RELEASE NOTIFICATION RETRACTION

For

Charles C. Cashman Elementary School
193 Lions Mouth Road
Amesbury, Massachusetts 01913
MassDEP RTN 3-36397

Prepared for:

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Prepared by:

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September 17, 2020

ECMS Project No. 1009.073

Environmental & Construction
Management Services, Inc.

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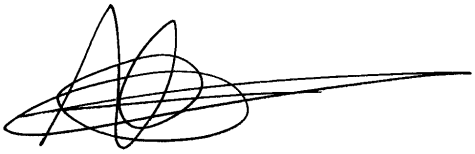
CERTIFICATION OF RESULTS

The evaluation was conducted on behalf of and for the exclusive use of *DiNisco Design* and their client, the *City of Amesbury, Massachusetts* and all its successors and assigns, solely for use in an environmental evaluation of the Site. This report and the findings contained herein shall not, in whole or in part, be disseminated or conveyed to any other party, nor used by any other party, in whole or in part, other than *DiNisco Design* or the *City of Amesbury* and all its successors and assigns, without the prior written consent of *Environmental & Construction Management Services, Inc. (ECMS).*

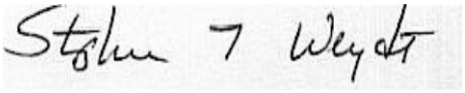
ECMS professional services have been performed, our findings obtained, and our recommendations prepared by an environmental professional and customary principles and practices in the fields of environmental science and engineering. This warranty is in lieu of all other warranties either expressed or implied. *ECMS* is not responsible for the independent conclusions, opinions or recommendations made by others based on the records review, site inspection, field exploration, and laboratory test data presented in this report.

Respectfully submitted this 17th day of September 2020.

For ***Environmental & Construction Management Services, Inc.*** by



Kevin J. Kavanaugh, L.S.P., CHMM
Principal Environmental Engineer



Stephen T. Weydt
Principal Environmental Scientist

1.0 INTRODUCTION

This Release Notification Retraction (retraction) was prepared based upon an evaluation of additional site data and discussions with Massachusetts Department of Environmental Protection (MassDEP) regarding elevated concentrations of arsenic detected in the soils at the Cashman Elementary School Site, located at 193 Lions Mouth Road in Amesbury, Massachusetts. The release is identified by the MassDEP as Release Tracking Number (RTN) 3-36397. This retraction was prepared in accordance with the requirements of the Massachusetts Contingency Plan (MCP) 310 CMR 40.0000, Section 40.0335 and other relevant guidance developed by the MassDEP.

A Release Notification Transmittal Form (RNF) BWSC-103 for the retraction has been submitted to the MassDEP via eDEP. A copy of the RNF Transmittal Form BWSC-103 is attached as Appendix A.

2.0 PROPERTY DESCRIPTION

2.1 Location and Legal Description of the Site

The Site is an irregularly-shaped 35.32-acre parcel of land located at 193 Lions Mouth Road in Amesbury, Essex County, Massachusetts 01913. According to the City of Amesbury Assessor, the property is listed as three (3) parcels including 50/6, 50/16 and 50/42. In addition, a portion of the Woodsom Farm (Parcel 37/4) is part of the proposed project. The Site is occupied by the Charles C. Cashman Elementary School and associated athletic fields, playground, parking lots and landscaped areas. Refer to Figure 2 entitled Lot Location Plan.

The Site is depicted on the 7.5 x 15-minute U.S.G.S. topographic quadrangle for Newburyport, Massachusetts dated 1987. The Universal Transverse Mercator (UTM) coordinates of the Site within zone 19 are approximately 4,746,558 meters north latitude and 340,818.9 meters east longitude or 42° 51' 26.06'' north latitude and 70° 56' 54.07'' west longitude. Elevation at the site is approximately 105 feet above mean sea level (amsl). Figure 1 includes both a Site Locus Plan and a Street Location Map of the Site. The Site and surrounding properties are shown on Figure 2, Lot Location Plan attached to this report.

2.2 Site and Vicinity Characteristics

The Site is currently occupied by the City of Amesbury Cashman Elementary School housing grades Pre-kindergarten through 4 (approximately 458 children). The Site is located within OSC – Open Space Conservancy. The school building is surrounded by a driveway and associated paved parking lots, a playground area and grass athletic fields and two (2) little league baseball fields (Randall and Packer Fields).

Woodsom Farm to the west, and is accessed from Lions Mouth Road to the South. The north edge of the site is steeply sloping forested hill with an intermittent stream at the base. The Site is surrounded with pockets of densely settled residential neighborhoods.

No existing commercial printing facilities, gasoline filling/service stations, industrial properties or fuel depots were identified in the immediate vicinity of the subject site. The past uses of these surrounding properties do not pose recognized environmental concerns to the Site.

2.3 Descriptions of Structures, Roads, Other Improvements on the Site

The 2-story school building is 61,472 gross square feet (GSF). The building is constructed of masonry block with brick veneer on slab on grade construction.

Assessor Office records indicate that the main Site building construction was completed in 1975. The school building is currently heated by natural gas and heated through forced air ducts. The roof is asphalt and on the roof are several HVAC units. Records indicate, the building is and always has been heated by natural gas. Copies of the City of Amesbury Assessor Property Record Cards for the project are attached as Appendix B.

The nearest surface water bodies to the Site is Lake Gardner that is located approximately 2,500 feet to the north-northeast. According to the City of Amesbury Health Department, there are no know public or private potable water supply wells in the vicinity of the Site.

The City of Amesbury obtains its drinking water from its watershed area that encompasses about 55 square miles; most of which reside in New Hampshire. Tuxbury Pond feeds the Powow River, which the treatment plant draws from. Lake Attitash and Meadowbrook also supplement the water source seasonally and in times of drought. All of Amesbury's wastewater empties into their municipal sewer system. The wastewater treatment facility is located at 19 Merrimac Street.

The site is currently supplied with natural gas and serviced by the municipal water and sewer systems.

The existing school building has a sewage ejector system that was observed along the entrance driveway area south of the school.

2.4 Site Ownership

According to City of Amesbury Assessor's records, the subject site is owned by the City of Amesbury as of December 30, 1971 (Book 5833, Page 124).

2.5 Current Uses of the Site

The Site is currently utilized as the City of Amesbury Cashman Elementary School for grades Pre-K through Grade 4.

2.6 Current Uses of Surrounding Properties

The Site is located within an area primarily used for single-family residential homes, farmland and undeveloped wooded vacant land. There were no visual indications observed during *ECMS* visual inspection of nearby or abutting properties of conditions that would indicate a release or threat of release of oil and/or hazardous substances on, at, in, or to the Site.

2.7 Past Uses of the Site and Vicinity

Prior to the site investigation, *ECMS* prepared a Phase I Environmental Site Assessment (ESA) dated September 13, 2018 included interviews with officials from the City of Amesbury and review of readily available information on site history. Historical information was obtained from a review of the historical topographs (1932, 1934, 1943, 1944, 1947, 1950, 1956, 1952, 1968, 1973, 1979, 1971, 1985, 1987 and 2012), historical aerial photos (1953, 1960, 1966, 1973, 1978, 1986, 1992, 1998, 2006, 2009, 2012 and 2016), City Directory (1961, 1965, 1968, 1973, 1977, 1982, 1987, 1992, 1995, 2000, 2005, 2010 and 2014). Refer to Appendix C for copies of the above historic documents.

The historical aerial photo from 1978 shows the school building. Prior to construction of the school building, the Site land area was undeveloped and appears to be farmland as depicted in the aerial photographs from 1953 through 1973. The farm was used as a dairy farm and for the growing of hay.

Properties surrounding the Site to the north, south, east and west were developed with sporadic residential properties and some may have been farmland.

The past uses of these surrounding properties do not pose recognized environmental concerns to the Site.

3.0 SENSITIVE RECEPTORS

3.1 Human Receptors

The property consists of Cashman Elementary School, which enrolls approximately 443 students and employs approximately 50 full- and part-time staff. Human receptors at the property include children, adult staff, and visitors (adult and child).

Under reasonably foreseeable future exposure scenarios, subsurface utility or construction workers on the site would also be potential human receptors.

The property is located within a residential area of Amesbury. Numerous residential properties were identified within 500 feet of the property. The property itself is a public school. No other public schools or "institutions," as defined by the MCP, have been identified within 500 feet of the property. An "institution" is defined in the MCP as a hospital, health care facility, orphanage, nursing home, convalescent home, educational facility, or correctional facility, where such facility in whole or in part provides overnight housing. Consistent with 310 CMR 40.0361, reporting category RCS-1 is applicable to the property based upon the presence of residential properties within 500 feet.

According to an on-line MassDEP MCP Numerical Ranking System (NRS) map of the property and vicinity, the property is not located within 500 feet of any public drinking water sources, including Potentially Productive Aquifers, Zone II areas, Interim Wellhead Protection Areas, Zone A areas, or private wells. Consistent with 310 CMR 40.0361, reporting category RCGW-2 is applicable to the property because it is not within a current or potential drinking water source area. Refer to Figure 6 for a copy of the MassDEP Priority Resource (21E) Map.

3.2 Environmental Receptors

Sensitive environmental receptors at the property include wetlands associated with Cashman Elementary School, located on the northern and western side of the property approximately 250 feet north and northwest of the school building. According to the NRS map, wetlands associated with an unnamed brook to the east. No other surface waters (including wetlands, vernal pools, ponds, lakes, streams, rivers, and reservoirs) have been documented within 500 feet. A wetland area located within 0.5 mile to the southwest of the property is designated a Natural Heritage and Endangered Species Program (NHESP) Potential Vernal Pool.

According to information in the *Massachusetts Natural Heritage Atlas* (updated August 1, 2017), no certified vernal pools, priority habitats of rare species or estimated habitats of rare wildlife were identified within a 500-foot radius of the site. Refer to Figures 3 for a Map of Priority Habitats of Rare Species and Figure 4 for a Map of Estimated Habitats of Rare Wildlife and Certified Vernal Pools.

4.0 INITIAL SITE INVESTIGATION – PRE-CONSTRUCTION SOIL SAMPLING

At the request of the Project Architect *DiNisco Design, Inc. (DiNisco)*, *ECMS* completed the collection of loam/topsoil and subsoils samples from representative areas proximate to the Cashman Elementary School and from the field adjacent to the school for laboratory analysis for potential oil and/or hazardous material (OHM) prior to proposed site construction activities. Photographs were taken by *ECMS* personnel and are attached as Appendix D.

In Massachusetts, the regulatory program that concerns releases of OHM to the environment is the MCP 310 CMR 40.0000. This program is implemented by the MassDEP and includes specific provisions regarding releases of OHM to the environment that must be reported to the MassDEP.

4.1 Initial Soil Sampling and Analysis

On July 9, 2020, *ECMS* personnel collected fifteen (15) surficial loam/topsoil and two (2) subsoil samples. The samples were collected from areas identified by *DiNisco Design (DiNisco)* in "Proposed Topsoil Removal Limit Plan (Markup)" dated May 15, 2020. Refer to Figure 9, Soil Sample Location Plan for the location of the soil samples. Loam/topsoil samples were collected below the grass surface from 2 to 6 inches below surface grade and subsurface soil samples were collected approximately 2 feet below grade at refusal.

All soil samples were analyzed under chain of custody (COC) by Massachusetts approved laboratory *Eurofins Spectrum Analytical* (*Eurofins Spectrum*) of North Kingstown, Rhode Island for Comm97 Soil Laboratory Analysis plus additional analysis for Mass Reclamation Facilities which includes: Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) Method 8260, Semi Volatile Organic Compounds (SVOCs) by EPA Method 8270, Polychlorinated Biphenyls (PCBs) by EPA Method 8082 and Total Petroleum Hydrocarbons (TPH) by Gas Chromatograph (GC), MassDEP 14 Metals, Herbicides and Pesticides by EPA Method 8151A and Method 8151B. Additionally, all soil samples were further characterized by the analysis of pH, flashpoint and reactivity (cyanide and sulfide).

4.2 Initial Soil Sampling Results

No concentrations of OHM in any of the fifteen (15) loam/topsoil and/or two (2) subsoil samples analyzed were detected above their applicable reportable concentration RCS-1 specified in Massachusetts Oil and Hazardous Materials List (MOHML) 310 CMR 40.1600 and 310 CMR 40.0300 with the exception of arsenic. Concentrations of arsenic in all 17 soil samples submitted were detected above their RCS-1 of 20 milligrams per kilogram (mg/kg). The concentrations of arsenic ranged between 20.5 mg/kg and 82.3 mg/kg with an RCS-1 of 20 mg/kg. No concentrations

of arsenic were detected above their applicable upper concentration limit (UCL) of 500 mg/kg. A copy of the laboratory results and their respective MCP RCS-1 reporting concentrations (RCs) are presented in Tables 1 through 4.

In addition, several SVOC compounds were above their applicable MCP RCS-1 310 CMR 40.0300 and 40.1600 criteria. The method detection limits (MDLs) for these compounds are generally less than one order magnitude over their respective MDL and the past use of the site does not include the past use, storage of application of any OHM and therefore these compounds are not considered to be compounds of concern (COC).

In accordance with the MCP 310 CMR 40.0361: Reportable Concentrations of Oil and Hazardous Material in Soil:

> (1) For the purpose of determining whether a notification obligation exists under 310 CMR 40.0315, measured concentrations of any oil or hazardous material listed at 310 CMR 40.1600 shall be compared to the Reportable Concentration value in the reporting category that best characterizes the current use of the site under evaluation, as described below:
>
> > (a) Reporting Category RCS-1. Reporting category RCS-1 shall be applied to all soil samples obtained at or within 500 feet of a residential dwelling, a residentially-zoned property, school, playground, recreational area or park.

The detection of arsenic collected on July 9, 2020 in the site soils at concentrations exceeding their applicable RCS-1 triggers a 120-day notification requirement to the MassDEP under MCP 310 CMR 40.0315: Releases Which Require Notification Within 120 Days.

Additionally, since five (5) of the 17 soil samples exceeded a concentration of arsenic over 40 mg/kg the criteria for a release that could pose an Imminent Hazard to human health in accordance with MCP 310 CMR 40.0321(2) which is "a release to the environment indicated by the measurement of concentrations of hazardous material, equal to or greater than any of the following concentrations at the ground surface or within a depth of twelve (12) inches below the ground surface, at any location within 500 feet of a residential dwelling, school, playground, recreation area or park, unless access by children is controlled or prevented by means of bituminous pavement, concrete, fence, or other physical barrier". A release that could pose an Imminent Hazard to human health requires a "Two Hour" release notification obligation to the MassDEP.

4.3 Initial Recommendations

Due to the limited time to properly evaluate whether the detection of the concentrations of arsenic from the soil results from the July 9, 2020 soil precharacterization sampling prior to construction are naturally occurring as believed, *ECMS* recommended that the MassDEP be notified of a release that could pose an Imminent Hazard to human health requires a "Two Hour" release notification obligation.

As stated in MCP 310 CMR 40.0321(3) Notwithstanding the provisions of 310 CMR 40.0321(2) and 40.0321(3), a person required to notify under 310 CMR 40.0331 may demonstrate to the Department by a preponderance of the evidence that release or site conditions specified in 310 CMR 40.0321(2) and/or (3) do not constitute an actual Imminent Hazard to human health, in conformance with the Imminent Hazard Evaluation process described in 310 CMR 40.0426, and in consideration of the site-specific factors and the risk assessment and risk management criteria contained in 310 CMR 40.0950. No such demonstration, however, shall relieve any person of the obligation to notify the Department of a release or threat of release under the provisions of 310 CMR 40.0311 or 40.0312.

ECMS also recommended that an Imminent Hazard Evaluation (IHE) be completed to ensure that an Imminent Hazard did not exist.

ECMS prepared an IHE dated July 28, 2020 that was submitted to MassDEP on behalf of the City of Amesbury on August 14, 2020. Details and results of the IHE are including in Section 5.0 of this report.

4.4 MassDEP Notification and Oral IRA Approval

On July 24, 2020, Kevin J. Kavanaugh, LSP, CHMM of *ECMS* called the MassDEP-NERO, Bureau of Waste Site Cleanup on behalf of the City of Amesbury to report the 2-hour release condition in accordance with the requirements of the MCP 310 CMR 40.0313 for a release that could pose an Imminent Hazard to human health in accordance with MCP 310 CMR 40.0321(2) which is "a release to the environment indicated by the measurement of concentrations of hazardous material, equal to or greater than any of the following concentrations at the ground surface or within a depth of twelve (12) inches below the ground surface, at any location within 500 feet of a residential dwelling, school, playground, recreation area or park, unless access by children is controlled or prevented by means of bituminous pavement, concrete, fence, or other physical barrier".

Mr. Kenneth Sanderson of the MassDEP-NERO, Bureau of Waste Site Cleanup orally approved the proposed "assessment only" subsurface investigation to determine the nature and extent of the detection of arsenic. Other recommendations

included the restrictive fencing, posting warning signage and covering exposed soil with Polyethylene sheeting. A copy of the MassDEP Release Log Form (RLF) BWSC-101 is attached as Appendix E.

A Release Notification Form (RNF) BWSC-103 prepared by *ECMS* was electronically signed by Mr. Kevin J. Kavanaugh, LSP, CHMM for *ECMS* on behalf of the City of Amesbury and was submitted to the MassDEP on July 31, 2020 via eDEP. A copy of the RNF is also attached in Appendix F.

5.0 IMMEDIATE RESPONSE ACTION (IRA) ASSESSMENT ACTIVITIES

5.1 Imminent Hazard Evaluation (IHE)

ECMS prepared an IHE dated July 28, 2020 that was submitted to MassDEP on behalf of the City of Amesbury on August 14, 2020.

The purpose of an IHE was to evaluate whether an IRA is needed to control or reduce short-term exposure to a release of oil and/or hazardous material while comprehensive investigations and response actions are being evaluated. The need for comprehensive response actions (i.e., the ultimate actions for the release) is determined (in part) by a Risk Characterization, which is performed after all site investigations are completed.

For this IHE *ECMS* engaged *Mr. Peter LaGoy of LaGoy Risk Analysis, Inc. (LaGoy)* in Hopkinton, Massachusetts as a professional risk assessor to evaluate the recently obtained soil sample analytical results for samples collected on July 9, 2020.

The conclusions from the *LaGoy* "Evaluation of Soil Data from the Charles C. Cashman Elementary School, 193 Lions Mouth Road, Amesbury, Massachusetts dated July 27, 2020" are as follows:

- The site poses no imminent hazard to students, non-student users of the playing fields, school workers, and construction/utility workers.
- The site poses no imminent hazard to the environment.
- The site poses no imminent hazard to safety.

A copy of the *ECMS* IHE dated July 28, 2020 is attached as Appendix G.

5.2 Additional Soil Sampling, Analysis and Results

5.2.1 Baseball Field Infield Surface Sampling – July 31, 2020

On July 31, 2020, *ECMS* personnel collected four (4) surface soil samples from the infield of Randall Field (1st base, 2nd base, 3rd base and home plate) and four (4) surface soil samples from the infield of Packer Field (1st base, 2nd base, 3rd base and home plate). The soil appeared to be imported (noting its reddish color as well as its greater content of clay) and visually unlike the native soils encountered during the previous sampling of soils on July 9, 2020 by *ECMS*. Refer to Figure 9, Soil Sample Location Plan for the location of the soil samples.

All soil samples were analyzed under chain of custody (COC) by Massachusetts approved laboratory *Eurofins Spectrum* for MassDEP 14 Metals (including antimony, arsenic, beryllium, cadmium, chromium, lead, nickel, selenium, silver, thallium, vanadium, zinc, barium and mercury).

No concentrations of any of the MassDEP 14 Metals in any of the eight (8) infield surface samples analyzed were detected above their applicable reportable concentration RCS-1 specified in MOHML 310 CMR 40.1600 and 310 CMR 40.0300.

5.2.2 Packer Field Sampling and Background Sampling on the Woodsom Farm Property – August 12, 2020

On August 12, 2020, *ECMS* Licensed Site Professional (LSP) Kevin J. Kavanaugh met with Mr. Paul Giddings of the MassDEP Northeast Regional Office (NERO), Bureau of Waste Site Cleanup to collected additional soil samples for laboratory analysis for the presence of arsenic in an area that was previously found to have the highest concentration of arsenic in soils by *ECMS* on July 9, 2020 and in background areas in order to determine if the presence of arsenic on the Cashman School property is from a release at the Site or is consistently present in the environment at and in the vicinity of the sampling location that is solely attributable to natural geologic or ecologic conditions; and has not been mobilized or transferred to another environmental medium or increased in concentration in an environmental medium as a result of anthropogenic activities.

Mr. Giddings collected four (4) samples from two (2) different areas at depths between surface and 6 inches and increased depth approximately 16-18 inches below grade. *ECMS* collected eight (8) additional soil samples from the "background" areas on the Cashman School field property as well as from the Woodsom Farm property located west of the school property. All soils

appeared to be similar to those soils (dense light brown glacial till) encountered during the *ECMS* sampling on July 9, 2020 with the exception of the soil sample (designated as SSS-28) that was collected at a depth of between 18 and 20 inches in the outfield of Randall Field. This soil was found below approximately 6 inches of grass and loam and consisted of a more uniform brown medium to fine sand and was well graded and considered to be imported fill.

All *ECMS* collected soil samples were analyzed under proper COC by Massachusetts approved laboratory *Eurofins Spectrum* for MassDEP 14 Metals. Concentrations of arsenic was detected in 7 of the 8 soil samples submitted by *ECMS* above their RCS-1 of 20 mg/kg and 5 samples were also above the MassDEP IH concentration of 40 mg/kg. The concentrations of arsenic ranged between 4.89 mg/kg and 89.6 mg/kg. No concentrations of arsenic were detected above their applicable UCL of 500 mg/kg. Concentrations of the other 13 metals analyzed were all below their applicable RCS-1 concentration. A copy of the laboratory results and their respective MCP RCS-1 reporting concentrations (RCs) are presented in Table 6 and a copy of the *Eurofins Spectrum* Laboratory Report is attached as Appendix H.

All MassDEP collected soil samples were analyzed under proper COC by Massachusetts approved laboratory *Alpha Analytical* of Westborough, Massachusetts for arsenic and lead.

Concentrations of arsenic was detected in 4 of the 4 soil samples submitted by *MassDEP* were detected above their RCS-1 of 20 mg/kg and all samples were also above the MassDEP IH concentration of 40 mg/kg. The concentrations of arsenic ranged between 45.2 mg/kg and 66.6 mg/kg. No concentrations of arsenic were detected above their applicable UCL of 500 mg/kg. Concentrations of lead ranging between 10.9 and 38.8 mg/kg analyzed were all below their applicable RCS-1 concentration of 200 mg/kg. Refer to Figure 9, Soil Sample Location Plan for the location of the soil samples. A copy of the laboratory results and their respective MCP RCS-1 reporting concentrations (RCs) are presented in Table 7 and a copy of the Alpha Laboratory Report is attached as Appendix I.

6.0 SITE CONCEPTUAL MODEL & LINES OF EVIDENCE - ORIGIN OF ARSENIC IN SITE SOIL

6.1 Historical Documentation

The historical aerial photo from 1978 shows the school building. Prior to construction of the school building, the Site land area was undeveloped and appears to be farmland as depicted in the aerial photographs from 1953 through 1973.

Properties surrounding the Site to the north, south, east and west were developed with sporadic residential properties and some may have been farmland.

Woodsom Farm which lies adjacent to the northern and northwestern side of the Cashman School property is 365 acres in size and was purchased by the City of Amesbury in 1989 and is listed as a City Park (article 97). Note that not all of the 365 acres Woodsom Farm is article 97 as the corner where the proposed project egress drive will be located was designated "General Municipal Purposes" - Woodsom Farm Book: 9963, Page 317.

According to the Essex National Heritage Area society information Woodsom Farm was farmed as early as 1790, and at one time, was the largest dairy farm in Essex County. Hayfields, wetlands, woods, marshes and drumlins stretch across these 370 acres, bordered by the Powow River, and make the farm a scenic spot for walking, hiking, cross-country skiing and biking. Woodsom Farm is home to a diverse population of birds, including bobolinks, barn swallows, rock doves and meadowlarks. Species of Note include Bobolinks, rock doves, redwing blackbirds, mourning doves, meadowlarks and barn swallows. There were 41 different species (including unidentified warblers) seen on a June bird count. Habitats include grasslands, marsh, hayfields, drumlin hills and pasture land. There is no account that the farmland was utilized for anything else but a dairy farm and hayfields which would eliminate the historical use of herbicides and pesticides, particularly lead arsenate.

6.2 Arsenic Distribution

The distribution of arsenic in surface (depths from just below the grass to a maximum depth achieved of 24 inches) soil is heterogeneous, possibly reflecting perturbations by some reworking of the native soils. Twenty-nine (29) total soil samples were collected from a depth between just below the grass surface to a maximum of 24 inches below grade on both the Cashman School property and on the neighboring City of Amesbury owned Woodsom Farm property. Of the 29 samples collected 28 samples had arsenic concentrations greater than its applicable RCS-1 of 20 mg/kg and of those 28 samples, 15 had an arsenic concentration above its IH of 40 mg/kg. The one sample (designated SSS-28) that did not have an arsenic concentration over RCS-1 was collected from the outfield of Randall Field at a depth of 18-24 inches and consisted of a well-graded area that appeared to be fill related to the construction of the baseball field.

The highest arsenic found in site soils is in the deepest samples, and at several locations the arsenic concentration increases with increasing depth. This was noted in the samples collected by *ECMS* and MassDEP in what was considered to be a "background" or unworked portion of the Cashman School property (listed as samples "SSS-26" and "SSS-27" collected by *ECMS* and "DEP S-3 Background" and

"DEP S-4 Background" collected by MassDEP). Surficial application of arsenic would yield a concentration gradient that is the opposite of that observed at the site.

Elevated soil arsenic was also found at on the Woodsom Farm property at the same depth range as found on the Cashman School property. Soils appeared to be the same on both properties consisting of dry, brown, fine to coarse sand with little silt and trace gravel and trace root fibers in the top 6 inches below the grass cover.

No evidence has been found for the existence of a historical "point source" for arsenic at the school site, such as a pesticide manufacturer, tannery, or other industry using large quantities of arsenic. Historic and aerial maps also do not indicate the presence of any apple orchards in the area in the late 19th century, where arsenical pesticides (e.g., lead arsenate) may have been used on the Site and adjoining Woodsom farm property. Concentrations of lead were not found to be elevated beyond typical background levels thus eliminating the application of lead arsenate.

6.3 Soil Appearance

Soils sampled by *ECMS* within the first 6 inches consisted of dry, brown, fine to coarse sand with little silt and trace gravel and trace root fibers. In the areas sampled, little to no loam was observed. Soils sampled below 6 inches to a maximum of 24 inches were similar to those observed in the first 6 inches and deemed as subsoils.

The subsurface samples of unconsolidated deposits at the site contained arsenic-bearing minerals and elevated concentrations of arsenic. Although bedrock was not sampled, descriptions of bedrock, as observed in subsurface samples from the site, are consistent with published regional data indicating elevated arsenic levels in rock as published in the studies of the Merrimack and Nashoba formations.

6.4 Conclusions

Based on the data collected by *ECMS*, presented here and within the Retraction to which this memorandum is appended, along with the foregoing discussion, arsenic in the Cashman Elementary School soils is naturally occurring. This conclusion is supported by: the location of the site in a known and documented arsenic belt, appearance of site soils, the distribution of arsenic in the site soils; the comparison of site soil analytical results to arsenic concentrations off the property and in "background" locations; and the occurrence of the highest arsenic samples at depth.

7.0 RETRACTION OF RELEASE NOTIFICATION

Consistent with the provisions of 310 CMR 40.0335(1)(c), this release notification is being retracted on the basis that the subject release did not meet one or more of the sets of notification criteria specified in 310 CMR 40.0300. Specifically, releases of arsenic do not require notification pursuant to 310 CMR 40.0317(22) if they are in areas that are documented to have elevated arsenic measured in soil or groundwater that:

- is consistently present in the environment at and in the vicinity of the sampling location;
- is solely attributable to natural geologic or ecologic conditions; and
- has not been mobilized or transferred to another environmental medium or increased in concentration in an environmental medium as a result of anthropogenic activities.

The City of Amesbury lies within an area of Massachusetts that has been identified in studies by the United States Geological Survey (USGS) as being underlain by bedrock units, particularly the Merrimack and Nashoba formations, containing elevated arsenic concentrations (see *Arsenic and Uranium in Water from Private Well Completed in Bedrock of East-Central Massachusetts – Concentrations, Correlations with Bedrock Units, and Estimated Probability Maps*, John A. Colman, USGS, Scientific Investigations Report 2011-5013). Refer to Appendix J for a copy of the *Arsenic and Uranium in Water from Private Well Completed in Bedrock of East-Central Massachusetts – Concentrations, Correlations with Bedrock Units, and Estimated Probability Maps*, John A. Colman, USGS, Scientific Investigations Report 2011-5013.

Elevated concentrations of arsenic were detected in native soil across the site at all depths sampled, with the most elevated concentration detected just below the grass cover to a depth of 2 feet below grade. No field evidence was encountered that indicated soil had been disturbed or mobilized, or that an anthropogenic activity might have resulted in the elevated arsenic concentrations. As a result, *ECMS*, on behalf the City of Amesbury submitting this retraction in accordance MCP 310 MR 40.0335.

8.0 PROPOSED CONSTRUCTION OVERSIGHT

As stated in MCP 310 CMR 40.0335(6) *"*Nothing in 310 CMR 40.0335 shall limit the Department's authority to initiate, oversee, or order the performance of any response action deemed necessary by the Department to protect health, safety, public welfare, or the environment."

The presence of the arsenic detected on the Cashman School property should be properly managed to prevent exposure of arsenic present in the site's soils to protect health, safety, public welfare, and the environment.

ECMS proposed that a Health and Safety Plan (HASP) for use by construction workers and ancillary construction support staff during construction of a new school building and a Soil and Groundwater Management Plan that will provides a plan for the management of metals-impacted soil and groundwater that may be encountered during construction of a new elementary school building be prepared for the construction activities that will occur during the construction of the new school.

9.0 PUBLIC INVOLVEMENT

Although not required, a letter regarding this release notification retraction has been provided to the appropriate municipal officials. A copy of the letter is provided in Appendix K.

10.0 LIMITATIONS

This evaluation is based on the conditions existing at the property on the dates of property visits and field investigation activities. Past conditions are considered on the basis of readily available records, interviews, and recollections. Property conditions are subject to variations and changes over time. This report is based on the current fully-implemented environmental regulations.

Future regulatory modifications, agency interpretations, and/or attitude changes may affect the environmental status of the site.

Environmental & Construction Management Services, Inc. (*ECMS*) professional services have been performed, our findings obtained, and our recommendations prepared in accordance with customary principles and practices in the fields of environmental science and engineering. This warranty is in lieu of all other warranties either expressed or implied. *ECMS* is not responsible for the independent conclusions, opinions or recommendations made by others based on the records review, site inspection, field exploration, and laboratory test data presented in this report.

The findings set forth in the attached Site assessment report are strictly limited in time and scope to the date of the evaluation(s). The conclusions presented in the Report are based solely on the services described therein and not on scientific tasks or procedures beyond the scope of agreed upon services or the time and budgeting restraints imposed by the client.

The purpose of this report was to assess the physical characteristics of the subject Site with respect to the presence in the environment of hazardous material or oil. No specific attempt was made to check on the compliance of present or past owners or operators or of the Site with Federal, State or local laws and regulations, environmental, or otherwise.

Partial findings of this investigation are based on data provided by others. No warranty is expressed or implied with the usage of such data. Much of the information provided in this report is based upon personal interviews and research of all available documents, records, and maps held by the appropriate government and private agencies. This is subject to the limitations of historical documentation, availability and accuracy of pertinent records, and the personal recollection of those persons contacted by *ECMS* personnel. *ECMS* is not a professional title insurance firm and makes no guarantee, explicit or implied that the listing, which was reviewed, represented a comprehensive delineation of past Site ownership or tenancy for legal purposes.

Observations were made of the Site and of structures on the Site as indicated within the Report. Where access to portions of the Site or to structures on the Site was unavailable or limited, *ECMS* is unable to render an opinion as to the presence of hazardous material or oil, or to the presence if indirect evidence relating to hazardous material or oil, in that portion of the Site or structure. In addition, *ECMS* renders no opinion as to the presence of hazardous material or oil, where direct observation of the interior walls, floor, or ceiling of a structure on a Site was obstructed by objects or coverings on or over these surfaces.

The initial site investigation took into account the natural and man-made features of the Site, including any unusual or suspect phenomenon. These factors combined with the Site's geology, hydrology, topography, and past and present land uses served as a basis for choosing a methodology and location for subsurface exploration as well as ground water and subsurface sampling, if done. The subsurface data, if provided, is meant as a representative overview of the Site.

The conclusions and recommendations contained in this report May be based in part upon various types of chemical data and are contingent upon their validity. As indicated within the Report, some of these data are preliminary "screening" level data, and should be confirmed with quantitative analyses if more specific information is necessary. It should be noted that variations in the types and concentrations of contaminants and variations in their flow paths May occur due to seasonal water table fluctuations, past disposal practices, the passage of time, and other factors. Should additional data or variations of current data become available in the future, these data should be reviewed, and the conclusions and recommendations presented herein modified accordingly.

Chemical analyses May have been performed for specific parameters during the course of this Site assessment, as described in the text. However, it should be noted that additional chemical constituents not searched for during the current study might be present in soil and/or ground water at the Site.

ATTACHMENT TO OPINION OF MASSACHUSETTS LICENSED SITE PROFESSIONAL (LSP)

Name of Licensed Site Professional:	Kevin J. Kavanaugh
LSP Registration Number:	7610
Date of Opinion:	September 18, 2020
Client to Whom Opinion was Rendered:	DiNisco Design, Inc. and their client the City of Amesbury Massachusetts
Acceptance date of Agreement between *ECMS, Inc.* and *Client* pursuant to which Opinion was Rendered:	May 20, 2020
Release Tracking Number/Site No.:	3-36397

This Statement of Limitations and Conditions is an integral part of, and is incorporated by reference into, the Opinion of Massachusetts Licensed Site Professional referenced above.

LIMITATIONS

1. Purpose of Opinion

A. This Opinion is being provided in compliance with the requirements set forth in the Massachusetts Contingency Plan (MCP), 310 CMR 40.0000 et seq. Specifically, the LSP has prepared this Opinion at the request of the Client identified above as part of a Permanent Solution Statement. This stated purpose has been a significant factor in determining the scope and level of services required to render this Opinion.

B. Should the purpose for which this Opinion is to be used change, this Opinion shall no longer be valid.

2. General

A. This Opinion was prepared for the sole and exclusive use of *DiNisco Design* and their Client *the City of Amesbury* (Owner), subject to the provisions of the MCP. Except for Client, their attorneys, banker, or insurance carriers, no other party is entitled to rely in any way on the conclusions, observations, specifications, or data contained herein without the express written consent of *ECMS* and the LSP who rendered this opinion. Any use of this Opinion by anyone other than the Client, or any use of this Opinion by the Client or others for any purpose other than the stated purpose set forth above, without the LSP's review and the written authorization of *ECMS* and

the LSP, shall be at the user's sole risk, and neither *ECMS*, nor the LSP shall have any liability or responsibility therefore.

B. This Opinion was prepared pursuant to an Agreement between *ECMS* and the Client referenced above which defines the scope of work and sets out agreements regarding waivers of consequential damages, limitations on liability, and other important conditions and restrictions pursuant to which the Opinion is rendered. All uses of the Opinions are subject to and deemed acceptance of the conditions and restrictions contained in such Agreement.

3. Scope of Services

The observations and conclusions described in this Opinion are based solely on the Services provided pursuant to the Agreement with the Client and any approved additional services authorized by the Client. Without limitation of any other applicable limitations or conditions, neither *ECMS*, nor the LSP shall be liable for the existence of any condition, the discovery of which would have required the performance of services not authorized under this Agreement. To the best knowledge and behalf of *ECMS* and the LSP who signed this Opinion, no inquiry of an attorney-at-law having being made, no laws, regulations, orders, permits or approvals are applicable to the response actions to which this opinion relates except, if and to the extent applicable, M.G.L. c. 21A, Sections 19-19J, 309 CMR, M.G.L. c. 21E and 310 CMR 40.0000. Accordingly, this opinion is not intended to and does not address compliance with any other laws, regulations, orders, permits or approvals.

4. Changed Circumstances

The passage of time may result in changed technology, economic conditions or regulatory standards, manifestations of latent conditions, or the occurrence of future events, which would render this Opinion inaccurate or otherwise inapplicable. Neither *ECMS* nor the LSP shall be liable or responsible for the consequences of any such changed circumstances or conditions on the accuracy of this Opinion. In addition, under no circumstances shall the Client nor any other persons or entity rely on the information or conclusions contained in this Opinion after five (5) months from its date of submission without the express written consent of *ECMS* and the LSP. Reliance on the Opinion after such period of time shall be at the user's sole risk.

5. Should *ECMS* or the LSP be required or requested to review or authorize others to use this Opinion after its date of submission, *ECMS* shall be entitled to additional compensation at then existing rates or such other terms as may be agreed upon by *ECMS* and the Client. Nothing herein contained shall be deemed to require *ECMS* or the LSP to undertake any such review or authorize others to use this Opinion.

6. The conclusions stated in this Opinion are based upon [check and initial appropriate boxes]:

☑ KJK Visual inspection of existing physical conditions;

☑ KJK Review and interpretation of Site history and Site usage information which was made available or obtained within the scope of work authorized by the Client;

☑ KJK Information provided by the Client;

☑ KJK Information and/or analyses for designated substances or parameters provided by an independent testing service or laboratory on a limited number of samples;

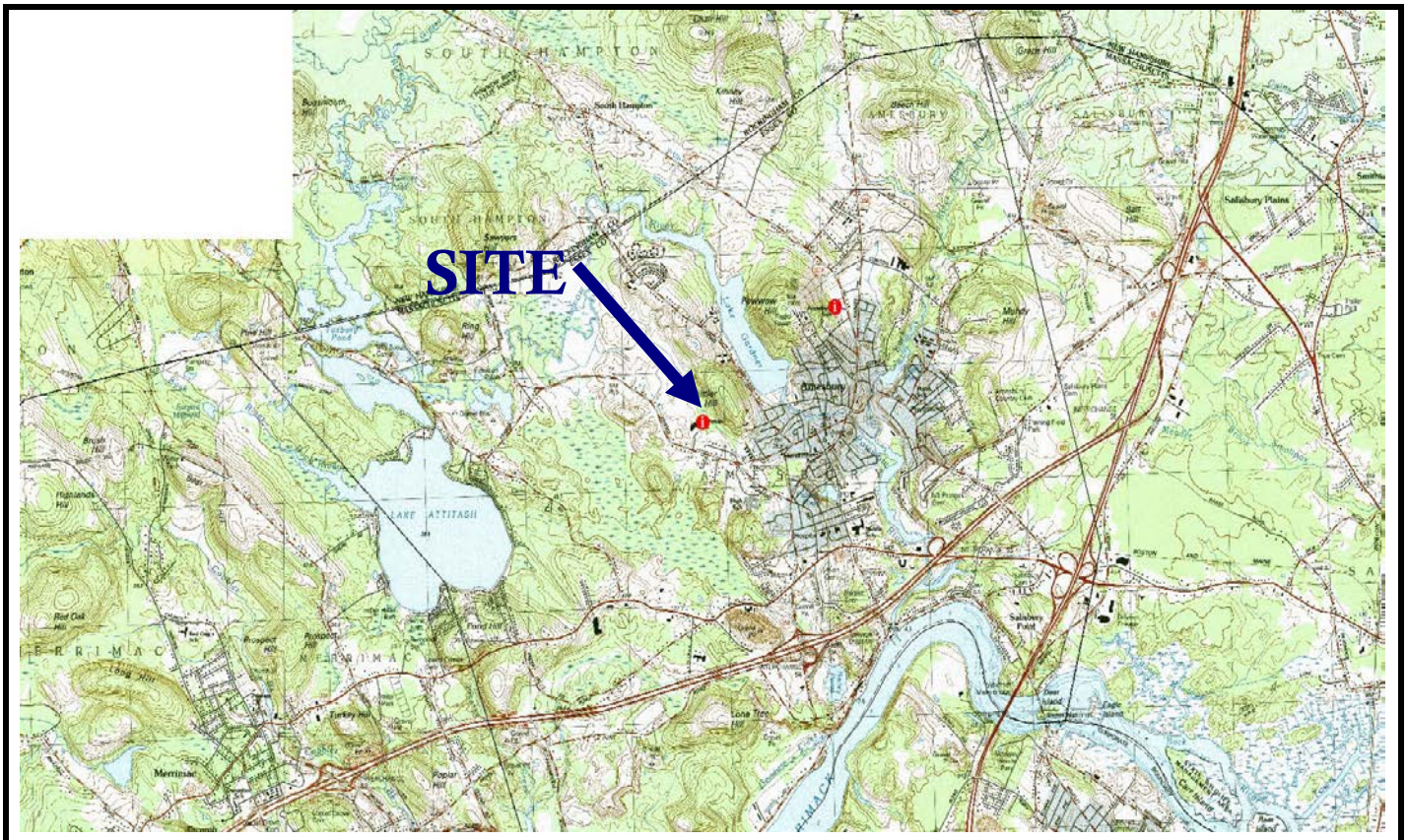
☑ KJK A limited number of subsurface explorations made on dates indicated in documentation supporting this Opinion;

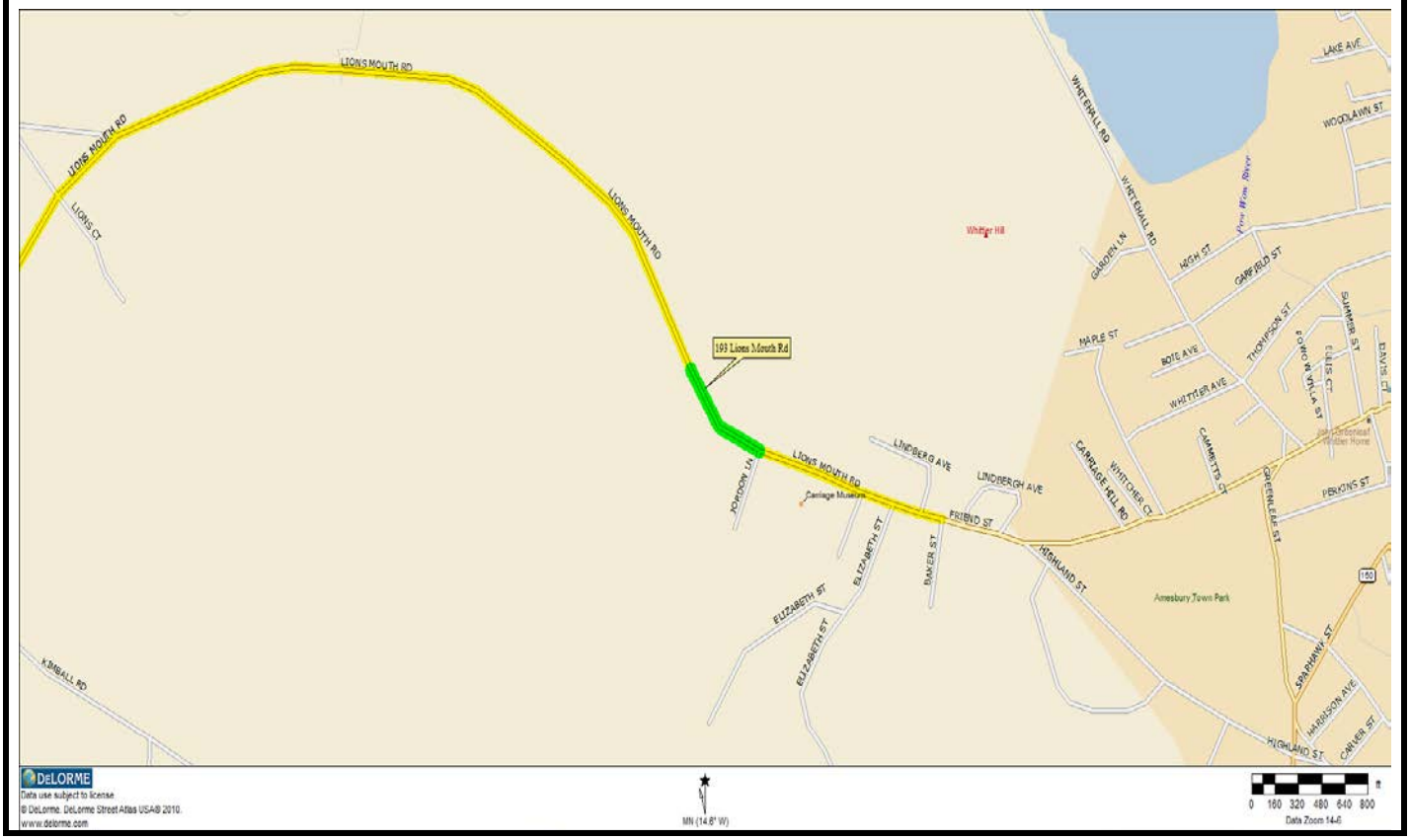
☐ _____ Other _____

Upon which the LSP has relied and presumed accurate, and upon which the LSP is entitled to reasonably rely. The LSP was not authorized and did not attempt to independently verify the accuracy or completeness of information or materials received from the Client and/or from laboratories and other third parties during the performance of its services. Neither *ECMS* nor the LSP shall be liable for any condition, information, or conclusion, the discovery of which required information available to the LSP or the independent investigation of information provided to the LSP by the Client and/or independent third parties.

This Opinion is rendered for the limited purpose stated above, and is not and should not be deemed to be an opinion concerning the compliance of any past or present owner or operator of the Site with any federal, state or local law or regulation. **No warranty or guarantee, whether expressed or implied, is made by the opinion, and any implied warranties of merchantability or fitness for a particular purpose are expressly disclaimed.** Without limiting the generality of the foregoing, no warranty is made that all contamination at a Site or sources of contamination has been detected or identified, that any action or recommended action will achieve all of its objectives, or that this opinion or any action as to which this Opinion relates will be upheld by any audit conducted by the Massachusetts Department of Environmental Protection (MassDEP) or any other party.

FIGURES





Cashman Elementary School **193 Lions Mouth Road** **Amesbury, Massachusetts** **01913**	**Environmental & Construction Management Services, Inc.**	**Project No.** 1009.073	**Figure 1**
		Site Locus / Street Location Plan	**N**
		Drawn By: KJK	**Date:** 8/24/18

CITY OF AMESBURY, MASS.

Assessor Maps

LEGEND

- Parcel Line
- Building Footprints
- Prior Parcel Line with Common Ownership
- 5 Condo Unit Number
- Right of Way
- Map Index
- Town Boundaries
- Easements
- Hydrographic Features
- Streams
- Wetlands

Exempt Lands

- Federal
- State
- Municipal
- Private

N

SCALE: 1" = 100'

100 0 100 200 300 400

NOTE:
THE AREAS, BOUNDARIES, AND DIMENSIONS SHOWN ON THIS TAX MAP ARE DERIVED FROM AERIAL PHOTOGRAPHS, GROUND SURVEYS, AND RECORDED PLANS, MAPS, DEEDS, AND WILLS, AND ARE INTENDED TO BE USED FOR PROPERTY ASSESSMENT PURPOSES ONLY AND NOT FOR CONVEYANCE.

MAP REVISION DATE		
As of January 1, 2018		

Data Sources: The data for this map was supplied by the Merrimack Valley Planning Commission, the Town of Amesbury and the Executive Office of Environmental Affairs/MassGIS.

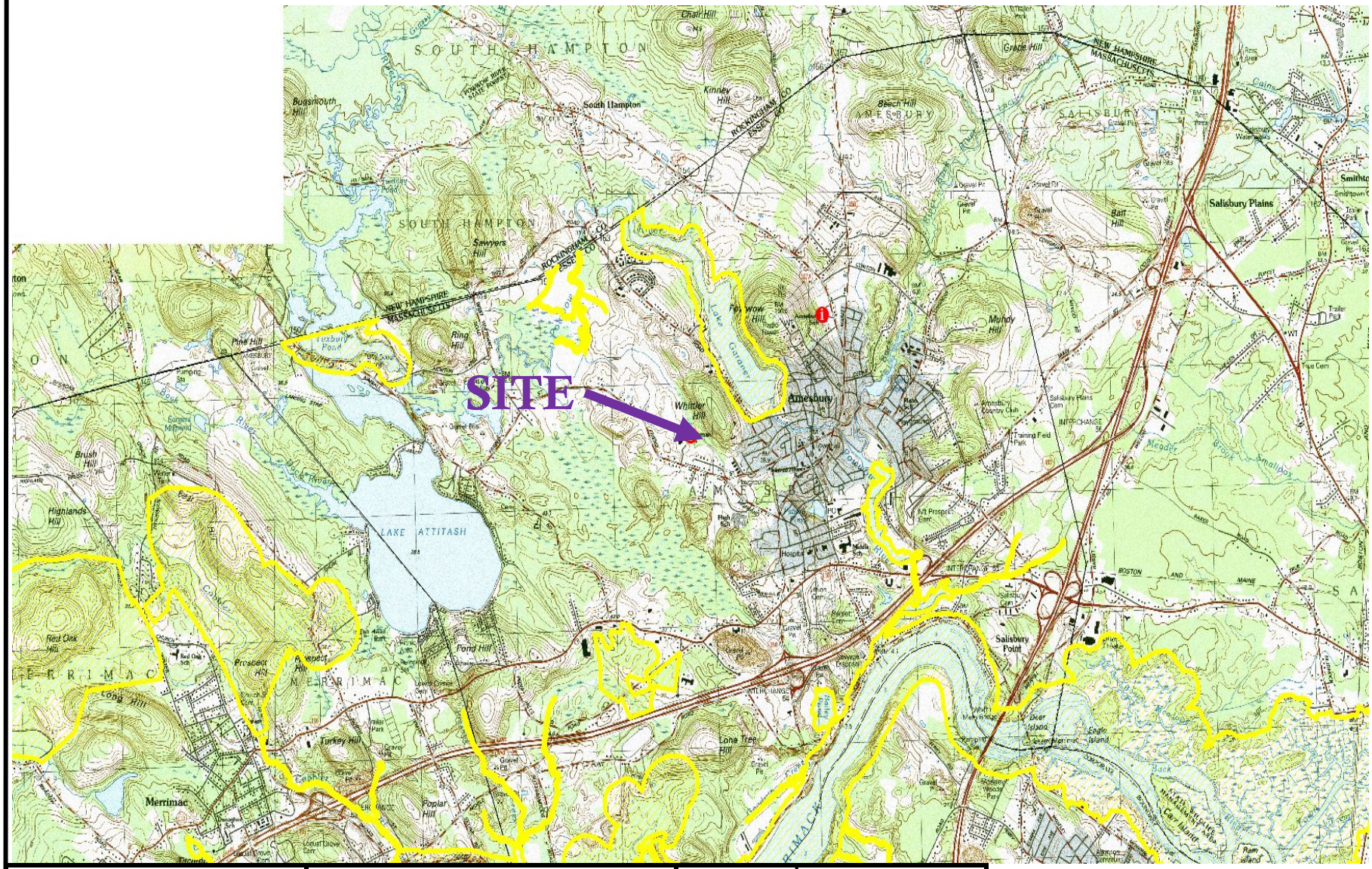
Merrimack Valley Planning Commission
plan • develop • promote

J:\ArcGIS\Amesbury\AmesburyAssessorMap_24x36.mxd

INDEX

						1	2	3	4					
					5	6	7	8	9					
				10	11	12	13	14	15	16	17			
		18	19	20	21	22	23	24	25	26	27	28	29	
30	31	32	33	34	35	36	37	38	39	40	41	42	43	
	44	45	46	47	48	49	50	51	52	53	54	55	56	
	57	58	59	60	61	62	63	64	65	66	67	68	69	
	70	71	72	73	74	75	76	77	78	79	80	81		
	82	83	84	85	86	87	88	89	90	91	92			
	93	94	95	96	97	98	99		100	101				
	102	103	104	105	106	107								
		108	109	110	111									

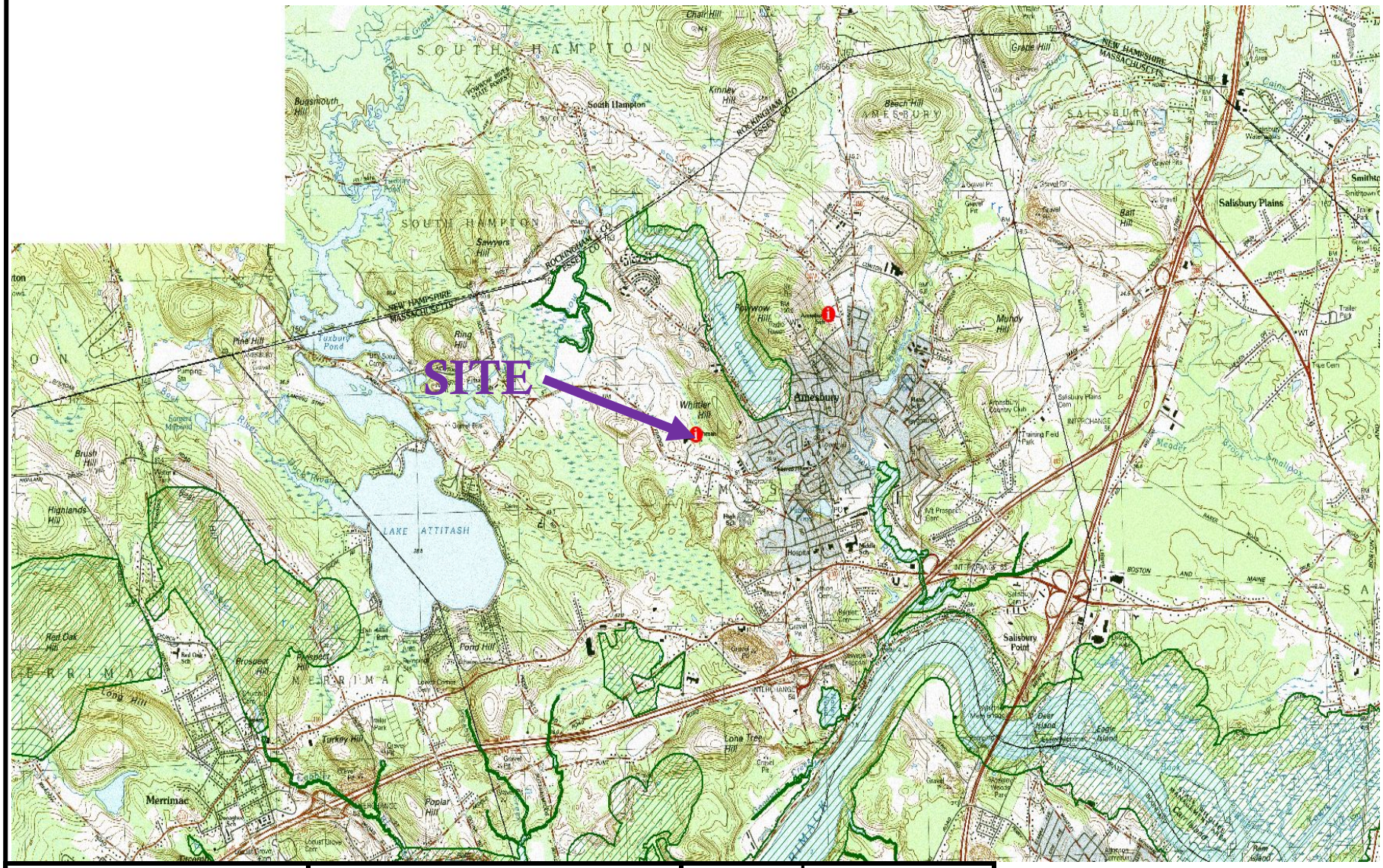
Map 50



Cashman Elementary School
193 Lions Mouth Road
Amesbury, Massachusetts
01913

Environmental & Construction Management Services, Inc.

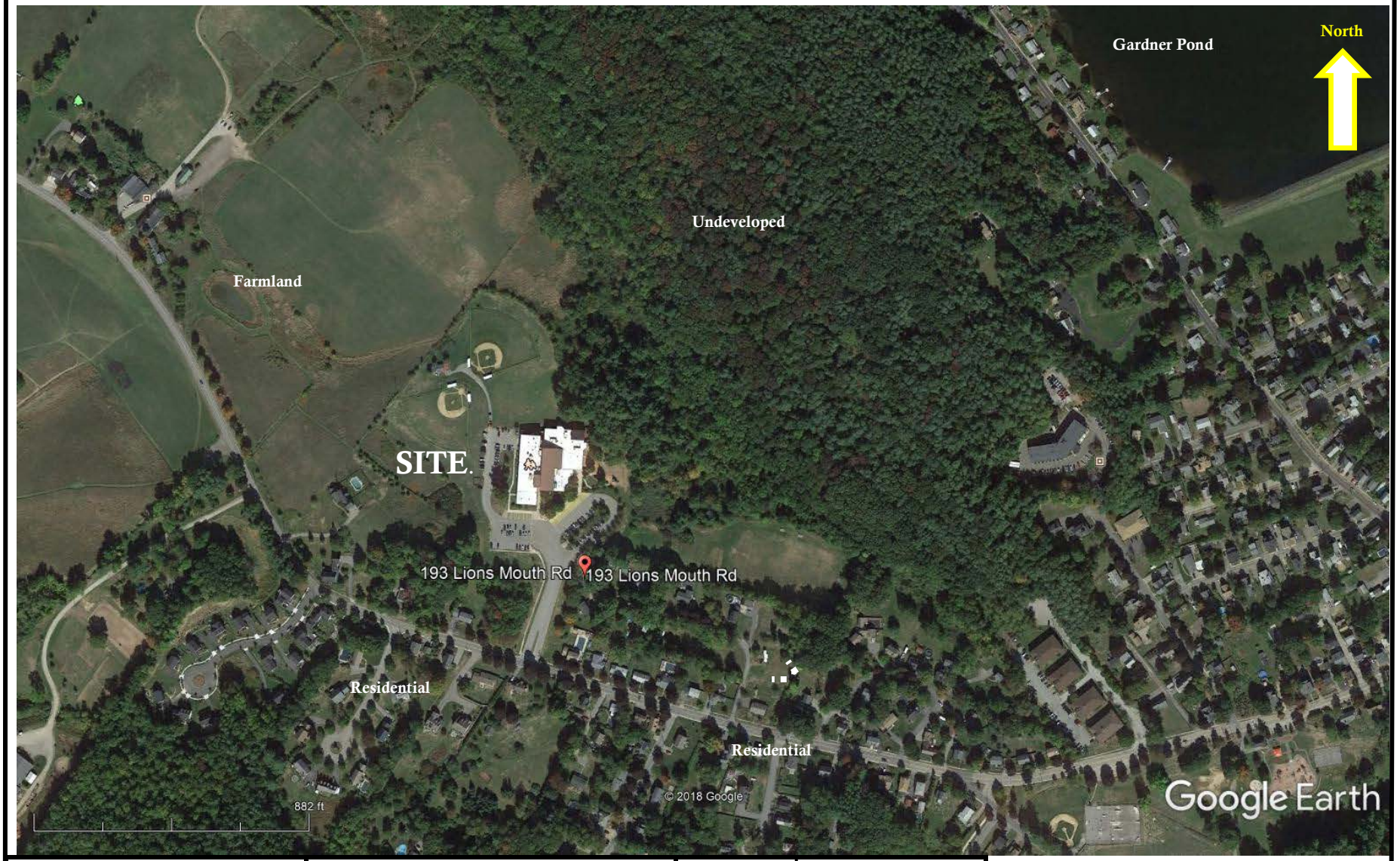
Project No. 1009.073	**Figure 3**
Priority Habitats of Rare Species Plan	
Drawn By: KJK	**Date:** 8/23/18



Cashman Elementary School
193 Lions Mouth Road
Amesbury, Massachusetts
01913

Environmental & Construction Management Services, Inc.

Project No. 1009.073	**Figure 4**
Map of Estimated Habitats of Rare Wildlife and Certified Vernal Pools	
Drawn By: KJK	**Date:** 8/23/18



Cashman Elementary School **193 Lions Mouth Road** **Amesbury, Massachusetts** **01913**	**Environmental & Construction Management Services, Inc.**	**Project No.** 1009.073	**Figure 5**
		Aerial Photograph Site Location Plan	
		Drawn By: KJK	**Date:** 8/24/2018

MassDEP - Bureau of Waste Site Cleanup

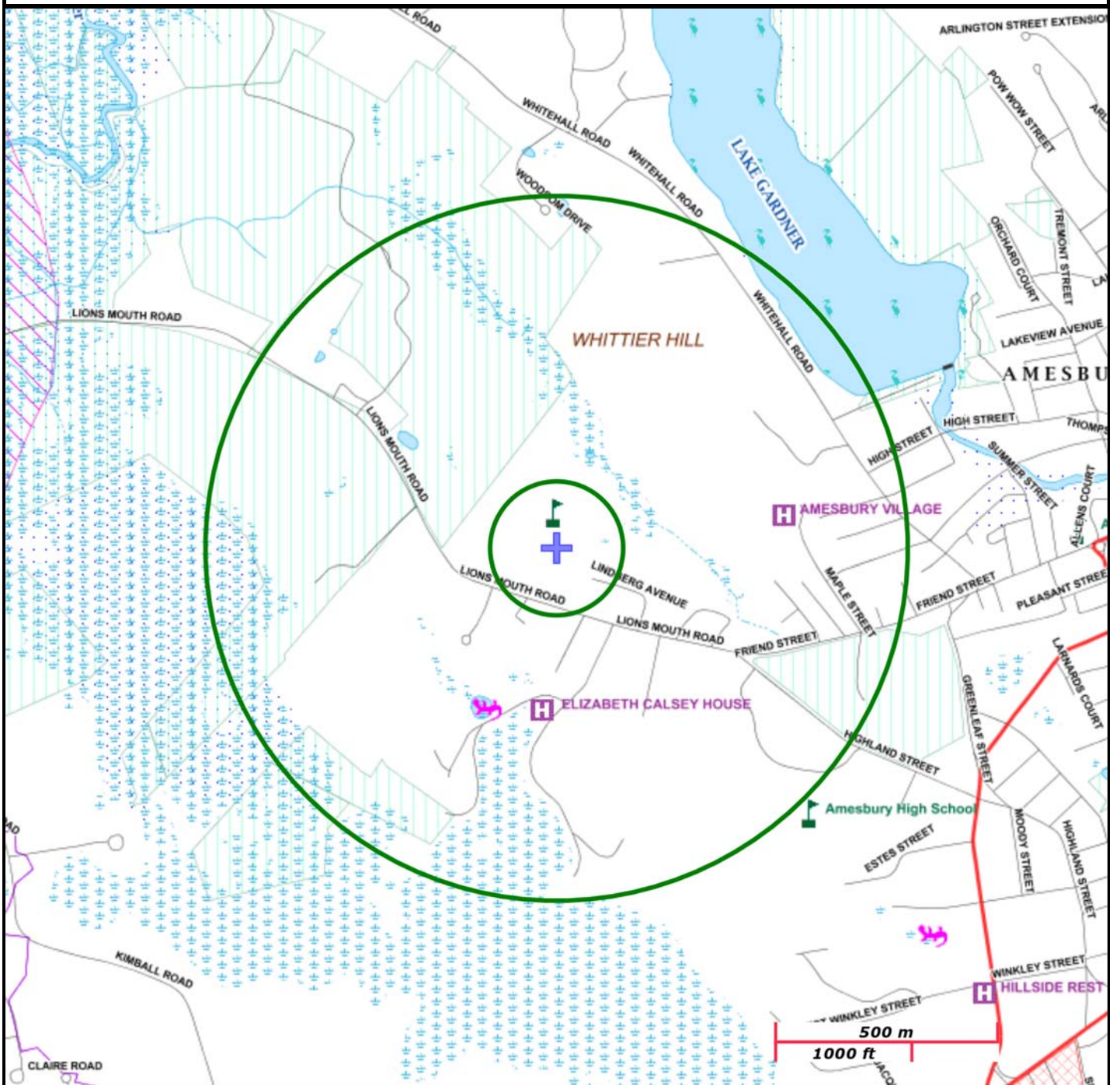
Phase 1 Site Assessment Map: 500 feet & 0.5 Mile Radii

Site Information:
CAHSMAN ELEMENTARY SCHOOL
193 LIONS MOUTH ROAD AMESBURY, MA

NAD83 UTM Meters:
4746679mN , 340744mE (Zone: 19)
September 13, 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/mgis/.

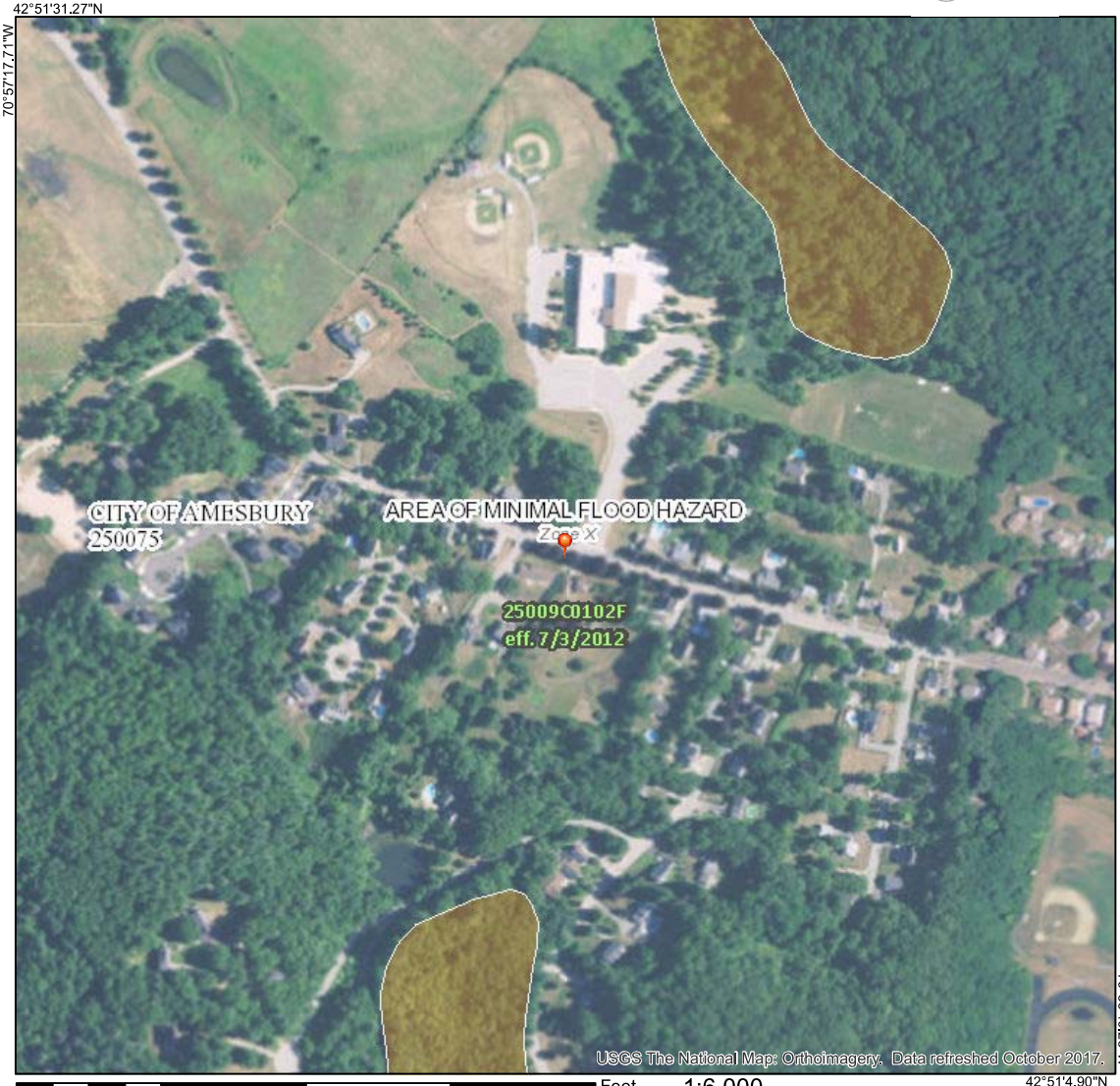
MassDEP
Commonwealth of Massachusetts
Department of Environmental Protection



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

National Flood Hazard Layer FIRMette

FEMA



0 250 500 1,000 1,500 2,000 Feet

1:6,000

Legend

FIGURE 7

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

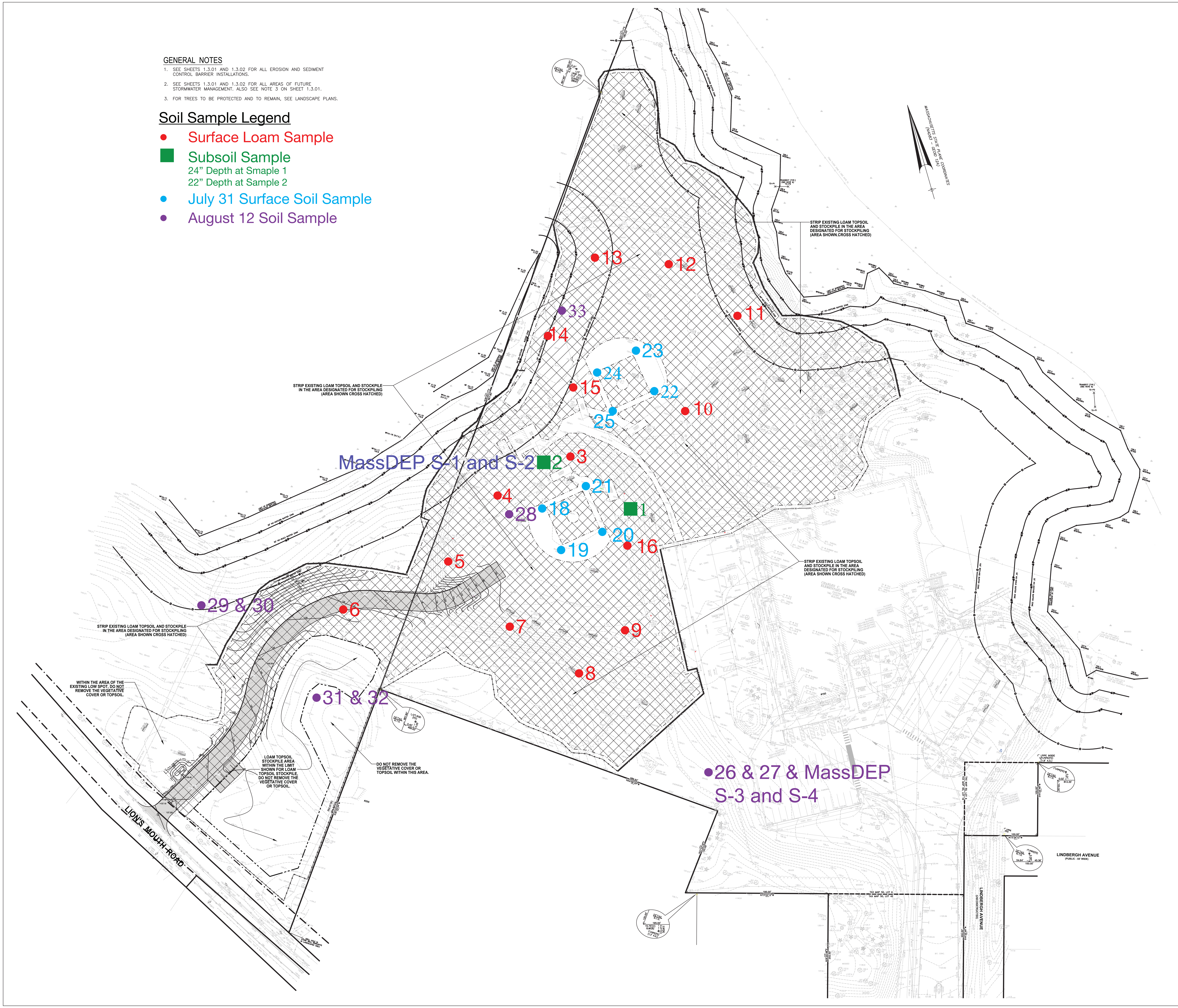
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/13/2018 at 3:39:51 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Cashman Elementary School **193 Lions Mouth Road** **Amesbury, Massachusetts** **01913**	**Environmental & Construction Management Services, Inc.**	**Project No.** 1009.073	**Figure 8**
		Site Plan	
		Drawn By: KJK	**Date:** 8/23/18



AMESBURY ELEMENTARY SCHOOL

EARLY SITE PREPARATION

AMESBURY, MA

DINISCO DESIGN
architects + planners
99 Chauncy Street, Suite 901
Boston, MA 02111
(617) 426-2858

DGT Associates
Surveying & Engineers
1071 Worcester Road
Framingham, MA 01701
(508) 879-0030

Brown Sardina, Inc.
Landscape Architects
24 Roland Street
Boston, MA 02129
(617) 482-4703

Thompson Engineering Company, Inc.
Electrical Engineers
89 Newbury Street, Suite 103
Danvers, MA 01923
(617) 866-9066

Hancock Associates
Surveyor
185 Centre Street
Danvers, MA 09123
(978) 777-3050

KEY PLAN

NORTH ARROW

STAMP

Date: 6 JULY 2020

Drawn By: KMR

Scale: 0 40 80

Revisions

Number	Date	Description

Figure 8 - Soil Sample Location Plan

TABLES

TABLE 1

SUMMARY OF TOPSOIL/LOAM/SUBSOIL SAMPLES FOR pH, REACTIVITY, IGNITABILITY, MASSDEP 14 METALS, POLCHLORINATED BIPHENYLS (PCBs) & TOTAL PETROLEUM HYDROCARBONS (TPH)

Cashman School
Amesbury, Massachusetts
***ECMS* Project No. 1009.073**
MassDEP RTN 3-36397

Sample Location		**SS-1**	**SS-2**	**SSS-3**	**SSS-4**	**SSS-5**	**SSS-6**	**SSS-7**	**SSS-8**	**SSS-9**	**MassDEP**	**MassDEP**
Laboratory ID		**SC58794-01**	**SC58794-02**	**SC58794-10**	**SC58794-11**	**SC58794-12**	**SC58794-13**	**SC58794-14**	**SC58794-15**	**SC58794-16**	**Reportable**	**Imminent**
Sample Date		**7/9/2020**	**7/9/2020**	**7/9/2020**	**7/9/2020**	**7/9/2020**	**7/9/2020**	**7/9/2020**	**7/9/2020**	**7/9/2020**	**Concentrations**	**Hazard**
Sample Depth		**24"**	**22"**	**2-6"**	**2-6"**	**2-6"**	**2-6"**	**2-6"**	**2-6"**	**2-6"**	**RCS-1**	
SM2540 G (11) Mod. (%)												
solids	% Solids	89.3	88.8	82.7	88.9	85.8	92.6	83.4	86.1	78.7	NA	
SW846 9045D (pH Units)												
pH		5.99	6.08	6.13	5.58	5.57	5.74	5.71	5.56	5.41	NA	
SW846 Ch. 7.3 (mg/kg dry)												
Reactivity		Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative		
Reactive Cyanide		<6	<7	<7	<6	<6	<6	<7	<6	<7	30	
Reactive Sulfide		< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20		
SW846 1030 (N/A)												
NA	Ignitability by Definition	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative	NA	
MassDEP 14 Metals - SW846 6010C (mg/kg)												
7440-36-0	Antimony	<5.59	<5.58	<5.98	<5.41	<6.27	<5.63	<6.01	<6.24	<6.28	20	
7440-38-2	Arsenic	**39.9**	**55.9**	**36.6**	**20.5**	**53.4**	**29.6**	**48.6**	**48.7**	**82.3**	**20**	**40**
7440-41-7	Beryllium	<0.559	<0.558	<0.598	<0.541	<0.627	<0.563	<0.601	<0.624	<0.628	90	
7440-43-9	Cadmium	<0.559	<0.558	<0.598	<0.541	<0.627	<0.563	<0.601	<0.624	<0.628	70	
7440-47-3	Chromium	22.6	19.4	21.8	18.8	25.0	30.0	65.9	31.6	24.7	100	
7439-92-1	Lead	8.42	19.3	17.0	18.6	17.0	15.8	28.6	21.0	22.9	200	
7440-02-0	Nickel	39.7	71.4	33.2	20.3	46.2	25.6	44.8	47.7	76.0	600	
7782-49-2	Selenium	<1.68	<1.67	<1.80	<1.62	<1.88	<1.69	<1.80	<1.87	<1.88	400	
7440-22-4	Silver	<3.35	<3.35	<3.59	<3.25	<3.76	<3.38	<3.60	<3.75	<3.77	100	
7440-28-0	Thallium	<3.35	<3.35	<3.59	<3.25	<3.76	<3.38	<3.60	<3.75	<3.77	8	
7440-62-2	Vanadium	22.7	24.5	30.1	24.5	33.9	35.8	46.7	36.0	39.4	400	
7440-66-6	Zinc	36.3	58.5	107	36.0	52.1	43.2	56.2	52.3	64.7	1000	
7440-39-3	Barium	18.4	22.5	30.0	29.5	30.3	28.6	34.6	33.0	29.1	1000	
RCRA Metals - SW846 7471B (mg/kg)												
7439-97-6	Mercury	<0.115	<0.127	<0.110	<0.116	<0.103	<0.120	<0.128	<0.115	<0.120	20	
Polychlorinated biphenyls (PCBs) - SW846 8082A (µg/kg)												
12674-11-2	Aroclor-1016	<22.1	<22.3	<23.1	<21.5	<23.0	<21.4	<23.8	<23.0	<25.3	1000	
11104-28-2	Aroclor-1221	<22.1	<22.3	<23.1	<21.5	<23.0	<21.4	<23.8	<23.0	<25.3	1000	
11141-16-5	Aroclor-1232	<22.1	<22.3	<23.1	<21.5	<23.0	<21.4	<23.8	<23.0	<25.3	1000	
53469-21-9	Aroclor-1242	<22.1	<22.3	<23.1	<21.5	<23.0	<21.4	<23.8	<23.0	<25.3	1000	
12672-29-6	Aroclor-1248	<22.1	<22.3	<23.1	<21.5	<23.0	<21.4	<23.8	<23.0	<25.3	1000	
11097-69-1	Aroclor-1254	<22.1	<22.3	<23.1	<21.5	<23.0	<21.4	<23.8	<23.0	<25.3	1000	
11096-82-5	Aroclor-1260	<22.1	<22.3	<23.1	<21.5	<23.0	<21.4	<23.8	<23.0	<25.3	1000	
37324-23-5	Aroclor-1262	<22.1	<22.3	<23.1	<21.5	<23.0	<21.4	<23.8	<23.0	<25.3	-	
11100-14-4	Aroclor-1268	<22.1	<22.3	<23.1	<21.5	<23.0	<21.4	<23.8	<23.0	<25.3	-	
Total Petroleum Hydrocarbons (TPH) 8100 by GC (mg/kg)												
PH(TOT)	Total Petroleum Hydrocarbons	24.9	38.7	113	118	106	134	170	111	129	1000	

< indicates less than the respective method detection limit.
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
Bolfaced type indicates an exceedance.
Pursuant to MCP 310 CMR 40.0975(6)(a-c): MCP Method 1 Soil Standards, and Massachusetts Oil and Hazrdous Materials List (MOHML) revised (effective) 2014

Environmental & Construction Management Services, Inc.

TABLE 1

SUMMARY OF TOPSOIL/LOAM/SUBSOIL SAMPLES FOR pH, REACTIVITY, IGNITABILITY, MASSDEP 14 METALS, POLCHLORINATED BIPHENYLS (PCBs) & TOTAL PETROLEUM HYDROCARBONS (TPH)

Cashman School
Amesbury, Massachusetts
***ECMS* Project No. 1009.073**
MassDEP RTN 3-36397

Sample Location Laboratory ID Sample Date Sample Depth		SSS-10 SC58794-03 7/9/2020 2-6"	SSS-11 SC58794-04 7/9/2020 2-6"	SSS-12 SC58794-05 7/9/2020 2-6"	SSS-13 SC58794-06 7/9/2020 2-6"	SSS-14 SC58794-07 7/9/2020 2-6"	SSS-15 SC58794-17 7/9/2020 2-6"	SSS-16 SC58794-08 7/9/2020 2-6"	SSS-17 SC58794-09 7/9/2020 2-6"	MassDEP Reportable Concentrations RCS-1	MassDEP Imminent Hazard
SM2540 G (11) Mod. (%)											
solids	% Solids	80.1	80.6	83.3	79.0	86.9	79.8	90.3	89.6	NA	
SW846 9045D (pH Units)											
pH		6.17	5.47	5.71	6.35	6.03	5.69	6.08	6.11		
SW846 Ch. 7.3 (mg/kg dry)											
Reactivity		Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative		
Reactive Cyanide		<7	<9	<6	<7	<6	<7	<6	<6	30	
Reactive Sulfide		< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20		
SW846 1030 (N/A)											
NA	Ignitability by Definition	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative	NA	
MassDEP 14 Metals - SW846 6010C (mg/kg)											
7440-36-0	Antimony	<5.89	<6.24	<5.56	<6.11	<5.63	<6.33	<5.58	<5.33	20	
7440-38-2	Arsenic	**25.4**	**33.6**	**39.2**	**49.1**	**23.7**	**37.8**	**36.6**	**21.9**	**20**	**40**
7440-41-7	Beryllium	<0.589	<0.624	<0.556	<0.611	<0.563	<0.633	<0.558	<0.533	90	
7440-43-9	Cadmium	<0.589	<0.624	<0.556	<0.611	<0.563	<0.633	<0.558	<0.533	70	
7440-47-3	Chromium	22.9	23.2	17.4	23.3	36.0	31.5	21.7	19.4	100	
7439-92-1	Lead	13.7	18.9	19.6	22.7	13.7	25.9	17.5	12.1	200	
7440-02-0	Nickel	28.2	30.4	26.9	37.2	26.1	37.7	30.6	27.9	600	
7782-49-2	Selenium	<1.77	<1.87	<1.67	<1.83	<1.69	<1.90	<1.67	<1.60	400	
7440-22-4	Silver	<3.53	<3.74	<3.34	<3.67	<3.38	<3.80	<3.35	<3.20	100	
7440-28-0	Thallium	<3.53	<3.74	<3.34	<3.67	<3.38	<3.80	<3.35	<3.20	8	
7440-62-2	Vanadium	29.6	38.3	33.5	34.6	41.9	36.3	30.6	8.48	400	
7440-66-6	Zinc	60.8	43.2	37.9	49.2	44.6	60.7	44.3	61.8	1000	
7440-39-3	Barium	26.5	24.8	21.7	28.9	44.1	46.3	24.0	113	1000	
RCRA Metals - SW846 7471B (mg/kg)											
7439-97-6	Mercury	<0.117	<0.126	<0.129	<0.133	<0.118	<0.123	<0.119	<0.116	20	
Polychlorinated biphenyls (PCBs) - SW846 8082A (µg/kg)											
12674-11-2	Aroclor-1016	<24.3	<24.6	<23.4	<25.2	<22.5	<24.9	<21.8	<22.3	1000	
11104-28-2	Aroclor-1221	<24.3	<24.6	<23.4	<25.2	<22.5	<24.9	<21.8	<22.3	1000	
11141-16-5	Aroclor-1232	<24.3	<24.6	<23.4	<25.2	<22.5	<24.9	<21.8	<22.3	1000	
53469-21-9	Aroclor-1242	<24.3	<24.6	<23.4	<25.2	<22.5	<24.9	<21.8	<22.3	1000	
12672-29-6	Aroclor-1248	<24.3	<24.6	<23.4	<25.2	<22.5	<24.9	<21.8	<22.3	1000	
11097-69-1	Aroclor-1254	<24.3	<24.6	<23.4	<25.2	<22.5	<24.9	<21.8	<22.3	1000	
11096-82-5	Aroclor-1260	<24.3	<24.6	<23.4	<25.2	<22.5	<24.9	<21.8	<22.3	1000	
37324-23-5	Aroclor-1262	<24.3	<24.6	<23.4	<25.2	<22.5	<24.9	<21.8	<22.3	-	
11100-14-4	Aroclor-1268	<24.3	<24.6	<23.4	<25.2	<22.5	<24.9	<21.8	<22.3	-	
Total Petroleum Hydrocarbons (TPH) 8100 by GC (mg/kg)											
PH(TOT)	Total Petroleum Hydrocarbons	109	184	180	93.0	116	168	93.6	49.7	1000	

< indicates less than the respective method detection limit.
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
Bolfaced type indicates an exceedance.
Pursuant to MCP 310 CMR 40.0975(6)(a-c): MCP Method 1 Soil Standards, and Massachusetts Oil and Hazrdous Materials List (MOHML) revised (effective) 2014

Environmental & Construction Management Services, Inc.

TABLE 2

SUMMARY OF TOPSOIL/LOAM & SUBSOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS (VOCs)

Cashman School
Amesbury, Massachusetts
***ECMS* Project No. 1009.073**
MassDEP RTN 3-36397

Sample Location		SS-1	SS-2	SSS-3	SSS-4	SSS-5	SSS-6	SSS-7	SSS-8	SSS-9	MassDEP Reportable Concentrations
Laboratory ID		SC58794-01	SC58794-02	SC58794-10	SC58794-11	SC58794-12	SC58794-13	SC58794-14	SC58794-15	SC58794-16	
Sample Date		7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	
Sample Depth		24"	22"	2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	RCS-1
Volatile Organic Compounds (VOCs) - SW846 8260B (µg/kg)											
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	
67-64-1	Acetone	<532	<573	<711	<643	<662	<521	<594	<605	<760	6000
107-13-1	Acrylonitrile	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100000
71-43-2	Benzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	2000
108-86-1	Bromobenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100000
74-97-5	Bromochloromethane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	
75-27-4	Bromodichloromethane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100
75-25-2	Bromoform	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100
74-83-9	Bromomethane	<106	<115	<142	<129	<132	<104	<119	<121	<152	500
78-93-3	2-Butanone (MEK)	<106	<115	<142	<129	<132	<104	<119	<121	<152	4000
104-51-8	n-Butylbenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	
135-98-8	sec-Butylbenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	
98-06-6	tert-Butylbenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100000
75-15-0	Carbon disulfide	<106	<115	<142	<129	<132	<104	<119	<121	<152	100000
56-23-5	Carbon tetrachloride	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	5000
108-90-7	Chlorobenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	1000
75-00-3	Chloroethane	<106	<115	<142	<129	<132	<104	<119	<121	<152	100000
67-66-3	Chloroform	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	200
74-87-3	Chloromethane	<106	<115	<142	<129	<132	<104	<119	<121	<152	100000
95-49-8	2-Chlorotoluene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100000
106-43-4	4-Chlorotoluene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	
96-12-8	1,2-Dibromo-3-chloropropane	<106	<115	<142	<129	<132	<104	<119	<121	<152	10000
124-48-1	Dibromochloromethane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	5
106-93-4	1,2-Dibromoethane (EDB)	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100
74-95-3	Dibromomethane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	500000
95-50-1	1,2-Dichlorobenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	9000
541-73-1	1,3-Dichlorobenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	3000
106-46-7	1,4-Dichlorobenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	700
75-71-8	Dichlorodifluoromethane (Freon12)	<106	<115	<142	<129	<132	<104	<119	<121	<152	1000000
75-34-3	1,1-Dichloroethane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	400
107-06-2	1,2-Dichloroethane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100
75-35-4	1,1-Dichloroethene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	3000
156-59-2	cis-1,2-Dichloroethene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	300
156-60-5	trans-1,2-Dichloroethene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	1000
78-87-5	1,2-Dichloropropane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100
142-28-9	1,3-Dichloropropane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	500000
594-20-7	2,2-Dichloropropane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	
563-58-6	1,1-Dichloropropene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	
10061-01-5	cis-1,3-Dichloropropene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	10
10061-02-6	trans-1,3-Dichloropropene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	10
100-41-4	Ethylbenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	40000
87-68-3	Hexachlorobutadiene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	30000
591-78-6	2-Hexanone (MBK)	<106	<115	<142	<129	<132	<104	<119	<121	<152	100000
98-82-8	Isopropylbenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	1000000
99-87-6	4-Isopropyltoluene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100000
1634-04-4	Methyl tert-butyl ether	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100
108-10-1	4-Methyl-2-pentanone (MIBK)	<106	<115	<142	<129	<132	<104	<119	<121	<152	400
75-09-2	Methylene chloride	<106	<115	<142	<129	<132	<104	<119	<121	<152	100
91-20-3	Naphthalene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	4000
103-65-1	n-Propylbenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100000
100-42-5	Styrene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	3000
630-20-6	1,1,1,2-Tetrachloroethane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100
79-34-5	1,1,2,2-Tetrachloroethane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	5
127-18-4	Tetrachloroethene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	1000
108-88-3	Toluene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	30000
87-61-6	1,2,3-Trichlorobenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	
120-82-1	1,2,4-Trichlorobenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	2000
108-70-3	1,3,5-Trichlorobenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	30000
71-55-6	1,1,1-Trichloroethane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	
79-00-5	1,1,2-Trichloroethane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100
79-01-6	Trichloroethene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	300
75-69-4	Trichlorofluoromethane (Freon 11)	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	1000000
96-18-4	1,2,3-Trichloropropane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100000
95-63-6	1,2,4-Trimethylbenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	1000000
108-67-8	1,3,5-Trimethylbenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	10000
75-01-4	Vinyl chloride	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	700
179601-23-1	m,p-Xylene	<106	<115	<142	<129	<132	<104	<119	<121	<152	300000
95-47-6	o-Xylene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	500000
109-99-9	Tetrahydrofuran	<106	<115	<142	<129	<132	<104	<119	<121	<152	500000
60-29-7	Ethyl ether	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100000
994-05-8	Tert-amyl methyl ether	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	
637-92-3	Ethyl tert-butyl ether	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	
108-20-3	Di-isopropyl ether	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100000
75-65-0	Tert-Butanol / butyl alcohol	<1060	<1150	<1420	<1290	<1320	<1040	<1190	<1210	<1520	100000
123-91-1	1,4-Dioxane	<1060	<1150	<1420	<1290	<1320	<1040	<1190	<1210	<1520	10000
110-57-6	trans-1,4-Dichloro-2-butene	<266	<286	<356	<321	<331	<261	<297	<302	<380	200
64-17-5	Ethanol	<10600	<11500	<14200	<12900	<13200	<10400	<11900	<12100	<15200	100000

< indicates less than the respective method detection limit.
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
Bolfaced type indicates an exceedance.
Pursuant to MCP 310 CMR 40.0975(6)(a-c): MCP Method 1 Soil Standards, and Massachusetts Oil and Hazrdous Materials List (MOHML) revised (effective) February 14, 2008

Environmental & Construction Management Services, Inc.

TABLE 2

SUMMARY OF TOPSOIL/LOAM & SUBSOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS (VOCs)

Cashman School
Amesbury, Massachusetts
***ECMS* Project No. 1009.073**
MassDEP RTN 3-36397

Sample Location		SSS-10	SSS-11	SSS-12	SSS-13	SSS-14	SSS-15	SSS-16	SSS-17	MassDEP Reportable Concentrations
Laboratory ID		SC58794-03	SC58794-04	SC58794-05	SC58794-06	SC58794-07	SC58794-17	SC58794-08	SC58794-09	
Sample Date		7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	
Sample Depth		2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	RCS-1
Volatile Organic Compounds (VOCs) - SW846 8260B (µg/kg)										
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	
67-64-1	Acetone	<686	<693	<637	<695	<585	<695	<540	<529	6000
107-13-1	Acrylonitrile	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100000
71-43-2	Benzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	2000
108-86-1	Bromobenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100000
74-97-5	Bromochloromethane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	
75-27-4	Bromodichloromethane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100
75-25-2	Bromoform	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100
74-83-9	Bromomethane	<137	<139	<127	<139	<117	<139	<108	<106	500
78-93-3	2-Butanone (MEK)	<137	<139	<127	<139	<117	<139	<108	<106	4000
104-51-8	n-Butylbenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	
135-98-8	sec-Butylbenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	
98-06-6	tert-Butylbenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100000
75-15-0	Carbon disulfide	<137	<139	<127	<139	<117	<139	<108	<106	100000
56-23-5	Carbon tetrachloride	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	5000
108-90-7	Chlorobenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	1000
75-00-3	Chloroethane	<137	<139	<127	<139	<117	<139	<108	<106	100000
67-66-3	Chloroform	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	200
74-87-3	Chloromethane	<137	<139	<127	<139	<117	<139	<108	<106	100000
95-49-8	2-Chlorotoluene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100000
106-43-4	4-Chlorotoluene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	
96-12-8	1,2-Dibromo-3-chloropropane	<137	<139	<127	<139	<117	<139	<108	<106	10000
124-48-1	Dibromochloromethane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	5
106-93-4	1,2-Dibromoethane (EDB)	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100
74-95-3	Dibromomethane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	500000
95-50-1	1,2-Dichlorobenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	9000
541-73-1	1,3-Dichlorobenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	3000
106-46-7	1,4-Dichlorobenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	700
75-71-8	Dichlorodifluoromethane (Freon12)	<137	<139	<127	<139	<117	<139	<108	<106	1000000
75-34-3	1,1-Dichloroethane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	400
107-06-2	1,2-Dichloroethane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100
75-35-4	1,1-Dichloroethene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	3000
156-59-2	cis-1,2-Dichloroethene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	300
156-60-5	trans-1,2-Dichloroethene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	1000
78-87-5	1,2-Dichloropropane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100
142-28-9	1,3-Dichloropropane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	500000
594-20-7	2,2-Dichloropropane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	
563-58-6	1,1-Dichloropropene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	
10061-01-5	cis-1,3-Dichloropropene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	10
10061-02-6	trans-1,3-Dichloropropene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	10
100-41-4	Ethylbenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	40000
87-68-3	Hexachlorobutadiene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	30000
591-78-6	2-Hexanone (MBK)	<137	<139	<127	<139	<117	<139	<108	<106	100000
98-82-8	Isopropylbenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	1000000
99-87-6	4-Isopropyltoluene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100000
1634-04-4	Methyl tert-butyl ether	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100
108-10-1	4-Methyl-2-pentanone (MIBK)	<137	<139	<127	<139	<117	<139	<108	<106	400
75-09-2	Methylene chloride	<137	<139	<127	<139	<117	<139	<108	<106	100
91-20-3	Naphthalene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	4000
103-65-1	n-Propylbenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100000
100-42-5	Styrene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	3000
630-20-6	1,1,1,2-Tetrachloroethane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100
79-34-5	1,1,2,2-Tetrachloroethane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	5
127-18-4	Tetrachloroethene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	1000
108-88-3	Toluene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	30000
87-61-6	1,2,3-Trichlorobenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	
120-82-1	1,2,4-Trichlorobenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	2000
108-70-3	1,3,5-Trichlorobenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	30000
71-55-6	1,1,1-Trichloroethane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	
79-00-5	1,1,2-Trichloroethane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100
79-01-6	Trichloroethene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	300
75-69-4	Trichlorofluoromethane (Freon 11)	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	1000000
96-18-4	1,2,3-Trichloropropane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100000
95-63-6	1,2,4-Trimethylbenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	1000000
108-67-8	1,3,5-Trimethylbenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	10000
75-01-4	Vinyl chloride	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	700
179601-23-1	m,p-Xylene	<137	<139	<127	<139	<117	<139	<108	<106	300000
95-47-6	o-Xylene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	500000
109-99-9	Tetrahydrofuran	<137	<139	<127	<139	<117	<139	<108	<106	500000
60-29-7	Ethyl ether	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100000
994-05-8	Tert-amyl methyl ether	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	
637-92-3	Ethyl tert-butyl ether	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	
108-20-3	Di-isopropyl ether	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100000
75-65-0	Tert-Butanol / butyl alcohol	<1370	<1390	<1270	<1390	<1170	<1390	<1080	<1060	100000
123-91-1	1,4-Dioxane	<1370	<1390	<1270	<1390	<1170	<1390	<1080	<1060	10000
110-57-6	trans-1,4-Dichloro-2-butene	<343	<347	<318	<348	<292	<347	<270	<264	200
64-17-5	Ethanol	<13700	<13900	<12700	<13900	<11700	<13900	<10800	<10600	100000

< indicates less than the respective method detection limit.
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
Bolfaced type indicates an exceedance.
Pursuant to MCP 310 CMR 40.0975(6)(a-c): MCP Method 1 Soil Standards, and Massachusetts Oil and Hazrdous Materials List (MOHML) revised (effective) February 14, 2008

Environmental & Construction Management Services, Inc.

TABLE 3

SUMMARY OF TOPSOIL/LOAM & SUBSOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

Cashman School
Amesbury, Massachusetts
***ECMS* Project No. 1009.073**
MassDEP RTN 3-36397

Sample Location		SS-1	SS-2	SSS-3	SSS-4	SSS-5	SSS-6	SSS-7	SSS-8	SSS-9	MassDEP Reportable Concentrations
Laboratory ID		SC58794-01	SC58794-02	SC58794-10	SC58794-11	SC58794-12	SC58794-13	SC58794-14	SC58794-15	SC58794-16	
Sample Date		7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	
Sample Depth		24"	22"	2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	RCS-1
Semi-Volatile Organic Compounds (SVOCs) - SW846 8270D (µg/kg)											
83-32-9	Acenaphthene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	4000
208-96-8	Acenaphthylene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	1000
62-53-3	Aniline	<368	<369	<396	<367	<379	<352	<394	<379	<415	100000
120-12-7	Anthracene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	1000000
103-33-3	Azobenzene/Diphenyldiazene	<368	<369	<396	<367	<379	<352	<394	<379	<415	50000
92-87-5	Benzidine	<736	<738	<792	<735	<759	<704	<787	<757	<829	10000
56-55-3	Benzo (a) anthracene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	7000
50-32-8	Benzo (a) pyrene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	2000
205-99-2	Benzo (b) fluoranthene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	7000
191-24-2	Benzo (g,h,i) perylene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	1000000
207-08-9	Benzo (k) fluoranthene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	1000000
65-85-0	Benzoic acid	<368	<369	<396	<367	<379	<352	<394	<379	<415	1000000
100-51-6	Benzyl alcohol	<368	<369	<396	<367	<379	<352	<394	<379	<415	-
111-91-1	Bis(2-chloroethoxy)methane	<368	<369	<396	<367	<379	<352	<394	<379	<415	500000
111-44-4	Bis(2-chloroethyl)ether	<186	<187	<201	<186	<192	<178	<199	<192	<210	700
108-60-1	Bis(2-chloroisopropyl)ether	<186	<187	<201	<186	<192	<178	<199	<192	<210	700
117-81-7	Bis(2-ethylhexyl)phthalate	<186	<187	<201	<186	<192	<178	<199	<192	<210	200000
101-55-3	4-Bromophenyl phenyl ether	<368	<369	<396	<367	<379	<352	<394	<379	<415	100000
85-68-7	Butyl benzyl phthalate	<368	<369	<396	<367	<379	<352	<394	<379	<415	100000
86-74-8	Carbazole	<186	<187	<201	<186	<192	<178	<199	<192	<210	-
59-50-7	4-Chloro-3-methylphenol	<368	<369	<396	<367	<379	<352	<394	<379	<415	1000000
106-47-8	4-Chloroaniline	<186	<187	<201	<186	<192	<178	<199	<192	<210	1000
91-58-7	2-Chloronaphthalene	<368	<369	<396	<367	<379	<352	<394	<379	<415	1000000
95-57-8	2-Chlorophenol	<186	<187	<201	<186	<192	<178	<199	<192	<210	700
7005-72-3	4-Chlorophenyl phenyl ether	<368	<369	<396	<367	<379	<352	<394	<379	<415	1000000
218-01-9	Chrysene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	70000
53-70-3	Dibenzo (a,h) anthracene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	700
132-64-9	Dibenzofuran	<186	<187	<201	<186	<192	<178	<199	<192	<210	100000
95-50-1	1,2-Dichlorobenzene	<368	<369	<396	<367	<379	<352	<394	<379	<415	9000
541-73-1	1,3-Dichlorobenzene	<368	<369	<396	<367	<379	<352	<394	<379	<415	1000
106-46-7	1,4-Dichlorobenzene	<368	<369	<396	<367	<379	<352	<394	<379	<415	700
91-94-1	3,3´-Dichlorobenzidine	<368	<369	<396	<367	<379	<352	<394	<379	<415	1000
120-83-2	2,4-Dichlorophenol	<186	<187	<201	<186	<192	<178	<199	<192	<210	700
84-66-2	Diethyl phthalate	<368	<369	<396	<367	<379	<352	<394	<379	<415	10000
131-11-3	Dimethyl phthalate	<368	<369	<396	<367	<379	<352	<394	<379	<415	30000
105-67-9	2,4-Dimethylphenol	<368	<369	<396	<367	<379	<352	<394	<379	<415	700
84-74-2	Di-n-butyl phthalate	<368	<369	<396	<367	<379	<352	<394	<379	<415	50000
534-52-1	4,6-Dinitro-2-methylphenol	<368	<369	<396	<367	<379	<352	<394	<379	<415	50000
51-28-5	2,4-Dinitrophenol	<368	<369	<396	<367	<379	<352	<394	<379	<415	3000
121-14-2	2,4-Dinitrotoluene	<186	<187	<201	<186	<192	<178	<199	<192	<210	700
606-20-2	2,6-Dinitrotoluene	<186	<187	<201	<186	<192	<178	<199	<192	<210	100000
117-84-0	Di-n-octyl phthalate	<368	<369	<396	<367	<379	<352	<394	<379	<415	1000000
206-44-0	Fluoranthene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	1000000
86-73-7	Fluorene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	1000000
118-74-1	Hexachlorobenzene	<186	<187	<201	<186	<192	<178	<199	<192	<210	700
87-68-3	Hexachlorobutadiene	<186	<187	<201	<186	<192	<178	<199	<192	<210	6000
77-47-4	Hexachlorocyclopentadiene	<186	<187	<201	<186	<192	<178	<199	<192	<210	50000
67-72-1	Hexachloroethane	<186	<187	<201	<186	<192	<178	<199	<192	<210	700
193-39-5	Indeno (1,2,3-cd) pyrene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	7000
78-59-1	Isophorone	<186	<187	<201	<186	<192	<178	<199	<192	<210	100000
91-57-6	2-Methylnaphthalene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	700
95-48-7	2-Methylphenol	<368	<369	<396	<367	<379	<352	<394	<379	<415	500000
108-39-4, 106-44-5	3 & 4-Methylphenol	<368	<369	<396	<367	<379	<352	<394	<379	<415	500000
91-20-3	Naphthalene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	4000
88-74-4	2-Nitroaniline	<368	<369	<396	<367	<379	<352	<394	<379	<415	-
99-09-2	3-Nitroaniline	<368	<369	<396	<367	<379	<352	<394	<379	<415	-
100-01-6	4-Nitroaniline	<186	<187	<201	<186	<192	<178	<199	<192	<210	1000000
98-95-3	Nitrobenzene	<186	<187	<201	<186	<192	<178	<199	<192	<210	500000
88-75-5	2-Nitrophenol	<186	<187	<201	<186	<192	<178	<199	<192	<210	100000
100-02-7	4-Nitrophenol	<1470	<1480	<1580	<1470	<1520	<1410	<1570	<1510	<1660	100000
62-75-9	N-Nitrosodimethylamine	<186	<187	<201	<186	<192	<178	<199	<192	<210	50000
621-64-7	N-Nitrosodi-n-propylamine	<186	<187	<201	<186	<192	<178	<199	<192	<210	50000
86-30-6	N-Nitrosodiphenylamine	<368	<369	<396	<367	<379	<352	<394	<379	<415	100000
87-86-5	Pentachlorophenol	<368	<369	<396	<367	<379	<352	<394	<379	<415	3000
85-01-8	Phenanthrene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	10000
108-95-2	Phenol	<368	<369	<396	<367	<379	<352	<394	<379	<415	1000
129-00-0	Pyrene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	1000000
110-86-1	Pyridine	<368	<369	<396	<367	<379	<352	<394	<379	<415	500000
120-82-1	1,2,4-Trichlorobenzene	<368	<369	<396	<367	<379	<352	<394	<379	<415	2000
90-12-0	1-Methylnaphthalene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	-
95-95-4	2,4,5-Trichlorophenol	<368	<369	<396	<367	<379	<352	<394	<379	<415	3000
88-06-2	2,4,6-Trichlorophenol	<186	<187	<201	<186	<192	<178	<199	<192	<210	700
82-68-8	Pentachloronitrobenzene	<368	<369	<396	<367	<379	<352	<394	<379	<415	100000
95-94-3	1,2,4,5-Tetrachlorobenzene	<368	<369	<396	<367	<379	<352	<394	<379	<415	1000000

< indicates less than the respective method detection limit.
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
Boldfaced type indicates an exceedance.
Pursuant to MCP 310 CMR 40.0975(6)(a-c): MCP Method 1 Soil Standards, and Massachusetts Oil and Hazardous Materials List (MOHML) revised (effective) 2014

Environmental & Construction Management Services, Inc.

TABLE 3

SUMMARY OF TOPSOIL/LOAM & SUBSOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

Cashman School
Amesbury, Massachusetts
***ECMS* Project No. 1009.073**
MassDEP RTN 3-36397

Sample Location		SSS-10	SSS-11	SSS-12	SSS-13	SSS-14	SSS-15	SSS-16	SSS-17	MassDEP Reportable Concentrations
Laboratory ID		SC58794-03	SC58794-04	SC58794-05	SC58794-06	SC58794-07	SC58794-17	SC58794-08	SC58794-09	
Sample Date		7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	
Sample Depth		2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	RCS-1
Semi-Volatile Organic Compounds (SVOCs) - SW846 8270D (µg/kg)										
83-32-9	Acenaphthene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	4000
208-96-8	Acenaphthylene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	1000
62-53-3	Aniline	<407	<405	<385	<414	<375	<407	<361	<356	100000
120-12-7	Anthracene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	1000000
103-33-3	Azobenzene/Diphenyldiazene	<407	<405	<385	<414	<375	<407	<361	<356	50000
92-87-5	Benzidine	<815	<809	<771	<828	<750	<814	<722	<713	10000
56-55-3	Benzo (a) anthracene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	7000
50-32-8	Benzo (a) pyrene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	2000
205-99-2	Benzo (b) fluoranthene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	7000
191-24-2	Benzo (g,h,i) perylene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	1000000
207-08-9	Benzo (k) fluoranthene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	1000000
65-85-0	Benzoic acid	<407	<405	<385	<414	<375	<407	<361	<356	1000000
100-51-6	Benzyl alcohol	<407	<405	<385	<414	<375	<407	<361	<356	-
111-91-1	Bis(2-chloroethoxy)methane	<407	<405	<385	<414	<375	<407	<361	<356	500000
111-44-4	Bis(2-chloroethyl)ether	<206	<205	<195	<210	<190	<206	<183	<180	700
108-60-1	Bis(2-chloroisopropyl)ether	<206	<205	<195	<210	<190	<206	<183	<180	700
117-81-7	Bis(2-ethylhexyl)phthalate	305	<205	<195	<210	<190	<206	<183	<180	200000
101-55-3	4-Bromophenyl phenyl ether	<407	<405	<385	<414	<375	<407	<361	<356	100000
85-68-7	Butyl benzyl phthalate	<407	<405	<385	<414	<375	<407	<361	<356	100000
86-74-8	Carbazole	<206	<205	<195	<210	<190	<206	<183	<180	-
59-50-7	4-Chloro-3-methylphenol	<407	<405	<385	<414	<375	<407	<361	<356	1000000
106-47-8	4-Chloroaniline	<206	<205	<195	<210	<190	<206	<183	<180	1000
91-58-7	2-Chloronaphthalene	<407	<405	<385	<414	<375	<407	<361	<356	1000000
95-57-8	2-Chlorophenol	<206	<205	<195	<210	<190	<206	<183	<180	700
7005-72-3	4-Chlorophenyl phenyl ether	<407	<405	<385	<414	<375	<407	<361	<356	1000000
218-01-9	Chrysene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	70000
53-70-3	Dibenzo (a,h) anthracene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	700
132-64-9	Dibenzofuran	<206	<205	<195	<210	<190	<206	<183	<180	100000
95-50-1	1,2-Dichlorobenzene	<407	<405	<385	<414	<375	<407	<361	<356	9000
541-73-1	1,3-Dichlorobenzene	<407	<405	<385	<414	<375	<407	<361	<356	1000
106-46-7	1,4-Dichlorobenzene	<407	<405	<385	<414	<375	<407	<361	<356	700
91-94-1	3,3'-Dichlorobenzidine	<407	<405	<385	<414	<375	<407	<361	<356	1000
120-83-2	2,4-Dichlorophenol	<206	<205	<195	<210	<190	<206	<183	<180	700
84-66-2	Diethyl phthalate	<407	<405	<385	<414	<375	<407	<361	<356	10000
131-11-3	Dimethyl phthalate	<407	<405	<385	<414	<375	<407	<361	<356	30000
105-67-9	2,4-Dimethylphenol	<407	<405	<385	<414	<375	<407	<361	<356	700
84-74-2	Di-n-butyl phthalate	<407	<405	<385	<414	<375	<407	<361	<356	50000
534-52-1	4,6-Dinitro-2-methylphenol	<407	<405	<385	<414	<375	<407	<361	<356	50000
51-28-5	2,4-Dinitrophenol	<407	<405	<385	<414	<375	<407	<361	<356	3000
121-14-2	2,4-Dinitrotoluene	<206	<205	<195	<210	<190	<206	<183	<180	700
606-20-2	2,6-Dinitrotoluene	<206	<205	<195	<210	<190	<206	<183	<180	100000
117-84-0	Di-n-octyl phthalate	<407	<405	<385	<414	<375	<407	<361	<356	1000000
206-44-0	Fluoranthene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	1000000
86-73-7	Fluorene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	1000000
118-74-1	Hexachlorobenzene	<206	<205	<195	<210	<190	<206	<183	<180	700
87-68-3	Hexachlorobutadiene	<206	<205	<195	<210	<190	<206	<183	<180	6000
77-47-4	Hexachlorocyclopentadiene	<206	<205	<195	<210	<190	<206	<183	<180	50000
67-72-1	Hexachloroethane	<206	<205	<195	<210	<190	<206	<183	<180	700
193-39-5	Indeno (1,2,3-cd) pyrene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	7000
78-59-1	Isophorone	<206	<205	<195	<210	<190	<206	<183	<180	100000
91-57-6	2-Methylnaphthalene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	700
95-48-7	2-Methylphenol	<407	<405	<385	<414	<375	<407	<361	<356	500000
108-39-4, 106-44-5	3 & 4-Methylphenol	<407	<405	<385	<414	<375	<407	<361	<356	500000
91-20-3	Naphthalene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	4000
88-74-4	2-Nitroaniline	<407	<405	<385	<414	<375	<407	<361	<356	-
99-09-2	3-Nitroaniline	<407	<405	<385	<414	<375	<407	<361	<356	-
100-01-6	4-Nitroaniline	<206	<205	<195	<210	<190	<206	<183	<180	1000000
98-95-3	Nitrobenzene	<206	<205	<195	<210	<190	<206	<183	<180	500000
88-75-5	2-Nitrophenol	<206	<205	<195	<210	<190	<206	<183	<180	100000
100-02-7	4-Nitrophenol	<1630	<1620	<1540	<1660	<1500	<1630	<1440	<1430	100000
62-75-9	N-Nitrosodimethylamine	<206	<205	<195	<210	<190	<206	<183	<180	50000
621-64-7	N-Nitrosodi-n-propylamine	<206	<205	<195	<210	<190	<206	<183	<180	50000
86-30-6	N-Nitrosodiphenylamine	<407	<405	<385	<414	<375	<407	<361	<356	100000
87-86-5	Pentachlorophenol	<407	<405	<385	<414	<375	<407	<361	<356	3000
85-01-8	Phenanthrene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	10000
108-95-2	Phenol	<407	<405	<385	<414	<375	<407	<361	<356	1000
129-00-0	Pyrene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	1000000
110-86-1	Pyridine	<407	<405	<385	<414	<375	<407	<361	<356	500000
120-82-1	1,2,4-Trichlorobenzene	<407	<405	<385	<414	<375	<407	<361	<356	2000
90-12-0	1-Methylnaphthalene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	-
95-95-4	2,4,5-Trichlorophenol	<407	<405	<385	<414	<375	<407	<361	<356	3000
88-06-2	2,4,6-Trichlorophenol	<206	<205	<195	<210	<190	<206	<183	<180	700
82-68-8	Pentachloronitrobenzene	<407	<405	<385	<414	<375	<407	<361	<356	100000
95-94-3	1,2,4,5-Tetrachlorobenzene	<407	<405	<385	<414	<375	<407	<361	<356	1000000

< indicates less than the respective method detection limit.
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
Boldfaced type indicates an exceedance.
Pursuant to MCP 310 CMR 40.0975(6)(a-c): MCP Method 1 Soil Standards, and Massachusetts Oil and Hazardous Materials List (MOHML) revised (effective) 2014

Environmental & Construction Management Services, Inc.

TABLE 4

SUMMARY OF TOPSOIL/LOAM & SUBSOIL SAMPLES FOR PESTICIDES AND HERBICIDES

Cashman School
Amesbury, Massachusetts
***ECMS* Project No. 1009.073**
MassDEP RTN 3-36397

Sample Location		SS-1	SS-2	SSS-3	SSS-4	SSS-5	SSS-6	SSS-7	SSS-8	SSS-9	MCP
Laboratory ID		SC58794-01	SC58794-02	SC58794-10	SC58794-11	SC58794-12	SC58794-13	SC58794-14	SC58794-15	SC58794-16	Reportable
Sample Date		7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	Concentrations
Sample Depth		24"	22"	2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	RCS-1
Pesticides - SW846 8081B (µg/kg)											
319-84-6	a-BHC	<5.53	<5.56	<5.77	<5.38	<5.76	<5.36	<5.94	<5.75	<6.34	50000
319-85-7	b-BHC	<5.53	<5.56	<5.77	<5.38	<5.76	<5.36	<5.94	<5.75	<6.34	10000
319-86-8	d-BHC	<5.53	<5.56	<5.77	<5.38	<5.76	<5.36	<5.94	<5.75	<6.34	10000
58-89-9	g-BHC (Lindane)	<3.32	<3.34	<3.46	<3.23	<3.46	<3.22	<3.57	<3.45	<3.80	3000
76-44-8	Heptachlor	<5.53	<5.56	<5.77	<5.38	<5.76	<5.36	<5.94	<5.75	<6.34	200
309-00-2	Aldrin	<5.53	<5.56	<5.77	<5.38	<5.76	<5.36	<5.94	<5.75	<6.34	100000
1024-57-3	Heptachlor epoxide	<5.53	<5.56	<5.77	<5.38	<5.76	<5.36	<5.94	<5.75	<6.34	90
959-98-8	Endosulfan I	<5.53	<5.56	<5.77	<5.38	<5.76	<5.36	<5.94	<5.75	<6.34	500
60-57-1	Dieldrin	<5.53	<5.56	<5.77	<5.38	<5.76	<5.36	<5.94	<5.75	<6.34	50
72-55-9	4,4' -DDE	<5.53	<5.56	<5.77	<5.38	<5.76	<5.36	<5.94	<5.75	<6.34	3000
72-20-8	Endrin	<8.85	<8.90	<9.24	<8.60	<9.21	<8.58	<9.51	<9.19	<10.1	8000
33213-65-9	Endosulfan II	<8.85	<8.90	<9.24	<8.60	<9.21	<8.58	<9.51	<9.19	<10.1	500
72-54-8	4,4' -DDD	<8.85	<8.90	<9.24	<8.60	<9.21	<8.58	<9.51	<9.19	<10.1	4000
1031-07-8	Endosulfan sulfate	<8.85	<8.90	<9.24	<8.60	<9.21	<8.58	<9.51	<9.19	<10.1	-
50-29-3	4,4' -DDT	<8.85	<8.90	<9.24	<8.60	<9.21	<8.58	<9.51	<9.19	<10.1	-
72-43-5	Methoxychlor	<8.85	<8.90	<9.24	<8.60	<9.21	<8.58	<9.51	<9.19	<10.1	200000
53494-70-5	Endrin ketone	<8.85	<8.90	<9.24	<8.60	<9.21	<8.58	<9.51	<9.19	<10.1	8000
7421-93-4	Endrin aldehyde	<8.85	<8.90	<9.24	<8.60	<9.21	<8.58	<9.51	<9.19	<10.1	10000
5103-71-9	alpha-Chlordane	<5.53	<5.56	<5.77	<5.38	<5.76	<5.36	<5.94	<5.75	<6.34	-
5103-74-2	gamma-Chlordane	<5.53	<5.56	<5.77	<5.38	<5.76	<5.36	<5.94	<5.75	<6.34	-
8001-35-2	Toxaphene	<111	<111	<115	<108	<115	<107	<119	<115	<127	10000
57-74-9	Chlordane	<22.1	<22.3	<23.1	<21.5	<23.0	<21.4	<23.8	<23.0	<25.3	700
15972-60-8	Alachlor	<5.53	<5.56	<5.77	<5.38	<5.76	<5.36	<5.94	<5.75	<6.34	100
Herbicides - SW846 8151A (µg/kg)											
93-76-5	2,4,5-T	<80	<80	<80	<80	<80	<80	<80	<80	<80	100000
93-72-1	2,4,5-TP (Silvex)	<80	<80	<80	<80	<80	<80	<80	<80	<80	100000
94-75-7	2,4-D	<80	<80	<80	<80	<80	<80	<80	<80	<80	100000
94-82-6	2,4-DB	<80	<80	<80	<80	<80	<80	<80	<80	<80	100000
75-99-0	Dalapon	<80	<80	<80	<80	<80	<80	<80	<80	<80	1000000
1918-00-9	Dicamba	<80	<80	<80	<80	<80	<80	<80	<80	<80	500000
120-36-5	Dichloroprop	<80	<80	<80	<80	<80	<80	<80	<80	<80	-
88-85-7	Dinoseb	<80	<80	<80	<80	<80	<80	<80	<80	<80	500000
94-74-6	MCPA	<3300	<3300	<3300	<3300	<3300	<3300	<3300	<3300	<3300	100000
7085-19-0	MCPP	<3300	<3300	<3300	<3300	<3300	<3300	<3300	<3300	<3300	-

< indicates less than the respective method detection limit.
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
Boldfaced type indicates an exceedance.
Pursuant to MCP 310 CMR 40.0975(6)(a-c): MCP Method 1 Soil Standards, and Massachusetts Oil and Hazardous Materials List (MOHML) revised (effective) 2014

TABLE 4

SUMMARY OF TOPSOIL/LOAM & SUBSOIL SAMPLES FOR PESTICIDES AND HERBICIDES

Cashman School
Amesbury, Massachusetts
***ECMS* Project No. 1009.073**
MassDEP RTN 3-36397

Sample Location Laboratory ID Sample Date Sample Depth		SSS-10 SC58794-03 7/9/2020 2-6"	SSS-11 SC58794-04 7/9/2020 2-6"	SSS-12 SC58794-05 7/9/2020 2-6"	SSS-13 SC58794-06 7/9/2020 2-6"	SSS-14 SC58794-07 7/9/2020 2-6"	SSS-15 SC58794-17 7/9/2020 2-6"	SSS-16 SC58794-08 7/9/2020 2-6"	SSS-17 SC58794-09 7/9/2020 2-6"	MCP Reportable Concentrations RCS-1
Pesticides - SW846 8081B (µg/kg)										
319-84-6	a-BHC	<6.07	<6.15	<5.85	<6.30	<5.63	<6.22	<5.44	<5.57	4000
319-85-7	b-BHC	<6.07	<6.15	<5.85	<6.30	<5.63	<6.22	<5.44	<5.57	3000
319-86-8	d-BHC	<6.07	<6.15	<5.85	<6.30	<5.63	<6.22	<5.44	<5.57	3000
58-89-9	g-BHC (Lindane)	<3.64	<3.69	<3.51	<3.78	<3.38	<3.73	<3.26	<3.34	50000
76-44-8	Heptachlor	<6.07	<6.15	<5.85	<6.30	<5.63	<6.22	<5.44	<5.57	100
309-00-2	Aldrin	<6.07	<6.15	<5.85	<6.30	<5.63	<6.22	<5.44	<5.57	100000
1024-57-3	Heptachlor epoxide	<6.07	<6.15	<5.85	<6.30	<5.63	<6.22	<5.44	<5.57	10000
959-98-8	Endosulfan I	<6.07	<6.15	<5.85	<6.30	<5.63	<6.22	<5.44	<5.57	700
60-57-1	Dieldrin	<6.07	<6.15	<5.85	<6.30	<5.63	<6.22	<5.44	<5.57	10000
72-55-9	4,4' -DDE	<6.07	<6.15	<5.85	<6.30	<5.63	<6.22	<5.44	<5.57	50
72-20-8	Endrin	<9.71	<9.84	<9.36	<10.1	<9.01	<9.95	<8.71	<8.92	500
33213-65-9	Endosulfan II	<9.71	<9.84	<9.36	<10.1	<9.01	<9.95	<8.71	<8.92	500
72-54-8	4,4' -DDD	<9.71	<9.84	<9.36	<10.1	<9.01	<9.95	<8.71	<8.92	-
1031-07-8	Endosulfan sulfate	<9.71	<9.84	<9.36	<10.1	<9.01	<9.95	<8.71	<8.92	8000
50-29-3	4,4' -DDT	<9.71	<9.84	<9.36	<10.1	<9.01	<9.95	<8.71	<8.92	10000
72-43-5	Methoxychlor	<9.71	<9.84	<9.36	<10.1	<9.01	<9.95	<8.71	<8.92	8000
53494-70-5	Endrin ketone	<9.71	<9.84	<9.36	<10.1	<9.01	<9.95	<8.71	<8.92	3000
7421-93-4	Endrin aldehyde	<9.71	<9.84	<9.36	<10.1	<9.01	<9.95	<8.71	<8.92	200
5103-71-9	alpha-Chlordane	<6.07	<6.15	<5.85	<6.30	<5.63	<6.22	<5.44	<5.57	90
5103-74-2	gamma-Chlordane	<6.07	<6.15	<5.85	<6.30	<5.63	<6.22	<5.44	<5.57	700
8001-35-2	Toxaphene	<121	<123	<117	<126	<113	<124	<109	<111	200000
57-74-9	Chlordane	<24.3	<24.6	<23.4	<25.2	<22.5	<24.9	<21.8	<22.3	10000
15972-60-8	Alachlor	<6.07	<6.15	<5.85	<6.30	<5.63	<6.22	<5.44	<5.57	-
Herbicides - SW846 8151A (µg/kg)										
93-76-5	2,4,5-T	<80	<80	<80	<80	<80	<80	<80	<80	100000
93-72-1	2,4,5-TP (Silvex)	<80	<80	<80	<80	<80	<80	<80	<80	100000
94-75-7	2,4-D	<80	<80	<80	<80	<80	<80	<80	<80	100000
94-82-6	2,4-DB	<80	<80	<80	<80	<80	<80	<80	<80	100000
75-99-0	Dalapon	<80	<80	<80	<80	<80	<80	<80	<80	1000000
1918-00-9	Dicamba	<80	<80	<80	<80	<80	<80	<80	<80	500000
120-36-5	Dichloroprop	<80	<80	<80	<80	<80	<80	<80	<80	-
88-85-7	Dinoseb	<80	<80	<80	<80	<80	<80	<80	<80	500000
94-74-6	MCPA	<3300	<3300	<3300	<3300	<3300	<3300	<3300	<3300	100000
7085-19-0	MCPP	<3300	<3300	<3300	<3300	<3300	<3300	<3300	<3300	-

< indicates less than the respective method detection limit.
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
Boldfaced type indicates an exceedance.
Pursuant to MCP 310 CMR 40.0975(6)(a-c): MCP Method 1 Soil Standards, and Massachusetts Oil and Hazardous Materials List (MOHML) revised (effective) 2014

TABLE 5

SUMMARY OF BASEBALL INFIELD SOIL SAMPLES FOR MASSDEP 14 METALS

Cashman School
Amesbury, Massachusetts
***ECMS* Project No. 1009.073**
MassDEP RTN 3-36397

Sample Location		SSS-18	SSS-19	SSS-20	SSS-21	SSS-22	SSS-23	SSS-24	SSS-25	MassDEP Reportable Concentrations	MassDEP Imminent Hazard
Laboratory ID		SC58954-01	SC58954-02	SC58954-03	SC58954-04	SC58954-05	SC58954-06	SC58954-07	SC58954-08		
Sample Date		7/31/2020	7/31/2020	7/31/2020	7/31/2020	7/31/2020	7/31/2020	7/31/2020	7/31/2020		
Sample Location		Randall Field - 1st Base	Randall Field - 2nd Base	Randall Field - 3rd Base	Randall Field - Home Plate	Packer Field - 1st Base	Packer Field - 2nd Base	Packer Field - 3rd Base	Packer Field - Home Plate	RCS-1	
Sample Depth		Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	(mg/kg)	
SM2540 G (11) Mod. (%)											
solids	% Solids	86.9	90.9	90.9	86.7	90.1	90.2	87.5	90.0	NA	
MassDEP 14 Metals - SW846 6010C (mg/kg)											
7440-36-0	Antimony	<5.90	<5.43	<5.43	<6.07	<5.13	<5.45	<5.68	<5.61	20	
7440-38-2	Arsenic	10.9	11.6	10.7	15.8	13.6	14.8	13.4	15.3	20	40
7440-41-7	Beryllium	<0.590	<0.543	<0.543	<0.607	<0.513	<0.545	<0.568	<0.561	90	
7440-43-9	Cadmium	<0.590	<0.543	<0.543	<0.607	<0.513	<0.545	<0.568	<0.561	70	
7440-47-3	Chromium	10.8	14.6	11.1	11.8	9.20	7.74	9.07	8.99	100	
7439-92-1	Lead	6.88	7.03	6.04	8.03	6.24	7.26	6.72	6.88	200	
7440-02-0	Nickel	5.65	6.67	6.73	6.81	5.25	5.20	4.90	5.42	600	
7782-49-2	Selenium	<1.77	<1.63	<1.63	<1.82	<1.54	<1.63	<1.70	<1.68	400	
7440-22-4	Silver	<3.54	<3.26	<3.26	<3.64	<3.08	<3.27	<3.41	<3.37	100	
7440-28-0	Thallium	<3.54	<3.26	<3.26	<3.64	<3.08	<3.27	<3.41	<3.37	8	
7440-62-2	Vanadium	13.6	14.4	14.6	17.2	15.6	15.8	16.2	15.5	400	
7440-66-6	Zinc	25.3	24.6	22.6	28.1	26.0	27.0	27.8	27.6	1000	
7440-39-3	Barium	31.4	33.2	27.0	45.7	29.4	25.4	31.5	29.2	1000	
RCRA Metals - SW846 7471B (mg/kg)											
7439-97-6	Mercury	<0.0323	<0.0363	<0.0310	<0.0305	<0.0388	<0.0321	<0.0319	<0.0330	20	

< indicates less than the respective method detection limit.
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
Bolfaced type indicates an exceedance.
Pursuant to MCP 310 CMR 40.0975(6)(a-c): MCP Method 1 Soil Standards, and Massachusetts Oil and Hazardous Materials List (MOHML) revised (effective) 2014

Environmental & Construction Management Services, Inc.

TABLE 6

SUMMARY OF BACKGROUND SOIL SAMPLES FOR MASSDEP 14 METALS

Cashman School & Woodsom Farm Property
Amesbury, Massachusetts
***ECMS* Project No. 1009.073**
MassDEP RTN 3-36397

Sample Location		SSS-26**	SSS-27**	SSS-28	SSS-29	SSS-30	SSS-31	SSS-32	SSS-33	MassDEP Reportable Concentrations	MassDEP Imminent Hazard
Laboratory ID		SC59063-01	SC59063-02	SC59063-03	SC59063-04	SC59063-05	SC59063-06	SC59063-07	SC59063-08		
Sample Date		8/12/2020	8/12/2020	8/12/2020	8/12/2020	8/12/2020	8/12/2020	8/12/2020	8/12/2020		
Sample Location		Background-Woods	Background-Woods	Randall Field - Outfield	Background-Woodsom Farm	Background-Woodsom Farm	Background-Woodsom Farm	Background-Woodsom Farm	Packer Field - Outfield	RCS-1	
Sample Depth		0-6"	12"	18-24"	6"	18-22"	6"	18-22"	14-18"	(mg/kg)	
SM2540 G (11) Mod. (%)											
solids	% Solids	93.3	93.1	95.6	89.8	84.7	90.2	94.9	89.6	NA	
MassDEP 14 Metals - SW846 6010C (mg/kg)											
7440-36-0	Antimony	<5.34	<5.50	<4.92	<5.21	<5.68	<5.70	<5.25	<5.56	20	
7440-38-2	Arsenic	**56.1**	**65.5**	4.89	**27.7**	**31.2**	**74.8**	**89.6**	**62.3**	20	40
7440-41-7	Beryllium	<0.534	<0.550	<0.492	0.590	<0.568	<0.570	<0.525	<0.556	90	
7440-43-9	Cadmium	<0.534	<0.550	<0.492	<0.521	<0.568	<0.570	<0.525	<0.556	70	
7440-47-3	Chromium	32.0	32.8	7.71	35.6	32.3	60.3	50.5	24.7	100	
7439-92-1	Lead	40.0	35.4	2.80	29.6	25.9	32.3	30.7	13.7	200	
7440-02-0	Nickel	52.2	61.9	4.15	25.4	25.6	41.3	41.2	52.9	600	
7782-49-2	Selenium	<1.60	<1.65	<1.48	<1.56	<1.70	<1.71	<1.58	<1.67	400	
7440-22-4	Silver	<3.20	<3.30	<2.95	<3.13	<3.41	<3.42	<3.15	<3.33	100	
7440-28-0	Thallium	<3.20	<3.30	<2.95	<3.13	<3.41	<3.42	<3.15	<3.33	8	
7440-62-2	Vanadium	33.5	29.4	7.97	33.9	29.7	23.6	24.2	23.4	400	
7440-66-6	Zinc	56.6	57.7	7.36	44.5	38.6	66.2	62.2	64.5	1000	
7440-39-3	Barium	24.6	26.8	16.4	37.3	33.3	32.1	26.2	27.9	1000	
RCRA Metals - SW846 7471B (mg/kg)											
7439-97-6	Mercury	0.0764	0.0655	<0.0337	0.0650	0.0583	0.541	0.471	<0.0305	20	

< indicates less than the respective method detection limit.
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
Bolfaced type indicates an exceedance.
Pursuant to MCP 310 CMR 40.0975(6)(a-c): MCP Method 1 Soil Standards, and Massachusetts Oil and Hazardous Materials List (MOHML) revised (effective) 2014
** MassDEP also collectd soil samples for laboratory analysis

Environmental & Construction Management Services, Inc.

TABLE 7

SUMMARY OF MASSDEP COLLECTED BACKGROUND SOIL SAMPLES FOR ARSENIC AND LEAD

Cashman School & Woodsom Farm Property
Amesbury, Massachusetts
***ECMS* Project No. 1009.073**
MassDEP RTN 3-36397

Sample Location		DEP S-1 Little League Field	DEP S-2 Little League Field	DEP S-3 Background	DEP S-4 Background	MassDEP Reportable Concentrations	MassDEP Imminent Hazard
Laboratory ID		L2033028-01	L2033028-02	L2033028-03	L2033028-04		
Sample Date		8/12/2020	8/12/2020	8/12/2020	8/12/2020		
Sample Location		Little League Field	Background-Woods	Background	Background	RCS-1	
Sample Depth		0-6"	12"	18-24"	14-18"	(mg/kg)	
SM2540 G (11) Mod. (%)							
solids	% Solids	97	94	90	94	NA	
Metals - SW846 6010C (mg/kg)							
7440-38-2	Arsenic	**46.1**	**45.2**	**57.3**	**66.6**	20	40
7439-92-1	Lead	14.2	10.9	38.8	29.5	200	

< indicates less than the respective method detection limit.
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
Bolfaced type indicates an exceedance.
Pursuant to MCP 310 CMR 40.0975(6)(a-c): MCP Method 1 Soil Standards, and Massachusetts Oil and Hazardous Materials List (MOHML) revised (effective) 2014
** MassDEP collected and Alpha Analytical analyzed the above soil samples for laboratory analysis

Environmental & Construction Management Services, Inc.

APPENDIX A

COPY OF RELEASE NOTIFICATION FORM (RNF) BWSC-103 FOR "RETRACTION"

Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

RELEASE NOTIFICATION & NOTIFICATION RETRACTION FORM

Pursuant to 310 CMR 40.0335 and 310 CMR 40.0371 (Subpart C)

BWSC 103

Release Tracking Number
3 - 36397

A. RELEASE OR THREAT OF RELEASE LOCATION:

1. Release Name/Location Aid: CHARLES C. CASHMAN ELEMENTARY SCHOOL
2. Street Address: 193 LIONS MOUTH ROAD
3. City/Town: AMESBURY 4. ZIP Code: 019130000
5. Coordinates: a. Latitude: N 42.85723 b. Longitude: W 70.94835

B. THIS FORM IS BEING USED TO: (check one)

- ☐ 1. Submit a **Release Notification**
- ☐ 2. Submit a **Revised Release Notification**
- ☑ 3. Submit a **Retraction of a Previously Reported Notification** of a release or threat of release including supporting documentation required pursuant to 310 CMR 40.0335 (Section C is not required)

(All sections of this transmittal form must be filled out unless otherwise noted above)

C. INFORMATION DESCRIBING THE RELEASE OR THREAT OF RELEASE (TOR):

1. Date and time of Oral Notification, if applicable: _____ (mm/dd/yyyy) Time: _____ (hh:mm) ☐ AM ☐ PM
2. Date and time you obtained knowledge of the Release or TOR: _____ (mm/dd/yyyy) Time: _____ (hh:mm) ☐ AM ☐ PM
3. Date and time release or TOR occurred, if known: _____ (mm/dd/yyyy) Time: _____ (hh:mm) ☐ AM ☐ PM

Check all Notification Thresholds that apply to the Release or Threat of Release:
(for more information see 310 CMR 40.0310 - 40.0315)

4. 2 HOUR REPORTING CONDITIONS

- ☐ a. Sudden Release
- ☐ b. Threat of Sudden Release
- ☐ c. Oil Sheen on Surface Water
- ☐ d. Poses Imminent Hazard
- ☐ e. Could Pose Imminent Hazard
- ☐ f. Release Detected in Private Well
- ☐ g. Release to Storm Drain
- ☐ h. Sanitary Sewer Release (Imminent Hazard Only)

5. 72 HOUR REPORTING CONDITIONS

- ☐ a. Subsurface Non-Aqueous Phase Liquid (NAPL) Equal to or Greater than 1/2 Inch (.04 feet)
- ☐ b. Underground Storage Tank (UST) Release
- ☐ c. Threat of UST Release
- ☐ d. Release to Groundwater near Water Supply
- ☐ e. Substantial Release Migration

6. 120 DAY REPORTING CONDITIONS

- ☐ a. Release of Hazardous Material(s) to Soil or Groundwater Exceeding Reportable Concentration(s)
- ☐ b. Release of Oil to Soil Exceeding Reportable Concentration(s) and Affecting More than 2 Cubic Yards
- ☐ c. Release of Oil to Groundwater Exceeding Reportable Concentration(s)
- ☐ d. Subsurface Non-Aqueous Phase Liquid (NAPL) Equal to or Greater than 1/8 Inch (.01 feet) and Less than 1/2 Inch (.04 feet)

C. INFORMATION DESCRIBING THE RELEASE OR THREAT OF RELEASE (TOR): (cont.)

7. List below the Oils (O) or Hazardous Materials (HM) that exceed their Reportable Concentration (RC) or Reportable Quantity (RQ) by the greatest amount.

☐ Check here if an amount or concentration is unknown or less than detectable.

O or HM Released	CAS Number, if known	O or HM	Amount or Concentration	Units	RCs Exceeded, if Applicable (RCS-1, RCS-2,RCGW-1, RCGW-2)

☐ Check here if a list of additional Oil and Hazardous Materials subject to reporting, or any other documentation relating to this notification is attached.

D. PERSON REQUIRED TO NOTIFY:

1. Check all that apply: ☐ a. change in contact name ☐ b. change of address ☐ c. change in the person notifying

2. Name of Organization: CITY OF AMESBURY

3. Contact First Name: KASSANDRA 4. Last Name: GOVE

5. Street: 62 FRIEND STREET 6. Title:

7. City/Town: AMESBURY 8. State: MA 9. ZIP Code: 019130000

10. Telephone: 978-388-8121 11. Ext.: 12. Email: GoveK@AmesburyMA.Gov

☐ 13. Check here if attaching names and addresses of owners of properties affected by the Release or Threat of Release, other than an owner who is submitting this Release Notification (required).

E. RELATIONSHIP OF PERSON TO RELEASE OR THREAT OF RELEASE: ☐ Check here to change relationship

☑ 1. RP or PRP ☐ a. Owner ☐ b. Operator ☐ c. Generator ☐ d. Transporter

☑ e. Other RP or PRP Specify: NON-SPECIFIED PRP

☐ 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 Otherwise Required to Notify Specify Relationship:

F. CERTIFICATION OF PERSON REQUIRED TO NOTIFY:

1. I, KEVIN J KAVANAUGH, 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.

2. By : KEVIN J KAVANAUGH (Signature) 3. Title: _____

4. For: CITY OF AMESBURY (Name of person or entity recorded in Section D) 5. Date : 9/17/2020 (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 ANNUAL COMPLIANCE ASSURANCE FEES FOR EACH BILLABLE YEAR FOR TIER CLASSIFIED DISPOSAL SITES. 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:)

Received by DEP on 9/17/2020 12:31:24 PM

Amesbury
Mayor Kassandra Gove

Office of the Mayor
City Hall, 62 Friend Street
Amesbury, MA 01913-2884

(978) 388-8121
Fax: (978) 388-6727
govek@amesburyma.gov

August 5, 2020

Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup
205B Lowell Street
Wilmington, MA 01887

Re: LSP Authorized Signature for MassDEP RTN 3-36397
Charles C. Cashman Elementary School
193 Lions Mouth Road
Amesbury, MA 01913

To Whom It May Concern:

As Mayor of the City of Amesbury, I authorize Kevin J. Kavanaugh, LSP, CHMM for Environmental & Construction Management Services, Inc. (ECMS) to sign and hereby submit Bureau of Waste Site Cleanup (BWSC) forms in eDEP as necessary on my behalf for the release of petroleum at 193 Lion's Mouth Road, Amesbury, MA as listed as Massachusetts Department of Environmental Protection (MassDEP) Release Tracking Number (RTN) 3-36397.

Sincerely,

Kassandra Gove (KG)

Kassandra Gove
Mayor

APPENDIX B

COPY OF CITY OF AMESBURY ASSESSOR PROPERTY RECORD CARD

193 LIONS MOUTH RD

Location	193 LIONS MOUTH RD	**Mblu**	50/ / 6/ /
Acct#		**Owner**	AMESBURY CITY OF
Assessment	$8,061,100	**PID**	4685
Building Count	1		

Current Value

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$6,545,400	$1,515,700	$8,061,100

Owner of Record

Owner	AMESBURY CITY OF	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	TOWN HALL AMESBURY, MA 01913	**Book & Page**	05833/0124
		Sale Date	12/30/1971

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
AMESBURY CITY OF	$0		05833/0124	12/30/1971

Building Information

Building 1 : Section 1

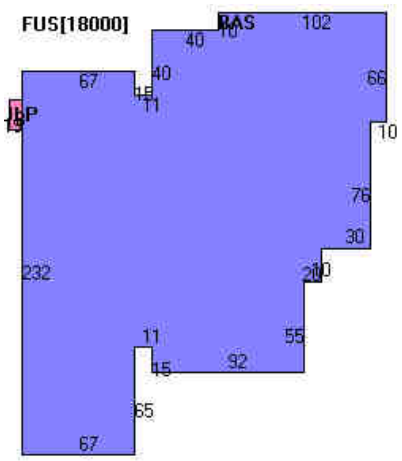
Year Built: 1975
Living Area: 61,320
Replacement Cost: $9,437,102
Building Percent Good: 65
Replacement Cost Less Depreciation: $6,134,100

Building Attributes	
Field	**Description**
STYLE	High School
MODEL	Commercial
Grade	Average +10
Stories:	2
Occupancy	2
Exterior Wall 1	Brick/Masonry
Exterior Wall 2	
Roof Structure	Gable/Hip
Roof Cover	Asph/F Gls/Cmp
Interior Wall 1	Drywall/Sheet
Interior Wall 2	Minim/Masonry
Interior Floor 1	Vinyl/Asphalt
Interior Floor 2	
Heating Fuel	Gas
Heating Type	Forced Air-Duc
AC Type	None
Bldg Use	PUB-SCHOOL
Total Rooms	
Total Bedrms	00
Total Baths	2
1st Floor Use:	9033
Heat/AC	NONE
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
Ceiling/Wall	SUS-CEIL & WL
Rooms/Prtns	AVERAGE
Wall Height	14
% Comn Wall	0

Building Photo

(http://images.vgsi.com/photos/AmesburyMAPhotos//\00\01\57/55.jpg)

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	43,320	43,320
FUS	Upper Story, Finished	18,000	18,000
ULP	Loading Platform, Unfinished	152	0
		61,472	61,320

Extra Features

Extra Features				Legend
Code	**Description**	**Size**	**Value**	**Bldg #**
SPR2	WET CONCEALED	56760 S.F.	$129,100	1
ELV2	COMM/AVG	4 UNIT	$104,000	1

Land

Land Use

Use Code	9340
Description	Education C
Zone	OSC
Neighborhood	0200
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	35.32
Frontage	180
Depth	1200
Assessed Value	$1,515,700

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
PAV1	PAV ASPH			74574 S.F.	$138,000	1
LT1	LIGHTS INC 1			7 UNITS	$2,400	1
LT2	LIGHTS INC 2			2 UNITS	$1,100	1
	BLEACHR			1	$1,000	1
CAB2	W/PLUMB			576 S.F.	$16,100	1
LT12	LIGHTS SOD 4			4 UNITS	$13,300	1
WDDK	WOOD DECK			559 S.F.	$6,000	1
SGN1	SIGN 1 SIDE			16 SF+HT	$300	1

193 LIONS MOUTH RD

Location	193 LIONS MOUTH RD	**Mblu**	50/ / 42/ /
Acct#		**Owner**	AMESBURY CITY OF
Assessment	$172,700	**PID**	5531
Building Count	1		

Current Value

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$31,100	$141,600	$172,700

Owner of Record

Owner	AMESBURY CITY OF	**Sale Price**	$0
Co-Owner	CASHMAN SCHOOL-ELEMENTARY	**Certificate**	
Address	TOWN HALL AMESBURY, MA 01913	**Book & Page**	05843/0244
		Sale Date	02/15/1972

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
AMESBURY CITY OF	$0		05843/0244	02/15/1972

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost: $0
Building Percent Good:
Replacement Cost Less Depreciation: $0

Building Attributes	
Field	**Description**
Style	Vacant Land
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	

Building Photo

(http://images.vgsi.com/photos/AmesburyMAPhotos//default.jpg)

Building Layout

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	9300
Description	Town V
Zone	R20
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	0.86
Frontage	110
Depth	325
Assessed Value	$141,600

Outbuildings

Outbuildings — **Legend**

Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
PAV1	PAV ASPH			10112 S.F.	$28,100	1
LT5	LIGHTS MER 1			4 UNITS	$3,000	1

193 LIONS MOUTH RD

Location	193 LIONS MOUTH RD	**Mblu**	50/ / 16/ /
Acct#		**Owner**	AMESBURY CITY OF
Assessment	$105,800	**PID**	5504
Building Count	1		

Current Value

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$0	$105,800	$105,800

Owner of Record

Owner	AMESBURY CITY OF	**Sale Price**	$0
Co-Owner	CASHMAN SCHOOL-ELEMENTARY	**Certificate**	
Address	TOWN HALL AMESBURY, MA 01913	**Book & Page**	05833/0124
		Sale Date	12/30/1971

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
AMESBURY CITY OF	$0		05833/0124	12/30/1971

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost: $0
Building Percent Good:
Replacement Cost Less Depreciation: $0

Building Attributes	
Field	**Description**
Style	Vacant Land
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	

Building Photo

(http://images.vgsi.com/photos/AmesburyMAPhotos//default.jpg)

Building Layout

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	9300
Description	Town V
Zone	R20
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	0.23
Frontage	100
Depth	100
Assessed Value	$105,800

Outbuildings

Outbuildings	Legend
No Data for Outbuildings	

219 LIONS MOUTH RD #RR

Location	219 LIONS MOUTH RD #RR	**Mblu**	37/ / 4/ /
Acct#		**Owner**	AMESBURY CITY OF
Assessment	$804,600	**PID**	4579
Building Count	1		

Current Value

Assessment			
Valuation Year	**Improvements**	**Land**	
2020	$35,800	$768,800	

Owner of Record

Owner	AMESBURY CITY OF	**Sale Price**	$5,000,000
Co-Owner		**Certificate**	
Address	TOWN HALL AMESBURY, MA 01913	**Book & Page**	9963/0317
		Sale Date	04/14/1989
		Instrument	1E

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**
AMESBURY CITY OF	$5,000,000		9963/0317	1E
WOODSOM TRUST	$0		05342/049-	

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost: $0
Building Percent Good:
Replacement Cost Less Depreciation: $0

Building Attributes	
Field	**Description**
Style	Outbuildings
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	

Building Photo

(http://images.vgsi.com/photos/AmesburyMAP

Building Layout

Building Layout (http://images.vgsi.com/photos
//Sketches/4579_4217.jpg)

Building Sub-Areas (sq ft)
No Data for Building Sub-A

Extra Features

Extra Features
No Data for Extra Features

Land

Land Use

Use Code	9300
Description	Town V
Zone	OSC
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	79.1
Frontage	0
Depth	690
Assessed Value	$768,800

Outbuildings

Outbuildings					
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**V**
BRN2	1 STY W/BSMNT			1250 S.F.	
SLO1	SILO WD/CONCR			400 DIAx HT	

APPENDIX C

COPY OF HISTORICAL DOCUMENTS

Cashman Elementary School

193 Lions Mouth Rd

Amesbury, MA 01913

Inquiry Number: 5397483.8

August 17, 2018

The EDR Aerial Photo Decade Package

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

EDR Aerial Photo Decade Package

08/17/18

Site Name:

Cashman Elementary School
193 Lions Mouth Rd
Amesbury, MA 01913
EDR Inquiry # 5397483.8

Client Name:

ECMS, Inc.
288 Grove Street #391
Braintree, MA 02184
Contact: Kevin Kavanaugh

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

Search Results:

Year	*Scale*	*Details*	*Source*
2016	1"=500'	Flight Year: 2016	USDA/NAIP
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
1998	1"=500'	Acquisition Date: April 11, 1998	USGS/DOQQ
1992	1"=500'	Flight Date: April 29, 1992	USGS
1986	1"=500'	Flight Date: April 01, 1986	USDA
1978	1"=500'	Flight Date: January 23, 1978	USGS
1973	1"=500'	Flight Date: April 16, 1973	USGS
1966	1"=500'	Flight Date: April 15, 1966	USGS
1960	1"=500'	Flight Date: May 01, 1960	USGS
1953	1"=500'	Flight Date: May 03, 1953	USGS
1938	1"=500'	Flight Date: November 01, 1938	USGS

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

INQUIRY #: 5397483.8

YEAR: 2016

= 500'

N

EDR


INQUIRY #: 5397483.8
YEAR: 2012
= 500'
N
EDR

INQUIRY #: 5397483.8

YEAR: 2009

= 500'

N

EDR

INQUIRY #: 5397483.8

YEAR: 2006

= 500'

N

EDR

INQUIRY #: 5397483.8

YEAR: 1998

= 500'

N

EDR

INQUIRY #: 5397483.8

YEAR: 1992

= 500'

N

EDR

INQUIRY #: 5397483.8

YEAR: 1986

= 500'

N

EDR

INQUIRY #: 5397483.8

YEAR: 1978

= 500'

N

EDR

INQUIRY #: 5397483.8

YEAR: 1973

= 500'

N

EDR

INQUIRY #: 5397483.8

YEAR: 1966

= 500'

N

EDR

INQUIRY #: 5397483.8

YEAR: 1960

= 500'

N

EDR

INQUIRY #: 5397483.8

YEAR: 1953

= 500'

N

EDR

INQUIRY #: 5397483.8

YEAR: 1938

= 500'

N

EDR

APPENDIX D

SITE PHOTOGRAPHS

Cashman Elementary School -193 Lions Mouth Road in Amesbury, Massachusetts

Photo 1 – View of athletic and Little League Baseball Fields from the Cashman School

Photo 2 – View from parking lot of Randall Little League Baseball Field.

Environmental & Construction Management Services, Inc.

Cashman Elementary School -193 Lions Mouth Road in Amesbury, Massachusetts

Photo 3 – View of Randall Little League Baseball Field

Photo 4 – View of concession stand and bathroom for little league baseball fields.

Cashman Elementary School -193 Lions Mouth Road in Amesbury, Massachusetts

Photo 5 – View of Packer Little League Baseball Field.

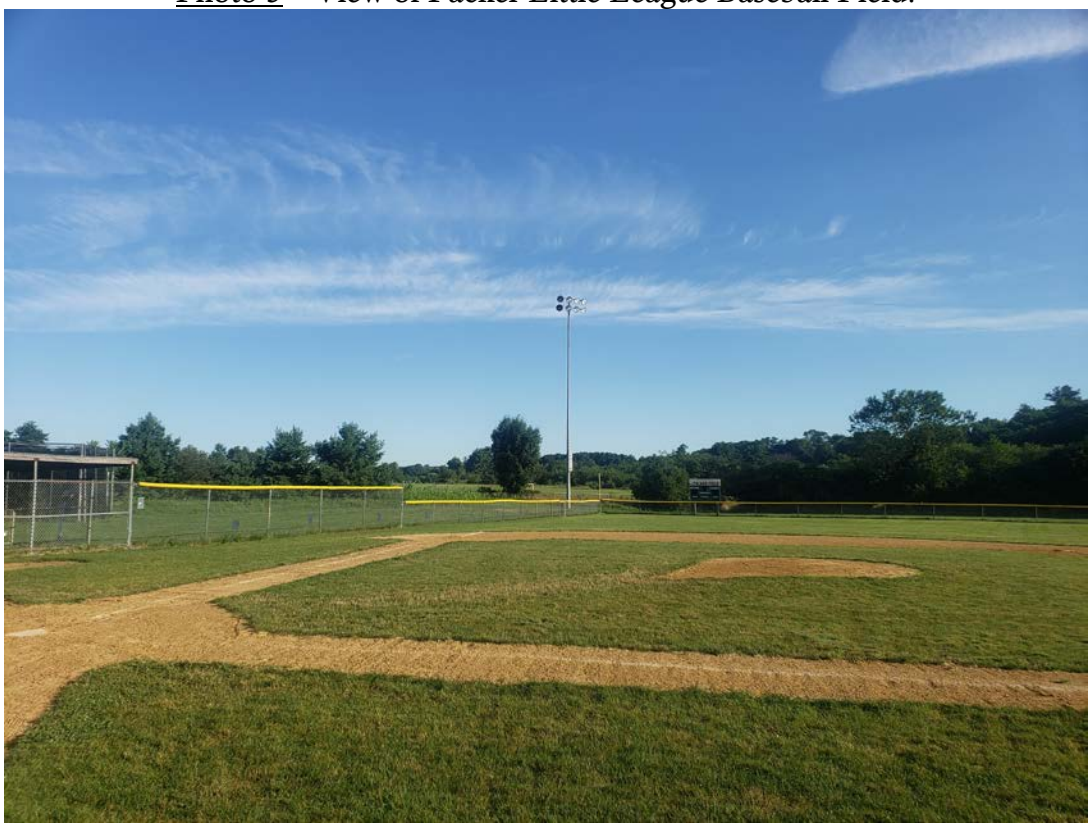


Photo 6 – View of the Woodsom Farm property to the north.

Photo 7 – View of soils from SSS-31 and SSS-32 on the Woodsom Farm Property.

Photo 8 – Photo of soil sample SSS-33 (18-24 inches below grade).

Cashman Elementary School -193 Lions Mouth Road in Amesbury, Massachusetts

Photo 9 – View of loading dock area.

Photo 10 – View of natural gas fired boiler units.

Environmental & Construction Management Services, Inc.

Cashman Elementary School -193 Lions Mouth Road in Amesbury, Massachusetts

Photo 11 – View of loading dock area.

Photo 12 – Photo of soil sample location SSS-26 and SSS-27 and MassDEP DE_ S-3 Background and DEP S-4 Background.

APPENDIX E

COPY OF RELEASE LOG FORM (RLF) BWSC-101

Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

RELEASE LOG FORM

BWSC 101

Release Tracking Number
3 - 36397

A. THIS FORM IS BEING USED TO: (check one)

1. Log Date: 7/24/2020 (mm/dd/yyyy) Log Time: 01:57 (hh:mm) ☐ AM ☑ PM

☑ 2. Assign a Release Tracking Number (RTN) to a Release or TOR Report.
- ☑ a. **Reportable Release or TOR.**
- ☐ b. **Release that is Less Than the Reporting Thresholds.**

☐ 3. Amend a Previously Recorded Release or TOR Report (RTN Assigned) .
- ☐ a. The Release is a **Reportable Release or TOR.**
- ☐ b. The Release is a **Release that is Less Than the Reporting Thresholds.**
- ☐ c. The Release or TOR is **Retracted**. (BWSC103 must be submitted, as well)
- ☐ d. The Release or TOR is **not a Release under M.G.L. c. 21E.**

B. REPORTING PERSON:

1. Name of Organization: ENVIRONMENTAL & CONSTRUCTION MANAGEMENT SERVICES
2. First Name: KEVIN
3. Last Name: KAVANAUGH
4. Telephone: 6172129255
5. Ext.:
6. Relationship of Person to Release: ☐ PRP ☑ Other c. Type, if known (e.g. Current Owner): Licensed Site Professional

C. RELEASE OR THREAT OF RELEASE (TOR) /SITE LOCATION:

1. Location Aid/Site Name: CHARLES C. CASHMAN ELEMENTARY SCHOOL
2. Street Address: 193 LIONS MOUTH ROAD
3. 2nd Address Line:
4. City/Town: AMESBURY, AMESBURY
5. Zip Code (if known): 019130000
6. Type of Location: (check all that apply) ☑ a. School ☐ b. Water Body ☐ c. Right of Way ☐ d. Utility Easement ☐ e. Roadway ☐ f. Municipal ☐ g. State ☐ h. Residential ☑ i. Open Space ☐ j. Private Property ☐ k. Industrial ☐ l. Commercial ☐ m. Federal ☐ n. Other Describe:

D. RELEASE OR TOR INFORMATION:

1. Date and Time of **Notification**: 7/24/2020 (mm/dd/yyyy) Time: 01:57 (hh:mm) ☐ AM ☑ PM
2. Date and Time Reporting Person obtained **Knowledge of Release or TOR**: 7/24/2020 (mm/dd/yyyy) Time: 12:00 (hh:mm) ☐ AM ☑ PM
3. Date and Time **Release or TOR occurred**, if known: (mm/dd/yyyy) Time: (hh:mm) ☐ AM ☐ PM
4. **Sources of the Release or TOR**: (check all that apply) ☐ a. Transformer ☐ b. Fuel Tank ☐ c. Pipe ☐ d. OHM Delivery ☐ e. AST ☐ f. Drums ☐ g. Tanker Truck ☐ h. Hose ☐ i. Line ☐ j. UST Describe ☐ k. Vehicle ☐ l. Boat/Vessel ☐ m. Unknown ☑ n. Other: UNDER INVESTIGATION
5. **Federal LUST Eligible**: ☐ Yes ☑ No ☐ Unknown

Check all Notification Thresholds that apply to the Release or TOR:

6. 2 Hour Reporting Conditions:

- ☐ a. Sudden Release
- ☐ b. Threat of Sudden Release
- ☐ c. Oil Sheen on Surface Water
- ☐ d. Poses Imminent Hazard
- ☑ e. Could Pose Imminent Hazard
- ☐ f. Release Detected in Private Well
- ☐ g. Release to Storm Drain
- ☐ h. Sanitary Sewer Release (Imminent Hazard Only)

7. 72 Hour Reporting Conditions:

- ☐ a. Subsurface Non-Aqueous Phase Liquid (NAPL) Equal to or Greater than 1/2 Inch
- ☐ b. Underground Storage Tank (UST) Release
- ☐ c. Threat of UST Release
- ☐ d. Release to Groundwater near Water Supply
- ☐ e. Release to Groundwater near School or Residence
- ☐ f. Substantial Release Migration

8. 120 Day Reporting Conditions:

- ☐ a. Release of Hazardous Material(s) to Soil or Groundwater Exceeding Reportable Concentration(s)
- ☐ b. Release of Oil to Soil Exceeding Reportable Concentration(s) and Affecting More than 2 Cubic Yards
- ☐ c. Release of Oil to Groundwater Exceeding Reportable Concentration(s)
- ☐ d. Subsurface Non-Aqueous Phase Liquid(NAPL) Equal to or Greater than 1/8 Inch and Less than 1/2 Inch

9. Type of Release or TOR: (check all that apply) ☐ a. Dumping ☐ b. Fire ☐ c. AST Removal ☐ d. Overfill ☐ e. rupture ☐ f. Vehicle Accident ☐ g. Leak ☐ h. Spill ☐ i. Test Failure ☐ j. TOR Only ☐ k. UST Removal Describe ☐ l. Unknown ☑ m. Other: UNDER INVESTIGATION

10. Media Impacted and Receptors Affected: (check all that apply) ☐ a. Paved Surface ☐ b. Basement ☐ c. School ☐ d. Public Water Supply ☐ e. Surface Water ☐ f. Zone 2 ☐ g. Private Well ☐ h. Residence ☑ i. Soil ☐ j. Ground Water ☐ k. Sediments ☐ l. Wetland ☐ m. Storm Drain ☐ n. Indoor Air ☐ o. Air ☐ p. Soil Gas ☐ q. Sub-Slab Soil Gas ☐ r. Critical Exposure Pathway ☐ s. NAPL ☐ t. Unknown ☐ u. Others Specify:

11. List below the Oils (O) or Hazardous Materials (HM) that exceed their Reportable Concentration (RC) or Reportable Quantity (RQ) by the greatest amount.

☐ Check here if an amount or concentration is unknown or less than detectable.

O or HM Released	CAS Number, if known	O or HM	Amount or Concentration	Units	RCs Exceeded, if Applicable
ARSENIC		HM	82.3	MG/KG	N/A
					N/A
					N/A

12. Description of Release or Threat of Release (if additional space is needed, attach additional information in H17)

LSP KAVANAUGH REPORTED THAT HE MEASURE ELEVATED LEVELS OF ARSENIC UP TO 82.3 MG/KG IN SOIL FROM ZERO TO TWELVE INCHES AT THE CHARLES C. CASHMAN ELEMENTARY SCHOOL 193 LIONS MOUTH ROAD IN AMESBURY. HE STATED THAT THE ARSENIC IS FOUND IN THE FIELDS OF THE ELEMENTARY SCHOOL. HE INDICATED THAT THE SCHOOL IS CURRENTLY VACANT HOWEVER THE FIELDS ARE BEING USED FOR SOCIAL ACTIVITIES. HE INDICATED THAT FURTHER IRA ASSESSMENT IS NEEDED TO HELP DETERMINE THE NATURE AND EXTENT OF THIS RELEASE.

E. INVOLVED PARTIES SUMMARY :

1. PRP Status (check one): ☐ a. PRP Unknown ☐ b. PRP unwilling, unable or has not committed to Perform Response Actions
☑ c. PRP Performing Response Actions ☐ d. Release is Adequated Regulated by the US Coast Guard

2. If PRP is not Performing Response Actions, who is?

☐ a. MassDEP State Contractor ☐ b. Other Person

3. Contractor:	a. Name of Organization:		b. Telephone:	
	c. Contact First Name:		d. Last Name:	
4. LSP:	a. Name:	KAVANAUGH KEVIN J	b. LSP #:	7610
	c. Telephone:	6173382121		

F. PRP OR PERSON PERFORMING RESPONSE ACTIONS:

1. Name of Organization: CITY OF AMESBURY, CITY HALL
2. Contact First Name: MAYOR KASSANDRA
3. Last Name: GOVE
4. Street: 62 FRIEND STREET
5. Title: MAYOR
6. City/Town: AMESBURY
7. State: MA
8. ZIP Code: 019130000
9. Telephone: 9783888121
10. Ext:
11. Email: GoveK@AmesburyMA.Gov
12. Relationship of Person to Release: ☑ PRP ☐ Other c. Type (e.g. Current Owner): Non-specified PRP

☐ 13. Check here if this PRP received a field NOR ☑ 14. Check here if an RNF was requested from this PRP

☑ 15. Check here if Provisions of 21E were explained to this PRP.

G. RECORD ORAL RESPONSE ACTIVITIES:

☐ 1. IRA Completed Pre-notification
☐ 2. No IRA Approved at Notification
☐ 3. IRA Assessment Only.
☑ 4. IRA Oral Plan Approved
☐ 5. IRA Oral Modified Plan Approved
☐ 6. IRA Oral Plan Denied and/or Request for Written Plan
☐ 7. Notice of Intent to Conduct a URAM
☐ 8 IRA-D Oral Plan Approved
☐ 9. IRA-D Oversight Work Started

10. Date of Action: 7/24/2020

11. Soil Previously Excavated: ☐ a. Excavated prior to notification. ☐ b. Excavated as part of an UST closure.

c. Quantity of contaminated soil previously excavated and destination, if applicable:

12. Specify any Regional Specific Code (Regional Use):

H. ORAL RESPONSE ACTION PLAN: (check all that apply)

☐ 1. Assessment and/or Monitoring Only
☑ 2. Temporary Covers or Caps
☐ 3. Deployment of Absorbent or Containment Materials
☐ 4. Temporary Water Supplies
☐ 5. Structure Venting System
☐ 6. Temporary Evacuation or Relocation of Residents
☐ 7. Product or NAPL Recovery
☑ 8. Fencing and Sign Posting
☐ 9. Groundwater Treatment Systems
☐ 10. Soil Vapor Extraction
☐ 11. Bioremediation
☐ 12. Air Sparging
☐ 13. Excavation of Contaminated Soils

☐ a. Re-use, Recycling or Treatment ☐ i. On Site ☐ ii. Off Site Authorized volume in cubic yards:
☐ b. Store ☐ i. On Site ☐ ii. Off Site Authorized volume in cubic yards:
☐ c. Landfill ☐ i. Cover ☐ ii. Disposal Authorized volume in cubic yards:

☐ 14. Removal of Drums, Tanks or Containers:

Describe Quantity and Amount: _____

☐ 15. Removal of Other Contaminated Media:

Specify Type and Volume: _____

☑ 16 Other Response Actions and Additional Comments (describe):

I PROVIDED ORAL IRA APPROVAL TO LSP KAVANAUGH AND RECOMMENDED INSTALLATION OF RESTRICTIVE FENCING, POSTING WARNING SIGNAGE, AND COVERING EXPOSED SOIL WITH POLYETHYLENE SHEETING. IRA ASSESSMENT MUST BE PERFORMED TO DETERMINE THE NATURE AND EXTENT OF THIS RELEASE. 21E RESPONSIBILITIES AND THE NEED TO SUBMIT A RELEASE NOTIFICATION FORM TO MASSDEP IN SIXTY DAYS WERE EXPLAINED TO LSP KAVANAUGH ON BEHALF OF THE CITY OF AMESBURY.

☐ 17. Check here if Additional Information is Provided in an Attachment

I. DEP STAFF AND FORM PREPARER:

1. DEP Staff: a. Name: GIDDINGS PAUL ☐ b. Check here, if Unassigned (or staff name not applicable).

2 . Preparer : a. Name: SANDERSON KENNETH

b. Signature: KENNETH SANDERSON c. Date: 7/24/2020

APPENDIX F

COPY OF RELEASE NOTIFICATION FORM (RNF) BWSC-103

Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

RELEASE NOTIFICATION & NOTIFICATION RETRACTION FORM

Pursuant to 310 CMR 40.0335 and 310 CMR 40.0371 (Subpart C)

BWSC 103

Release Tracking Number
3 - 36397

A. RELEASE OR THREAT OF RELEASE LOCATION:

1. Release Name/Location Aid: CHARLES C. CASHMAN ELEMENTARY SCHOOL
2. Street Address: 193 LIONS MOUTH ROAD
3. City/Town: AMESBURY 4. ZIP Code: 019130000
5. Coordinates: a. Latitude: N 42.85723 b. Longitude: W 70.94835

B. THIS FORM IS BEING USED TO: (check one)

- [x] 1. Submit a **Release Notification**
- [ ] 2. Submit a **Revised Release Notification**
- [ ] 3. Submit a **Retraction of a Previously Reported Notification** of a release or threat of release including supporting documentation required pursuant to 310 CMR 40.0335 (Section C is not required)

(All sections of this transmittal form must be filled out unless otherwise noted above)

C. INFORMATION DESCRIBING THE RELEASE OR THREAT OF RELEASE (TOR):

1. Date and time of Oral Notification, if applicable: 7/24/2020 (mm/dd/yyyy) Time: 01:57 (hh:mm) [ ] AM [x] PM
2. Date and time you obtained knowledge of the Release or TOR: 7/24/2020 (mm/dd/yyyy) Time: 12:00 (hh:mm) [ ] AM [x] PM
3. Date and time release or TOR occurred, if known: (mm/dd/yyyy) Time: (hh:mm) [ ] AM [ ] PM

Check all Notification Thresholds that apply to the Release or Threat of Release:
(for more information see 310 CMR 40.0310 - 40.0315)

4. 2 HOUR REPORTING CONDITIONS

- [ ] a. Sudden Release
- [ ] b. Threat of Sudden Release
- [ ] c. Oil Sheen on Surface Water
- [ ] d. Poses Imminent Hazard
- [x] e. Could Pose Imminent Hazard
- [ ] f. Release Detected in Private Well
- [ ] g. Release to Storm Drain
- [ ] h. Sanitary Sewer Release (Imminent Hazard Only)

5. 72 HOUR REPORTING CONDITIONS

- [ ] a. Subsurface Non-Aqueous Phase Liquid (NAPL) Equal to or Greater than 1/2 Inch (.04 feet)
- [ ] b. Underground Storage Tank (UST) Release
- [ ] c. Threat of UST Release
- [ ] d. Release to Groundwater near Water Supply
- [ ] e. Substantial Release Migration

6. 120 DAY REPORTING CONDITIONS

- [x] a. Release of Hazardous Material(s) to Soil or Groundwater Exceeding Reportable Concentration(s)
- [ ] b. Release of Oil to Soil Exceeding Reportable Concentration(s) and Affecting More than 2 Cubic Yards
- [ ] c. Release of Oil to Groundwater Exceeding Reportable Concentration(s)
- [ ] d. Subsurface Non-Aqueous Phase Liquid (NAPL) Equal to or Greater than 1/8 Inch (.01 feet) and Less than 1/2 Inch (.04 feet)

C. INFORMATION DESCRIBING THE RELEASE OR THREAT OF RELEASE (TOR): (cont.)

7. List below the Oils (O) or Hazardous Materials (HM) that exceed their Reportable Concentration (RC) or Reportable Quantity (RQ) by the greatest amount.

☐ Check here if an amount or concentration is unknown or less than detectable.

O or HM Released	CAS Number, if known	O or HM	Amount or Concentration	Units	RCs Exceeded, if Applicable (RCS-1, RCS-2,RCGW-1, RCGW-2)
ARSENIC		HM	82.3	MG/KG	RCS-1

☐ Check here if a list of additional Oil and Hazardous Materials subject to reporting, or any other documentation relating to this notification is attached.

D. PERSON REQUIRED TO NOTIFY:

1. Check all that apply: ☐ a. change in contact name ☐ b. change of address ☑ c. change in the person notifying

2. Name of Organization: CITY OF AMESBURY

3. Contact First Name: KASSANDRA 4. Last Name: GOVE

5. Street: 62 FRIEND STREET 6. Title: MAYOR

7. City/Town: AMESBURY 8. State: MA 9. ZIP Code: 019130000

10. Telephone: 978-388-8121 11. Ext.: 12. Email: govek@amesburyma.gov

☐ 13. Check here if attaching names and addresses of owners of properties affected by the Release or Threat of Release, other than an owner who is submitting this Release Notification (required).

E. RELATIONSHIP OF PERSON TO RELEASE OR THREAT OF RELEASE: ☐ 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 Otherwise Required to Notify Specify Relationship:

F. CERTIFICATION OF PERSON REQUIRED TO NOTIFY:

1. I, KEVIN J KAVANAUGH, 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.

2. By : KEVIN J KAVANAUGH (Signature) 3. Title: MAYOR

4. For: CITY OF AMESBURY (Name of person or entity recorded in Section D) 5. Date : 7/31/2020 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 ANNUAL COMPLIANCE ASSURANCE FEES FOR EACH BILLABLE YEAR FOR TIER CLASSIFIED DISPOSAL SITES. 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:)

Received by DEP on 7/31/2020 11:06:17 AM

APPENDIX G

ECMS IMMINENT HAZARD EVALUATION (IHE) DATED JULY 28, 2020

IMMINENT HAZARD EVALUATION

For

Charles C. Cashman Elementary School
193 Lions Mouth Road
Amesbury, Massachusetts 01913

Prepared for:

DiNisco Design, Inc.
99 Chauncy Street
Boston, Massachusetts 02111

Prepared by:

Environmental & Construction Management Services, Inc.
288 Grove Street #391
Braintree, Massachusetts 02184
(617) 338-2121

July 28, 2020

ECMS Project No. 1009.073

Environmental & Construction Management Services, Inc.

TABLE OF CONTENTS

SECTION **PAGE**

ATTACHMENTS, CONTINUED:

Figures

Appendices

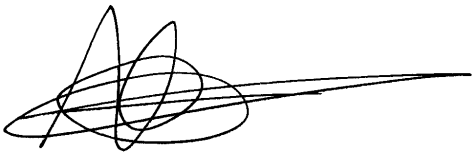
CERTIFICATION OF RESULTS

The evaluation was conducted on behalf of and for the exclusive use of *DiNisco Design* and their client, the *City of Amesbury, Massachusetts* and all its successors and assigns, solely for use in an environmental evaluation of the Site. This report and the findings contained herein shall not, in whole or in part, be disseminated or conveyed to any other party, nor used by any other party, in whole or in part, other than *DiNisco Design* or the *City of Amesbury* and all its successors and assigns, without the prior written consent of *Environmental & Construction Management Services, Inc. (ECMS).*

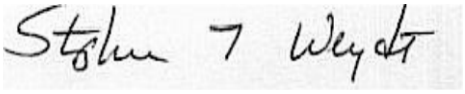
ECMS professional services have been performed, our findings obtained, and our recommendations prepared by an environmental professional and customary principles and practices in the fields of environmental science and engineering. This warranty is in lieu of all other warranties either expressed or implied. *ECMS* is not responsible for the independent conclusions, opinions or recommendations made by others based on the records review, site inspection, field exploration, and laboratory test data presented in this report.

Respectfully submitted this 28th day of July 2020.

For ***Environmental & Construction Management Services, Inc.*** by



Kevin J. Kavanaugh, L.S.P., CHMM
Principal Environmental Engineer



Stephen T. Weydt
Principal Environmental Scientist

1.0 INTRODUCTION

An Imminent Hazard Evaluation (IHE) is presented in this report for the Cashman Elementary School, located at 193 Lions Mouth Road in Amesbury, Massachusetts [Release Tracking Number (RTN) 3-31833]. This IHE was performed in accordance with requirements of the Massachusetts Contingency Plan (MCP, 310 CMR 40.0000) and other relevant guidance developed by the Massachusetts Department of Environmental Protection (MassDEP).

2.0 PROPERTY DESCRIPTION

2.1 Location and Legal Description of the Site

The Site is an irregularly-shaped 35.32-acre parcel of land located at 193 Lions Mouth Road in Amesbury, Essex County, Massachusetts 01913. According to the City of Amesbury Assessor, the property is listed as parcel 50/6. The Site is occupied by the Charles C. Cashman Elementary School and associated athletic fields, playground, parking lots and landscaped areas. Refer to Figure 2 entitled Lot Location Plan.

The Site is depicted on the 7.5 x 15-minute U.S.G.S. topographic quadrangle for Newburyport, Massachusetts dated 1987. The Universal Transverse Mercator (UTM) coordinates of the Site within zone 19 are approximately 4,746,558 meters north latitude and 340,818.9 meters east longitude or 42° 51' 26.06'' north latitude and 70° 56' 54.07'' west longitude. Elevation at the site is approximately 105 feet above mean sea level (amsl). Figure 1 includes both a Site Locus Plan and a Street Location Map of the Site. The Site and surrounding properties are shown on Figure 2, Lot Location Plan attached to this report.

2.2 Site and Vicinity Characteristics

The Site is currently occupied by the City of Amesbury Cashman Elementary School housing grades Pre-kindergarten through 4 (approximately 458 children). The Site is located within OSC – Open Space Conservancy. The school building is surrounded by a driveway and associated paved parking lots, a playground area and grass athletic field. Woodsom Farm to the west, and is accessed from Lions Mouth Road to the South. The north edge of the site is steeply sloping forested hill with an intermittent steam at the base. The Site is surrounded with pockets of densely settled residential neighborhoods.

No existing commercial printing facilities, gasoline filling/service stations, industrial properties or fuel depots were identified in the immediate vicinity of the

subject site. The past uses of these surrounding properties do not pose recognized environmental concerns to the Site.

2.3 Descriptions of Structures, Roads, Other Improvements on the Site

The 2-story school building is 61,472 gross square feet (GSF). The building is constructed of masonry block with brick veneer on slab on grade construction.

Assessor Office records indicate that the main Site building construction was completed in 1975. The school building is currently heated by natural gas and heated through forced air ducts. The roof is asphalt and on the roof are several HVAC units. Records indicate, the building is and always has been heated by natural gas. A copy of the Assessor Property Card is attached as Appendix D.

The nearest surface water bodies to the Site is Lake Gardner that is located approximately 2,500 feet to the north-northeast. According to the City of Amesbury Health Department, there are no know public or private potable water supply wells in the vicinity of the Site.

The City of Amesbury obtains its drinking water from its watershed area that encompasses about 55 square miles; most of which reside in New Hampshire. Tuxbury Pond feeds the Powow River, which the treatment plant draws from. Lake Attitash and Meadowbrook also supplement the water source seasonally and in times of drought. All of Amesbury's wastewater empties into their municipal sewer system. The wastewater treatment facility is located at 19 Merrimac Street.

The site is currently supplied with natural gas and serviced by the municipal water and sewer systems.

The existing school building has a sewage ejector system that was observed along the entrance driveway area south of the school.

2.4 Site Ownership

According to City of Amesbury Assessor's records, the subject site is owned by the City of Amesbury as of December 30, 1971 (Book 5833, Page 124).

A Title Search was not supplied to *ECMS*, and therefore additional ownership information was not available.

2.5 Current Uses of the Site

The Site is currently utilized as the City of Amesbury Cashman Elementary School for grades Pre-K through Grade 4.

2.6 Current Uses of Surrounding Properties

The Site is located within an area primarily used for single-family residential homes, farmland and undeveloped wooded vacant land. There were no visual indications observed during *ECMS* visual inspection of nearby or abutting properties of conditions that would indicate a release or threat of release of oil and/or hazardous substances on, at, in, or to the Site.

2.7 Past Uses of the Site and Vicinity

Historical information was obtained from a review of the historical topographs (1932, 1934, 1943, 1944, 1947, 1950, 1956, 1952, 1968, 1973, 1979, 1971, 1985, 1987 and 2012), historical aerial photos (1953, 1960, 1966, 1973, 1978, 1986, 1992, 1998, 2006, 2009, 2012 and 2016), City Directory (1961, 1965, 1968, 1973, 1977, 1982, 1987, 1992, 1995, 2000, 2005, 2010 and 2014). Refer to Appendix A for copies of the above historic documents.

The historical aerial photo from 1978 shows the school building. Prior to construction of the school building, the Site land area was undeveloped and appears to be farmland as depicted in the aerial photographs from 1953 through 1973.

Properties surrounding the Site to the north, south, east and west were developed with sporadic residential properties and some may have been farmland.

The past uses of these surrounding properties do not pose recognized environmental concerns to the Site.

3.0 EVALUATION OF IMMINENT HAZARDS

The purpose of an IHE is to evaluate whether an immediate response action (IRA) is needed to control or reduce short-term exposure to a release of oil and/or hazardous material while comprehensive investigations and response actions are being evaluated. The need for comprehensive response actions (i.e., the ultimate actions for the release) is determined (in part) by a Risk Characterization, which is performed after all site investigations are completed.

For this IHE *ECMS* engaged *Mr. Peter LaGoy of LaGoy Risk Analysis, Inc. (LaGoy)* in Hopkinton, Massachusetts as a professional risk assessor to evaluate the recently obtained soil sample analytical results for samples collected on July 9, 2020. Excerpts from the *LaGoy* "Evaluation of Soil Data from the Charles C. Cashman Elementary School, 193 Lions Mouth Road, Amesbury, Massachusetts dated July 27, 2020" and attached as Appendix A are included in the ECMS IHE presented herein.

The MCP requires that IHEs be conducted separately for human health, the environment, and safety. These evaluations are presented in the following subsections.

3.1 Human Health Imminent Hazard Evaluation

According to 310 CMR 40.0321(1)(d) and (f), a release of oil and/or hazardous material that poses a significant risk of harm to human health when present even for a short period of time, or a release to the environment that produces readily apparent effects to human health, including respiratory distress or dermal irritation, constitutes an imminent hazard. A short period of time is defined as five (5) years, unless site circumstances indicate that a shorter period of time is appropriate [40 CMR 40.0953(1)]. Human health IHEs consider actual or likely exposures of humans under current site conditions and uses (§40.0953). IHEs are expected to be conservative [(§40.0953(7)], to consider "hot spots" [§40.0953(4)], to focus on soil between 0 and 1 foot in depth [§40.0953(2)], and can focus on the constituents that are likely to dominate the IHE [§40.0953(5)].

The MCP and MassDEP guidance specify criteria for identifying the presence of an imminent hazard to human health. For non-carcinogenic constituents, the Hazard Index (HI) defining an imminent hazard is greater than:

- one (1) for oil or hazardous materials that have the potential to cause serious effects (including but not limited to lethal, developmental, or neurological effects) following short-term exposures; or
- ten (10) for all other oil or hazardous materials [MCP 310 CMR 40.0955(2)(c)(1)].

For carcinogenic constituents, the excess lifetime cancer risk defining an imminent hazard is:

- greater than a risk of 1 in 100,000 (denoted as 1x10-5) for a short exposure period (e.g., a 5-year exposure period) [MCP 310 CMR 40.0995(2)(b)]; and,
- greater than a risk of 1 in 10,000 (denoted as 1x10-4) over a long exposure period (MassDEP 1995).

3.1.1 Compounds of Concern (COCs)

The recent subject sampling event consisted of collecting 15 soil samples from beneath the grass (2-6 inches in depth), and two additional samples of slightly deeper soil (2 feet in depth). Soil was analyzed for the presence of metals, total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs, including the polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and pesticides and herbicides. The results of the sampling are presented in Table 1 of Appendix A.

Only arsenic was present at a concentration above a reportable concentration. TPH was also detected in most samples (concentrations around 100 mg/kg) but could be present as a result of it use as a binder (waxes) in various lawn care products. Maximum metal concentrations were compared with expected concentrations in soil in Massachusetts (Table 2 of Appendix A), and chromium, nickel, and vanadium were present at levels above expected background. The four metals, arsenic, chromium, nickel, and vanadium will be considered in the imminent hazard calculations.

3.1.2 Receptors and Exposure Pathways

Potentially exposed humans at the site under current site use include children including students, non-student users of the playing fields and adults including commercial (school) workers, construction/utility workers (potentially), and visitors (including parents attending sporting event games). Because intermittently exposed individuals, such visitors, will be exposed to a lesser extent (shorter duration of exposure and/or less frequently) than students, non-student users of the playing field, and school workers, visitor exposure is not assessed. School worker exposure conservatively represents potential visitor exposure.

3.1.3 Exposure Point Concentrations

Students, school workers, and non-student users of the playing fields are assumed exposed only to shallow soil (depths of 0-1 foot), per MCP guidance for performing IHEs. The soil exposure point concentration (EPC) for arsenic in soil applied to the IHE is the 95th percentile upper confidence limit (95% UCL) of the mean concentration of arsenic in shallow soil.

Construction/utility workers are assumed exposed to both shallow and deeper soil, consistent with the type of activities (e.g., soil excavation) potentially performed. The soil EPC for arsenic is the 95% UCL of the mean concentration of arsenic in shallow and deeper soil.

Maximum concentrations were used as EPCs for chromium, nickel, and vanadium. For this site, concentrations of arsenic in shallow soil were detected in a narrow range (21.9 mg/kg – 82.3 mg/kg), and the 95% Upper Confidence Limit (UCL) calculated using the EPA's ProUCL model version 5.1 was used to calculate an EPC of 46.4 mg/kg for arsenic, based on a normal distribution of data and the Student t-test.

3.1.4 Quantitative Exposure Assessment

In general, individuals are exposed to materials released into the environment in varying quantities and proportions via a wide variety of possible exposure routes. The actual amount of material to which an individual is exposed depends on the

individual's frequency, extent, and duration of exposure, which in turn depend on many factors, including location of residence, age, body weight, sex, and activity patterns. Patterns of exposure are highly variable among individuals. This large potential variation in exposure to environmental conditions implies that a certain amount of uncertainty is inherent in risk assessment. This exposure assessment uses standard approaches and assumptions that are designed to be health protective, i.e., they are designed to produce estimates of exposure that overestimate, rather than underestimate, actual exposure and risk.

The purpose of a quantitative exposure assessment is to estimate the Chronic Daily Intake (CDI) of each contaminant of concern by an individual for each exposure route. For carcinogens, the CDI is averaged over the full lifetime (by convention, assumed to be 70 years; MassDEP 2008) and is termed the Lifetime Average Daily Dose or LADD for oral and dermal exposures. For noncarcinogens, the dose is only averaged over the period of exposure and is noted as the Average Daily Dose or ADD for oral and dermal exposure.

Soil Exposure – Children

Children are at school 180 days per year, and can also use the school facilities during the summer (roughly 70 days; end of June to end of August) but will use the outdoor play fields for only a fraction of that time and for short periods. Very young children (less than 2 year of age) are considered unlikely to be present on a regular basis. For the purposes of this assessment, contact by children is assumed for 109 days per year, which is the outdoor time assumed by MassDEP (1994) in initially establishing the S-1 soil standards. Exposure for a third of a year to a single outdoor play area is unlikely but provides a conservative estimate of exposure potential. People who contact soil may be exposed to constituents present in the soil by direct contact and subsequent ingestion of contaminated soil or by dermal absorption of constituents in soils adhering to the skin. Younger children are of greatest concern for soil contact, and therefore, assessment of exposure to younger children can be used to conservatively evaluate the potential for risks to older students. For this IHE, children are estimated to weigh an average of 15 kg (33 lbs.) based on the median weight for 5-year-old children (the youngest age likely to be regularly out on their own) determined in the NHANES II study for the US population in 1980 (MassDEP 1994). USEPA has reviewed more current data and has indicated average weights for humans have increased since that study.

Soil Ingestion: Children in regular contact with site soil are estimated to ingest 100 mg of soil per day (MassDEP 2002). All constituents in soil are assumed to be as available from the soil as from the media used in the toxicity studies and, consequently, a relative absorption factor or RAF of one is used for these constituents. Using this assumption and the others noted above, the ADD and LADD for soil ingestion by children can be estimated using the formula:

$$ADD/LADD = \frac{CS \times IR \times RAF \times EF \times ED}{BW \times 106\ (mg/kg) \times AT}$$

Where:

ADD = Average daily intake of the constituent (mg/kg/day),
LADD= Lifetime average daily dose (mg/kg/day),
CS = Constituent concentration in soil (mg/kg),
IR = Soil ingestion rate (100 mg/day; MassDEP 1995),
RAF = Relative absorption factor (1),
EF = Frequency of ingestion (109 days/year; MassDEP 1995),
ED = Exposure Duration (5 years; MassDEP 1995),
BW = Body weight (15 kg; EPA 1989), and
AT = Averaging Time (365 days x 5 yrs. (ADD) or 365 x 70 (LADD) days).

The calculated ADD for children exposed to lead detected in soil at the property based on this equation is provided in Table 3 for ingestion exposure to the soil at the school.

Dermal Contact: Dermal exposure to constituents in soil can occur through direct physical contact with soil. The same assumptions as for soil ingestion are used, with the exceptions that in place of an ingestion rate, a soil adherence factor of 0.2 mg soil/cm2 of skin, an exposed skin surface area of 3000 cm2 (roughly a third of the body surface area for this age child; MassDEP 1994) and constituent-specific relative absorption factors were used. Using these assumptions, the ADD and LADD can be estimated using the formula:

$$ADD/LADD = \frac{CS \times AD \times SA \times RAF \times EF \times ED}{BW \times 106\ (mg/kg) \times AT}$$

Where:

ADD = Average daily intake of the constituent (mg/kg/day),
LADD= Lifetime average daily dose (mg/kg/day),
CS = Constituent concentration in soil (mg/kg),
AD = Soil adherence to skin (0.2 mg/cm2; MassDEP 1995),
SA = Exposed skin surface area (3000 cm2; MassDEP 1995),
RAF = Relative absorption factor (constituent-specific; MassDEP 2006),
EF = Frequency of contact (109 days/year),
ED = Exposure Duration (5 years),
BW = Body weight (15 kg; EPA 1989), and
AT = Averaging Time (365 days x 5 yrs. (ADD) or 365 days x 70 days (LADD)).

The calculated ADD for children exposed to lead in soil at the site based on this equation is provided in Table 3 for exposure via dermal contact to the soil EPCs.

While the primary purpose of this assessment is to calculate whether an imminent hazard exists, the same approach can be modified slightly to assess overall site risks, given the continued use of the school and playground for current purposes. The assumption that children are unlikely to use the facility for more than 109 days per year, and for more than 5 years seems likely, given the grades (pre-K to 4th) that currently use the school. However, as a conservative measure, risks are also assessed assuming that children play at the school for 100 days per year over the course of a 10-year period and that they weigh 24 kg (average body weight for 2-12 years) over this period. This exposure and risk are calculated in Table 4.

Soil Exposure - Adults

Adults that may use the area would include school landscape workers, teachers, and parents attending games. Of these groups, landscapers would be expected to have the highest potential for regular contact. In order to determine if such soil contact is safe, exposure and risks to landscapers were evaluated quantitatively, using the previously-established EPCs.

Landscapers who work site soil may be exposed to constituents present in the soil by direct contact and subsequent ingestion of contaminated soil or by dermal absorption of constituents in soils adhering to the skin. Workers may also be exposed to constituents that become airborne as a component of windborne dust. Exposure for these people is assumed to occur for 100 days over the course of a year, assuming that during the roughly 8-month landscaping season, these workers are outdoors roughly 3 days per week over the 240-day period. Adults are estimated to weigh 70 kg. It should be noted that these calculations are particularly conservative in that exposure estimates are compared with toxicity values designed to be protective for chronic (long-term) exposures; toxicity values for short-term exposure are generally lower by a factor of 10.

Soil Ingestion: Workers in frequent contact with site soil are estimated to ingest 100 mg of soil per day (MassDEP 2002) and this value will be used for landscape workers. Using these assumptions and the others noted above, the ADD and LADD for soil ingestion by workers can be estimated using the formula for soil ingestion noted above. The calculated ADD for the constituents in soil at the property based on this equation is provided in Table 5 in Appendix A for soil ingestion exposure to the site-wide exposure point concentration.

Dermal Contact: Dermal exposure to constituents in soil can occur through direct physical contact with soil. The same assumptions as for soil ingestion are used, with the exceptions that in place of an ingestion rate, a soil adherence factor of 0.29 mg soil/cm2 of skin, an exposed skin surface area of 3,500 cm^2, and constituent-specific relative absorption factors were used. Using these assumptions, the ADD and LADD can be estimated using the formula for dermal contact noted above. The calculated ADD for the constituents in soil at the property based on this equation is

provided in Table 5 in Appendix A for exposure via dermal contact to the EPCs in soil.

Inhalation. Although unlikely considering the small area of uncovered soil, landscapers could be exposed via inhalation to constituents entrained in soil-derived dust (MassDEP 2002). To estimate exposure, the same assumptions provided above for body weight, lifetime exposure duration and frequency were used. It was assumed that the gardener inhaled 20 cubic meters (m3) of air during the time on site (essentially equal to the daily inhalation rate of 20 m^3/day; EPA, 1989 and corresponding to a full workday at an average moderate to heavy level of exertion; MassDEP 1995a).

In order to evaluate the potential for inhalation exposure to constituents entrained in the dust, it is necessary to estimate the amount of dust that would be present in the air, and the amount of air inhaled during the period that dust is present in the air. MassDEP (2002) suggests a value of 60 ug/m^3 for excavations and this value will be used in this evaluation, which is a conservative approach since excavation work would be expected to generate more dust than gardening. The value of 60 ug/m3 is based on the assumption that gardeners will only receive intermittent exposure to visible dust but that the average exposure level will be above that used by EPA for undisturbed sites.

MassDEP notes that exposure to constituents on airborne particulates can occur through either direct inhalation or via inhalation followed by movement of the particles from the upper respiratory tract to the gastrointestinal tract. For direct inhalation, MassDEP indicates that only approximately half of the inhaled particulate matter will actually reach the lungs. However, for this evaluation, it is assumed that all the agent inhaled is of concern, as many inhaled constituents act at sites along the respiratory tract and do not need to reach the lungs to have adverse effects. For the inhalation-to-oral pathway, the ingested dose is estimated to be twice the measured PM10 dose of 60 ug/m3. However, the total soil intake via this pathway (2 x 60 ug/m3 x 20 m3/day x 1 mg/1000 ug = 2.4 mg soil) is so low as to not add significantly to the soil dose calculated for direct ingestion and is not considered further in this assessment.

Exposure can be calculated using the equation:

$$ADE/LADE = \frac{EPC \times IF \times PM10 \times RAF \times EF \times ED}{BW \times AT}$$

Where:

ADE = Average daily exposure to the constituent (mg/m3),
LADE= Lifetime average daily dose (mg/m3),
EPC = Constituent concentration in soil (mg/kg),
IF = Inhalation Fraction (20 m3 / 20 m3day; MassDEP 2002),
PM10 = Particulate air concentration (60 ug/m3; MassDEP 2002).

RAF = Relative absorption factor (1 used to be conservative),
EF = Frequency of contact (100 days/year),
ED = Exposure Duration (5 years), and
AT = Averaging Time (365 days x 5 or 70 years).

Table 5 in Appendix A provides the estimated exposure and risk values for inhalation exposure to an adult landscaper, assuming no dust suppression measures are implemented. Exposure to other site users, including teachers and parents, would be expected to be lower.

3.1.5 Human Health Imminent Hazard Evaluation Results

Using the EPCs, exposure factors, and toxicity values discussed above, and using conventional risk characterization models, imminent hazard calculations were performed. The calculations are contained in *LaGoy Risk Analysis, Inc. (LaGoy)* "Evaluation of Soil Data from the Charles C. Cashman Elementary School, 193 Lions Mouth Road, Amesbury, Massachusetts dated July 27, 2020" and attached as Appendix A.

For noncarcinogenic (systemic) effects, EPA and MassDEP assume that there is a level below which no effects will occur (a threshold no effect concentration). To evaluate possible risk from exposure to noncarcinogenic contaminants, the average daily dose (ADD) is divided by the health criterion value [the reference dose (RfD)]. If the ADD:RfD ratio, also termed the hazard index or HI, is less than ten for all constituents (i.e., if the daily intake is below the health criterion), then the contaminant is considered unlikely to pose an Imminent Hazard (i.e., a significant risk under conditions of short-term exposure) to individuals exposed under the given scenario. If the HI is less than ten, the site does not pose an Imminent Hazard. For cancer risk, the exposure, termed the lifetime average daily dose or LADD is multiplied by the cancer slope factor to estimate cancer risk, and this risk is compared with a target risk level of 1 in 100,000 or 10-5.

Imminent hazards associated with short term exposure to site constituents in soil are estimated in Table 3 for children and in Table 5 for landscapers (and other adults). Based on these calculations, exposure by children to soil concentrations of site constituents results in a hazard index of 0.5 (soil ingestion plus dermal absorption risks combined) and a cancer risk of 1 x 10-5. Exposure by adults to soil concentrations of site constituents results in a hazard index of 0.08 (soil ingestion, dermal absorption, and inhalation exposures combined) and a cancer risk of 3 x 10-6. These levels do not exceed the Imminent Hazard criterion of an HI of ten and a cancer risk level of 10^{-5}, indicating that continued use of this site does not pose an imminent hazard.

Hazards and risks associated with longer term exposure to site constituents in soil are estimated in Table 4 in Appendix A for children and in Table 6 in Appendix A for

landscapers (and other adults). Based on these calculations, exposure by children to soil concentrations of site constituents results in a hazard index of 0.3 and a cancer risk of 1 x 10-5. Exposure by adults to soil concentrations of site constituents results in a hazard index of 0.08 and a cancer risk of 1×10^{-5}. These levels do not exceed the long-term risk targets of a cancer risk of 10^{-5} and an HI of 1, indicating that continued long term exposure at these concentrations would not pose a significant risk.

Based on these results, an imminent hazard to human health does not exist at the site.

3.2 Environmental Imminent Hazard Evaluation

The site property is developed for educational use and is partially paved or built on and partially uncovered. The developed areas of the site possess little potential environmental habitat because of human use; however, undeveloped portions of the site may serve as habitat for native flora and fauna. According to 40 CMR 40.0955(3), the following conditions constitute an imminent hazard to the environment:

- evidence of stressed biota attributable to the release at the disposal site, including, without limitation, fish kills or abiotic conditions; or

- a release to the environment of oil or hazardous material which produces immediate or acute adverse impacts to freshwater or saltwater fish populations.

No such conditions are known to exist as a result of arsenic in site soil. Therefore, it is concluded that the site poses no imminent hazard to the environment.

3.3 Safety Imminent Hazard Evaluation

An imminent hazard to safety is evaluated by identifying conditions that could pose a threat of physical harm or bodily injury to existing receptors under current site conditions. Examples include the presence of an explosive environment or insecurely containerized waste.

No conditions representative of an imminent hazard to safety exist on the site. Based on these factors, it is concluded that no imminent hazard to safety exists at the site.

4.0 SUMMARY, CONCLUSION & RECOMMENDATIONS

An IHE was performed for the presence of arsenic in soil of the Cashman school property. The IHE examined potential imminent hazards to the health of students, non-student users of the playing fields, commercial (school) workers, and construction/utility workers not protected by conditions of an adequate Health and Safety Plan. The IHE also evaluated potential imminent hazards to the environment and safety. The IHE concludes the following:

- The site poses no imminent hazard to students, non-student users of the playing fields, school workers, and construction/utility workers.
- The site poses no imminent hazard to the environment.
- The site poses no imminent hazard to safety.

Soil was recently sampled by *ECMS* and analyzed with respect to the Cashman Elementary School property located at 193 Lions Mouth Road in Amesbury, Massachusetts. Arsenic and several other metals were detected at levels above a reportable concentration (arsenic) and above levels expected in background soil. However, no anthropogenic source of arsenic was present, the Amesbury area is known to have naturally-elevated arsenic levels in soil, and the source appears most likely to be natural. Further assessment will be required to determine if the source of arsenic detected on the Site is naturally occurring and presented with lines of evidence as part of the development of a Conceptual Site Model (CSM) for this "release". While the arsenic is assumed to be naturally occurring, calculations were performed to assess if a calculated risk was present for either short-term (IH) or longer-term exposure. Evaluation of the concentrations detected and of site-specific factors indicates that an Imminent Hazard condition does not exist at the site. Use of the site would also not pose a Significant Risks.

It should be noted that calculated risks did not exceed but were at the target risk levels. Therefore, although the area does not pose an Imminent Hazard or Significant Risk for current use, considering the use of the site as a school, it may be prudent to take measures to mitigate the potential for exposure. Such measures could include replacing natural soil in areas of exposed soil with imported soil containing lower levels of natural arsenic.

In order to ensure that public health is adequately protected, conservative assumptions (i.e., those unlikely to underestimate risk) were used in deriving both the exposure estimates and the toxicity values that are included in this letter report. Because of the use of these conservative assumptions, it is likely that the actual potential for non-cancer and cancer risks is lower than as is estimated in this report.

5.0 REFERENCES

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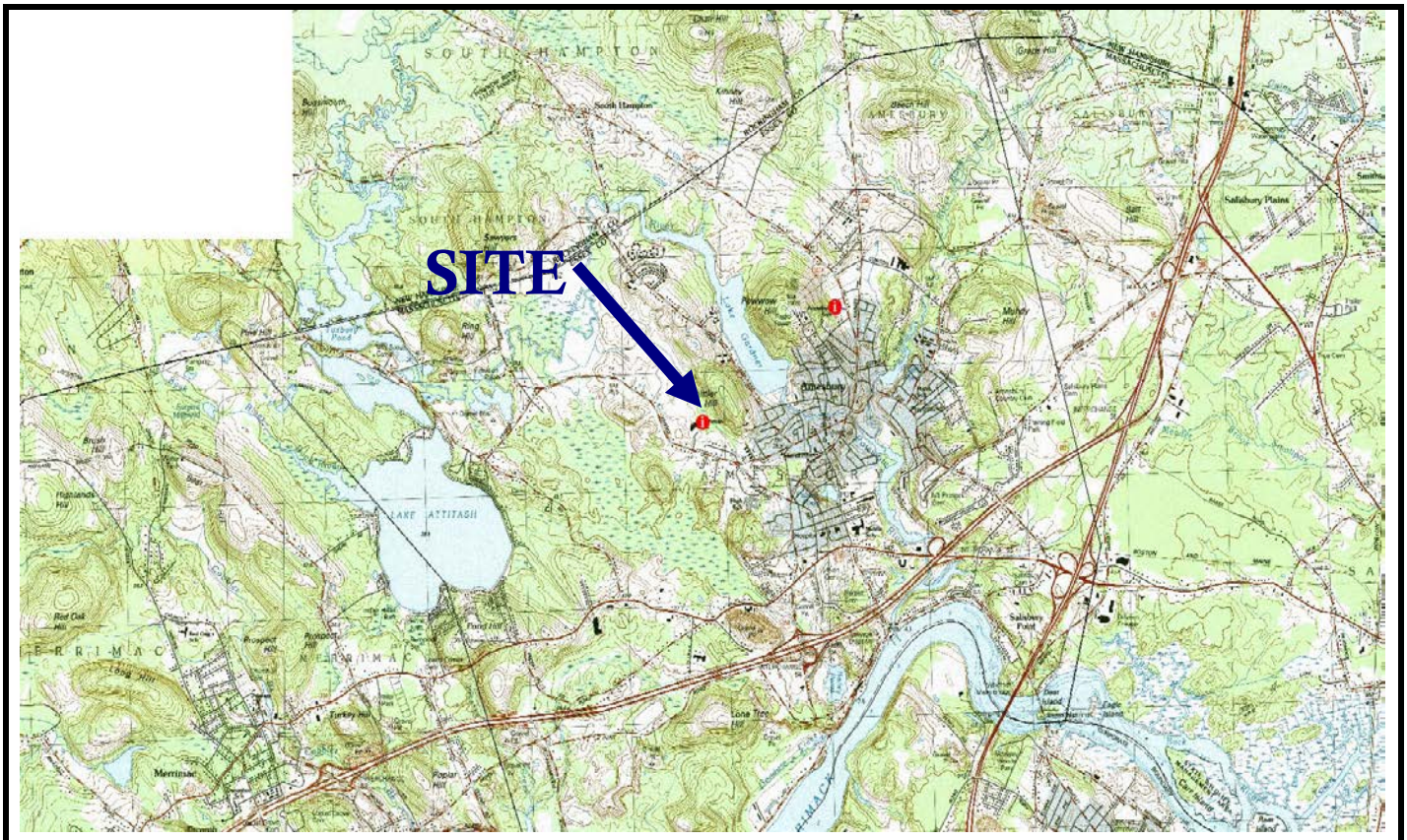
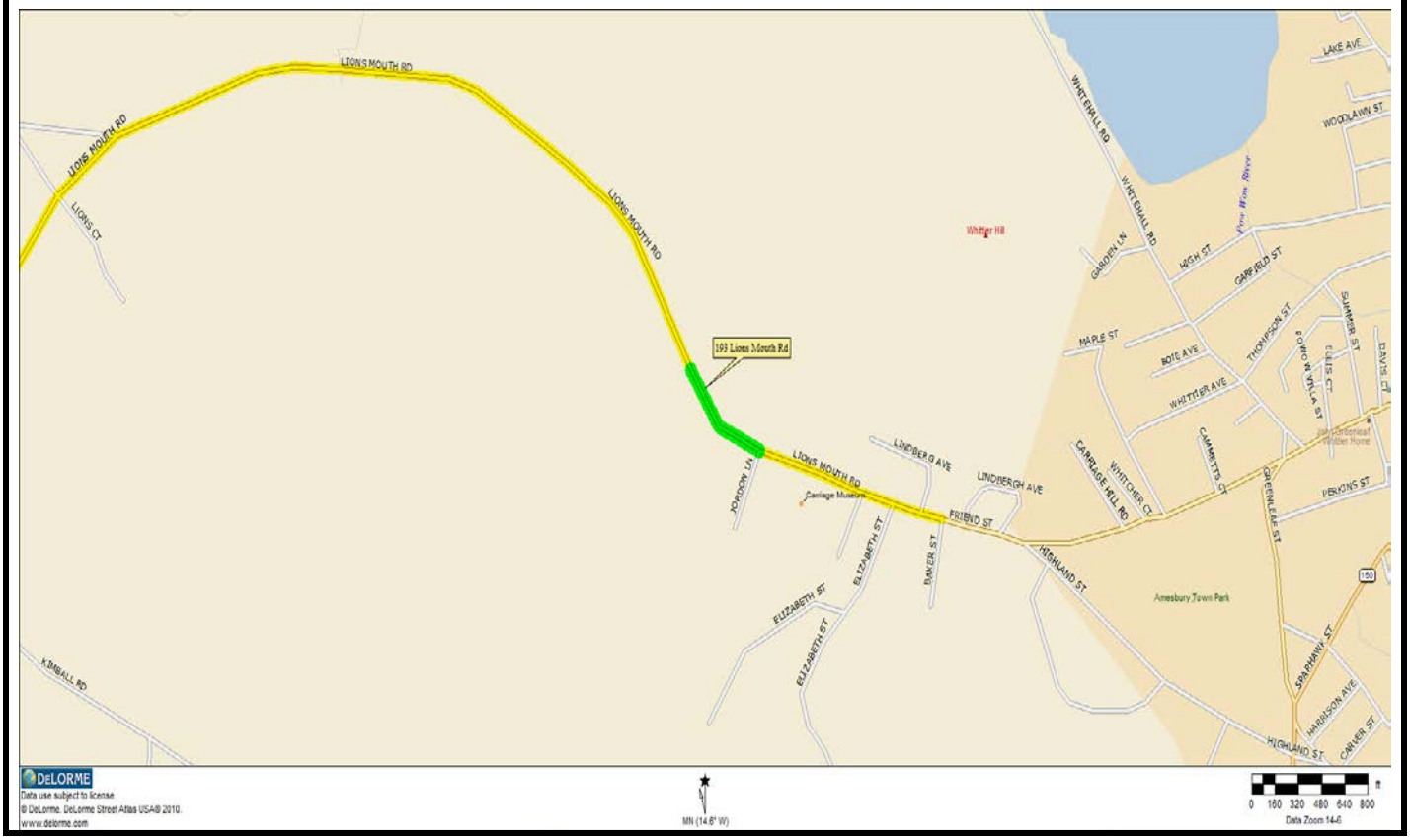
FIGURES





Cashman Elementary School **193 Lions Mouth Road** **Amesbury, Massachusetts** **01913**	**Environmental & Construction Management Services, Inc.**	**Project No.** 1009.073	**Figure 1**
		Site Locus / Street Location Plan	
		Drawn By: KJK	**Date:** 8/24/18

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CITY OF AMESBURY, MASS.

Assessor Maps

LEGEND

- Parcel Line
- Building Footprints
- Prior Parcel Line with Common Ownership
- 5 Condo Unit Number
- Right of Way
- Map Index
- Town Boundaries
- Easements
- Hydrographic Features
- Streams
- Wetlands

Exempt Lands

- Federal
- State
- Municipal
- Private

N

SCALE: 1" = 100'

100 0 100 200 300 400

NOTE:
THE AREAS, BOUNDARIES, AND DIMENSIONS SHOWN ON THIS TAX MAP ARE DERIVED FROM AERIAL PHOTOGRAPHS, GROUND SURVEYS, AND RECORDED PLANS, MAPS, DEEDS, AND WILLS, AND ARE INTENDED TO BE USED FOR PROPERTY ASSESSMENT PURPOSES ONLY AND NOT FOR CONVEYANCE.

MAP REVISION DATE		
As of January 1, 2018		

Data Sources: The data for this map was supplied by the Merrimack Valley Planning Commission, the Town of Amesbury and the Executive Office of Environmental Affairs/MassGIS.

Merrimack Valley Planning Commission
plan • develop • promote

J:\ArcGIS\Amesbury\AmesburyAssessorMap_24x36.mxd

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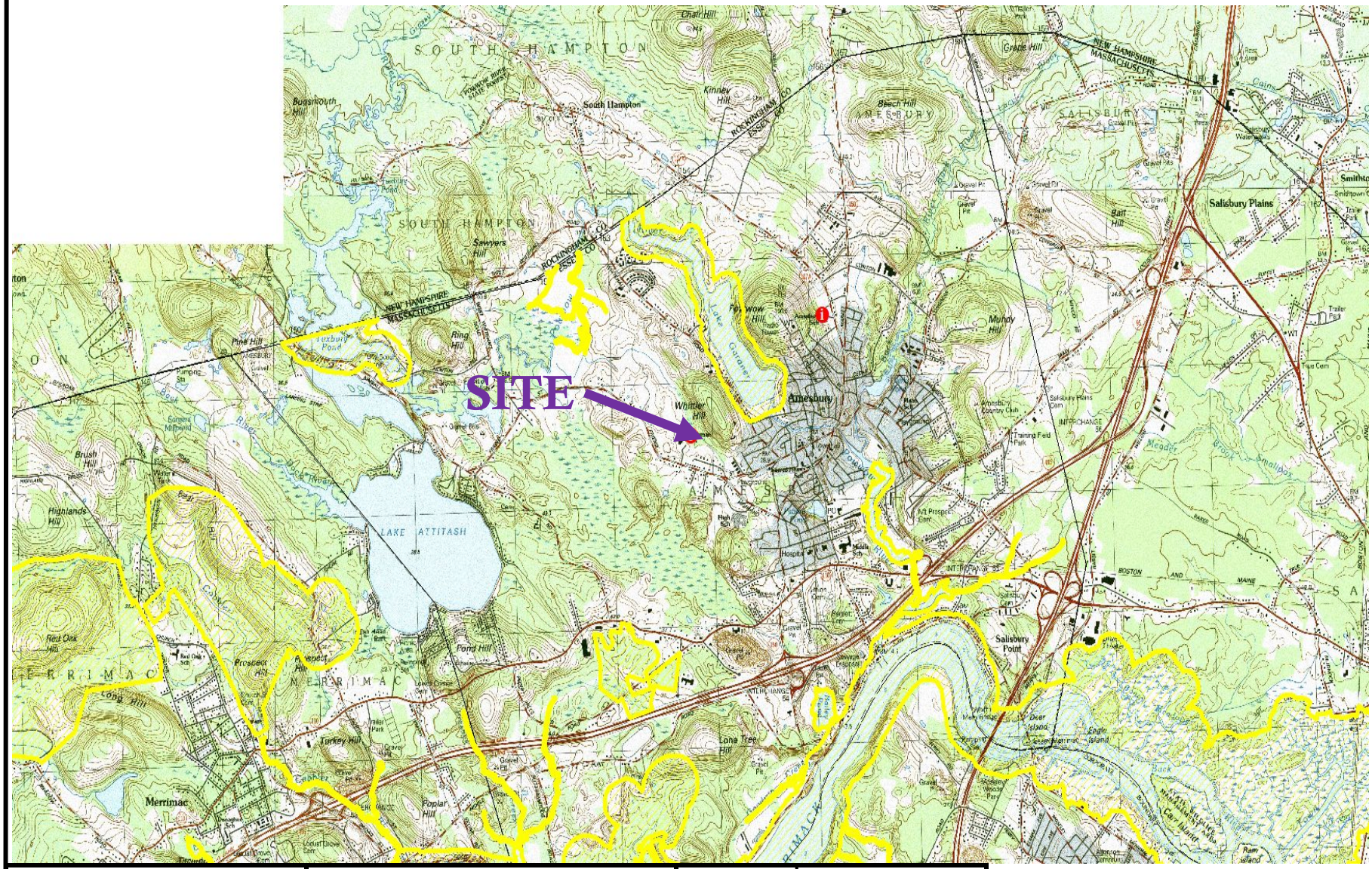
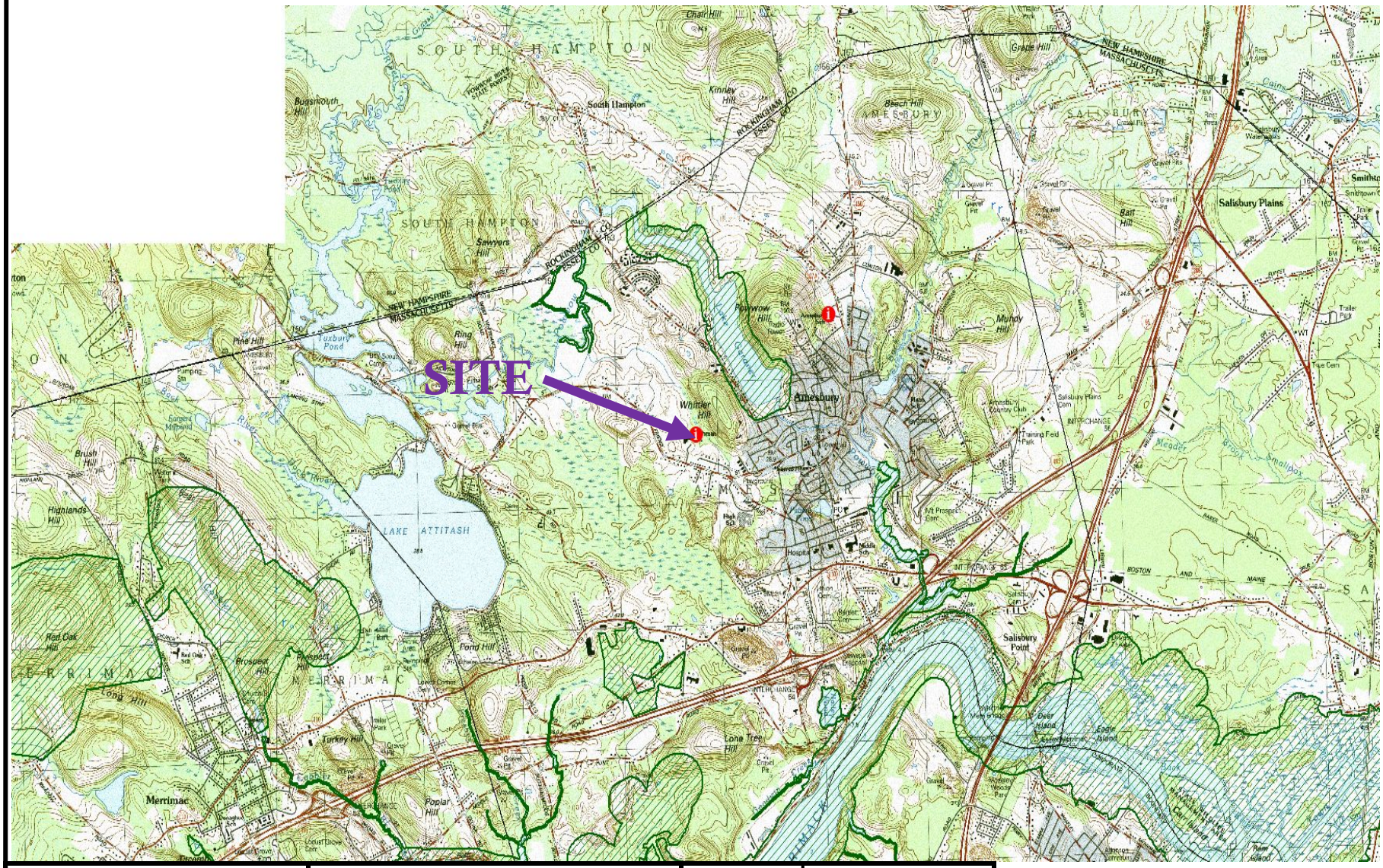
Map 50



Cashman Elementary School
193 Lions Mouth Road
Amesbury, Massachusetts
01913

Environmental & Construction Management Services, Inc.

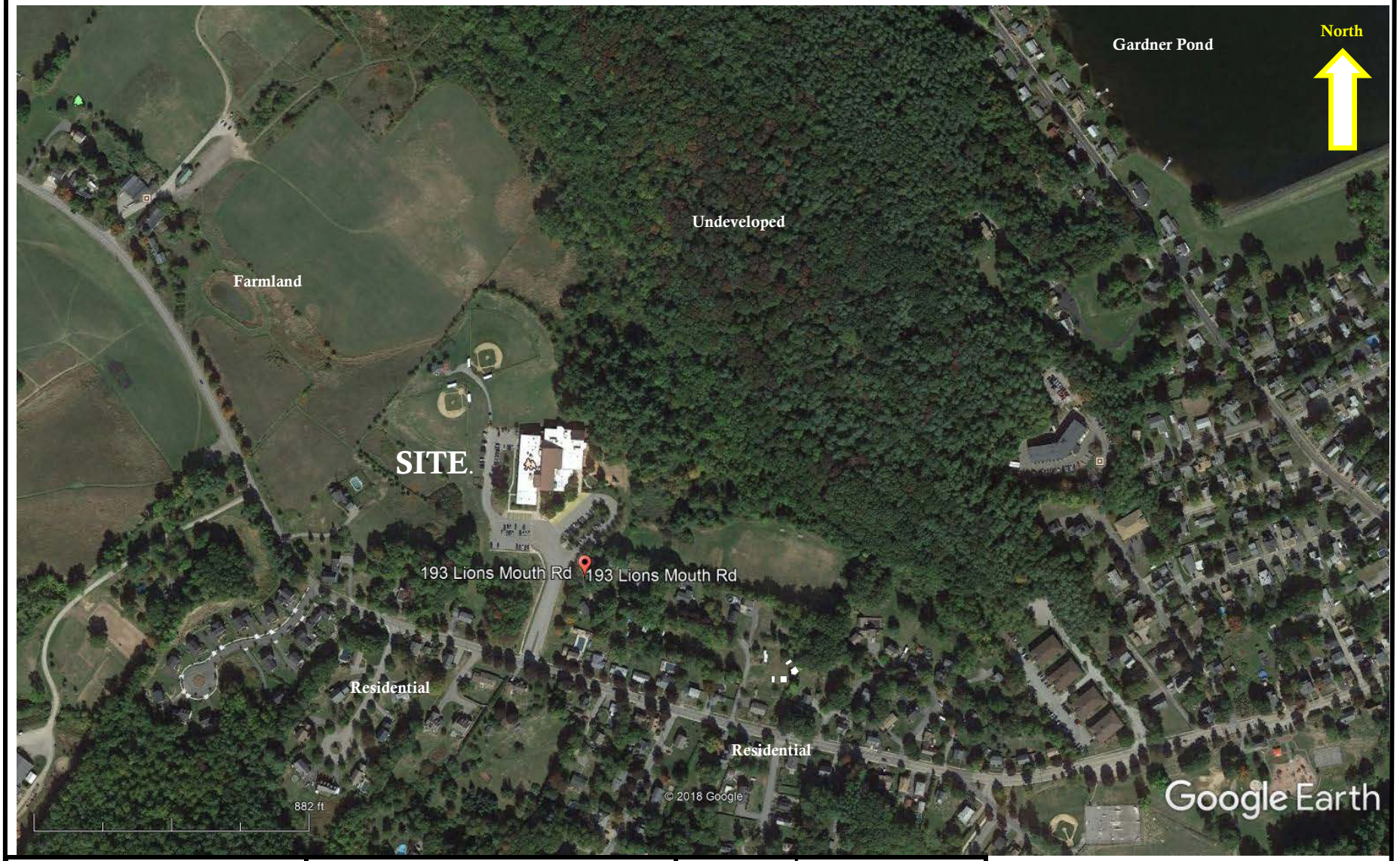
Project No. 1009.073	**Figure 3**
Priority Habitats of Rare Species Plan	
Drawn By: KJK	**Date:** 8/23/18



Cashman Elementary School
193 Lions Mouth Road
Amesbury, Massachusetts
01913

Environmental & Construction Management Services, Inc.

Project No. 1009.073	**Figure 4**
Map of Estimated Habitats of Rare Wildlife and Certified Vernal Pools	
Drawn By: KJK	**Date:** 8/23/18



Cashman Elementary School **193 Lions Mouth Road** **Amesbury, Massachusetts** **01913**	**Environmental & Construction Management Services, Inc.**	**Project No.** 1009.073	**Figure 5**
		Aerial Photograph Site Location Plan	
		Drawn By: KJK	**Date:** 8/24/2018

MassDEP - Bureau of Waste Site Cleanup

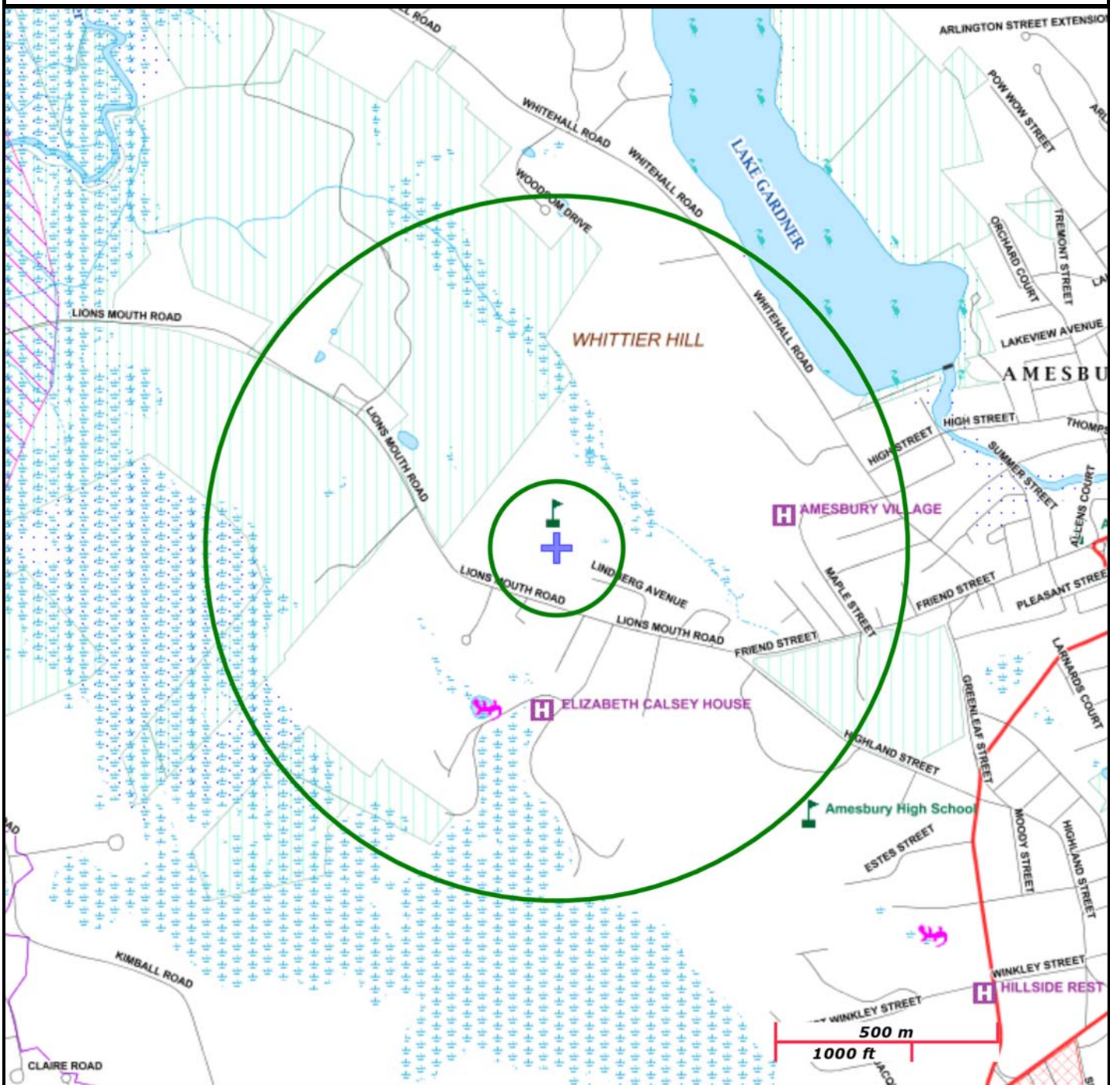
Phase 1 Site Assessment Map: 500 feet & 0.5 Mile Radii

Site Information:
CAHSMAN ELEMENTARY SCHOOL
193 LIONS MOUTH ROAD AMESBURY, MA

NAD83 UTM Meters:
4746679mN , 340744mE (Zone: 19)
September 13, 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/mgis/.

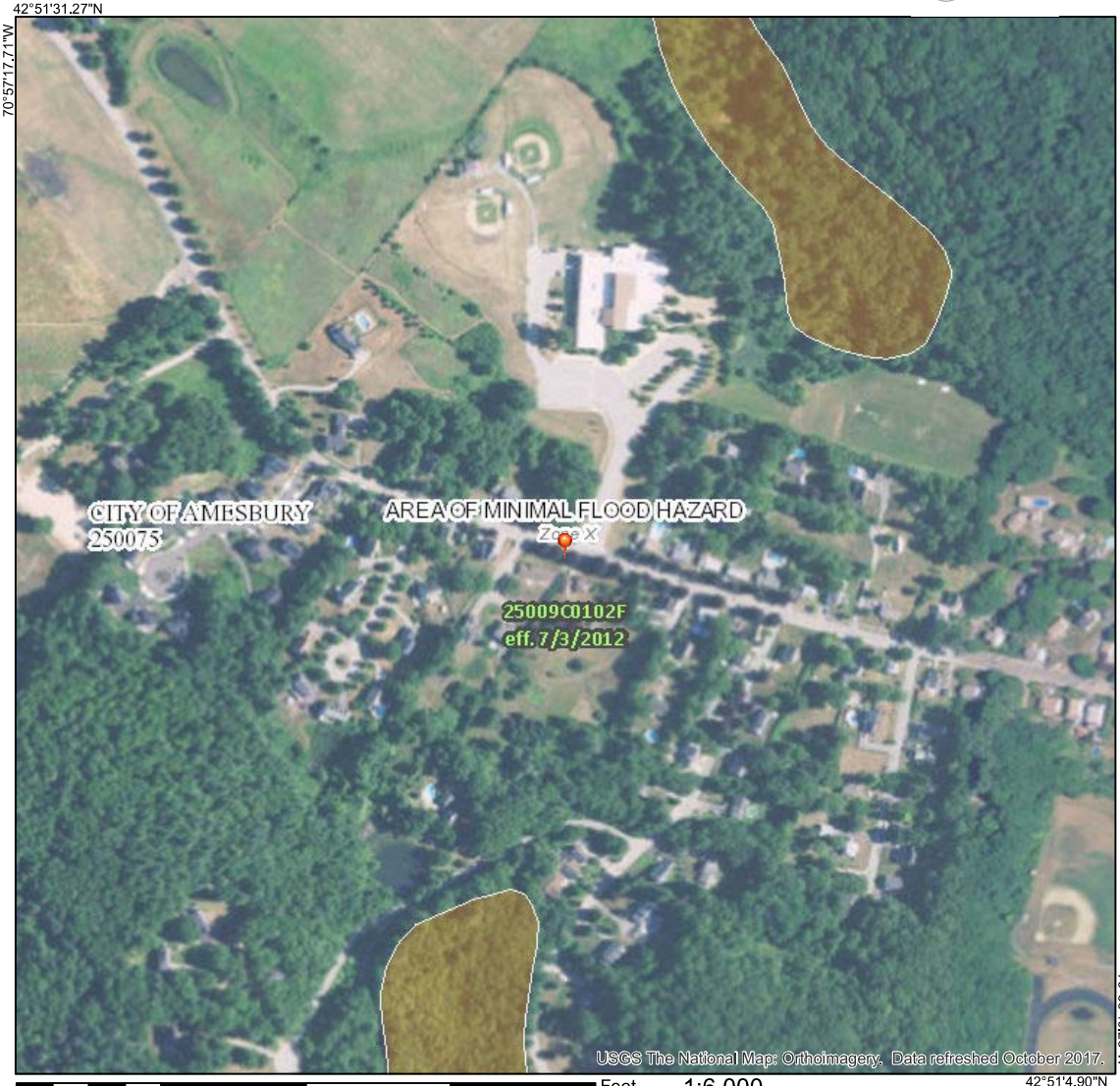
MassDEP
Commonwealth of Massachusetts
Department of Environmental Protection



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

National Flood Hazard Layer FIRMette

FEMA



0 250 500 1,000 1,500 2,000 Feet

1:6,000

Legend

FIGURE 7

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

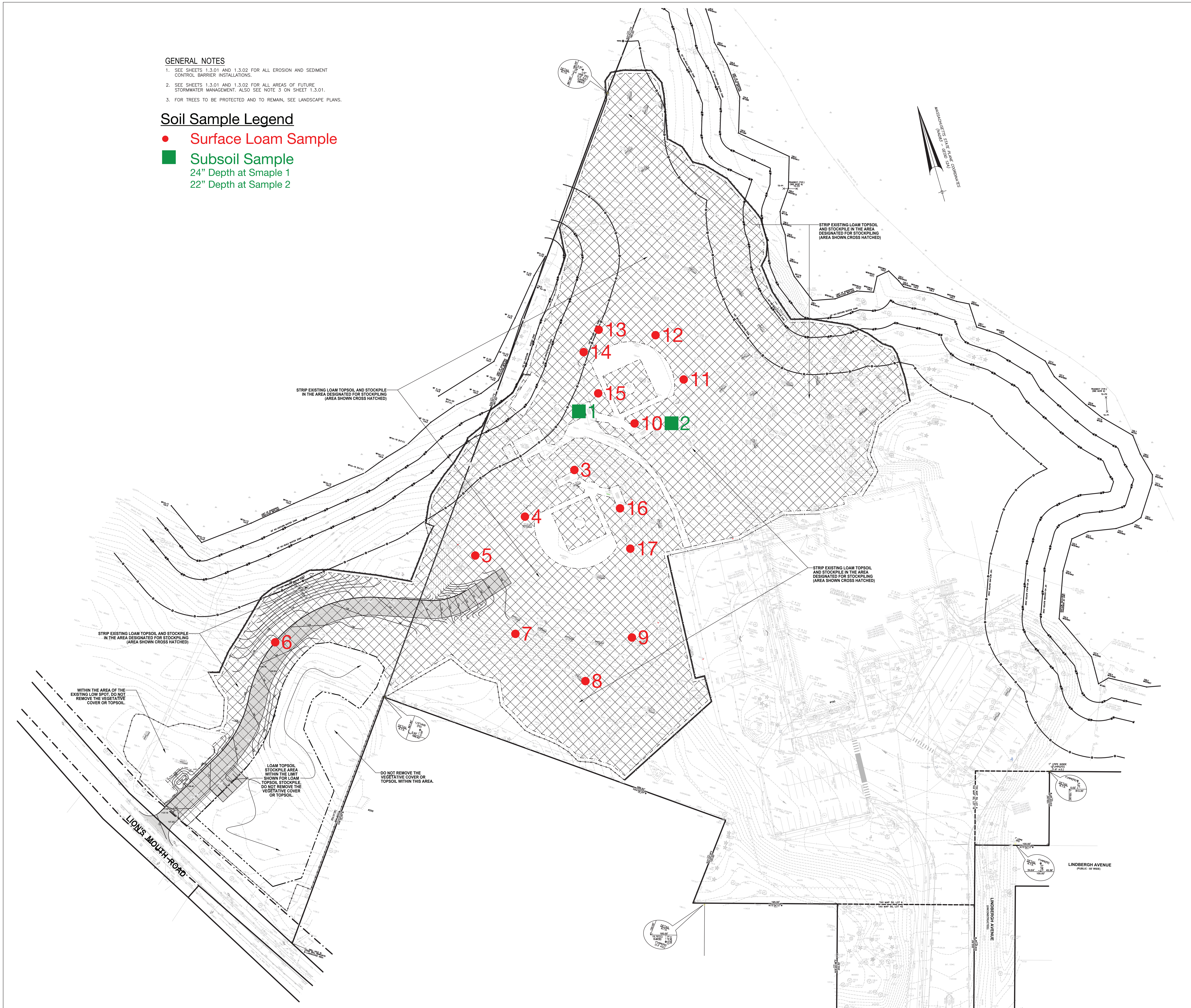
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/13/2018 at 3:39:51 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Cashman Elementary School **193 Lions Mouth Road** **Amesbury, Massachusetts** **01913**	**Environmental & Construction Management Services, Inc.**	**Project No.** 1009.073	**Figure 8**
		Site Plan	
		Drawn By: KJK	**Date:** 8/23/18



AMESBURY ELEMENTARY SCHOOL

EARLY SITE PREPARATION

AMESBURY, MA

DINISCO DESIGN architects + planners
99 Chauncy Street, Suite 901
Boston, MA 02111
(617) 426-2858

DGT Associates
Surveying & Engineers
1071 Worcester Road
Framingham, MA 01701
(508) 879-0030

Brown Sardina, Inc.
Landscape Architects
24 Roland Street
Boston, MA 02129
(617) 482-4703

Thompson Engineering Company, Inc.
Electrical Engineers
89 Newbury Street, Suite 103
Danvers, MA 01923
(617) 866-9066

Hancock Associates
Surveyor
185 Centre Street
Danvers, MA 09123
(978) 777-3050

ECMS Figure 9
Soil Sample Location Plan

KEY PLAN

NORTH ARROW

STAMP

Date: 6 JULY 2020

Drawn By: KMR

Scale: 0 40 80

Revisions

Number	Date	Description

90% EARLY SITE PACKAGE

Proposed Topsoil Removal Limit Plan

1.3.06

TABLES

TABLE 1

SUMMARY OF TOPSOIL/LOAM/SUBSOIL SAMPLES FOR pH, REACTIVITY, IGNITABILITY, MASSDEP 14 METALS, POLCHLORINATED BIPHENYLS (PCBs) & TOTAL PETROLEUM HYDROCARBONS (TPH)

Cashman School
Amesbury, Massachusetts
***ECMS* Project No. 1009.073**

Sample Location		SS-1	SS-2	SSS-3	SSS-4	SSS-5	SSS-6	SSS-7	SSS-8	SSS-9	MassDEP	MassDEP
Laboratory ID		SC58794-01	SC58794-02	SC58794-10	SC58794-11	SC58794-12	SC58794-13	SC58794-14	SC58794-15	SC58794-16	Reportable Concentrations	Imminent Hazard
Sample Date		7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020		
Sample Depth		24"	22"	2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	RCS-1	
SM2540 G (11) Mod. (%)												
solids	% Solids	89.3	88.8	82.7	88.9	85.8	92.6	83.4	86.1	78.7	NA	
SW846 9045D (pH Units)												
pH		5.99	6.08	6.13	5.58	5.57	5.74	5.71	5.56	5.41	NA	
SW846 Ch. 7.3 (mg/kg dry)												
Reactivity		Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative		
Reactive Cyanide		<6	<7	<7	<6	<6	<6	<7	<6	<7	30	
Reactive Sulfide		< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20		
SW846 1030 (N/A)												
NA	Ignitability by Definition	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative	NA	
MassDEP 14 Metals - SW846 6010C (mg/kg)												
7440-36-0	Antimony	<5.59	<5.58	<5.98	<5.41	<6.27	<5.63	<6.01	<6.24	<6.28	20	
7440-38-2	Arsenic	**39.9**	**55.9**	**36.6**	**20.5**	**53.4**	**29.6**	**48.6**	**48.7**	**82.3**	**20**	**40**
7440-41-7	Beryllium	<0.559	<0.558	<0.598	<0.541	<0.627	<0.563	<0.601	<0.624	<0.628	90	
7440-43-9	Cadmium	<0.559	<0.558	<0.598	<0.541	<0.627	<0.563	<0.601	<0.624	<0.628	70	
7440-47-3	Chromium	22.6	19.4	21.8	18.8	25.0	30.0	65.9	31.6	24.7	100	
7439-92-1	Lead	8.42	19.3	17.0	18.6	17.0	15.8	28.6	21.0	22.9	200	
7440-02-0	Nickel	39.7	71.4	33.2	20.3	46.2	25.6	44.8	47.7	76.0	600	
7782-49-2	Selenium	<1.68	<1.67	<1.80	<1.62	<1.88	<1.69	<1.80	<1.87	<1.88	400	
7440-22-4	Silver	<3.35	<3.35	<3.59	<3.25	<3.76	<3.38	<3.60	<3.75	<3.77	100	
7440-28-0	Thallium	<3.35	<3.35	<3.59	<3.25	<3.76	<3.38	<3.60	<3.75	<3.77	8	
7440-62-2	Vanadium	22.7	24.5	30.1	24.5	33.9	35.8	46.7	36.0	39.4	400	
7440-66-6	Zinc	36.3	58.5	107	36.0	52.1	43.2	56.2	52.3	64.7	1000	
7440-39-3	Barium	18.4	22.5	30.0	29.5	30.3	28.6	34.6	33.0	29.1	1000	
RCRA Metals - SW846 7471B (mg/kg)												
7439-97-6	Mercury	<0.115	<0.127	<0.110	<0.116	<0.103	<0.120	<0.128	<0.115	<0.120	20	
Polychlorinated biphenyls (PCBs) - SW846 8082A (µg/kg)												
12674-11-2	Aroclor-1016	<22.1	<22.3	<23.1	<21.5	<23.0	<21.4	<23.8	<23.0	<25.3	1000	
11104-28-2	Aroclor-1221	<22.1	<22.3	<23.1	<21.5	<23.0	<21.4	<23.8	<23.0	<25.3	1000	
11141-16-5	Aroclor-1232	<22.1	<22.3	<23.1	<21.5	<23.0	<21.4	<23.8	<23.0	<25.3	1000	
53469-21-9	Aroclor-1242	<22.1	<22.3	<23.1	<21.5	<23.0	<21.4	<23.8	<23.0	<25.3	1000	
12672-29-6	Aroclor-1248	<22.1	<22.3	<23.1	<21.5	<23.0	<21.4	<23.8	<23.0	<25.3	1000	
11097-69-1	Aroclor-1254	<22.1	<22.3	<23.1	<21.5	<23.0	<21.4	<23.8	<23.0	<25.3	1000	
11096-82-5	Aroclor-1260	<22.1	<22.3	<23.1	<21.5	<23.0	<21.4	<23.8	<23.0	<25.3	1000	
37324-23-5	Aroclor-1262	<22.1	<22.3	<23.1	<21.5	<23.0	<21.4	<23.8	<23.0	<25.3	-	
11100-14-4	Aroclor-1268	<22.1	<22.3	<23.1	<21.5	<23.0	<21.4	<23.8	<23.0	<25.3	-	
Total Petroleum Hydrocarbons (TPH) 8100 by GC (mg/kg)												
PH(TOT)	Total Petroleum Hydrocarbons	24.9	38.7	113	118	106	134	170	111	129	1000	

< indicates less than the respective method detection limit.
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
Bolfaced type indicates an exceedance.
Pursuant to MCP 310 CMR 40.0975(6)(a-c): MCP Method 1 Soil Standards, and Massachusetts Oil and Hazrdous Materials List (MOHML) revised (effective) 2014

Environmental & Construction Management Services, Inc.

TABLE 1

SUMMARY OF TOPSOIL/LOAM/SUBSOIL SAMPLES FOR pH, REACTIVITY, IGNITABILITY, MASSDEP 14 METALS, POLCHLORINATED BIPHENYLS (PCBs) & TOTAL PETROLEUM HYDROCARBONS (TPH)

Cashman School
Amesbury, Massachusetts
***ECMS* Project No. 1009.073**

Sample Location		SSS-10	SSS-11	SSS-12	SSS-13	SSS-14	SSS-15	SSS-16	SSS-17	MassDEP Reportable Concentrations	MassDEP Imminent Hazard
Laboratory ID		SC58794-03	SC58794-04	SC58794-05	SC58794-06	SC58794-07	SC58794-17	SC58794-08	SC58794-09		
Sample Date		7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020		
Sample Depth		2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	RCS-1	
SM2540 G (11) Mod. (%)											
solids	% Solids	80.1	80.6	83.3	79.0	86.9	79.8	90.3	89.6	NA	
SW846 9045D (pH Units)											
pH		6.17	5.47	5.71	6.35	6.03	5.69	6.08	6.11		
SW846 Ch. 7.3 (mg/kg dry)											
Reactivity		Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative		
Reactive Cyanide		<7	<9	<6	<7	<6	<7	<6	<6	30	
Reactive Sulfide		< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20		
SW846 1030 (N/A)											
NA	Ignitability by Definition	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative	NA	
MassDEP 14 Metals - SW846 6010C (mg/kg)											
7440-36-0	Antimony	<5.89	<6.24	<5.56	<6.11	<5.63	<6.33	<5.58	<5.33	20	
7440-38-2	Arsenic	**25.4**	**33.6**	**39.2**	**49.1**	**23.7**	**37.8**	**36.6**	**21.9**	**20**	**40**
7440-41-7	Beryllium	<0.589	<0.624	<0.556	<0.611	<0.563	<0.633	<0.558	<0.533	90	
7440-43-9	Cadmium	<0.589	<0.624	<0.556	<0.611	<0.563	<0.633	<0.558	<0.533	70	
7440-47-3	Chromium	22.9	23.2	17.4	23.3	36.0	31.5	21.7	19.4	100	
7439-92-1	Lead	13.7	18.9	19.6	22.7	13.7	25.9	17.5	12.1	200	
7440-02-0	Nickel	28.2	30.4	26.9	37.2	26.1	37.7	30.6	27.9	600	
7782-49-2	Selenium	<1.77	<1.87	<1.67	<1.83	<1.69	<1.90	<1.67	<1.60	400	
7440-22-4	Silver	<3.53	<3.74	<3.34	<3.67	<3.38	<3.80	<3.35	<3.20	100	
7440-28-0	Thallium	<3.53	<3.74	<3.34	<3.67	<3.38	<3.80	<3.35	<3.20	8	
7440-62-2	Vanadium	29.6	38.3	33.5	34.6	41.9	36.3	30.6	8.48	400	
7440-66-6	Zinc	60.8	43.2	37.9	49.2	44.6	60.7	44.3	61.8	1000	
7440-39-3	Barium	26.5	24.8	21.7	28.9	44.1	46.3	24.0	113	1000	
RCRA Metals - SW846 7471B (mg/kg)											
7439-97-6	Mercury	<0.117	<0.126	<0.129	<0.133	<0.118	<0.123	<0.119	<0.116	20	
Polychlorinated biphenyls (PCBs) - SW846 8082A (µg/kg)											
12674-11-2	Aroclor-1016	<24.3	<24.6	<23.4	<25.2	<22.5	<24.9	<21.8	<22.3	1000	
11104-28-2	Aroclor-1221	<24.3	<24.6	<23.4	<25.2	<22.5	<24.9	<21.8	<22.3	1000	
11141-16-5	Aroclor-1232	<24.3	<24.6	<23.4	<25.2	<22.5	<24.9	<21.8	<22.3	1000	
53469-21-9	Aroclor-1242	<24.3	<24.6	<23.4	<25.2	<22.5	<24.9	<21.8	<22.3	1000	
12672-29-6	Aroclor-1248	<24.3	<24.6	<23.4	<25.2	<22.5	<24.9	<21.8	<22.3	1000	
11097-69-1	Aroclor-1254	<24.3	<24.6	<23.4	<25.2	<22.5	<24.9	<21.8	<22.3	1000	
11096-82-5	Aroclor-1260	<24.3	<24.6	<23.4	<25.2	<22.5	<24.9	<21.8	<22.3	1000	
37324-23-5	Aroclor-1262	<24.3	<24.6	<23.4	<25.2	<22.5	<24.9	<21.8	<22.3	-	
11100-14-4	Aroclor-1268	<24.3	<24.6	<23.4	<25.2	<22.5	<24.9	<21.8	<22.3	-	
Total Petroleum Hydrocarbons (TPH) 8100 by GC (mg/kg)											
PH(TOT)	Total Petroleum Hydrocarbons	109	184	180	93.0	116	168	93.6	49.7	1000	

< indicates less than the respective method detection limit.
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
Bolfaced type indicates an exceedance.
Pursuant to MCP 310 CMR 40.0975(6)(a-c): MCP Method 1 Soil Standards, and Massachusetts Oil and Hazrdous Materials List (MOHML) revised (effective) 2014

Environmental & Construction Management Services, Inc.

TABLE 2

SUMMARY OF TOPSOIL/LOAM & SUBSOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS (VOCs)

Cashman School
Amesbury, Massachusetts
***ECMS* Project No. 1009.073**

Sample Location		SS-1	SS-2	SSS-3	SSS-4	SSS-5	SSS-6	SSS-7	SSS-8	SSS-9	MassDEP Reportable Concentrations
Laboratory ID		SC58794-01	SC58794-02	SC58794-10	SC58794-11	SC58794-12	SC58794-13	SC58794-14	SC58794-15	SC58794-16	
Sample Date		7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	
Sample Depth		24"	22"	2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	RCS-1
Volatile Organic Compounds (VOCs) - SW846 8260B (µg/kg)											
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	
67-64-1	Acetone	<532	<573	<711	<643	<662	<521	<594	<605	<760	6000
107-13-1	Acrylonitrile	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100000
71-43-2	Benzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	2000
108-86-1	Bromobenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100000
74-97-5	Bromochloromethane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	
75-27-4	Bromodichloromethane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100
75-25-2	Bromoform	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100
74-83-9	Bromomethane	<106	<115	<142	<129	<132	<104	<119	<121	<152	500
78-93-3	2-Butanone (MEK)	<106	<115	<142	<129	<132	<104	<119	<121	<152	4000
104-51-8	n-Butylbenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	
135-98-8	sec-Butylbenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	
98-06-6	tert-Butylbenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100000
75-15-0	Carbon disulfide	<106	<115	<142	<129	<132	<104	<119	<121	<152	100000
56-23-5	Carbon tetrachloride	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	5000
108-90-7	Chlorobenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	1000
75-00-3	Chloroethane	<106	<115	<142	<129	<132	<104	<119	<121	<152	100000
67-66-3	Chloroform	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	200
74-87-3	Chloromethane	<106	<115	<142	<129	<132	<104	<119	<121	<152	100000
95-49-8	2-Chlorotoluene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100000
106-43-4	4-Chlorotoluene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	
96-12-8	1,2-Dibromo-3-chloropropane	<106	<115	<142	<129	<132	<104	<119	<121	<152	10000
124-48-1	Dibromochloromethane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	5
106-93-4	1,2-Dibromoethane (EDB)	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100
74-95-3	Dibromomethane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	500000
95-50-1	1,2-Dichlorobenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	9000
541-73-1	1,3-Dichlorobenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	3000
106-46-7	1,4-Dichlorobenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	700
75-71-8	Dichlorodifluoromethane (Freon12)	<106	<115	<142	<129	<132	<104	<119	<121	<152	1000000
75-34-3	1,1-Dichloroethane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	400
107-06-2	1,2-Dichloroethane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100
75-35-4	1,1-Dichloroethene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	3000
156-59-2	cis-1,2-Dichloroethene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	300
156-60-5	trans-1,2-Dichloroethene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	1000
78-87-5	1,2-Dichloropropane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100
142-28-9	1,3-Dichloropropane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	500000
594-20-7	2,2-Dichloropropane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	
563-58-6	1,1-Dichloropropene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	
10061-01-5	cis-1,3-Dichloropropene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	10
10061-02-6	trans-1,3-Dichloropropene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	10
100-41-4	Ethylbenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	40000
87-68-3	Hexachlorobutadiene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	30000
591-78-6	2-Hexanone (MBK)	<106	<115	<142	<129	<132	<104	<119	<121	<152	100000
98-82-8	Isopropylbenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	1000000
99-87-6	4-Isopropyltoluene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100000
1634-04-4	Methyl tert-butyl ether	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100
108-10-1	4-Methyl-2-pentanone (MIBK)	<106	<115	<142	<129	<132	<104	<119	<121	<152	400
75-09-2	Methylene chloride	<106	<115	<142	<129	<132	<104	<119	<121	<152	100
91-20-3	Naphthalene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	4000
103-65-1	n-Propylbenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100000
100-42-5	Styrene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	3000
630-20-6	1,1,1,2-Tetrachloroethane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100
79-34-5	1,1,2,2-Tetrachloroethane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	5
127-18-4	Tetrachloroethene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	1000
108-88-3	Toluene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	30000
87-61-6	1,2,3-Trichlorobenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	
120-82-1	1,2,4-Trichlorobenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	2000
108-70-3	1,3,5-Trichlorobenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	30000
71-55-6	1,1,1-Trichloroethane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	
79-00-5	1,1,2-Trichloroethane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100
79-01-6	Trichloroethene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	300
75-69-4	Trichlorofluoromethane (Freon 11)	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	1000000
96-18-4	1,2,3-Trichloropropane	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100000
95-63-6	1,2,4-Trimethylbenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	1000000
108-67-8	1,3,5-Trimethylbenzene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	10000
75-01-4	Vinyl chloride	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	700
179601-23-1	m,p-Xylene	<106	<115	<142	<129	<132	<104	<119	<121	<152	300000
95-47-6	o-Xylene	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	500000
109-99-9	Tetrahydrofuran	<106	<115	<142	<129	<132	<104	<119	<121	<152	500000
60-29-7	Ethyl ether	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100000
994-05-8	Tert-amyl methyl ether	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	
637-92-3	Ethyl tert-butyl ether	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	
108-20-3	Di-isopropyl ether	<53.2	<57.3	<71.1	<64.3	<66.2	<52.1	<59.4	<60.5	<76.0	100000
75-65-0	Tert-Butanol / butyl alcohol	<1060	<1150	<1420	<1290	<1320	<1040	<1190	<1210	<1520	100000
123-91-1	1,4-Dioxane	<1060	<1150	<1420	<1290	<1320	<1040	<1190	<1210	<1520	10000
110-57-6	trans-1,4-Dichloro-2-butene	<266	<286	<356	<321	<331	<261	<297	<302	<380	200
64-17-5	Ethanol	<10600	<11500	<14200	<12900	<13200	<10400	<11900	<12100	<15200	100000

< indicates less than the respective method detection limit.
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
Bolfaced type indicates an exceedance.
Pursuant to MCP 310 CMR 40.0975(6)(a-c): MCP Method 1 Soil Standards, and Massachusetts Oil and Hazrdous Materials List (MOHML) revised (effective) February 14, 2008

Environmental & Construction Management Services, Inc.

TABLE 2

SUMMARY OF TOPSOIL/LOAM & SUBSOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS (VOCs)

Cashman School
Amesbury, Massachusetts
***ECMS* Project No. 1009.073**

Sample Location		SSS-10	SSS-11	SSS-12	SSS-13	SSS-14	SSS-15	SSS-16	SSS-17	MassDEP Reportable Concentrations
Laboratory ID		SC58794-03	SC58794-04	SC58794-05	SC58794-06	SC58794-07	SC58794-17	SC58794-08	SC58794-09	
Sample Date		7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	
Sample Depth		2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	RCS-1
Volatile Organic Compounds (VOCs) - SW846 8260B (µg/kg)										
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	
67-64-1	Acetone	<686	<693	<637	<695	<585	<695	<540	<529	6000
107-13-1	Acrylonitrile	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100000
71-43-2	Benzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	2000
108-86-1	Bromobenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100000
74-97-5	Bromochloromethane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	
75-27-4	Bromodichloromethane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100
75-25-2	Bromoform	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100
74-83-9	Bromomethane	<137	<139	<127	<139	<117	<139	<108	<106	500
78-93-3	2-Butanone (MEK)	<137	<139	<127	<139	<117	<139	<108	<106	4000
104-51-8	n-Butylbenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	
135-98-8	sec-Butylbenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	
98-06-6	tert-Butylbenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100000
75-15-0	Carbon disulfide	<137	<139	<127	<139	<117	<139	<108	<106	100000
56-23-5	Carbon tetrachloride	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	5000
108-90-7	Chlorobenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	1000
75-00-3	Chloroethane	<137	<139	<127	<139	<117	<139	<108	<106	100000
67-66-3	Chloroform	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	200
74-87-3	Chloromethane	<137	<139	<127	<139	<117	<139	<108	<106	100000
95-49-8	2-Chlorotoluene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100000
106-43-4	4-Chlorotoluene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	
96-12-8	1,2-Dibromo-3-chloropropane	<137	<139	<127	<139	<117	<139	<108	<106	10000
124-48-1	Dibromochloromethane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	5
106-93-4	1,2-Dibromoethane (EDB)	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100
74-95-3	Dibromomethane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	500000
95-50-1	1,2-Dichlorobenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	9000
541-73-1	1,3-Dichlorobenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	3000
106-46-7	1,4-Dichlorobenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	700
75-71-8	Dichlorodifluoromethane (Freon12)	<137	<139	<127	<139	<117	<139	<108	<106	1000000
75-34-3	1,1-Dichloroethane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	400
107-06-2	1,2-Dichloroethane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100
75-35-4	1,1-Dichloroethene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	3000
156-59-2	cis-1,2-Dichloroethene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	300
156-60-5	trans-1,2-Dichloroethene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	1000
78-87-5	1,2-Dichloropropane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100
142-28-9	1,3-Dichloropropane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	500000
594-20-7	2,2-Dichloropropane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	
563-58-6	1,1-Dichloropropene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	
10061-01-5	cis-1,3-Dichloropropene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	10
10061-02-6	trans-1,3-Dichloropropene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	10
100-41-4	Ethylbenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	40000
87-68-3	Hexachlorobutadiene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	30000
591-78-6	2-Hexanone (MBK)	<137	<139	<127	<139	<117	<139	<108	<106	100000
98-82-8	Isopropylbenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	1000000
99-87-6	4-Isopropyltoluene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100000
1634-04-4	Methyl tert-butyl ether	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100
108-10-1	4-Methyl-2-pentanone (MIBK)	<137	<139	<127	<139	<117	<139	<108	<106	400
75-09-2	Methylene chloride	<137	<139	<127	<139	<117	<139	<108	<106	100
91-20-3	Naphthalene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	4000
103-65-1	n-Propylbenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100000
100-42-5	Styrene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	3000
630-20-6	1,1,1,2-Tetrachloroethane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100
79-34-5	1,1,2,2-Tetrachloroethane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	5
127-18-4	Tetrachloroethene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	1000
108-88-3	Toluene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	30000
87-61-6	1,2,3-Trichlorobenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	
120-82-1	1,2,4-Trichlorobenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	2000
108-70-3	1,3,5-Trichlorobenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	30000
71-55-6	1,1,1-Trichloroethane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	
79-00-5	1,1,2-Trichloroethane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100
79-01-6	Trichloroethene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	300
75-69-4	Trichlorofluoromethane (Freon 11)	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	1000000
96-18-4	1,2,3-Trichloropropane	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100000
95-63-6	1,2,4-Trimethylbenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	1000000
108-67-8	1,3,5-Trimethylbenzene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	10000
75-01-4	Vinyl chloride	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	700
179601-23-1	m,p-Xylene	<137	<139	<127	<139	<117	<139	<108	<106	300000
95-47-6	o-Xylene	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	500000
109-99-9	Tetrahydrofuran	<137	<139	<127	<139	<117	<139	<108	<106	500000
60-29-7	Ethyl ether	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100000
994-05-8	Tert-amyl methyl ether	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	
637-92-3	Ethyl tert-butyl ether	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	
108-20-3	Di-isopropyl ether	<68.6	<69.3	<63.7	<69.5	<58.5	<69.5	<54.0	<52.9	100000
75-65-0	Tert-Butanol / butyl alcohol	<1370	<1390	<1270	<1390	<1170	<1390	<1080	<1060	100000
123-91-1	1,4-Dioxane	<1370	<1390	<1270	<1390	<1170	<1390	<1080	<1060	10000
110-57-6	trans-1,4-Dichloro-2-butene	<343	<347	<318	<348	<292	<347	<270	<264	200
64-17-5	Ethanol	<13700	<13900	<12700	<13900	<11700	<13900	<10800	<10600	100000

< indicates less than the respective method detection limit.
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
Bolfaced type indicates an exceedance.
Pursuant to MCP 310 CMR 40.0975(6)(a-c): MCP Method 1 Soil Standards, and Massachusetts Oil and Hazrdous Materials List (MOHML) revised (effective) February 14, 2008

Environmental & Construction Management Services, Inc.

TABLE 3

SUMMARY OF TOPSOIL/LOAM & SUBSOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

Cashman School
Amesbury, Massachusetts
***ECMS* Project No. 1009.073**

Sample Location		SS-1	SS-2	SSS-3	SSS-4	SSS-5	SSS-6	SSS-7	SSS-8	SSS-9	MassDEP Reportable Concentrations
Laboratory ID		SC58794-01	SC58794-02	SC58794-10	SC58794-11	SC58794-12	SC58794-13	SC58794-14	SC58794-15	SC58794-16	
Sample Date		7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	
Sample Depth		24"	22"	2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	RCS-1
Semi-Volatile Organic Compounds (SVOCs) - SW846 8270D (µg/kg)											
83-32-9	Acenaphthene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	4000
208-96-8	Acenaphthylene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	1000
62-53-3	Aniline	<368	<369	<396	<367	<379	<352	<394	<379	<415	100000
120-12-7	Anthracene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	1000000
103-33-3	Azobenzene/Diphenyldiazene	<368	<369	<396	<367	<379	<352	<394	<379	<415	50000
92-87-5	Benzidine	<736	<738	<792	<735	<759	<704	<787	<757	<829	10000
56-55-3	Benzo (a) anthracene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	7000
50-32-8	Benzo (a) pyrene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	2000
205-99-2	Benzo (b) fluoranthene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	7000
191-24-2	Benzo (g,h,i) perylene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	1000000
207-08-9	Benzo (k) fluoranthene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	1000000
65-85-0	Benzoic acid	<368	<369	<396	<367	<379	<352	<394	<379	<415	1000000
100-51-6	Benzyl alcohol	<368	<369	<396	<367	<379	<352	<394	<379	<415	-
111-91-1	Bis(2-chloroethoxy)methane	<368	<369	<396	<367	<379	<352	<394	<379	<415	500000
111-44-4	Bis(2-chloroethyl)ether	<186	<187	<201	<186	<192	<178	<199	<192	<210	700
108-60-1	Bis(2-chloroisopropyl)ether	<186	<187	<201	<186	<192	<178	<199	<192	<210	700
117-81-7	Bis(2-ethylhexyl)phthalate	<186	<187	<201	<186	<192	<178	<199	<192	<210	200000
101-55-3	4-Bromophenyl phenyl ether	<368	<369	<396	<367	<379	<352	<394	<379	<415	100000
85-68-7	Butyl benzyl phthalate	<368	<369	<396	<367	<379	<352	<394	<379	<415	100000
86-74-8	Carbazole	<186	<187	<201	<186	<192	<178	<199	<192	<210	-
59-50-7	4-Chloro-3-methylphenol	<368	<369	<396	<367	<379	<352	<394	<379	<415	1000000
106-47-8	4-Chloroaniline	<186	<187	<201	<186	<192	<178	<199	<192	<210	1000
91-58-7	2-Chloronaphthalene	<368	<369	<396	<367	<379	<352	<394	<379	<415	1000000
95-57-8	2-Chlorophenol	<186	<187	<201	<186	<192	<178	<199	<192	<210	700
7005-72-3	4-Chlorophenyl phenyl ether	<368	<369	<396	<367	<379	<352	<394	<379	<415	1000000
218-01-9	Chrysene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	70000
53-70-3	Dibenzo (a,h) anthracene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	700
132-64-9	Dibenzofuran	<186	<187	<201	<186	<192	<178	<199	<192	<210	100000
95-50-1	1,2-Dichlorobenzene	<368	<369	<396	<367	<379	<352	<394	<379	<415	9000
541-73-1	1,3-Dichlorobenzene	<368	<369	<396	<367	<379	<352	<394	<379	<415	1000
106-46-7	1,4-Dichlorobenzene	<368	<369	<396	<367	<379	<352	<394	<379	<415	700
91-94-1	3,3´-Dichlorobenzidine	<368	<369	<396	<367	<379	<352	<394	<379	<415	1000
120-83-2	2,4-Dichlorophenol	<186	<187	<201	<186	<192	<178	<199	<192	<210	700
84-66-2	Diethyl phthalate	<368	<369	<396	<367	<379	<352	<394	<379	<415	10000
131-11-3	Dimethyl phthalate	<368	<369	<396	<367	<379	<352	<394	<379	<415	30000
105-67-9	2,4-Dimethylphenol	<368	<369	<396	<367	<379	<352	<394	<379	<415	700
84-74-2	Di-n-butyl phthalate	<368	<369	<396	<367	<379	<352	<394	<379	<415	50000
534-52-1	4,6-Dinitro-2-methylphenol	<368	<369	<396	<367	<379	<352	<394	<379	<415	50000
51-28-5	2,4-Dinitrophenol	<368	<369	<396	<367	<379	<352	<394	<379	<415	3000
121-14-2	2,4-Dinitrotoluene	<186	<187	<201	<186	<192	<178	<199	<192	<210	700
606-20-2	2,6-Dinitrotoluene	<186	<187	<201	<186	<192	<178	<199	<192	<210	100000
117-84-0	Di-n-octyl phthalate	<368	<369	<396	<367	<379	<352	<394	<379	<415	1000000
206-44-0	Fluoranthene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	1000000
86-73-7	Fluorene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	1000000
118-74-1	Hexachlorobenzene	<186	<187	<201	<186	<192	<178	<199	<192	<210	700
87-68-3	Hexachlorobutadiene	<186	<187	<201	<186	<192	<178	<199	<192	<210	6000
77-47-4	Hexachlorocyclopentadiene	<186	<187	<201	<186	<192	<178	<199	<192	<210	50000
67-72-1	Hexachloroethane	<186	<187	<201	<186	<192	<178	<199	<192	<210	700
193-39-5	Indeno (1,2,3-cd) pyrene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	7000
78-59-1	Isophorone	<186	<187	<201	<186	<192	<178	<199	<192	<210	100000
91-57-6	2-Methylnaphthalene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	700
95-48-7	2-Methylphenol	<368	<369	<396	<367	<379	<352	<394	<379	<415	500000
108-39-4, 106-44-5	3 & 4-Methylphenol	<368	<369	<396	<367	<379	<352	<394	<379	<415	500000
91-20-3	Naphthalene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	4000
88-74-4	2-Nitroaniline	<368	<369	<396	<367	<379	<352	<394	<379	<415	-
99-09-2	3-Nitroaniline	<368	<369	<396	<367	<379	<352	<394	<379	<415	-
100-01-6	4-Nitroaniline	<186	<187	<201	<186	<192	<178	<199	<192	<210	1000000
98-95-3	Nitrobenzene	<186	<187	<201	<186	<192	<178	<199	<192	<210	500000
88-75-5	2-Nitrophenol	<186	<187	<201	<186	<192	<178	<199	<192	<210	100000
100-02-7	4-Nitrophenol	<1470	<1480	<1580	<1470	<1520	<1410	<1570	<1510	<1660	100000
62-75-9	N-Nitrosodimethylamine	<186	<187	<201	<186	<192	<178	<199	<192	<210	50000
621-64-7	N-Nitrosodi-n-propylamine	<186	<187	<201	<186	<192	<178	<199	<192	<210	50000
86-30-6	N-Nitrosodiphenylamine	<368	<369	<396	<367	<379	<352	<394	<379	<415	100000
87-86-5	Pentachlorophenol	<368	<369	<396	<367	<379	<352	<394	<379	<415	3000
85-01-8	Phenanthrene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	10000
108-95-2	Phenol	<368	<369	<396	<367	<379	<352	<394	<379	<415	1000
129-00-0	Pyrene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	1000000
110-86-1	Pyridine	<368	<369	<396	<367	<379	<352	<394	<379	<415	500000
120-82-1	1,2,4-Trichlorobenzene	<368	<369	<396	<367	<379	<352	<394	<379	<415	2000
90-12-0	1-Methylnaphthalene	<74.4	<74.6	<80.1	<74.3	<76.7	<71.1	<79.6	<76.5	<83.8	-
95-95-4	2,4,5-Trichlorophenol	<368	<369	<396	<367	<379	<352	<394	<379	<415	3000
88-06-2	2,4,6-Trichlorophenol	<186	<187	<201	<186	<192	<178	<199	<192	<210	700
82-68-8	Pentachloronitrobenzene	<368	<369	<396	<367	<379	<352	<394	<379	<415	100000
95-94-3	1,2,4,5-Tetrachlorobenzene	<368	<369	<396	<367	<379	<352	<394	<379	<415	1000000

< indicates less than the respective method detection limit.
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
Boldfaced type indicates an exceedance.
Pursuant to MCP 310 CMR 40.0975(6)(a-c): MCP Method 1 Soil Standards, and Massachusetts Oil and Hazardous Materials List (MOHML) revised (effective) 2014

Environmental & Construction Management Services, Inc.

TABLE 3

SUMMARY OF TOPSOIL/LOAM & SUBSOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

Cashman School
Amesbury, Massachusetts
***ECMS* Project No. 1009.073**

Sample Location		SSS-10	SSS-11	SSS-12	SSS-13	SSS-14	SSS-15	SSS-16	SSS-17	MassDEP Reportable Concentrations
Laboratory ID		SC58794-03	SC58794-04	SC58794-05	SC58794-06	SC58794-07	SC58794-17	SC58794-08	SC58794-09	
Sample Date		7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	
Sample Depth		2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	RCS-1
Semi-Volatile Organic Compounds (SVOCs) - SW846 8270D (µg/kg)										
83-32-9	Acenaphthene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	4000
208-96-8	Acenaphthylene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	1000
62-53-3	Aniline	<407	<405	<385	<414	<375	<407	<361	<356	100000
120-12-7	Anthracene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	1000000
103-33-3	Azobenzene/Diphenyldiazene	<407	<405	<385	<414	<375	<407	<361	<356	50000
92-87-5	Benzidine	<815	<809	<771	<828	<750	<814	<722	<713	10000
56-55-3	Benzo (a) anthracene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	7000
50-32-8	Benzo (a) pyrene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	2000
205-99-2	Benzo (b) fluoranthene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	7000
191-24-2	Benzo (g,h,i) perylene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	1000000
207-08-9	Benzo (k) fluoranthene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	1000000
65-85-0	Benzoic acid	<407	<405	<385	<414	<375	<407	<361	<356	1000000
100-51-6	Benzyl alcohol	<407	<405	<385	<414	<375	<407	<361	<356	-
111-91-1	Bis(2-chloroethoxy)methane	<407	<405	<385	<414	<375	<407	<361	<356	500000
111-44-4	Bis(2-chloroethyl)ether	<206	<205	<195	<210	<190	<206	<183	<180	700
108-60-1	Bis(2-chloroisopropyl)ether	<206	<205	<195	<210	<190	<206	<183	<180	700
117-81-7	Bis(2-ethylhexyl)phthalate	305	<205	<195	<210	<190	<206	<183	<180	200000
101-55-3	4-Bromophenyl phenyl ether	<407	<405	<385	<414	<375	<407	<361	<356	100000
85-68-7	Butyl benzyl phthalate	<407	<405	<385	<414	<375	<407	<361	<356	100000
86-74-8	Carbazole	<206	<205	<195	<210	<190	<206	<183	<180	-
59-50-7	4-Chloro-3-methylphenol	<407	<405	<385	<414	<375	<407	<361	<356	1000000
106-47-8	4-Chloroaniline	<206	<205	<195	<210	<190	<206	<183	<180	1000
91-58-7	2-Chloronaphthalene	<407	<405	<385	<414	<375	<407	<361	<356	1000000
95-57-8	2-Chlorophenol	<206	<205	<195	<210	<190	<206	<183	<180	700
7005-72-3	4-Chlorophenyl phenyl ether	<407	<405	<385	<414	<375	<407	<361	<356	1000000
218-01-9	Chrysene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	70000
53-70-3	Dibenzo (a,h) anthracene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	700
132-64-9	Dibenzofuran	<206	<205	<195	<210	<190	<206	<183	<180	100000
95-50-1	1,2-Dichlorobenzene	<407	<405	<385	<414	<375	<407	<361	<356	9000
541-73-1	1,3-Dichlorobenzene	<407	<405	<385	<414	<375	<407	<361	<356	1000
106-46-7	1,4-Dichlorobenzene	<407	<405	<385	<414	<375	<407	<361	<356	700
91-94-1	3,3´-Dichlorobenzidine	<407	<405	<385	<414	<375	<407	<361	<356	1000
120-83-2	2,4-Dichlorophenol	<206	<205	<195	<210	<190	<206	<183	<180	700
84-66-2	Diethyl phthalate	<407	<405	<385	<414	<375	<407	<361	<356	10000
131-11-3	Dimethyl phthalate	<407	<405	<385	<414	<375	<407	<361	<356	30000
105-67-9	2,4-Dimethylphenol	<407	<405	<385	<414	<375	<407	<361	<356	700
84-74-2	Di-n-butyl phthalate	<407	<405	<385	<414	<375	<407	<361	<356	50000
534-52-1	4,6-Dinitro-2-methylphenol	<407	<405	<385	<414	<375	<407	<361	<356	50000
51-28-5	2,4-Dinitrophenol	<407	<405	<385	<414	<375	<407	<361	<356	3000
121-14-2	2,4-Dinitrotoluene	<206	<205	<195	<210	<190	<206	<183	<180	700
606-20-2	2,6-Dinitrotoluene	<206	<205	<195	<210	<190	<206	<183	<180	100000
117-84-0	Di-n-octyl phthalate	<407	<405	<385	<414	<375	<407	<361	<356	1000000
206-44-0	Fluoranthene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	1000000
86-73-7	Fluorene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	1000000
118-74-1	Hexachlorobenzene	<206	<205	<195	<210	<190	<206	<183	<180	700
87-68-3	Hexachlorobutadiene	<206	<205	<195	<210	<190	<206	<183	<180	6000
77-47-4	Hexachlorocyclopentadiene	<206	<205	<195	<210	<190	<206	<183	<180	50000
67-72-1	Hexachloroethane	<206	<205	<195	<210	<190	<206	<183	<180	700
193-39-5	Indeno (1,2,3-cd) pyrene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	7000
78-59-1	Isophorone	<206	<205	<195	<210	<190	<206	<183	<180	100000
91-57-6	2-Methylnaphthalene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	700
95-48-7	2-Methylphenol	<407	<405	<385	<414	<375	<407	<361	<356	500000
108-39-4, 106-44-5	3 & 4-Methylphenol	<407	<405	<385	<414	<375	<407	<361	<356	500000
91-20-3	Naphthalene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	4000
88-74-4	2-Nitroaniline	<407	<405	<385	<414	<375	<407	<361	<356	-
99-09-2	3-Nitroaniline	<407	<405	<385	<414	<375	<407	<361	<356	-
100-01-6	4-Nitroaniline	<206	<205	<195	<210	<190	<206	<183	<180	1000000
98-95-3	Nitrobenzene	<206	<205	<195	<210	<190	<206	<183	<180	500000
88-75-5	2-Nitrophenol	<206	<205	<195	<210	<190	<206	<183	<180	100000
100-02-7	4-Nitrophenol	<1630	<1620	<1540	<1660	<1500	<1630	<1440	<1430	100000
62-75-9	N-Nitrosodimethylamine	<206	<205	<195	<210	<190	<206	<183	<180	50000
621-64-7	N-Nitrosodi-n-propylamine	<206	<205	<195	<210	<190	<206	<183	<180	50000
86-30-6	N-Nitrosodiphenylamine	<407	<405	<385	<414	<375	<407	<361	<356	100000
87-86-5	Pentachlorophenol	<407	<405	<385	<414	<375	<407	<361	<356	3000
85-01-8	Phenanthrene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	10000
108-95-2	Phenol	<407	<405	<385	<414	<375	<407	<361	<356	1000
129-00-0	Pyrene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	1000000
110-86-1	Pyridine	<407	<405	<385	<414	<375	<407	<361	<356	500000
120-82-1	1,2,4-Trichlorobenzene	<407	<405	<385	<414	<375	<407	<361	<356	2000
90-12-0	1-Methylnaphthalene	<82.3	<81.8	<77.9	<83.7	<75.8	<82.3	<73.0	<72.0	-
95-95-4	2,4,5-Trichlorophenol	<407	<405	<385	<414	<375	<407	<361	<356	3000
88-06-2	2,4,6-Trichlorophenol	<206	<205	<195	<210	<190	<206	<183	<180	700
82-68-8	Pentachloronitrobenzene	<407	<405	<385	<414	<375	<407	<361	<356	100000
95-94-3	1,2,4,5-Tetrachlorobenzene	<407	<405	<385	<414	<375	<407	<361	<356	1000000

< indicates less than the respective method detection limit.
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
Boldfaced type indicates an exceedance.
Pursuant to MCP 310 CMR 40.0975(6)(a-c): MCP Method 1 Soil Standards, and Massachusetts Oil and Hazardous Materials List (MOHML) revised (effective) 2014

Environmental & Construction Management Services, Inc.

TABLE 4

SUMMARY OF TOPSOIL/LOAM & SUBSOIL SAMPLES FOR PESTICIDES AND HERBICIDES

Cashman School
Amesbury, Massachusetts
***ECMS* Project No. 1009.073**

Sample Location		SS-1	SS-2	SSS-3	SSS-4	SSS-5	SSS-6	SSS-7	SSS-8	SSS-9	MCP
Laboratory ID		SC58794-01	SC58794-02	SC58794-10	SC58794-11	SC58794-12	SC58794-13	SC58794-14	SC58794-15	SC58794-16	Reportable
Sample Date		7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	Concentrations
Sample Depth		24"	22"	2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	RCS-1
Pesticides - SW846 8081B (µg/kg)											
319-84-6	a-BHC	<5.53	<5.56	<5.77	<5.38	<5.76	<5.36	<5.94	<5.75	<6.34	50000
319-85-7	b-BHC	<5.53	<5.56	<5.77	<5.38	<5.76	<5.36	<5.94	<5.75	<6.34	10000
319-86-8	d-BHC	<5.53	<5.56	<5.77	<5.38	<5.76	<5.36	<5.94	<5.75	<6.34	10000
58-89-9	g-BHC (Lindane)	<3.32	<3.34	<3.46	<3.23	<3.46	<3.22	<3.57	<3.45	<3.80	3000
76-44-8	Heptachlor	<5.53	<5.56	<5.77	<5.38	<5.76	<5.36	<5.94	<5.75	<6.34	200
309-00-2	Aldrin	<5.53	<5.56	<5.77	<5.38	<5.76	<5.36	<5.94	<5.75	<6.34	100000
1024-57-3	Heptachlor epoxide	<5.53	<5.56	<5.77	<5.38	<5.76	<5.36	<5.94	<5.75	<6.34	90
959-98-8	Endosulfan I	<5.53	<5.56	<5.77	<5.38	<5.76	<5.36	<5.94	<5.75	<6.34	500
60-57-1	Dieldrin	<5.53	<5.56	<5.77	<5.38	<5.76	<5.36	<5.94	<5.75	<6.34	50
72-55-9	4,4' -DDE	<5.53	<5.56	<5.77	<5.38	<5.76	<5.36	<5.94	<5.75	<6.34	3000
72-20-8	Endrin	<8.85	<8.90	<9.24	<8.60	<9.21	<8.58	<9.51	<9.19	<10.1	8000
33213-65-9	Endosulfan II	<8.85	<8.90	<9.24	<8.60	<9.21	<8.58	<9.51	<9.19	<10.1	500
72-54-8	4,4' -DDD	<8.85	<8.90	<9.24	<8.60	<9.21	<8.58	<9.51	<9.19	<10.1	4000
1031-07-8	Endosulfan sulfate	<8.85	<8.90	<9.24	<8.60	<9.21	<8.58	<9.51	<9.19	<10.1	-
50-29-3	4,4' -DDT	<8.85	<8.90	<9.24	<8.60	<9.21	<8.58	<9.51	<9.19	<10.1	-
72-43-5	Methoxychlor	<8.85	<8.90	<9.24	<8.60	<9.21	<8.58	<9.51	<9.19	<10.1	200000
53494-70-5	Endrin ketone	<8.85	<8.90	<9.24	<8.60	<9.21	<8.58	<9.51	<9.19	<10.1	8000
7421-93-4	Endrin aldehyde	<8.85	<8.90	<9.24	<8.60	<9.21	<8.58	<9.51	<9.19	<10.1	10000
5103-71-9	alpha-Chlordane	<5.53	<5.56	<5.77	<5.38	<5.76	<5.36	<5.94	<5.75	<6.34	-
5103-74-2	gamma-Chlordane	<5.53	<5.56	<5.77	<5.38	<5.76	<5.36	<5.94	<5.75	<6.34	-
8001-35-2	Toxaphene	<111	<111	<115	<108	<115	<107	<119	<115	<127	10000
57-74-9	Chlordane	<22.1	<22.3	<23.1	<21.5	<23.0	<21.4	<23.8	<23.0	<25.3	700
15972-60-8	Alachlor	<5.53	<5.56	<5.77	<5.38	<5.76	<5.36	<5.94	<5.75	<6.34	100
Herbicides - SW846 8151A (µg/kg)											
93-76-5	2,4,5-T	<80	<80	<80	<80	<80	<80	<80	<80	<80	100000
93-72-1	2,4,5-TP (Silvex)	<80	<80	<80	<80	<80	<80	<80	<80	<80	100000
94-75-7	2,4-D	<80	<80	<80	<80	<80	<80	<80	<80	<80	100000
94-82-6	2,4-DB	<80	<80	<80	<80	<80	<80	<80	<80	<80	100000
75-99-0	Dalapon	<80	<80	<80	<80	<80	<80	<80	<80	<80	1000000
1918-00-9	Dicamba	<80	<80	<80	<80	<80	<80	<80	<80	<80	500000
120-36-5	Dichloroprop	<80	<80	<80	<80	<80	<80	<80	<80	<80	-
88-85-7	Dinoseb	<80	<80	<80	<80	<80	<80	<80	<80	<80	500000
94-74-6	MCPA	<3300	<3300	<3300	<3300	<3300	<3300	<3300	<3300	<3300	100000
7085-19-0	MCPP	<3300	<3300	<3300	<3300	<3300	<3300	<3300	<3300	<3300	-

< indicates less than the respective method detection limit.
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
Boldfaced type indicates an exceedance.
Pursuant to MCP 310 CMR 40.0975(6)(a-c): MCP Method 1 Soil Standards, and Massachusetts Oil and Hazardous Materials List (MOHML) revised (effective) 2014

Environmental & Construction Management Services, Inc.

TABLE 4

SUMMARY OF TOPSOIL/LOAM & SUBSOIL SAMPLES FOR PESTICIDES AND HERBICIDES

Cashman School
Amesbury, Massachusetts
***ECMS* Project No. 1009.073**

Sample Location		SSS-10	SSS-11	SSS-12	SSS-13	SSS-14	SSS-15	SSS-16	SSS-17	MCP
Laboratory ID		SC58794-03	SC58794-04	SC58794-05	SC58794-06	SC58794-07	SC58794-17	SC58794-08	SC58794-09	Reportable
Sample Date		7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	7/9/2020	Concentrations
Sample Depth		2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	2-6"	RCS-1
Pesticides - SW846 8081B (µg/kg)										
319-84-6	a-BHC	<6.07	<6.15	<5.85	<6.30	<5.63	<6.22	<5.44	<5.57	4000
319-85-7	b-BHC	<6.07	<6.15	<5.85	<6.30	<5.63	<6.22	<5.44	<5.57	3000
319-86-8	d-BHC	<6.07	<6.15	<5.85	<6.30	<5.63	<6.22	<5.44	<5.57	3000
58-89-9	g-BHC (Lindane)	<3.64	<3.69	<3.51	<3.78	<3.38	<3.73	<3.26	<3.34	50000
76-44-8	Heptachlor	<6.07	<6.15	<5.85	<6.30	<5.63	<6.22	<5.44	<5.57	100
309-00-2	Aldrin	<6.07	<6.15	<5.85	<6.30	<5.63	<6.22	<5.44	<5.57	100000
1024-57-3	Heptachlor epoxide	<6.07	<6.15	<5.85	<6.30	<5.63	<6.22	<5.44	<5.57	10000
959-98-8	Endosulfan I	<6.07	<6.15	<5.85	<6.30	<5.63	<6.22	<5.44	<5.57	700
60-57-1	Dieldrin	<6.07	<6.15	<5.85	<6.30	<5.63	<6.22	<5.44	<5.57	10000
72-55-9	4,4' -DDE	<6.07	<6.15	<5.85	<6.30	<5.63	<6.22	<5.44	<5.57	50
72-20-8	Endrin	<9.71	<9.84	<9.36	<10.1	<9.01	<9.95	<8.71	<8.92	500
33213-65-9	Endosulfan II	<9.71	<9.84	<9.36	<10.1	<9.01	<9.95	<8.71	<8.92	500
72-54-8	4,4' -DDD	<9.71	<9.84	<9.36	<10.1	<9.01	<9.95	<8.71	<8.92	-
1031-07-8	Endosulfan sulfate	<9.71	<9.84	<9.36	<10.1	<9.01	<9.95	<8.71	<8.92	8000
50-29-3	4,4' -DDT	<9.71	<9.84	<9.36	<10.1	<9.01	<9.95	<8.71	<8.92	10000
72-43-5	Methoxychlor	<9.71	<9.84	<9.36	<10.1	<9.01	<9.95	<8.71	<8.92	8000
53494-70-5	Endrin ketone	<9.71	<9.84	<9.36	<10.1	<9.01	<9.95	<8.71	<8.92	3000
7421-93-4	Endrin aldehyde	<9.71	<9.84	<9.36	<10.1	<9.01	<9.95	<8.71	<8.92	200
5103-71-9	alpha-Chlordane	<6.07	<6.15	<5.85	<6.30	<5.63	<6.22	<5.44	<5.57	90
5103-74-2	gamma-Chlordane	<6.07	<6.15	<5.85	<6.30	<5.63	<6.22	<5.44	<5.57	700
8001-35-2	Toxaphene	<121	<123	<117	<126	<113	<124	<109	<111	200000
57-74-9	Chlordane	<24.3	<24.6	<23.4	<25.2	<22.5	<24.9	<21.8	<22.3	10000
15972-60-8	Alachlor	<6.07	<6.15	<5.85	<6.30	<5.63	<6.22	<5.44	<5.57	-
Herbicides - SW846 8151A (µg/kg)										
93-76-5	2,4,5-T	<80	<80	<80	<80	<80	<80	<80	<80	100000
93-72-1	2,4,5-TP (Silvex)	<80	<80	<80	<80	<80	<80	<80	<80	100000
94-75-7	2,4-D	<80	<80	<80	<80	<80	<80	<80	<80	100000
94-82-6	2,4-DB	<80	<80	<80	<80	<80	<80	<80	<80	100000
75-99-0	Dalapon	<80	<80	<80	<80	<80	<80	<80	<80	1000000
1918-00-9	Dicamba	<80	<80	<80	<80	<80	<80	<80	<80	500000
120-36-5	Dichloroprop	<80	<80	<80	<80	<80	<80	<80	<80	-
88-85-7	Dinoseb	<80	<80	<80	<80	<80	<80	<80	<80	500000
94-74-6	MCPA	<3300	<3300	<3300	<3300	<3300	<3300	<3300	<3300	100000
7085-19-0	MCPP	<3300	<3300	<3300	<3300	<3300	<3300	<3300	<3300	-

< indicates less than the respective method detection limit.
mg/kg = milligrams per kilogram
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Pursuant to MCP 310 CMR 40.0975(6)(a-c): MCP Method 1 Soil Standards, and Massachusetts Oil and Hazardous Materials List (MOHML) revised (effective) 2014

APPENDIX A

LAGOY RISK ANALYSIS "EVALUATION OF SOIL DATA FROM THE CHARLES C. CASHMAN ELEMENTARY SCHOOL, 193 LIONS MOUTH ROAD, AMESBURY, MASSACHUSETTS DATED JULY 27, 2020

LaGoy Risk Analysis, Inc.
P.O. Box 498
Hopkinton, MA 01748
(508) 208-9299
Peter_LaGoy@msn.com

July 27, 2020

Kevin Kavanaugh
ECMS, Inc.
288 Grove Street, #391
Braintree, MA 02184

RE: Evaluation of Soil Data from the Charles C. Cashman Elementary School, 193 Lions Mouth Road, Amesbury, Massachusetts

Dear Kevin:

I reviewed the soil data collected by Environmental & Construction Management Services, Inc. (ECMS) on July 9, 2020, from the Charles C. Cashman Elementary School property at 193 Lions Mouth Road in Amesbury, Massachusetts. I understand that samples were collected from loam and shallow (2 feet deep) subsoil near an existing baseball field on the property.

Based on my review and using standard calculations following the methodology required by the Massachusetts Department of Environmental Protection (MassDEP), the detected constituents do not pose an Imminent Hazard under the Massachusetts Contingency Plan (MCP), which is the relevant state regulatory program. Using the average concentration of arsenic and the maximum value of other metals that were detected above state-wide background levels for natural soil in Massachusetts as an exposure point concentration (EPC; the level of a constituent that an individual could regularly contact) and site-specific exposure assumptions provided on children and adults likely to use this field, the constituents that were detected do not pose an Imminent Hazard. I would also note that the use does not pose a calculated Significant Risk as that term is defined under the MCP, and that the arsenic appears to be present as a result of its presence in native soil. Although the site does not pose an Imminent Hazard under the MCP, steps to reduce or eliminate the potential for contact with these constituents and the associated soil at the site may still be prudent from both a risk management and MCP perspective.

Initial Evaluation

The Cashman school property in Amesbury, Massachusetts consists of a roughly 35-acre parcel that is currently used for pre-K through 4th grade students. The results of explorations performed at the property indicate that fill material identified at the site contains varying amounts of ash and cinders and may also contain remnants of the former residential building that had occupied the property prior to the garden.

The recent subject sampling event consisted of collecting 15 soil samples from beneath the grass (2-6 inches in depth), and two additional samples of slightly deeper soil (2 feet in depth). Soil was analyzed for the presence of metals, total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs, including the polycyclic aromatic hydrocarbons (PAHs), and pesticides and herbicides. The results of the sampling are presented in Table 1.

Only arsenic was present at a concentration above a reportable concentration. TPH was also detected in most samples (concentrations around 100 mg/kg) but could be present as a result of it use as a binder (waxes) in various lawn care products. Maximum metal concentrations were compared with expected concentrations in soil in Massachusetts (Table 2), and chromium, nickel, and vanadium were present at levels above expected background. The four metals, arsenic, chromium, nickel, and vanadium will be considered in the imminent hazard calculations.

The source of the arsenic is site soils does not appear to be associated with anthropogenic use but rather as a result of naturally-elevated arsenic concentrations. While arsenic was used widely for industrial purposes (e.g., for preservation of hides in tanning; as a pesticide as lead arsenates) the past use of the property is not consistent with these uses, and if the arsenic was present as a result of agricultural pesticide use, lead levels would be expected to be higher. Amesbury is in an area of Massachusetts known to have naturally elevated arsenic levels and consequently, its present is considered most likely to be attributable to natural sources. As such, its presence would not be regulated under the MCP but considering its location at a school, further assessment is prudent.

Imminent Hazard Calculations

An Imminent Hazard Evaluation (IHE) performed in accordance with the MCP evaluates whether constituents that are detected at a site could pose a risk of harm to human health, safety, public welfare, and the environment under current site conditions or for a short period of time (5 years, unless site conditions indicate a shorter time period is appropriate). For this site, the constituent of greatest concern, arsenic appears to be present as a result of natural background, and as such does not pose an imminent hazard. However, because of the use of the property as a school, further calculations are warranted to determine if some mitigation of the presence of even these natural soils may be warranted.

An Imminent Hazard does not exist if the cumulative cancer risk calculated for the short time period is below one in one hundred thousand (1×10^{-5} or 1E-05), the "hazard index" is below ten (10) for most constituents or below one (1) for constituents that have the potential to cause serious effects (specifically lead and cyanide, per a discussion with Nancy Bettinger of MassDEP BWSC ORS in January 2007, and trichloroethylene, per a discussion with Paul Locke of MassDEP in November 2012) following short-term exposures, and the site does not pose a risk to safety, public welfare, or the environment based on a consideration of site conditions and applicable standards. The results of the Imminent Hazard Risk Characterization are used as the basis for a decision as to whether or not an Immediate Response Action is necessary at the site.

This Imminent Hazard Evaluation has been conducted to specifically evaluate metals detected in soil at the Cashman Elementary School in Amesbury, Massachusetts. The purpose of this evaluation is to determine if a calculated Imminent Hazard to human health, as defined by the MCP, currently exists for the area for short-term exposure. Past exposure is likely to have been similar, so this IHE also provides information about possible past risks associated with use of the area.

This IHE focuses on human health. A consideration of site conditions indicates that the presence of the identified constituents does not pose an Imminent Hazard to public welfare, the environment, or safety.

Toxicity Assessment

The toxicity values for the metals are presented in Tables 3 and 5. Further description of the toxicity of arsenic, the metal of primary concern, is presented below.

Arsenic is a metalloid that has been shown to cause skin, bladder, and perhaps other cancers in individuals exposed through drinking water from wells with high arsenic levels. Arsenic has also been associated with an increased risk of lung cancer in exposed workers. Chronic exposure to arsenic at high levels causes adverse effects on the gastrointestinal tract. In addition, there is some evidence that exposure causes polyneuropathy. EPA has established an oral reference dose of 0.0003 mg/kg/day and an inhalation reference concentration of $2.5 \times 10^{-5} mg/m^3$. EPA has also established an oral cancer potency factor of $1.5 (mg/kg/day)^{-1}$ and an inhalation unit risk of $0.003 (ug/m^3)^{-1}$ and MassDEP uses these values.

Exposure Evaluation

As part of an IHE, concentrations of constituents detected in accessible surface soil can be used to evaluate the potential for actual exposure and risk with respect to current site uses and activities. The MCP defines accessible surface soil as soil that extends to a depth of 6 inches below the ground surface. As noted in MassDEP guidance, for an IHE, the focus is on short term risks, and maximum concentrations are typically used in the assessment as exposure point concentrations (EPCs; the concentration an individual could be exposed to on a regular basis). Maximum concentrations were used as EPCs for chromium, nickel, and vanadium. For this site, concentrations of arsenic in shallow soil

were detected in a narrow range (21.9 mg/kg – 82.3 mg/kg), and the 95% Upper Confidence Limit (UCL) calculated using the EPA's ProUCL model version 5.1 was used to calculate an EPC of 46.4 mg/kg for arsenic, based on a normal distribution of data and the Student t-test.

Quantitative Exposure Assessment

In general, individuals are exposed to materials released into the environment in varying quantities and proportions via a wide variety of possible exposure routes. The actual amount of material to which an individual is exposed depends on the individual's frequency, extent, and duration of exposure, which in turn depend on many factors, including location of residence, age, body weight, sex, and activity patterns. Patterns of exposure are highly variable among individuals. This large potential variation in exposure to environmental conditions implies that a certain amount of uncertainty is inherent in risk assessment. This exposure assessment uses standard approaches and assumptions that are designed to be health protective, i.e., they are designed to produce estimates of exposure that overestimate, rather than underestimate, actual exposure and risk.

The purpose of a quantitative exposure assessment is to estimate the Chronic Daily Intake (CDI) of each contaminant of concern by an individual for each exposure route. For carcinogens, the CDI is averaged over the full lifetime (by convention, assumed to be 70 years; MassDEP 2008) and is termed the Lifetime Average Daily Dose or LADD for oral and dermal exposures. For noncarcinogens, the dose is only averaged over the period of exposure and is noted as the Average Daily Dose or ADD for oral and dermal exposure.

Soil Exposure - Children

Children are at school 180 days per year, and can also use the school facilities during the summer (roughly 70 days; end of June to end of August) but will use the outdoor play fields for only a fraction of that time and for short periods. Very young children (less than 2 year of age) are considered unlikely to be present on a regular basis. For the purposes of this assessment, contact by children is assumed for 109 days per year, which is the outdoor time assumed by MassDEP (1994) in initially establishing the S-1 soil standards. Exposure for a third of a year to a single outdoor play area is unlikely but provides a conservative estimate of exposure potential. People who contact soil may be exposed to constituents present in the soil by direct contact and subsequent ingestion of contaminated soil or by dermal absorption of constituents in soils adhering to the skin. Younger children are of greatest concern for soil contact, and therefore, assessment of exposure to younger children can be used to conservatively evaluate the potential for risks to older students. For this IHE, children are estimated to weigh an average of 15 kg (33 lbs) based on the median weight for 5-year-old children (the youngest age likely to be regularly out on their own) determined in the NHANES II study for the US population in 1980 (MassDEP 1994). USEPA has reviewed more current data and has indicated average weights for humans have increased since that study.

Soil Ingestion: Children in regular contact with site soil are estimated to ingest 100 mg of soil per day (MassDEP 2002). All constituents in soil are assumed to be as available

from the soil as from the media used in the toxicity studies and, consequently, a relative absorption factor or RAF of one is used for these constituents. Using this assumption and the others noted above, the ADD and LADD for soil ingestion by children can be estimated using the formula:

$$\text{ADD/LADD} = \frac{\text{CS x IR x RAF x EF x ED}}{\text{BW x } 10^6 \text{ (mg/kg) x AT}}$$

Where:

ADD	=	Average daily intake of the constituent (mg/kg/day),
LADD	=	Lifetime average daily dose (mg/kg/day),
CS	=	Constituent concentration in soil (mg/kg),
IR	=	Soil ingestion rate (100 mg/day; MassDEP 1995),
RAF	=	Relative absorption factor (1),
EF	=	Frequency of ingestion (109 days/year; MassDEP 1995),
ED	=	Exposure Duration (5 years; MassDEP 1995),
BW	=	Body weight (15 kg; EPA 1989), and
AT	=	Averaging Time (365 days x 5 yrs (ADD) or 365 x 70 (LADD) days).

The calculated ADD for children exposed to lead detected in soil at the property based on this equation is provided in Table 3 for ingestion exposure to the soil at the school.

Dermal Contact: Dermal exposure to constituents in soil can occur through direct physical contact with soil. The same assumptions as for soil ingestion are used, with the exceptions that in place of an ingestion rate, a soil adherence factor of 0.2 mg soil/cm^2 of skin, an exposed skin surface area of 3000 cm^2 (roughly a third of the body surface area for this age child; MassDEP 1994) and constituent-specific relative absorption factors were used. Using these assumptions, the ADD and LADD can be estimated using the formula:

$$\text{ADD/LADD} = \frac{\text{CS x AD x SA x RAF x EF x ED}}{\text{BW x } 10^6 \text{ (mg/kg) x AT}}$$

Where:

ADD	=	Average daily intake of the constituent (mg/kg/day),
LADD	=	Lifetime average daily dose (mg/kg/day),
CS	=	Constituent concentration in soil (mg/kg),
AD	=	Soil adherence to skin (0.2 mg/cm^2; MassDEP 1995),
SA	=	Exposed skin surface area (3000 cm^2; MassDEP 1995),
RAF	=	Relative absorption factor (constituent-specific; MassDEP 2006),
EF	=	Frequency of contact (109 days/year),
ED	=	Exposure Duration (5 years),
BW	=	Body weight (15 kg; EPA 1989), and
AT	=	Averaging Time (365 days x 5 yrs (ADD) or 365 days x 70 days (LADD)).

The calculated ADD for children exposed to lead in soil at the site based on this equation is provided in Table 3 for exposure via dermal contact to the soil EPCs.

While the primary purpose of this assessment is to calculate whether an imminent hazard exists, the same approach can be modified slightly to assess overall site risks, given the continued use of the school and playground for current purposes. The assumption that children are unlikely to use the facility for more than 109 days per year, and for more than 5 years seems likely, given the grades (pre-K to 4th) that currently use the school. However, as a conservative measure, risks are also assessed assuming that children play at the school for 100 days per year over the course of a 10-year period and that they weigh 24 kg (average body weight for 2-12 years) over this period. This exposure and risk are calculated in Table 4.

Soil Exposure - Adults

Adults that may use the area would include school landscape workers, teachers, and parents attending games. Of these groups, landscapers would be expected to have the highest potential for regular contact. In order to determine if such soil contact is safe, exposure and risks to landscapers were evaluated quantitatively, using the previously-established EPCs.

Landscapers who work site soil may be exposed to constituents present in the soil by direct contact and subsequent ingestion of contaminated soil or by dermal absorption of constituents in soils adhering to the skin. Workers may also be exposed to constituents that become airborne as a component of windborne dust. Exposure for these people is assumed to occur for 100 days over the course of a year, assuming that during the roughly 8-month landscaping season, these workers are outdoors roughly 3 days per week over the 240-day period. Adults are estimated to weigh 70 kg. It should be noted that these calculations are particularly conservative in that exposure estimates are compared with toxicity values designed to be protective for chronic (long-term) exposures; toxicity values for short-term exposure are generally lower by a factor of 10.

Soil Ingestion: Workers in frequent contact with site soil are estimated to ingest 100 mg of soil per day (MassDEP 2002) and this value will be used for landscape workers. Using these assumptions and the others noted above, the ADD and LADD for soil ingestion by workers can be estimated using the formula for soil ingestion noted above. The calculated ADD for the constituents in soil at the property based on this equation is provided in Table 5 for soil ingestion exposure to the site-wide exposure point concentration.

Dermal Contact: Dermal exposure to constituents in soil can occur through direct physical contact with soil. The same assumptions as for soil ingestion are used, with the exceptions that in place of an ingestion rate, a soil adherence factor of 0.29 mg soil/cm^2 of skin, an exposed skin surface area of 3500 cm^2, and constituent-specific relative

absorption factors were used. Using these assumptions, the ADD and LADD can be estimated using the formula for dermal contact noted above. The calculated ADD for the constituents in soil at the property based on this equation is provided in Table 5 for exposure via dermal contact to the EPCs in soil.

Inhalation. Although unlikely considering the small area of uncovered soil, landscapers could be exposed via inhalation to constituents entrained in soil-derived dust (MassDEP 2002). To estimate exposure, the same assumptions provided above for body weight, lifetime exposure duration and frequency were used. It was assumed that the gardener inhaled 20 cubic meters (m^3) of air during the time on site (essentially equal to the daily inhalation rate of 20 m^3/day; EPA, 1989 and corresponding to a full workday at an average moderate to heavy level of exertion; MassDEP 1995a).

In order to evaluate the potential for inhalation exposure to constituents entrained in the dust, it is necessary to estimate the amount of dust that would be present in the air, and the amount of air inhaled during the period that dust is present in the air. MassDEP (2002) suggests a value of 60 ug/m^3 for excavations and this value will be used in this evaluation, which is a conservative approach since excavation work would be expected to generate more dust than gardening. The value of 60 ug/m^3 is based on the assumption that gardeners will only receive intermittent exposure to visible dust but that the average exposure level will be above that used by EPA for undisturbed sites.

MassDEP notes that exposure to constituents on airborne particulates can occur through either direct inhalation or via inhalation followed by movement of the particles from the upper respiratory tract to the gastrointestinal tract. For direct inhalation, MassDEP indicates that only approximately half of the inhaled particulate matter will actually reach the lungs. However, for this evaluation, it is assumed that all the agent inhaled is of concern, as many inhaled constituents act at sites along the respiratory tract and do not need to reach the lungs to have adverse effects. For the inhalation-to-oral pathway, the ingested dose is estimated to be twice the measured PM_{10} dose of 60 ug/m^3. However, the total soil intake via this pathway (2 x 60 ug/m^3 x 20 m^3/day x 1 mg/1000 ug = 2.4 mg soil) is so low as to not add significantly to the soil dose calculated for direct ingestion and is not considered further in this assessment.

Exposure can be calculated using the equation:

$$ADE/LADE = \frac{EPC \times IF \times PM10 \times RAF \times EF \times ED}{BW \times AT}$$

Where:

ADE = Average daily exposure to the constituent (mg/m^3),
LADE= Lifetime average daily dose (mg/m^3),
EPC = Constituent concentration in soil (mg/kg),
IF = Inhalation Fraction (20 m^3 / 20 m^3day; MassDEP 2002),
PM10 = Particulate air concentration (60 ug/m^3; MassDEP 2002).
RAF = Relative absorption factor (1 used to be conservative),

EF	=	Frequency of contact (100 days/year),
ED	=	Exposure Duration (5 years), and
AT	=	Averaging Time (365 days x 5 or 70 years).

Table 5 provides the estimated exposure and risk values for inhalation exposure to an adult landscaper, assuming no dust suppression measures are implemented. Exposure to other site users, including teachers and parents, would be expected to be lower.

Health Risks at the Site

In this section, information concerning the potential levels of exposure to contaminants is combined with information concerning the toxicity of the contaminants in order to determine the potential health risks at the property. For noncarcinogenic (systemic) effects, EPA and MassDEP assume that there is a level below which no effects will occur (a threshold no effect concentration). To evaluate possible risk from exposure to noncarcinogenic contaminants, the average daily dose (ADD) is divided by the health criterion value [the reference dose (RfD)]. If the ADD:RfD ratio, also termed the hazard index or HI, is less than ten for all constituents (i.e., if the daily intake is below the health criterion), then the contaminant is considered unlikely to pose an Imminent Hazard (i.e., a significant risk under conditions of short-term exposure) to individuals exposed under the given scenario. If the HI is less than ten, the site does not pose an Imminent Hazard. For cancer risk, the exposure, termed the lifetime average daily dose or LADD is multiplied by the cancer slope factor to estimate cancer risk, and this risk is compared with a target risk level of 1 in 100,000 or 10^{-5}.

Imminent hazards associated with short term exposure to site constituents in soil are estimated in Table 3 for children and in Table 5 for landscapers (and other adults). Based on these calculations, exposure by children to soil concentrations of site constituents results in a hazard index of 0.5 (soil ingestion plus dermal absorption risks combined) and a cancer risk of 1×10^{-5}. Exposure by adults to soil concentrations of site constituents results in a hazard index of 0.08 (soil ingestion, dermal absorption, and inhalation exposures combined) and a cancer risk of 3×10^{-6}. These levels do not exceed the Imminent Hazard criterion of an HI of ten and a cancer risk level of 10^{-5}, indicating that continued use of this site does not pose an imminent hazard.

Hazards and risks associated with longer term exposure to site constituents in soil are estimated in Table 4 for children and in Table 6 for landscapers (and other adults). Based on these calculations, exposure by children to soil concentrations of site constituents results in a hazard index of 0.3 and a cancer risk of 1×10^{-5}. Exposure by adults to soil concentrations of site constituents results in a hazard index of 0.08 and a cancer risk of 1×10^{-5}. These levels do not exceed the long-term risk targets of a cancer risk of 10^{-5} and an HI of 1, indicating that continued long term exposure at these concentrations would not pose a significant risk.

A number of assumptions were used in deriving the exposure estimates and toxicity criteria. While there is some uncertainty in the resulting hazard and risk estimates, conservative (health protective) assumptions were made so actual hazards and risks are likely to be lower than the calculated hazards and risks.

Conclusions and Recommendations

Soil was recently sampled by ECMS and analyzed with respect to the Cashman Elementary School property located at 193 Lions Mouth Road in Amesbury, Massachusetts. Arsenic and several other metals were detected at levels above a reportable concentration (arsenic) and above levels expected in background soil. However, no anthropogenic source of arsenic was present, the Amesbury area is known to have naturally-elevated arsenic levels in soil, and the source appears most likely to be natural. While the arsenic is assumed to be naturally occurring, calculations were performed to assess if a calculated risk was present for either short-term (IH) or longer-term exposure. Evaluation of the concentrations detected and of site-specific factors indicates that an Imminent Hazard condition does not exist at the site. Use of the site would also not pose a Significant Risks.

It should be noted that calculated risks did not exceed but were at the target risk levels. Therefore, although the area does not pose an Imminent Hazard or Significant Risk for current use, considering the use of the site as a school, it may be prudent to take measures to mitigate the potential for exposure. Such measures could include replacing natural soil in areas of exposed soil with imported soil containing lower levels of natural arsenic.

In order to ensure that public health is adequately protected, conservative assumptions (i.e., those unlikely to underestimate risk) were used in deriving both the exposure estimates and the toxicity values that are included in this letter report. Because of the use of these conservative assumptions, it is likely that the actual potential for non-cancer and cancer risks is lower than as is estimated in this report.

If you have any questions, please give me a call.

Sincerely,

Peter K. LaGoy
Principal

References

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Table 1
Exposure Point Concentrations for Soil
Cashman School
Amesbury, Massachusetts

	Number of Samples	Soil Average/a (mg/kg)	Soil Maximum (mg/kg)	EPC (mg/kg)	MCP RCS-1 Reportable Concentration (mg/kg)
Metals					
Antimony	17		ND	NC	20
Arsenic (0-1 ft)	15	46.4	82.3	46.4	20
Arsenic (2 ft)	2		55.9	NC	20
Barium	17		34.6	NC	1000
Beryllium	17		ND	NC	90
Cadmium	17		ND	NC	70
Chromium	17		65.9	66	100
Lead	17		28.6	NC	200
Mercury	17		ND	NC	20
Nickel	17		76	76	600
Selenium	17		ND	NC	400
Silver	17		ND	NC	100
Thallium	17		ND	NC	8
Vanadium	17		46.7	47	400
Zinc	17		107	NC	1000
TPH	17		184	NC	
VOCs	17		ND	NC	
SVOCs	17		ND	NC	
Pesticides/Herbicides	17		ND	NC	

Table 2
Comparison of Maximum Site Concentrations with Background Levels in Massachusetts Soil
Cashman School
Amesbury, Massachusetts

ANALYTE	Soil Maximum	Background Levels in MA/a Natural Soil	Fill Soil	Urban Maximum
Metals (mg/kg)/a				
Antimony	ND	1	7	160
Arsenic	**82.3**	20	20	99
Barium	34.6	50	50	680
Beryllium	ND	0.4	0.9	7.5
Cadmium	ND	2	3	25
Chromium	**65.9**	30	40	530
Lead	28.6	100	600	11000
Mercury	ND	0.3	1	23
Nickel	**76**	20	30	220
Selenium	ND	0.5	1	57
Silver	ND	0.6	5	82
Thallium	ND	0.6	5	50
Vanadium	**46.7**	30	30	47
Zinc	107	100	300	5000

a/ "Natural soil" represent soils from non-urban areas with no visible ash.
"Fill soils" represent soils that have visible coal or wood ash and are associated with fill.
Maximum values are the maximum detected in several studies
Background values derived from MADEP 2002 Technical update: Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil.
Values in bold exceed the "fill soil" background value.

Table 3
Exposure and Risk of Imminent Hazard for Children
Cashman School
Amesbury, Massachusetts

SOIL INGESTION	Soil EPC				Oral	Oral		
			ADD	LADD	RfD	CSF	Hazard	Risk
ANALYTE	mg/kg		mg/kg/day	mg/kg/day	mg/kg/day	1/(mg/kg/day)	ADD/RfD	LADD x CSF
Arsenic	46.4		9.24E-05	6.60E-06	0.0003	1.5	3.1E-01	9.9E-06
Chromium	66		1.31E-04		0.003		4.4E-02	
Nickel	76		1.51E-04		0.02		7.6E-03	
Vanadium	47		9.36E-05		0.009		1.0E-02	

DERMAL CONTACT	Soil EPC	Dermal RAF			Oral	Oral		
			ADD	LADD	RfD	CSF	Hazard	Risk
	mg/kg		mg/kg/day	mg/kg/day	mg/kg/day	1/(mg/kg/day)	ADD/RfD	LADD x CSF
Arsenic	46.4	0.03	1.66E-05	1.19E-06	0.0003	1.5	5.5E-02	1.8E-06
Chromium	66	0.1	7.88E-05		0.003		2.6E-02	
Nickel	76	0.2	1.82E-04		0.02		9.1E-03	
Vanadium	47	0.1	5.61E-05		0.009		6.2E-03	
						SUM	**0.5**	**1E-05**

Table 3
Exposure and Risk of Imminent Hazard for Children
Cashman School
Amesbury, Massachusetts

SOIL INGESTION	Soil EPC				Oral	Oral		
			ADD	LADD	RfD	CSF	Hazard	Risk
ANALYTE	mg/kg		mg/kg/day	mg/kg/day	mg/kg/day	1/(mg/kg/day)	ADD/RfD	LADD x CSF
Arsenic	46.4		5.30E-05	7.57E-06	0.0003	1.5	1.8E-01	1.1E-05
Chromium	66		7.53E-05		0.003		2.5E-02	
Nickel	76		8.68E-05		0.02		4.3E-03	
Vanadium	47		5.37E-05		0.009		6.0E-03	

DERMAL CONTACT	Soil EPC	Dermal RAF			Oral	Oral		
			ADD	LADD	RfD	CSF	Hazard	Risk
	mg/kg		mg/kg/day	mg/kg/day	mg/kg/day	1/(mg/kg/day)	ADD/RfD	LADD x CSF
Arsenic	46.4	0.03	9.53E-06	1.36E-06	0.0003	1.5	3.2E-02	2.0E-06
Chromium	66	0.1	4.52E-05		0.003		1.5E-02	
Nickel	76	0.2	1.04E-04		0.02		5.2E-03	
Vanadium	47	0.1	3.22E-05		0.009		3.6E-03	
						SUM	**0.3**	**1E-05**

Table 4
Exposure and Risk for Adult Gardeners
Cashman School
Amesbury, Massachusetts

ANALYTE					Oral	Oral		
	EPC		ADD	LADD	RfD	CSF	Hazard	Risk
SOIL INGESTION	**mg/kg**		**mg/kg/day**	**mg/kg/day**	**mg/kg/day**	**1/(mg/kg/day)**	**ADD/RfD**	**LADD x CSF**
Arsenic	46.4		1.91E-06	1.36E-06	0.0003	1.5	6.4E-03	2.0E-06
Chromium	66		2.71E-06		0.003		9.0E-04	
Nickel	76		3.12E-06		0.02		1.6E-04	
Vanadium	47		1.93E-06		0.009		2.1E-04	

	EPC	Dermal			Oral	Oral		
DERMAL CONTACT	**mg/kg**	**RAF**	**ADD**	**LADD**	**RfD**	**CSF**	**Hazard**	**Risk**
Arsenic	46.4	0.03	5.81E-06	4.15E-07	0.0003	1.5	1.9E-02	6.2E-07
Chromium	66	0.1	2.75E-05		0.003		9.2E-03	
Nickel	76	0.2	6.34E-05		0.02		3.2E-03	
Vanadium	47	0.1	1.96E-05		0.009		2.2E-03	

					Inhalation	Inhalation		
	EPC		ADE	LADE	RfC	URF	Hazard	Risk
DUST INHALATION	**mg/kg**		**mg/m3**	**ug/m3/a**	**mg/m3**	**1/(ug/m3)**	**ADE/RfC**	**LADE x URF**
Arsenic	46.4		8.01E-07	5.72E-08	0.000025	0.003	3.2E-02	1.7E-10
Chromium	66		1.14E-06	8.14E-08	0.0004	0.012	2.8E-03	9.8E-10
Nickel	76		1.31E-06	9.37E-08	0.001	0.00048	1.3E-03	4.5E-11
Vanadium	47		8.11E-07		0.001		8.1E-04	

						SUM	**0.08**	**2.7E-06**

Table 4
Exposure and Risk for Adult Gardeners
Cashman School
Amesbury, Massachusetts

ANALYTE					Oral	Oral		
	EPC		ADD	LADD	RfD	CSF	Hazard	Risk
SOIL INGESTION	**mg/kg**		**mg/kg/day**	**mg/kg/day**	**mg/kg/day**	**1/(mg/kg/day)**	**ADD/RfD**	**LADD x CSF**
Arsenic	46.4		1.91E-06	6.49E-06	0.0003	1.5	6.4E-03	9.7E-06
Chromium	66		2.71E-06		0.003		9.0E-04	
Nickel	76		3.12E-06		0.02		1.6E-04	
Vanadium	47		1.93E-06		0.009		2.1E-04	

	EPC	Dermal			Oral	Oral		
DERMAL CONTACT	**mg/kg**	**RAF**	**ADD**	**LADD**	**RfD**	**CSF**	**Hazard**	**Risk**
Arsenic	46.4	0.03	5.81E-06	1.97E-06	0.0003	1.5	1.9E-02	3.0E-06
Chromium	66	0.1	2.75E-05		0.003		9.2E-03	
Nickel	76	0.2	6.34E-05		0.02		3.2E-03	
Vanadium	47	0.1	1.96E-05		0.009		2.2E-03	

					Inhalation	Inhalation		
	EPC		ADE	LADE	RfC	URF	Hazard	Risk
DUST INHALATION	**mg/kg**		**mg/m3**	**ug/m3/a**	**mg/m3**	**1/(ug/m3)**	**ADE/RfC**	**LADE x URF**
Arsenic	46.4		8.01E-07	2.72E-07	0.000025	0.003	3.2E-02	8.2E-10
Chromium	66		1.14E-06	3.87E-07	0.0004	0.012	2.8E-03	4.6E-09
Nickel	76		1.31E-06	4.46E-07	0.001	0.00048	1.3E-03	2.1E-10
Vanadium	47		8.11E-07		0.001		8.1E-04	

						SUM	**0.08**	**1E-05**

APPENDIX B

QUALIFICATIONS/LIMITATIONS

QUALIFICATIONS/LIMITATIONS

Environmental & Construction Management Services, Inc. (ECMS) professional services have been performed, our findings obtained, and our recommendations prepared in accordance with customary principles and practices in the fields of environmental science and engineering. This warranty is in lieu of all other warranties either expressed or implied. *ECMS* is not responsible for the independent conclusions, opinions or recommendations made by others based on the records review, site inspection, field exploration, and laboratory test data presented in this report.

Factual information regarding on-site business operations, conditions, and historical data provided to *ECMS* is assumed to be correct and complete. *ECMS* assumes no responsibility for hidden or latent conditions or misrepresentation by the property owner, its representatives, public information officials or any authority consulted in connection with the compilation of this report.

The findings set forth in the attached Site assessment report are strictly limited in time and scope to the date of the evaluation(s). The conclusions presented in the Report are based solely on the services described therein, and not on scientific tasks or procedures beyond the scope of agreed upon services or the time and budgeting restraints imposed by the client.

The purpose of this report was to assess the physical characteristics of the subject Site with respect to the presence in the environment of hazardous material or oil. No specific attempt was made to check on the compliance of present or past owners or operators or of the Site with Federal, State or local laws and regulations, environmental, or otherwise.

Partial findings of this investigation are based on data provided by others. No warranty is expressed or implied with the usage of such data. Much of the information provided in this report is based upon personal interviews and research of all available documents, records and maps held by the appropriate government and private agencies. This is subject to the limitations of historical documentation, availability and accuracy of pertinent records, and the personal recollection of those persons contacted by *ECMS* personnel. *ECMS* is not a professional title insurance firm and makes no guarantee, explicit or implied that the listing, which was reviewed, represented a comprehensive delineation of past Site ownership or tenancy for legal purposes.

Observations were made of the Site and of structures on the Site as indicated within the Report. Where access to portions of the Site or to structures on the Site was unavailable or limited, *ECMS* is unable to render an opinion as to the presence of hazardous material or oil, or to the presence if indirect evidence relating to hazardous material or oil, in that portion of the Site or structure. In addition, *ECMS* renders no opinion as to the presence of hazardous material or oil, where direct observation of the interior walls, floor, or ceiling of a structure on a Site was obstructed by objects or coverings on or over these surfaces.

The initial site investigation took into account the natural and man-made features of the Site, including any unusual or suspect phenomenon. These factors combined with the Site's geology, hydrology, topography, and past and present land uses served as a basis for choosing a methodology and location for subsurface exploration as well as ground water and subsurface sampling, if done. The subsurface data, if provided, is meant as a representative overview of the Site.

The conclusions and recommendations contained in this report may be based in part upon various types of chemical data and are contingent upon their validity. As indicated within the Report, some

of these data are preliminary "screening" level data, and should be confirmed with quantitative analyses if more specific information is necessary. It should be noted that variations in the types and concentrations of contaminants and variations in their flow paths may occur due to seasonal water table fluctuations, past disposal practices, the passage of time, and other factors. Should additional data or variations of current data become available in the future, these data should be reviewed, and the conclusions and recommendations presented herein modified accordingly.

Chemical analyses may have been performed for specific parameters during the course of this Site assessment, as described in the text. However, it should be noted that additional chemical constituents not searched for during the current study might be present in soil and/or ground water at the Site.

APPENDIX H

COPY OF SOIL SAMPLE EUROFINS SPECTRUM LABORATORY REPORT

eurofins | Environment Testing New England

☑ Final Report
☐ Revised Report

Report Date:
17-Jul-20 14:44

Laboratory Report
SC58794

ECMS, Inc.
639 Granite Street, Suite 407
Braintree, MA 02184
Attn: Kevin Kavanaugh

Project: Cashman School - Amesbury, MA
Project #: 1009.073

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.
All applicable NELAC requirements have been met.

Massachusetts # RI907
New York # 11393
Rhode Island # LAI00368
USDA # P330-20-00109

Authorized by:

Agnes Huntley
Project Manager

Eurofins Environment Testing New England holds primary NELAC certification in the State of New York for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of New York does not offer certification for all analytes. Please refer to our website for specific certification holdings in each state.
Please note that this report contains 175 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Eurofins Environment Testing New England.

Eurofins Environment Testing New England is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Eurofins Environment Testing New England is currently accredited for the specific method or analyte indicated. Please refer to our "Quality" web page at www.eurofinsus.com/Spectrum for a full listing of our current certifications and fields of accreditation.

Please contact the Laboratory or Technical Director at 413-789-9018 with any questions regarding the data contained in this laboratory report.

Sample Summary

Work Order: SC58794

Project: Cashman School - Amesbury, MA

Project Number: 1009.073

Laboratory ID	Client Sample ID	Matrix	Date Sampled	Date Received
SC58794-01	SS-1	Soil	09-Jul-20 00:00	10-Jul-20 15:28
SC58794-02	SS-2	Soil	09-Jul-20 00:00	10-Jul-20 15:28
SC58794-03	SSS-10	Soil	09-Jul-20 00:00	10-Jul-20 15:28
SC58794-04	SSS-11	Soil	09-Jul-20 00:00	10-Jul-20 15:28
SC58794-05	SSS-12	Soil	09-Jul-20 00:00	10-Jul-20 15:28
SC58794-06	SSS-13	Soil	09-Jul-20 00:00	10-Jul-20 15:28
SC58794-07	SSS-14	Soil	09-Jul-20 00:00	10-Jul-20 15:28
SC58794-08	SSS-16	Soil	09-Jul-20 00:00	10-Jul-20 15:28
SC58794-09	SSS-17	Soil	09-Jul-20 00:00	10-Jul-20 15:28
SC58794-10	SSS-3	Soil	09-Jul-20 00:00	10-Jul-20 15:28
SC58794-11	SSS-4	Soil	09-Jul-20 00:00	10-Jul-20 15:28
SC58794-12	SSS-5	Soil	09-Jul-20 00:00	10-Jul-20 15:28
SC58794-13	SSS-6	Soil	09-Jul-20 00:00	10-Jul-20 15:28
SC58794-14	SSS-7	Soil	09-Jul-20 00:00	10-Jul-20 15:28
SC58794-15	SSS-8	Soil	09-Jul-20 00:00	10-Jul-20 15:28
SC58794-16	SSS-9	Soil	09-Jul-20 00:00	10-Jul-20 15:28
SC58794-17	SSS-15	Soil	09-Jul-20 00:00	10-Jul-20 15:28

MassDEP Analytical Protocol Certification Form

Laboratory Name: Eurofins Spectrum Analytical, Inc. **Project #:** 1009.073

Project Location: Cashman School - Amesbury, MA **RTN:**

This form provides certifications for the following data set: SC58794-01 through SC58794-17

Matrices: Soil

CAM Protocol

✓ 8260 VOC CAM II A	✓ 7470/7471 Hg CAM III B	MassDEP VPH CAM IV A	✓ 8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
✓ 8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B	✓ 8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
✓ 6010 Metals CAM III A	6020 Metals CAM III D	✓ 8082 PCB CAM V A	9012 Total Cyanide/PAC CAM VI A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

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

Responses to questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	✓ Yes No

***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 are addressed in a case narrative on the cover page of this report.

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.

Dawn E. Wojcik

Dawn E. Wojcik
Laboratory Director
Date: 7/17/2020

CASE NARRATIVE:

Data has been reported to the RDL. This report excludes estimated concentrations detected below the RDL and above the MDL (J-Flag).

All non-detects and all results below the reporting limit are reported as "<" (less than) the reporting limit in this report.

The samples were received 2.3 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of +/- 1.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group. If method or program required MS/MSD/Dup were not performed, sufficient sample was not provided to the laboratory.

MADEP has published a list of analytical methods (CAM) which provides a series of recommended protocols for the acquisition, analysis and reporting of analytical data in support of MCP decisions. "Presumptive Certainty" can be established only for those methods published by the MADEP in the MCP CAM. The compounds and/or elements reported were specifically requested by the client on the Chain of Custody and in some cases may not include the full analyte list as defined in the method. Regulatory limits may not be achieved if specific method and/or technique was not requested on the Chain of Custody.

According to WSC-CAM 5/2009 Rev.1, Table 11 A-1, recovery for some VOC analytes have been deemed potentially difficult. Although they may still be within the recommended recovery range, a range has been set based on historical control limits.

Some target analytes which are not listed as exceptions in the Summary of CAM Reporting Limits may exceed the recommended RL based on sample initial volume or weight provided, % moisture content, or responsiveness of a particular analyte to purge and trap instrumentation.

All VOC soils samples submitted and analyzed in methanol will have a minimum dilution factor of 50. This is the minimum amount of solvent allowed on the instrumentation without causing interference. Soils are run on a manual load instrument. 100ug of sample (MEOH) is spiked into 5ml DI water along with the surrogate and added directly onto the instrument. Additional dilution factors may be required to keep analyte concentration within instrument calibration range.

Method SW846 5035A is designed to use on samples containing low levels of VOCs, ranging from 0.5 to 200 ug/Kg. Target analytes that are less responsive to purge and trap may be present at concentrations over 200ug/Kg but may not be reportable in the methanol preserved vial (SW846 5030). This is the result of the inherent dilution factor required for the methanol preservation.

Analyses for Total Hardness, pH, and Total Residual Chlorine fall under the state of Pennsylvania code Chapter 252.6 accreditation by rule.

Reactivity (40 CFR 261.23) Case Narrative:

These samples do not exhibit the characteristics of reactivity as defined in 40 CFR 261.23, sections (1), (2) and (4); however, Eurofins Spectrum Analytical, Inc. does not test for detonation, explosive reaction or potential, or forbidden explosives as defined in 40 CFR 261.23, sections (3), (6), (7) and (8).

Reactive sulfide and cyanide are tested at a pH of 2 and not tested at all conditions between pH 2 and12.5 as stated in 40 CFR 261.23, section (5); thus reactive cyanide and sulfide results as reported in this document can not be used to support the nonreactive properties of these samples.

The responsibility falls on the generator to use knowledge of the waste to determine if the waste meets or does not meet the descriptive, prose definition of reactivity.

See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.

SW8151A

Laboratory Control Samples:

537320A BSD

SW8151A

Laboratory Control Samples:

537320A BSD

Dinoseb RPD 64.3% (20%) is outside individual acceptance criteria.

CG33195-LCS

This parameter is outside laboratory rpd specified recovery limits.

Dinoseb

CG33195-LCSD

This parameter is outside laboratory rpd specified recovery limits.

Dinoseb

SW846 6010C

Laboratory Control Samples:

2001078 SRM/SRMD

Lead percent recoveries (82/86) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

SS-1
SS-2
SSS-10
SSS-11
SSS-12
SSS-13
SSS-14
SSS-15
SSS-16
SSS-17
SSS-3
SSS-4
SSS-5
SSS-6
SSS-7
SSS-8
SSS-9

Spikes:

2001078-MS1 *Source: SC58794-02*

The spike recovery exceeded the QC control limits for the MS and/or MSD. The batch was accepted based upon acceptable PS and /or LCS recovery.

Antimony

2001078-MSD1 *Source: SC58794-02*

The spike recovery exceeded the QC control limits for the MS and/or MSD. The batch was accepted based upon acceptable PS and /or LCS recovery.

Antimony

Duplicates:

2001078-DUP1 *Source: SC58794-02*

The RPD exceeded the QC control limits; however precision is demonstrated with acceptable RPD values for MS/MSD.

Nickel

SW846 7471B

Spikes:

2001079-MS1 *Source: SC58794-01*

The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

Mercury

SW846 8081B

Laboratory Control Samples:

2001088 BS/BSD

Chlordane [2C] percent recoveries (0/0) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

SS-1
SS-2
SSS-10
SSS-11
SSS-12
SSS-13
SSS-14
SSS-15
SSS-16
SSS-17
SSS-3
SSS-4
SSS-5
SSS-6
SSS-7
SSS-8
SSS-9

Chlordane percent recoveries (0/0) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

SS-1
SS-2
SSS-10
SSS-11
SSS-12
SSS-13
SSS-14
SSS-15
SSS-16
SSS-17
SSS-3
SSS-4
SSS-5
SSS-6
SSS-7
SSS-8
SSS-9

SW846 8081B

Laboratory Control Samples:

2001088 BS/BSD

Toxaphene [2C] percent recoveries (0/0) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

SS-1
SS-2
SSS-10
SSS-11
SSS-12
SSS-13
SSS-14
SSS-15
SSS-16
SSS-17
SSS-3
SSS-4
SSS-5
SSS-6
SSS-7
SSS-8
SSS-9

Toxaphene percent recoveries (0/0) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

SS-1
SS-2
SSS-10
SSS-11
SSS-12
SSS-13
SSS-14
SSS-15
SSS-16
SSS-17
SSS-3
SSS-4
SSS-5
SSS-6
SSS-7
SSS-8
SSS-9

Samples:

SC58794-05 *SSS-12*

The closing calibration verification was below control limits, <20%, for the analyte 4,4-DDT, but greater than 50% recovery. This low recovery is due to sample matrix interference, which was confirmed by re-analysis.

SC58794-06 *SSS-13*

The closing calibration verification was below control limits, <20%, for the analyte 4,4-DDT, but greater than 50% recovery. This low recovery is due to sample matrix interference, which was confirmed by re-analysis.

SC58794-07 *SSS-14*

The closing calibration verification was below control limits, <20%, for the analyte 4,4-DDT, but greater than 50% recovery. This low recovery is due to sample matrix interference, which was confirmed by re-analysis.

SW846 8081B

Samples:

SC58794-08 *SSS-16*

The closing calibration verification was below control limits, <20%, for the analyte 4,4-DDT, but greater than 50% recovery. This low recovery is due to sample matrix interference, which was confirmed by re-analysis.

SC58794-09 *SSS-17*

The closing calibration verification was below control limits, <20%, for the analyte 4,4-DDT, but greater than 50% recovery. This low recovery is due to sample matrix interference, which was confirmed by re-analysis.

SC58794-10 *SSS-3*

The closing calibration verification was below control limits, <20%, for the analyte 4,4-DDT, but greater than 50% recovery. This low recovery is due to sample matrix interference, which was confirmed by re-analysis.

SC58794-11 *SSS-4*

The closing calibration verification was below control limits, <20%, for the analyte 4,4-DDT, but greater than 50% recovery. This low recovery is due to sample matrix interference, which was confirmed by re-analysis.

SC58794-12 *SSS-5*

The closing calibration verification was below control limits, <20%, for the analyte 4,4-DDT, but greater than 50% recovery. This low recovery is due to sample matrix interference, which was confirmed by re-analysis.

SC58794-13 *SSS-6*

The closing calibration verification was below control limits, <20%, for the analyte 4,4-DDT, but greater than 50% recovery. This low recovery is due to sample matrix interference, which was confirmed by re-analysis.

SC58794-14 *SSS-7*

The closing calibration verification was below control limits, <20%, for the analyte 4,4-DDT, but greater than 50% recovery. This low recovery is due to sample matrix interference, which was confirmed by re-analysis.

SC58794-15 *SSS-8*

The closing calibration verification was below control limits, <20%, for the analyte 4,4-DDT, but greater than 50% recovery. This low recovery is due to sample matrix interference, which was confirmed by re-analysis.

SC58794-16 *SSS-9*

The closing calibration verification was below control limits, <20%, for the analyte 4,4-DDT, but greater than 50% recovery. This low recovery is due to sample matrix interference, which was confirmed by re-analysis.

SC58794-17 *SSS-15*

The closing calibration verification was below control limits, <20%, for the analyte 4,4-DDT, but greater than 50% recovery. This low recovery is due to sample matrix interference, which was confirmed by re-analysis.

SW846 8260C

Laboratory Control Samples:

2001076 BS/BSD

SW846 8260C

Laboratory Control Samples:

2001076 BS/BSD

1,1,2-Trichlorotrifluoroethane (Freon 113) percent recoveries (130/131) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially high bias:

SS-1
SS-2
SSS-10
SSS-11
SSS-12
SSS-13
SSS-14
SSS-15
SSS-16
SSS-17
SSS-3
SSS-4
SSS-5
SSS-6
SSS-7
SSS-8
SSS-9

2-Butanone (MEK) percent recoveries (133/109) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially high bias:

SS-1
SS-2
SSS-10
SSS-11
SSS-12
SSS-13
SSS-14
SSS-15
SSS-16
SSS-17
SSS-3
SSS-4
SSS-5
SSS-6
SSS-7
SSS-8
SSS-9

SW846 8260C

Laboratory Control Samples:

2001076 BS/BSD

2-Hexanone (MBK) percent recoveries (150/130) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially high bias:

SS-1
SS-2
SSS-10
SSS-11
SSS-12
SSS-13
SSS-14
SSS-15
SSS-16
SSS-17
SSS-3
SSS-4
SSS-5
SSS-6
SSS-7
SSS-8
SSS-9

Acetone percent recoveries (121/143) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially high bias:

SS-1
SS-2
SSS-10
SSS-11
SSS-12
SSS-13
SSS-14
SSS-15
SSS-16
SSS-17
SSS-3
SSS-4
SSS-5
SSS-6
SSS-7
SSS-8
SSS-9

SW846 8260C

Laboratory Control Samples:

2001076 BS/BSD

Chloroethane percent recoveries (147/137) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially high bias:

SS-1
SS-2
SSS-10
SSS-11
SSS-12
SSS-13
SSS-14
SSS-15
SSS-16
SSS-17
SSS-3
SSS-4
SSS-5
SSS-6
SSS-7
SSS-8
SSS-9

Chloromethane percent recoveries (133/137) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially high bias:

SS-1
SS-2
SSS-10
SSS-11
SSS-12
SSS-13
SSS-14
SSS-15
SSS-16
SSS-17
SSS-3
SSS-4
SSS-5
SSS-6
SSS-7
SSS-8
SSS-9

SW846 8260C

Laboratory Control Samples:

2001076 BS/BSD

Dichlorodifluoromethane (Freon12) percent recoveries (150/150) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially high bias:

SS-1
SS-2
SSS-10
SSS-11
SSS-12
SSS-13
SSS-14
SSS-15
SSS-16
SSS-17
SSS-3
SSS-4
SSS-5
SSS-6
SSS-7
SSS-8
SSS-9

Trichlorofluoromethane (Freon 11) percent recoveries (140/138) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially high bias:

SS-1
SS-2
SSS-10
SSS-11
SSS-12
SSS-13
SSS-14
SSS-15
SSS-16
SSS-17
SSS-3
SSS-4
SSS-5
SSS-6
SSS-7
SSS-8
SSS-9

SW846 8270D

Laboratory Control Samples:

2001083 BSD

N-Nitrosodimethylamine RPD 32% (30%) is outside individual acceptance criteria.

Pyridine RPD 33% (30%) is outside individual acceptance criteria.

2001083-BSD1

Analyte is out of acceptance range in the QC spike but the total number of out of range analytes is within overall method criteria.

N-Nitrosodimethylamine
Pyridine

SW846 8270D

Spikes:

2001083-MS1 *Source: SC58794-01*

The spike recovery for this QC sample is outside the established control limits. The sample results for the QC batch were accepted based on LCS/LCSD or SRM recoveries within the control limits.

2,4-Dinitrophenol
Aniline
Benzidine
Benzoic acid

2001083-MSD1 *Source: SC58794-01*

The spike recovery for this QC sample is outside the established control limits. The sample results for the QC batch were accepted based on LCS/LCSD or SRM recoveries within the control limits.

Aniline
Benzidine

Sample Acceptance Check Form

Client:	ECMS, Inc.
Project:	Cashman School - Amesbury, MA / 1009.073
Work Order:	SC58794
Sample(s) received on:	7/10/2020

The following outlines the condition of samples for the attached Chain of Custody upon receipt.

	Yes	No	N/A
Were custody seals present?	☐	☑	☐
Were custody seals intact?	☐	☐	☑
Were samples received at a temperature of ≤ 6°C?	☑	☐	☐
Were samples cooled on ice upon transfer to laboratory representative?	☑	☐	☐
Were sample containers received intact?	☑	☐	☐
Were samples properly labeled (labels affixed to sample containers and include sample ID, site location, and/or project number and the collection date)?	☑	☐	☐
Were samples accompanied by a Chain of Custody document?	☑	☐	☐
Does Chain of Custody document include proper, full, and complete documentation, which shall include sample ID, site location, and/or project number, date and time of collection, collector's name, preservation type, sample matrix and any special remarks concerning the sample?	☐	☑	☐
Did sample container labels agree with Chain of Custody document?	☑	☐	☐
Were samples received within method-specific holding times?	☑	☐	☐

Summary of Hits

Lab ID: SC58794-01 **Client ID:** SS-1

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Arsenic	39.9		1.68	mg/kg	SW846 6010C
Barium	18.4		1.12	mg/kg	SW846 6010C
Chromium	22.6		1.12	mg/kg	SW846 6010C
Lead	8.42		1.68	mg/kg	SW846 6010C
Nickel	39.7		1.12	mg/kg	SW846 6010C
Vanadium	22.7		1.68	mg/kg	SW846 6010C
Zinc	36.3		3.35	mg/kg	SW846 6010C
Total Petroleum Hydrocarbons	24.9		14.9	mg/kg	SW846 8100Mod.

Lab ID: SC58794-02 **Client ID:** SS-2

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Arsenic	55.9		1.67	mg/kg	SW846 6010C
Barium	22.5		1.12	mg/kg	SW846 6010C
Chromium	19.4		1.12	mg/kg	SW846 6010C
Lead	19.3		1.67	mg/kg	SW846 6010C
Nickel	71.4		1.12	mg/kg	SW846 6010C
Vanadium	24.5		1.67	mg/kg	SW846 6010C
Zinc	58.5		3.35	mg/kg	SW846 6010C
Total Petroleum Hydrocarbons	38.7		14.6	mg/kg	SW846 8100Mod.

Lab ID: SC58794-03 **Client ID:** SSS-10

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Arsenic	25.4		1.77	mg/kg	SW846 6010C
Barium	26.5		1.18	mg/kg	SW846 6010C
Chromium	22.9		1.18	mg/kg	SW846 6010C
Lead	13.7		1.77	mg/kg	SW846 6010C
Nickel	28.2		1.18	mg/kg	SW846 6010C
Vanadium	29.6		1.77	mg/kg	SW846 6010C
Zinc	60.8		3.53	mg/kg	SW846 6010C
Total Petroleum Hydrocarbons	109		16.2	mg/kg	SW846 8100Mod.
Bis(2-ethylhexyl)phthalate	305		206	µg/kg	SW846 8270D

Lab ID: SC58794-04 **Client ID:** SSS-11

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Arsenic	33.6		1.87	mg/kg	SW846 6010C
Barium	24.8		1.25	mg/kg	SW846 6010C
Chromium	23.2		1.25	mg/kg	SW846 6010C
Lead	18.9		1.87	mg/kg	SW846 6010C
Nickel	30.4		1.25	mg/kg	SW846 6010C
Vanadium	38.3		1.87	mg/kg	SW846 6010C
Zinc	43.2		3.74	mg/kg	SW846 6010C
Total Petroleum Hydrocarbons	184		16.4	mg/kg	SW846 8100Mod.

Lab ID: SC58794-05 **Client ID:** SSS-12

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Arsenic	39.2		1.67	mg/kg	SW846 6010C
Barium	21.7		1.11	mg/kg	SW846 6010C
Chromium	17.4		1.11	mg/kg	SW846 6010C
Lead	19.6		1.67	mg/kg	SW846 6010C
Nickel	26.9		1.11	mg/kg	SW846 6010C
Vanadium	33.5		1.67	mg/kg	SW846 6010C
Zinc	37.9		3.34	mg/kg	SW846 6010C
Total Petroleum Hydrocarbons	180		15.9	mg/kg	SW846 8100Mod.

Lab ID: SC58794-06 **Client ID:** SSS-13

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Arsenic	49.1		1.83	mg/kg	SW846 6010C
Barium	28.9		1.22	mg/kg	SW846 6010C
Chromium	23.3		1.22	mg/kg	SW846 6010C
Lead	22.7		1.83	mg/kg	SW846 6010C
Nickel	37.2		1.22	mg/kg	SW846 6010C
Vanadium	34.6		1.83	mg/kg	SW846 6010C
Zinc	49.2		3.67	mg/kg	SW846 6010C
Total Petroleum Hydrocarbons	93.0		16.5	mg/kg	SW846 8100Mod.

Lab ID: SC58794-07 **Client ID:** SSS-14

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Arsenic	23.7		1.69	mg/kg	SW846 6010C
Barium	44.1		1.13	mg/kg	SW846 6010C
Chromium	36.0		1.13	mg/kg	SW846 6010C
Lead	13.7		1.69	mg/kg	SW846 6010C
Nickel	26.1		1.13	mg/kg	SW846 6010C
Vanadium	41.9		1.69	mg/kg	SW846 6010C
Zinc	44.6		3.38	mg/kg	SW846 6010C
Total Petroleum Hydrocarbons	116		15.2	mg/kg	SW846 8100Mod.

Lab ID: SC58794-08 **Client ID:** SSS-16

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Arsenic	36.6		1.67	mg/kg	SW846 6010C
Barium	24.0		1.12	mg/kg	SW846 6010C
Chromium	21.7		1.12	mg/kg	SW846 6010C
Lead	17.5		1.67	mg/kg	SW846 6010C
Nickel	30.6		1.12	mg/kg	SW846 6010C
Vanadium	30.6		1.67	mg/kg	SW846 6010C
Zinc	44.3		3.35	mg/kg	SW846 6010C
Total Petroleum Hydrocarbons	93.6		14.7	mg/kg	SW846 8100Mod.

Lab ID: SC58794-09 **Client ID:** SSS-17

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Arsenic	21.9		1.60	mg/kg	SW846 6010C
Barium	113		1.07	mg/kg	SW846 6010C
Chromium	19.4		1.07	mg/kg	SW846 6010C
Lead	12.1		1.60	mg/kg	SW846 6010C
Nickel	27.9		1.07	mg/kg	SW846 6010C
Vanadium	8.48		1.60	mg/kg	SW846 6010C
Zinc	61.8		3.20	mg/kg	SW846 6010C
Total Petroleum Hydrocarbons	49.7		14.5	mg/kg	SW846 8100Mod.

Lab ID: SC58794-10 **Client ID:** SSS-3

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Arsenic	36.6		1.80	mg/kg	SW846 6010C
Barium	30.0		1.20	mg/kg	SW846 6010C
Chromium	21.8		1.20	mg/kg	SW846 6010C
Lead	17.0		1.80	mg/kg	SW846 6010C
Nickel	33.2		1.20	mg/kg	SW846 6010C
Vanadium	30.1		1.80	mg/kg	SW846 6010C
Zinc	107		3.59	mg/kg	SW846 6010C
Total Petroleum Hydrocarbons	113		15.9	mg/kg	SW846 8100Mod.

Lab ID: SC58794-11 **Client ID:** SSS-4

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Arsenic	20.5		1.62	mg/kg	SW846 6010C
Barium	29.5		1.08	mg/kg	SW846 6010C
Chromium	18.8		1.08	mg/kg	SW846 6010C
Lead	18.6		1.62	mg/kg	SW846 6010C
Nickel	20.3		1.08	mg/kg	SW846 6010C
Vanadium	24.5		1.62	mg/kg	SW846 6010C
Zinc	36.0		3.25	mg/kg	SW846 6010C
Total Petroleum Hydrocarbons	118		14.5	mg/kg	SW846 8100Mod.

Lab ID: SC58794-12 **Client ID:** SSS-5

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Arsenic	53.4		1.88	mg/kg	SW846 6010C
Barium	30.3		1.25	mg/kg	SW846 6010C
Chromium	25.0		1.25	mg/kg	SW846 6010C
Lead	17.0		1.88	mg/kg	SW846 6010C
Nickel	46.2		1.25	mg/kg	SW846 6010C
Vanadium	33.9		1.88	mg/kg	SW846 6010C
Zinc	52.1		3.76	mg/kg	SW846 6010C
Total Petroleum Hydrocarbons	106		15.4	mg/kg	SW846 8100Mod.

Lab ID: SC58794-13 **Client ID:** SSS-6

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Arsenic	29.6		1.69	mg/kg	SW846 6010C
Barium	28.6		1.13	mg/kg	SW846 6010C
Chromium	30.0		1.13	mg/kg	SW846 6010C
Lead	15.8		1.69	mg/kg	SW846 6010C
Nickel	25.6		1.13	mg/kg	SW846 6010C
Vanadium	35.8		1.69	mg/kg	SW846 6010C
Zinc	43.2		3.38	mg/kg	SW846 6010C
Total Petroleum Hydrocarbons	134		14.3	mg/kg	SW846 8100Mod.

Lab ID: SC58794-14 **Client ID:** SSS-7

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Arsenic	48.6		1.80	mg/kg	SW846 6010C
Barium	34.6		1.20	mg/kg	SW846 6010C
Chromium	65.9		1.20	mg/kg	SW846 6010C
Lead	28.6		1.80	mg/kg	SW846 6010C
Nickel	44.8		1.20	mg/kg	SW846 6010C
Vanadium	46.7		1.80	mg/kg	SW846 6010C
Zinc	56.2		3.60	mg/kg	SW846 6010C
Total Petroleum Hydrocarbons	170		15.8	mg/kg	SW846 8100Mod.

Lab ID: SC58794-15 **Client ID:** SSS-8

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Arsenic	48.7		1.87	mg/kg	SW846 6010C
Barium	33.0		1.25	mg/kg	SW846 6010C
Chromium	31.6		1.25	mg/kg	SW846 6010C
Lead	21.0		1.87	mg/kg	SW846 6010C
Nickel	47.7		1.25	mg/kg	SW846 6010C
Vanadium	36.0		1.87	mg/kg	SW846 6010C
Zinc	52.3		3.75	mg/kg	SW846 6010C
Total Petroleum Hydrocarbons	111		15.4	mg/kg	SW846 8100Mod.

Lab ID: SC58794-16 **Client ID:** SSS-9

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Arsenic	82.3		1.88	mg/kg	SW846 6010C
Barium	29.1		1.26	mg/kg	SW846 6010C
Chromium	24.7		1.26	mg/kg	SW846 6010C
Lead	22.9		1.88	mg/kg	SW846 6010C
Nickel	76.0		1.26	mg/kg	SW846 6010C
Vanadium	39.4		1.88	mg/kg	SW846 6010C
Zinc	64.7		3.77	mg/kg	SW846 6010C
Total Petroleum Hydrocarbons	129		16.8	mg/kg	SW846 8100Mod.

Lab ID: SC58794-17 **Client ID:** SSS-15

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Arsenic	37.8		1.90	mg/kg	SW846 6010C
Barium	46.3		1.27	mg/kg	SW846 6010C
Chromium	31.5		1.27	mg/kg	SW846 6010C
Lead	25.9		1.90	mg/kg	SW846 6010C
Nickel	37.7		1.27	mg/kg	SW846 6010C
Vanadium	36.3		1.90	mg/kg	SW846 6010C
Zinc	60.7		3.80	mg/kg	SW846 6010C
Total Petroleum Hydrocarbons	168		16.7	mg/kg	SW846 8100Mod.

Please note that because there are no reporting limits associated with hazardous waste characterizations or micro analyses, this summary does not include hits from these analyses if included in this work order.

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SS-1	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-01				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
Prepared by method SW846 5035A Soil (high level)							Initial weight: 17.81 g						
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	< 53.2		µg/kg dry	53.2	29.1	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
67-64-1	Acetone	< 532		µg/kg dry	532	67.2	50	"	"	"	"	"	X
107-13-1	Acrylonitrile	< 53.2		µg/kg dry	53.2	19.2	50	"	"	"	"	"	X
71-43-2	Benzene	< 53.2		µg/kg dry	53.2	8.51	50	"	"	"	"	"	X
108-86-1	Bromobenzene	< 53.2		µg/kg dry	53.2	12.0	50	"	"	"	"	"	X
74-97-5	Bromochloromethane	< 53.2		µg/kg dry	53.2	7.60	50	"	"	"	"	"	X
75-27-4	Bromodichloromethane	< 53.2		µg/kg dry	53.2	13.7	50	"	"	"	"	"	X
75-25-2	Bromoform	< 53.2		µg/kg dry	53.2	11.4	50	"	"	"	"	"	X
74-83-9	Bromomethane	< 106		µg/kg dry	106	26.3	50	"	"	"	"	"	X
78-93-3	2-Butanone (MEK)	< 106		µg/kg dry	106	24.3	50	"	"	"	"	"	X
104-51-8	n-Butylbenzene	< 53.2		µg/kg dry	53.2	21.3	50	"	"	"	"	"	X
135-98-8	sec-Butylbenzene	< 53.2		µg/kg dry	53.2	16.3	50	"	"	"	"	"	X
98-06-6	tert-Butylbenzene	< 53.2		µg/kg dry	53.2	21.7	50	"	"	"	"	"	X
75-15-0	Carbon disulfide	< 106		µg/kg dry	106	19.7	50	"	"	"	"	"	X
56-23-5	Carbon tetrachloride	< 53.2		µg/kg dry	53.2	15.9	50	"	"	"	"	"	X
108-90-7	Chlorobenzene	< 53.2		µg/kg dry	53.2	6.43	50	"	"	"	"	"	X
75-00-3	Chloroethane	< 106		µg/kg dry	106	23.7	50	"	"	"	"	"	X
67-66-3	Chloroform	< 53.2		µg/kg dry	53.2	6.27	50	"	"	"	"	"	X
74-87-3	Chloromethane	< 106		µg/kg dry	106	63.2	50	"	"	"	"	"	X
95-49-8	2-Chlorotoluene	< 53.2		µg/kg dry	53.2	13.2	50	"	"	"	"	"	X
106-43-4	4-Chlorotoluene	< 53.2		µg/kg dry	53.2	9.62	50	"	"	"	"	"	X
96-12-8	1,2-Dibromo-3-chloropropane	< 106		µg/kg dry	106	21.0	50	"	"	"	"	"	X
124-48-1	Dibromochloromethane	< 53.2		µg/kg dry	53.2	8.40	50	"	"	"	"	"	X
106-93-4	1,2-Dibromoethane (EDB)	< 53.2		µg/kg dry	53.2	14.5	50	"	"	"	"	"	X
74-95-3	Dibromomethane	< 53.2		µg/kg dry	53.2	10.0	50	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 53.2		µg/kg dry	53.2	9.57	50	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 53.2		µg/kg dry	53.2	13.2	50	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 53.2		µg/kg dry	53.2	9.52	50	"	"	"	"	"	X
75-71-8	Dichlorodifluoromethane (Freon12)	< 106		µg/kg dry	106	69.5	50	"	"	"	"	"	X
75-34-3	1,1-Dichloroethane	< 53.2		µg/kg dry	53.2	12.3	50	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 53.2		µg/kg dry	53.2	13.9	50	"	"	"	"	"	X
75-35-4	1,1-Dichloroethene	< 53.2		µg/kg dry	53.2	13.6	50	"	"	"	"	"	X
156-59-2	cis-1,2-Dichloroethene	< 53.2		µg/kg dry	53.2	17.7	50	"	"	"	"	"	X
156-60-5	trans-1,2-Dichloroethene	< 53.2		µg/kg dry	53.2	12.1	50	"	"	"	"	"	X
78-87-5	1,2-Dichloropropane	< 53.2		µg/kg dry	53.2	18.4	50	"	"	"	"	"	X
142-28-9	1,3-Dichloropropane	< 53.2		µg/kg dry	53.2	16.8	50	"	"	"	"	"	X
594-20-7	2,2-Dichloropropane	< 53.2		µg/kg dry	53.2	14.0	50	"	"	"	"	"	X
563-58-6	1,1-Dichloropropene	< 53.2		µg/kg dry	53.2	16.3	50	"	"	"	"	"	X
10061-01-5	cis-1,3-Dichloropropene	< 53.2		µg/kg dry	53.2	12.5	50	"	"	"	"	"	X
10061-02-6	trans-1,3-Dichloropropene	< 53.2		µg/kg dry	53.2	21.6	50	"	"	"	"	"	X
100-41-4	Ethylbenzene	< 53.2		µg/kg dry	53.2	11.1	50	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 53.2		µg/kg dry	53.2	17.0	50	"	"	"	"	"	X
591-78-6	2-Hexanone (MBK)	< 106		µg/kg dry	106	35.4	50	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SS-1	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-01				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
							Initial weight: 17.81 g						
98-82-8	Isopropylbenzene	< 53.2		µg/kg dry	53.2	19.3	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
99-87-6	4-Isopropyltoluene	< 53.2		µg/kg dry	53.2	14.7	50	"	"	"	"	"	X
1634-04-4	Methyl tert-butyl ether	< 53.2		µg/kg dry	53.2	16.0	50	"	"	"	"	"	X
108-10-1	4-Methyl-2-pentanone (MIBK)	< 106		µg/kg dry	106	38.1	50	"	"	"	"	"	X
75-09-2	Methylene chloride	< 106		µg/kg dry	106	45.4	50	"	"	"	"	"	X
91-20-3	Naphthalene	< 53.2		µg/kg dry	53.2	15.4	50	"	"	"	"	"	X
103-65-1	n-Propylbenzene	< 53.2		µg/kg dry	53.2	13.2	50	"	"	"	"	"	X
100-42-5	Styrene	< 53.2		µg/kg dry	53.2	7.02	50	"	"	"	"	"	X
630-20-6	1,1,1,2-Tetrachloroethane	< 53.2		µg/kg dry	53.2	12.8	50	"	"	"	"	"	X
79-34-5	1,1,2,2-Tetrachloroethane	< 53.2		µg/kg dry	53.2	16.9	50	"	"	"	"	"	X
127-18-4	Tetrachloroethene	< 53.2		µg/kg dry	53.2	16.7	50	"	"	"	"	"	X
108-88-3	Toluene	< 53.2		µg/kg dry	53.2	8.56	50	"	"	"	"	"	X
87-61-6	1,2,3-Trichlorobenzene	< 53.2		µg/kg dry	53.2	12.4	50	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 53.2		µg/kg dry	53.2	8.77	50	"	"	"	"	"	X
108-70-3	1,3,5-Trichlorobenzene	< 53.2		µg/kg dry	53.2	8.40	50	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	< 53.2		µg/kg dry	53.2	12.9	50	"	"	"	"	"	X
79-00-5	1,1,2-Trichloroethane	< 53.2		µg/kg dry	53.2	16.4	50	"	"	"	"	"	X
79-01-6	Trichloroethene	< 53.2		µg/kg dry	53.2	9.09	50	"	"	"	"	"	X
75-69-4	Trichlorofluoromethane (Freon 11)	< 53.2		µg/kg dry	53.2	24.0	50	"	"	"	"	"	X
96-18-4	1,2,3-Trichloropropane	< 53.2		µg/kg dry	53.2	24.5	50	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	< 53.2		µg/kg dry	53.2	13.5	50	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	< 53.2		µg/kg dry	53.2	11.1	50	"	"	"	"	"	X
75-01-4	Vinyl chloride	< 53.2		µg/kg dry	53.2	26.2	50	"	"	"	"	"	X
179601-23-1	m,p-Xylene	< 106		µg/kg dry	106	31.3	50	"	"	"	"	"	X
95-47-6	o-Xylene	< 53.2		µg/kg dry	53.2	16.4	50	"	"	"	"	"	X
109-99-9	Tetrahydrofuran	< 106		µg/kg dry	106	38.9	50	"	"	"	"	"	
60-29-7	Ethyl ether	< 53.2		µg/kg dry	53.2	14.4	50	"	"	"	"	"	X
994-05-8	Tert-amyl methyl ether	< 53.2		µg/kg dry	53.2	29.4	50	"	"	"	"	"	
637-92-3	Ethyl tert-butyl ether	< 53.2		µg/kg dry	53.2	14.7	50	"	"	"	"	"	
108-20-3	Di-isopropyl ether	< 53.2		µg/kg dry	53.2	17.2	50	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	< 1060		µg/kg dry	1060	755	50	"	"	"	"	"	X
123-91-1	1,4-Dioxane	< 1060		µg/kg dry	1060	313	50	"	"	"	"	"	X
110-57-6	trans-1,4-Dichloro-2-buten e	< 266		µg/kg dry	266	35.1	50	"	"	"	"	"	X
64-17-5	Ethanol	< 10600		µg/kg dry	10600	916	50	"	"	"	"	"	
Surrogate recoveries:													
460-00-4	*4-Bromofluorobenzene*	*105*			*70-130 %*			"	"	"	"	"	
2037-26-5	*Toluene-d8*	*103*			*70-130 %*			"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*103*			*70-130 %*			"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*103*			*70-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds Prepared by method SW846 3546													
83-32-9	Acenaphthene	< 74.4		µg/kg dry	74.4	39.5	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SS-1	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-01				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
208-96-8	Acenaphthylene	< 74.4		µg/kg dry	74.4	38.8	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X
62-53-3	Aniline	< 368		µg/kg dry	368	23.4	1	"	"	"	"	"	X
120-12-7	Anthracene	< 74.4		µg/kg dry	74.4	42.8	1	"	"	"	"	"	X
103-33-3	Azobenzene/Diphenyldiazene	< 368		µg/kg dry	368	39.9	1	"	"	"	"	"	
92-87-5	Benzidine	< 736		µg/kg dry	736	23.4	1	"	"	"	"	"	X
56-55-3	Benzo (a) anthracene	< 74.4		µg/kg dry	74.4	41.8	1	"	"	"	"	"	X
50-32-8	Benzo (a) pyrene	< 74.4		µg/kg dry	74.4	50.8	1	"	"	"	"	"	X
205-99-2	Benzo (b) fluoranthene	< 74.4		µg/kg dry	74.4	56.0	1	"	"	"	"	"	X
191-24-2	Benzo (g,h,i) perylene	< 74.4		µg/kg dry	74.4	52.5	1	"	"	"	"	"	X
207-08-9	Benzo (k) fluoranthene	< 74.4		µg/kg dry	74.4	63.6	1	"	"	"	"	"	X
65-85-0	Benzoic acid	< 368		µg/kg dry	368	22.1	1	"	"	"	"	"	X
100-51-6	Benzyl alcohol	< 368		µg/kg dry	368	85.2	1	"	"	"	"	"	X
111-91-1	Bis(2-chloroethoxy)methane	< 368		µg/kg dry	368	37.1	1	"	"	"	"	"	X
111-44-4	Bis(2-chloroethyl)ether	< 186		µg/kg dry	186	34.5	1	"	"	"	"	"	X
108-60-1	Bis(2-chloroisopropyl)ether	< 186		µg/kg dry	186	29.9	1	"	"	"	"	"	X
117-81-7	Bis(2-ethylhexyl)phthalate	< 186		µg/kg dry	186	47.4	1	"	"	"	"	"	X
101-55-3	4-Bromophenyl phenyl ether	< 368		µg/kg dry	368	41.6	1	"	"	"	"	"	X
85-68-7	Butyl benzyl phthalate	< 368		µg/kg dry	368	36.9	1	"	"	"	"	"	X
86-74-8	Carbazole	< 186		µg/kg dry	186	42.8	1	"	"	"	"	"	X
59-50-7	4-Chloro-3-methylphenol	< 368		µg/kg dry	368	43.3	1	"	"	"	"	"	X
106-47-8	4-Chloroaniline	< 186		µg/kg dry	186	23.0	1	"	"	"	"	"	X
91-58-7	2-Chloronaphthalene	< 368		µg/kg dry	368	50.4	1	"	"	"	"	"	X
95-57-8	2-Chlorophenol	< 186		µg/kg dry	186	35.7	1	"	"	"	"	"	X
7005-72-3	4-Chlorophenyl phenyl ether	< 368		µg/kg dry	368	36.0	1	"	"	"	"	"	X
218-01-9	Chrysene	< 74.4		µg/kg dry	74.4	42.0	1	"	"	"	"	"	X
53-70-3	Dibenzo (a,h) anthracene	< 74.4		µg/kg dry	74.4	55.0	1	"	"	"	"	"	X
132-64-9	Dibenzofuran	< 186		µg/kg dry	186	50.1	1	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 368		µg/kg dry	368	43.9	1	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 368		µg/kg dry	368	39.7	1	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 368		µg/kg dry	368	41.8	1	"	"	"	"	"	X
91-94-1	3,3´-Dichlorobenzidine	< 368		µg/kg dry	368	40.7	1	"	"	"	"	"	X
120-83-2	2,4-Dichlorophenol	< 186		µg/kg dry	186	45.2	1	"	"	"	"	"	X
84-66-2	Diethyl phthalate	< 368		µg/kg dry	368	38.6	1	"	"	"	"	"	X
131-11-3	Dimethyl phthalate	< 368		µg/kg dry	368	41.4	1	"	"	"	"	"	X
105-67-9	2,4-Dimethylphenol	< 368		µg/kg dry	368	29.1	1	"	"	"	"	"	X
84-74-2	Di-n-butyl phthalate	< 368		µg/kg dry	368	39.4	1	"	"	"	"	"	X
534-52-1	4,6-Dinitro-2-methylphenol	< 368		µg/kg dry	368	52.7	1	"	"	"	"	"	X
51-28-5	2,4-Dinitrophenol	< 368		µg/kg dry	368	38.1	1	"	"	"	"	"	X
121-14-2	2,4-Dinitrotoluene	< 186		µg/kg dry	186	44.6	1	"	"	"	"	"	X
606-20-2	2,6-Dinitrotoluene	< 186		µg/kg dry	186	38.0	1	"	"	"	"	"	X
117-84-0	Di-n-octyl phthalate	< 368		µg/kg dry	368	54.8	1	"	"	"	"	"	X
206-44-0	Fluoranthene	< 74.4		µg/kg dry	74.4	43.6	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SS-1	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-01				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
86-73-7	Fluorene	< 74.4		µg/kg dry	74.4	48.1	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X
118-74-1	Hexachlorobenzene	< 186		µg/kg dry	186	46.8	1	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 186		µg/kg dry	186	46.8	1	"	"	"	"	"	X
77-47-4	Hexachlorocyclopentadiene	< 186		µg/kg dry	186	46.9	1	"	"	"	"	"	X
67-72-1	Hexachloroethane	< 186		µg/kg dry	186	42.0	1	"	"	"	"	"	X
193-39-5	Indeno (1,2,3-cd) pyrene	< 74.4		µg/kg dry	74.4	50.8	1	"	"	"	"	"	X
78-59-1	Isophorone	< 186		µg/kg dry	186	28.7	1	"	"	"	"	"	X
91-57-6	2-Methylnaphthalene	< 74.4		µg/kg dry	74.4	52.1	1	"	"	"	"	"	X
95-48-7	2-Methylphenol	< 368		µg/kg dry	368	29.6	1	"	"	"	"	"	X
108-39-4, 106-44-5	3 & 4-Methylphenol	< 368		µg/kg dry	368	28.9	1	"	"	"	"	"	X
91-20-3	Naphthalene	< 74.4		µg/kg dry	74.4	42.9	1	"	"	"	"	"	X
88-74-4	2-Nitroaniline	< 368		µg/kg dry	368	33.3	1	"	"	"	"	"	X
99-09-2	3-Nitroaniline	< 368		µg/kg dry	368	34.0	1	"	"	"	"	"	X
100-01-6	4-Nitroaniline	< 186		µg/kg dry	186	49.1	1	"	"	"	"	"	X
98-95-3	Nitrobenzene	< 186		µg/kg dry	186	43.0	1	"	"	"	"	"	X
88-75-5	2-Nitrophenol	< 186		µg/kg dry	186	32.6	1	"	"	"	"	"	X
100-02-7	4-Nitrophenol	< 1470		µg/kg dry	1470	49.0	1	"	"	"	"	"	X
62-75-9	N-Nitrosodimethylamine	< 186		µg/kg dry	186	24.3	1	"	"	"	"	"	X
621-64-7	N-Nitrosodi-n-propylamine	< 186		µg/kg dry	186	32.6	1	"	"	"	"	"	X
86-30-6	N-Nitrosodiphenylamine	< 368		µg/kg dry	368	37.5	1	"	"	"	"	"	X
87-86-5	Pentachlorophenol	< 368		µg/kg dry	368	43.8	1	"	"	"	"	"	X
85-01-8	Phenanthrene	< 74.4		µg/kg dry	74.4	42.2	1	"	"	"	"	"	X
108-95-2	Phenol	< 368		µg/kg dry	368	37.2	1	"	"	"	"	"	X
129-00-0	Pyrene	< 74.4		µg/kg dry	74.4	41.0	1	"	"	"	"	"	X
110-86-1	Pyridine	< 368		µg/kg dry	368	87.1	1	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 368		µg/kg dry	368	45.3	1	"	"	"	"	"	X
90-12-0	1-Methylnaphthalene	< 74.4		µg/kg dry	74.4	41.0	1	"	"	"	"	"	
95-95-4	2,4,5-Trichlorophenol	< 368		µg/kg dry	368	38.0	1	"	"	"	"	"	X
88-06-2	2,4,6-Trichlorophenol	< 186		µg/kg dry	186	45.5	1	"	"	"	"	"	X
82-68-8	Pentachloronitrobenzene	< 368		µg/kg dry	368	39.1	1	"	"	"	"	"	X
95-94-3	1,2,4,5-Tetrachlorobenzene	< 368		µg/kg dry	368	43.8	1	"	"	"	"	"	X
Surrogate recoveries:													
321-60-8	*2-Fluorobiphenyl*	*91*			*30-130 %*			"	"	"	"	"	
367-12-4	*2-Fluorophenol*	*87*			*30-130 %*			"	"	"	"	"	
4165-60-0	*Nitrobenzene-d5*	*81*			*30-130 %*			"	"	"	"	"	
4165-62-2	*Phenol-d5*	*105*			*30-130 %*			"	"	"	"	"	
1718-51-0	*Terphenyl-dl4*	*92*			*30-130 %*			"	"	"	"	"	
118-79-6	*2,4,6-Tribromophenol*	*85*			*30-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls Prepared by method SW846 3546													
12674-11-2	Aroclor-1016	< 22.1		µg/kg dry	22.1	15.9	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
11104-28-2	Aroclor-1221	< 22.1		µg/kg dry	22.1	6.54	1	"	"	"	"	"	X
11141-16-5	Aroclor-1232	< 22.1		µg/kg dry	22.1	6.13	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SS-1	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-01				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls													
53469-21-9	Aroclor-1242	< 22.1		µg/kg dry	22.1	2.10	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
12672-29-6	Aroclor-1248	< 22.1		µg/kg dry	22.1	6.92	1	"	"	"	"	"	X
11097-69-1	Aroclor-1254	< 22.1		µg/kg dry	22.1	17.2	1	"	"	"	"	"	X
11096-82-5	Aroclor-1260	< 22.1		µg/kg dry	22.1	4.76	1	"	"	"	"	"	X
37324-23-5	Aroclor-1262	< 22.1		µg/kg dry	22.1	5.16	1	"	"	"	"	"	X
11100-14-4	Aroclor-1268	< 22.1		µg/kg dry	22.1	4.71	1	"	"	"	"	"	X
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*93*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*86*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*81*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*71*			*30-150 %*			"	"	"	"	"	
Pesticides													
Organochlorine Pesticides Prepared by method SW846 3546													
319-84-6	alpha-BHC	< 5.53		µg/kg dry	5.53	0.255	1	SW846 8081B	13-Jul-20	16-Jul-20	BJJ	2001088	X
319-85-7	beta-BHC	< 5.53		µg/kg dry	5.53	0.354	1	"	"	"	"	"	X
319-86-8	delta-BHC	< 5.53		µg/kg dry	5.53	0.288	1	"	"	"	"	"	X
58-89-9	gamma-BHC (Lindane)	< 3.32		µg/kg dry	3.32	0.587	1	"	"	"	"	"	X
76-44-8	Heptachlor	< 5.53		µg/kg dry	5.53	0.642	1	"	"	"	"	"	X
309-00-2	Aldrin	< 5.53		µg/kg dry	5.53	0.188	1	"	"	"	"	"	X
1024-57-3	Heptachlor epoxide	< 5.53		µg/kg dry	5.53	0.221	1	"	"	"	"	"	X
959-98-8	Endosulfan I	< 5.53		µg/kg dry	5.53	0.255	1	"	"	"	"	"	X
60-57-1	Dieldrin	< 5.53		µg/kg dry	5.53	0.266	1	"	"	"	"	"	X
72-55-9	4,4'-DDE (p,p')	< 5.53		µg/kg dry	5.53	0.288	1	"	"	"	"	"	X
72-20-8	Endrin	< 8.85		µg/kg dry	8.85	0.542	1	"	"	"	"	"	X
33213-65-9	Endosulfan II	< 8.85		µg/kg dry	8.85	0.354	1	"	"	"	"	"	X
72-54-8	4,4'-DDD (p,p')	< 8.85		µg/kg dry	8.85	0.465	1	"	"	"	"	"	X
1031-07-8	Endosulfan sulfate	< 8.85		µg/kg dry	8.85	0.808	1	"	"	"	"	"	X
50-29-3	4,4'-DDT (p,p')	< 8.85		µg/kg dry	8.85	3.80	1	"	"	"	"	"	X
72-43-5	Methoxychlor	< 8.85		µg/kg dry	8.85	0.598	1	"	"	"	"	"	X
53494-70-5	Endrin ketone	< 8.85		µg/kg dry	8.85	0.321	1	"	"	"	"	"	X
7421-93-4	Endrin aldehyde	< 8.85		µg/kg dry	8.85	1.39	1	"	"	"	"	"	X
5103-71-9	alpha-Chlordane	< 5.53		µg/kg dry	5.53	0.232	1	"	"	"	"	"	X
5103-74-2	gamma-Chlordane	< 5.53		µg/kg dry	5.53	0.277	1	"	"	"	"	"	X
8001-35-2	Toxaphene	< 111		µg/kg dry	111	78.1	1	"	"	"	"	"	X
57-74-9	Chlordane	< 22.1		µg/kg dry	22.1	2.78	1	"	"	"	"	"	X
15972-60-8	Alachlor	< 5.53		µg/kg dry	5.53	0.487	1	"	"	"	"	"	
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*82*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*85*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*68*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*65*			*30-150 %*			"	"	"	"	"	
Extractable Petroleum Hydrocarbons													

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SS-1 SC58794-01	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Extractable Petroleum Hydrocarbons													
Fingerprinting by GC Prepared by method SW846 3546													
	Total Petroleum Hydrocarbons	**24.9**		mg/kg dry	14.9	12.4	1	SW846 8100Mod.	14-Jul-20	15-Jul-20	BJJ	2001092	
Surrogate recoveries:													
84-15-1	*o-Terphenyl*	*76*			*40-140 %*			"	"	"	"	"	
3386-33-2	*1-Chlorooctadecane*	*101*			*40-140 %*			"	"	"	"	"	
Total Metals by EPA 6000/7000 Series Methods													
Prepared by method SW846 3050B													
7440-22-4	Silver	< 3.35		mg/kg dry	3.35	0.181	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7440-38-2	Arsenic	**39.9**		mg/kg dry	1.68	0.212	1	"	"	"	"	"	X
7440-39-3	Barium	**18.4**		mg/kg dry	1.12	0.132	1	"	"	"	"	"	X
7440-41-7	Beryllium	< 0.559		mg/kg dry	0.559	0.0281	1	"	"	"	"	"	X
7440-43-9	Cadmium	< 0.559		mg/kg dry	0.559	0.0290	1	"	"	"	"	"	X
7440-47-3	Chromium	**22.6**		mg/kg dry	1.12	0.149	1	"	"	"	"	"	X
7439-97-6	Mercury	< 0.115		mg/kg dry	0.115	0.0096	1	SW846 7471B	13-Jul-20	13-Jul-20	edt	2001079	X
Prepared by method SW846 3050B													
7440-02-0	Nickel	**39.7**		mg/kg dry	1.12	0.129	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7439-92-1	Lead	**8.42**		mg/kg dry	1.68	0.237	1	"	"	"	"	"	X
7440-36-0	Antimony	< 5.59		mg/kg dry	5.59	0.420	1	"	"	"	"	"	X
7782-49-2	Selenium	< 1.68		mg/kg dry	1.68	0.320	1	"	"	"	"	"	X
7440-28-0	Thallium	< 3.35		mg/kg dry	3.35	1.23	1	"	"	"	"	"	X
7440-62-2	Vanadium	**22.7**		mg/kg dry	1.68	0.297	1	"	"	"	"	"	X
7440-66-6	Zinc	**36.3**		mg/kg dry	3.35	0.865	1	"	"	"	"	"	X
General Chemistry Parameters													
	% Solids	**89.3**		%			1	SM2540 G (11) Mod.	10-Jul-20	14-Jul-20	PN	2001075	
Toxicity Characteristics													
	Ignitability by Definition	**Negative**		N/A			1	SW846 1030	10-Jul-20 17:23	10-Jul-20 21:00	PN	2001074	X
	pH	**5.99**	pH	pH Units			1	SW846 9045D	14-Jul-20 15:31	14-Jul-20 18:55	PN	2001081	X
Subcontracted Analyses													
Subcontracted Analyses Prepared by method SW8151A										Methylation date: 13-Jul-20			
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
93-76-5	2,4,5-T	< 80		ug/kg	80	80	10	SW8151A	13-Jul-20	14-Jul-20 17:28	M-CT007	537166A	
93-72-1	2,4,5-TP (Silvex)	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-75-7	2,4-D	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-82-6	2,4-DB	< 80		ug/kg	80	80	10	"	"	"	"	"	
75-99-0	Dalapon	< 80		ug/kg	80	80	10	"	"	"	"	"	
1918-00-9	Dicamba	< 80		ug/kg	80	80	10	"	"	"	"	"	
120-36-5	Dichloroprop	< 80		ug/kg	80	80	10	"	"	"	"	"	
88-85-7	Dinoseb	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-74-6	MCPA	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
7085-19-0	MCPP	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
Surrogate recoveries:													
19719-28-9	*% DCAA*	*86*			*30-150 %*			"	"	"	"	"	

This laboratory report is not valid without an authorized signature on the cover page.

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SS-1 SC58794-01	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Subcontracted Analyses													
Prepared by method SW846 7.3.3.1/90													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Cyanide	< 6		mg/kg	6	6	1	SW846 7.3.3.1/90	14-Jul-20	14-Jul-20 14:30	M-CT007	537292A	
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Sulfide	< 20		mg/kg	20	20	1	SW846 CH7	"	14-Jul-20 15:17	M-CT007	537292B	
Prepared by method SW846-React													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity	**Negative**		Pos/Neg			1	SW846-React	14-Jul-20 15:18	14-Jul-20 15:18	M-CT007	'[none]'	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SS-2	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-02				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
Prepared by method SW846 5035A Soil (high level)							Initial weight: 16.55 g						
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	< 57.3		µg/kg dry	57.3	31.4	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
67-64-1	Acetone	< 573		µg/kg dry	573	72.4	50	"	"	"	"	"	X
107-13-1	Acrylonitrile	< 57.3		µg/kg dry	57.3	20.7	50	"	"	"	"	"	X
71-43-2	Benzene	< 57.3		µg/kg dry	57.3	9.17	50	"	"	"	"	"	X
108-86-1	Bromobenzene	< 57.3		µg/kg dry	57.3	12.9	50	"	"	"	"	"	X
74-97-5	Bromochloromethane	< 57.3		µg/kg dry	57.3	8.19	50	"	"	"	"	"	X
75-27-4	Bromodichloromethane	< 57.3		µg/kg dry	57.3	14.8	50	"	"	"	"	"	X
75-25-2	Bromoform	< 57.3		µg/kg dry	57.3	12.3	50	"	"	"	"	"	X
74-83-9	Bromomethane	< 115		µg/kg dry	115	28.3	50	"	"	"	"	"	X
78-93-3	2-Butanone (MEK)	< 115		µg/kg dry	115	26.2	50	"	"	"	"	"	X
104-51-8	n-Butylbenzene	< 57.3		µg/kg dry	57.3	22.9	50	"	"	"	"	"	X
135-98-8	sec-Butylbenzene	< 57.3		µg/kg dry	57.3	17.6	50	"	"	"	"	"	X
98-06-6	tert-Butylbenzene	< 57.3		µg/kg dry	57.3	23.4	50	"	"	"	"	"	X
75-15-0	Carbon disulfide	< 115		µg/kg dry	115	21.2	50	"	"	"	"	"	X
56-23-5	Carbon tetrachloride	< 57.3		µg/kg dry	57.3	17.1	50	"	"	"	"	"	X
108-90-7	Chlorobenzene	< 57.3		µg/kg dry	57.3	6.93	50	"	"	"	"	"	X
75-00-3	Chloroethane	< 115		µg/kg dry	115	25.6	50	"	"	"	"	"	X
67-66-3	Chloroform	< 57.3		µg/kg dry	57.3	6.76	50	"	"	"	"	"	X
74-87-3	Chloromethane	< 115		µg/kg dry	115	68.1	50	"	"	"	"	"	X
95-49-8	2-Chlorotoluene	< 57.3		µg/kg dry	57.3	14.2	50	"	"	"	"	"	X
106-43-4	4-Chlorotoluene	< 57.3		µg/kg dry	57.3	10.4	50	"	"	"	"	"	X
96-12-8	1,2-Dibromo-3-chloropropane	< 115		µg/kg dry	115	22.6	50	"	"	"	"	"	X
124-48-1	Dibromochloromethane	< 57.3		µg/kg dry	57.3	9.05	50	"	"	"	"	"	X
106-93-4	1,2-Dibromoethane (EDB)	< 57.3		µg/kg dry	57.3	15.6	50	"	"	"	"	"	X
74-95-3	Dibromomethane	< 57.3		µg/kg dry	57.3	10.8	50	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 57.3		µg/kg dry	57.3	10.3	50	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 57.3		µg/kg dry	57.3	14.3	50	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 57.3		µg/kg dry	57.3	10.3	50	"	"	"	"	"	X
75-71-8	Dichlorodifluoromethane (Freon12)	< 115		µg/kg dry	115	74.9	50	"	"	"	"	"	X
75-34-3	1,1-Dichloroethane	< 57.3		µg/kg dry	57.3	13.2	50	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 57.3		µg/kg dry	57.3	15.0	50	"	"	"	"	"	X
75-35-4	1,1-Dichloroethene	< 57.3		µg/kg dry	57.3	14.7	50	"	"	"	"	"	X
156-59-2	cis-1,2-Dichloroethene	< 57.3		µg/kg dry	57.3	19.1	50	"	"	"	"	"	X
156-60-5	trans-1,2-Dichloroethene	< 57.3		µg/kg dry	57.3	13.1	50	"	"	"	"	"	X
78-87-5	1,2-Dichloropropane	< 57.3		µg/kg dry	57.3	19.9	50	"	"	"	"	"	X
142-28-9	1,3-Dichloropropane	< 57.3		µg/kg dry	57.3	18.1	50	"	"	"	"	"	X
594-20-7	2,2-Dichloropropane	< 57.3		µg/kg dry	57.3	15.1	50	"	"	"	"	"	X
563-58-6	1,1-Dichloropropene	< 57.3		µg/kg dry	57.3	17.5	50	"	"	"	"	"	X
10061-01-5	cis-1,3-Dichloropropene	< 57.3		µg/kg dry	57.3	13.5	50	"	"	"	"	"	X
10061-02-6	trans-1,3-Dichloropropene	< 57.3		µg/kg dry	57.3	23.3	50	"	"	"	"	"	X
100-41-4	Ethylbenzene	< 57.3		µg/kg dry	57.3	12.0	50	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 57.3		µg/kg dry	57.3	18.3	50	"	"	"	"	"	X
591-78-6	2-Hexanone (MBK)	< 115		µg/kg dry	115	38.1	50	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SS-2	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-02				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
							Initial weight: 16.55 g						
98-82-8	Isopropylbenzene	< 57.3		µg/kg dry	57.3	20.8	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
99-87-6	4-Isopropyltoluene	< 57.3		µg/kg dry	57.3	15.9	50	"	"	"	"	"	X
1634-04-4	Methyl tert-butyl ether	< 57.3		µg/kg dry	57.3	17.2	50	"	"	"	"	"	X
108-10-1	4-Methyl-2-pentanone (MIBK)	< 115		µg/kg dry	115	41.0	50	"	"	"	"	"	X
75-09-2	Methylene chloride	< 115		µg/kg dry	115	48.9	50	"	"	"	"	"	X
91-20-3	Naphthalene	< 57.3		µg/kg dry	57.3	16.6	50	"	"	"	"	"	X
103-65-1	n-Propylbenzene	< 57.3		µg/kg dry	57.3	14.3	50	"	"	"	"	"	X
100-42-5	Styrene	< 57.3		µg/kg dry	57.3	7.56	50	"	"	"	"	"	X
630-20-6	1,1,1,2-Tetrachloroethane	< 57.3		µg/kg dry	57.3	13.8	50	"	"	"	"	"	X
79-34-5	1,1,2,2-Tetrachloroethane	< 57.3		µg/kg dry	57.3	18.2	50	"	"	"	"	"	X
127-18-4	Tetrachloroethene	< 57.3		µg/kg dry	57.3	18.0	50	"	"	"	"	"	X
108-88-3	Toluene	< 57.3		µg/kg dry	57.3	9.22	50	"	"	"	"	"	X
87-61-6	1,2,3-Trichlorobenzene	< 57.3		µg/kg dry	57.3	13.3	50	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 57.3		µg/kg dry	57.3	9.45	50	"	"	"	"	"	X
108-70-3	1,3,5-Trichlorobenzene	< 57.3		µg/kg dry	57.3	9.05	50	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	< 57.3		µg/kg dry	57.3	13.9	50	"	"	"	"	"	X
79-00-5	1,1,2-Trichloroethane	< 57.3		µg/kg dry	57.3	17.7	50	"	"	"	"	"	X
79-01-6	Trichloroethene	< 57.3		µg/kg dry	57.3	9.80	50	"	"	"	"	"	X
75-69-4	Trichlorofluoromethane (Freon 11)	< 57.3		µg/kg dry	57.3	25.9	50	"	"	"	"	"	X
96-18-4	1,2,3-Trichloropropane	< 57.3		µg/kg dry	57.3	26.4	50	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	< 57.3		µg/kg dry	57.3	14.5	50	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	< 57.3		µg/kg dry	57.3	12.0	50	"	"	"	"	"	X
75-01-4	Vinyl chloride	< 57.3		µg/kg dry	57.3	28.2	50	"	"	"	"	"	X
179601-23-1	m,p-Xylene	< 115		µg/kg dry	115	33.7	50	"	"	"	"	"	X
95-47-6	o-Xylene	< 57.3		µg/kg dry	57.3	17.6	50	"	"	"	"	"	X
109-99-9	Tetrahydrofuran	< 115		µg/kg dry	115	41.9	50	"	"	"	"	"	
60-29-7	Ethyl ether	< 57.3		µg/kg dry	57.3	15.5	50	"	"	"	"	"	X
994-05-8	Tert-amyl methyl ether	< 57.3		µg/kg dry	57.3	31.7	50	"	"	"	"	"	
637-92-3	Ethyl tert-butyl ether	< 57.3		µg/kg dry	57.3	15.9	50	"	"	"	"	"	
108-20-3	Di-isopropyl ether	< 57.3		µg/kg dry	57.3	18.5	50	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	< 1150		µg/kg dry	1150	814	50	"	"	"	"	"	X
123-91-1	1,4-Dioxane	< 1150		µg/kg dry	1150	337	50	"	"	"	"	"	X
110-57-6	trans-1,4-Dichloro-2-buten e	< 286		µg/kg dry	286	37.8	50	"	"	"	"	"	X
64-17-5	Ethanol	< 11500		µg/kg dry	11500	987	50	"	"	"	"	"	
Surrogate recoveries:													
460-00-4	*4-Bromofluorobenzene*	*105*			*70-130 %*			"	"	"	"	"	
2037-26-5	*Toluene-d8*	*104*			*70-130 %*			"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*104*			*70-130 %*			"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*106*			*70-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds Prepared by method SW846 3546													
83-32-9	Acenaphthene	< 74.6		µg/kg dry	74.6	39.6	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SS-2	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-02				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
208-96-8	Acenaphthylene	< 74.6		µg/kg dry	74.6	38.9	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X
62-53-3	Aniline	< 369		µg/kg dry	369	23.5	1	"	"	"	"	"	X
120-12-7	Anthracene	< 74.6		µg/kg dry	74.6	42.9	1	"	"	"	"	"	X
103-33-3	Azobenzene/Diphenyldiazene	< 369		µg/kg dry	369	40.0	1	"	"	"	"	"	
92-87-5	Benzidine	< 738		µg/kg dry	738	23.5	1	"	"	"	"	"	X
56-55-3	Benzo (a) anthracene	< 74.6		µg/kg dry	74.6	41.9	1	"	"	"	"	"	X
50-32-8	Benzo (a) pyrene	< 74.6		µg/kg dry	74.6	51.0	1	"	"	"	"	"	X
205-99-2	Benzo (b) fluoranthene	< 74.6		µg/kg dry	74.6	56.1	1	"	"	"	"	"	X
191-24-2	Benzo (g,h,i) perylene	< 74.6		µg/kg dry	74.6	52.6	1	"	"	"	"	"	X
207-08-9	Benzo (k) fluoranthene	< 74.6		µg/kg dry	74.6	63.7	1	"	"	"	"	"	X
65-85-0	Benzoic acid	< 369		µg/kg dry	369	22.1	1	"	"	"	"	"	X
100-51-6	Benzyl alcohol	< 369		µg/kg dry	369	85.4	1	"	"	"	"	"	X
111-91-1	Bis(2-chloroethoxy)methane	< 369		µg/kg dry	369	37.2	1	"	"	"	"	"	X
111-44-4	Bis(2-chloroethyl)ether	< 187		µg/kg dry	187	34.5	1	"	"	"	"	"	X
108-60-1	Bis(2-chloroisopropyl)ether	< 187		µg/kg dry	187	30.0	1	"	"	"	"	"	X
117-81-7	Bis(2-ethylhexyl)phthalate	< 187		µg/kg dry	187	47.5	1	"	"	"	"	"	X
101-55-3	4-Bromophenyl phenyl ether	< 369		µg/kg dry	369	41.7	1	"	"	"	"	"	X
85-68-7	Butyl benzyl phthalate	< 369		µg/kg dry	369	37.0	1	"	"	"	"	"	X
86-74-8	Carbazole	< 187		µg/kg dry	187	42.9	1	"	"	"	"	"	X
59-50-7	4-Chloro-3-methylphenol	< 369		µg/kg dry	369	43.4	1	"	"	"	"	"	X
106-47-8	4-Chloroaniline	< 187		µg/kg dry	187	23.0	1	"	"	"	"	"	X
91-58-7	2-Chloronaphthalene	< 369		µg/kg dry	369	50.5	1	"	"	"	"	"	X
95-57-8	2-Chlorophenol	< 187		µg/kg dry	187	35.8	1	"	"	"	"	"	X
7005-72-3	4-Chlorophenyl phenyl ether	< 369		µg/kg dry	369	36.1	1	"	"	"	"	"	X
218-01-9	Chrysene	< 74.6		µg/kg dry	74.6	42.1	1	"	"	"	"	"	X
53-70-3	Dibenzo (a,h) anthracene	< 74.6		µg/kg dry	74.6	55.1	1	"	"	"	"	"	X
132-64-9	Dibenzofuran	< 187		µg/kg dry	187	50.2	1	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 369		µg/kg dry	369	44.0	1	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 369		µg/kg dry	369	39.8	1	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 369		µg/kg dry	369	41.9	1	"	"	"	"	"	X
91-94-1	3,3´-Dichlorobenzidine	< 369		µg/kg dry	369	40.8	1	"	"	"	"	"	X
120-83-2	2,4-Dichlorophenol	< 187		µg/kg dry	187	45.3	1	"	"	"	"	"	X
84-66-2	Diethyl phthalate	< 369		µg/kg dry	369	38.7	1	"	"	"	"	"	X
131-11-3	Dimethyl phthalate	< 369		µg/kg dry	369	41.5	1	"	"	"	"	"	X
105-67-9	2,4-Dimethylphenol	< 369		µg/kg dry	369	29.2	1	"	"	"	"	"	X
84-74-2	Di-n-butyl phthalate	< 369		µg/kg dry	369	39.5	1	"	"	"	"	"	X
534-52-1	4,6-Dinitro-2-methylphenol	< 369		µg/kg dry	369	52.9	1	"	"	"	"	"	X
51-28-5	2,4-Dinitrophenol	< 369		µg/kg dry	369	38.2	1	"	"	"	"	"	X
121-14-2	2,4-Dinitrotoluene	< 187		µg/kg dry	187	44.7	1	"	"	"	"	"	X
606-20-2	2,6-Dinitrotoluene	< 187		µg/kg dry	187	38.1	1	"	"	"	"	"	X
117-84-0	Di-n-octyl phthalate	< 369		µg/kg dry	369	54.9	1	"	"	"	"	"	X
206-44-0	Fluoranthene	< 74.6		µg/kg dry	74.6	43.7	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SS-2	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-02				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
86-73-7	Fluorene	< 74.6		µg/kg dry	74.6	48.2	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X
118-74-1	Hexachlorobenzene	< 187		µg/kg dry	187	46.9	1	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 187		µg/kg dry	187	46.9	1	"	"	"	"	"	X
77-47-4	Hexachlorocyclopentadiene	< 187		µg/kg dry	187	47.1	1	"	"	"	"	"	X
67-72-1	Hexachloroethane	< 187		µg/kg dry	187	42.1	1	"	"	"	"	"	X
193-39-5	Indeno (1,2,3-cd) pyrene	< 74.6		µg/kg dry	74.6	51.0	1	"	"	"	"	"	X
78-59-1	Isophorone	< 187		µg/kg dry	187	28.7	1	"	"	"	"	"	X
91-57-6	2-Methylnaphthalene	< 74.6		µg/kg dry	74.6	52.2	1	"	"	"	"	"	X
95-48-7	2-Methylphenol	< 369		µg/kg dry	369	29.6	1	"	"	"	"	"	X
108-39-4, 106-44-5	3 & 4-Methylphenol	< 369		µg/kg dry	369	28.9	1	"	"	"	"	"	X
91-20-3	Naphthalene	< 74.6		µg/kg dry	74.6	43.0	1	"	"	"	"	"	X
88-74-4	2-Nitroaniline	< 369		µg/kg dry	369	33.4	1	"	"	"	"	"	X
99-09-2	3-Nitroaniline	< 369		µg/kg dry	369	34.1	1	"	"	"	"	"	X
100-01-6	4-Nitroaniline	< 187		µg/kg dry	187	49.2	1	"	"	"	"	"	X
98-95-3	Nitrobenzene	< 187		µg/kg dry	187	43.1	1	"	"	"	"	"	X
88-75-5	2-Nitrophenol	< 187		µg/kg dry	187	32.6	1	"	"	"	"	"	X
100-02-7	4-Nitrophenol	< 1480		µg/kg dry	1480	49.1	1	"	"	"	"	"	X
62-75-9	N-Nitrosodimethylamine	< 187		µg/kg dry	187	24.4	1	"	"	"	"	"	X
621-64-7	N-Nitrosodi-n-propylamine	< 187		µg/kg dry	187	32.6	1	"	"	"	"	"	X
86-30-6	N-Nitrosodiphenylamine	< 369		µg/kg dry	369	37.6	1	"	"	"	"	"	X
87-86-5	Pentachlorophenol	< 369		µg/kg dry	369	43.9	1	"	"	"	"	"	X
85-01-8	Phenanthrene	< 74.6		µg/kg dry	74.6	42.3	1	"	"	"	"	"	X
108-95-2	Phenol	< 369		µg/kg dry	369	37.3	1	"	"	"	"	"	X
129-00-0	Pyrene	< 74.6		µg/kg dry	74.6	41.1	1	"	"	"	"	"	X
110-86-1	Pyridine	< 369		µg/kg dry	369	87.3	1	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 369		µg/kg dry	369	45.4	1	"	"	"	"	"	X
90-12-0	1-Methylnaphthalene	< 74.6		µg/kg dry	74.6	41.1	1	"	"	"	"	"	
95-95-4	2,4,5-Trichlorophenol	< 369		µg/kg dry	369	38.1	1	"	"	"	"	"	X
88-06-2	2,4,6-Trichlorophenol	< 187		µg/kg dry	187	45.6	1	"	"	"	"	"	X
82-68-8	Pentachloronitrobenzene	< 369		µg/kg dry	369	39.2	1	"	"	"	"	"	X
95-94-3	1,2,4,5-Tetrachlorobenzene	< 369		µg/kg dry	369	43.9	1	"	"	"	"	"	X
Surrogate recoveries:													
321-60-8	*2-Fluorobiphenyl*	*99*			*30-130 %*			"	"	"	"	"	
367-12-4	*2-Fluorophenol*	*100*			*30-130 %*			"	"	"	"	"	
4165-60-0	*Nitrobenzene-d5*	*89*			*30-130 %*			"	"	"	"	"	
4165-62-2	*Phenol-d5*	*108*			*30-130 %*			"	"	"	"	"	
1718-51-0	*Terphenyl-dl4*	*92*			*30-130 %*			"	"	"	"	"	
118-79-6	*2,4,6-Tribromophenol*	*86*			*30-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls Prepared by method SW846 3546													
12674-11-2	Aroclor-1016	< 22.3		µg/kg dry	22.3	16.0	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
11104-28-2	Aroclor-1221	< 22.3		µg/kg dry	22.3	6.58	1	"	"	"	"	"	X
11141-16-5	Aroclor-1232	< 22.3		µg/kg dry	22.3	6.16	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SS-2	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-02				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls													
53469-21-9	Aroclor-1242	< 22.3		µg/kg dry	22.3	2.11	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
12672-29-6	Aroclor-1248	< 22.3		µg/kg dry	22.3	6.95	1	"	"	"	"	"	X
11097-69-1	Aroclor-1254	< 22.3		µg/kg dry	22.3	17.3	1	"	"	"	"	"	X
11096-82-5	Aroclor-1260	< 22.3		µg/kg dry	22.3	4.79	1	"	"	"	"	"	X
37324-23-5	Aroclor-1262	< 22.3		µg/kg dry	22.3	5.19	1	"	"	"	"	"	X
11100-14-4	Aroclor-1268	< 22.3		µg/kg dry	22.3	4.74	1	"	"	"	"	"	X
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*97*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*89*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*87*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*78*			*30-150 %*			"	"	"	"	"	
Pesticides													
Organochlorine Pesticides Prepared by method SW846 3546													
319-84-6	alpha-BHC	< 5.56		µg/kg dry	5.56	0.256	1	SW846 8081B	13-Jul-20	16-Jul-20	BJJ	2001088	X
319-85-7	beta-BHC	< 5.56		µg/kg dry	5.56	0.356	1	"	"	"	"	"	X
319-86-8	delta-BHC	< 5.56		µg/kg dry	5.56	0.289	1	"	"	"	"	"	X
58-89-9	gamma-BHC (Lindane)	< 3.34		µg/kg dry	3.34	0.590	1	"	"	"	"	"	X
76-44-8	Heptachlor	< 5.56		µg/kg dry	5.56	0.645	1	"	"	"	"	"	X
309-00-2	Aldrin	< 5.56		µg/kg dry	5.56	0.189	1	"	"	"	"	"	X
1024-57-3	Heptachlor epoxide	< 5.56		µg/kg dry	5.56	0.223	1	"	"	"	"	"	X
959-98-8	Endosulfan I	< 5.56		µg/kg dry	5.56	0.256	1	"	"	"	"	"	X
60-57-1	Dieldrin	< 5.56		µg/kg dry	5.56	0.267	1	"	"	"	"	"	X
72-55-9	4,4'-DDE (p,p')	< 5.56		µg/kg dry	5.56	0.289	1	"	"	"	"	"	X
72-20-8	Endrin	< 8.90		µg/kg dry	8.90	0.545	1	"	"	"	"	"	X
33213-65-9	Endosulfan II	< 8.90		µg/kg dry	8.90	0.356	1	"	"	"	"	"	X
72-54-8	4,4'-DDD (p,p')	< 8.90		µg/kg dry	8.90	0.467	1	"	"	"	"	"	X
1031-07-8	Endosulfan sulfate	< 8.90		µg/kg dry	8.90	0.812	1	"	"	"	"	"	X
50-29-3	4,4'-DDT (p,p')	< 8.90		µg/kg dry	8.90	3.82	1	"	"	"	"	"	X
72-43-5	Methoxychlor	< 8.90		µg/kg dry	8.90	0.601	1	"	"	"	"	"	X
53494-70-5	Endrin ketone	< 8.90		µg/kg dry	8.90	0.323	1	"	"	"	"	"	X
7421-93-4	Endrin aldehyde	< 8.90		µg/kg dry	8.90	1.40	1	"	"	"	"	"	X
5103-71-9	alpha-Chlordane	< 5.56		µg/kg dry	5.56	0.234	1	"	"	"	"	"	X
5103-74-2	gamma-Chlordane	< 5.56		µg/kg dry	5.56	0.278	1	"	"	"	"	"	X
8001-35-2	Toxaphene	< 111		µg/kg dry	111	78.5	1	"	"	"	"	"	X
57-74-9	Chlordane	< 22.3		µg/kg dry	22.3	2.80	1	"	"	"	"	"	X
15972-60-8	Alachlor	< 5.56		µg/kg dry	5.56	0.490	1	"	"	"	"	"	
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*87*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*93*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*81*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*77*			*30-150 %*			"	"	"	"	"	
Extractable Petroleum Hydrocarbons													

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SS-2	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-02				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Extractable Petroleum Hydrocarbons													
Fingerprinting by GC													
Prepared by method SW846 3546													
	Total Petroleum Hydrocarbons	**38.7**		mg/kg dry	14.6	12.2	1	SW846 8100Mod.	14-Jul-20	15-Jul-20	BJJ	2001092	
Surrogate recoveries:													
84-15-1	*o-Terphenyl*	*76*			*40-140 %*			"	"	"	"	"	
3386-33-2	*1-Chlorooctadecane*	*101*			*40-140 %*			"	"	"	"	"	
Total Metals by EPA 6000/7000 Series Methods													
Prepared by method SW846 3050B													
7440-22-4	Silver	< 3.35		mg/kg dry	3.35	0.181	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7440-38-2	Arsenic	**55.9**		mg/kg dry	1.67	0.212	1	"	"	"	"	"	X
7440-39-3	Barium	**22.5**		mg/kg dry	1.12	0.132	1	"	"	"	"	"	X
7440-41-7	Beryllium	< 0.558		mg/kg dry	0.558	0.0280	1	"	"	"	"	"	X
7440-43-9	Cadmium	< 0.558		mg/kg dry	0.558	0.0289	1	"	"	"	"	"	X
7440-47-3	Chromium	**19.4**		mg/kg dry	1.12	0.148	1	"	"	"	"	"	X
7439-97-6	Mercury	< 0.127		mg/kg dry	0.127	0.0105	1	SW846 7471B	13-Jul-20	13-Jul-20	edt	2001079	X
Prepared by method SW846 3050B													
7440-02-0	Nickel	**71.4**		mg/kg dry	1.12	0.128	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7439-92-1	Lead	**19.3**		mg/kg dry	1.67	0.236	1	"	"	"	"	"	X
7440-36-0	Antimony	< 5.58		mg/kg dry	5.58	0.419	1	"	"	"	"	"	X
7782-49-2	Selenium	< 1.67		mg/kg dry	1.67	0.319	1	"	"	"	"	"	X
7440-28-0	Thallium	< 3.35		mg/kg dry	3.35	1.23	1	"	"	"	"	"	X
7440-62-2	Vanadium	**24.5**		mg/kg dry	1.67	0.297	1	"	"	"	"	"	X
7440-66-6	Zinc	**58.5**		mg/kg dry	3.35	0.863	1	"	"	"	"	"	X
General Chemistry Parameters													
	% Solids	**88.8**		%			1	SM2540 G (11) Mod.	10-Jul-20	14-Jul-20	PN	2001075	
Toxicity Characteristics													
	Ignitability by Definition	**Negative**		N/A			1	SW846 1030	10-Jul-20 17:23	10-Jul-20 21:00	PN	2001074	X
	pH	**6.08**	pH	pH Units			1	SW846 9045D	14-Jul-20 15:31	14-Jul-20 18:55	PN	2001081	X
Subcontracted Analyses													
Subcontracted Analyses													
Prepared by method SW8151A									Methylation date: 13-Jul-20				
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
93-76-5	2,4,5-T	< 80		ug/kg	80	80	10	SW8151A	13-Jul-20	14-Jul-20 17:52	M-CT007	537166A	
93-72-1	2,4,5-TP (Silvex)	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-75-7	2,4-D	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-82-6	2,4-DB	< 80		ug/kg	80	80	10	"	"	"	"	"	
75-99-0	Dalapon	< 80		ug/kg	80	80	10	"	"	"	"	"	
1918-00-9	Dicamba	< 80		ug/kg	80	80	10	"	"	"	"	"	
120-36-5	Dichloroprop	< 80		ug/kg	80	80	10	"	"	"	"	"	
88-85-7	Dinoseb	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-74-6	MCPA	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
7085-19-0	MCPP	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
Surrogate recoveries:													
19719-28-9	*% DCAA*	*82*			*30-150 %*			"	"	"	"	"	

This laboratory report is not valid without an authorized signature on the cover page.

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SS-2 SC58794-02	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Subcontracted Analyses													
Prepared by method SW846 7.3.3.1/90													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Cyanide	< 7		mg/kg	7	7	1	SW846 7.3.3.1/90	14-Jul-20	14-Jul-20 14:31	M-CT007	537292A	
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Sulfide	< 20		mg/kg	20	20	1	SW846 CH7	"	14-Jul-20 15:17	M-CT007	537292B	
Prepared by method SW846-React													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity	**Negative**		Pos/Neg			1	SW846-React	14-Jul-20 15:18	14-Jul-20 15:18	M-CT007	'[none]'	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-10	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-03				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
Prepared by method SW846 5035A Soil (high level)							Initial weight: 16.67 g						
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	< 68.6		µg/kg dry	68.6	37.6	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
67-64-1	Acetone	< 686		µg/kg dry	686	86.8	50	"	"	"	"	"	X
107-13-1	Acrylonitrile	< 68.6		µg/kg dry	68.6	24.8	50	"	"	"	"	"	X
71-43-2	Benzene	< 68.6		µg/kg dry	68.6	11.0	50	"	"	"	"	"	X
108-86-1	Bromobenzene	< 68.6		µg/kg dry	68.6	15.5	50	"	"	"	"	"	X
74-97-5	Bromochloromethane	< 68.6		µg/kg dry	68.6	9.81	50	"	"	"	"	"	X
75-27-4	Bromodichloromethane	< 68.6		µg/kg dry	68.6	17.7	50	"	"	"	"	"	X
75-25-2	Bromoform	< 68.6		µg/kg dry	68.6	14.7	50	"	"	"	"	"	X
74-83-9	Bromomethane	< 137		µg/kg dry	137	33.9	50	"	"	"	"	"	X
78-93-3	2-Butanone (MEK)	< 137		µg/kg dry	137	31.4	50	"	"	"	"	"	X
104-51-8	n-Butylbenzene	< 68.6		µg/kg dry	68.6	27.5	50	"	"	"	"	"	X
135-98-8	sec-Butylbenzene	< 68.6		µg/kg dry	68.6	21.1	50	"	"	"	"	"	X
98-06-6	tert-Butylbenzene	< 68.6		µg/kg dry	68.6	28.0	50	"	"	"	"	"	X
75-15-0	Carbon disulfide	< 137		µg/kg dry	137	25.4	50	"	"	"	"	"	X
56-23-5	Carbon tetrachloride	< 68.6		µg/kg dry	68.6	20.5	50	"	"	"	"	"	X
108-90-7	Chlorobenzene	< 68.6		µg/kg dry	68.6	8.30	50	"	"	"	"	"	X
75-00-3	Chloroethane	< 137		µg/kg dry	137	30.6	50	"	"	"	"	"	X
67-66-3	Chloroform	< 68.6		µg/kg dry	68.6	8.10	50	"	"	"	"	"	X
74-87-3	Chloromethane	< 137		µg/kg dry	137	81.5	50	"	"	"	"	"	X
95-49-8	2-Chlorotoluene	< 68.6		µg/kg dry	68.6	17.0	50	"	"	"	"	"	X
106-43-4	4-Chlorotoluene	< 68.6		µg/kg dry	68.6	12.4	50	"	"	"	"	"	X
96-12-8	1,2-Dibromo-3-chloropropane	< 137		µg/kg dry	137	27.1	50	"	"	"	"	"	X
124-48-1	Dibromochloromethane	< 68.6		µg/kg dry	68.6	10.8	50	"	"	"	"	"	X
106-93-4	1,2-Dibromoethane (EDB)	< 68.6		µg/kg dry	68.6	18.7	50	"	"	"	"	"	X
74-95-3	Dibromomethane	< 68.6		µg/kg dry	68.6	12.9	50	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 68.6		µg/kg dry	68.6	12.4	50	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 68.6		µg/kg dry	68.6	17.1	50	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 68.6		µg/kg dry	68.6	12.3	50	"	"	"	"	"	X
75-71-8	Dichlorodifluoromethane (Freon12)	< 137		µg/kg dry	137	89.8	50	"	"	"	"	"	X
75-34-3	1,1-Dichloroethane	< 68.6		µg/kg dry	68.6	15.9	50	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 68.6		µg/kg dry	68.6	18.0	50	"	"	"	"	"	X
75-35-4	1,1-Dichloroethene	< 68.6		µg/kg dry	68.6	17.6	50	"	"	"	"	"	X
156-59-2	cis-1,2-Dichloroethene	< 68.6		µg/kg dry	68.6	22.9	50	"	"	"	"	"	X
156-60-5	trans-1,2-Dichloroethene	< 68.6		µg/kg dry	68.6	15.6	50	"	"	"	"	"	X
78-87-5	1,2-Dichloropropane	< 68.6		µg/kg dry	68.6	23.8	50	"	"	"	"	"	X
142-28-9	1,3-Dichloropropane	< 68.6		µg/kg dry	68.6	21.7	50	"	"	"	"	"	X
594-20-7	2,2-Dichloropropane	< 68.6		µg/kg dry	68.6	18.1	50	"	"	"	"	"	X
563-58-6	1,1-Dichloropropene	< 68.6		µg/kg dry	68.6	21.0	50	"	"	"	"	"	X
10061-01-5	cis-1,3-Dichloropropene	< 68.6		µg/kg dry	68.6	16.2	50	"	"	"	"	"	X
10061-02-6	trans-1,3-Dichloropropene	< 68.6		µg/kg dry	68.6	27.9	50	"	"	"	"	"	X
100-41-4	Ethylbenzene	< 68.6		µg/kg dry	68.6	14.3	50	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 68.6		µg/kg dry	68.6	22.0	50	"	"	"	"	"	X
591-78-6	2-Hexanone (MBK)	< 137		µg/kg dry	137	45.6	50	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-10	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-03				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
							Initial weight: 16.67 g						
98-82-8	Isopropylbenzene	< 68.6		µg/kg dry	68.6	24.9	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
99-87-6	4-Isopropyltoluene	< 68.6		µg/kg dry	68.6	19.0	50	"	"	"	"	"	X
1634-04-4	Methyl tert-butyl ether	< 68.6		µg/kg dry	68.6	20.7	50	"	"	"	"	"	X
108-10-1	4-Methyl-2-pentanone (MIBK)	< 137		µg/kg dry	137	49.1	50	"	"	"	"	"	X
75-09-2	Methylene chloride	< 137		µg/kg dry	137	58.6	50	"	"	"	"	"	X
91-20-3	Naphthalene	< 68.6		µg/kg dry	68.6	19.9	50	"	"	"	"	"	X
103-65-1	n-Propylbenzene	< 68.6		µg/kg dry	68.6	17.1	50	"	"	"	"	"	X
100-42-5	Styrene	< 68.6		µg/kg dry	68.6	9.06	50	"	"	"	"	"	X
630-20-6	1,1,1,2-Tetrachloroethane	< 68.6		µg/kg dry	68.6	16.5	50	"	"	"	"	"	X
79-34-5	1,1,2,2-Tetrachloroethane	< 68.6		µg/kg dry	68.6	21.8	50	"	"	"	"	"	X
127-18-4	Tetrachloroethene	< 68.6		µg/kg dry	68.6	21.6	50	"	"	"	"	"	X
108-88-3	Toluene	< 68.6		µg/kg dry	68.6	11.1	50	"	"	"	"	"	X
87-61-6	1,2,3-Trichlorobenzene	< 68.6		µg/kg dry	68.6	16.0	50	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 68.6		µg/kg dry	68.6	11.3	50	"	"	"	"	"	X
108-70-3	1,3,5-Trichlorobenzene	< 68.6		µg/kg dry	68.6	10.8	50	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	< 68.6		µg/kg dry	68.6	16.6	50	"	"	"	"	"	X
79-00-5	1,1,2-Trichloroethane	< 68.6		µg/kg dry	68.6	21.2	50	"	"	"	"	"	X
79-01-6	Trichloroethene	< 68.6		µg/kg dry	68.6	11.7	50	"	"	"	"	"	X
75-69-4	Trichlorofluoromethane (Freon 11)	< 68.6		µg/kg dry	68.6	31.0	50	"	"	"	"	"	X
96-18-4	1,2,3-Trichloropropane	< 68.6		µg/kg dry	68.6	31.6	50	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	< 68.6		µg/kg dry	68.6	17.4	50	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	< 68.6		µg/kg dry	68.6	14.3	50	"	"	"	"	"	X
75-01-4	Vinyl chloride	< 68.6		µg/kg dry	68.6	33.8	50	"	"	"	"	"	X
179601-23-1	m,p-Xylene	< 137		µg/kg dry	137	40.4	50	"	"	"	"	"	X
95-47-6	o-Xylene	< 68.6		µg/kg dry	68.6	21.1	50	"	"	"	"	"	X
109-99-9	Tetrahydrofuran	< 137		µg/kg dry	137	50.2	50	"	"	"	"	"	
60-29-7	Ethyl ether	< 68.6		µg/kg dry	68.6	18.6	50	"	"	"	"	"	X
994-05-8	Tert-amyl methyl ether	< 68.6		µg/kg dry	68.6	38.0	50	"	"	"	"	"	
637-92-3	Ethyl tert-butyl ether	< 68.6		µg/kg dry	68.6	19.0	50	"	"	"	"	"	
108-20-3	Di-isopropyl ether	< 68.6		µg/kg dry	68.6	22.2	50	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	< 1370		µg/kg dry	1370	975	50	"	"	"	"	"	X
123-91-1	1,4-Dioxane	< 1370		µg/kg dry	1370	404	50	"	"	"	"	"	X
110-57-6	trans-1,4-Dichloro-2-buten e	< 343		µg/kg dry	343	45.3	50	"	"	"	"	"	X
64-17-5	Ethanol	< 13700		µg/kg dry	13700	1180	50	"	"	"	"	"	
Surrogate recoveries:													
460-00-4	*4-Bromofluorobenzene*	*104*			*70-130 %*			"	"	"	"	"	
2037-26-5	*Toluene-d8*	*105*			*70-130 %*			"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*106*			*70-130 %*			"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*106*			*70-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds Prepared by method SW846 3546													
83-32-9	Acenaphthene	< 82.3		µg/kg dry	82.3	43.7	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-10 SC58794-03	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
208-96-8	Acenaphthylene	< 82.3		µg/kg dry	82.3	43.0	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X
62-53-3	Aniline	< 407		µg/kg dry	407	25.9	1	"	"	"	"	"	X
120-12-7	Anthracene	< 82.3		µg/kg dry	82.3	47.4	1	"	"	"	"	"	X
103-33-3	Azobenzene/Diphenyldiazene	< 407		µg/kg dry	407	44.2	1	"	"	"	"	"	
92-87-5	Benzidine	< 815		µg/kg dry	815	25.9	1	"	"	"	"	"	X
56-55-3	Benzo (a) anthracene	< 82.3		µg/kg dry	82.3	46.3	1	"	"	"	"	"	X
50-32-8	Benzo (a) pyrene	< 82.3		µg/kg dry	82.3	56.3	1	"	"	"	"	"	X
205-99-2	Benzo (b) fluoranthene	< 82.3		µg/kg dry	82.3	62.0	1	"	"	"	"	"	X
191-24-2	Benzo (g,h,i) perylene	< 82.3		µg/kg dry	82.3	58.1	1	"	"	"	"	"	X
207-08-9	Benzo (k) fluoranthene	< 82.3		µg/kg dry	82.3	70.4	1	"	"	"	"	"	X
65-85-0	Benzoic acid	< 407		µg/kg dry	407	24.4	1	"	"	"	"	"	X
100-51-6	Benzyl alcohol	< 407		µg/kg dry	407	94.3	1	"	"	"	"	"	X
111-91-1	Bis(2-chloroethoxy)methane	< 407		µg/kg dry	407	41.1	1	"	"	"	"	"	X
111-44-4	Bis(2-chloroethyl)ether	< 206		µg/kg dry	206	38.1	1	"	"	"	"	"	X
108-60-1	Bis(2-chloroisopropyl)ether	< 206		µg/kg dry	206	33.1	1	"	"	"	"	"	X
117-81-7	Bis(2-ethylhexyl)phthalate	**305**		µg/kg dry	206	52.5	1	"	"	"	"	"	X
101-55-3	4-Bromophenyl phenyl ether	< 407		µg/kg dry	407	46.0	1	"	"	"	"	"	X
85-68-7	Butyl benzyl phthalate	< 407		µg/kg dry	407	40.9	1	"	"	"	"	"	X
86-74-8	Carbazole	< 206		µg/kg dry	206	47.4	1	"	"	"	"	"	X
59-50-7	4-Chloro-3-methylphenol	< 407		µg/kg dry	407	47.9	1	"	"	"	"	"	X
106-47-8	4-Chloroaniline	< 206		µg/kg dry	206	25.4	1	"	"	"	"	"	X
91-58-7	2-Chloronaphthalene	< 407		µg/kg dry	407	55.8	1	"	"	"	"	"	X
95-57-8	2-Chlorophenol	< 206		µg/kg dry	206	39.5	1	"	"	"	"	"	X
7005-72-3	4-Chlorophenyl phenyl ether	< 407		µg/kg dry	407	39.9	1	"	"	"	"	"	X
218-01-9	Chrysene	< 82.3		µg/kg dry	82.3	46.5	1	"	"	"	"	"	X
53-70-3	Dibenzo (a,h) anthracene	< 82.3		µg/kg dry	82.3	60.9	1	"	"	"	"	"	X
132-64-9	Dibenzofuran	< 206		µg/kg dry	206	55.4	1	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 407		µg/kg dry	407	48.6	1	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 407		µg/kg dry	407	43.9	1	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 407		µg/kg dry	407	46.3	1	"	"	"	"	"	X
91-94-1	3,3´-Dichlorobenzidine	< 407		µg/kg dry	407	45.1	1	"	"	"	"	"	X
120-83-2	2,4-Dichlorophenol	< 206		µg/kg dry	206	50.0	1	"	"	"	"	"	X
84-66-2	Diethyl phthalate	< 407		µg/kg dry	407	42.7	1	"	"	"	"	"	X
131-11-3	Dimethyl phthalate	< 407		µg/kg dry	407	45.8	1	"	"	"	"	"	X
105-67-9	2,4-Dimethylphenol	< 407		µg/kg dry	407	32.2	1	"	"	"	"	"	X
84-74-2	Di-n-butyl phthalate	< 407		µg/kg dry	407	43.6	1	"	"	"	"	"	X
534-52-1	4,6-Dinitro-2-methylphenol	< 407		µg/kg dry	407	58.4	1	"	"	"	"	"	X
51-28-5	2,4-Dinitrophenol	< 407		µg/kg dry	407	42.2	1	"	"	"	"	"	X
121-14-2	2,4-Dinitrotoluene	< 206		µg/kg dry	206	49.4	1	"	"	"	"	"	X
606-20-2	2,6-Dinitrotoluene	< 206		µg/kg dry	206	42.1	1	"	"	"	"	"	X
117-84-0	Di-n-octyl phthalate	< 407		µg/kg dry	407	60.6	1	"	"	"	"	"	X
206-44-0	Fluoranthene	< 82.3		µg/kg dry	82.3	48.3	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-10	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-03				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
86-73-7	Fluorene	< 82.3		µg/kg dry	82.3	53.2	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X
118-74-1	Hexachlorobenzene	< 206		µg/kg dry	206	51.8	1	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 206		µg/kg dry	206	51.8	1	"	"	"	"	"	X
77-47-4	Hexachlorocyclopentadiene	< 206		µg/kg dry	206	52.0	1	"	"	"	"	"	X
67-72-1	Hexachloroethane	< 206		µg/kg dry	206	46.5	1	"	"	"	"	"	X
193-39-5	Indeno (1,2,3-cd) pyrene	< 82.3		µg/kg dry	82.3	56.3	1	"	"	"	"	"	X
78-59-1	Isophorone	< 206		µg/kg dry	206	31.7	1	"	"	"	"	"	X
91-57-6	2-Methylnaphthalene	< 82.3		µg/kg dry	82.3	57.6	1	"	"	"	"	"	X
95-48-7	2-Methylphenol	< 407		µg/kg dry	407	32.7	1	"	"	"	"	"	X
108-39-4, 106-44-5	3 & 4-Methylphenol	< 407		µg/kg dry	407	32.0	1	"	"	"	"	"	X
91-20-3	Naphthalene	< 82.3		µg/kg dry	82.3	47.5	1	"	"	"	"	"	X
88-74-4	2-Nitroaniline	< 407		µg/kg dry	407	36.9	1	"	"	"	"	"	X
99-09-2	3-Nitroaniline	< 407		µg/kg dry	407	37.6	1	"	"	"	"	"	X
100-01-6	4-Nitroaniline	< 206		µg/kg dry	206	54.3	1	"	"	"	"	"	X
98-95-3	Nitrobenzene	< 206		µg/kg dry	206	47.6	1	"	"	"	"	"	X
88-75-5	2-Nitrophenol	< 206		µg/kg dry	206	36.0	1	"	"	"	"	"	X
100-02-7	4-Nitrophenol	< 1630		µg/kg dry	1630	54.2	1	"	"	"	"	"	X
62-75-9	N-Nitrosodimethylamine	< 206		µg/kg dry	206	26.9	1	"	"	"	"	"	X
621-64-7	N-Nitrosodi-n-propylamine	< 206		µg/kg dry	206	36.0	1	"	"	"	"	"	X
86-30-6	N-Nitrosodiphenylamine	< 407		µg/kg dry	407	41.5	1	"	"	"	"	"	X
87-86-5	Pentachlorophenol	< 407		µg/kg dry	407	48.5	1	"	"	"	"	"	X
85-01-8	Phenanthrene	< 82.3		µg/kg dry	82.3	46.7	1	"	"	"	"	"	X
108-95-2	Phenol	< 407		µg/kg dry	407	41.2	1	"	"	"	"	"	X
129-00-0	Pyrene	< 82.3		µg/kg dry	82.3	45.4	1	"	"	"	"	"	X
110-86-1	Pyridine	< 407		µg/kg dry	407	96.4	1	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 407		µg/kg dry	407	50.1	1	"	"	"	"	"	X
90-12-0	1-Methylnaphthalene	< 82.3		µg/kg dry	82.3	45.4	1	"	"	"	"	"	
95-95-4	2,4,5-Trichlorophenol	< 407		µg/kg dry	407	42.1	1	"	"	"	"	"	X
88-06-2	2,4,6-Trichlorophenol	< 206		µg/kg dry	206	50.4	1	"	"	"	"	"	X
82-68-8	Pentachloronitrobenzene	< 407		µg/kg dry	407	43.3	1	"	"	"	"	"	X
95-94-3	1,2,4,5-Tetrachlorobenzene	< 407		µg/kg dry	407	48.5	1	"	"	"	"	"	X
Surrogate recoveries:													
321-60-8	*2-Fluorobiphenyl*	*94*			*30-130 %*			"	"	"	"	"	
367-12-4	*2-Fluorophenol*	*105*			*30-130 %*			"	"	"	"	"	
4165-60-0	*Nitrobenzene-d5*	*88*			*30-130 %*			"	"	"	"	"	
4165-62-2	*Phenol-d5*	*106*			*30-130 %*			"	"	"	"	"	
1718-51-0	*Terphenyl-dl4*	*86*			*30-130 %*			"	"	"	"	"	
118-79-6	*2,4,6-Tribromophenol*	*73*			*30-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls Prepared by method SW846 3546													
12674-11-2	Aroclor-1016	< 24.3		µg/kg dry	24.3	17.5	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
11104-28-2	Aroclor-1221	< 24.3		µg/kg dry	24.3	7.18	1	"	"	"	"	"	X
11141-16-5	Aroclor-1232	< 24.3		µg/kg dry	24.3	6.73	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-10	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-03				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls													
53469-21-9	Aroclor-1242	< 24.3		µg/kg dry	24.3	2.31	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
12672-29-6	Aroclor-1248	< 24.3		µg/kg dry	24.3	7.59	1	"	"	"	"	"	X
11097-69-1	Aroclor-1254	< 24.3		µg/kg dry	24.3	18.9	1	"	"	"	"	"	X
11096-82-5	Aroclor-1260	< 24.3		µg/kg dry	24.3	5.22	1	"	"	"	"	"	X
37324-23-5	Aroclor-1262	< 24.3		µg/kg dry	24.3	5.66	1	"	"	"	"	"	X
11100-14-4	Aroclor-1268	< 24.3		µg/kg dry	24.3	5.17	1	"	"	"	"	"	X
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*80*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*75*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*79*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*72*			*30-150 %*			"	"	"	"	"	
Pesticides													
Organochlorine Pesticides Prepared by method SW846 3546													
319-84-6	alpha-BHC	< 6.07		µg/kg dry	6.07	0.279	1	SW846 8081B	13-Jul-20	16-Jul-20	BJJ	2001088	X
319-85-7	beta-BHC	< 6.07		µg/kg dry	6.07	0.389	1	"	"	"	"	"	X
319-86-8	delta-BHC	< 6.07		µg/kg dry	6.07	0.316	1	"	"	"	"	"	X
58-89-9	gamma-BHC (Lindane)	< 3.64		µg/kg dry	3.64	0.643	1	"	"	"	"	"	X
76-44-8	Heptachlor	< 6.07		µg/kg dry	6.07	0.704	1	"	"	"	"	"	X
309-00-2	Aldrin	< 6.07		µg/kg dry	6.07	0.206	1	"	"	"	"	"	X
1024-57-3	Heptachlor epoxide	< 6.07		µg/kg dry	6.07	0.243	1	"	"	"	"	"	X
959-98-8	Endosulfan I	< 6.07		µg/kg dry	6.07	0.279	1	"	"	"	"	"	X
60-57-1	Dieldrin	< 6.07		µg/kg dry	6.07	0.291	1	"	"	"	"	"	X
72-55-9	4,4'-DDE (p,p')	< 6.07		µg/kg dry	6.07	0.316	1	"	"	"	"	"	X
72-20-8	Endrin	< 9.71		µg/kg dry	9.71	0.595	1	"	"	"	"	"	X
33213-65-9	Endosulfan II	< 9.71		µg/kg dry	9.71	0.389	1	"	"	"	"	"	X
72-54-8	4,4'-DDD (p,p')	< 9.71		µg/kg dry	9.71	0.510	1	"	"	"	"	"	X
1031-07-8	Endosulfan sulfate	< 9.71		µg/kg dry	9.71	0.886	1	"	"	"	"	"	X
50-29-3	4,4'-DDT (p,p')	< 9.71		µg/kg dry	9.71	4.16	1	"	"	"	"	"	X
72-43-5	Methoxychlor	< 9.71		µg/kg dry	9.71	0.656	1	"	"	"	"	"	X
53494-70-5	Endrin ketone	< 9.71		µg/kg dry	9.71	0.352	1	"	"	"	"	"	X
7421-93-4	Endrin aldehyde	< 9.71		µg/kg dry	9.71	1.53	1	"	"	"	"	"	X
5103-71-9	alpha-Chlordane	< 6.07		µg/kg dry	6.07	0.255	1	"	"	"	"	"	X
5103-74-2	gamma-Chlordane	< 6.07		µg/kg dry	6.07	0.304	1	"	"	"	"	"	X
8001-35-2	Toxaphene	< 121		µg/kg dry	121	85.7	1	"	"	"	"	"	X
57-74-9	Chlordane	< 24.3		µg/kg dry	24.3	3.05	1	"	"	"	"	"	X
15972-60-8	Alachlor	< 6.07		µg/kg dry	6.07	0.534	1	"	"	"	"	"	
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*87*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*83*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*71*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*70*			*30-150 %*			"	"	"	"	"	
Extractable Petroleum Hydrocarbons													

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-10	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-03				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Extractable Petroleum Hydrocarbons													
Fingerprinting by GC													
Prepared by method SW846 3546													
	Total Petroleum Hydrocarbons	**109**		mg/kg dry	16.2	13.5	1	SW846 8100Mod.	14-Jul-20	15-Jul-20	BJJ	2001092	
Surrogate recoveries:													
84-15-1	*o-Terphenyl*	*76*			*40-140 %*			"	"	"	"	"	
3386-33-2	*1-Chlorooctadecane*	*100*			*40-140 %*			"	"	"	"	"	
Total Metals by EPA 6000/7000 Series Methods													
Prepared by method SW846 3050B													
7440-22-4	Silver	< 3.53		mg/kg dry	3.53	0.191	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7440-38-2	Arsenic	**25.4**		mg/kg dry	1.77	0.224	1	"	"	"	"	"	X
7440-39-3	Barium	**26.5**		mg/kg dry	1.18	0.139	1	"	"	"	"	"	X
7440-41-7	Beryllium	< 0.589		mg/kg dry	0.589	0.0296	1	"	"	"	"	"	X
7440-43-9	Cadmium	< 0.589		mg/kg dry	0.589	0.0305	1	"	"	"	"	"	X
7440-47-3	Chromium	**22.9**		mg/kg dry	1.18	0.157	1	"	"	"	"	"	X
7439-97-6	Mercury	< 0.117		mg/kg dry	0.117	0.0098	1	SW846 7471B	13-Jul-20	13-Jul-20	edt	2001079	X
Prepared by method SW846 3050B													
7440-02-0	Nickel	**28.2**		mg/kg dry	1.18	0.135	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7439-92-1	Lead	**13.7**		mg/kg dry	1.77	0.250	1	"	"	"	"	"	X
7440-36-0	Antimony	< 5.89		mg/kg dry	5.89	0.443	1	"	"	"	"	"	X
7782-49-2	Selenium	< 1.77		mg/kg dry	1.77	0.337	1	"	"	"	"	"	X
7440-28-0	Thallium	< 3.53		mg/kg dry	3.53	1.30	1	"	"	"	"	"	X
7440-62-2	Vanadium	**29.6**		mg/kg dry	1.77	0.313	1	"	"	17-Jul-20	"	"	X
7440-66-6	Zinc	**60.8**		mg/kg dry	3.53	0.911	1	"	"	15-Jul-20	"	"	X
General Chemistry Parameters													
	% Solids	**80.1**		%			1	SM2540 G (11) Mod.	10-Jul-20	14-Jul-20	PN	2001075	
Toxicity Characteristics													
	Ignitability by Definition	**Negative**		N/A			1	SW846 1030	10-Jul-20 17:23	10-Jul-20 21:00	PN	2001074	X
	pH	**6.17**	pH	pH Units			1	SW846 9045D	14-Jul-20 15:31	14-Jul-20 18:55	PN	2001081	X
Subcontracted Analyses													
Subcontracted Analyses													
Prepared by method SW8151A									Methylation date: 13-Jul-20				
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
93-76-5	2,4,5-T	< 80		ug/kg	80	80	10	SW8151A	13-Jul-20	14-Jul-20 18:17	M-CT007	537166A	
93-72-1	2,4,5-TP (Silvex)	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-75-7	2,4-D	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-82-6	2,4-DB	< 80		ug/kg	80	80	10	"	"	"	"	"	
75-99-0	Dalapon	< 80		ug/kg	80	80	10	"	"	"	"	"	
1918-00-9	Dicamba	< 80		ug/kg	80	80	10	"	"	"	"	"	
120-36-5	Dichloroprop	< 80		ug/kg	80	80	10	"	"	"	"	"	
88-85-7	Dinoseb	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-74-6	MCPA	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
7085-19-0	MCPP	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
Surrogate recoveries:													
19719-28-9	*% DCAA*	*76*			*30-150 %*			"	"	"	"	"	

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Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-10 SC58794-03	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Subcontracted Analyses													
Prepared by method SW846 7.3.3.1/90													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Cyanide	< 7		mg/kg	7	7	1	SW846 7.3.3.1/90	14-Jul-20	14-Jul-20 14:32	M-CT007	537292A	
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Sulfide	< 20		mg/kg	20	20	1	SW846 CH7	"	14-Jul-20 15:17	M-CT007	537292B	
Prepared by method SW846-React													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity	**Negative**		Pos/Neg			1	SW846-React	14-Jul-20 15:18	14-Jul-20 15:18	M-CT007	'[none]'	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-11	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-04				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
Prepared by method SW846 5035A Soil (high level)							Initial weight: 16.23 g						
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	< 69.3		µg/kg dry	69.3	38.0	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
67-64-1	Acetone	< 693		µg/kg dry	693	87.6	50	"	"	"	"	"	X
107-13-1	Acrylonitrile	< 69.3		µg/kg dry	69.3	25.0	50	"	"	"	"	"	X
71-43-2	Benzene	< 69.3		µg/kg dry	69.3	11.1	50	"	"	"	"	"	X
108-86-1	Bromobenzene	< 69.3		µg/kg dry	69.3	15.7	50	"	"	"	"	"	X
74-97-5	Bromochloromethane	< 69.3		µg/kg dry	69.3	9.91	50	"	"	"	"	"	X
75-27-4	Bromodichloromethane	< 69.3		µg/kg dry	69.3	17.9	50	"	"	"	"	"	X
75-25-2	Bromoform	< 69.3		µg/kg dry	69.3	14.8	50	"	"	"	"	"	X
74-83-9	Bromomethane	< 139		µg/kg dry	139	34.2	50	"	"	"	"	"	X
78-93-3	2-Butanone (MEK)	< 139		µg/kg dry	139	31.7	50	"	"	"	"	"	X
104-51-8	n-Butylbenzene	< 69.3		µg/kg dry	69.3	27.7	50	"	"	"	"	"	X
135-98-8	sec-Butylbenzene	< 69.3		µg/kg dry	69.3	21.3	50	"	"	"	"	"	X
98-06-6	tert-Butylbenzene	< 69.3		µg/kg dry	69.3	28.3	50	"	"	"	"	"	X
75-15-0	Carbon disulfide	< 139		µg/kg dry	139	25.6	50	"	"	"	"	"	X
56-23-5	Carbon tetrachloride	< 69.3		µg/kg dry	69.3	20.7	50	"	"	"	"	"	X
108-90-7	Chlorobenzene	< 69.3		µg/kg dry	69.3	8.39	50	"	"	"	"	"	X
75-00-3	Chloroethane	< 139		µg/kg dry	139	30.9	50	"	"	"	"	"	X
67-66-3	Chloroform	< 69.3		µg/kg dry	69.3	8.18	50	"	"	"	"	"	X
74-87-3	Chloromethane	< 139		µg/kg dry	139	82.4	50	"	"	"	"	"	X
95-49-8	2-Chlorotoluene	< 69.3		µg/kg dry	69.3	17.2	50	"	"	"	"	"	X
106-43-4	4-Chlorotoluene	< 69.3		µg/kg dry	69.3	12.5	50	"	"	"	"	"	X
96-12-8	1,2-Dibromo-3-chloropropane	< 139		µg/kg dry	139	27.4	50	"	"	"	"	"	X
124-48-1	Dibromochloromethane	< 69.3		µg/kg dry	69.3	11.0	50	"	"	"	"	"	X
106-93-4	1,2-Dibromoethane (EDB)	< 69.3		µg/kg dry	69.3	18.9	50	"	"	"	"	"	X
74-95-3	Dibromomethane	< 69.3		µg/kg dry	69.3	13.0	50	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 69.3		µg/kg dry	69.3	12.5	50	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 69.3		µg/kg dry	69.3	17.3	50	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 69.3		µg/kg dry	69.3	12.4	50	"	"	"	"	"	X
75-71-8	Dichlorodifluoromethane (Freon12)	< 139		µg/kg dry	139	90.7	50	"	"	"	"	"	X
75-34-3	1,1-Dichloroethane	< 69.3		µg/kg dry	69.3	16.0	50	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 69.3		µg/kg dry	69.3	18.2	50	"	"	"	"	"	X
75-35-4	1,1-Dichloroethene	< 69.3		µg/kg dry	69.3	17.7	50	"	"	"	"	"	X
156-59-2	cis-1,2-Dichloroethene	< 69.3		µg/kg dry	69.3	23.1	50	"	"	"	"	"	X
156-60-5	trans-1,2-Dichloroethene	< 69.3		µg/kg dry	69.3	15.8	50	"	"	"	"	"	X
78-87-5	1,2-Dichloropropane	< 69.3		µg/kg dry	69.3	24.1	50	"	"	"	"	"	X
142-28-9	1,3-Dichloropropane	< 69.3		µg/kg dry	69.3	21.9	50	"	"	"	"	"	X
594-20-7	2,2-Dichloropropane	< 69.3		µg/kg dry	69.3	18.2	50	"	"	"	"	"	X
563-58-6	1,1-Dichloropropene	< 69.3		µg/kg dry	69.3	21.2	50	"	"	"	"	"	X
10061-01-5	cis-1,3-Dichloropropene	< 69.3		µg/kg dry	69.3	16.4	50	"	"	"	"	"	X
10061-02-6	trans-1,3-Dichloropropene	< 69.3		µg/kg dry	69.3	28.2	50	"	"	"	"	"	X
100-41-4	Ethylbenzene	< 69.3		µg/kg dry	69.3	14.5	50	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 69.3		µg/kg dry	69.3	22.2	50	"	"	"	"	"	X
591-78-6	2-Hexanone (MBK)	< 139		µg/kg dry	139	46.1	50	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-11	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-04				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
						Initial weight: 16.23 g							
98-82-8	Isopropylbenzene	< 69.3		µg/kg dry	69.3	25.2	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
99-87-6	4-Isopropyltoluene	< 69.3		µg/kg dry	69.3	19.2	50	"	"	"	"	"	X
1634-04-4	Methyl tert-butyl ether	< 69.3		µg/kg dry	69.3	20.9	50	"	"	"	"	"	X
108-10-1	4-Methyl-2-pentanone (MIBK)	< 139		µg/kg dry	139	49.6	50	"	"	"	"	"	X
75-09-2	Methylene chloride	< 139		µg/kg dry	139	59.2	50	"	"	"	"	"	X
91-20-3	Naphthalene	< 69.3		µg/kg dry	69.3	20.1	50	"	"	"	"	"	X
103-65-1	n-Propylbenzene	< 69.3		µg/kg dry	69.3	17.3	50	"	"	"	"	"	X
100-42-5	Styrene	< 69.3		µg/kg dry	69.3	9.15	50	"	"	"	"	"	X
630-20-6	1,1,1,2-Tetrachloroethane	< 69.3		µg/kg dry	69.3	16.7	50	"	"	"	"	"	X
79-34-5	1,1,2,2-Tetrachloroethane	< 69.3		µg/kg dry	69.3	22.0	50	"	"	"	"	"	X
127-18-4	Tetrachloroethene	< 69.3		µg/kg dry	69.3	21.8	50	"	"	"	"	"	X
108-88-3	Toluene	< 69.3		µg/kg dry	69.3	11.2	50	"	"	"	"	"	X
87-61-6	1,2,3-Trichlorobenzene	< 69.3		µg/kg dry	69.3	16.2	50	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 69.3		µg/kg dry	69.3	11.4	50	"	"	"	"	"	X
108-70-3	1,3,5-Trichlorobenzene	< 69.3		µg/kg dry	69.3	11.0	50	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	< 69.3		µg/kg dry	69.3	16.8	50	"	"	"	"	"	X
79-00-5	1,1,2-Trichloroethane	< 69.3		µg/kg dry	69.3	21.4	50	"	"	"	"	"	X
79-01-6	Trichloroethene	< 69.3		µg/kg dry	69.3	11.9	50	"	"	"	"	"	X
75-69-4	Trichlorofluoromethane (Freon 11)	< 69.3		µg/kg dry	69.3	31.3	50	"	"	"	"	"	X
96-18-4	1,2,3-Trichloropropane	< 69.3		µg/kg dry	69.3	32.0	50	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	< 69.3		µg/kg dry	69.3	17.5	50	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	< 69.3		µg/kg dry	69.3	14.5	50	"	"	"	"	"	X
75-01-4	Vinyl chloride	< 69.3		µg/kg dry	69.3	34.1	50	"	"	"	"	"	X
179601-23-1	m,p-Xylene	< 139		µg/kg dry	139	40.8	50	"	"	"	"	"	X
95-47-6	o-Xylene	< 69.3		µg/kg dry	69.3	21.4	50	"	"	"	"	"	X
109-99-9	Tetrahydrofuran	< 139		µg/kg dry	139	50.7	50	"	"	"	"	"	
60-29-7	Ethyl ether	< 69.3		µg/kg dry	69.3	18.8	50	"	"	"	"	"	X
994-05-8	Tert-amyl methyl ether	< 69.3		µg/kg dry	69.3	38.3	50	"	"	"	"	"	
637-92-3	Ethyl tert-butyl ether	< 69.3		µg/kg dry	69.3	19.2	50	"	"	"	"	"	
108-20-3	Di-isopropyl ether	< 69.3		µg/kg dry	69.3	22.4	50	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	< 1390		µg/kg dry	1390	984	50	"	"	"	"	"	X
123-91-1	1,4-Dioxane	< 1390		µg/kg dry	1390	408	50	"	"	"	"	"	X
110-57-6	trans-1,4-Dichloro-2-buten e	< 347		µg/kg dry	347	45.8	50	"	"	"	"	"	X
64-17-5	Ethanol	< 13900		µg/kg dry	13900	1190	50	"	"	"	"	"	
Surrogate recoveries:													
460-00-4	*4-Bromofluorobenzene*	*104*			*70-130 %*			"	"	"	"	"	
2037-26-5	*Toluene-d8*	*106*			*70-130 %*			"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*104*			*70-130 %*			"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*105*			*70-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds Prepared by method SW846 3546													
83-32-9	Acenaphthene	< 81.8		µg/kg dry	81.8	43.4	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-11	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-04				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
208-96-8	Acenaphthylene	< 81.8		µg/kg dry	81.8	42.7	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X
62-53-3	Aniline	< 405		µg/kg dry	405	25.7	1	"	"	"	"	"	X
120-12-7	Anthracene	< 81.8		µg/kg dry	81.8	47.1	1	"	"	"	"	"	X
103-33-3	Azobenzene/Diphenyldiazene	< 405		µg/kg dry	405	43.9	1	"	"	"	"	"	
92-87-5	Benzidine	< 809		µg/kg dry	809	25.7	1	"	"	"	"	"	X
56-55-3	Benzo (a) anthracene	< 81.8		µg/kg dry	81.8	46.0	1	"	"	"	"	"	X
50-32-8	Benzo (a) pyrene	< 81.8		µg/kg dry	81.8	55.9	1	"	"	"	"	"	X
205-99-2	Benzo (b) fluoranthene	< 81.8		µg/kg dry	81.8	61.6	1	"	"	"	"	"	X
191-24-2	Benzo (g,h,i) perylene	< 81.8		µg/kg dry	81.8	57.7	1	"	"	"	"	"	X
207-08-9	Benzo (k) fluoranthene	< 81.8		µg/kg dry	81.8	69.9	1	"	"	"	"	"	X
65-85-0	Benzoic acid	< 405		µg/kg dry	405	24.3	1	"	"	"	"	"	X
100-51-6	Benzyl alcohol	< 405		µg/kg dry	405	93.7	1	"	"	"	"	"	X
111-91-1	Bis(2-chloroethoxy)methane	< 405		µg/kg dry	405	40.8	1	"	"	"	"	"	X
111-44-4	Bis(2-chloroethyl)ether	< 205		µg/kg dry	205	37.9	1	"	"	"	"	"	X
108-60-1	Bis(2-chloroisopropyl)ether	< 205		µg/kg dry	205	32.9	1	"	"	"	"	"	X
117-81-7	Bis(2-ethylhexyl)phthalate	< 205		µg/kg dry	205	52.1	1	"	"	"	"	"	X
101-55-3	4-Bromophenyl phenyl ether	< 405		µg/kg dry	405	45.7	1	"	"	"	"	"	X
85-68-7	Butyl benzyl phthalate	< 405		µg/kg dry	405	40.6	1	"	"	"	"	"	X
86-74-8	Carbazole	< 205		µg/kg dry	205	47.1	1	"	"	"	"	"	X
59-50-7	4-Chloro-3-methylphenol	< 405		µg/kg dry	405	47.6	1	"	"	"	"	"	X
106-47-8	4-Chloroaniline	< 205		µg/kg dry	205	25.3	1	"	"	"	"	"	X
91-58-7	2-Chloronaphthalene	< 405		µg/kg dry	405	55.4	1	"	"	"	"	"	X
95-57-8	2-Chlorophenol	< 205		µg/kg dry	205	39.2	1	"	"	"	"	"	X
7005-72-3	4-Chlorophenyl phenyl ether	< 405		µg/kg dry	405	39.6	1	"	"	"	"	"	X
218-01-9	Chrysene	< 81.8		µg/kg dry	81.8	46.2	1	"	"	"	"	"	X
53-70-3	Dibenzo (a,h) anthracene	< 81.8		µg/kg dry	81.8	60.4	1	"	"	"	"	"	X
132-64-9	Dibenzofuran	< 205		µg/kg dry	205	55.1	1	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 405		µg/kg dry	405	48.3	1	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 405		µg/kg dry	405	43.6	1	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 405		µg/kg dry	405	46.0	1	"	"	"	"	"	X
91-94-1	3,3´-Dichlorobenzidine	< 405		µg/kg dry	405	44.8	1	"	"	"	"	"	X
120-83-2	2,4-Dichlorophenol	< 205		µg/kg dry	205	49.7	1	"	"	"	"	"	X
84-66-2	Diethyl phthalate	< 405		µg/kg dry	405	42.4	1	"	"	"	"	"	X
131-11-3	Dimethyl phthalate	< 405		µg/kg dry	405	45.5	1	"	"	"	"	"	X
105-67-9	2,4-Dimethylphenol	< 405		µg/kg dry	405	32.0	1	"	"	"	"	"	X
84-74-2	Di-n-butyl phthalate	< 405		µg/kg dry	405	43.3	1	"	"	"	"	"	X
534-52-1	4,6-Dinitro-2-methylphenol	< 405		µg/kg dry	405	58.0	1	"	"	"	"	"	X
51-28-5	2,4-Dinitrophenol	< 405		µg/kg dry	405	41.9	1	"	"	"	"	"	X
121-14-2	2,4-Dinitrotoluene	< 205		µg/kg dry	205	49.0	1	"	"	"	"	"	X
606-20-2	2,6-Dinitrotoluene	< 205		µg/kg dry	205	41.8	1	"	"	"	"	"	X
117-84-0	Di-n-octyl phthalate	< 405		µg/kg dry	405	60.2	1	"	"	"	"	"	X
206-44-0	Fluoranthene	< 81.8		µg/kg dry	81.8	47.9	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-11	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-04				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
86-73-7	Fluorene	< 81.8		µg/kg dry	81.8	52.8	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X
118-74-1	Hexachlorobenzene	< 205		µg/kg dry	205	51.5	1	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 205		µg/kg dry	205	51.5	1	"	"	"	"	"	X
77-47-4	Hexachlorocyclopentadiene	< 205		µg/kg dry	205	51.6	1	"	"	"	"	"	X
67-72-1	Hexachloroethane	< 205		µg/kg dry	205	46.2	1	"	"	"	"	"	X
193-39-5	Indeno (1,2,3-cd) pyrene	< 81.8		µg/kg dry	81.8	55.9	1	"	"	"	"	"	X
78-59-1	Isophorone	< 205		µg/kg dry	205	31.5	1	"	"	"	"	"	X
91-57-6	2-Methylnaphthalene	< 81.8		µg/kg dry	81.8	57.3	1	"	"	"	"	"	X
95-48-7	2-Methylphenol	< 405		µg/kg dry	405	32.5	1	"	"	"	"	"	X
108-39-4, 106-44-5	3 & 4-Methylphenol	< 405		µg/kg dry	405	31.8	1	"	"	"	"	"	X
91-20-3	Naphthalene	< 81.8		µg/kg dry	81.8	47.2	1	"	"	"	"	"	X
88-74-4	2-Nitroaniline	< 405		µg/kg dry	405	36.7	1	"	"	"	"	"	X
99-09-2	3-Nitroaniline	< 405		µg/kg dry	405	37.4	1	"	"	"	"	"	X
100-01-6	4-Nitroaniline	< 205		µg/kg dry	205	53.9	1	"	"	"	"	"	X
98-95-3	Nitrobenzene	< 205		µg/kg dry	205	47.3	1	"	"	"	"	"	X
88-75-5	2-Nitrophenol	< 205		µg/kg dry	205	35.8	1	"	"	"	"	"	X
100-02-7	4-Nitrophenol	< 1620		µg/kg dry	1620	53.8	1	"	"	"	"	"	X
62-75-9	N-Nitrosodimethylamine	< 205		µg/kg dry	205	26.7	1	"	"	"	"	"	X
621-64-7	N-Nitrosodi-n-propylamine	< 205		µg/kg dry	205	35.8	1	"	"	"	"	"	X
86-30-6	N-Nitrosodiphenylamine	< 405		µg/kg dry	405	41.2	1	"	"	"	"	"	X
87-86-5	Pentachlorophenol	< 405		µg/kg dry	405	48.2	1	"	"	"	"	"	X
85-01-8	Phenanthrene	< 81.8		µg/kg dry	81.8	46.3	1	"	"	"	"	"	X
108-95-2	Phenol	< 405		µg/kg dry	405	41.0	1	"	"	"	"	"	X
129-00-0	Pyrene	< 81.8		µg/kg dry	81.8	45.1	1	"	"	"	"	"	X
110-86-1	Pyridine	< 405		µg/kg dry	405	95.8	1	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 405		µg/kg dry	405	49.8	1	"	"	"	"	"	X
90-12-0	1-Methylnaphthalene	< 81.8		µg/kg dry	81.8	45.1	1	"	"	"	"	"	
95-95-4	2,4,5-Trichlorophenol	< 405		µg/kg dry	405	41.8	1	"	"	"	"	"	X
88-06-2	2,4,6-Trichlorophenol	< 205		µg/kg dry	205	50.0	1	"	"	"	"	"	X
82-68-8	Pentachloronitrobenzene	< 405		µg/kg dry	405	43.0	1	"	"	"	"	"	X
95-94-3	1,2,4,5-Tetrachlorobenzene	< 405		µg/kg dry	405	48.2	1	"	"	"	"	"	X
Surrogate recoveries:													
321-60-8	*2-Fluorobiphenyl*	*73*			*30-130 %*			"	"	"	"	"	
367-12-4	*2-Fluorophenol*	*86*			*30-130 %*			"	"	"	"	"	
4165-60-0	*Nitrobenzene-d5*	*89*			*30-130 %*			"	"	"	"	"	
4165-62-2	*Phenol-d5*	*99*			*30-130 %*			"	"	"	"	"	
1718-51-0	*Terphenyl-dl4*	*84*			*30-130 %*			"	"	"	"	"	
118-79-6	*2,4,6-Tribromophenol*	*92*			*30-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls Prepared by method SW846 3546													
12674-11-2	Aroclor-1016	< 24.6		µg/kg dry	24.6	17.7	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
11104-28-2	Aroclor-1221	< 24.6		µg/kg dry	24.6	7.27	1	"	"	"	"	"	X
11141-16-5	Aroclor-1232	< 24.6		µg/kg dry	24.6	6.81	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-11	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-04				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls													
53469-21-9	Aroclor-1242	< 24.6		µg/kg dry	24.6	2.34	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
12672-29-6	Aroclor-1248	< 24.6		µg/kg dry	24.6	7.69	1	"	"	"	"	"	X
11097-69-1	Aroclor-1254	< 24.6		µg/kg dry	24.6	19.1	1	"	"	"	"	"	X
11096-82-5	Aroclor-1260	< 24.6		µg/kg dry	24.6	5.29	1	"	"	"	"	"	X
37324-23-5	Aroclor-1262	< 24.6		µg/kg dry	24.6	5.73	1	"	"	"	"	"	X
11100-14-4	Aroclor-1268	< 24.6		µg/kg dry	24.6	5.24	1	"	"	"	"	"	X
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*74*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*68*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*78*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*71*			*30-150 %*			"	"	"	"	"	
Pesticides													
Organochlorine Pesticides Prepared by method SW846 3546													
319-84-6	alpha-BHC	< 6.15		µg/kg dry	6.15	0.283	1	SW846 8081B	13-Jul-20	16-Jul-20	BJJ	2001088	X
319-85-7	beta-BHC	< 6.15		µg/kg dry	6.15	0.394	1	"	"	"	"	"	X
319-86-8	delta-BHC	< 6.15		µg/kg dry	6.15	0.320	1	"	"	"	"	"	X
58-89-9	gamma-BHC (Lindane)	< 3.69		µg/kg dry	3.69	0.652	1	"	"	"	"	"	X
76-44-8	Heptachlor	< 6.15		µg/kg dry	6.15	0.713	1	"	"	"	"	"	X
309-00-2	Aldrin	< 6.15		µg/kg dry	6.15	0.209	1	"	"	"	"	"	X
1024-57-3	Heptachlor epoxide	< 6.15		µg/kg dry	6.15	0.246	1	"	"	"	"	"	X
959-98-8	Endosulfan I	< 6.15		µg/kg dry	6.15	0.283	1	"	"	"	"	"	X
60-57-1	Dieldrin	< 6.15		µg/kg dry	6.15	0.295	1	"	"	"	"	"	X
72-55-9	4,4'-DDE (p,p')	< 6.15		µg/kg dry	6.15	0.320	1	"	"	"	"	"	X
72-20-8	Endrin	< 9.84		µg/kg dry	9.84	0.603	1	"	"	"	"	"	X
33213-65-9	Endosulfan II	< 9.84		µg/kg dry	9.84	0.394	1	"	"	"	"	"	X
72-54-8	4,4'-DDD (p,p')	< 9.84		µg/kg dry	9.84	0.517	1	"	"	"	"	"	X
1031-07-8	Endosulfan sulfate	< 9.84		µg/kg dry	9.84	0.898	1	"	"	"	"	"	X
50-29-3	4,4'-DDT (p,p')	< 9.84		µg/kg dry	9.84	4.22	1	"	"	"	"	"	X
72-43-5	Methoxychlor	< 9.84		µg/kg dry	9.84	0.664	1	"	"	"	"	"	X
53494-70-5	Endrin ketone	< 9.84		µg/kg dry	9.84	0.357	1	"	"	"	"	"	X
7421-93-4	Endrin aldehyde	< 9.84		µg/kg dry	9.84	1.55	1	"	"	"	"	"	X
5103-71-9	alpha-Chlordane	< 6.15		µg/kg dry	6.15	0.258	1	"	"	"	"	"	X
5103-74-2	gamma-Chlordane	< 6.15		µg/kg dry	6.15	0.308	1	"	"	"	"	"	X
8001-35-2	Toxaphene	< 123		µg/kg dry	123	86.8	1	"	"	"	"	"	X
57-74-9	Chlordane	< 24.6		µg/kg dry	24.6	3.09	1	"	"	"	"	"	X
15972-60-8	Alachlor	< 6.15		µg/kg dry	6.15	0.541	1	"	"	"	"	"	
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*88*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*84*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*61*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*58*			*30-150 %*			"	"	"	"	"	
Extractable Petroleum Hydrocarbons													

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-11 SC58794-04	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Extractable Petroleum Hydrocarbons													
Fingerprinting by GC Prepared by method SW846 3546													
	Total Petroleum Hydrocarbons	**184**		mg/kg dry	16.4	13.8	1	SW846 8100Mod.	14-Jul-20	15-Jul-20	BJJ	2001092	
Surrogate recoveries:													
84-15-1	*o-Terphenyl*	*79*			*40-140 %*			"	"	"	"	"	
3386-33-2	*1-Chlorooctadecane*	*103*			*40-140 %*			"	"	"	"	"	
Total Metals by EPA 6000/7000 Series Methods													
Prepared by method SW846 3050B													
7440-22-4	Silver	< 3.74		mg/kg dry	3.74	0.202	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7440-38-2	Arsenic	**33.6**		mg/kg dry	1.87	0.237	1	"	"	"	"	"	X
7440-39-3	Barium	**24.8**		mg/kg dry	1.25	0.147	1	"	"	"	"	"	X
7440-41-7	Beryllium	< 0.624		mg/kg dry	0.624	0.0313	1	"	"	"	"	"	X
7440-43-9	Cadmium	< 0.624		mg/kg dry	0.624	0.0323	1	"	"	"	"	"	X
7440-47-3	Chromium	**23.2**		mg/kg dry	1.25	0.166	1	"	"	"	"	"	X
7439-97-6	Mercury	< 0.126		mg/kg dry	0.126	0.0105	1	SW846 7471B	13-Jul-20	13-Jul-20	edt	2001079	X
Prepared by method SW846 3050B													
7440-02-0	Nickel	**30.4**		mg/kg dry	1.25	0.144	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7439-92-1	Lead	**18.9**		mg/kg dry	1.87	0.265	1	"	"	"	"	"	X
7440-36-0	Antimony	< 6.24		mg/kg dry	6.24	0.469	1	"	"	"	"	"	X
7782-49-2	Selenium	< 1.87		mg/kg dry	1.87	0.357	1	"	"	"	"	"	X
7440-28-0	Thallium	< 3.74		mg/kg dry	3.74	1.38	1	"	"	"	"	"	X
7440-62-2	Vanadium	**38.3**		mg/kg dry	1.87	0.332	1	"	"	17-Jul-20	"	"	X
7440-66-6	Zinc	**43.2**		mg/kg dry	3.74	0.966	1	"	"	15-Jul-20	"	"	X
General Chemistry Parameters													
	% Solids	**80.6**		%			1	SM2540 G (11) Mod.	10-Jul-20	14-Jul-20	PN	2001075	
Toxicity Characteristics													
	Ignitability by Definition	**Negative**		N/A			1	SW846 1030	10-Jul-20 17:23	10-Jul-20 21:00	PN	2001074	X
	pH	**5.47**	pH	pH Units			1	SW846 9045D	14-Jul-20 15:31	14-Jul-20 18:55	PN	2001081	X
Subcontracted Analyses													
Subcontracted Analyses Prepared by method SW8151A										Methylation date: 13-Jul-20			
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
93-76-5	2,4,5-T	< 80		ug/kg	80	80	10	SW8151A	13-Jul-20	14-Jul-20 19:30	M-CT007	537166A	
93-72-1	2,4,5-TP (Silvex)	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-75-7	2,4-D	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-82-6	2,4-DB	< 80		ug/kg	80	80	10	"	"	"	"	"	
75-99-0	Dalapon	< 80		ug/kg	80	80	10	"	"	"	"	"	
1918-00-9	Dicamba	< 80		ug/kg	80	80	10	"	"	"	"	"	
120-36-5	Dichloroprop	< 80		ug/kg	80	80	10	"	"	"	"	"	
88-85-7	Dinoseb	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-74-6	MCPA	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
7085-19-0	MCPP	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
Surrogate recoveries:													
19719-28-9	*% DCAA*	*81*			*30-150 %*			"	"	"	"	"	

This laboratory report is not valid without an authorized signature on the cover page.

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-11 SC58794-04	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Subcontracted Analyses													
Prepared by method SW846 7.3.3.1/90													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Cyanide	< 9		mg/kg	9	9	1	SW846 7.3.3.1/90	14-Jul-20	14-Jul-20 14:33	M-CT007	537292A	
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Sulfide	< 20		mg/kg	20	20	1	SW846 CH7	"	14-Jul-20 15:17	M-CT007	537292B	
Prepared by method SW846-React													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity	**Negative**		Pos/Neg			1	SW846-React	14-Jul-20 15:18	14-Jul-20 15:18	M-CT007	'[none]'	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-12	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-05				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
Prepared by method SW846 5035A Soil (high level)							Initial weight: 16.77 g						
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	< 63.7		µg/kg dry	63.7	34.9	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
67-64-1	Acetone	< 637		µg/kg dry	637	80.5	50	"	"	"	"	"	X
107-13-1	Acrylonitrile	< 63.7		µg/kg dry	63.7	23.0	50	"	"	"	"	"	X
71-43-2	Benzene	< 63.7		µg/kg dry	63.7	10.2	50	"	"	"	"	"	X
108-86-1	Bromobenzene	< 63.7		µg/kg dry	63.7	14.4	50	"	"	"	"	"	X
74-97-5	Bromochloromethane	< 63.7		µg/kg dry	63.7	9.11	50	"	"	"	"	"	X
75-27-4	Bromodichloromethane	< 63.7		µg/kg dry	63.7	16.4	50	"	"	"	"	"	X
75-25-2	Bromoform	< 63.7		µg/kg dry	63.7	13.6	50	"	"	"	"	"	X
74-83-9	Bromomethane	< 127		µg/kg dry	127	31.5	50	"	"	"	"	"	X
78-93-3	2-Butanone (MEK)	< 127		µg/kg dry	127	29.1	50	"	"	"	"	"	X
104-51-8	n-Butylbenzene	< 63.7		µg/kg dry	63.7	25.5	50	"	"	"	"	"	X
135-98-8	sec-Butylbenzene	< 63.7		µg/kg dry	63.7	19.6	50	"	"	"	"	"	X
98-06-6	tert-Butylbenzene	< 63.7		µg/kg dry	63.7	26.0	50	"	"	"	"	"	X
75-15-0	Carbon disulfide	< 127		µg/kg dry	127	23.6	50	"	"	"	"	"	X
56-23-5	Carbon tetrachloride	< 63.7		µg/kg dry	63.7	19.0	50	"	"	"	"	"	X
108-90-7	Chlorobenzene	< 63.7		µg/kg dry	63.7	7.71	50	"	"	"	"	"	X
75-00-3	Chloroethane	< 127		µg/kg dry	127	28.4	50	"	"	"	"	"	X
67-66-3	Chloroform	< 63.7		µg/kg dry	63.7	7.52	50	"	"	"	"	"	X
74-87-3	Chloromethane	< 127		µg/kg dry	127	75.7	50	"	"	"	"	"	X
95-49-8	2-Chlorotoluene	< 63.7		µg/kg dry	63.7	15.8	50	"	"	"	"	"	X
106-43-4	4-Chlorotoluene	< 63.7		µg/kg dry	63.7	11.5	50	"	"	"	"	"	X
96-12-8	1,2-Dibromo-3-chloropropane	< 127		µg/kg dry	127	25.2	50	"	"	"	"	"	X
124-48-1	Dibromochloromethane	< 63.7		µg/kg dry	63.7	10.1	50	"	"	"	"	"	X
106-93-4	1,2-Dibromoethane (EDB)	< 63.7		µg/kg dry	63.7	17.3	50	"	"	"	"	"	X
74-95-3	Dibromomethane	< 63.7		µg/kg dry	63.7	12.0	50	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 63.7		µg/kg dry	63.7	11.5	50	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 63.7		µg/kg dry	63.7	15.9	50	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 63.7		µg/kg dry	63.7	11.4	50	"	"	"	"	"	X
75-71-8	Dichlorodifluoromethane (Freon12)	< 127		µg/kg dry	127	83.3	50	"	"	"	"	"	X
75-34-3	1,1-Dichloroethane	< 63.7		µg/kg dry	63.7	14.7	50	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 63.7		µg/kg dry	63.7	16.7	50	"	"	"	"	"	X
75-35-4	1,1-Dichloroethene	< 63.7		µg/kg dry	63.7	16.3	50	"	"	"	"	"	X
156-59-2	cis-1,2-Dichloroethene	< 63.7		µg/kg dry	63.7	21.2	50	"	"	"	"	"	X
156-60-5	trans-1,2-Dichloroethene	< 63.7		µg/kg dry	63.7	14.5	50	"	"	"	"	"	X
78-87-5	1,2-Dichloropropane	< 63.7		µg/kg dry	63.7	22.1	50	"	"	"	"	"	X
142-28-9	1,3-Dichloropropane	< 63.7		µg/kg dry	63.7	20.1	50	"	"	"	"	"	X
594-20-7	2,2-Dichloropropane	< 63.7		µg/kg dry	63.7	16.7	50	"	"	"	"	"	X
563-58-6	1,1-Dichloropropene	< 63.7		µg/kg dry	63.7	19.5	50	"	"	"	"	"	X
10061-01-5	cis-1,3-Dichloropropene	< 63.7		µg/kg dry	63.7	15.0	50	"	"	"	"	"	X
10061-02-6	trans-1,3-Dichloropropene	< 63.7		µg/kg dry	63.7	25.9	50	"	"	"	"	"	X
100-41-4	Ethylbenzene	< 63.7		µg/kg dry	63.7	13.3	50	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 63.7		µg/kg dry	63.7	20.4	50	"	"	"	"	"	X
591-78-6	2-Hexanone (MBK)	< 127		µg/kg dry	127	42.4	50	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-12	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-05				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
						Initial weight: 16.77 g							
98-82-8	Isopropylbenzene	< 63.7		µg/kg dry	63.7	23.1	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
99-87-6	4-Isopropyltoluene	< 63.7		µg/kg dry	63.7	17.6	50	"	"	"	"	"	X
1634-04-4	Methyl tert-butyl ether	< 63.7		µg/kg dry	63.7	19.2	50	"	"	"	"	"	X
108-10-1	4-Methyl-2-pentanone (MIBK)	< 127		µg/kg dry	127	45.6	50	"	"	"	"	"	X
75-09-2	Methylene chloride	< 127		µg/kg dry	127	54.4	50	"	"	"	"	"	X
91-20-3	Naphthalene	< 63.7		µg/kg dry	63.7	18.5	50	"	"	"	"	"	X
103-65-1	n-Propylbenzene	< 63.7		µg/kg dry	63.7	15.9	50	"	"	"	"	"	X
100-42-5	Styrene	< 63.7		µg/kg dry	63.7	8.41	50	"	"	"	"	"	X
630-20-6	1,1,1,2-Tetrachloroethane	< 63.7		µg/kg dry	63.7	15.3	50	"	"	"	"	"	X
79-34-5	1,1,2,2-Tetrachloroethane	< 63.7		µg/kg dry	63.7	20.2	50	"	"	"	"	"	X
127-18-4	Tetrachloroethene	< 63.7		µg/kg dry	63.7	20.1	50	"	"	"	"	"	X
108-88-3	Toluene	< 63.7		µg/kg dry	63.7	10.3	50	"	"	"	"	"	X
87-61-6	1,2,3-Trichlorobenzene	< 63.7		µg/kg dry	63.7	14.8	50	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 63.7		µg/kg dry	63.7	10.5	50	"	"	"	"	"	X
108-70-3	1,3,5-Trichlorobenzene	< 63.7		µg/kg dry	63.7	10.1	50	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	< 63.7		µg/kg dry	63.7	15.4	50	"	"	"	"	"	X
79-00-5	1,1,2-Trichloroethane	< 63.7		µg/kg dry	63.7	19.7	50	"	"	"	"	"	X
79-01-6	Trichloroethene	< 63.7		µg/kg dry	63.7	10.9	50	"	"	"	"	"	X
75-69-4	Trichlorofluoromethane (Freon 11)	< 63.7		µg/kg dry	63.7	28.8	50	"	"	"	"	"	X
96-18-4	1,2,3-Trichloropropane	< 63.7		µg/kg dry	63.7	29.4	50	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	< 63.7		µg/kg dry	63.7	16.1	50	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	< 63.7		µg/kg dry	63.7	13.3	50	"	"	"	"	"	X
75-01-4	Vinyl chloride	< 63.7		µg/kg dry	63.7	31.3	50	"	"	"	"	"	X
179601-23-1	m,p-Xylene	< 127		µg/kg dry	127	37.4	50	"	"	"	"	"	X
95-47-6	o-Xylene	< 63.7		µg/kg dry	63.7	19.6	50	"	"	"	"	"	X
109-99-9	Tetrahydrofuran	< 127		µg/kg dry	127	46.6	50	"	"	"	"	"	
60-29-7	Ethyl ether	< 63.7		µg/kg dry	63.7	17.3	50	"	"	"	"	"	X
994-05-8	Tert-amyl methyl ether	< 63.7		µg/kg dry	63.7	35.2	50	"	"	"	"	"	
637-92-3	Ethyl tert-butyl ether	< 63.7		µg/kg dry	63.7	17.6	50	"	"	"	"	"	
108-20-3	Di-isopropyl ether	< 63.7		µg/kg dry	63.7	20.6	50	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	< 1270		µg/kg dry	1270	904	50	"	"	"	"	"	X
123-91-1	1,4-Dioxane	< 1270		µg/kg dry	1270	375	50	"	"	"	"	"	X
110-57-6	trans-1,4-Dichloro-2-buten e	< 318		µg/kg dry	318	42.0	50	"	"	"	"	"	X
64-17-5	Ethanol	< 12700		µg/kg dry	12700	1100	50	"	"	"	"	"	
Surrogate recoveries:													
460-00-4	*4-Bromofluorobenzene*	*106*			*70-130 %*			"	"	"	"	"	
2037-26-5	*Toluene-d8*	*103*			*70-130 %*			"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*102*			*70-130 %*			"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*104*			*70-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds Prepared by method SW846 3546													
83-32-9	Acenaphthene	< 77.9		µg/kg dry	77.9	41.4	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-12	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-05				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
208-96-8	Acenaphthylene	< 77.9		µg/kg dry	77.9	40.7	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X
62-53-3	Aniline	< 385		µg/kg dry	385	24.5	1	"	"	"	"	"	X
120-12-7	Anthracene	< 77.9		µg/kg dry	77.9	44.9	1	"	"	"	"	"	X
103-33-3	Azobenzene/Diphenyldiazene	< 385		µg/kg dry	385	41.8	1	"	"	"	"	"	
92-87-5	Benzidine	< 771		µg/kg dry	771	24.5	1	"	"	"	"	"	X
56-55-3	Benzo (a) anthracene	< 77.9		µg/kg dry	77.9	43.8	1	"	"	"	"	"	X
50-32-8	Benzo (a) pyrene	< 77.9		µg/kg dry	77.9	53.3	1	"	"	"	"	"	X
205-99-2	Benzo (b) fluoranthene	< 77.9		µg/kg dry	77.9	58.6	1	"	"	"	"	"	X
191-24-2	Benzo (g,h,i) perylene	< 77.9		µg/kg dry	77.9	55.0	1	"	"	"	"	"	X
207-08-9	Benzo (k) fluoranthene	< 77.9		µg/kg dry	77.9	66.6	1	"	"	"	"	"	X
65-85-0	Benzoic acid	< 385		µg/kg dry	385	23.1	1	"	"	"	"	"	X
100-51-6	Benzyl alcohol	< 385		µg/kg dry	385	89.2	1	"	"	"	"	"	X
111-91-1	Bis(2-chloroethoxy)methane	< 385		µg/kg dry	385	38.9	1	"	"	"	"	"	X
111-44-4	Bis(2-chloroethyl)ether	< 195		µg/kg dry	195	36.1	1	"	"	"	"	"	X
108-60-1	Bis(2-chloroisopropyl)ether	< 195		µg/kg dry	195	31.3	1	"	"	"	"	"	X
117-81-7	Bis(2-ethylhexyl)phthalate	< 195		µg/kg dry	195	49.6	1	"	"	"	"	"	X
101-55-3	4-Bromophenyl phenyl ether	< 385		µg/kg dry	385	43.6	1	"	"	"	"	"	X
85-68-7	Butyl benzyl phthalate	< 385		µg/kg dry	385	38.7	1	"	"	"	"	"	X
86-74-8	Carbazole	< 195		µg/kg dry	195	44.9	1	"	"	"	"	"	X
59-50-7	4-Chloro-3-methylphenol	< 385		µg/kg dry	385	45.3	1	"	"	"	"	"	X
106-47-8	4-Chloroaniline	< 195		µg/kg dry	195	24.1	1	"	"	"	"	"	X
91-58-7	2-Chloronaphthalene	< 385		µg/kg dry	385	52.8	1	"	"	"	"	"	X
95-57-8	2-Chlorophenol	< 195		µg/kg dry	195	37.4	1	"	"	"	"	"	X
7005-72-3	4-Chlorophenyl phenyl ether	< 385		µg/kg dry	385	37.7	1	"	"	"	"	"	X
218-01-9	Chrysene	< 77.9		µg/kg dry	77.9	44.0	1	"	"	"	"	"	X
53-70-3	Dibenzo (a,h) anthracene	< 77.9		µg/kg dry	77.9	57.6	1	"	"	"	"	"	X
132-64-9	Dibenzofuran	< 195		µg/kg dry	195	52.4	1	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 385		µg/kg dry	385	46.0	1	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 385		µg/kg dry	385	41.6	1	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 385		µg/kg dry	385	43.8	1	"	"	"	"	"	X
91-94-1	3,3´-Dichlorobenzidine	< 385		µg/kg dry	385	42.6	1	"	"	"	"	"	X
120-83-2	2,4-Dichlorophenol	< 195		µg/kg dry	195	47.3	1	"	"	"	"	"	X
84-66-2	Diethyl phthalate	< 385		µg/kg dry	385	40.4	1	"	"	"	"	"	X
131-11-3	Dimethyl phthalate	< 385		µg/kg dry	385	43.3	1	"	"	"	"	"	X
105-67-9	2,4-Dimethylphenol	< 385		µg/kg dry	385	30.5	1	"	"	"	"	"	X
84-74-2	Di-n-butyl phthalate	< 385		µg/kg dry	385	41.2	1	"	"	"	"	"	X
534-52-1	4,6-Dinitro-2-methylphenol	< 385		µg/kg dry	385	55.3	1	"	"	"	"	"	X
51-28-5	2,4-Dinitrophenol	< 385		µg/kg dry	385	39.9	1	"	"	"	"	"	X
121-14-2	2,4-Dinitrotoluene	< 195		µg/kg dry	195	46.7	1	"	"	"	"	"	X
606-20-2	2,6-Dinitrotoluene	< 195		µg/kg dry	195	39.8	1	"	"	"	"	"	X
117-84-0	Di-n-octyl phthalate	< 385		µg/kg dry	385	57.4	1	"	"	"	"	"	X
206-44-0	Fluoranthene	< 77.9		µg/kg dry	77.9	45.7	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-12	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-05				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
86-73-7	Fluorene	< 77.9		µg/kg dry	77.9	50.3	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X
118-74-1	Hexachlorobenzene	< 195		µg/kg dry	195	49.1	1	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 195		µg/kg dry	195	49.1	1	"	"	"	"	"	X
77-47-4	Hexachlorocyclopentadiene	< 195		µg/kg dry	195	49.2	1	"	"	"	"	"	X
67-72-1	Hexachloroethane	< 195		µg/kg dry	195	44.0	1	"	"	"	"	"	X
193-39-5	Indeno (1,2,3-cd) pyrene	< 77.9		µg/kg dry	77.9	53.3	1	"	"	"	"	"	X
78-59-1	Isophorone	< 195		µg/kg dry	195	30.0	1	"	"	"	"	"	X
91-57-6	2-Methylnaphthalene	< 77.9		µg/kg dry	77.9	54.6	1	"	"	"	"	"	X
95-48-7	2-Methylphenol	< 385		µg/kg dry	385	31.0	1	"	"	"	"	"	X
108-39-4, 106-44-5	3 & 4-Methylphenol	< 385		µg/kg dry	385	30.3	1	"	"	"	"	"	X
91-20-3	Naphthalene	< 77.9		µg/kg dry	77.9	45.0	1	"	"	"	"	"	X
88-74-4	2-Nitroaniline	< 385		µg/kg dry	385	34.9	1	"	"	"	"	"	X
99-09-2	3-Nitroaniline	< 385		µg/kg dry	385	35.6	1	"	"	"	"	"	X
100-01-6	4-Nitroaniline	< 195		µg/kg dry	195	51.4	1	"	"	"	"	"	X
98-95-3	Nitrobenzene	< 195		µg/kg dry	195	45.1	1	"	"	"	"	"	X
88-75-5	2-Nitrophenol	< 195		µg/kg dry	195	34.1	1	"	"	"	"	"	X
100-02-7	4-Nitrophenol	< 1540		µg/kg dry	1540	51.3	1	"	"	"	"	"	X
62-75-9	N-Nitrosodimethylamine	< 195		µg/kg dry	195	25.5	1	"	"	"	"	"	X
621-64-7	N-Nitrosodi-n-propylamine	< 195		µg/kg dry	195	34.1	1	"	"	"	"	"	X
86-30-6	N-Nitrosodiphenylamine	< 385		µg/kg dry	385	39.2	1	"	"	"	"	"	X
87-86-5	Pentachlorophenol	< 385		µg/kg dry	385	45.9	1	"	"	"	"	"	X
85-01-8	Phenanthrene	< 77.9		µg/kg dry	77.9	44.2	1	"	"	"	"	"	X
108-95-2	Phenol	< 385		µg/kg dry	385	39.0	1	"	"	"	"	"	X
129-00-0	Pyrene	< 77.9		µg/kg dry	77.9	43.0	1	"	"	"	"	"	X
110-86-1	Pyridine	< 385		µg/kg dry	385	91.2	1	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 385		µg/kg dry	385	47.4	1	"	"	"	"	"	X
90-12-0	1-Methylnaphthalene	< 77.9		µg/kg dry	77.9	43.0	1	"	"	"	"	"	
95-95-4	2,4,5-Trichlorophenol	< 385		µg/kg dry	385	39.8	1	"	"	"	"	"	X
88-06-2	2,4,6-Trichlorophenol	< 195		µg/kg dry	195	47.7	1	"	"	"	"	"	X
82-68-8	Pentachloronitrobenzene	< 385		µg/kg dry	385	41.0	1	"	"	"	"	"	X
95-94-3	1,2,4,5-Tetrachlorobenzene	< 385		µg/kg dry	385	45.9	1	"	"	"	"	"	X
Surrogate recoveries:													
321-60-8	*2-Fluorobiphenyl*	*88*			*30-130 %*			"	"	"	"	"	
367-12-4	*2-Fluorophenol*	*95*			*30-130 %*			"	"	"	"	"	
4165-60-0	*Nitrobenzene-d5*	*79*			*30-130 %*			"	"	"	"	"	
4165-62-2	*Phenol-d5*	*99*			*30-130 %*			"	"	"	"	"	
1718-51-0	*Terphenyl-dl4*	*87*			*30-130 %*			"	"	"	"	"	
118-79-6	*2,4,6-Tribromophenol*	*75*			*30-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls Prepared by method SW846 3546													
12674-11-2	Aroclor-1016	< 23.4		µg/kg dry	23.4	16.9	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
11104-28-2	Aroclor-1221	< 23.4		µg/kg dry	23.4	6.91	1	"	"	"	"	"	X
11141-16-5	Aroclor-1232	< 23.4		µg/kg dry	23.4	6.48	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-12	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-05				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls													
53469-21-9	Aroclor-1242	< 23.4		µg/kg dry	23.4	2.22	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
12672-29-6	Aroclor-1248	< 23.4		µg/kg dry	23.4	7.31	1	"	"	"	"	"	X
11097-69-1	Aroclor-1254	< 23.4		µg/kg dry	23.4	18.2	1	"	"	"	"	"	X
11096-82-5	Aroclor-1260	< 23.4		µg/kg dry	23.4	5.03	1	"	"	"	"	"	X
37324-23-5	Aroclor-1262	< 23.4		µg/kg dry	23.4	5.45	1	"	"	"	"	"	X
11100-14-4	Aroclor-1268	< 23.4		µg/kg dry	23.4	4.98	1	"	"	"	"	"	X
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*71*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*68*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*81*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*73*			*30-150 %*			"	"	"	"	"	
Pesticides													
Organochlorine Pesticides Prepared by method SW846 3546			Z-2										
319-84-6	alpha-BHC	< 5.85		µg/kg dry	5.85	0.269	1	SW846 8081B	13-Jul-20	16-Jul-20	BJJ	2001088	X
319-85-7	beta-BHC	< 5.85		µg/kg dry	5.85	0.374	1	"	"	"	"	"	X
319-86-8	delta-BHC	< 5.85		µg/kg dry	5.85	0.304	1	"	"	"	"	"	X
58-89-9	gamma-BHC (Lindane)	< 3.51		µg/kg dry	3.51	0.620	1	"	"	"	"	"	X
76-44-8	Heptachlor	< 5.85		µg/kg dry	5.85	0.678	1	"	"	"	"	"	X
309-00-2	Aldrin	< 5.85		µg/kg dry	5.85	0.199	1	"	"	"	"	"	X
1024-57-3	Heptachlor epoxide	< 5.85		µg/kg dry	5.85	0.234	1	"	"	"	"	"	X
959-98-8	Endosulfan I	< 5.85		µg/kg dry	5.85	0.269	1	"	"	"	"	"	X
60-57-1	Dieldrin	< 5.85		µg/kg dry	5.85	0.281	1	"	"	"	"	"	X
72-55-9	4,4'-DDE (p,p')	< 5.85		µg/kg dry	5.85	0.304	1	"	"	"	"	"	X
72-20-8	Endrin	< 9.36		µg/kg dry	9.36	0.573	1	"	"	"	"	"	X
33213-65-9	Endosulfan II	< 9.36		µg/kg dry	9.36	0.374	1	"	"	"	"	"	X
72-54-8	4,4'-DDD (p,p')	< 9.36		µg/kg dry	9.36	0.491	1	"	"	"	"	"	X
1031-07-8	Endosulfan sulfate	< 9.36		µg/kg dry	9.36	0.854	1	"	"	"	"	"	X
50-29-3	4,4'-DDT (p,p')	< 9.36		µg/kg dry	9.36	4.01	1	"	"	"	"	"	X
72-43-5	Methoxychlor	< 9.36		µg/kg dry	9.36	0.632	1	"	"	"	"	"	X
53494-70-5	Endrin ketone	< 9.36		µg/kg dry	9.36	0.339	1	"	"	"	"	"	X
7421-93-4	Endrin aldehyde	< 9.36		µg/kg dry	9.36	1.47	1	"	"	"	"	"	X
5103-71-9	alpha-Chlordane	< 5.85		µg/kg dry	5.85	0.246	1	"	"	"	"	"	X
5103-74-2	gamma-Chlordane	< 5.85		µg/kg dry	5.85	0.292	1	"	"	"	"	"	X
8001-35-2	Toxaphene	< 117		µg/kg dry	117	82.5	1	"	"	"	"	"	X
57-74-9	Chlordane	< 23.4		µg/kg dry	23.4	2.94	1	"	"	"	"	"	X
15972-60-8	Alachlor	< 5.85		µg/kg dry	5.85	0.515	1	"	"	"	"	"	
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*88*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*88*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*58*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*55*			*30-150 %*			"	"	"	"	"	
Extractable Petroleum Hydrocarbons													

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-12 SC58794-05	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Extractable Petroleum Hydrocarbons													
Fingerprinting by GC Prepared by method SW846 3546													
	Total Petroleum Hydrocarbons	**180**		mg/kg dry	15.9	13.3	1	SW846 8100Mod.	14-Jul-20	15-Jul-20	BJJ	2001092	
Surrogate recoveries:													
84-15-1	*o-Terphenyl*	*84*			*40-140 %*			"	"	"	"	"	
3386-33-2	*1-Chlorooctadecane*	*112*			*40-140 %*			"	"	"	"	"	
Total Metals by EPA 6000/7000 Series Methods													
Prepared by method SW846 3050B													
7440-22-4	Silver	< 3.34		mg/kg dry	3.34	0.180	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7440-38-2	Arsenic	**39.2**		mg/kg dry	1.67	0.211	1	"	"	"	"	"	X
7440-39-3	Barium	**21.7**		mg/kg dry	1.11	0.131	1	"	"	"	"	"	X
7440-41-7	Beryllium	< 0.556		mg/kg dry	0.556	0.0279	1	"	"	"	"	"	X
7440-43-9	Cadmium	< 0.556		mg/kg dry	0.556	0.0288	1	"	"	"	"	"	X
7440-47-3	Chromium	**17.4**		mg/kg dry	1.11	0.148	1	"	"	"	"	"	X
7439-97-6	Mercury	< 0.129		mg/kg dry	0.129	0.0107	1	SW846 7471B	13-Jul-20	13-Jul-20	edt	2001079	X
Prepared by method SW846 3050B													
7440-02-0	Nickel	**26.9**		mg/kg dry	1.11	0.128	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7439-92-1	Lead	**19.6**		mg/kg dry	1.67	0.236	1	"	"	"	"	"	X
7440-36-0	Antimony	< 5.56		mg/kg dry	5.56	0.418	1	"	"	"	"	"	X
7782-49-2	Selenium	< 1.67		mg/kg dry	1.67	0.318	1	"	"	"	"	"	X
7440-28-0	Thallium	< 3.34		mg/kg dry	3.34	1.23	1	"	"	"	"	"	X
7440-62-2	Vanadium	**33.5**		mg/kg dry	1.67	0.296	1	"	"	17-Jul-20	"	"	X
7440-66-6	Zinc	**37.9**		mg/kg dry	3.34	0.861	1	"	"	15-Jul-20	"	"	X
General Chemistry Parameters													
	% Solids	**83.3**		%			1	SM2540 G (11) Mod.	10-Jul-20	14-Jul-20	PN	2001075	
Toxicity Characteristics													
	Ignitability by Definition	**Negative**		N/A			1	SW846 1030	10-Jul-20 17:23	10-Jul-20 21:00	PN	2001074	X
	pH	**5.71**	pH	pH Units			1	SW846 9045D	14-Jul-20 15:31	14-Jul-20 18:55	PN	2001081	X
Subcontracted Analyses													
Subcontracted Analyses Prepared by method SW8151A										Methylation date: 13-Jul-20			
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
93-76-5	2,4,5-T	< 80		ug/kg	80	80	10	SW8151A	13-Jul-20	14-Jul-20 19:54	M-CT007	537166A	
93-72-1	2,4,5-TP (Silvex)	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-75-7	2,4-D	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-82-6	2,4-DB	< 80		ug/kg	80	80	10	"	"	"	"	"	
75-99-0	Dalapon	< 80		ug/kg	80	80	10	"	"	"	"	"	
1918-00-9	Dicamba	< 80		ug/kg	80	80	10	"	"	"	"	"	
120-36-5	Dichloroprop	< 80		ug/kg	80	80	10	"	"	"	"	"	
88-85-7	Dinoseb	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-74-6	MCPA	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
7085-19-0	MCPP	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
Surrogate recoveries:													
19719-28-9	*% DCAA*	*82*			*30-150 %*			"	"	"	"	"	

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Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-12 SC58794-05	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Subcontracted Analyses													
Prepared by method SW846 7.3.3.1/90													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Cyanide	< 6		mg/kg	6	6	1	SW846 7.3.3.1/90	14-Jul-20	14-Jul-20 14:33	M-CT007	537292A	
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Sulfide	< 20		mg/kg	20	20	1	SW846 CH7	"	14-Jul-20 15:17	M-CT007	537292B	
Prepared by method SW846-React													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity	**Negative**		Pos/Neg			1	SW846-React	14-Jul-20 15:18	14-Jul-20 15:18	M-CT007	'[none]'	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-13	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-06				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
Prepared by method SW846 5035A Soil (high level)							Initial weight: 16.9 g						
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	< 69.5		µg/kg dry	69.5	38.1	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
67-64-1	Acetone	< 695		µg/kg dry	695	87.9	50	"	"	"	"	"	X
107-13-1	Acrylonitrile	< 69.5		µg/kg dry	69.5	25.1	50	"	"	"	"	"	X
71-43-2	Benzene	< 69.5		µg/kg dry	69.5	11.1	50	"	"	"	"	"	X
108-86-1	Bromobenzene	< 69.5		µg/kg dry	69.5	15.7	50	"	"	"	"	"	X
74-97-5	Bromochloromethane	< 69.5		µg/kg dry	69.5	9.94	50	"	"	"	"	"	X
75-27-4	Bromodichloromethane	< 69.5		µg/kg dry	69.5	17.9	50	"	"	"	"	"	X
75-25-2	Bromoform	< 69.5		µg/kg dry	69.5	14.9	50	"	"	"	"	"	X
74-83-9	Bromomethane	< 139		µg/kg dry	139	34.3	50	"	"	"	"	"	X
78-93-3	2-Butanone (MEK)	< 139		µg/kg dry	139	31.8	50	"	"	"	"	"	X
104-51-8	n-Butylbenzene	< 69.5		µg/kg dry	69.5	27.8	50	"	"	"	"	"	X
135-98-8	sec-Butylbenzene	< 69.5		µg/kg dry	69.5	21.3	50	"	"	"	"	"	X
98-06-6	tert-Butylbenzene	< 69.5		µg/kg dry	69.5	28.4	50	"	"	"	"	"	X
75-15-0	Carbon disulfide	< 139		µg/kg dry	139	25.7	50	"	"	"	"	"	X
56-23-5	Carbon tetrachloride	< 69.5		µg/kg dry	69.5	20.8	50	"	"	"	"	"	X
108-90-7	Chlorobenzene	< 69.5		µg/kg dry	69.5	8.41	50	"	"	"	"	"	X
75-00-3	Chloroethane	< 139		µg/kg dry	139	31.0	50	"	"	"	"	"	X
67-66-3	Chloroform	< 69.5		µg/kg dry	69.5	8.20	50	"	"	"	"	"	X
74-87-3	Chloromethane	< 139		µg/kg dry	139	82.6	50	"	"	"	"	"	X
95-49-8	2-Chlorotoluene	< 69.5		µg/kg dry	69.5	17.2	50	"	"	"	"	"	X
106-43-4	4-Chlorotoluene	< 69.5		µg/kg dry	69.5	12.6	50	"	"	"	"	"	X
96-12-8	1,2-Dibromo-3-chloropropane	< 139		µg/kg dry	139	27.5	50	"	"	"	"	"	X
124-48-1	Dibromochloromethane	< 69.5		µg/kg dry	69.5	11.0	50	"	"	"	"	"	X
106-93-4	1,2-Dibromoethane (EDB)	< 69.5		µg/kg dry	69.5	18.9	50	"	"	"	"	"	X
74-95-3	Dibromomethane	< 69.5		µg/kg dry	69.5	13.1	50	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 69.5		µg/kg dry	69.5	12.5	50	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 69.5		µg/kg dry	69.5	17.3	50	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 69.5		µg/kg dry	69.5	12.4	50	"	"	"	"	"	X
75-71-8	Dichlorodifluoromethane (Freon12)	< 139		µg/kg dry	139	90.9	50	"	"	"	"	"	X
75-34-3	1,1-Dichloroethane	< 69.5		µg/kg dry	69.5	16.1	50	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 69.5		µg/kg dry	69.5	18.2	50	"	"	"	"	"	X
75-35-4	1,1-Dichloroethene	< 69.5		µg/kg dry	69.5	17.8	50	"	"	"	"	"	X
156-59-2	cis-1,2-Dichloroethene	< 69.5		µg/kg dry	69.5	23.1	50	"	"	"	"	"	X
156-60-5	trans-1,2-Dichloroethene	< 69.5		µg/kg dry	69.5	15.8	50	"	"	"	"	"	X
78-87-5	1,2-Dichloropropane	< 69.5		µg/kg dry	69.5	24.1	50	"	"	"	"	"	X
142-28-9	1,3-Dichloropropane	< 69.5		µg/kg dry	69.5	22.0	50	"	"	"	"	"	X
594-20-7	2,2-Dichloropropane	< 69.5		µg/kg dry	69.5	18.3	50	"	"	"	"	"	X
563-58-6	1,1-Dichloropropene	< 69.5		µg/kg dry	69.5	21.3	50	"	"	"	"	"	X
10061-01-5	cis-1,3-Dichloropropene	< 69.5		µg/kg dry	69.5	16.4	50	"	"	"	"	"	X
10061-02-6	trans-1,3-Dichloropropene	< 69.5		µg/kg dry	69.5	28.3	50	"	"	"	"	"	X
100-41-4	Ethylbenzene	< 69.5		µg/kg dry	69.5	14.5	50	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 69.5		µg/kg dry	69.5	22.2	50	"	"	"	"	"	X
591-78-6	2-Hexanone (MBK)	< 139		µg/kg dry	139	46.2	50	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-13	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-06				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
							Initial weight: 16.9 g						
98-82-8	Isopropylbenzene	< 69.5		µg/kg dry	69.5	25.2	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
99-87-6	4-Isopropyltoluene	< 69.5		µg/kg dry	69.5	19.3	50	"	"	"	"	"	X
1634-04-4	Methyl tert-butyl ether	< 69.5		µg/kg dry	69.5	20.9	50	"	"	"	"	"	X
108-10-1	4-Methyl-2-pentanone (MIBK)	< 139		µg/kg dry	139	49.8	50	"	"	"	"	"	X
75-09-2	Methylene chloride	< 139		µg/kg dry	139	59.4	50	"	"	"	"	"	X
91-20-3	Naphthalene	< 69.5		µg/kg dry	69.5	20.2	50	"	"	"	"	"	X
103-65-1	n-Propylbenzene	< 69.5		µg/kg dry	69.5	17.3	50	"	"	"	"	"	X
100-42-5	Styrene	< 69.5		µg/kg dry	69.5	9.17	50	"	"	"	"	"	X
630-20-6	1,1,1,2-Tetrachloroethane	< 69.5		µg/kg dry	69.5	16.7	50	"	"	"	"	"	X
79-34-5	1,1,2,2-Tetrachloroethane	< 69.5		µg/kg dry	69.5	22.0	50	"	"	"	"	"	X
127-18-4	Tetrachloroethene	< 69.5		µg/kg dry	69.5	21.9	50	"	"	"	"	"	X
108-88-3	Toluene	< 69.5		µg/kg dry	69.5	11.2	50	"	"	"	"	"	X
87-61-6	1,2,3-Trichlorobenzene	< 69.5		µg/kg dry	69.5	16.2	50	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 69.5		µg/kg dry	69.5	11.5	50	"	"	"	"	"	X
108-70-3	1,3,5-Trichlorobenzene	< 69.5		µg/kg dry	69.5	11.0	50	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	< 69.5		µg/kg dry	69.5	16.8	50	"	"	"	"	"	X
79-00-5	1,1,2-Trichloroethane	< 69.5		µg/kg dry	69.5	21.5	50	"	"	"	"	"	X
79-01-6	Trichloroethene	< 69.5		µg/kg dry	69.5	11.9	50	"	"	"	"	"	X
75-69-4	Trichlorofluoromethane (Freon 11)	< 69.5		µg/kg dry	69.5	31.4	50	"	"	"	"	"	X
96-18-4	1,2,3-Trichloropropane	< 69.5		µg/kg dry	69.5	32.0	50	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	< 69.5		µg/kg dry	69.5	17.6	50	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	< 69.5		µg/kg dry	69.5	14.5	50	"	"	"	"	"	X
75-01-4	Vinyl chloride	< 69.5		µg/kg dry	69.5	34.2	50	"	"	"	"	"	X
179601-23-1	m,p-Xylene	< 139		µg/kg dry	139	40.9	50	"	"	"	"	"	X
95-47-6	o-Xylene	< 69.5		µg/kg dry	69.5	21.4	50	"	"	"	"	"	X
109-99-9	Tetrahydrofuran	< 139		µg/kg dry	139	50.8	50	"	"	"	"	"	
60-29-7	Ethyl ether	< 69.5		µg/kg dry	69.5	18.8	50	"	"	"	"	"	X
994-05-8	Tert-amyl methyl ether	< 69.5		µg/kg dry	69.5	38.4	50	"	"	"	"	"	
637-92-3	Ethyl tert-butyl ether	< 69.5		µg/kg dry	69.5	19.3	50	"	"	"	"	"	
108-20-3	Di-isopropyl ether	< 69.5		µg/kg dry	69.5	22.4	50	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	< 1390		µg/kg dry	1390	987	50	"	"	"	"	"	X
123-91-1	1,4-Dioxane	< 1390		µg/kg dry	1390	409	50	"	"	"	"	"	X
110-57-6	trans-1,4-Dichloro-2-buten e	< 348		µg/kg dry	348	45.9	50	"	"	"	"	"	X
64-17-5	Ethanol	< 13900		µg/kg dry	13900	1200	50	"	"	"	"	"	
Surrogate recoveries:													
460-00-4	*4-Bromofluorobenzene*	*102*			*70-130 %*			"	"	"	"	"	
2037-26-5	*Toluene-d8*	*105*			*70-130 %*			"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*103*			*70-130 %*			"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*105*			*70-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds Prepared by method SW846 3546													
83-32-9	Acenaphthene	< 83.7		µg/kg dry	83.7	44.4	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-13	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-06				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
208-96-8	Acenaphthylene	< 83.7		µg/kg dry	83.7	43.7	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X
62-53-3	Aniline	< 414		µg/kg dry	414	26.4	1	"	"	"	"	"	X
120-12-7	Anthracene	< 83.7		µg/kg dry	83.7	48.2	1	"	"	"	"	"	X
103-33-3	Azobenzene/Diphenyldiazene	< 414		µg/kg dry	414	44.9	1	"	"	"	"	"	
92-87-5	Benzidine	< 828		µg/kg dry	828	26.4	1	"	"	"	"	"	X
56-55-3	Benzo (a) anthracene	< 83.7		µg/kg dry	83.7	47.1	1	"	"	"	"	"	X
50-32-8	Benzo (a) pyrene	< 83.7		µg/kg dry	83.7	57.2	1	"	"	"	"	"	X
205-99-2	Benzo (b) fluoranthene	< 83.7		µg/kg dry	83.7	63.0	1	"	"	"	"	"	X
191-24-2	Benzo (g,h,i) perylene	< 83.7		µg/kg dry	83.7	59.1	1	"	"	"	"	"	X
207-08-9	Benzo (k) fluoranthene	< 83.7		µg/kg dry	83.7	71.5	1	"	"	"	"	"	X
65-85-0	Benzoic acid	< 414		µg/kg dry	414	24.8	1	"	"	"	"	"	X
100-51-6	Benzyl alcohol	< 414		µg/kg dry	414	95.9	1	"	"	"	"	"	X
111-91-1	Bis(2-chloroethoxy)methane	< 414		µg/kg dry	414	41.8	1	"	"	"	"	"	X
111-44-4	Bis(2-chloroethyl)ether	< 210		µg/kg dry	210	38.8	1	"	"	"	"	"	X
108-60-1	Bis(2-chloroisopropyl)ether	< 210		µg/kg dry	210	33.6	1	"	"	"	"	"	X
117-81-7	Bis(2-ethylhexyl)phthalate	< 210		µg/kg dry	210	53.3	1	"	"	"	"	"	X
101-55-3	4-Bromophenyl phenyl ether	< 414		µg/kg dry	414	46.8	1	"	"	"	"	"	X
85-68-7	Butyl benzyl phthalate	< 414		µg/kg dry	414	41.5	1	"	"	"	"	"	X
86-74-8	Carbazole	< 210		µg/kg dry	210	48.2	1	"	"	"	"	"	X
59-50-7	4-Chloro-3-methylphenol	< 414		µg/kg dry	414	48.7	1	"	"	"	"	"	X
106-47-8	4-Chloroaniline	< 210		µg/kg dry	210	25.9	1	"	"	"	"	"	X
91-58-7	2-Chloronaphthalene	< 414		µg/kg dry	414	56.7	1	"	"	"	"	"	X
95-57-8	2-Chlorophenol	< 210		µg/kg dry	210	40.2	1	"	"	"	"	"	X
7005-72-3	4-Chlorophenyl phenyl ether	< 414		µg/kg dry	414	40.5	1	"	"	"	"	"	X
218-01-9	Chrysene	< 83.7		µg/kg dry	83.7	47.3	1	"	"	"	"	"	X
53-70-3	Dibenzo (a,h) anthracene	< 83.7		µg/kg dry	83.7	61.9	1	"	"	"	"	"	X
132-64-9	Dibenzofuran	< 210		µg/kg dry	210	56.3	1	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 414		µg/kg dry	414	49.4	1	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 414		µg/kg dry	414	44.7	1	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 414		µg/kg dry	414	47.1	1	"	"	"	"	"	X
91-94-1	3,3´-Dichlorobenzidine	< 414		µg/kg dry	414	45.8	1	"	"	"	"	"	X
120-83-2	2,4-Dichlorophenol	< 210		µg/kg dry	210	50.8	1	"	"	"	"	"	X
84-66-2	Diethyl phthalate	< 414		µg/kg dry	414	43.4	1	"	"	"	"	"	X
131-11-3	Dimethyl phthalate	< 414		µg/kg dry	414	46.6	1	"	"	"	"	"	X
105-67-9	2,4-Dimethylphenol	< 414		µg/kg dry	414	32.8	1	"	"	"	"	"	X
84-74-2	Di-n-butyl phthalate	< 414		µg/kg dry	414	44.3	1	"	"	"	"	"	X
534-52-1	4,6-Dinitro-2-methylphenol	< 414		µg/kg dry	414	59.4	1	"	"	"	"	"	X
51-28-5	2,4-Dinitrophenol	< 414		µg/kg dry	414	42.9	1	"	"	"	"	"	X
121-14-2	2,4-Dinitrotoluene	< 210		µg/kg dry	210	50.2	1	"	"	"	"	"	X
606-20-2	2,6-Dinitrotoluene	< 210		µg/kg dry	210	42.8	1	"	"	"	"	"	X
117-84-0	Di-n-octyl phthalate	< 414		µg/kg dry	414	61.6	1	"	"	"	"	"	X
206-44-0	Fluoranthene	< 83.7		µg/kg dry	83.7	49.1	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-13	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-06				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
86-73-7	Fluorene	< 83.7		µg/kg dry	83.7	54.1	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X
118-74-1	Hexachlorobenzene	< 210		µg/kg dry	210	52.7	1	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 210		µg/kg dry	210	52.7	1	"	"	"	"	"	X
77-47-4	Hexachlorocyclopentadiene	< 210		µg/kg dry	210	52.8	1	"	"	"	"	"	X
67-72-1	Hexachloroethane	< 210		µg/kg dry	210	47.3	1	"	"	"	"	"	X
193-39-5	Indeno (1,2,3-cd) pyrene	< 83.7		µg/kg dry	83.7	57.2	1	"	"	"	"	"	X
78-59-1	Isophorone	< 210		µg/kg dry	210	32.3	1	"	"	"	"	"	X
91-57-6	2-Methylnaphthalene	< 83.7		µg/kg dry	83.7	58.6	1	"	"	"	"	"	X
95-48-7	2-Methylphenol	< 414		µg/kg dry	414	33.3	1	"	"	"	"	"	X
108-39-4, 106-44-5	3 & 4-Methylphenol	< 414		µg/kg dry	414	32.5	1	"	"	"	"	"	X
91-20-3	Naphthalene	< 83.7		µg/kg dry	83.7	48.3	1	"	"	"	"	"	X
88-74-4	2-Nitroaniline	< 414		µg/kg dry	414	37.5	1	"	"	"	"	"	X
99-09-2	3-Nitroaniline	< 414		µg/kg dry	414	38.3	1	"	"	"	"	"	X
100-01-6	4-Nitroaniline	< 210		µg/kg dry	210	55.2	1	"	"	"	"	"	X
98-95-3	Nitrobenzene	< 210		µg/kg dry	210	48.4	1	"	"	"	"	"	X
88-75-5	2-Nitrophenol	< 210		µg/kg dry	210	36.6	1	"	"	"	"	"	X
100-02-7	4-Nitrophenol	< 1660		µg/kg dry	1660	55.1	1	"	"	"	"	"	X
62-75-9	N-Nitrosodimethylamine	< 210		µg/kg dry	210	27.4	1	"	"	"	"	"	X
621-64-7	N-Nitrosodi-n-propylamine	< 210		µg/kg dry	210	36.6	1	"	"	"	"	"	X
86-30-6	N-Nitrosodiphenylamine	< 414		µg/kg dry	414	42.2	1	"	"	"	"	"	X
87-86-5	Pentachlorophenol	< 414		µg/kg dry	414	49.3	1	"	"	"	"	"	X
85-01-8	Phenanthrene	< 83.7		µg/kg dry	83.7	47.4	1	"	"	"	"	"	X
108-95-2	Phenol	< 414		µg/kg dry	414	41.9	1	"	"	"	"	"	X
129-00-0	Pyrene	< 83.7		µg/kg dry	83.7	46.2	1	"	"	"	"	"	X
110-86-1	Pyridine	< 414		µg/kg dry	414	98.0	1	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 414		µg/kg dry	414	50.9	1	"	"	"	"	"	X
90-12-0	1-Methylnaphthalene	< 83.7		µg/kg dry	83.7	46.2	1	"	"	"	"	"	
95-95-4	2,4,5-Trichlorophenol	< 414		µg/kg dry	414	42.8	1	"	"	"	"	"	X
88-06-2	2,4,6-Trichlorophenol	< 210		µg/kg dry	210	51.2	1	"	"	"	"	"	X
82-68-8	Pentachloronitrobenzene	< 414		µg/kg dry	414	44.0	1	"	"	"	"	"	X
95-94-3	1,2,4,5-Tetrachlorobenzene	< 414		µg/kg dry	414	49.3	1	"	"	"	"	"	X
Surrogate recoveries:													
321-60-8	*2-Fluorobiphenyl*	*94*			*30-130 %*			"	"	"	"	"	
367-12-4	*2-Fluorophenol*	*88*			*30-130 %*			"	"	"	"	"	
4165-60-0	*Nitrobenzene-d5*	*84*			*30-130 %*			"	"	"	"	"	
4165-62-2	*Phenol-d5*	*100*			*30-130 %*			"	"	"	"	"	
1718-51-0	*Terphenyl-dl4*	*77*			*30-130 %*			"	"	"	"	"	
118-79-6	*2,4,6-Tribromophenol*	*84*			*30-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls Prepared by method SW846 3546													
12674-11-2	Aroclor-1016	< 25.2		µg/kg dry	25.2	18.2	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
11104-28-2	Aroclor-1221	< 25.2		µg/kg dry	25.2	7.45	1	"	"	"	"	"	X
11141-16-5	Aroclor-1232	< 25.2		µg/kg dry	25.2	6.98	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-13	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-06				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls													
53469-21-9	Aroclor-1242	< 25.2		µg/kg dry	25.2	2.39	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
12672-29-6	Aroclor-1248	< 25.2		µg/kg dry	25.2	7.88	1	"	"	"	"	"	X
11097-69-1	Aroclor-1254	< 25.2		µg/kg dry	25.2	19.6	1	"	"	"	"	"	X
11096-82-5	Aroclor-1260	< 25.2		µg/kg dry	25.2	5.42	1	"	"	"	"	"	X
37324-23-5	Aroclor-1262	< 25.2		µg/kg dry	25.2	5.87	1	"	"	"	"	"	X
11100-14-4	Aroclor-1268	< 25.2		µg/kg dry	25.2	5.37	1	"	"	"	"	"	X
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*91*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*84*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*84*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*76*			*30-150 %*			"	"	"	"	"	
Pesticides													
Organochlorine Pesticides Prepared by method SW846 3546			Z-2										
319-84-6	alpha-BHC	< 6.30		µg/kg dry	6.30	0.290	1	SW846 8081B	13-Jul-20	16-Jul-20	BJJ	2001088	X
319-85-7	beta-BHC	< 6.30		µg/kg dry	6.30	0.403	1	"	"	"	"	"	X
319-86-8	delta-BHC	< 6.30		µg/kg dry	6.30	0.328	1	"	"	"	"	"	X
58-89-9	gamma-BHC (Lindane)	< 3.78		µg/kg dry	3.78	0.668	1	"	"	"	"	"	X
76-44-8	Heptachlor	< 6.30		µg/kg dry	6.30	0.731	1	"	"	"	"	"	X
309-00-2	Aldrin	< 6.30		µg/kg dry	6.30	0.214	1	"	"	"	"	"	X
1024-57-3	Heptachlor epoxide	< 6.30		µg/kg dry	6.30	0.252	1	"	"	"	"	"	X
959-98-8	Endosulfan I	< 6.30		µg/kg dry	6.30	0.290	1	"	"	"	"	"	X
60-57-1	Dieldrin	< 6.30		µg/kg dry	6.30	0.302	1	"	"	"	"	"	X
72-55-9	4,4'-DDE (p,p')	< 6.30		µg/kg dry	6.30	0.328	1	"	"	"	"	"	X
72-20-8	Endrin	< 10.1		µg/kg dry	10.1	0.618	1	"	"	"	"	"	X
33213-65-9	Endosulfan II	< 10.1		µg/kg dry	10.1	0.403	1	"	"	"	"	"	X
72-54-8	4,4'-DDD (p,p')	< 10.1		µg/kg dry	10.1	0.529	1	"	"	"	"	"	X
1031-07-8	Endosulfan sulfate	< 10.1		µg/kg dry	10.1	0.920	1	"	"	"	"	"	X
50-29-3	4,4'-DDT (p,p')	< 10.1		µg/kg dry	10.1	4.32	1	"	"	"	"	"	X
72-43-5	Methoxychlor	< 10.1		µg/kg dry	10.1	0.681	1	"	"	"	"	"	X
53494-70-5	Endrin ketone	< 10.1		µg/kg dry	10.1	0.365	1	"	"	"	"	"	X
7421-93-4	Endrin aldehyde	< 10.1		µg/kg dry	10.1	1.59	1	"	"	"	"	"	X
5103-71-9	alpha-Chlordane	< 6.30		µg/kg dry	6.30	0.265	1	"	"	"	"	"	X
5103-74-2	gamma-Chlordane	< 6.30		µg/kg dry	6.30	0.315	1	"	"	"	"	"	X
8001-35-2	Toxaphene	< 126		µg/kg dry	126	88.9	1	"	"	"	"	"	X
57-74-9	Chlordane	< 25.2		µg/kg dry	25.2	3.17	1	"	"	"	"	"	X
15972-60-8	Alachlor	< 6.30		µg/kg dry	6.30	0.555	1	"	"	"	"	"	
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*72*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*62*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*52*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*53*			*30-150 %*			"	"	"	"	"	
Extractable Petroleum Hydrocarbons													

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-13 SC58794-06	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Extractable Petroleum Hydrocarbons													
Fingerprinting by GC Prepared by method SW846 3546													
	Total Petroleum Hydrocarbons	**93.0**		mg/kg dry	16.5	13.8	1	SW846 8100Mod.	14-Jul-20	15-Jul-20	BJJ	2001092	
Surrogate recoveries:													
84-15-1	*o-Terphenyl*	*78*			*40-140 %*			"	"	"	"	"	
3386-33-2	*1-Chlorooctadecane*	*105*			*40-140 %*			"	"	"	"	"	
Total Metals by EPA 6000/7000 Series Methods													
Prepared by method SW846 3050B													
7440-22-4	Silver	< 3.67		mg/kg dry	3.67	0.198	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7440-38-2	Arsenic	**49.1**		mg/kg dry	1.83	0.232	1	"	"	"	"	"	X
7440-39-3	Barium	**28.9**		mg/kg dry	1.22	0.144	1	"	"	"	"	"	X
7440-41-7	Beryllium	< 0.611		mg/kg dry	0.611	0.0307	1	"	"	"	"	"	X
7440-43-9	Cadmium	< 0.611		mg/kg dry	0.611	0.0316	1	"	"	"	"	"	X
7440-47-3	Chromium	**23.3**		mg/kg dry	1.22	0.163	1	"	"	"	"	"	X
7439-97-6	Mercury	< 0.133		mg/kg dry	0.133	0.0111	1	SW846 7471B	13-Jul-20	13-Jul-20	edt	2001079	X
Prepared by method SW846 3050B													
7440-02-0	Nickel	**37.2**		mg/kg dry	1.22	0.141	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7439-92-1	Lead	**22.7**		mg/kg dry	1.83	0.259	1	"	"	"	"	"	X
7440-36-0	Antimony	< 6.11		mg/kg dry	6.11	0.459	1	"	"	"	"	"	X
7782-49-2	Selenium	< 1.83		mg/kg dry	1.83	0.349	1	"	"	"	"	"	X
7440-28-0	Thallium	< 3.67		mg/kg dry	3.67	1.35	1	"	"	"	"	"	X
7440-62-2	Vanadium	**34.6**		mg/kg dry	1.83	0.325	1	"	"	17-Jul-20	"	"	X
7440-66-6	Zinc	**49.2**		mg/kg dry	3.67	0.946	1	"	"	15-Jul-20	"	"	X
General Chemistry Parameters													
	% Solids	**79.0**		%			1	SM2540 G (11) Mod.	10-Jul-20	14-Jul-20	PN	2001075	
Toxicity Characteristics													
	Ignitability by Definition	**Negative**		N/A			1	SW846 1030	10-Jul-20 17:23	10-Jul-20 21:00	PN	2001074	X
	pH	**6.35**	pH	pH Units			1	SW846 9045D	14-Jul-20 15:31	14-Jul-20 18:55	PN	2001081	X
Subcontracted Analyses													
Subcontracted Analyses Prepared by method SW8151A										Methylation date: 13-Jul-20			
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
93-76-5	2,4,5-T	< 80		ug/kg	80	80	10	SW8151A	13-Jul-20	14-Jul-20 20:19	M-CT007	537166A	
93-72-1	2,4,5-TP (Silvex)	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-75-7	2,4-D	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-82-6	2,4-DB	< 80		ug/kg	80	80	10	"	"	"	"	"	
75-99-0	Dalapon	< 80		ug/kg	80	80	10	"	"	"	"	"	
1918-00-9	Dicamba	< 80		ug/kg	80	80	10	"	"	"	"	"	
120-36-5	Dichloroprop	< 80		ug/kg	80	80	10	"	"	"	"	"	
88-85-7	Dinoseb	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-74-6	MCPA	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
7085-19-0	MCPP	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
Surrogate recoveries:													
19719-28-9	*% DCAA*	*85*			*30-150 %*			"	"	"	"	"	

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Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-13 SC58794-06	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Subcontracted Analyses													
Prepared by method SW846 7.3.3.1/90													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Cyanide	< 7		mg/kg	7	7	1	SW846 7.3.3.1/90	14-Jul-20	14-Jul-20 14:34	M-CT007	537292A	
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Sulfide	< 20		mg/kg	20	20	1	SW846 CH7	"	14-Jul-20 15:17	M-CT007	537292B	
Prepared by method SW846-React													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity	**Negative**		Pos/Neg			1	SW846-React	14-Jul-20 15:18	14-Jul-20 15:18	M-CT007	'[none]'	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-14	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-07				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
Prepared by method SW846 5035A Soil (high level)							Initial weight: 16.96 g						
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	< 58.5		µg/kg dry	58.5	32.0	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
67-64-1	Acetone	< 585		µg/kg dry	585	73.9	50	"	"	"	"	"	X
107-13-1	Acrylonitrile	< 58.5		µg/kg dry	58.5	21.1	50	"	"	"	"	"	X
71-43-2	Benzene	< 58.5		µg/kg dry	58.5	9.36	50	"	"	"	"	"	X
108-86-1	Bromobenzene	< 58.5		µg/kg dry	58.5	13.2	50	"	"	"	"	"	X
74-97-5	Bromochloromethane	< 58.5		µg/kg dry	58.5	8.36	50	"	"	"	"	"	X
75-27-4	Bromodichloromethane	< 58.5		µg/kg dry	58.5	15.1	50	"	"	"	"	"	X
75-25-2	Bromoform	< 58.5		µg/kg dry	58.5	12.5	50	"	"	"	"	"	X
74-83-9	Bromomethane	< 117		µg/kg dry	117	28.9	50	"	"	"	"	"	X
78-93-3	2-Butanone (MEK)	< 117		µg/kg dry	117	26.7	50	"	"	"	"	"	X
104-51-8	n-Butylbenzene	< 58.5		µg/kg dry	58.5	23.4	50	"	"	"	"	"	X
135-98-8	sec-Butylbenzene	< 58.5		µg/kg dry	58.5	18.0	50	"	"	"	"	"	X
98-06-6	tert-Butylbenzene	< 58.5		µg/kg dry	58.5	23.9	50	"	"	"	"	"	X
75-15-0	Carbon disulfide	< 117		µg/kg dry	117	21.6	50	"	"	"	"	"	X
56-23-5	Carbon tetrachloride	< 58.5		µg/kg dry	58.5	17.5	50	"	"	"	"	"	X
108-90-7	Chlorobenzene	< 58.5		µg/kg dry	58.5	7.08	50	"	"	"	"	"	X
75-00-3	Chloroethane	< 117		µg/kg dry	117	26.1	50	"	"	"	"	"	X
67-66-3	Chloroform	< 58.5		µg/kg dry	58.5	6.90	50	"	"	"	"	"	X
74-87-3	Chloromethane	< 117		µg/kg dry	117	69.5	50	"	"	"	"	"	X
95-49-8	2-Chlorotoluene	< 58.5		µg/kg dry	58.5	14.5	50	"	"	"	"	"	X
106-43-4	4-Chlorotoluene	< 58.5		µg/kg dry	58.5	10.6	50	"	"	"	"	"	X
96-12-8	1,2-Dibromo-3-chloropropane	< 117		µg/kg dry	117	23.1	50	"	"	"	"	"	X
124-48-1	Dibromochloromethane	< 58.5		µg/kg dry	58.5	9.24	50	"	"	"	"	"	X
106-93-4	1,2-Dibromoethane (EDB)	< 58.5		µg/kg dry	58.5	15.9	50	"	"	"	"	"	X
74-95-3	Dibromomethane	< 58.5		µg/kg dry	58.5	11.0	50	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 58.5		µg/kg dry	58.5	10.5	50	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 58.5		µg/kg dry	58.5	14.6	50	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 58.5		µg/kg dry	58.5	10.5	50	"	"	"	"	"	X
75-71-8	Dichlorodifluoromethane (Freon12)	< 117		µg/kg dry	117	76.5	50	"	"	"	"	"	X
75-34-3	1,1-Dichloroethane	< 58.5		µg/kg dry	58.5	13.5	50	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 58.5		µg/kg dry	58.5	15.3	50	"	"	"	"	"	X
75-35-4	1,1-Dichloroethene	< 58.5		µg/kg dry	58.5	15.0	50	"	"	"	"	"	X
156-59-2	cis-1,2-Dichloroethene	< 58.5		µg/kg dry	58.5	19.5	50	"	"	"	"	"	X
156-60-5	trans-1,2-Dichloroethene	< 58.5		µg/kg dry	58.5	13.3	50	"	"	"	"	"	X
78-87-5	1,2-Dichloropropane	< 58.5		µg/kg dry	58.5	20.3	50	"	"	"	"	"	X
142-28-9	1,3-Dichloropropane	< 58.5		µg/kg dry	58.5	18.5	50	"	"	"	"	"	X
594-20-7	2,2-Dichloropropane	< 58.5		µg/kg dry	58.5	15.4	50	"	"	"	"	"	X
563-58-6	1,1-Dichloropropene	< 58.5		µg/kg dry	58.5	17.9	50	"	"	"	"	"	X
10061-01-5	cis-1,3-Dichloropropene	< 58.5		µg/kg dry	58.5	13.8	50	"	"	"	"	"	X
10061-02-6	trans-1,3-Dichloropropene	< 58.5		µg/kg dry	58.5	23.8	50	"	"	"	"	"	X
100-41-4	Ethylbenzene	< 58.5		µg/kg dry	58.5	12.2	50	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 58.5		µg/kg dry	58.5	18.7	50	"	"	"	"	"	X
591-78-6	2-Hexanone (MBK)	< 117		µg/kg dry	117	38.9	50	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-14	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-07				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
							Initial weight: 16.96 g						
98-82-8	Isopropylbenzene	< 58.5		µg/kg dry	58.5	21.2	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
99-87-6	4-Isopropyltoluene	< 58.5		µg/kg dry	58.5	16.2	50	"	"	"	"	"	X
1634-04-4	Methyl tert-butyl ether	< 58.5		µg/kg dry	58.5	17.6	50	"	"	"	"	"	X
108-10-1	4-Methyl-2-pentanone (MIBK)	< 117		µg/kg dry	117	41.9	50	"	"	"	"	"	X
75-09-2	Methylene chloride	< 117		µg/kg dry	117	49.9	50	"	"	"	"	"	X
91-20-3	Naphthalene	< 58.5		µg/kg dry	58.5	17.0	50	"	"	"	"	"	X
103-65-1	n-Propylbenzene	< 58.5		µg/kg dry	58.5	14.6	50	"	"	"	"	"	X
100-42-5	Styrene	< 58.5		µg/kg dry	58.5	7.72	50	"	"	"	"	"	X
630-20-6	1,1,1,2-Tetrachloroethane	< 58.5		µg/kg dry	58.5	14.1	50	"	"	"	"	"	X
79-34-5	1,1,2,2-Tetrachloroethane	< 58.5		µg/kg dry	58.5	18.5	50	"	"	"	"	"	X
127-18-4	Tetrachloroethene	< 58.5		µg/kg dry	58.5	18.4	50	"	"	"	"	"	X
108-88-3	Toluene	< 58.5		µg/kg dry	58.5	9.41	50	"	"	"	"	"	X
87-61-6	1,2,3-Trichlorobenzene	< 58.5		µg/kg dry	58.5	13.6	50	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 58.5		µg/kg dry	58.5	9.65	50	"	"	"	"	"	X
108-70-3	1,3,5-Trichlorobenzene	< 58.5		µg/kg dry	58.5	9.24	50	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	< 58.5		µg/kg dry	58.5	14.2	50	"	"	"	"	"	X
79-00-5	1,1,2-Trichloroethane	< 58.5		µg/kg dry	58.5	18.1	50	"	"	"	"	"	X
79-01-6	Trichloroethene	< 58.5		µg/kg dry	58.5	10.0	50	"	"	"	"	"	X
75-69-4	Trichlorofluoromethane (Freon 11)	< 58.5		µg/kg dry	58.5	26.4	50	"	"	"	"	"	X
96-18-4	1,2,3-Trichloropropane	< 58.5		µg/kg dry	58.5	27.0	50	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	< 58.5		µg/kg dry	58.5	14.8	50	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	< 58.5		µg/kg dry	58.5	12.2	50	"	"	"	"	"	X
75-01-4	Vinyl chloride	< 58.5		µg/kg dry	58.5	28.8	50	"	"	"	"	"	X
179601-23-1	m,p-Xylene	< 117		µg/kg dry	117	34.4	50	"	"	"	"	"	X
95-47-6	o-Xylene	< 58.5		µg/kg dry	58.5	18.0	50	"	"	"	"	"	X
109-99-9	Tetrahydrofuran	< 117		µg/kg dry	117	42.7	50	"	"	"	"	"	
60-29-7	Ethyl ether	< 58.5		µg/kg dry	58.5	15.8	50	"	"	"	"	"	X
994-05-8	Tert-amyl methyl ether	< 58.5		µg/kg dry	58.5	32.3	50	"	"	"	"	"	
637-92-3	Ethyl tert-butyl ether	< 58.5		µg/kg dry	58.5	16.2	50	"	"	"	"	"	
108-20-3	Di-isopropyl ether	< 58.5		µg/kg dry	58.5	18.9	50	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	< 1170		µg/kg dry	1170	830	50	"	"	"	"	"	X
123-91-1	1,4-Dioxane	< 1170		µg/kg dry	1170	344	50	"	"	"	"	"	X
110-57-6	trans-1,4-Dichloro-2-buten e	< 292		µg/kg dry	292	38.6	50	"	"	"	"	"	X
64-17-5	Ethanol	< 11700		µg/kg dry	11700	1010	50	"	"	"	"	"	
Surrogate recoveries:													
460-00-4	*4-Bromofluorobenzene*	*103*			*70-130 %*			"	"	"	"	"	
2037-26-5	*Toluene-d8*	*107*			*70-130 %*			"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*104*			*70-130 %*			"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*107*			*70-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds Prepared by method SW846 3546													
83-32-9	Acenaphthene	< 75.8		µg/kg dry	75.8	40.2	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-14	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-07				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
208-96-8	Acenaphthylene	< 75.8		µg/kg dry	75.8	39.5	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X
62-53-3	Aniline	< 375		µg/kg dry	375	23.9	1	"	"	"	"	"	X
120-12-7	Anthracene	< 75.8		µg/kg dry	75.8	43.6	1	"	"	"	"	"	X
103-33-3	Azobenzene/Diphenyldiazene	< 375		µg/kg dry	375	40.7	1	"	"	"	"	"	
92-87-5	Benzidine	< 750		µg/kg dry	750	23.9	1	"	"	"	"	"	X
56-55-3	Benzo (a) anthracene	< 75.8		µg/kg dry	75.8	42.6	1	"	"	"	"	"	X
50-32-8	Benzo (a) pyrene	< 75.8		µg/kg dry	75.8	51.8	1	"	"	"	"	"	X
205-99-2	Benzo (b) fluoranthene	< 75.8		µg/kg dry	75.8	57.0	1	"	"	"	"	"	X
191-24-2	Benzo (g,h,i) perylene	< 75.8		µg/kg dry	75.8	53.5	1	"	"	"	"	"	X
207-08-9	Benzo (k) fluoranthene	< 75.8		µg/kg dry	75.8	64.7	1	"	"	"	"	"	X
65-85-0	Benzoic acid	< 375		µg/kg dry	375	22.5	1	"	"	"	"	"	X
100-51-6	Benzyl alcohol	< 375		µg/kg dry	375	86.8	1	"	"	"	"	"	X
111-91-1	Bis(2-chloroethoxy)methane	< 375		µg/kg dry	375	37.8	1	"	"	"	"	"	X
111-44-4	Bis(2-chloroethyl)ether	< 190		µg/kg dry	190	35.1	1	"	"	"	"	"	X
108-60-1	Bis(2-chloroisopropyl)ether	< 190		µg/kg dry	190	30.4	1	"	"	"	"	"	X
117-81-7	Bis(2-ethylhexyl)phthalate	< 190		µg/kg dry	190	48.3	1	"	"	"	"	"	X
101-55-3	4-Bromophenyl phenyl ether	< 375		µg/kg dry	375	42.4	1	"	"	"	"	"	X
85-68-7	Butyl benzyl phthalate	< 375		µg/kg dry	375	37.6	1	"	"	"	"	"	X
86-74-8	Carbazole	< 190		µg/kg dry	190	43.6	1	"	"	"	"	"	X
59-50-7	4-Chloro-3-methylphenol	< 375		µg/kg dry	375	44.1	1	"	"	"	"	"	X
106-47-8	4-Chloroaniline	< 190		µg/kg dry	190	23.4	1	"	"	"	"	"	X
91-58-7	2-Chloronaphthalene	< 375		µg/kg dry	375	51.3	1	"	"	"	"	"	X
95-57-8	2-Chlorophenol	< 190		µg/kg dry	190	36.3	1	"	"	"	"	"	X
7005-72-3	4-Chlorophenyl phenyl ether	< 375		µg/kg dry	375	36.7	1	"	"	"	"	"	X
218-01-9	Chrysene	< 75.8		µg/kg dry	75.8	42.8	1	"	"	"	"	"	X
53-70-3	Dibenzo (a,h) anthracene	< 75.8		µg/kg dry	75.8	56.0	1	"	"	"	"	"	X
132-64-9	Dibenzofuran	< 190		µg/kg dry	190	51.0	1	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 375		µg/kg dry	375	44.8	1	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 375		µg/kg dry	375	40.4	1	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 375		µg/kg dry	375	42.6	1	"	"	"	"	"	X
91-94-1	3,3´-Dichlorobenzidine	< 375		µg/kg dry	375	41.5	1	"	"	"	"	"	X
120-83-2	2,4-Dichlorophenol	< 190		µg/kg dry	190	46.0	1	"	"	"	"	"	X
84-66-2	Diethyl phthalate	< 375		µg/kg dry	375	39.3	1	"	"	"	"	"	X
131-11-3	Dimethyl phthalate	< 375		µg/kg dry	375	42.1	1	"	"	"	"	"	X
105-67-9	2,4-Dimethylphenol	< 375		µg/kg dry	375	29.6	1	"	"	"	"	"	X
84-74-2	Di-n-butyl phthalate	< 375		µg/kg dry	375	40.1	1	"	"	"	"	"	X
534-52-1	4,6-Dinitro-2-methylphenol	< 375		µg/kg dry	375	53.7	1	"	"	"	"	"	X
51-28-5	2,4-Dinitrophenol	< 375		µg/kg dry	375	38.8	1	"	"	"	"	"	X
121-14-2	2,4-Dinitrotoluene	< 190		µg/kg dry	190	45.4	1	"	"	"	"	"	X
606-20-2	2,6-Dinitrotoluene	< 190		µg/kg dry	190	38.7	1	"	"	"	"	"	X
117-84-0	Di-n-octyl phthalate	< 375		µg/kg dry	375	55.8	1	"	"	"	"	"	X
206-44-0	Fluoranthene	< 75.8		µg/kg dry	75.8	44.4	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-14	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-07				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
86-73-7	Fluorene	< 75.8		µg/kg dry	75.8	49.0	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X
118-74-1	Hexachlorobenzene	< 190		µg/kg dry	190	47.7	1	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 190		µg/kg dry	190	47.7	1	"	"	"	"	"	X
77-47-4	Hexachlorocyclopentadiene	< 190		µg/kg dry	190	47.8	1	"	"	"	"	"	X
67-72-1	Hexachloroethane	< 190		µg/kg dry	190	42.8	1	"	"	"	"	"	X
193-39-5	Indeno (1,2,3-cd) pyrene	< 75.8		µg/kg dry	75.8	51.8	1	"	"	"	"	"	X
78-59-1	Isophorone	< 190		µg/kg dry	190	29.2	1	"	"	"	"	"	X
91-57-6	2-Methylnaphthalene	< 75.8		µg/kg dry	75.8	53.0	1	"	"	"	"	"	X
95-48-7	2-Methylphenol	< 375		µg/kg dry	375	30.1	1	"	"	"	"	"	X
108-39-4, 106-44-5	3 & 4-Methylphenol	< 375		µg/kg dry	375	29.4	1	"	"	"	"	"	X
91-20-3	Naphthalene	< 75.8		µg/kg dry	75.8	43.7	1	"	"	"	"	"	X
88-74-4	2-Nitroaniline	< 375		µg/kg dry	375	34.0	1	"	"	"	"	"	X
99-09-2	3-Nitroaniline	< 375		µg/kg dry	375	34.6	1	"	"	"	"	"	X
100-01-6	4-Nitroaniline	< 190		µg/kg dry	190	50.0	1	"	"	"	"	"	X
98-95-3	Nitrobenzene	< 190		µg/kg dry	190	43.8	1	"	"	"	"	"	X
88-75-5	2-Nitrophenol	< 190		µg/kg dry	190	33.2	1	"	"	"	"	"	X
100-02-7	4-Nitrophenol	< 1500		µg/kg dry	1500	49.9	1	"	"	"	"	"	X
62-75-9	N-Nitrosodimethylamine	< 190		µg/kg dry	190	24.8	1	"	"	"	"	"	X
621-64-7	N-Nitrosodi-n-propylamine	< 190		µg/kg dry	190	33.2	1	"	"	"	"	"	X
86-30-6	N-Nitrosodiphenylamine	< 375		µg/kg dry	375	38.2	1	"	"	"	"	"	X
87-86-5	Pentachlorophenol	< 375		µg/kg dry	375	44.6	1	"	"	"	"	"	X
85-01-8	Phenanthrene	< 75.8		µg/kg dry	75.8	42.9	1	"	"	"	"	"	X
108-95-2	Phenol	< 375		µg/kg dry	375	37.9	1	"	"	"	"	"	X
129-00-0	Pyrene	< 75.8		µg/kg dry	75.8	41.8	1	"	"	"	"	"	X
110-86-1	Pyridine	< 375		µg/kg dry	375	88.7	1	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 375		µg/kg dry	375	46.1	1	"	"	"	"	"	X
90-12-0	1-Methylnaphthalene	< 75.8		µg/kg dry	75.8	41.8	1	"	"	"	"	"	
95-95-4	2,4,5-Trichlorophenol	< 375		µg/kg dry	375	38.7	1	"	"	"	"	"	X
88-06-2	2,4,6-Trichlorophenol	< 190		µg/kg dry	190	46.3	1	"	"	"	"	"	X
82-68-8	Pentachloronitrobenzene	< 375		µg/kg dry	375	39.9	1	"	"	"	"	"	X
95-94-3	1,2,4,5-Tetrachlorobenzene	< 375		µg/kg dry	375	44.6	1	"	"	"	"	"	X
Surrogate recoveries:													
321-60-8	*2-Fluorobiphenyl*	*94*			*30-130 %*			"	"	"	"	"	
367-12-4	*2-Fluorophenol*	*96*			*30-130 %*			"	"	"	"	"	
4165-60-0	*Nitrobenzene-d5*	*83*			*30-130 %*			"	"	"	"	"	
4165-62-2	*Phenol-d5*	*106*			*30-130 %*			"	"	"	"	"	
1718-51-0	*Terphenyl-dl4*	*89*			*30-130 %*			"	"	"	"	"	
118-79-6	*2,4,6-Tribromophenol*	*71*			*30-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls Prepared by method SW846 3546													
12674-11-2	Aroclor-1016	< 22.5		µg/kg dry	22.5	16.2	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
11104-28-2	Aroclor-1221	< 22.5		µg/kg dry	22.5	6.65	1	"	"	"	"	"	X
11141-16-5	Aroclor-1232	< 22.5		µg/kg dry	22.5	6.24	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-14	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-07				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls													
53469-21-9	Aroclor-1242	< 22.5		µg/kg dry	22.5	2.14	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
12672-29-6	Aroclor-1248	< 22.5		µg/kg dry	22.5	7.04	1	"	"	"	"	"	X
11097-69-1	Aroclor-1254	< 22.5		µg/kg dry	22.5	17.5	1	"	"	"	"	"	X
11096-82-5	Aroclor-1260	< 22.5		µg/kg dry	22.5	4.84	1	"	"	"	"	"	X
37324-23-5	Aroclor-1262	< 22.5		µg/kg dry	22.5	5.25	1	"	"	"	"	"	X
11100-14-4	Aroclor-1268	< 22.5		µg/kg dry	22.5	4.80	1	"	"	"	"	"	X
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*94*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*85*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*84*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*75*			*30-150 %*			"	"	"	"	"	
Pesticides													
Organochlorine Pesticides Prepared by method SW846 3546			Z-2										
319-84-6	alpha-BHC	< 5.63		µg/kg dry	5.63	0.259	1	SW846 8081B	13-Jul-20	16-Jul-20	BJJ	2001088	X
319-85-7	beta-BHC	< 5.63		µg/kg dry	5.63	0.360	1	"	"	"	"	"	X
319-86-8	delta-BHC	< 5.63		µg/kg dry	5.63	0.293	1	"	"	"	"	"	X
58-89-9	gamma-BHC (Lindane)	< 3.38		µg/kg dry	3.38	0.597	1	"	"	"	"	"	X
76-44-8	Heptachlor	< 5.63		µg/kg dry	5.63	0.653	1	"	"	"	"	"	X
309-00-2	Aldrin	< 5.63		µg/kg dry	5.63	0.191	1	"	"	"	"	"	X
1024-57-3	Heptachlor epoxide	< 5.63		µg/kg dry	5.63	0.225	1	"	"	"	"	"	X
959-98-8	Endosulfan I	< 5.63		µg/kg dry	5.63	0.259	1	"	"	"	"	"	X
60-57-1	Dieldrin	< 5.63		µg/kg dry	5.63	0.270	1	"	"	"	"	"	X
72-55-9	4,4'-DDE (p,p')	< 5.63		µg/kg dry	5.63	0.293	1	"	"	"	"	"	X
72-20-8	Endrin	< 9.01		µg/kg dry	9.01	0.552	1	"	"	"	"	"	X
33213-65-9	Endosulfan II	< 9.01		µg/kg dry	9.01	0.360	1	"	"	"	"	"	X
72-54-8	4,4'-DDD (p,p')	< 9.01		µg/kg dry	9.01	0.473	1	"	"	"	"	"	X
1031-07-8	Endosulfan sulfate	< 9.01		µg/kg dry	9.01	0.822	1	"	"	"	"	"	X
50-29-3	4,4'-DDT (p,p')	< 9.01		µg/kg dry	9.01	3.86	1	"	"	"	"	"	X
72-43-5	Methoxychlor	< 9.01		µg/kg dry	9.01	0.608	1	"	"	"	"	"	X
53494-70-5	Endrin ketone	< 9.01		µg/kg dry	9.01	0.326	1	"	"	"	"	"	X
7421-93-4	Endrin aldehyde	< 9.01		µg/kg dry	9.01	1.42	1	"	"	"	"	"	X
5103-71-9	alpha-Chlordane	< 5.63		µg/kg dry	5.63	0.236	1	"	"	"	"	"	X
5103-74-2	gamma-Chlordane	< 5.63		µg/kg dry	5.63	0.281	1	"	"	"	"	"	X
8001-35-2	Toxaphene	< 113		µg/kg dry	113	79.4	1	"	"	"	"	"	X
57-74-9	Chlordane	< 22.5		µg/kg dry	22.5	2.83	1	"	"	"	"	"	X
15972-60-8	Alachlor	< 5.63		µg/kg dry	5.63	0.495	1	"	"	"	"	"	
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*80*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*80*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*57*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*67*			*30-150 %*			"	"	"	"	"	
Extractable Petroleum Hydrocarbons													

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-14 SC58794-07	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Extractable Petroleum Hydrocarbons													
Fingerprinting by GC Prepared by method SW846 3546													
	Total Petroleum Hydrocarbons	**116**		mg/kg dry	15.2	12.7	1	SW846 8100Mod.	14-Jul-20	15-Jul-20	BJJ	2001092	
Surrogate recoveries:													
84-15-1	*o-Terphenyl*	*75*			*40-140 %*			"	"	"	"	"	
3386-33-2	*1-Chlorooctadecane*	*101*			*40-140 %*			"	"	"	"	"	
Total Metals by EPA 6000/7000 Series Methods													
Prepared by method SW846 3050B													
7440-22-4	Silver	< 3.38		mg/kg dry	3.38	0.183	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7440-38-2	Arsenic	**23.7**		mg/kg dry	1.69	0.214	1	"	"	"	"	"	X
7440-39-3	Barium	**44.1**		mg/kg dry	1.13	0.133	1	"	"	"	"	"	X
7440-41-7	Beryllium	< 0.563		mg/kg dry	0.563	0.0283	1	"	"	"	"	"	X
7440-43-9	Cadmium	< 0.563		mg/kg dry	0.563	0.0292	1	"	"	"	"	"	X
7440-47-3	Chromium	**36.0**		mg/kg dry	1.13	0.150	1	"	"	"	"	"	X
7439-97-6	Mercury	< 0.118		mg/kg dry	0.118	0.0098	1	SW846 7471B	13-Jul-20	13-Jul-20	edt	2001079	X
Prepared by method SW846 3050B													
7440-02-0	Nickel	**26.1**		mg/kg dry	1.13	0.130	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7439-92-1	Lead	**13.7**		mg/kg dry	1.69	0.239	1	"	"	"	"	"	X
7440-36-0	Antimony	< 5.63		mg/kg dry	5.63	0.424	1	"	"	"	"	"	X
7782-49-2	Selenium	< 1.69		mg/kg dry	1.69	0.322	1	"	"	"	"	"	X
7440-28-0	Thallium	< 3.38		mg/kg dry	3.38	1.24	1	"	"	"	"	"	X
7440-62-2	Vanadium	**41.9**		mg/kg dry	1.69	0.300	1	"	"	17-Jul-20	"	"	X
7440-66-6	Zinc	**44.6**		mg/kg dry	3.38	0.872	1	"	"	15-Jul-20	"	"	X
General Chemistry Parameters													
	% Solids	**86.9**		%			1	SM2540 G (11) Mod.	10-Jul-20	14-Jul-20	PN	2001075	
Toxicity Characteristics													
	Ignitability by Definition	**Negative**		N/A			1	SW846 1030	10-Jul-20 17:23	10-Jul-20 21:00	PN	2001074	X
	pH	**6.03**	pH	pH Units			1	SW846 9045D	14-Jul-20 15:31	14-Jul-20 18:55	PN	2001081	X
Subcontracted Analyses													
Subcontracted Analyses Prepared by method SW8151A										Methylation date: 13-Jul-20			
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
93-76-5	2,4,5-T	< 80		ug/kg	80	80	10	SW8151A	13-Jul-20	14-Jul-20 21:33	M-CT007	537166A	
93-72-1	2,4,5-TP (Silvex)	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-75-7	2,4-D	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-82-6	2,4-DB	< 80		ug/kg	80	80	10	"	"	"	"	"	
75-99-0	Dalapon	< 80		ug/kg	80	80	10	"	"	"	"	"	
1918-00-9	Dicamba	< 80		ug/kg	80	80	10	"	"	"	"	"	
120-36-5	Dichloroprop	< 80		ug/kg	80	80	10	"	"	"	"	"	
88-85-7	Dinoseb	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-74-6	MCPA	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
7085-19-0	MCPP	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
Surrogate recoveries:													
19719-28-9	*% DCAA*	*81*			*30-150 %*			"	"	"	"	"	

This laboratory report is not valid without an authorized signature on the cover page.

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-14 SC58794-07	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Subcontracted Analyses													
Prepared by method SW846 7.3.3.1/90													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Cyanide	< 6		mg/kg	6	6	1	SW846 7.3.3.1/90	14-Jul-20	14-Jul-20 14:37	M-CT007	537292A	
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Sulfide	< 20		mg/kg	20	20	1	SW846 CH7	"	14-Jul-20 15:17	M-CT007	537292B	
Prepared by method SW846-React													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity	**Negative**		Pos/Neg			1	SW846-React	14-Jul-20 15:18	14-Jul-20 15:18	M-CT007	'[none]'	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-16	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-08				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
Prepared by method SW846 5035A Soil (high level)							Initial weight: 17.1 g						
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	< 54.0		µg/kg dry	54.0	29.6	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
67-64-1	Acetone	< 540		µg/kg dry	540	68.3	50	"	"	"	"	"	X
107-13-1	Acrylonitrile	< 54.0		µg/kg dry	54.0	19.5	50	"	"	"	"	"	X
71-43-2	Benzene	< 54.0		µg/kg dry	54.0	8.64	50	"	"	"	"	"	X
108-86-1	Bromobenzene	< 54.0		µg/kg dry	54.0	12.2	50	"	"	"	"	"	X
74-97-5	Bromochloromethane	< 54.0		µg/kg dry	54.0	7.72	50	"	"	"	"	"	X
75-27-4	Bromodichloromethane	< 54.0		µg/kg dry	54.0	13.9	50	"	"	"	"	"	X
75-25-2	Bromoform	< 54.0		µg/kg dry	54.0	11.6	50	"	"	"	"	"	X
74-83-9	Bromomethane	< 108		µg/kg dry	108	26.7	50	"	"	"	"	"	X
78-93-3	2-Butanone (MEK)	< 108		µg/kg dry	108	24.7	50	"	"	"	"	"	X
104-51-8	n-Butylbenzene	< 54.0		µg/kg dry	54.0	21.6	50	"	"	"	"	"	X
135-98-8	sec-Butylbenzene	< 54.0		µg/kg dry	54.0	16.6	50	"	"	"	"	"	X
98-06-6	tert-Butylbenzene	< 54.0		µg/kg dry	54.0	22.0	50	"	"	"	"	"	X
75-15-0	Carbon disulfide	< 108		µg/kg dry	108	20.0	50	"	"	"	"	"	X
56-23-5	Carbon tetrachloride	< 54.0		µg/kg dry	54.0	16.1	50	"	"	"	"	"	X
108-90-7	Chlorobenzene	< 54.0		µg/kg dry	54.0	6.53	50	"	"	"	"	"	X
75-00-3	Chloroethane	< 108		µg/kg dry	108	24.1	50	"	"	"	"	"	X
67-66-3	Chloroform	< 54.0		µg/kg dry	54.0	6.37	50	"	"	"	"	"	X
74-87-3	Chloromethane	< 108		µg/kg dry	108	64.1	50	"	"	"	"	"	X
95-49-8	2-Chlorotoluene	< 54.0		µg/kg dry	54.0	13.4	50	"	"	"	"	"	X
106-43-4	4-Chlorotoluene	< 54.0		µg/kg dry	54.0	9.77	50	"	"	"	"	"	X
96-12-8	1,2-Dibromo-3-chloropropane	< 108		µg/kg dry	108	21.3	50	"	"	"	"	"	X
124-48-1	Dibromochloromethane	< 54.0		µg/kg dry	54.0	8.53	50	"	"	"	"	"	X
106-93-4	1,2-Dibromoethane (EDB)	< 54.0		µg/kg dry	54.0	14.7	50	"	"	"	"	"	X
74-95-3	Dibromomethane	< 54.0		µg/kg dry	54.0	10.2	50	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 54.0		µg/kg dry	54.0	9.72	50	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 54.0		µg/kg dry	54.0	13.4	50	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 54.0		µg/kg dry	54.0	9.67	50	"	"	"	"	"	X
75-71-8	Dichlorodifluoromethane (Freon12)	< 108		µg/kg dry	108	70.6	50	"	"	"	"	"	X
75-34-3	1,1-Dichloroethane	< 54.0		µg/kg dry	54.0	12.5	50	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 54.0		µg/kg dry	54.0	14.1	50	"	"	"	"	"	X
75-35-4	1,1-Dichloroethene	< 54.0		µg/kg dry	54.0	13.8	50	"	"	"	"	"	X
156-59-2	cis-1,2-Dichloroethene	< 54.0		µg/kg dry	54.0	18.0	50	"	"	"	"	"	X
156-60-5	trans-1,2-Dichloroethene	< 54.0		µg/kg dry	54.0	12.3	50	"	"	"	"	"	X
78-87-5	1,2-Dichloropropane	< 54.0		µg/kg dry	54.0	18.7	50	"	"	"	"	"	X
142-28-9	1,3-Dichloropropane	< 54.0		µg/kg dry	54.0	17.1	50	"	"	"	"	"	X
594-20-7	2,2-Dichloropropane	< 54.0		µg/kg dry	54.0	14.2	50	"	"	"	"	"	X
563-58-6	1,1-Dichloropropene	< 54.0		µg/kg dry	54.0	16.5	50	"	"	"	"	"	X
10061-01-5	cis-1,3-Dichloropropene	< 54.0		µg/kg dry	54.0	12.7	50	"	"	"	"	"	X
10061-02-6	trans-1,3-Dichloropropene	< 54.0		µg/kg dry	54.0	22.0	50	"	"	"	"	"	X
100-41-4	Ethylbenzene	< 54.0		µg/kg dry	54.0	11.3	50	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 54.0		µg/kg dry	54.0	17.3	50	"	"	"	"	"	X
591-78-6	2-Hexanone (MBK)	< 108		µg/kg dry	108	35.9	50	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-16	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-08				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260							Initial weight: 17.1 g						
98-82-8	Isopropylbenzene	< 54.0		µg/kg dry	54.0	19.6	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
99-87-6	4-Isopropyltoluene	< 54.0		µg/kg dry	54.0	15.0	50	"	"	"	"	"	X
1634-04-4	Methyl tert-butyl ether	< 54.0		µg/kg dry	54.0	16.3	50	"	"	"	"	"	X
108-10-1	4-Methyl-2-pentanone (MIBK)	< 108		µg/kg dry	108	38.7	50	"	"	"	"	"	X
75-09-2	Methylene chloride	< 108		µg/kg dry	108	46.1	50	"	"	"	"	"	X
91-20-3	Naphthalene	< 54.0		µg/kg dry	54.0	15.7	50	"	"	"	"	"	X
103-65-1	n-Propylbenzene	< 54.0		µg/kg dry	54.0	13.4	50	"	"	"	"	"	X
100-42-5	Styrene	< 54.0		µg/kg dry	54.0	7.13	50	"	"	"	"	"	X
630-20-6	1,1,1,2-Tetrachloroethane	< 54.0		µg/kg dry	54.0	13.0	50	"	"	"	"	"	X
79-34-5	1,1,2,2-Tetrachloroethane	< 54.0		µg/kg dry	54.0	17.1	50	"	"	"	"	"	X
127-18-4	Tetrachloroethene	< 54.0		µg/kg dry	54.0	17.0	50	"	"	"	"	"	X
108-88-3	Toluene	< 54.0		µg/kg dry	54.0	8.69	50	"	"	"	"	"	X
87-61-6	1,2,3-Trichlorobenzene	< 54.0		µg/kg dry	54.0	12.6	50	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 54.0		µg/kg dry	54.0	8.91	50	"	"	"	"	"	X
108-70-3	1,3,5-Trichlorobenzene	< 54.0		µg/kg dry	54.0	8.53	50	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	< 54.0		µg/kg dry	54.0	13.1	50	"	"	"	"	"	X
79-00-5	1,1,2-Trichloroethane	< 54.0		µg/kg dry	54.0	16.7	50	"	"	"	"	"	X
79-01-6	Trichloroethene	< 54.0		µg/kg dry	54.0	9.23	50	"	"	"	"	"	X
75-69-4	Trichlorofluoromethane (Freon 11)	< 54.0		µg/kg dry	54.0	24.4	50	"	"	"	"	"	X
96-18-4	1,2,3-Trichloropropane	< 54.0		µg/kg dry	54.0	24.9	50	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	< 54.0		µg/kg dry	54.0	13.7	50	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	< 54.0		µg/kg dry	54.0	11.3	50	"	"	"	"	"	X
75-01-4	Vinyl chloride	< 54.0		µg/kg dry	54.0	26.6	50	"	"	"	"	"	X
179601-23-1	m,p-Xylene	< 108		µg/kg dry	108	31.7	50	"	"	"	"	"	X
95-47-6	o-Xylene	< 54.0		µg/kg dry	54.0	16.6	50	"	"	"	"	"	X
109-99-9	Tetrahydrofuran	< 108		µg/kg dry	108	39.5	50	"	"	"	"	"	
60-29-7	Ethyl ether	< 54.0		µg/kg dry	54.0	14.6	50	"	"	"	"	"	X
994-05-8	Tert-amyl methyl ether	< 54.0		µg/kg dry	54.0	29.9	50	"	"	"	"	"	
637-92-3	Ethyl tert-butyl ether	< 54.0		µg/kg dry	54.0	15.0	50	"	"	"	"	"	
108-20-3	Di-isopropyl ether	< 54.0		µg/kg dry	54.0	17.4	50	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	< 1080		µg/kg dry	1080	767	50	"	"	"	"	"	X
123-91-1	1,4-Dioxane	< 1080		µg/kg dry	1080	318	50	"	"	"	"	"	X
110-57-6	trans-1,4-Dichloro-2-buten e	< 270		µg/kg dry	270	35.6	50	"	"	"	"	"	X
64-17-5	Ethanol	< 10800		µg/kg dry	10800	930	50	"	"	"	"	"	
Surrogate recoveries:													
460-00-4	*4-Bromofluorobenzene*	*103*			*70-130 %*			"	"	"	"	"	
2037-26-5	*Toluene-d8*	*105*			*70-130 %*			"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*104*			*70-130 %*			"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*105*			*70-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds Prepared by method SW846 3546													
83-32-9	Acenaphthene	< 73.0		µg/kg dry	73.0	38.7	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-16	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
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CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
208-96-8	Acenaphthylene	< 73.0		µg/kg dry	73.0	38.1	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X
62-53-3	Aniline	< 361		µg/kg dry	361	23.0	1	"	"	"	"	"	X
120-12-7	Anthracene	< 73.0		µg/kg dry	73.0	42.0	1	"	"	"	"	"	X
103-33-3	Azobenzene/Diphenyldiazene	< 361		µg/kg dry	361	39.2	1	"	"	"	"	"	
92-87-5	Benzidine	< 722		µg/kg dry	722	23.0	1	"	"	"	"	"	X
56-55-3	Benzo (a) anthracene	< 73.0		µg/kg dry	73.0	41.0	1	"	"	"	"	"	X
50-32-8	Benzo (a) pyrene	< 73.0		µg/kg dry	73.0	49.9	1	"	"	"	"	"	X
205-99-2	Benzo (b) fluoranthene	< 73.0		µg/kg dry	73.0	54.9	1	"	"	"	"	"	X
191-24-2	Benzo (g,h,i) perylene	< 73.0		µg/kg dry	73.0	51.5	1	"	"	"	"	"	X
207-08-9	Benzo (k) fluoranthene	< 73.0		µg/kg dry	73.0	62.4	1	"	"	"	"	"	X
65-85-0	Benzoic acid	< 361		µg/kg dry	361	21.7	1	"	"	"	"	"	X
100-51-6	Benzyl alcohol	< 361		µg/kg dry	361	83.6	1	"	"	"	"	"	X
111-91-1	Bis(2-chloroethoxy)methane	< 361		µg/kg dry	361	36.4	1	"	"	"	"	"	X
111-44-4	Bis(2-chloroethyl)ether	< 183		µg/kg dry	183	33.8	1	"	"	"	"	"	X
108-60-1	Bis(2-chloroisopropyl)ether	< 183		µg/kg dry	183	29.3	1	"	"	"	"	"	X
117-81-7	Bis(2-ethylhexyl)phthalate	< 183		µg/kg dry	183	46.5	1	"	"	"	"	"	X
101-55-3	4-Bromophenyl phenyl ether	< 361		µg/kg dry	361	40.8	1	"	"	"	"	"	X
85-68-7	Butyl benzyl phthalate	< 361		µg/kg dry	361	36.2	1	"	"	"	"	"	X
86-74-8	Carbazole	< 183		µg/kg dry	183	42.0	1	"	"	"	"	"	X
59-50-7	4-Chloro-3-methylphenol	< 361		µg/kg dry	361	42.5	1	"	"	"	"	"	X
106-47-8	4-Chloroaniline	< 183		µg/kg dry	183	22.5	1	"	"	"	"	"	X
91-58-7	2-Chloronaphthalene	< 361		µg/kg dry	361	49.5	1	"	"	"	"	"	X
95-57-8	2-Chlorophenol	< 183		µg/kg dry	183	35.0	1	"	"	"	"	"	X
7005-72-3	4-Chlorophenyl phenyl ether	< 361		µg/kg dry	361	35.3	1	"	"	"	"	"	X
218-01-9	Chrysene	< 73.0		µg/kg dry	73.0	41.3	1	"	"	"	"	"	X
53-70-3	Dibenzo (a,h) anthracene	< 73.0		µg/kg dry	73.0	53.9	1	"	"	"	"	"	X
132-64-9	Dibenzofuran	< 183		µg/kg dry	183	49.1	1	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 361		µg/kg dry	361	43.1	1	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 361		µg/kg dry	361	39.0	1	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 361		µg/kg dry	361	41.0	1	"	"	"	"	"	X
91-94-1	3,3´-Dichlorobenzidine	< 361		µg/kg dry	361	39.9	1	"	"	"	"	"	X
120-83-2	2,4-Dichlorophenol	< 183		µg/kg dry	183	44.3	1	"	"	"	"	"	X
84-66-2	Diethyl phthalate	< 361		µg/kg dry	361	37.9	1	"	"	"	"	"	X
131-11-3	Dimethyl phthalate	< 361		µg/kg dry	361	40.6	1	"	"	"	"	"	X
105-67-9	2,4-Dimethylphenol	< 361		µg/kg dry	361	28.6	1	"	"	"	"	"	X
84-74-2	Di-n-butyl phthalate	< 361		µg/kg dry	361	38.6	1	"	"	"	"	"	X
534-52-1	4,6-Dinitro-2-methylphenol	< 361		µg/kg dry	361	51.8	1	"	"	"	"	"	X
51-28-5	2,4-Dinitrophenol	< 361		µg/kg dry	361	37.4	1	"	"	"	"	"	X
121-14-2	2,4-Dinitrotoluene	< 183		µg/kg dry	183	43.8	1	"	"	"	"	"	X
606-20-2	2,6-Dinitrotoluene	< 183		µg/kg dry	183	37.3	1	"	"	"	"	"	X
117-84-0	Di-n-octyl phthalate	< 361		µg/kg dry	361	53.7	1	"	"	"	"	"	X
206-44-0	Fluoranthene	< 73.0		µg/kg dry	73.0	42.8	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-16	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-08				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
86-73-7	Fluorene	< 73.0		µg/kg dry	73.0	47.2	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X
118-74-1	Hexachlorobenzene	< 183		µg/kg dry	183	46.0	1	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 183		µg/kg dry	183	46.0	1	"	"	"	"	"	X
77-47-4	Hexachlorocyclopentadiene	< 183		µg/kg dry	183	46.1	1	"	"	"	"	"	X
67-72-1	Hexachloroethane	< 183		µg/kg dry	183	41.3	1	"	"	"	"	"	X
193-39-5	Indeno (1,2,3-cd) pyrene	< 73.0		µg/kg dry	73.0	49.9	1	"	"	"	"	"	X
78-59-1	Isophorone	< 183		µg/kg dry	183	28.1	1	"	"	"	"	"	X
91-57-6	2-Methylnaphthalene	< 73.0		µg/kg dry	73.0	51.1	1	"	"	"	"	"	X
95-48-7	2-Methylphenol	< 361		µg/kg dry	361	29.0	1	"	"	"	"	"	X
108-39-4, 106-44-5	3 & 4-Methylphenol	< 361		µg/kg dry	361	28.3	1	"	"	"	"	"	X
91-20-3	Naphthalene	< 73.0		µg/kg dry	73.0	42.1	1	"	"	"	"	"	X
88-74-4	2-Nitroaniline	< 361		µg/kg dry	361	32.7	1	"	"	"	"	"	X
99-09-2	3-Nitroaniline	< 361		µg/kg dry	361	33.4	1	"	"	"	"	"	X
100-01-6	4-Nitroaniline	< 183		µg/kg dry	183	48.1	1	"	"	"	"	"	X
98-95-3	Nitrobenzene	< 183		µg/kg dry	183	42.2	1	"	"	"	"	"	X
88-75-5	2-Nitrophenol	< 183		µg/kg dry	183	32.0	1	"	"	"	"	"	X
100-02-7	4-Nitrophenol	< 1440		µg/kg dry	1440	48.0	1	"	"	"	"	"	X
62-75-9	N-Nitrosodimethylamine	< 183		µg/kg dry	183	23.9	1	"	"	"	"	"	X
621-64-7	N-Nitrosodi-n-propylamine	< 183		µg/kg dry	183	32.0	1	"	"	"	"	"	X
86-30-6	N-Nitrosodiphenylamine	< 361		µg/kg dry	361	36.8	1	"	"	"	"	"	X
87-86-5	Pentachlorophenol	< 361		µg/kg dry	361	43.0	1	"	"	"	"	"	X
85-01-8	Phenanthrene	< 73.0		µg/kg dry	73.0	41.4	1	"	"	"	"	"	X
108-95-2	Phenol	< 361		µg/kg dry	361	36.5	1	"	"	"	"	"	X
129-00-0	Pyrene	< 73.0		µg/kg dry	73.0	40.3	1	"	"	"	"	"	X
110-86-1	Pyridine	< 361		µg/kg dry	361	85.5	1	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 361		µg/kg dry	361	44.4	1	"	"	"	"	"	X
90-12-0	1-Methylnaphthalene	< 73.0		µg/kg dry	73.0	40.3	1	"	"	"	"	"	
95-95-4	2,4,5-Trichlorophenol	< 361		µg/kg dry	361	37.3	1	"	"	"	"	"	X
88-06-2	2,4,6-Trichlorophenol	< 183		µg/kg dry	183	44.6	1	"	"	"	"	"	X
82-68-8	Pentachloronitrobenzene	< 361		µg/kg dry	361	38.4	1	"	"	"	"	"	X
95-94-3	1,2,4,5-Tetrachlorobenzene	< 361		µg/kg dry	361	43.0	1	"	"	"	"	"	X
Surrogate recoveries:													
321-60-8	*2-Fluorobiphenyl*	*64*			*30-130 %*			"	"	"	"	"	
367-12-4	*2-Fluorophenol*	*85*			*30-130 %*			"	"	"	"	"	
4165-60-0	*Nitrobenzene-d5*	*78*			*30-130 %*			"	"	"	"	"	
4165-62-2	*Phenol-d5*	*90*			*30-130 %*			"	"	"	"	"	
1718-51-0	*Terphenyl-dl4*	*84*			*30-130 %*			"	"	"	"	"	
118-79-6	*2,4,6-Tribromophenol*	*74*			*30-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls Prepared by method SW846 3546													
12674-11-2	Aroclor-1016	< 21.8		µg/kg dry	21.8	15.7	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
11104-28-2	Aroclor-1221	< 21.8		µg/kg dry	21.8	6.43	1	"	"	"	"	"	X
11141-16-5	Aroclor-1232	< 21.8		µg/kg dry	21.8	6.03	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-16	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-08				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls													
53469-21-9	Aroclor-1242	< 21.8		µg/kg dry	21.8	2.07	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
12672-29-6	Aroclor-1248	< 21.8		µg/kg dry	21.8	6.80	1	"	"	"	"	"	X
11097-69-1	Aroclor-1254	< 21.8		µg/kg dry	21.8	16.9	1	"	"	"	"	"	X
11096-82-5	Aroclor-1260	< 21.8		µg/kg dry	21.8	4.68	1	"	"	"	"	"	X
37324-23-5	Aroclor-1262	< 21.8		µg/kg dry	21.8	5.07	1	"	"	"	"	"	X
11100-14-4	Aroclor-1268	< 21.8		µg/kg dry	21.8	4.64	1	"	"	"	"	"	X
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*73*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*67*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*81*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*74*			*30-150 %*			"	"	"	"	"	
Pesticides													
Organochlorine Pesticides Prepared by method SW846 3546			Z-2										
319-84-6	alpha-BHC	< 5.44		µg/kg dry	5.44	0.250	1	SW846 8081B	13-Jul-20	16-Jul-20	BJJ	2001088	X
319-85-7	beta-BHC	< 5.44		µg/kg dry	5.44	0.348	1	"	"	"	"	"	X
319-86-8	delta-BHC	< 5.44		µg/kg dry	5.44	0.283	1	"	"	"	"	"	X
58-89-9	gamma-BHC (Lindane)	< 3.26		µg/kg dry	3.26	0.577	1	"	"	"	"	"	X
76-44-8	Heptachlor	< 5.44		µg/kg dry	5.44	0.631	1	"	"	"	"	"	X
309-00-2	Aldrin	< 5.44		µg/kg dry	5.44	0.185	1	"	"	"	"	"	X
1024-57-3	Heptachlor epoxide	< 5.44		µg/kg dry	5.44	0.218	1	"	"	"	"	"	X
959-98-8	Endosulfan I	< 5.44		µg/kg dry	5.44	0.250	1	"	"	"	"	"	X
60-57-1	Dieldrin	< 5.44		µg/kg dry	5.44	0.261	1	"	"	"	"	"	X
72-55-9	4,4'-DDE (p,p')	< 5.44		µg/kg dry	5.44	0.283	1	"	"	"	"	"	X
72-20-8	Endrin	< 8.71		µg/kg dry	8.71	0.533	1	"	"	"	"	"	X
33213-65-9	Endosulfan II	< 8.71		µg/kg dry	8.71	0.348	1	"	"	"	"	"	X
72-54-8	4,4'-DDD (p,p')	< 8.71		µg/kg dry	8.71	0.457	1	"	"	"	"	"	X
1031-07-8	Endosulfan sulfate	< 8.71		µg/kg dry	8.71	0.794	1	"	"	"	"	"	X
50-29-3	4,4'-DDT (p,p')	< 8.71		µg/kg dry	8.71	3.73	1	"	"	"	"	"	X
72-43-5	Methoxychlor	< 8.71		µg/kg dry	8.71	0.588	1	"	"	"	"	"	X
53494-70-5	Endrin ketone	< 8.71		µg/kg dry	8.71	0.316	1	"	"	"	"	"	X
7421-93-4	Endrin aldehyde	< 8.71		µg/kg dry	8.71	1.37	1	"	"	"	"	"	X
5103-71-9	alpha-Chlordane	< 5.44		µg/kg dry	5.44	0.229	1	"	"	"	"	"	X
5103-74-2	gamma-Chlordane	< 5.44		µg/kg dry	5.44	0.272	1	"	"	"	"	"	X
8001-35-2	Toxaphene	< 109		µg/kg dry	109	76.8	1	"	"	"	"	"	X
57-74-9	Chlordane	< 21.8		µg/kg dry	21.8	2.74	1	"	"	"	"	"	X
15972-60-8	Alachlor	< 5.44		µg/kg dry	5.44	0.479	1	"	"	"	"	"	
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*68*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*61*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*53*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*55*			*30-150 %*			"	"	"	"	"	
Extractable Petroleum Hydrocarbons													

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-16 SC58794-08	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Extractable Petroleum Hydrocarbons													
Fingerprinting by GC Prepared by method SW846 3546													
	Total Petroleum Hydrocarbons	**93.6**		mg/kg dry	14.7	12.3	1	SW846 8100Mod.	14-Jul-20	16-Jul-20	BJJ	2001092	
Surrogate recoveries:													
84-15-1	*o-Terphenyl*	*73*			*40-140 %*			"	"	"	"	"	
3386-33-2	*1-Chlorooctadecane*	*97*			*40-140 %*			"	"	"	"	"	
Total Metals by EPA 6000/7000 Series Methods													
Prepared by method SW846 3050B													
7440-22-4	Silver	< 3.35		mg/kg dry	3.35	0.181	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7440-38-2	Arsenic	**36.6**		mg/kg dry	1.67	0.212	1	"	"	"	"	"	X
7440-39-3	Barium	**24.0**		mg/kg dry	1.12	0.132	1	"	"	"	"	"	X
7440-41-7	Beryllium	< 0.558		mg/kg dry	0.558	0.0280	1	"	"	"	"	"	X
7440-43-9	Cadmium	< 0.558		mg/kg dry	0.558	0.0289	1	"	"	"	"	"	X
7440-47-3	Chromium	**21.7**		mg/kg dry	1.12	0.148	1	"	"	"	"	"	X
7439-97-6	Mercury	< 0.119		mg/kg dry	0.119	0.0099	1	SW846 7471B	13-Jul-20	13-Jul-20	edt	2001079	X
Prepared by method SW846 3050B													
7440-02-0	Nickel	**30.6**		mg/kg dry	1.12	0.128	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7439-92-1	Lead	**17.5**		mg/kg dry	1.67	0.237	1	"	"	"	"	"	X
7440-36-0	Antimony	< 5.58		mg/kg dry	5.58	0.420	1	"	"	"	"	"	X
7782-49-2	Selenium	< 1.67		mg/kg dry	1.67	0.319	1	"	"	"	"	"	X
7440-28-0	Thallium	< 3.35		mg/kg dry	3.35	1.23	1	"	"	"	"	"	X
7440-62-2	Vanadium	**30.6**		mg/kg dry	1.67	0.297	1	"	"	17-Jul-20	"	"	X
7440-66-6	Zinc	**44.3**		mg/kg dry	3.35	0.864	1	"	"	15-Jul-20	"	"	X
General Chemistry Parameters													
	% Solids	**90.3**		%			1	SM2540 G (11) Mod.	10-Jul-20	14-Jul-20	PN	2001075	
Toxicity Characteristics													
	Ignitability by Definition	**Negative**		N/A			1	SW846 1030	10-Jul-20 17:23	10-Jul-20 21:00	PN	2001074	X
	pH	**6.08**	pH	pH Units			1	SW846 9045D	14-Jul-20 15:31	14-Jul-20 18:55	PN	2001081	X
Subcontracted Analyses													
Subcontracted Analyses Prepared by method SW8151A										Methylation date: 13-Jul-20			
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
93-76-5	2,4,5-T	< 80		ug/kg	80	80	10	SW8151A	13-Jul-20	14-Jul-20 21:57	M-CT007	537166A	
93-72-1	2,4,5-TP (Silvex)	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-75-7	2,4-D	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-82-6	2,4-DB	< 80		ug/kg	80	80	10	"	"	"	"	"	
75-99-0	Dalapon	< 80		ug/kg	80	80	10	"	"	"	"	"	
1918-00-9	Dicamba	< 80		ug/kg	80	80	10	"	"	"	"	"	
120-36-5	Dichloroprop	< 80		ug/kg	80	80	10	"	"	"	"	"	
88-85-7	Dinoseb	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-74-6	MCPA	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
7085-19-0	MCPP	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
Surrogate recoveries:													
19719-28-9	*% DCAA*	*84*			*30-150 %*			"	"	"	"	"	

This laboratory report is not valid without an authorized signature on the cover page.

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-16 SC58794-08	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Subcontracted Analyses													
Prepared by method SW846 7.3.3.1/90													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Cyanide	< 6		mg/kg	6	6	1	SW846 7.3.3.1/90	14-Jul-20	14-Jul-20 14:38	M-CT007	537292A	
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Sulfide	< 20		mg/kg	20	20	1	SW846 CH7	"	14-Jul-20 15:17	M-CT007	537292B	
Prepared by method SW846-React													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity	**Negative**		Pos/Neg			1	SW846-React	14-Jul-20 15:18	14-Jul-20 15:18	M-CT007	'[none]'	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-17	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-09				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
Prepared by method SW846 5035A Soil (high level)							Initial weight: 17.77 g						
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	< 52.9		µg/kg dry	52.9	29.0	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
67-64-1	Acetone	< 529		µg/kg dry	529	66.8	50	"	"	"	"	"	X
107-13-1	Acrylonitrile	< 52.9		µg/kg dry	52.9	19.1	50	"	"	"	"	"	X
71-43-2	Benzene	< 52.9		µg/kg dry	52.9	8.46	50	"	"	"	"	"	X
108-86-1	Bromobenzene	< 52.9		µg/kg dry	52.9	12.0	50	"	"	"	"	"	X
74-97-5	Bromochloromethane	< 52.9		µg/kg dry	52.9	7.56	50	"	"	"	"	"	X
75-27-4	Bromodichloromethane	< 52.9		µg/kg dry	52.9	13.6	50	"	"	"	"	"	X
75-25-2	Bromoform	< 52.9		µg/kg dry	52.9	11.3	50	"	"	"	"	"	X
74-83-9	Bromomethane	< 106		µg/kg dry	106	26.1	50	"	"	"	"	"	X
78-93-3	2-Butanone (MEK)	< 106		µg/kg dry	106	24.2	50	"	"	"	"	"	X
104-51-8	n-Butylbenzene	< 52.9		µg/kg dry	52.9	21.2	50	"	"	"	"	"	X
135-98-8	sec-Butylbenzene	< 52.9		µg/kg dry	52.9	16.2	50	"	"	"	"	"	X
98-06-6	tert-Butylbenzene	< 52.9		µg/kg dry	52.9	21.6	50	"	"	"	"	"	X
75-15-0	Carbon disulfide	< 106		µg/kg dry	106	19.6	50	"	"	"	"	"	X
56-23-5	Carbon tetrachloride	< 52.9		µg/kg dry	52.9	15.8	50	"	"	"	"	"	X
108-90-7	Chlorobenzene	< 52.9		µg/kg dry	52.9	6.40	50	"	"	"	"	"	X
75-00-3	Chloroethane	< 106		µg/kg dry	106	23.6	50	"	"	"	"	"	X
67-66-3	Chloroform	< 52.9		µg/kg dry	52.9	6.24	50	"	"	"	"	"	X
74-87-3	Chloromethane	< 106		µg/kg dry	106	62.8	50	"	"	"	"	"	X
95-49-8	2-Chlorotoluene	< 52.9		µg/kg dry	52.9	13.1	50	"	"	"	"	"	X
106-43-4	4-Chlorotoluene	< 52.9		µg/kg dry	52.9	9.57	50	"	"	"	"	"	X
96-12-8	1,2-Dibromo-3-chloropropane	< 106		µg/kg dry	106	20.9	50	"	"	"	"	"	X
124-48-1	Dibromochloromethane	< 52.9		µg/kg dry	52.9	8.35	50	"	"	"	"	"	X
106-93-4	1,2-Dibromoethane (EDB)	< 52.9		µg/kg dry	52.9	14.4	50	"	"	"	"	"	X
74-95-3	Dibromomethane	< 52.9		µg/kg dry	52.9	9.94	50	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 52.9		µg/kg dry	52.9	9.52	50	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 52.9		µg/kg dry	52.9	13.2	50	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 52.9		µg/kg dry	52.9	9.47	50	"	"	"	"	"	X
75-71-8	Dichlorodifluoromethane (Freon12)	< 106		µg/kg dry	106	69.2	50	"	"	"	"	"	X
75-34-3	1,1-Dichloroethane	< 52.9		µg/kg dry	52.9	12.2	50	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 52.9		µg/kg dry	52.9	13.9	50	"	"	"	"	"	X
75-35-4	1,1-Dichloroethene	< 52.9		µg/kg dry	52.9	13.5	50	"	"	"	"	"	X
156-59-2	cis-1,2-Dichloroethene	< 52.9		µg/kg dry	52.9	17.6	50	"	"	"	"	"	X
156-60-5	trans-1,2-Dichloroethene	< 52.9		µg/kg dry	52.9	12.1	50	"	"	"	"	"	X
78-87-5	1,2-Dichloropropane	< 52.9		µg/kg dry	52.9	18.3	50	"	"	"	"	"	X
142-28-9	1,3-Dichloropropane	< 52.9		µg/kg dry	52.9	16.7	50	"	"	"	"	"	X
594-20-7	2,2-Dichloropropane	< 52.9		µg/kg dry	52.9	13.9	50	"	"	"	"	"	X
563-58-6	1,1-Dichloropropene	< 52.9		µg/kg dry	52.9	16.2	50	"	"	"	"	"	X
10061-01-5	cis-1,3-Dichloropropene	< 52.9		µg/kg dry	52.9	12.5	50	"	"	"	"	"	X
10061-02-6	trans-1,3-Dichloropropene	< 52.9		µg/kg dry	52.9	21.5	50	"	"	"	"	"	X
100-41-4	Ethylbenzene	< 52.9		µg/kg dry	52.9	11.1	50	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 52.9		µg/kg dry	52.9	16.9	50	"	"	"	"	"	X
591-78-6	2-Hexanone (MBK)	< 106		µg/kg dry	106	35.2	50	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-17	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-09				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
							Initial weight: 17.77 g						
98-82-8	Isopropylbenzene	< 52.9		µg/kg dry	52.9	19.2	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
99-87-6	4-Isopropyltoluene	< 52.9		µg/kg dry	52.9	14.6	50	"	"	"	"	"	X
1634-04-4	Methyl tert-butyl ether	< 52.9		µg/kg dry	52.9	15.9	50	"	"	"	"	"	X
108-10-1	4-Methyl-2-pentanone (MIBK)	< 106		µg/kg dry	106	37.9	50	"	"	"	"	"	X
75-09-2	Methylene chloride	< 106		µg/kg dry	106	45.2	50	"	"	"	"	"	X
91-20-3	Naphthalene	< 52.9		µg/kg dry	52.9	15.3	50	"	"	"	"	"	X
103-65-1	n-Propylbenzene	< 52.9		µg/kg dry	52.9	13.2	50	"	"	"	"	"	X
100-42-5	Styrene	< 52.9		µg/kg dry	52.9	6.98	50	"	"	"	"	"	X
630-20-6	1,1,1,2-Tetrachloroethane	< 52.9		µg/kg dry	52.9	12.7	50	"	"	"	"	"	X
79-34-5	1,1,2,2-Tetrachloroethane	< 52.9		µg/kg dry	52.9	16.8	50	"	"	"	"	"	X
127-18-4	Tetrachloroethene	< 52.9		µg/kg dry	52.9	16.7	50	"	"	"	"	"	X
108-88-3	Toluene	< 52.9		µg/kg dry	52.9	8.51	50	"	"	"	"	"	X
87-61-6	1,2,3-Trichlorobenzene	< 52.9		µg/kg dry	52.9	12.3	50	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 52.9		µg/kg dry	52.9	8.72	50	"	"	"	"	"	X
108-70-3	1,3,5-Trichlorobenzene	< 52.9		µg/kg dry	52.9	8.35	50	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	< 52.9		µg/kg dry	52.9	12.8	50	"	"	"	"	"	X
79-00-5	1,1,2-Trichloroethane	< 52.9		µg/kg dry	52.9	16.3	50	"	"	"	"	"	X
79-01-6	Trichloroethene	< 52.9		µg/kg dry	52.9	9.04	50	"	"	"	"	"	X
75-69-4	Trichlorofluoromethane (Freon 11)	< 52.9		µg/kg dry	52.9	23.9	50	"	"	"	"	"	X
96-18-4	1,2,3-Trichloropropane	< 52.9		µg/kg dry	52.9	24.4	50	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	< 52.9		µg/kg dry	52.9	13.4	50	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	< 52.9		µg/kg dry	52.9	11.1	50	"	"	"	"	"	X
75-01-4	Vinyl chloride	< 52.9		µg/kg dry	52.9	26.0	50	"	"	"	"	"	X
179601-23-1	m,p-Xylene	< 106		µg/kg dry	106	31.1	50	"	"	"	"	"	X
95-47-6	o-Xylene	< 52.9		µg/kg dry	52.9	16.3	50	"	"	"	"	"	X
109-99-9	Tetrahydrofuran	< 106		µg/kg dry	106	38.7	50	"	"	"	"	"	
60-29-7	Ethyl ether	< 52.9		µg/kg dry	52.9	14.3	50	"	"	"	"	"	X
994-05-8	Tert-amyl methyl ether	< 52.9		µg/kg dry	52.9	29.2	50	"	"	"	"	"	
637-92-3	Ethyl tert-butyl ether	< 52.9		µg/kg dry	52.9	14.6	50	"	"	"	"	"	
108-20-3	Di-isopropyl ether	< 52.9		µg/kg dry	52.9	17.1	50	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	< 1060		µg/kg dry	1060	751	50	"	"	"	"	"	X
123-91-1	1,4-Dioxane	< 1060		µg/kg dry	1060	311	50	"	"	"	"	"	X
110-57-6	trans-1,4-Dichloro-2-buten e	< 264		µg/kg dry	264	34.9	50	"	"	"	"	"	X
64-17-5	Ethanol	< 10600		µg/kg dry	10600	911	50	"	"	"	"	"	
Surrogate recoveries:													
460-00-4	*4-Bromofluorobenzene*	*102*			*70-130 %*			"	"	"	"	"	
2037-26-5	*Toluene-d8*	*105*			*70-130 %*			"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*106*			*70-130 %*			"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*106*			*70-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds Prepared by method SW846 3546													
83-32-9	Acenaphthene	< 72.0		µg/kg dry	72.0	38.2	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-17	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-09				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
208-96-8	Acenaphthylene	< 72.0		µg/kg dry	72.0	37.6	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X
62-53-3	Aniline	< 356		µg/kg dry	356	22.7	1	"	"	"	"	"	X
120-12-7	Anthracene	< 72.0		µg/kg dry	72.0	41.5	1	"	"	"	"	"	X
103-33-3	Azobenzene/Diphenyldiazene	< 356		µg/kg dry	356	38.7	1	"	"	"	"	"	
92-87-5	Benzidine	< 713		µg/kg dry	713	22.7	1	"	"	"	"	"	X
56-55-3	Benzo (a) anthracene	< 72.0		µg/kg dry	72.0	40.5	1	"	"	"	"	"	X
50-32-8	Benzo (a) pyrene	< 72.0		µg/kg dry	72.0	49.2	1	"	"	"	"	"	X
205-99-2	Benzo (b) fluoranthene	< 72.0		µg/kg dry	72.0	54.2	1	"	"	"	"	"	X
191-24-2	Benzo (g,h,i) perylene	< 72.0		µg/kg dry	72.0	50.9	1	"	"	"	"	"	X
207-08-9	Benzo (k) fluoranthene	< 72.0		µg/kg dry	72.0	61.5	1	"	"	"	"	"	X
65-85-0	Benzoic acid	< 356		µg/kg dry	356	21.4	1	"	"	"	"	"	X
100-51-6	Benzyl alcohol	< 356		µg/kg dry	356	82.5	1	"	"	"	"	"	X
111-91-1	Bis(2-chloroethoxy)methane	< 356		µg/kg dry	356	36.0	1	"	"	"	"	"	X
111-44-4	Bis(2-chloroethyl)ether	< 180		µg/kg dry	180	33.4	1	"	"	"	"	"	X
108-60-1	Bis(2-chloroisopropyl)ether	< 180		µg/kg dry	180	28.9	1	"	"	"	"	"	X
117-81-7	Bis(2-ethylhexyl)phthalate	< 180		µg/kg dry	180	45.9	1	"	"	"	"	"	X
101-55-3	4-Bromophenyl phenyl ether	< 356		µg/kg dry	356	40.3	1	"	"	"	"	"	X
85-68-7	Butyl benzyl phthalate	< 356		µg/kg dry	356	35.7	1	"	"	"	"	"	X
86-74-8	Carbazole	< 180		µg/kg dry	180	41.5	1	"	"	"	"	"	X
59-50-7	4-Chloro-3-methylphenol	< 356		µg/kg dry	356	41.9	1	"	"	"	"	"	X
106-47-8	4-Chloroaniline	< 180		µg/kg dry	180	22.2	1	"	"	"	"	"	X
91-58-7	2-Chloronaphthalene	< 356		µg/kg dry	356	48.8	1	"	"	"	"	"	X
95-57-8	2-Chlorophenol	< 180		µg/kg dry	180	34.6	1	"	"	"	"	"	X
7005-72-3	4-Chlorophenyl phenyl ether	< 356		µg/kg dry	356	34.9	1	"	"	"	"	"	X
218-01-9	Chrysene	< 72.0		µg/kg dry	72.0	40.7	1	"	"	"	"	"	X
53-70-3	Dibenzo (a,h) anthracene	< 72.0		µg/kg dry	72.0	53.2	1	"	"	"	"	"	X
132-64-9	Dibenzofuran	< 180		µg/kg dry	180	48.5	1	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 356		µg/kg dry	356	42.5	1	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 356		µg/kg dry	356	38.4	1	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 356		µg/kg dry	356	40.5	1	"	"	"	"	"	X
91-94-1	3,3´-Dichlorobenzidine	< 356		µg/kg dry	356	39.4	1	"	"	"	"	"	X
120-83-2	2,4-Dichlorophenol	< 180		µg/kg dry	180	43.7	1	"	"	"	"	"	X
84-66-2	Diethyl phthalate	< 356		µg/kg dry	356	37.4	1	"	"	"	"	"	X
131-11-3	Dimethyl phthalate	< 356		µg/kg dry	356	40.1	1	"	"	"	"	"	X
105-67-9	2,4-Dimethylphenol	< 356		µg/kg dry	356	28.2	1	"	"	"	"	"	X
84-74-2	Di-n-butyl phthalate	< 356		µg/kg dry	356	38.1	1	"	"	"	"	"	X
534-52-1	4,6-Dinitro-2-methylphenol	< 356		µg/kg dry	356	51.1	1	"	"	"	"	"	X
51-28-5	2,4-Dinitrophenol	< 356		µg/kg dry	356	36.9	1	"	"	"	"	"	X
121-14-2	2,4-Dinitrotoluene	< 180		µg/kg dry	180	43.2	1	"	"	"	"	"	X
606-20-2	2,6-Dinitrotoluene	< 180		µg/kg dry	180	36.8	1	"	"	"	"	"	X
117-84-0	Di-n-octyl phthalate	< 356		µg/kg dry	356	53.0	1	"	"	"	"	"	X
206-44-0	Fluoranthene	< 72.0		µg/kg dry	72.0	42.2	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-17	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-09				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
86-73-7	Fluorene	< 72.0		µg/kg dry	72.0	46.5	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X
118-74-1	Hexachlorobenzene	< 180		µg/kg dry	180	45.4	1	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 180		µg/kg dry	180	45.4	1	"	"	"	"	"	X
77-47-4	Hexachlorocyclopentadiene	< 180		µg/kg dry	180	45.5	1	"	"	"	"	"	X
67-72-1	Hexachloroethane	< 180		µg/kg dry	180	40.7	1	"	"	"	"	"	X
193-39-5	Indeno (1,2,3-cd) pyrene	< 72.0		µg/kg dry	72.0	49.2	1	"	"	"	"	"	X
78-59-1	Isophorone	< 180		µg/kg dry	180	27.8	1	"	"	"	"	"	X
91-57-6	2-Methylnaphthalene	< 72.0		µg/kg dry	72.0	50.4	1	"	"	"	"	"	X
95-48-7	2-Methylphenol	< 356		µg/kg dry	356	28.6	1	"	"	"	"	"	X
108-39-4, 106-44-5	3 & 4-Methylphenol	< 356		µg/kg dry	356	28.0	1	"	"	"	"	"	X
91-20-3	Naphthalene	< 72.0		µg/kg dry	72.0	41.6	1	"	"	"	"	"	X
88-74-4	2-Nitroaniline	< 356		µg/kg dry	356	32.3	1	"	"	"	"	"	X
99-09-2	3-Nitroaniline	< 356		µg/kg dry	356	32.9	1	"	"	"	"	"	X
100-01-6	4-Nitroaniline	< 180		µg/kg dry	180	47.5	1	"	"	"	"	"	X
98-95-3	Nitrobenzene	< 180		µg/kg dry	180	41.7	1	"	"	"	"	"	X
88-75-5	2-Nitrophenol	< 180		µg/kg dry	180	31.5	1	"	"	"	"	"	X
100-02-7	4-Nitrophenol	< 1430		µg/kg dry	1430	47.4	1	"	"	"	"	"	X
62-75-9	N-Nitrosodimethylamine	< 180		µg/kg dry	180	23.5	1	"	"	"	"	"	X
621-64-7	N-Nitrosodi-n-propylamine	< 180		µg/kg dry	180	31.5	1	"	"	"	"	"	X
86-30-6	N-Nitrosodiphenylamine	< 356		µg/kg dry	356	36.3	1	"	"	"	"	"	X
87-86-5	Pentachlorophenol	< 356		µg/kg dry	356	42.4	1	"	"	"	"	"	X
85-01-8	Phenanthrene	< 72.0		µg/kg dry	72.0	40.8	1	"	"	"	"	"	X
108-95-2	Phenol	< 356		µg/kg dry	356	36.1	1	"	"	"	"	"	X
129-00-0	Pyrene	< 72.0		µg/kg dry	72.0	39.7	1	"	"	"	"	"	X
110-86-1	Pyridine	< 356		µg/kg dry	356	84.3	1	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 356		µg/kg dry	356	43.8	1	"	"	"	"	"	X
90-12-0	1-Methylnaphthalene	< 72.0		µg/kg dry	72.0	39.7	1	"	"	"	"	"	
95-95-4	2,4,5-Trichlorophenol	< 356		µg/kg dry	356	36.8	1	"	"	"	"	"	X
88-06-2	2,4,6-Trichlorophenol	< 180		µg/kg dry	180	44.1	1	"	"	"	"	"	X
82-68-8	Pentachloronitrobenzene	< 356		µg/kg dry	356	37.9	1	"	"	"	"	"	X
95-94-3	1,2,4,5-Tetrachlorobenzene	< 356		µg/kg dry	356	42.4	1	"	"	"	"	"	X
Surrogate recoveries:													
321-60-8	*2-Fluorobiphenyl*	*81*			*30-130 %*			"	"	"	"	"	
367-12-4	*2-Fluorophenol*	*92*			*30-130 %*			"	"	"	"	"	
4165-60-0	*Nitrobenzene-d5*	*87*			*30-130 %*			"	"	"	"	"	
4165-62-2	*Phenol-d5*	*97*			*30-130 %*			"	"	"	"	"	
1718-51-0	*Terphenyl-dl4*	*97*			*30-130 %*			"	"	"	"	"	
118-79-6	*2,4,6-Tribromophenol*	*84*			*30-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls Prepared by method SW846 3546													
12674-11-2	Aroclor-1016	< 22.3		µg/kg dry	22.3	16.1	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
11104-28-2	Aroclor-1221	< 22.3		µg/kg dry	22.3	6.59	1	"	"	"	"	"	X
11141-16-5	Aroclor-1232	< 22.3		µg/kg dry	22.3	6.17	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-17	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-09				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls													
53469-21-9	Aroclor-1242	< 22.3		µg/kg dry	22.3	2.12	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
12672-29-6	Aroclor-1248	< 22.3		µg/kg dry	22.3	6.96	1	"	"	"	"	"	X
11097-69-1	Aroclor-1254	< 22.3		µg/kg dry	22.3	17.3	1	"	"	"	"	"	X
11096-82-5	Aroclor-1260	< 22.3		µg/kg dry	22.3	4.79	1	"	"	"	"	"	X
37324-23-5	Aroclor-1262	< 22.3		µg/kg dry	22.3	5.19	1	"	"	"	"	"	X
11100-14-4	Aroclor-1268	< 22.3		µg/kg dry	22.3	4.75	1	"	"	"	"	"	X
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*95*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*87*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*86*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*79*			*30-150 %*			"	"	"	"	"	
Pesticides													
Organochlorine Pesticides Prepared by method SW846 3546			Z-2										
319-84-6	alpha-BHC	< 5.57		µg/kg dry	5.57	0.256	1	SW846 8081B	13-Jul-20	16-Jul-20	BJJ	2001088	X
319-85-7	beta-BHC	< 5.57		µg/kg dry	5.57	0.357	1	"	"	"	"	"	X
319-86-8	delta-BHC	< 5.57		µg/kg dry	5.57	0.290	1	"	"	"	"	"	X
58-89-9	gamma-BHC (Lindane)	< 3.34		µg/kg dry	3.34	0.591	1	"	"	"	"	"	X
76-44-8	Heptachlor	< 5.57		µg/kg dry	5.57	0.646	1	"	"	"	"	"	X
309-00-2	Aldrin	< 5.57		µg/kg dry	5.57	0.189	1	"	"	"	"	"	X
1024-57-3	Heptachlor epoxide	< 5.57		µg/kg dry	5.57	0.223	1	"	"	"	"	"	X
959-98-8	Endosulfan I	< 5.57		µg/kg dry	5.57	0.256	1	"	"	"	"	"	X
60-57-1	Dieldrin	< 5.57		µg/kg dry	5.57	0.267	1	"	"	"	"	"	X
72-55-9	4,4'-DDE (p,p')	< 5.57		µg/kg dry	5.57	0.290	1	"	"	"	"	"	X
72-20-8	Endrin	< 8.92		µg/kg dry	8.92	0.546	1	"	"	"	"	"	X
33213-65-9	Endosulfan II	< 8.92		µg/kg dry	8.92	0.357	1	"	"	"	"	"	X
72-54-8	4,4'-DDD (p,p')	< 8.92		µg/kg dry	8.92	0.468	1	"	"	"	"	"	X
1031-07-8	Endosulfan sulfate	< 8.92		µg/kg dry	8.92	0.814	1	"	"	"	"	"	X
50-29-3	4,4'-DDT (p,p')	< 8.92		µg/kg dry	8.92	3.82	1	"	"	"	"	"	X
72-43-5	Methoxychlor	< 8.92		µg/kg dry	8.92	0.602	1	"	"	"	"	"	X
53494-70-5	Endrin ketone	< 8.92		µg/kg dry	8.92	0.323	1	"	"	"	"	"	X
7421-93-4	Endrin aldehyde	< 8.92		µg/kg dry	8.92	1.40	1	"	"	"	"	"	X
5103-71-9	alpha-Chlordane	< 5.57		µg/kg dry	5.57	0.234	1	"	"	"	"	"	X
5103-74-2	gamma-Chlordane	< 5.57		µg/kg dry	5.57	0.279	1	"	"	"	"	"	X
8001-35-2	Toxaphene	< 111		µg/kg dry	111	78.6	1	"	"	"	"	"	X
57-74-9	Chlordane	< 22.3		µg/kg dry	22.3	2.80	1	"	"	"	"	"	X
15972-60-8	Alachlor	< 5.57		µg/kg dry	5.57	0.490	1	"	"	"	"	"	
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*72*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*66*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*53*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*54*			*30-150 %*			"	"	"	"	"	
Extractable Petroleum Hydrocarbons													

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-17 SC58794-09	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Extractable Petroleum Hydrocarbons													
Fingerprinting by GC Prepared by method SW846 3546													
	Total Petroleum Hydrocarbons	**49.7**		mg/kg dry	14.5	12.1	1	SW846 8100Mod.	14-Jul-20	15-Jul-20	BJJ	2001092	
Surrogate recoveries:													
84-15-1	*o-Terphenyl*	*83*			*40-140 %*			"	"	"	"	"	
3386-33-2	*1-Chlorooctadecane*	*111*			*40-140 %*			"	"	"	"	"	
Total Metals by EPA 6000/7000 Series Methods													
Prepared by method SW846 3050B													
7440-22-4	Silver	< 3.20		mg/kg dry	3.20	0.173	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7440-38-2	Arsenic	**21.9**		mg/kg dry	1.60	0.203	1	"	"	"	"	"	X
7440-39-3	Barium	**113**		mg/kg dry	1.07	0.126	1	"	"	"	"	"	X
7440-41-7	Beryllium	< 0.533		mg/kg dry	0.533	0.0268	1	"	"	"	"	"	X
7440-43-9	Cadmium	< 0.533		mg/kg dry	0.533	0.0276	1	"	"	"	"	"	X
7440-47-3	Chromium	**19.4**		mg/kg dry	1.07	0.142	1	"	"	"	"	"	X
7439-97-6	Mercury	< 0.116		mg/kg dry	0.116	0.0096	1	SW846 7471B	13-Jul-20	13-Jul-20	edt	2001079	X
Prepared by method SW846 3050B													
7440-02-0	Nickel	**27.9**		mg/kg dry	1.07	0.123	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7439-92-1	Lead	**12.1**		mg/kg dry	1.60	0.226	1	"	"	"	"	"	X
7440-36-0	Antimony	< 5.33		mg/kg dry	5.33	0.401	1	"	"	"	"	"	X
7782-49-2	Selenium	< 1.60		mg/kg dry	1.60	0.305	1	"	"	"	"	"	X
7440-28-0	Thallium	< 3.20		mg/kg dry	3.20	1.18	1	"	"	"	"	"	X
7440-62-2	Vanadium	**8.48**		mg/kg dry	1.60	0.284	1	"	"	17-Jul-20	"	"	X
7440-66-6	Zinc	**61.8**		mg/kg dry	3.20	0.826	1	"	"	15-Jul-20	"	"	X
General Chemistry Parameters													
	% Solids	**89.6**		%			1	SM2540 G (11) Mod.	10-Jul-20	14-Jul-20	PN	2001075	
Toxicity Characteristics													
	Ignitability by Definition	**Negative**		N/A			1	SW846 1030	10-Jul-20 17:23	10-Jul-20 21:00	PN	2001074	X
	pH	**6.11**	pH	pH Units			1	SW846 9045D	14-Jul-20 15:31	14-Jul-20 18:55	PN	2001081	X
Subcontracted Analyses													
Subcontracted Analyses Prepared by method SW8151A										Methylation date: 13-Jul-20			
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
93-76-5	2,4,5-T	< 80		ug/kg	80	80	10	SW8151A	13-Jul-20	14-Jul-20 22:22	M-CT007	537166A	
93-72-1	2,4,5-TP (Silvex)	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-75-7	2,4-D	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-82-6	2,4-DB	< 80		ug/kg	80	80	10	"	"	"	"	"	
75-99-0	Dalapon	< 80		ug/kg	80	80	10	"	"	"	"	"	
1918-00-9	Dicamba	< 80		ug/kg	80	80	10	"	"	"	"	"	
120-36-5	Dichloroprop	< 80		ug/kg	80	80	10	"	"	"	"	"	
88-85-7	Dinoseb	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-74-6	MCPA	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
7085-19-0	MCPP	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
Surrogate recoveries:													
19719-28-9	*% DCAA*	*83*			*30-150 %*			"	"	"	"	"	

This laboratory report is not valid without an authorized signature on the cover page.

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-17 SC58794-09	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Subcontracted Analyses													
Prepared by method SW846 7.3.3.1/90													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Cyanide	< 6		mg/kg	6	6	1	SW846 7.3.3.1/90	14-Jul-20	14-Jul-20 14:39	M-CT007	537292A	
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Sulfide	< 20		mg/kg	20	20	1	SW846 CH7	"	14-Jul-20 15:17	M-CT007	537292B	
Prepared by method SW846-React													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity	**Negative**		Pos/Neg			1	SW846-React	14-Jul-20 15:18	14-Jul-20 15:18	M-CT007	'[none]'	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-3	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-10				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
Prepared by method SW846 5035A Soil (high level)							Initial weight: 14.95 g						
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	< 71.1		µg/kg dry	71.1	39.0	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
67-64-1	Acetone	< 711		µg/kg dry	711	89.9	50	"	"	"	"	"	X
107-13-1	Acrylonitrile	< 71.1		µg/kg dry	71.1	25.7	50	"	"	"	"	"	X
71-43-2	Benzene	< 71.1		µg/kg dry	71.1	11.4	50	"	"	"	"	"	X
108-86-1	Bromobenzene	< 71.1		µg/kg dry	71.1	16.1	50	"	"	"	"	"	X
74-97-5	Bromochloromethane	< 71.1		µg/kg dry	71.1	10.2	50	"	"	"	"	"	X
75-27-4	Bromodichloromethane	< 71.1		µg/kg dry	71.1	18.3	50	"	"	"	"	"	X
75-25-2	Bromoform	< 71.1		µg/kg dry	71.1	15.2	50	"	"	"	"	"	X
74-83-9	Bromomethane	< 142		µg/kg dry	142	35.1	50	"	"	"	"	"	X
78-93-3	2-Butanone (MEK)	< 142		µg/kg dry	142	32.5	50	"	"	"	"	"	X
104-51-8	n-Butylbenzene	< 71.1		µg/kg dry	71.1	28.4	50	"	"	"	"	"	X
135-98-8	sec-Butylbenzene	< 71.1		µg/kg dry	71.1	21.8	50	"	"	"	"	"	X
98-06-6	tert-Butylbenzene	< 71.1		µg/kg dry	71.1	29.0	50	"	"	"	"	"	X
75-15-0	Carbon disulfide	< 142		µg/kg dry	142	26.3	50	"	"	"	"	"	X
56-23-5	Carbon tetrachloride	< 71.1		µg/kg dry	71.1	21.3	50	"	"	"	"	"	X
108-90-7	Chlorobenzene	< 71.1		µg/kg dry	71.1	8.60	50	"	"	"	"	"	X
75-00-3	Chloroethane	< 142		µg/kg dry	142	31.7	50	"	"	"	"	"	X
67-66-3	Chloroform	< 71.1		µg/kg dry	71.1	8.39	50	"	"	"	"	"	X
74-87-3	Chloromethane	< 142		µg/kg dry	142	84.5	50	"	"	"	"	"	X
95-49-8	2-Chlorotoluene	< 71.1		µg/kg dry	71.1	17.6	50	"	"	"	"	"	X
106-43-4	4-Chlorotoluene	< 71.1		µg/kg dry	71.1	12.9	50	"	"	"	"	"	X
96-12-8	1,2-Dibromo-3-chloropropane	< 142		µg/kg dry	142	28.1	50	"	"	"	"	"	X
124-48-1	Dibromochloromethane	< 71.1		µg/kg dry	71.1	11.2	50	"	"	"	"	"	X
106-93-4	1,2-Dibromoethane (EDB)	< 71.1		µg/kg dry	71.1	19.3	50	"	"	"	"	"	X
74-95-3	Dibromomethane	< 71.1		µg/kg dry	71.1	13.4	50	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 71.1		µg/kg dry	71.1	12.8	50	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 71.1		µg/kg dry	71.1	17.7	50	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 71.1		µg/kg dry	71.1	12.7	50	"	"	"	"	"	X
75-71-8	Dichlorodifluoromethane (Freon12)	< 142		µg/kg dry	142	93.0	50	"	"	"	"	"	X
75-34-3	1,1-Dichloroethane	< 71.1		µg/kg dry	71.1	16.4	50	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 71.1		µg/kg dry	71.1	18.6	50	"	"	"	"	"	X
75-35-4	1,1-Dichloroethene	< 71.1		µg/kg dry	71.1	18.2	50	"	"	"	"	"	X
156-59-2	cis-1,2-Dichloroethene	< 71.1		µg/kg dry	71.1	23.7	50	"	"	"	"	"	X
156-60-5	trans-1,2-Dichloroethene	< 71.1		µg/kg dry	71.1	16.2	50	"	"	"	"	"	X
78-87-5	1,2-Dichloropropane	< 71.1		µg/kg dry	71.1	24.7	50	"	"	"	"	"	X
142-28-9	1,3-Dichloropropane	< 71.1		µg/kg dry	71.1	22.5	50	"	"	"	"	"	X
594-20-7	2,2-Dichloropropane	< 71.1		µg/kg dry	71.1	18.7	50	"	"	"	"	"	X
563-58-6	1,1-Dichloropropene	< 71.1		µg/kg dry	71.1	21.8	50	"	"	"	"	"	X
10061-01-5	cis-1,3-Dichloropropene	< 71.1		µg/kg dry	71.1	16.8	50	"	"	"	"	"	X
10061-02-6	trans-1,3-Dichloropropene	< 71.1		µg/kg dry	71.1	28.9	50	"	"	"	"	"	X
100-41-4	Ethylbenzene	< 71.1		µg/kg dry	71.1	14.9	50	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 71.1		µg/kg dry	71.1	22.8	50	"	"	"	"	"	X
591-78-6	2-Hexanone (MBK)	< 142		µg/kg dry	142	47.3	50	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-3	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-10				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
							Initial weight: 14.95 g						
98-82-8	Isopropylbenzene	< 71.1		µg/kg dry	71.1	25.8	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
99-87-6	4-Isopropyltoluene	< 71.1		µg/kg dry	71.1	19.7	50	"	"	"	"	"	X
1634-04-4	Methyl tert-butyl ether	< 71.1		µg/kg dry	71.1	21.4	50	"	"	"	"	"	X
108-10-1	4-Methyl-2-pentanone (MIBK)	< 142		µg/kg dry	142	50.9	50	"	"	"	"	"	X
75-09-2	Methylene chloride	< 142		µg/kg dry	142	60.7	50	"	"	"	"	"	X
91-20-3	Naphthalene	< 71.1		µg/kg dry	71.1	20.6	50	"	"	"	"	"	X
103-65-1	n-Propylbenzene	< 71.1		µg/kg dry	71.1	17.7	50	"	"	"	"	"	X
100-42-5	Styrene	< 71.1		µg/kg dry	71.1	9.39	50	"	"	"	"	"	X
630-20-6	1,1,1,2-Tetrachloroethane	< 71.1		µg/kg dry	71.1	17.1	50	"	"	"	"	"	X
79-34-5	1,1,2,2-Tetrachloroethane	< 71.1		µg/kg dry	71.1	22.5	50	"	"	"	"	"	X
127-18-4	Tetrachloroethene	< 71.1		µg/kg dry	71.1	22.4	50	"	"	"	"	"	X
108-88-3	Toluene	< 71.1		µg/kg dry	71.1	11.4	50	"	"	"	"	"	X
87-61-6	1,2,3-Trichlorobenzene	< 71.1		µg/kg dry	71.1	16.6	50	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 71.1		µg/kg dry	71.1	11.7	50	"	"	"	"	"	X
108-70-3	1,3,5-Trichlorobenzene	< 71.1		µg/kg dry	71.1	11.2	50	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	< 71.1		µg/kg dry	71.1	17.2	50	"	"	"	"	"	X
79-00-5	1,1,2-Trichloroethane	< 71.1		µg/kg dry	71.1	22.0	50	"	"	"	"	"	X
79-01-6	Trichloroethene	< 71.1		µg/kg dry	71.1	12.2	50	"	"	"	"	"	X
75-69-4	Trichlorofluoromethane (Freon 11)	< 71.1		µg/kg dry	71.1	32.1	50	"	"	"	"	"	X
96-18-4	1,2,3-Trichloropropane	< 71.1		µg/kg dry	71.1	32.8	50	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	< 71.1		µg/kg dry	71.1	18.0	50	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	< 71.1		µg/kg dry	71.1	14.9	50	"	"	"	"	"	X
75-01-4	Vinyl chloride	< 71.1		µg/kg dry	71.1	35.0	50	"	"	"	"	"	X
179601-23-1	m,p-Xylene	< 142		µg/kg dry	142	41.8	50	"	"	"	"	"	X
95-47-6	o-Xylene	< 71.1		µg/kg dry	71.1	21.9	50	"	"	"	"	"	X
109-99-9	Tetrahydrofuran	< 142		µg/kg dry	142	52.0	50	"	"	"	"	"	
60-29-7	Ethyl ether	< 71.1		µg/kg dry	71.1	19.3	50	"	"	"	"	"	X
994-05-8	Tert-amyl methyl ether	< 71.1		µg/kg dry	71.1	39.3	50	"	"	"	"	"	
637-92-3	Ethyl tert-butyl ether	< 71.1		µg/kg dry	71.1	19.7	50	"	"	"	"	"	
108-20-3	Di-isopropyl ether	< 71.1		µg/kg dry	71.1	23.0	50	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	< 1420		µg/kg dry	1420	1010	50	"	"	"	"	"	X
123-91-1	1,4-Dioxane	< 1420		µg/kg dry	1420	419	50	"	"	"	"	"	X
110-57-6	trans-1,4-Dichloro-2-buten e	< 356		µg/kg dry	356	46.9	50	"	"	"	"	"	X
64-17-5	Ethanol	< 14200		µg/kg dry	14200	1230	50	"	"	"	"	"	
Surrogate recoveries:													
460-00-4	*4-Bromofluorobenzene*	*104*			*70-130 %*			"	"	"	"	"	
2037-26-5	*Toluene-d8*	*105*			*70-130 %*			"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*109*			*70-130 %*			"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*108*			*70-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds Prepared by method SW846 3546													
83-32-9	Acenaphthene	< 80.1		µg/kg dry	80.1	42.5	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-3	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-10				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
208-96-8	Acenaphthylene	< 80.1		µg/kg dry	80.1	41.8	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X
62-53-3	Aniline	< 396		µg/kg dry	396	25.2	1	"	"	"	"	"	X
120-12-7	Anthracene	< 80.1		µg/kg dry	80.1	46.1	1	"	"	"	"	"	X
103-33-3	Azobenzene/Diphenyldiazene	< 396		µg/kg dry	396	43.0	1	"	"	"	"	"	
92-87-5	Benzidine	< 792		µg/kg dry	792	25.2	1	"	"	"	"	"	X
56-55-3	Benzo (a) anthracene	< 80.1		µg/kg dry	80.1	45.0	1	"	"	"	"	"	X
50-32-8	Benzo (a) pyrene	< 80.1		µg/kg dry	80.1	54.7	1	"	"	"	"	"	X
205-99-2	Benzo (b) fluoranthene	< 80.1		µg/kg dry	80.1	60.3	1	"	"	"	"	"	X
191-24-2	Benzo (g,h,i) perylene	< 80.1		µg/kg dry	80.1	56.6	1	"	"	"	"	"	X
207-08-9	Benzo (k) fluoranthene	< 80.1		µg/kg dry	80.1	68.4	1	"	"	"	"	"	X
65-85-0	Benzoic acid	< 396		µg/kg dry	396	23.8	1	"	"	"	"	"	X
100-51-6	Benzyl alcohol	< 396		µg/kg dry	396	91.7	1	"	"	"	"	"	X
111-91-1	Bis(2-chloroethoxy)methane	< 396		µg/kg dry	396	40.0	1	"	"	"	"	"	X
111-44-4	Bis(2-chloroethyl)ether	< 201		µg/kg dry	201	37.1	1	"	"	"	"	"	X
108-60-1	Bis(2-chloroisopropyl)ether	< 201		µg/kg dry	201	32.2	1	"	"	"	"	"	X
117-81-7	Bis(2-ethylhexyl)phthalate	< 201		µg/kg dry	201	51.0	1	"	"	"	"	"	X
101-55-3	4-Bromophenyl phenyl ether	< 396		µg/kg dry	396	44.8	1	"	"	"	"	"	X
85-68-7	Butyl benzyl phthalate	< 396		µg/kg dry	396	39.7	1	"	"	"	"	"	X
86-74-8	Carbazole	< 201		µg/kg dry	201	46.1	1	"	"	"	"	"	X
59-50-7	4-Chloro-3-methylphenol	< 396		µg/kg dry	396	46.6	1	"	"	"	"	"	X
106-47-8	4-Chloroaniline	< 201		µg/kg dry	201	24.7	1	"	"	"	"	"	X
91-58-7	2-Chloronaphthalene	< 396		µg/kg dry	396	54.3	1	"	"	"	"	"	X
95-57-8	2-Chlorophenol	< 201		µg/kg dry	201	38.4	1	"	"	"	"	"	X
7005-72-3	4-Chlorophenyl phenyl ether	< 396		µg/kg dry	396	38.8	1	"	"	"	"	"	X
218-01-9	Chrysene	< 80.1		µg/kg dry	80.1	45.3	1	"	"	"	"	"	X
53-70-3	Dibenzo (a,h) anthracene	< 80.1		µg/kg dry	80.1	59.2	1	"	"	"	"	"	X
132-64-9	Dibenzofuran	< 201		µg/kg dry	201	53.9	1	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 396		µg/kg dry	396	47.3	1	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 396		µg/kg dry	396	42.7	1	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 396		µg/kg dry	396	45.0	1	"	"	"	"	"	X
91-94-1	3,3´-Dichlorobenzidine	< 396		µg/kg dry	396	43.8	1	"	"	"	"	"	X
120-83-2	2,4-Dichlorophenol	< 201		µg/kg dry	201	48.6	1	"	"	"	"	"	X
84-66-2	Diethyl phthalate	< 396		µg/kg dry	396	41.5	1	"	"	"	"	"	X
131-11-3	Dimethyl phthalate	< 396		µg/kg dry	396	44.5	1	"	"	"	"	"	X
105-67-9	2,4-Dimethylphenol	< 396		µg/kg dry	396	31.3	1	"	"	"	"	"	X
84-74-2	Di-n-butyl phthalate	< 396		µg/kg dry	396	42.4	1	"	"	"	"	"	X
534-52-1	4,6-Dinitro-2-methylphenol	< 396		µg/kg dry	396	56.8	1	"	"	"	"	"	X
51-28-5	2,4-Dinitrophenol	< 396		µg/kg dry	396	41.1	1	"	"	"	"	"	X
121-14-2	2,4-Dinitrotoluene	< 201		µg/kg dry	201	48.0	1	"	"	"	"	"	X
606-20-2	2,6-Dinitrotoluene	< 201		µg/kg dry	201	40.9	1	"	"	"	"	"	X
117-84-0	Di-n-octyl phthalate	< 396		µg/kg dry	396	59.0	1	"	"	"	"	"	X
206-44-0	Fluoranthene	< 80.1		µg/kg dry	80.1	46.9	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-3	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-10				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
86-73-7	Fluorene	< 80.1		µg/kg dry	80.1	51.7	1	SW846 8270D	13-Jul-20	13-Jul-20	BJJ	2001083	X
118-74-1	Hexachlorobenzene	< 201		µg/kg dry	201	50.4	1	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 201		µg/kg dry	201	50.4	1	"	"	"	"	"	X
77-47-4	Hexachlorocyclopentadiene	< 201		µg/kg dry	201	50.5	1	"	"	"	"	"	X
67-72-1	Hexachloroethane	< 201		µg/kg dry	201	45.3	1	"	"	"	"	"	X
193-39-5	Indeno (1,2,3-cd) pyrene	< 80.1		µg/kg dry	80.1	54.7	1	"	"	"	"	"	X
78-59-1	Isophorone	< 201		µg/kg dry	201	30.9	1	"	"	"	"	"	X
91-57-6	2-Methylnaphthalene	< 80.1		µg/kg dry	80.1	56.1	1	"	"	"	"	"	X
95-48-7	2-Methylphenol	< 396		µg/kg dry	396	31.8	1	"	"	"	"	"	X
108-39-4, 106-44-5	3 & 4-Methylphenol	< 396		µg/kg dry	396	31.1	1	"	"	"	"	"	X
91-20-3	Naphthalene	< 80.1		µg/kg dry	80.1	46.2	1	"	"	"	"	"	X
88-74-4	2-Nitroaniline	< 396		µg/kg dry	396	35.9	1	"	"	"	"	"	X
99-09-2	3-Nitroaniline	< 396		µg/kg dry	396	36.6	1	"	"	"	"	"	X
100-01-6	4-Nitroaniline	< 201		µg/kg dry	201	52.8	1	"	"	"	"	"	X
98-95-3	Nitrobenzene	< 201		µg/kg dry	201	46.3	1	"	"	"	"	"	X
88-75-5	2-Nitrophenol	< 201		µg/kg dry	201	35.1	1	"	"	"	"	"	X
100-02-7	4-Nitrophenol	< 1580		µg/kg dry	1580	52.7	1	"	"	"	"	"	X
62-75-9	N-Nitrosodimethylamine	< 201		µg/kg dry	201	26.2	1	"	"	"	"	"	X
621-64-7	N-Nitrosodi-n-propylamine	< 201		µg/kg dry	201	35.1	1	"	"	"	"	"	X
86-30-6	N-Nitrosodiphenylamine	< 396		µg/kg dry	396	40.3	1	"	"	"	"	"	X
87-86-5	Pentachlorophenol	< 396		µg/kg dry	396	47.2	1	"	"	"	"	"	X
85-01-8	Phenanthrene	< 80.1		µg/kg dry	80.1	45.4	1	"	"	"	"	"	X
108-95-2	Phenol	< 396		µg/kg dry	396	40.1	1	"	"	"	"	"	X
129-00-0	Pyrene	< 80.1		µg/kg dry	80.1	44.2	1	"	"	"	"	"	X
110-86-1	Pyridine	< 396		µg/kg dry	396	93.8	1	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 396		µg/kg dry	396	48.7	1	"	"	"	"	"	X
90-12-0	1-Methylnaphthalene	< 80.1		µg/kg dry	80.1	44.2	1	"	"	"	"	"	
95-95-4	2,4,5-Trichlorophenol	< 396		µg/kg dry	396	40.9	1	"	"	"	"	"	X
88-06-2	2,4,6-Trichlorophenol	< 201		µg/kg dry	201	49.0	1	"	"	"	"	"	X
82-68-8	Pentachloronitrobenzene	< 396		µg/kg dry	396	42.1	1	"	"	"	"	"	X
95-94-3	1,2,4,5-Tetrachlorobenzene	< 396		µg/kg dry	396	47.2	1	"	"	"	"	"	X
Surrogate recoveries:													
321-60-8	*2-Fluorobiphenyl*	*91*			*30-130 %*			"	"	"	"	"	
367-12-4	*2-Fluorophenol*	*88*			*30-130 %*			"	"	"	"	"	
4165-60-0	*Nitrobenzene-d5*	*81*			*30-130 %*			"	"	"	"	"	
4165-62-2	*Phenol-d5*	*101*			*30-130 %*			"	"	"	"	"	
1718-51-0	*Terphenyl-dl4*	*93*			*30-130 %*			"	"	"	"	"	
118-79-6	*2,4,6-Tribromophenol*	*72*			*30-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls Prepared by method SW846 3546													
12674-11-2	Aroclor-1016	< 23.1		µg/kg dry	23.1	16.6	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
11104-28-2	Aroclor-1221	< 23.1		µg/kg dry	23.1	6.83	1	"	"	"	"	"	X
11141-16-5	Aroclor-1232	< 23.1		µg/kg dry	23.1	6.40	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-3	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-10				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls													
53469-21-9	Aroclor-1242	< 23.1		µg/kg dry	23.1	2.19	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
12672-29-6	Aroclor-1248	< 23.1		µg/kg dry	23.1	7.22	1	"	"	"	"	"	X
11097-69-1	Aroclor-1254	< 23.1		µg/kg dry	23.1	18.0	1	"	"	"	"	"	X
11096-82-5	Aroclor-1260	< 23.1		µg/kg dry	23.1	4.97	1	"	"	"	"	"	X
37324-23-5	Aroclor-1262	< 23.1		µg/kg dry	23.1	5.38	1	"	"	"	"	"	X
11100-14-4	Aroclor-1268	< 23.1		µg/kg dry	23.1	4.92	1	"	"	"	"	"	X
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*90*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*82*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*82*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*72*			*30-150 %*			"	"	"	"	"	
Pesticides													
Organochlorine Pesticides Prepared by method SW846 3546			Z-2										
319-84-6	alpha-BHC	< 5.77		µg/kg dry	5.77	0.266	1	SW846 8081B	13-Jul-20	16-Jul-20	BJJ	2001088	X
319-85-7	beta-BHC	< 5.77		µg/kg dry	5.77	0.370	1	"	"	"	"	"	X
319-86-8	delta-BHC	< 5.77		µg/kg dry	5.77	0.300	1	"	"	"	"	"	X
58-89-9	gamma-BHC (Lindane)	< 3.46		µg/kg dry	3.46	0.612	1	"	"	"	"	"	X
76-44-8	Heptachlor	< 5.77		µg/kg dry	5.77	0.670	1	"	"	"	"	"	X
309-00-2	Aldrin	< 5.77		µg/kg dry	5.77	0.196	1	"	"	"	"	"	X
1024-57-3	Heptachlor epoxide	< 5.77		µg/kg dry	5.77	0.231	1	"	"	"	"	"	X
959-98-8	Endosulfan I	< 5.77		µg/kg dry	5.77	0.266	1	"	"	"	"	"	X
60-57-1	Dieldrin	< 5.77		µg/kg dry	5.77	0.277	1	"	"	"	"	"	X
72-55-9	4,4'-DDE (p,p')	< 5.77		µg/kg dry	5.77	0.300	1	"	"	"	"	"	X
72-20-8	Endrin	< 9.24		µg/kg dry	9.24	0.566	1	"	"	"	"	"	X
33213-65-9	Endosulfan II	< 9.24		µg/kg dry	9.24	0.370	1	"	"	"	"	"	X
72-54-8	4,4'-DDD (p,p')	< 9.24		µg/kg dry	9.24	0.485	1	"	"	"	"	"	X
1031-07-8	Endosulfan sulfate	< 9.24		µg/kg dry	9.24	0.843	1	"	"	"	"	"	X
50-29-3	4,4'-DDT (p,p')	< 9.24		µg/kg dry	9.24	3.96	1	"	"	"	"	"	X
72-43-5	Methoxychlor	< 9.24		µg/kg dry	9.24	0.624	1	"	"	"	"	"	X
53494-70-5	Endrin ketone	< 9.24		µg/kg dry	9.24	0.335	1	"	"	"	"	"	X
7421-93-4	Endrin aldehyde	< 9.24		µg/kg dry	9.24	1.46	1	"	"	"	"	"	X
5103-71-9	alpha-Chlordane	< 5.77		µg/kg dry	5.77	0.243	1	"	"	"	"	"	X
5103-74-2	gamma-Chlordane	< 5.77		µg/kg dry	5.77	0.289	1	"	"	"	"	"	X
8001-35-2	Toxaphene	< 115		µg/kg dry	115	81.5	1	"	"	"	"	"	X
57-74-9	Chlordane	< 23.1		µg/kg dry	23.1	2.91	1	"	"	"	"	"	X
15972-60-8	Alachlor	< 5.77		µg/kg dry	5.77	0.508	1	"	"	"	"	"	
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*74*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*69*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*55*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*55*			*30-150 %*			"	"	"	"	"	
Extractable Petroleum Hydrocarbons													

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-3 SC58794-10	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Extractable Petroleum Hydrocarbons													
Fingerprinting by GC Prepared by method SW846 3546													
	Total Petroleum Hydrocarbons	**113**		mg/kg dry	15.9	13.3	1	SW846 8100Mod.	14-Jul-20	15-Jul-20	BJJ	2001092	
Surrogate recoveries:													
84-15-1	*o-Terphenyl*	*84*			*40-140 %*			"	"	"	"	"	
3386-33-2	*1-Chlorooctadecane*	*113*			*40-140 %*			"	"	"	"	"	
Total Metals by EPA 6000/7000 Series Methods													
Prepared by method SW846 3050B													
7440-22-4	Silver	< 3.59		mg/kg dry	3.59	0.194	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7440-38-2	Arsenic	**36.6**		mg/kg dry	1.80	0.227	1	"	"	"	"	"	X
7440-39-3	Barium	**30.0**		mg/kg dry	1.20	0.141	1	"	"	"	"	"	X
7440-41-7	Beryllium	< 0.598		mg/kg dry	0.598	0.0300	1	"	"	"	"	"	X
7440-43-9	Cadmium	< 0.598		mg/kg dry	0.598	0.0310	1	"	"	"	"	"	X
7440-47-3	Chromium	**21.8**		mg/kg dry	1.20	0.159	1	"	"	"	"	"	X
7439-97-6	Mercury	< 0.110		mg/kg dry	0.110	0.0092	1	SW846 7471B	13-Jul-20	13-Jul-20	edt	2001079	X
Prepared by method SW846 3050B													
7440-02-0	Nickel	**33.2**		mg/kg dry	1.20	0.138	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7439-92-1	Lead	**17.0**		mg/kg dry	1.80	0.254	1	"	"	"	"	"	X
7440-36-0	Antimony	< 5.98		mg/kg dry	5.98	0.450	1	"	"	"	"	"	X
7782-49-2	Selenium	< 1.80		mg/kg dry	1.80	0.342	1	"	"	"	"	"	X
7440-28-0	Thallium	< 3.59		mg/kg dry	3.59	1.32	1	"	"	"	"	"	X
7440-62-2	Vanadium	**30.1**		mg/kg dry	1.80	0.318	1	"	"	17-Jul-20	"	"	X
7440-66-6	Zinc	**107**		mg/kg dry	3.59	0.926	1	"	"	15-Jul-20	"	"	X
General Chemistry Parameters													
	% Solids	**82.7**		%			1	SM2540 G (11) Mod.	10-Jul-20	14-Jul-20	PN	2001075	
Toxicity Characteristics													
	Ignitability by Definition	**Negative**		N/A			1	SW846 1030	10-Jul-20 17:23	10-Jul-20 21:00	PN	2001074	X
	pH	**6.13**	pH	pH Units			1	SW846 9045D	14-Jul-20 15:31	14-Jul-20 18:55	PN	2001081	X
Subcontracted Analyses													
Subcontracted Analyses Prepared by method SW8151A									Methylation date: 13-Jul-20				
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
93-76-5	2,4,5-T	< 80		ug/kg	80	80	10	SW8151A	13-Jul-20	14-Jul-20 22:46	M-CT007	537166A	
93-72-1	2,4,5-TP (Silvex)	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-75-7	2,4-D	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-82-6	2,4-DB	< 80		ug/kg	80	80	10	"	"	"	"	"	
75-99-0	Dalapon	< 80		ug/kg	80	80	10	"	"	"	"	"	
1918-00-9	Dicamba	< 80		ug/kg	80	80	10	"	"	"	"	"	
120-36-5	Dichloroprop	< 80		ug/kg	80	80	10	"	"	"	"	"	
88-85-7	Dinoseb	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-74-6	MCPA	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
7085-19-0	MCPP	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
Surrogate recoveries:													
19719-28-9	*% DCAA*	*80*			*30-150 %*			"	"	"	"	"	

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Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-3 SC58794-10	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Subcontracted Analyses													
Prepared by method SW846 7.3.3.1/90													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Cyanide	< 7		mg/kg	7	7	1	SW846 7.3.3.1/90	14-Jul-20	14-Jul-20 14:40	M-CT007	537292A	
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Sulfide	< 20		mg/kg	20	20	1	SW846 CH7	"	14-Jul-20 15:17	M-CT007	537292B	
Prepared by method SW846-React													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity	**Negative**		Pos/Neg			1	SW846-React	14-Jul-20 15:18	14-Jul-20 15:18	M-CT007	'[none]'	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-4	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-11				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
Prepared by method SW846 5035A Soil (high level)							Initial weight: 14.54 g						
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	< 64.3		µg/kg dry	64.3	35.2	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
67-64-1	Acetone	< 643		µg/kg dry	643	81.3	50	"	"	"	"	"	X
107-13-1	Acrylonitrile	< 64.3		µg/kg dry	64.3	23.2	50	"	"	"	"	"	X
71-43-2	Benzene	< 64.3		µg/kg dry	64.3	10.3	50	"	"	"	"	"	X
108-86-1	Bromobenzene	< 64.3		µg/kg dry	64.3	14.5	50	"	"	"	"	"	X
74-97-5	Bromochloromethane	< 64.3		µg/kg dry	64.3	9.19	50	"	"	"	"	"	X
75-27-4	Bromodichloromethane	< 64.3		µg/kg dry	64.3	16.6	50	"	"	"	"	"	X
75-25-2	Bromoform	< 64.3		µg/kg dry	64.3	13.8	50	"	"	"	"	"	X
74-83-9	Bromomethane	< 129		µg/kg dry	129	31.8	50	"	"	"	"	"	X
78-93-3	2-Butanone (MEK)	< 129		µg/kg dry	129	29.4	50	"	"	"	"	"	X
104-51-8	n-Butylbenzene	< 64.3		µg/kg dry	64.3	25.7	50	"	"	"	"	"	X
135-98-8	sec-Butylbenzene	< 64.3		µg/kg dry	64.3	19.7	50	"	"	"	"	"	X
98-06-6	tert-Butylbenzene	< 64.3		µg/kg dry	64.3	26.2	50	"	"	"	"	"	X
75-15-0	Carbon disulfide	< 129		µg/kg dry	129	23.8	50	"	"	"	"	"	X
56-23-5	Carbon tetrachloride	< 64.3		µg/kg dry	64.3	19.2	50	"	"	"	"	"	X
108-90-7	Chlorobenzene	< 64.3		µg/kg dry	64.3	7.78	50	"	"	"	"	"	X
75-00-3	Chloroethane	< 129		µg/kg dry	129	28.7	50	"	"	"	"	"	X
67-66-3	Chloroform	< 64.3		µg/kg dry	64.3	7.59	50	"	"	"	"	"	X
74-87-3	Chloromethane	< 129		µg/kg dry	129	76.4	50	"	"	"	"	"	X
95-49-8	2-Chlorotoluene	< 64.3		µg/kg dry	64.3	15.9	50	"	"	"	"	"	X
106-43-4	4-Chlorotoluene	< 64.3		µg/kg dry	64.3	11.6	50	"	"	"	"	"	X
96-12-8	1,2-Dibromo-3-chloropropane	< 129		µg/kg dry	129	25.4	50	"	"	"	"	"	X
124-48-1	Dibromochloromethane	< 64.3		µg/kg dry	64.3	10.2	50	"	"	"	"	"	X
106-93-4	1,2-Dibromoethane (EDB)	< 64.3		µg/kg dry	64.3	17.5	50	"	"	"	"	"	X
74-95-3	Dibromomethane	< 64.3		µg/kg dry	64.3	12.1	50	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 64.3		µg/kg dry	64.3	11.6	50	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 64.3		µg/kg dry	64.3	16.0	50	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 64.3		µg/kg dry	64.3	11.5	50	"	"	"	"	"	X
75-71-8	Dichlorodifluoromethane (Freon12)	< 129		µg/kg dry	129	84.1	50	"	"	"	"	"	X
75-34-3	1,1-Dichloroethane	< 64.3		µg/kg dry	64.3	14.9	50	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 64.3		µg/kg dry	64.3	16.8	50	"	"	"	"	"	X
75-35-4	1,1-Dichloroethene	< 64.3		µg/kg dry	64.3	16.5	50	"	"	"	"	"	X
156-59-2	cis-1,2-Dichloroethene	< 64.3		µg/kg dry	64.3	21.4	50	"	"	"	"	"	X
156-60-5	trans-1,2-Dichloroethene	< 64.3		µg/kg dry	64.3	14.7	50	"	"	"	"	"	X
78-87-5	1,2-Dichloropropane	< 64.3		µg/kg dry	64.3	22.3	50	"	"	"	"	"	X
142-28-9	1,3-Dichloropropane	< 64.3		µg/kg dry	64.3	20.3	50	"	"	"	"	"	X
594-20-7	2,2-Dichloropropane	< 64.3		µg/kg dry	64.3	16.9	50	"	"	"	"	"	X
563-58-6	1,1-Dichloropropene	< 64.3		µg/kg dry	64.3	19.7	50	"	"	"	"	"	X
10061-01-5	cis-1,3-Dichloropropene	< 64.3		µg/kg dry	64.3	15.2	50	"	"	"	"	"	X
10061-02-6	trans-1,3-Dichloropropene	< 64.3		µg/kg dry	64.3	26.2	50	"	"	"	"	"	X
100-41-4	Ethylbenzene	< 64.3		µg/kg dry	64.3	13.4	50	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 64.3		µg/kg dry	64.3	20.6	50	"	"	"	"	"	X
591-78-6	2-Hexanone (MBK)	< 129		µg/kg dry	129	42.8	50	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-4	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-11				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
							Initial weight: 14.54 g						
98-82-8	Isopropylbenzene	< 64.3		µg/kg dry	64.3	23.3	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
99-87-6	4-Isopropyltoluene	< 64.3		µg/kg dry	64.3	17.8	50	"	"	"	"	"	X
1634-04-4	Methyl tert-butyl ether	< 64.3		µg/kg dry	64.3	19.4	50	"	"	"	"	"	X
108-10-1	4-Methyl-2-pentanone (MIBK)	< 129		µg/kg dry	129	46.0	50	"	"	"	"	"	X
75-09-2	Methylene chloride	< 129		µg/kg dry	129	54.9	50	"	"	"	"	"	X
91-20-3	Naphthalene	< 64.3		µg/kg dry	64.3	18.6	50	"	"	"	"	"	X
103-65-1	n-Propylbenzene	< 64.3		µg/kg dry	64.3	16.0	50	"	"	"	"	"	X
100-42-5	Styrene	< 64.3		µg/kg dry	64.3	8.49	50	"	"	"	"	"	X
630-20-6	1,1,1,2-Tetrachloroethane	< 64.3		µg/kg dry	64.3	15.5	50	"	"	"	"	"	X
79-34-5	1,1,2,2-Tetrachloroethane	< 64.3		µg/kg dry	64.3	20.4	50	"	"	"	"	"	X
127-18-4	Tetrachloroethene	< 64.3		µg/kg dry	64.3	20.3	50	"	"	"	"	"	X
108-88-3	Toluene	< 64.3		µg/kg dry	64.3	10.4	50	"	"	"	"	"	X
87-61-6	1,2,3-Trichlorobenzene	< 64.3		µg/kg dry	64.3	15.0	50	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 64.3		µg/kg dry	64.3	10.6	50	"	"	"	"	"	X
108-70-3	1,3,5-Trichlorobenzene	< 64.3		µg/kg dry	64.3	10.2	50	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	< 64.3		µg/kg dry	64.3	15.6	50	"	"	"	"	"	X
79-00-5	1,1,2-Trichloroethane	< 64.3		µg/kg dry	64.3	19.9	50	"	"	"	"	"	X
79-01-6	Trichloroethene	< 64.3		µg/kg dry	64.3	11.0	50	"	"	"	"	"	X
75-69-4	Trichlorofluoromethane (Freon 11)	< 64.3		µg/kg dry	64.3	29.1	50	"	"	"	"	"	X
96-18-4	1,2,3-Trichloropropane	< 64.3		µg/kg dry	64.3	29.6	50	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	< 64.3		µg/kg dry	64.3	16.3	50	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	< 64.3		µg/kg dry	64.3	13.4	50	"	"	"	"	"	X
75-01-4	Vinyl chloride	< 64.3		µg/kg dry	64.3	31.6	50	"	"	"	"	"	X
179601-23-1	m,p-Xylene	< 129		µg/kg dry	129	37.8	50	"	"	"	"	"	X
95-47-6	o-Xylene	< 64.3		µg/kg dry	64.3	19.8	50	"	"	"	"	"	X
109-99-9	Tetrahydrofuran	< 129		µg/kg dry	129	47.0	50	"	"	"	"	"	
60-29-7	Ethyl ether	< 64.3		µg/kg dry	64.3	17.4	50	"	"	"	"	"	X
994-05-8	Tert-amyl methyl ether	< 64.3		µg/kg dry	64.3	35.6	50	"	"	"	"	"	
637-92-3	Ethyl tert-butyl ether	< 64.3		µg/kg dry	64.3	17.8	50	"	"	"	"	"	
108-20-3	Di-isopropyl ether	< 64.3		µg/kg dry	64.3	20.8	50	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	< 1290		µg/kg dry	1290	913	50	"	"	"	"	"	X
123-91-1	1,4-Dioxane	< 1290		µg/kg dry	1290	379	50	"	"	"	"	"	X
110-57-6	trans-1,4-Dichloro-2-buten e	< 321		µg/kg dry	321	42.4	50	"	"	"	"	"	X
64-17-5	Ethanol	< 12900		µg/kg dry	12900	1110	50	"	"	"	"	"	
Surrogate recoveries:													
460-00-4	*4-Bromofluorobenzene*	*103*			*70-130 %*			"	"	"	"	"	
2037-26-5	*Toluene-d8*	*102*			*70-130 %*			"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*103*			*70-130 %*			"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*105*			*70-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds Prepared by method SW846 3546													
83-32-9	Acenaphthene	< 74.3		µg/kg dry	74.3	39.4	1	SW846 8270D	13-Jul-20	14-Jul-20	BJJ	2001083	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-4	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-11				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
208-96-8	Acenaphthylene	< 74.3		µg/kg dry	74.3	38.7	1	SW846 8270D	13-Jul-20	14-Jul-20	BJJ	2001083	X
62-53-3	Aniline	< 367		µg/kg dry	367	23.4	1	"	"	"	"	"	X
120-12-7	Anthracene	< 74.3		µg/kg dry	74.3	42.8	1	"	"	"	"	"	X
103-33-3	Azobenzene/Diphenyldiazene	< 367		µg/kg dry	367	39.9	1	"	"	"	"	"	
92-87-5	Benzidine	< 735		µg/kg dry	735	23.4	1	"	"	"	"	"	X
56-55-3	Benzo (a) anthracene	< 74.3		µg/kg dry	74.3	41.8	1	"	"	"	"	"	X
50-32-8	Benzo (a) pyrene	< 74.3		µg/kg dry	74.3	50.8	1	"	"	"	"	"	X
205-99-2	Benzo (b) fluoranthene	< 74.3		µg/kg dry	74.3	55.9	1	"	"	"	"	"	X
191-24-2	Benzo (g,h,i) perylene	< 74.3		µg/kg dry	74.3	52.4	1	"	"	"	"	"	X
207-08-9	Benzo (k) fluoranthene	< 74.3		µg/kg dry	74.3	63.5	1	"	"	"	"	"	X
65-85-0	Benzoic acid	< 367		µg/kg dry	367	22.0	1	"	"	"	"	"	X
100-51-6	Benzyl alcohol	< 367		µg/kg dry	367	85.1	1	"	"	"	"	"	X
111-91-1	Bis(2-chloroethoxy)methane	< 367		µg/kg dry	367	37.1	1	"	"	"	"	"	X
111-44-4	Bis(2-chloroethyl)ether	< 186		µg/kg dry	186	34.4	1	"	"	"	"	"	X
108-60-1	Bis(2-chloroisopropyl)ether	< 186		µg/kg dry	186	29.8	1	"	"	"	"	"	X
117-81-7	Bis(2-ethylhexyl)phthalate	< 186		µg/kg dry	186	47.3	1	"	"	"	"	"	X
101-55-3	4-Bromophenyl phenyl ether	< 367		µg/kg dry	367	41.5	1	"	"	"	"	"	X
85-68-7	Butyl benzyl phthalate	< 367		µg/kg dry	367	36.9	1	"	"	"	"	"	X
86-74-8	Carbazole	< 186		µg/kg dry	186	42.8	1	"	"	"	"	"	X
59-50-7	4-Chloro-3-methylphenol	< 367		µg/kg dry	367	43.2	1	"	"	"	"	"	X
106-47-8	4-Chloroaniline	< 186		µg/kg dry	186	22.9	1	"	"	"	"	"	X
91-58-7	2-Chloronaphthalene	< 367		µg/kg dry	367	50.3	1	"	"	"	"	"	X
95-57-8	2-Chlorophenol	< 186		µg/kg dry	186	35.6	1	"	"	"	"	"	X
7005-72-3	4-Chlorophenyl phenyl ether	< 367		µg/kg dry	367	36.0	1	"	"	"	"	"	X
218-01-9	Chrysene	< 74.3		µg/kg dry	74.3	42.0	1	"	"	"	"	"	X
53-70-3	Dibenzo (a,h) anthracene	< 74.3		µg/kg dry	74.3	54.9	1	"	"	"	"	"	X
132-64-9	Dibenzofuran	< 186		µg/kg dry	186	50.0	1	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 367		µg/kg dry	367	43.9	1	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 367		µg/kg dry	367	39.6	1	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 367		µg/kg dry	367	41.8	1	"	"	"	"	"	X
91-94-1	3,3´-Dichlorobenzidine	< 367		µg/kg dry	367	40.6	1	"	"	"	"	"	X
120-83-2	2,4-Dichlorophenol	< 186		µg/kg dry	186	45.1	1	"	"	"	"	"	X
84-66-2	Diethyl phthalate	< 367		µg/kg dry	367	38.5	1	"	"	"	"	"	X
131-11-3	Dimethyl phthalate	< 367		µg/kg dry	367	41.3	1	"	"	"	"	"	X
105-67-9	2,4-Dimethylphenol	< 367		µg/kg dry	367	29.1	1	"	"	"	"	"	X
84-74-2	Di-n-butyl phthalate	< 367		µg/kg dry	367	39.3	1	"	"	"	"	"	X
534-52-1	4,6-Dinitro-2-methylphenol	< 367		µg/kg dry	367	52.7	1	"	"	"	"	"	X
51-28-5	2,4-Dinitrophenol	< 367		µg/kg dry	367	38.1	1	"	"	"	"	"	X
121-14-2	2,4-Dinitrotoluene	< 186		µg/kg dry	186	44.5	1	"	"	"	"	"	X
606-20-2	2,6-Dinitrotoluene	< 186		µg/kg dry	186	38.0	1	"	"	"	"	"	X
117-84-0	Di-n-octyl phthalate	< 367		µg/kg dry	367	54.7	1	"	"	"	"	"	X
206-44-0	Fluoranthene	< 74.3		µg/kg dry	74.3	43.5	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-4	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-11				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
86-73-7	Fluorene	< 74.3		µg/kg dry	74.3	48.0	1	SW846 8270D	13-Jul-20	14-Jul-20	BJJ	2001083	X
118-74-1	Hexachlorobenzene	< 186		µg/kg dry	186	46.8	1	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 186		µg/kg dry	186	46.8	1	"	"	"	"	"	X
77-47-4	Hexachlorocyclopentadiene	< 186		µg/kg dry	186	46.9	1	"	"	"	"	"	X
67-72-1	Hexachloroethane	< 186		µg/kg dry	186	42.0	1	"	"	"	"	"	X
193-39-5	Indeno (1,2,3-cd) pyrene	< 74.3		µg/kg dry	74.3	50.8	1	"	"	"	"	"	X
78-59-1	Isophorone	< 186		µg/kg dry	186	28.6	1	"	"	"	"	"	X
91-57-6	2-Methylnaphthalene	< 74.3		µg/kg dry	74.3	52.0	1	"	"	"	"	"	X
95-48-7	2-Methylphenol	< 367		µg/kg dry	367	29.5	1	"	"	"	"	"	X
108-39-4, 106-44-5	3 & 4-Methylphenol	< 367		µg/kg dry	367	28.8	1	"	"	"	"	"	X
91-20-3	Naphthalene	< 74.3		µg/kg dry	74.3	42.9	1	"	"	"	"	"	X
88-74-4	2-Nitroaniline	< 367		µg/kg dry	367	33.3	1	"	"	"	"	"	X
99-09-2	3-Nitroaniline	< 367		µg/kg dry	367	34.0	1	"	"	"	"	"	X
100-01-6	4-Nitroaniline	< 186		µg/kg dry	186	49.0	1	"	"	"	"	"	X
98-95-3	Nitrobenzene	< 186		µg/kg dry	186	43.0	1	"	"	"	"	"	X
88-75-5	2-Nitrophenol	< 186		µg/kg dry	186	32.5	1	"	"	"	"	"	X
100-02-7	4-Nitrophenol	< 1470		µg/kg dry	1470	48.9	1	"	"	"	"	"	X
62-75-9	N-Nitrosodimethylamine	< 186		µg/kg dry	186	24.3	1	"	"	"	"	"	X
621-64-7	N-Nitrosodi-n-propylamine	< 186		µg/kg dry	186	32.5	1	"	"	"	"	"	X
86-30-6	N-Nitrosodiphenylamine	< 367		µg/kg dry	367	37.4	1	"	"	"	"	"	X
87-86-5	Pentachlorophenol	< 367		µg/kg dry	367	43.8	1	"	"	"	"	"	X
85-01-8	Phenanthrene	< 74.3		µg/kg dry	74.3	42.1	1	"	"	"	"	"	X
108-95-2	Phenol	< 367		µg/kg dry	367	37.2	1	"	"	"	"	"	X
129-00-0	Pyrene	< 74.3		µg/kg dry	74.3	41.0	1	"	"	"	"	"	X
110-86-1	Pyridine	< 367		µg/kg dry	367	87.0	1	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 367		µg/kg dry	367	45.2	1	"	"	"	"	"	X
90-12-0	1-Methylnaphthalene	< 74.3		µg/kg dry	74.3	41.0	1	"	"	"	"	"	
95-95-4	2,4,5-Trichlorophenol	< 367		µg/kg dry	367	38.0	1	"	"	"	"	"	X
88-06-2	2,4,6-Trichlorophenol	< 186		µg/kg dry	186	45.4	1	"	"	"	"	"	X
82-68-8	Pentachloronitrobenzene	< 367		µg/kg dry	367	39.1	1	"	"	"	"	"	X
95-94-3	1,2,4,5-Tetrachlorobenzene	< 367		µg/kg dry	367	43.8	1	"	"	"	"	"	X
Surrogate recoveries:													
321-60-8	*2-Fluorobiphenyl*	*63*			*30-130 %*			"	"	"	"	"	
367-12-4	*2-Fluorophenol*	*78*			*30-130 %*			"	"	"	"	"	
4165-60-0	*Nitrobenzene-d5*	*74*			*30-130 %*			"	"	"	"	"	
4165-62-2	*Phenol-d5*	*86*			*30-130 %*			"	"	"	"	"	
1718-51-0	*Terphenyl-dl4*	*82*			*30-130 %*			"	"	"	"	"	
118-79-6	*2,4,6-Tribromophenol*	*74*			*30-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls Prepared by method SW846 3546													
12674-11-2	Aroclor-1016	< 21.5		µg/kg dry	21.5	15.5	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
11104-28-2	Aroclor-1221	< 21.5		µg/kg dry	21.5	6.36	1	"	"	"	"	"	X
11141-16-5	Aroclor-1232	< 21.5		µg/kg dry	21.5	5.96	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-4	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-11				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls													
53469-21-9	Aroclor-1242	< 21.5		µg/kg dry	21.5	2.04	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
12672-29-6	Aroclor-1248	< 21.5		µg/kg dry	21.5	6.72	1	"	"	"	"	"	X
11097-69-1	Aroclor-1254	< 21.5		µg/kg dry	21.5	16.7	1	"	"	"	"	"	X
11096-82-5	Aroclor-1260	< 21.5		µg/kg dry	21.5	4.62	1	"	"	"	"	"	X
37324-23-5	Aroclor-1262	< 21.5		µg/kg dry	21.5	5.01	1	"	"	"	"	"	X
11100-14-4	Aroclor-1268	< 21.5		µg/kg dry	21.5	4.58	1	"	"	"	"	"	X
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*95*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*85*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*88*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*80*			*30-150 %*			"	"	"	"	"	
Pesticides													
Organochlorine Pesticides Prepared by method SW846 3546			Z-2										
319-84-6	alpha-BHC	< 5.38		µg/kg dry	5.38	0.247	1	SW846 8081B	13-Jul-20	16-Jul-20	BJJ	2001088	X
319-85-7	beta-BHC	< 5.38		µg/kg dry	5.38	0.344	1	"	"	"	"	"	X
319-86-8	delta-BHC	< 5.38		µg/kg dry	5.38	0.280	1	"	"	"	"	"	X
58-89-9	gamma-BHC (Lindane)	< 3.23		µg/kg dry	3.23	0.570	1	"	"	"	"	"	X
76-44-8	Heptachlor	< 5.38		µg/kg dry	5.38	0.624	1	"	"	"	"	"	X
309-00-2	Aldrin	< 5.38		µg/kg dry	5.38	0.183	1	"	"	"	"	"	X
1024-57-3	Heptachlor epoxide	< 5.38		µg/kg dry	5.38	0.215	1	"	"	"	"	"	X
959-98-8	Endosulfan I	< 5.38		µg/kg dry	5.38	0.247	1	"	"	"	"	"	X
60-57-1	Dieldrin	< 5.38		µg/kg dry	5.38	0.258	1	"	"	"	"	"	X
72-55-9	4,4'-DDE (p,p')	< 5.38		µg/kg dry	5.38	0.280	1	"	"	"	"	"	X
72-20-8	Endrin	< 8.60		µg/kg dry	8.60	0.527	1	"	"	"	"	"	X
33213-65-9	Endosulfan II	< 8.60		µg/kg dry	8.60	0.344	1	"	"	"	"	"	X
72-54-8	4,4'-DDD (p,p')	< 8.60		µg/kg dry	8.60	0.452	1	"	"	"	"	"	X
1031-07-8	Endosulfan sulfate	< 8.60		µg/kg dry	8.60	0.785	1	"	"	"	"	"	X
50-29-3	4,4'-DDT (p,p')	< 8.60		µg/kg dry	8.60	3.69	1	"	"	"	"	"	X
72-43-5	Methoxychlor	< 8.60		µg/kg dry	8.60	0.581	1	"	"	"	"	"	X
53494-70-5	Endrin ketone	< 8.60		µg/kg dry	8.60	0.312	1	"	"	"	"	"	X
7421-93-4	Endrin aldehyde	< 8.60		µg/kg dry	8.60	1.36	1	"	"	"	"	"	X
5103-71-9	alpha-Chlordane	< 5.38		µg/kg dry	5.38	0.226	1	"	"	"	"	"	X
5103-74-2	gamma-Chlordane	< 5.38		µg/kg dry	5.38	0.269	1	"	"	"	"	"	X
8001-35-2	Toxaphene	< 108		µg/kg dry	108	75.9	1	"	"	"	"	"	X
57-74-9	Chlordane	< 21.5		µg/kg dry	21.5	2.71	1	"	"	"	"	"	X
15972-60-8	Alachlor	< 5.38		µg/kg dry	5.38	0.473	1	"	"	"	"	"	
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*67*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*73*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*55*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*51*			*30-150 %*			"	"	"	"	"	
Extractable Petroleum Hydrocarbons													

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-4 SC58794-11	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Extractable Petroleum Hydrocarbons													
Fingerprinting by GC Prepared by method SW846 3546													
	Total Petroleum Hydrocarbons	**118**		mg/kg dry	14.5	12.1	1	SW846 8100Mod.	14-Jul-20	15-Jul-20	BJJ	2001092	
Surrogate recoveries:													
84-15-1	*o-Terphenyl*	*76*			*40-140 %*			"	"	"	"	"	
3386-33-2	*1-Chlorooctadecane*	*102*			*40-140 %*			"	"	"	"	"	
Total Metals by EPA 6000/7000 Series Methods													
Prepared by method SW846 3050B													
7440-22-4	Silver	< 3.25		mg/kg dry	3.25	0.175	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7440-38-2	Arsenic	**20.5**		mg/kg dry	1.62	0.206	1	"	"	"	"	"	X
7440-39-3	Barium	**29.5**		mg/kg dry	1.08	0.128	1	"	"	"	"	"	X
7440-41-7	Beryllium	< 0.541		mg/kg dry	0.541	0.0272	1	"	"	"	"	"	X
7440-43-9	Cadmium	< 0.541		mg/kg dry	0.541	0.0280	1	"	"	"	"	"	X
7440-47-3	Chromium	**18.8**		mg/kg dry	1.08	0.144	1	"	"	"	"	"	X
7439-97-6	Mercury	< 0.116		mg/kg dry	0.116	0.0097	1	SW846 7471B	13-Jul-20	13-Jul-20	edt	2001079	X
Prepared by method SW846 3050B													
7440-02-0	Nickel	**20.3**		mg/kg dry	1.08	0.125	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7439-92-1	Lead	**18.6**		mg/kg dry	1.62	0.230	1	"	"	"	"	"	X
7440-36-0	Antimony	< 5.41		mg/kg dry	5.41	0.407	1	"	"	"	"	"	X
7782-49-2	Selenium	< 1.62		mg/kg dry	1.62	0.310	1	"	"	"	"	"	X
7440-28-0	Thallium	< 3.25		mg/kg dry	3.25	1.19	1	"	"	"	"	"	X
7440-62-2	Vanadium	**24.5**		mg/kg dry	1.62	0.288	1	"	"	17-Jul-20	"	"	X
7440-66-6	Zinc	**36.0**		mg/kg dry	3.25	0.838	1	"	"	15-Jul-20	"	"	X
General Chemistry Parameters													
	% Solids	**88.9**		%			1	SM2540 G (11) Mod.	10-Jul-20	14-Jul-20	PN	2001075	
Toxicity Characteristics													
	Ignitability by Definition	**Negative**		N/A			1	SW846 1030	10-Jul-20 17:23	10-Jul-20 21:00	PN	2001074	X
	pH	**5.58**	pH	pH Units			1	SW846 9045D	14-Jul-20 15:31	14-Jul-20 18:55	PN	2001081	X
Subcontracted Analyses													
Subcontracted Analyses Prepared by method SW8151A										Methylation date: 14-Jul-20			
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
93-76-5	2,4,5-T	< 80		ug/kg	80	80	10	SW8151A	14-Jul-20	15-Jul-20 17:03	M-CT007	537320A	
93-72-1	2,4,5-TP (Silvex)	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-75-7	2,4-D	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-82-6	2,4-DB	< 80		ug/kg	80	80	10	"	"	"	"	"	
75-99-0	Dalapon	< 80		ug/kg	80	80	10	"	"	"	"	"	
1918-00-9	Dicamba	< 80		ug/kg	80	80	10	"	"	"	"	"	
120-36-5	Dichloroprop	< 80		ug/kg	80	80	10	"	"	"	"	"	
88-85-7	Dinoseb	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-74-6	MCPA	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
7085-19-0	MCPP	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
Surrogate recoveries:													
19719-28-9	*% DCAA*	*92*			*30-150 %*			"	"	"	"	"	

This laboratory report is not valid without an authorized signature on the cover page.

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-4 SC58794-11	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Subcontracted Analyses													
Prepared by method SW846 7.3.3.1/90													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Cyanide	< 6		mg/kg	6	6	1	SW846 7.3.3.1/90	14-Jul-20	14-Jul-20 14:41	M-CT007	537292A	
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Sulfide	< 20		mg/kg	20	20	1	SW846 CH7	"	14-Jul-20 15:17	M-CT007	537292B	
Prepared by method SW846-React													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity	**Negative**		Pos/Neg			1	SW846-React	14-Jul-20 15:18	14-Jul-20 15:18	M-CT007	'[none]'	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-5	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-12				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
Prepared by method SW846 5035A Soil (high level)							Initial weight: 15.08 g						
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	< 66.2		µg/kg dry	66.2	36.3	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
67-64-1	Acetone	< 662		µg/kg dry	662	83.7	50	"	"	"	"	"	X
107-13-1	Acrylonitrile	< 66.2		µg/kg dry	66.2	23.9	50	"	"	"	"	"	X
71-43-2	Benzene	< 66.2		µg/kg dry	66.2	10.6	50	"	"	"	"	"	X
108-86-1	Bromobenzene	< 66.2		µg/kg dry	66.2	15.0	50	"	"	"	"	"	X
74-97-5	Bromochloromethane	< 66.2		µg/kg dry	66.2	9.47	50	"	"	"	"	"	X
75-27-4	Bromodichloromethane	< 66.2		µg/kg dry	66.2	17.1	50	"	"	"	"	"	X
75-25-2	Bromoform	< 66.2		µg/kg dry	66.2	14.2	50	"	"	"	"	"	X
74-83-9	Bromomethane	< 132		µg/kg dry	132	32.7	50	"	"	"	"	"	X
78-93-3	2-Butanone (MEK)	< 132		µg/kg dry	132	30.3	50	"	"	"	"	"	X
104-51-8	n-Butylbenzene	< 66.2		µg/kg dry	66.2	26.5	50	"	"	"	"	"	X
135-98-8	sec-Butylbenzene	< 66.2		µg/kg dry	66.2	20.3	50	"	"	"	"	"	X
98-06-6	tert-Butylbenzene	< 66.2		µg/kg dry	66.2	27.0	50	"	"	"	"	"	X
75-15-0	Carbon disulfide	< 132		µg/kg dry	132	24.5	50	"	"	"	"	"	X
56-23-5	Carbon tetrachloride	< 66.2		µg/kg dry	66.2	19.8	50	"	"	"	"	"	X
108-90-7	Chlorobenzene	< 66.2		µg/kg dry	66.2	8.02	50	"	"	"	"	"	X
75-00-3	Chloroethane	< 132		µg/kg dry	132	29.5	50	"	"	"	"	"	X
67-66-3	Chloroform	< 66.2		µg/kg dry	66.2	7.82	50	"	"	"	"	"	X
74-87-3	Chloromethane	< 132		µg/kg dry	132	78.7	50	"	"	"	"	"	X
95-49-8	2-Chlorotoluene	< 66.2		µg/kg dry	66.2	16.4	50	"	"	"	"	"	X
106-43-4	4-Chlorotoluene	< 66.2		µg/kg dry	66.2	12.0	50	"	"	"	"	"	X
96-12-8	1,2-Dibromo-3-chloropropane	< 132		µg/kg dry	132	26.2	50	"	"	"	"	"	X
124-48-1	Dibromochloromethane	< 66.2		µg/kg dry	66.2	10.5	50	"	"	"	"	"	X
106-93-4	1,2-Dibromoethane (EDB)	< 66.2		µg/kg dry	66.2	18.0	50	"	"	"	"	"	X
74-95-3	Dibromomethane	< 66.2		µg/kg dry	66.2	12.5	50	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 66.2		µg/kg dry	66.2	11.9	50	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 66.2		µg/kg dry	66.2	16.5	50	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 66.2		µg/kg dry	66.2	11.9	50	"	"	"	"	"	X
75-71-8	Dichlorodifluoromethane (Freon12)	< 132		µg/kg dry	132	86.6	50	"	"	"	"	"	X
75-34-3	1,1-Dichloroethane	< 66.2		µg/kg dry	66.2	15.3	50	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 66.2		µg/kg dry	66.2	17.4	50	"	"	"	"	"	X
75-35-4	1,1-Dichloroethene	< 66.2		µg/kg dry	66.2	17.0	50	"	"	"	"	"	X
156-59-2	cis-1,2-Dichloroethene	< 66.2		µg/kg dry	66.2	22.1	50	"	"	"	"	"	X
156-60-5	trans-1,2-Dichloroethene	< 66.2		µg/kg dry	66.2	15.1	50	"	"	"	"	"	X
78-87-5	1,2-Dichloropropane	< 66.2		µg/kg dry	66.2	23.0	50	"	"	"	"	"	X
142-28-9	1,3-Dichloropropane	< 66.2		µg/kg dry	66.2	20.9	50	"	"	"	"	"	X
594-20-7	2,2-Dichloropropane	< 66.2		µg/kg dry	66.2	17.4	50	"	"	"	"	"	X
563-58-6	1,1-Dichloropropene	< 66.2		µg/kg dry	66.2	20.3	50	"	"	"	"	"	X
10061-01-5	cis-1,3-Dichloropropene	< 66.2		µg/kg dry	66.2	15.6	50	"	"	"	"	"	X
10061-02-6	trans-1,3-Dichloropropene	< 66.2		µg/kg dry	66.2	27.0	50	"	"	"	"	"	X
100-41-4	Ethylbenzene	< 66.2		µg/kg dry	66.2	13.8	50	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 66.2		µg/kg dry	66.2	21.2	50	"	"	"	"	"	X
591-78-6	2-Hexanone (MBK)	< 132		µg/kg dry	132	44.1	50	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-5	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-12				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
							Initial weight: 15.08 g						
98-82-8	Isopropylbenzene	< 66.2		µg/kg dry	66.2	24.0	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
99-87-6	4-Isopropyltoluene	< 66.2		µg/kg dry	66.2	18.3	50	"	"	"	"	"	X
1634-04-4	Methyl tert-butyl ether	< 66.2		µg/kg dry	66.2	19.9	50	"	"	"	"	"	X
108-10-1	4-Methyl-2-pentanone (MIBK)	< 132		µg/kg dry	132	47.4	50	"	"	"	"	"	X
75-09-2	Methylene chloride	< 132		µg/kg dry	132	56.6	50	"	"	"	"	"	X
91-20-3	Naphthalene	< 66.2		µg/kg dry	66.2	19.2	50	"	"	"	"	"	X
103-65-1	n-Propylbenzene	< 66.2		µg/kg dry	66.2	16.5	50	"	"	"	"	"	X
100-42-5	Styrene	< 66.2		µg/kg dry	66.2	8.74	50	"	"	"	"	"	X
630-20-6	1,1,1,2-Tetrachloroethane	< 66.2		µg/kg dry	66.2	16.0	50	"	"	"	"	"	X
79-34-5	1,1,2,2-Tetrachloroethane	< 66.2		µg/kg dry	66.2	21.0	50	"	"	"	"	"	X
127-18-4	Tetrachloroethene	< 66.2		µg/kg dry	66.2	20.9	50	"	"	"	"	"	X
108-88-3	Toluene	< 66.2		µg/kg dry	66.2	10.7	50	"	"	"	"	"	X
87-61-6	1,2,3-Trichlorobenzene	< 66.2		µg/kg dry	66.2	15.4	50	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 66.2		µg/kg dry	66.2	10.9	50	"	"	"	"	"	X
108-70-3	1,3,5-Trichlorobenzene	< 66.2		µg/kg dry	66.2	10.5	50	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	< 66.2		µg/kg dry	66.2	16.0	50	"	"	"	"	"	X
79-00-5	1,1,2-Trichloroethane	< 66.2		µg/kg dry	66.2	20.5	50	"	"	"	"	"	X
79-01-6	Trichloroethene	< 66.2		µg/kg dry	66.2	11.3	50	"	"	"	"	"	X
75-69-4	Trichlorofluoromethane (Freon 11)	< 66.2		µg/kg dry	66.2	29.9	50	"	"	"	"	"	X
96-18-4	1,2,3-Trichloropropane	< 66.2		µg/kg dry	66.2	30.5	50	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	< 66.2		µg/kg dry	66.2	16.8	50	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	< 66.2		µg/kg dry	66.2	13.8	50	"	"	"	"	"	X
75-01-4	Vinyl chloride	< 66.2		µg/kg dry	66.2	32.6	50	"	"	"	"	"	X
179601-23-1	m,p-Xylene	< 132		µg/kg dry	132	39.0	50	"	"	"	"	"	X
95-47-6	o-Xylene	< 66.2		µg/kg dry	66.2	20.4	50	"	"	"	"	"	X
109-99-9	Tetrahydrofuran	< 132		µg/kg dry	132	48.4	50	"	"	"	"	"	
60-29-7	Ethyl ether	< 66.2		µg/kg dry	66.2	18.0	50	"	"	"	"	"	X
994-05-8	Tert-amyl methyl ether	< 66.2		µg/kg dry	66.2	36.6	50	"	"	"	"	"	
637-92-3	Ethyl tert-butyl ether	< 66.2		µg/kg dry	66.2	18.3	50	"	"	"	"	"	
108-20-3	Di-isopropyl ether	< 66.2		µg/kg dry	66.2	21.4	50	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	< 1320		µg/kg dry	1320	941	50	"	"	"	"	"	X
123-91-1	1,4-Dioxane	< 1320		µg/kg dry	1320	390	50	"	"	"	"	"	X
110-57-6	trans-1,4-Dichloro-2-buten e	< 331		µg/kg dry	331	43.7	50	"	"	"	"	"	X
64-17-5	Ethanol	< 13200		µg/kg dry	13200	1140	50	"	"	"	"	"	
Surrogate recoveries:													
460-00-4	*4-Bromofluorobenzene*	*104*			*70-130 %*			"	"	"	"	"	
2037-26-5	*Toluene-d8*	*102*			*70-130 %*			"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*105*			*70-130 %*			"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*104*			*70-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds Prepared by method SW846 3546													
83-32-9	Acenaphthene	< 76.7		µg/kg dry	76.7	40.7	1	SW846 8270D	13-Jul-20	14-Jul-20	BJJ	2001083	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-5	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-12				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
208-96-8	Acenaphthylene	< 76.7		µg/kg dry	76.7	40.0	1	SW846 8270D	13-Jul-20	14-Jul-20	BJJ	2001083	X
62-53-3	Aniline	< 379		µg/kg dry	379	24.1	1	"	"	"	"	"	X
120-12-7	Anthracene	< 76.7		µg/kg dry	76.7	44.2	1	"	"	"	"	"	X
103-33-3	Azobenzene/Diphenyldiazene	< 379		µg/kg dry	379	41.2	1	"	"	"	"	"	
92-87-5	Benzidine	< 759		µg/kg dry	759	24.1	1	"	"	"	"	"	X
56-55-3	Benzo (a) anthracene	< 76.7		µg/kg dry	76.7	43.1	1	"	"	"	"	"	X
50-32-8	Benzo (a) pyrene	< 76.7		µg/kg dry	76.7	52.4	1	"	"	"	"	"	X
205-99-2	Benzo (b) fluoranthene	< 76.7		µg/kg dry	76.7	57.7	1	"	"	"	"	"	X
191-24-2	Benzo (g,h,i) perylene	< 76.7		µg/kg dry	76.7	54.2	1	"	"	"	"	"	X
207-08-9	Benzo (k) fluoranthene	< 76.7		µg/kg dry	76.7	65.5	1	"	"	"	"	"	X
65-85-0	Benzoic acid	< 379		µg/kg dry	379	22.8	1	"	"	"	"	"	X
100-51-6	Benzyl alcohol	< 379		µg/kg dry	379	87.9	1	"	"	"	"	"	X
111-91-1	Bis(2-chloroethoxy)methane	< 379		µg/kg dry	379	38.3	1	"	"	"	"	"	X
111-44-4	Bis(2-chloroethyl)ether	< 192		µg/kg dry	192	35.5	1	"	"	"	"	"	X
108-60-1	Bis(2-chloroisopropyl)ether	< 192		µg/kg dry	192	30.8	1	"	"	"	"	"	X
117-81-7	Bis(2-ethylhexyl)phthalate	< 192		µg/kg dry	192	48.9	1	"	"	"	"	"	X
101-55-3	4-Bromophenyl phenyl ether	< 379		µg/kg dry	379	42.9	1	"	"	"	"	"	X
85-68-7	Butyl benzyl phthalate	< 379		µg/kg dry	379	38.1	1	"	"	"	"	"	X
86-74-8	Carbazole	< 192		µg/kg dry	192	44.2	1	"	"	"	"	"	X
59-50-7	4-Chloro-3-methylphenol	< 379		µg/kg dry	379	44.6	1	"	"	"	"	"	X
106-47-8	4-Chloroaniline	< 192		µg/kg dry	192	23.7	1	"	"	"	"	"	X
91-58-7	2-Chloronaphthalene	< 379		µg/kg dry	379	52.0	1	"	"	"	"	"	X
95-57-8	2-Chlorophenol	< 192		µg/kg dry	192	36.8	1	"	"	"	"	"	X
7005-72-3	4-Chlorophenyl phenyl ether	< 379		µg/kg dry	379	37.1	1	"	"	"	"	"	X
218-01-9	Chrysene	< 76.7		µg/kg dry	76.7	43.4	1	"	"	"	"	"	X
53-70-3	Dibenzo (a,h) anthracene	< 76.7		µg/kg dry	76.7	56.7	1	"	"	"	"	"	X
132-64-9	Dibenzofuran	< 192		µg/kg dry	192	51.6	1	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 379		µg/kg dry	379	45.3	1	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 379		µg/kg dry	379	40.9	1	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 379		µg/kg dry	379	43.1	1	"	"	"	"	"	X
91-94-1	3,3´-Dichlorobenzidine	< 379		µg/kg dry	379	42.0	1	"	"	"	"	"	X
120-83-2	2,4-Dichlorophenol	< 192		µg/kg dry	192	46.6	1	"	"	"	"	"	X
84-66-2	Diethyl phthalate	< 379		µg/kg dry	379	39.8	1	"	"	"	"	"	X
131-11-3	Dimethyl phthalate	< 379		µg/kg dry	379	42.7	1	"	"	"	"	"	X
105-67-9	2,4-Dimethylphenol	< 379		µg/kg dry	379	30.0	1	"	"	"	"	"	X
84-74-2	Di-n-butyl phthalate	< 379		µg/kg dry	379	40.6	1	"	"	"	"	"	X
534-52-1	4,6-Dinitro-2-methylphenol	< 379		µg/kg dry	379	54.4	1	"	"	"	"	"	X
51-28-5	2,4-Dinitrophenol	< 379		µg/kg dry	379	39.3	1	"	"	"	"	"	X
121-14-2	2,4-Dinitrotoluene	< 192		µg/kg dry	192	46.0	1	"	"	"	"	"	X
606-20-2	2,6-Dinitrotoluene	< 192		µg/kg dry	192	39.2	1	"	"	"	"	"	X
117-84-0	Di-n-octyl phthalate	< 379		µg/kg dry	379	56.5	1	"	"	"	"	"	X
206-44-0	Fluoranthene	< 76.7		µg/kg dry	76.7	45.0	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-5	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-12				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
86-73-7	Fluorene	< 76.7		µg/kg dry	76.7	49.6	1	SW846 8270D	13-Jul-20	14-Jul-20	BJJ	2001083	X
118-74-1	Hexachlorobenzene	< 192		µg/kg dry	192	48.3	1	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 192		µg/kg dry	192	48.3	1	"	"	"	"	"	X
77-47-4	Hexachlorocyclopentadiene	< 192		µg/kg dry	192	48.4	1	"	"	"	"	"	X
67-72-1	Hexachloroethane	< 192		µg/kg dry	192	43.4	1	"	"	"	"	"	X
193-39-5	Indeno (1,2,3-cd) pyrene	< 76.7		µg/kg dry	76.7	52.4	1	"	"	"	"	"	X
78-59-1	Isophorone	< 192		µg/kg dry	192	29.6	1	"	"	"	"	"	X
91-57-6	2-Methylnaphthalene	< 76.7		µg/kg dry	76.7	53.7	1	"	"	"	"	"	X
95-48-7	2-Methylphenol	< 379		µg/kg dry	379	30.5	1	"	"	"	"	"	X
108-39-4, 106-44-5	3 & 4-Methylphenol	< 379		µg/kg dry	379	29.8	1	"	"	"	"	"	X
91-20-3	Naphthalene	< 76.7		µg/kg dry	76.7	44.3	1	"	"	"	"	"	X
88-74-4	2-Nitroaniline	< 379		µg/kg dry	379	34.4	1	"	"	"	"	"	X
99-09-2	3-Nitroaniline	< 379		µg/kg dry	379	35.1	1	"	"	"	"	"	X
100-01-6	4-Nitroaniline	< 192		µg/kg dry	192	50.6	1	"	"	"	"	"	X
98-95-3	Nitrobenzene	< 192		µg/kg dry	192	44.4	1	"	"	"	"	"	X
88-75-5	2-Nitrophenol	< 192		µg/kg dry	192	33.6	1	"	"	"	"	"	X
100-02-7	4-Nitrophenol	< 1520		µg/kg dry	1520	50.5	1	"	"	"	"	"	X
62-75-9	N-Nitrosodimethylamine	< 192		µg/kg dry	192	25.1	1	"	"	"	"	"	X
621-64-7	N-Nitrosodi-n-propylamine	< 192		µg/kg dry	192	33.6	1	"	"	"	"	"	X
86-30-6	N-Nitrosodiphenylamine	< 379		µg/kg dry	379	38.6	1	"	"	"	"	"	X
87-86-5	Pentachlorophenol	< 379		µg/kg dry	379	45.2	1	"	"	"	"	"	X
85-01-8	Phenanthrene	< 76.7		µg/kg dry	76.7	43.5	1	"	"	"	"	"	X
108-95-2	Phenol	< 379		µg/kg dry	379	38.4	1	"	"	"	"	"	X
129-00-0	Pyrene	< 76.7		µg/kg dry	76.7	42.3	1	"	"	"	"	"	X
110-86-1	Pyridine	< 379		µg/kg dry	379	89.8	1	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 379		µg/kg dry	379	46.7	1	"	"	"	"	"	X
90-12-0	1-Methylnaphthalene	< 76.7		µg/kg dry	76.7	42.3	1	"	"	"	"	"	
95-95-4	2,4,5-Trichlorophenol	< 379		µg/kg dry	379	39.2	1	"	"	"	"	"	X
88-06-2	2,4,6-Trichlorophenol	< 192		µg/kg dry	192	46.9	1	"	"	"	"	"	X
82-68-8	Pentachloronitrobenzene	< 379		µg/kg dry	379	40.4	1	"	"	"	"	"	X
95-94-3	1,2,4,5-Tetrachlorobenzene	< 379		µg/kg dry	379	45.2	1	"	"	"	"	"	X
Surrogate recoveries:													
321-60-8	*2-Fluorobiphenyl*	*79*			*30-130 %*			"	"	"	"	"	
367-12-4	*2-Fluorophenol*	*91*			*30-130 %*			"	"	"	"	"	
4165-60-0	*Nitrobenzene-d5*	*75*			*30-130 %*			"	"	"	"	"	
4165-62-2	*Phenol-d5*	*95*			*30-130 %*			"	"	"	"	"	
1718-51-0	*Terphenyl-dl4*	*90*			*30-130 %*			"	"	"	"	"	
118-79-6	*2,4,6-Tribromophenol*	*81*			*30-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls Prepared by method SW846 3546													
12674-11-2	Aroclor-1016	< 23.0		µg/kg dry	23.0	16.6	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
11104-28-2	Aroclor-1221	< 23.0		µg/kg dry	23.0	6.81	1	"	"	"	"	"	X
11141-16-5	Aroclor-1232	< 23.0		µg/kg dry	23.0	6.38	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-5	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-12				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls													
53469-21-9	Aroclor-1242	< 23.0		µg/kg dry	23.0	2.19	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
12672-29-6	Aroclor-1248	< 23.0		µg/kg dry	23.0	7.20	1	"	"	"	"	"	X
11097-69-1	Aroclor-1254	< 23.0		µg/kg dry	23.0	17.9	1	"	"	"	"	"	X
11096-82-5	Aroclor-1260	< 23.0		µg/kg dry	23.0	4.95	1	"	"	"	"	"	X
37324-23-5	Aroclor-1262	< 23.0		µg/kg dry	23.0	5.37	1	"	"	"	"	"	X
11100-14-4	Aroclor-1268	< 23.0		µg/kg dry	23.0	4.91	1	"	"	"	"	"	X
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*94*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*84*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*84*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*77*			*30-150 %*			"	"	"	"	"	
Pesticides													
Organochlorine Pesticides Prepared by method SW846 3546			Z-2										
319-84-6	alpha-BHC	< 5.76		µg/kg dry	5.76	0.265	1	SW846 8081B	13-Jul-20	16-Jul-20	BJJ	2001088	X
319-85-7	beta-BHC	< 5.76		µg/kg dry	5.76	0.369	1	"	"	"	"	"	X
319-86-8	delta-BHC	< 5.76		µg/kg dry	5.76	0.299	1	"	"	"	"	"	X
58-89-9	gamma-BHC (Lindane)	< 3.46		µg/kg dry	3.46	0.610	1	"	"	"	"	"	X
76-44-8	Heptachlor	< 5.76		µg/kg dry	5.76	0.668	1	"	"	"	"	"	X
309-00-2	Aldrin	< 5.76		µg/kg dry	5.76	0.196	1	"	"	"	"	"	X
1024-57-3	Heptachlor epoxide	< 5.76		µg/kg dry	5.76	0.230	1	"	"	"	"	"	X
959-98-8	Endosulfan I	< 5.76		µg/kg dry	5.76	0.265	1	"	"	"	"	"	X
60-57-1	Dieldrin	< 5.76		µg/kg dry	5.76	0.276	1	"	"	"	"	"	X
72-55-9	4,4'-DDE (p,p')	< 5.76		µg/kg dry	5.76	0.299	1	"	"	"	"	"	X
72-20-8	Endrin	< 9.21		µg/kg dry	9.21	0.564	1	"	"	"	"	"	X
33213-65-9	Endosulfan II	< 9.21		µg/kg dry	9.21	0.369	1	"	"	"	"	"	X
72-54-8	4,4'-DDD (p,p')	< 9.21		µg/kg dry	9.21	0.484	1	"	"	"	"	"	X
1031-07-8	Endosulfan sulfate	< 9.21		µg/kg dry	9.21	0.841	1	"	"	"	"	"	X
50-29-3	4,4'-DDT (p,p')	< 9.21		µg/kg dry	9.21	3.95	1	"	"	"	"	"	X
72-43-5	Methoxychlor	< 9.21		µg/kg dry	9.21	0.622	1	"	"	"	"	"	X
53494-70-5	Endrin ketone	< 9.21		µg/kg dry	9.21	0.334	1	"	"	"	"	"	X
7421-93-4	Endrin aldehyde	< 9.21		µg/kg dry	9.21	1.45	1	"	"	"	"	"	X
5103-71-9	alpha-Chlordane	< 5.76		µg/kg dry	5.76	0.242	1	"	"	"	"	"	X
5103-74-2	gamma-Chlordane	< 5.76		µg/kg dry	5.76	0.288	1	"	"	"	"	"	X
8001-35-2	Toxaphene	< 115		µg/kg dry	115	81.3	1	"	"	"	"	"	X
57-74-9	Chlordane	< 23.0		µg/kg dry	23.0	2.90	1	"	"	"	"	"	X
15972-60-8	Alachlor	< 5.76		µg/kg dry	5.76	0.507	1	"	"	"	"	"	
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*75*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*75*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*61*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*58*			*30-150 %*			"	"	"	"	"	
Extractable Petroleum Hydrocarbons													

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-5 SC58794-12	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Extractable Petroleum Hydrocarbons													
Fingerprinting by GC Prepared by method SW846 3546													
	Total Petroleum Hydrocarbons	**106**		mg/kg dry	15.4	12.9	1	SW846 8100Mod.	14-Jul-20	15-Jul-20	BJJ	2001092	
Surrogate recoveries:													
84-15-1	*o-Terphenyl*	*64*			*40-140 %*			"	"	"	"	"	
3386-33-2	*1-Chlorooctadecane*	*86*			*40-140 %*			"	"	"	"	"	
Total Metals by EPA 6000/7000 Series Methods													
Prepared by method SW846 3050B													
7440-22-4	Silver	< 3.76		mg/kg dry	3.76	0.203	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7440-38-2	Arsenic	**53.4**		mg/kg dry	1.88	0.238	1	"	"	"	"	"	X
7440-39-3	Barium	**30.3**		mg/kg dry	1.25	0.148	1	"	"	"	"	"	X
7440-41-7	Beryllium	< 0.627		mg/kg dry	0.627	0.0315	1	"	"	"	"	"	X
7440-43-9	Cadmium	< 0.627		mg/kg dry	0.627	0.0325	1	"	"	"	"	"	X
7440-47-3	Chromium	**25.0**		mg/kg dry	1.25	0.167	1	"	"	"	"	"	X
7439-97-6	Mercury	< 0.103		mg/kg dry	0.103	0.0086	1	SW846 7471B	13-Jul-20	13-Jul-20	edt	2001079	X
Prepared by method SW846 3050B													
7440-02-0	Nickel	**46.2**		mg/kg dry	1.25	0.144	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7439-92-1	Lead	**17.0**		mg/kg dry	1.88	0.266	1	"	"	"	"	"	X
7440-36-0	Antimony	< 6.27		mg/kg dry	6.27	0.471	1	"	"	"	"	"	X
7782-49-2	Selenium	< 1.88		mg/kg dry	1.88	0.359	1	"	"	"	"	"	X
7440-28-0	Thallium	< 3.76		mg/kg dry	3.76	1.38	1	"	"	"	"	"	X
7440-62-2	Vanadium	**33.9**		mg/kg dry	1.88	0.333	1	"	"	17-Jul-20	"	"	X
7440-66-6	Zinc	**52.1**		mg/kg dry	3.76	0.970	1	"	"	15-Jul-20	"	"	X
General Chemistry Parameters													
	% Solids	**85.8**		%			1	SM2540 G (11) Mod.	10-Jul-20	14-Jul-20	PN	2001075	
Toxicity Characteristics													
	Ignitability by Definition	**Negative**		N/A			1	SW846 1030	10-Jul-20 17:23	10-Jul-20 21:00	PN	2001074	X
	pH	**5.57**	pH	pH Units			1	SW846 9045D	14-Jul-20 15:31	14-Jul-20 18:55	PN	2001081	X
Subcontracted Analyses													
Subcontracted Analyses Prepared by method SW8151A										Methylation date: 14-Jul-20			
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
93-76-5	2,4,5-T	< 80		ug/kg	80	80	10	SW8151A	14-Jul-20	15-Jul-20 17:27	M-CT007	537320A	
93-72-1	2,4,5-TP (Silvex)	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-75-7	2,4-D	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-82-6	2,4-DB	< 80		ug/kg	80	80	10	"	"	"	"	"	
75-99-0	Dalapon	< 80		ug/kg	80	80	10	"	"	"	"	"	
1918-00-9	Dicamba	< 80		ug/kg	80	80	10	"	"	"	"	"	
120-36-5	Dichloroprop	< 80		ug/kg	80	80	10	"	"	"	"	"	
88-85-7	Dinoseb	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-74-6	MCPA	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
7085-19-0	MCPP	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
Surrogate recoveries:													
19719-28-9	*% DCAA*	*80*			*30-150 %*			"	"	"	"	"	

This laboratory report is not valid without an authorized signature on the cover page.

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-5 SC58794-12	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Subcontracted Analyses													
Prepared by method SW846 7.3.3.1/90													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Cyanide	< 6		mg/kg	6	6	1	SW846 7.3.3.1/90	14-Jul-20	14-Jul-20 14:42	M-CT007	537292A	
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Sulfide	< 20		mg/kg	20	20	1	SW846 CH7	"	14-Jul-20 15:17	M-CT007	537292B	
Prepared by method SW846-React													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity	**Negative**		Pos/Neg			1	SW846-React	14-Jul-20 15:18	14-Jul-20 15:18	M-CT007	'[none]'	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-6	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-13				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
Prepared by method SW846 5035A Soil (high level)							Initial weight: 16.85 g						
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	< 52.1		µg/kg dry	52.1	28.6	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
67-64-1	Acetone	< 521		µg/kg dry	521	65.9	50	"	"	"	"	"	X
107-13-1	Acrylonitrile	< 52.1		µg/kg dry	52.1	18.8	50	"	"	"	"	"	X
71-43-2	Benzene	< 52.1		µg/kg dry	52.1	8.34	50	"	"	"	"	"	X
108-86-1	Bromobenzene	< 52.1		µg/kg dry	52.1	11.8	50	"	"	"	"	"	X
74-97-5	Bromochloromethane	< 52.1		µg/kg dry	52.1	7.45	50	"	"	"	"	"	X
75-27-4	Bromodichloromethane	< 52.1		µg/kg dry	52.1	13.4	50	"	"	"	"	"	X
75-25-2	Bromoform	< 52.1		µg/kg dry	52.1	11.2	50	"	"	"	"	"	X
74-83-9	Bromomethane	< 104		µg/kg dry	104	25.7	50	"	"	"	"	"	X
78-93-3	2-Butanone (MEK)	< 104		µg/kg dry	104	23.8	50	"	"	"	"	"	X
104-51-8	n-Butylbenzene	< 52.1		µg/kg dry	52.1	20.8	50	"	"	"	"	"	X
135-98-8	sec-Butylbenzene	< 52.1		µg/kg dry	52.1	16.0	50	"	"	"	"	"	X
98-06-6	tert-Butylbenzene	< 52.1		µg/kg dry	52.1	21.3	50	"	"	"	"	"	X
75-15-0	Carbon disulfide	< 104		µg/kg dry	104	19.3	50	"	"	"	"	"	X
56-23-5	Carbon tetrachloride	< 52.1		µg/kg dry	52.1	15.6	50	"	"	"	"	"	X
108-90-7	Chlorobenzene	< 52.1		µg/kg dry	52.1	6.30	50	"	"	"	"	"	X
75-00-3	Chloroethane	< 104		µg/kg dry	104	23.2	50	"	"	"	"	"	X
67-66-3	Chloroform	< 52.1		µg/kg dry	52.1	6.15	50	"	"	"	"	"	X
74-87-3	Chloromethane	< 104		µg/kg dry	104	61.9	50	"	"	"	"	"	X
95-49-8	2-Chlorotoluene	< 52.1		µg/kg dry	52.1	12.9	50	"	"	"	"	"	X
106-43-4	4-Chlorotoluene	< 52.1		µg/kg dry	52.1	9.43	50	"	"	"	"	"	X
96-12-8	1,2-Dibromo-3-chloropropane	< 104		µg/kg dry	104	20.6	50	"	"	"	"	"	X
124-48-1	Dibromochloromethane	< 52.1		µg/kg dry	52.1	8.23	50	"	"	"	"	"	X
106-93-4	1,2-Dibromoethane (EDB)	< 52.1		µg/kg dry	52.1	14.2	50	"	"	"	"	"	X
74-95-3	Dibromomethane	< 52.1		µg/kg dry	52.1	9.80	50	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 52.1		µg/kg dry	52.1	9.38	50	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 52.1		µg/kg dry	52.1	13.0	50	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 52.1		µg/kg dry	52.1	9.33	50	"	"	"	"	"	X
75-71-8	Dichlorodifluoromethane (Freon12)	< 104		µg/kg dry	104	68.2	50	"	"	"	"	"	X
75-34-3	1,1-Dichloroethane	< 52.1		µg/kg dry	52.1	12.0	50	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 52.1		µg/kg dry	52.1	13.7	50	"	"	"	"	"	X
75-35-4	1,1-Dichloroethene	< 52.1		µg/kg dry	52.1	13.3	50	"	"	"	"	"	X
156-59-2	cis-1,2-Dichloroethene	< 52.1		µg/kg dry	52.1	17.4	50	"	"	"	"	"	X
156-60-5	trans-1,2-Dichloroethene	< 52.1		µg/kg dry	52.1	11.9	50	"	"	"	"	"	X
78-87-5	1,2-Dichloropropane	< 52.1		µg/kg dry	52.1	18.1	50	"	"	"	"	"	X
142-28-9	1,3-Dichloropropane	< 52.1		µg/kg dry	52.1	16.5	50	"	"	"	"	"	X
594-20-7	2,2-Dichloropropane	< 52.1		µg/kg dry	52.1	13.7	50	"	"	"	"	"	X
563-58-6	1,1-Dichloropropene	< 52.1		µg/kg dry	52.1	15.9	50	"	"	"	"	"	X
10061-01-5	cis-1,3-Dichloropropene	< 52.1		µg/kg dry	52.1	12.3	50	"	"	"	"	"	X
10061-02-6	trans-1,3-Dichloropropene	< 52.1		µg/kg dry	52.1	21.2	50	"	"	"	"	"	X
100-41-4	Ethylbenzene	< 52.1		µg/kg dry	52.1	10.9	50	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 52.1		µg/kg dry	52.1	16.7	50	"	"	"	"	"	X
591-78-6	2-Hexanone (MBK)	< 104		µg/kg dry	104	34.6	50	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-6	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-13				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
							Initial weight: 16.85 g						
98-82-8	Isopropylbenzene	< 52.1		µg/kg dry	52.1	18.9	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
99-87-6	4-Isopropyltoluene	< 52.1		µg/kg dry	52.1	14.4	50	"	"	"	"	"	X
1634-04-4	Methyl tert-butyl ether	< 52.1		µg/kg dry	52.1	15.7	50	"	"	"	"	"	X
108-10-1	4-Methyl-2-pentanone (MIBK)	< 104		µg/kg dry	104	37.3	50	"	"	"	"	"	X
75-09-2	Methylene chloride	< 104		µg/kg dry	104	44.5	50	"	"	"	"	"	X
91-20-3	Naphthalene	< 52.1		µg/kg dry	52.1	15.1	50	"	"	"	"	"	X
103-65-1	n-Propylbenzene	< 52.1		µg/kg dry	52.1	13.0	50	"	"	"	"	"	X
100-42-5	Styrene	< 52.1		µg/kg dry	52.1	6.88	50	"	"	"	"	"	X
630-20-6	1,1,1,2-Tetrachloroethane	< 52.1		µg/kg dry	52.1	12.6	50	"	"	"	"	"	X
79-34-5	1,1,2,2-Tetrachloroethane	< 52.1		µg/kg dry	52.1	16.5	50	"	"	"	"	"	X
127-18-4	Tetrachloroethene	< 52.1		µg/kg dry	52.1	16.4	50	"	"	"	"	"	X
108-88-3	Toluene	< 52.1		µg/kg dry	52.1	8.39	50	"	"	"	"	"	X
87-61-6	1,2,3-Trichlorobenzene	< 52.1		µg/kg dry	52.1	12.1	50	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 52.1		µg/kg dry	52.1	8.60	50	"	"	"	"	"	X
108-70-3	1,3,5-Trichlorobenzene	< 52.1		µg/kg dry	52.1	8.23	50	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	< 52.1		µg/kg dry	52.1	12.6	50	"	"	"	"	"	X
79-00-5	1,1,2-Trichloroethane	< 52.1		µg/kg dry	52.1	16.1	50	"	"	"	"	"	X
79-01-6	Trichloroethene	< 52.1		µg/kg dry	52.1	8.91	50	"	"	"	"	"	X
75-69-4	Trichlorofluoromethane (Freon 11)	< 52.1		µg/kg dry	52.1	23.6	50	"	"	"	"	"	X
96-18-4	1,2,3-Trichloropropane	< 52.1		µg/kg dry	52.1	24.0	50	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	< 52.1		µg/kg dry	52.1	13.2	50	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	< 52.1		µg/kg dry	52.1	10.9	50	"	"	"	"	"	X
75-01-4	Vinyl chloride	< 52.1		µg/kg dry	52.1	25.6	50	"	"	"	"	"	X
179601-23-1	m,p-Xylene	< 104		µg/kg dry	104	30.6	50	"	"	"	"	"	X
95-47-6	o-Xylene	< 52.1		µg/kg dry	52.1	16.0	50	"	"	"	"	"	X
109-99-9	Tetrahydrofuran	< 104		µg/kg dry	104	38.1	50	"	"	"	"	"	
60-29-7	Ethyl ether	< 52.1		µg/kg dry	52.1	14.1	50	"	"	"	"	"	X
994-05-8	Tert-amyl methyl ether	< 52.1		µg/kg dry	52.1	28.8	50	"	"	"	"	"	
637-92-3	Ethyl tert-butyl ether	< 52.1		µg/kg dry	52.1	14.4	50	"	"	"	"	"	
108-20-3	Di-isopropyl ether	< 52.1		µg/kg dry	52.1	16.8	50	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	< 1040		µg/kg dry	1040	740	50	"	"	"	"	"	X
123-91-1	1,4-Dioxane	< 1040		µg/kg dry	1040	307	50	"	"	"	"	"	X
110-57-6	trans-1,4-Dichloro-2-buten e	< 261		µg/kg dry	261	34.4	50	"	"	"	"	"	X
64-17-5	Ethanol	< 10400		µg/kg dry	10400	898	50	"	"	"	"	"	
Surrogate recoveries:													
460-00-4	*4-Bromofluorobenzene*	*105*			*70-130 %*			"	"	"	"	"	
2037-26-5	*Toluene-d8*	*105*			*70-130 %*			"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*105*			*70-130 %*			"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*105*			*70-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds Prepared by method SW846 3546													
83-32-9	Acenaphthene	< 71.1		µg/kg dry	71.1	37.7	1	SW846 8270D	13-Jul-20	14-Jul-20	BJJ	2001083	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-6	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-13				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
208-96-8	Acenaphthylene	< 71.1		µg/kg dry	71.1	37.1	1	SW846 8270D	13-Jul-20	14-Jul-20	BJJ	2001083	X
62-53-3	Aniline	< 352		µg/kg dry	352	22.4	1	"	"	"	"	"	X
120-12-7	Anthracene	< 71.1		µg/kg dry	71.1	40.9	1	"	"	"	"	"	X
103-33-3	Azobenzene/Diphenyldiazene	< 352		µg/kg dry	352	38.2	1	"	"	"	"	"	
92-87-5	Benzidine	< 704		µg/kg dry	704	22.4	1	"	"	"	"	"	X
56-55-3	Benzo (a) anthracene	< 71.1		µg/kg dry	71.1	40.0	1	"	"	"	"	"	X
50-32-8	Benzo (a) pyrene	< 71.1		µg/kg dry	71.1	48.6	1	"	"	"	"	"	X
205-99-2	Benzo (b) fluoranthene	< 71.1		µg/kg dry	71.1	53.5	1	"	"	"	"	"	X
191-24-2	Benzo (g,h,i) perylene	< 71.1		µg/kg dry	71.1	50.2	1	"	"	"	"	"	X
207-08-9	Benzo (k) fluoranthene	< 71.1		µg/kg dry	71.1	60.8	1	"	"	"	"	"	X
65-85-0	Benzoic acid	< 352		µg/kg dry	352	21.1	1	"	"	"	"	"	X
100-51-6	Benzyl alcohol	< 352		µg/kg dry	352	81.5	1	"	"	"	"	"	X
111-91-1	Bis(2-chloroethoxy)methane	< 352		µg/kg dry	352	35.5	1	"	"	"	"	"	X
111-44-4	Bis(2-chloroethyl)ether	< 178		µg/kg dry	178	33.0	1	"	"	"	"	"	X
108-60-1	Bis(2-chloroisopropyl)ether	< 178		µg/kg dry	178	28.6	1	"	"	"	"	"	X
117-81-7	Bis(2-ethylhexyl)phthalate	< 178		µg/kg dry	178	45.3	1	"	"	"	"	"	X
101-55-3	4-Bromophenyl phenyl ether	< 352		µg/kg dry	352	39.8	1	"	"	"	"	"	X
85-68-7	Butyl benzyl phthalate	< 352		µg/kg dry	352	35.3	1	"	"	"	"	"	X
86-74-8	Carbazole	< 178		µg/kg dry	178	40.9	1	"	"	"	"	"	X
59-50-7	4-Chloro-3-methylphenol	< 352		µg/kg dry	352	41.4	1	"	"	"	"	"	X
106-47-8	4-Chloroaniline	< 178		µg/kg dry	178	22.0	1	"	"	"	"	"	X
91-58-7	2-Chloronaphthalene	< 352		µg/kg dry	352	48.2	1	"	"	"	"	"	X
95-57-8	2-Chlorophenol	< 178		µg/kg dry	178	34.1	1	"	"	"	"	"	X
7005-72-3	4-Chlorophenyl phenyl ether	< 352		µg/kg dry	352	34.4	1	"	"	"	"	"	X
218-01-9	Chrysene	< 71.1		µg/kg dry	71.1	40.2	1	"	"	"	"	"	X
53-70-3	Dibenzo (a,h) anthracene	< 71.1		µg/kg dry	71.1	52.6	1	"	"	"	"	"	X
132-64-9	Dibenzofuran	< 178		µg/kg dry	178	47.9	1	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 352		µg/kg dry	352	42.0	1	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 352		µg/kg dry	352	38.0	1	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 352		µg/kg dry	352	40.0	1	"	"	"	"	"	X
91-94-1	3,3´-Dichlorobenzidine	< 352		µg/kg dry	352	38.9	1	"	"	"	"	"	X
120-83-2	2,4-Dichlorophenol	< 178		µg/kg dry	178	43.2	1	"	"	"	"	"	X
84-66-2	Diethyl phthalate	< 352		µg/kg dry	352	36.9	1	"	"	"	"	"	X
131-11-3	Dimethyl phthalate	< 352		µg/kg dry	352	39.6	1	"	"	"	"	"	X
105-67-9	2,4-Dimethylphenol	< 352		µg/kg dry	352	27.8	1	"	"	"	"	"	X
84-74-2	Di-n-butyl phthalate	< 352		µg/kg dry	352	37.6	1	"	"	"	"	"	X
534-52-1	4,6-Dinitro-2-methylphenol	< 352		µg/kg dry	352	50.4	1	"	"	"	"	"	X
51-28-5	2,4-Dinitrophenol	< 352		µg/kg dry	352	36.5	1	"	"	"	"	"	X
121-14-2	2,4-Dinitrotoluene	< 178		µg/kg dry	178	42.7	1	"	"	"	"	"	X
606-20-2	2,6-Dinitrotoluene	< 178		µg/kg dry	178	36.4	1	"	"	"	"	"	X
117-84-0	Di-n-octyl phthalate	< 352		µg/kg dry	352	52.4	1	"	"	"	"	"	X
206-44-0	Fluoranthene	< 71.1		µg/kg dry	71.1	41.7	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-6	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-13				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
86-73-7	Fluorene	< 71.1		µg/kg dry	71.1	46.0	1	SW846 8270D	13-Jul-20	14-Jul-20	BJJ	2001083	X
118-74-1	Hexachlorobenzene	< 178		µg/kg dry	178	44.8	1	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 178		µg/kg dry	178	44.8	1	"	"	"	"	"	X
77-47-4	Hexachlorocyclopentadiene	< 178		µg/kg dry	178	44.9	1	"	"	"	"	"	X
67-72-1	Hexachloroethane	< 178		µg/kg dry	178	40.2	1	"	"	"	"	"	X
193-39-5	Indeno (1,2,3-cd) pyrene	< 71.1		µg/kg dry	71.1	48.6	1	"	"	"	"	"	X
78-59-1	Isophorone	< 178		µg/kg dry	178	27.4	1	"	"	"	"	"	X
91-57-6	2-Methylnaphthalene	< 71.1		µg/kg dry	71.1	49.8	1	"	"	"	"	"	X
95-48-7	2-Methylphenol	< 352		µg/kg dry	352	28.3	1	"	"	"	"	"	X
108-39-4, 106-44-5	3 & 4-Methylphenol	< 352		µg/kg dry	352	27.6	1	"	"	"	"	"	X
91-20-3	Naphthalene	< 71.1		µg/kg dry	71.1	41.1	1	"	"	"	"	"	X
88-74-4	2-Nitroaniline	< 352		µg/kg dry	352	31.9	1	"	"	"	"	"	X
99-09-2	3-Nitroaniline	< 352		µg/kg dry	352	32.5	1	"	"	"	"	"	X
100-01-6	4-Nitroaniline	< 178		µg/kg dry	178	46.9	1	"	"	"	"	"	X
98-95-3	Nitrobenzene	< 178		µg/kg dry	178	41.2	1	"	"	"	"	"	X
88-75-5	2-Nitrophenol	< 178		µg/kg dry	178	31.1	1	"	"	"	"	"	X
100-02-7	4-Nitrophenol	< 1410		µg/kg dry	1410	46.8	1	"	"	"	"	"	X
62-75-9	N-Nitrosodimethylamine	< 178		µg/kg dry	178	23.2	1	"	"	"	"	"	X
621-64-7	N-Nitrosodi-n-propylamine	< 178		µg/kg dry	178	31.1	1	"	"	"	"	"	X
86-30-6	N-Nitrosodiphenylamine	< 352		µg/kg dry	352	35.8	1	"	"	"	"	"	X
87-86-5	Pentachlorophenol	< 352		µg/kg dry	352	41.9	1	"	"	"	"	"	X
85-01-8	Phenanthrene	< 71.1		µg/kg dry	71.1	40.3	1	"	"	"	"	"	X
108-95-2	Phenol	< 352		µg/kg dry	352	35.6	1	"	"	"	"	"	X
129-00-0	Pyrene	< 71.1		µg/kg dry	71.1	39.2	1	"	"	"	"	"	X
110-86-1	Pyridine	< 352		µg/kg dry	352	83.3	1	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 352		µg/kg dry	352	43.3	1	"	"	"	"	"	X
90-12-0	1-Methylnaphthalene	< 71.1		µg/kg dry	71.1	39.2	1	"	"	"	"	"	
95-95-4	2,4,5-Trichlorophenol	< 352		µg/kg dry	352	36.4	1	"	"	"	"	"	X
88-06-2	2,4,6-Trichlorophenol	< 178		µg/kg dry	178	43.5	1	"	"	"	"	"	X
82-68-8	Pentachloronitrobenzene	< 352		µg/kg dry	352	37.4	1	"	"	"	"	"	X
95-94-3	1,2,4,5-Tetrachlorobenzene	< 352		µg/kg dry	352	41.9	1	"	"	"	"	"	X
Surrogate recoveries:													
321-60-8	*2-Fluorobiphenyl*	*100*			*30-130 %*			"	"	"	"	"	
367-12-4	*2-Fluorophenol*	*93*			*30-130 %*			"	"	"	"	"	
4165-60-0	*Nitrobenzene-d5*	*78*			*30-130 %*			"	"	"	"	"	
4165-62-2	*Phenol-d5*	*98*			*30-130 %*			"	"	"	"	"	
1718-51-0	*Terphenyl-dl4*	*87*			*30-130 %*			"	"	"	"	"	
118-79-6	*2,4,6-Tribromophenol*	*77*			*30-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls Prepared by method SW846 3546													
12674-11-2	Aroclor-1016	< 21.4		µg/kg dry	21.4	15.5	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
11104-28-2	Aroclor-1221	< 21.4		µg/kg dry	21.4	6.34	1	"	"	"	"	"	X
11141-16-5	Aroclor-1232	< 21.4		µg/kg dry	21.4	5.94	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-6	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-13				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls													
53469-21-9	Aroclor-1242	< 21.4		µg/kg dry	21.4	2.04	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
12672-29-6	Aroclor-1248	< 21.4		µg/kg dry	21.4	6.70	1	"	"	"	"	"	X
11097-69-1	Aroclor-1254	< 21.4		µg/kg dry	21.4	16.7	1	"	"	"	"	"	X
11096-82-5	Aroclor-1260	< 21.4		µg/kg dry	21.4	4.61	1	"	"	"	"	"	X
37324-23-5	Aroclor-1262	< 21.4		µg/kg dry	21.4	5.00	1	"	"	"	"	"	X
11100-14-4	Aroclor-1268	< 21.4		µg/kg dry	21.4	4.57	1	"	"	"	"	"	X
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*93*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*82*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*78*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*70*			*30-150 %*			"	"	"	"	"	
Pesticides													
Organochlorine Pesticides Prepared by method SW846 3546			Z-2										
319-84-6	alpha-BHC	< 5.36		µg/kg dry	5.36	0.247	1	SW846 8081B	13-Jul-20	16-Jul-20	BJJ	2001088	X
319-85-7	beta-BHC	< 5.36		µg/kg dry	5.36	0.343	1	"	"	"	"	"	X
319-86-8	delta-BHC	< 5.36		µg/kg dry	5.36	0.279	1	"	"	"	"	"	X
58-89-9	gamma-BHC (Lindane)	< 3.22		µg/kg dry	3.22	0.568	1	"	"	"	"	"	X
76-44-8	Heptachlor	< 5.36		µg/kg dry	5.36	0.622	1	"	"	"	"	"	X
309-00-2	Aldrin	< 5.36		µg/kg dry	5.36	0.182	1	"	"	"	"	"	X
1024-57-3	Heptachlor epoxide	< 5.36		µg/kg dry	5.36	0.214	1	"	"	"	"	"	X
959-98-8	Endosulfan I	< 5.36		µg/kg dry	5.36	0.247	1	"	"	"	"	"	X
60-57-1	Dieldrin	< 5.36		µg/kg dry	5.36	0.257	1	"	"	"	"	"	X
72-55-9	4,4'-DDE (p,p')	< 5.36		µg/kg dry	5.36	0.279	1	"	"	"	"	"	X
72-20-8	Endrin	< 8.58		µg/kg dry	8.58	0.525	1	"	"	"	"	"	X
33213-65-9	Endosulfan II	< 8.58		µg/kg dry	8.58	0.343	1	"	"	"	"	"	X
72-54-8	4,4'-DDD (p,p')	< 8.58		µg/kg dry	8.58	0.450	1	"	"	"	"	"	X
1031-07-8	Endosulfan sulfate	< 8.58		µg/kg dry	8.58	0.783	1	"	"	"	"	"	X
50-29-3	4,4'-DDT (p,p')	< 8.58		µg/kg dry	8.58	3.68	1	"	"	"	"	"	X
72-43-5	Methoxychlor	< 8.58		µg/kg dry	8.58	0.579	1	"	"	"	"	"	X
53494-70-5	Endrin ketone	< 8.58		µg/kg dry	8.58	0.311	1	"	"	"	"	"	X
7421-93-4	Endrin aldehyde	< 8.58		µg/kg dry	8.58	1.35	1	"	"	"	"	"	X
5103-71-9	alpha-Chlordane	< 5.36		µg/kg dry	5.36	0.225	1	"	"	"	"	"	X
5103-74-2	gamma-Chlordane	< 5.36		µg/kg dry	5.36	0.268	1	"	"	"	"	"	X
8001-35-2	Toxaphene	< 107		µg/kg dry	107	75.7	1	"	"	"	"	"	X
57-74-9	Chlordane	< 21.4		µg/kg dry	21.4	2.70	1	"	"	"	"	"	X
15972-60-8	Alachlor	< 5.36		µg/kg dry	5.36	0.472	1	"	"	"	"	"	
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*64*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*57*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*49*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*46*			*30-150 %*			"	"	"	"	"	
Extractable Petroleum Hydrocarbons													

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-6 SC58794-13	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Extractable Petroleum Hydrocarbons													
Fingerprinting by GC Prepared by method SW846 3546													
	Total Petroleum Hydrocarbons	**134**		mg/kg dry	14.3	12.0	1	SW846 8100Mod.	14-Jul-20	15-Jul-20	BJJ	2001092	
Surrogate recoveries:													
84-15-1	*o-Terphenyl*	*80*			*40-140 %*			"	"	"	"	"	
3386-33-2	*1-Chlorooctadecane*	*108*			*40-140 %*			"	"	"	"	"	
Total Metals by EPA 6000/7000 Series Methods													
Prepared by method SW846 3050B													
7440-22-4	Silver	< 3.38		mg/kg dry	3.38	0.182	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7440-38-2	Arsenic	**29.6**		mg/kg dry	1.69	0.214	1	"	"	"	"	"	X
7440-39-3	Barium	**28.6**		mg/kg dry	1.13	0.133	1	"	"	"	"	"	X
7440-41-7	Beryllium	< 0.563		mg/kg dry	0.563	0.0282	1	"	"	"	"	"	X
7440-43-9	Cadmium	< 0.563		mg/kg dry	0.563	0.0291	1	"	"	"	"	"	X
7440-47-3	Chromium	**30.0**		mg/kg dry	1.13	0.150	1	"	"	"	"	"	X
7439-97-6	Mercury	< 0.120		mg/kg dry	0.120	0.0100	1	SW846 7471B	13-Jul-20	13-Jul-20	edt	2001079	X
Prepared by method SW846 3050B													
7440-02-0	Nickel	**25.6**		mg/kg dry	1.13	0.129	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7439-92-1	Lead	**15.8**		mg/kg dry	1.69	0.239	1	"	"	"	"	"	X
7440-36-0	Antimony	< 5.63		mg/kg dry	5.63	0.423	1	"	"	"	"	"	X
7782-49-2	Selenium	< 1.69		mg/kg dry	1.69	0.322	1	"	"	"	"	"	X
7440-28-0	Thallium	< 3.38		mg/kg dry	3.38	1.24	1	"	"	"	"	"	X
7440-62-2	Vanadium	**35.8**		mg/kg dry	1.69	0.299	1	"	"	17-Jul-20	"	"	X
7440-66-6	Zinc	**43.2**		mg/kg dry	3.38	0.871	1	"	"	15-Jul-20	"	"	X
General Chemistry Parameters													
	% Solids	**92.6**		%			1	SM2540 G (11) Mod.	10-Jul-20	14-Jul-20	PN	2001075	
Toxicity Characteristics													
	Ignitability by Definition	**Negative**		N/A			1	SW846 1030	10-Jul-20 17:23	10-Jul-20 21:00	PN	2001074	X
	pH	**5.74**	pH	pH Units			1	SW846 9045D	14-Jul-20 15:31	14-Jul-20 18:55	PN	2001081	X
Subcontracted Analyses													
Subcontracted Analyses Prepared by method SW8151A										Methylation date: 14-Jul-20			
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
93-76-5	2,4,5-T	< 80		ug/kg	80	80	10	SW8151A	14-Jul-20	15-Jul-20 17:52	M-CT007	537320A	
93-72-1	2,4,5-TP (Silvex)	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-75-7	2,4-D	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-82-6	2,4-DB	< 80		ug/kg	80	80	10	"	"	"	"	"	
75-99-0	Dalapon	< 80		ug/kg	80	80	10	"	"	"	"	"	
1918-00-9	Dicamba	< 80		ug/kg	80	80	10	"	"	"	"	"	
120-36-5	Dichloroprop	< 80		ug/kg	80	80	10	"	"	"	"	"	
88-85-7	Dinoseb	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-74-6	MCPA	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
7085-19-0	MCPP	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
Surrogate recoveries:													
19719-28-9	*% DCAA*	*83*			*30-150 %*			"	"	"	"	"	

This laboratory report is not valid without an authorized signature on the cover page.

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-6 SC58794-13	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Subcontracted Analyses													
Prepared by method SW846 7.3.3.1/90													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Cyanide	< 6		mg/kg	6	6	1	SW846 7.3.3.1/90	14-Jul-20	14-Jul-20 14:42	M-CT007	537292A	
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Sulfide	< 20		mg/kg	20	20	1	SW846 CH7	"	14-Jul-20 15:17	M-CT007	537292B	
Prepared by method SW846-React													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity	**Negative**		Pos/Neg			1	SW846-React	14-Jul-20 15:18	14-Jul-20 15:18	M-CT007	'[none]'	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-7	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-14				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
Prepared by method SW846 5035A Soil (high level)							Initial weight: 18.18 g						
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	< 59.4		µg/kg dry	59.4	32.6	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
67-64-1	Acetone	< 594		µg/kg dry	594	75.1	50	"	"	"	"	"	X
107-13-1	Acrylonitrile	< 59.4		µg/kg dry	59.4	21.5	50	"	"	"	"	"	X
71-43-2	Benzene	< 59.4		µg/kg dry	59.4	9.51	50	"	"	"	"	"	X
108-86-1	Bromobenzene	< 59.4		µg/kg dry	59.4	13.4	50	"	"	"	"	"	X
74-97-5	Bromochloromethane	< 59.4		µg/kg dry	59.4	8.50	50	"	"	"	"	"	X
75-27-4	Bromodichloromethane	< 59.4		µg/kg dry	59.4	15.3	50	"	"	"	"	"	X
75-25-2	Bromoform	< 59.4		µg/kg dry	59.4	12.7	50	"	"	"	"	"	X
74-83-9	Bromomethane	< 119		µg/kg dry	119	29.4	50	"	"	"	"	"	X
78-93-3	2-Butanone (MEK)	< 119		µg/kg dry	119	27.2	50	"	"	"	"	"	X
104-51-8	n-Butylbenzene	< 59.4		µg/kg dry	59.4	23.8	50	"	"	"	"	"	X
135-98-8	sec-Butylbenzene	< 59.4		µg/kg dry	59.4	18.3	50	"	"	"	"	"	X
98-06-6	tert-Butylbenzene	< 59.4		µg/kg dry	59.4	24.3	50	"	"	"	"	"	X
75-15-0	Carbon disulfide	< 119		µg/kg dry	119	22.0	50	"	"	"	"	"	X
56-23-5	Carbon tetrachloride	< 59.4		µg/kg dry	59.4	17.8	50	"	"	"	"	"	X
108-90-7	Chlorobenzene	< 59.4		µg/kg dry	59.4	7.19	50	"	"	"	"	"	X
75-00-3	Chloroethane	< 119		µg/kg dry	119	26.5	50	"	"	"	"	"	X
67-66-3	Chloroform	< 59.4		µg/kg dry	59.4	7.01	50	"	"	"	"	"	X
74-87-3	Chloromethane	< 119		µg/kg dry	119	70.6	50	"	"	"	"	"	X
95-49-8	2-Chlorotoluene	< 59.4		µg/kg dry	59.4	14.7	50	"	"	"	"	"	X
106-43-4	4-Chlorotoluene	< 59.4		µg/kg dry	59.4	10.8	50	"	"	"	"	"	X
96-12-8	1,2-Dibromo-3-chloropropane	< 119		µg/kg dry	119	23.5	50	"	"	"	"	"	X
124-48-1	Dibromochloromethane	< 59.4		µg/kg dry	59.4	9.39	50	"	"	"	"	"	X
106-93-4	1,2-Dibromoethane (EDB)	< 59.4		µg/kg dry	59.4	16.2	50	"	"	"	"	"	X
74-95-3	Dibromomethane	< 59.4		µg/kg dry	59.4	11.2	50	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 59.4		µg/kg dry	59.4	10.7	50	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 59.4		µg/kg dry	59.4	14.8	50	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 59.4		µg/kg dry	59.4	10.6	50	"	"	"	"	"	X
75-71-8	Dichlorodifluoromethane (Freon12)	< 119		µg/kg dry	119	77.8	50	"	"	"	"	"	X
75-34-3	1,1-Dichloroethane	< 59.4		µg/kg dry	59.4	13.7	50	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 59.4		µg/kg dry	59.4	15.6	50	"	"	"	"	"	X
75-35-4	1,1-Dichloroethene	< 59.4		µg/kg dry	59.4	15.2	50	"	"	"	"	"	X
156-59-2	cis-1,2-Dichloroethene	< 59.4		µg/kg dry	59.4	19.8	50	"	"	"	"	"	X
156-60-5	trans-1,2-Dichloroethene	< 59.4		µg/kg dry	59.4	13.6	50	"	"	"	"	"	X
78-87-5	1,2-Dichloropropane	< 59.4		µg/kg dry	59.4	20.6	50	"	"	"	"	"	X
142-28-9	1,3-Dichloropropane	< 59.4		µg/kg dry	59.4	18.8	50	"	"	"	"	"	X
594-20-7	2,2-Dichloropropane	< 59.4		µg/kg dry	59.4	15.6	50	"	"	"	"	"	X
563-58-6	1,1-Dichloropropene	< 59.4		µg/kg dry	59.4	18.2	50	"	"	"	"	"	X
10061-01-5	cis-1,3-Dichloropropene	< 59.4		µg/kg dry	59.4	14.0	50	"	"	"	"	"	X
10061-02-6	trans-1,3-Dichloropropene	< 59.4		µg/kg dry	59.4	24.2	50	"	"	"	"	"	X
100-41-4	Ethylbenzene	< 59.4		µg/kg dry	59.4	12.4	50	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 59.4		µg/kg dry	59.4	19.0	50	"	"	"	"	"	X
591-78-6	2-Hexanone (MBK)	< 119		µg/kg dry	119	39.5	50	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-7	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-14				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
							Initial weight: 18.18 g						
98-82-8	Isopropylbenzene	< 59.4		µg/kg dry	59.4	21.6	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
99-87-6	4-Isopropyltoluene	< 59.4		µg/kg dry	59.4	16.5	50	"	"	"	"	"	X
1634-04-4	Methyl tert-butyl ether	< 59.4		µg/kg dry	59.4	17.9	50	"	"	"	"	"	X
108-10-1	4-Methyl-2-pentanone (MIBK)	< 119		µg/kg dry	119	42.6	50	"	"	"	"	"	X
75-09-2	Methylene chloride	< 119		µg/kg dry	119	50.8	50	"	"	"	"	"	X
91-20-3	Naphthalene	< 59.4		µg/kg dry	59.4	17.2	50	"	"	"	"	"	X
103-65-1	n-Propylbenzene	< 59.4		µg/kg dry	59.4	14.8	50	"	"	"	"	"	X
100-42-5	Styrene	< 59.4		µg/kg dry	59.4	7.85	50	"	"	"	"	"	X
630-20-6	1,1,1,2-Tetrachloroethane	< 59.4		µg/kg dry	59.4	14.3	50	"	"	"	"	"	X
79-34-5	1,1,2,2-Tetrachloroethane	< 59.4		µg/kg dry	59.4	18.8	50	"	"	"	"	"	X
127-18-4	Tetrachloroethene	< 59.4		µg/kg dry	59.4	18.7	50	"	"	"	"	"	X
108-88-3	Toluene	< 59.4		µg/kg dry	59.4	9.57	50	"	"	"	"	"	X
87-61-6	1,2,3-Trichlorobenzene	< 59.4		µg/kg dry	59.4	13.9	50	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 59.4		µg/kg dry	59.4	9.81	50	"	"	"	"	"	X
108-70-3	1,3,5-Trichlorobenzene	< 59.4		µg/kg dry	59.4	9.39	50	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	< 59.4		µg/kg dry	59.4	14.4	50	"	"	"	"	"	X
79-00-5	1,1,2-Trichloroethane	< 59.4		µg/kg dry	59.4	18.4	50	"	"	"	"	"	X
79-01-6	Trichloroethene	< 59.4		µg/kg dry	59.4	10.2	50	"	"	"	"	"	X
75-69-4	Trichlorofluoromethane (Freon 11)	< 59.4		µg/kg dry	59.4	26.9	50	"	"	"	"	"	X
96-18-4	1,2,3-Trichloropropane	< 59.4		µg/kg dry	59.4	27.4	50	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	< 59.4		µg/kg dry	59.4	15.0	50	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	< 59.4		µg/kg dry	59.4	12.4	50	"	"	"	"	"	X
75-01-4	Vinyl chloride	< 59.4		µg/kg dry	59.4	29.2	50	"	"	"	"	"	X
179601-23-1	m,p-Xylene	< 119		µg/kg dry	119	35.0	50	"	"	"	"	"	X
95-47-6	o-Xylene	< 59.4		µg/kg dry	59.4	18.3	50	"	"	"	"	"	X
109-99-9	Tetrahydrofuran	< 119		µg/kg dry	119	43.5	50	"	"	"	"	"	
60-29-7	Ethyl ether	< 59.4		µg/kg dry	59.4	16.1	50	"	"	"	"	"	X
994-05-8	Tert-amyl methyl ether	< 59.4		µg/kg dry	59.4	32.9	50	"	"	"	"	"	
637-92-3	Ethyl tert-butyl ether	< 59.4		µg/kg dry	59.4	16.5	50	"	"	"	"	"	
108-20-3	Di-isopropyl ether	< 59.4		µg/kg dry	59.4	19.2	50	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	< 1190		µg/kg dry	1190	844	50	"	"	"	"	"	X
123-91-1	1,4-Dioxane	< 1190		µg/kg dry	1190	350	50	"	"	"	"	"	X
110-57-6	trans-1,4-Dichloro-2-buten e	< 297		µg/kg dry	297	39.2	50	"	"	"	"	"	X
64-17-5	Ethanol	< 11900		µg/kg dry	11900	1020	50	"	"	"	"	"	
Surrogate recoveries:													
460-00-4	*4-Bromofluorobenzene*	*103*			*70-130 %*			"	"	"	"	"	
2037-26-5	*Toluene-d8*	*107*			*70-130 %*			"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*104*			*70-130 %*			"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*104*			*70-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds Prepared by method SW846 3546													
83-32-9	Acenaphthene	< 79.6		µg/kg dry	79.6	42.2	1	SW846 8270D	13-Jul-20	14-Jul-20	BJJ	2001083	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-7	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-14				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
208-96-8	Acenaphthylene	< 79.6		µg/kg dry	79.6	41.5	1	SW846 8270D	13-Jul-20	14-Jul-20	BJJ	2001083	X
62-53-3	Aniline	< 394		µg/kg dry	394	25.0	1	"	"	"	"	"	X
120-12-7	Anthracene	< 79.6		µg/kg dry	79.6	45.8	1	"	"	"	"	"	X
103-33-3	Azobenzene/Diphenyldiazene	< 394		µg/kg dry	394	42.7	1	"	"	"	"	"	
92-87-5	Benzidine	< 787		µg/kg dry	787	25.0	1	"	"	"	"	"	X
56-55-3	Benzo (a) anthracene	< 79.6		µg/kg dry	79.6	44.7	1	"	"	"	"	"	X
50-32-8	Benzo (a) pyrene	< 79.6		µg/kg dry	79.6	54.4	1	"	"	"	"	"	X
205-99-2	Benzo (b) fluoranthene	< 79.6		µg/kg dry	79.6	59.9	1	"	"	"	"	"	X
191-24-2	Benzo (g,h,i) perylene	< 79.6		µg/kg dry	79.6	56.2	1	"	"	"	"	"	X
207-08-9	Benzo (k) fluoranthene	< 79.6		µg/kg dry	79.6	68.0	1	"	"	"	"	"	X
65-85-0	Benzoic acid	< 394		µg/kg dry	394	23.6	1	"	"	"	"	"	X
100-51-6	Benzyl alcohol	< 394		µg/kg dry	394	91.1	1	"	"	"	"	"	X
111-91-1	Bis(2-chloroethoxy)methane	< 394		µg/kg dry	394	39.7	1	"	"	"	"	"	X
111-44-4	Bis(2-chloroethyl)ether	< 199		µg/kg dry	199	36.9	1	"	"	"	"	"	X
108-60-1	Bis(2-chloroisopropyl)ether	< 199		µg/kg dry	199	32.0	1	"	"	"	"	"	X
117-81-7	Bis(2-ethylhexyl)phthalate	< 199		µg/kg dry	199	50.7	1	"	"	"	"	"	X
101-55-3	4-Bromophenyl phenyl ether	< 394		µg/kg dry	394	44.5	1	"	"	"	"	"	X
85-68-7	Butyl benzyl phthalate	< 394		µg/kg dry	394	39.5	1	"	"	"	"	"	X
86-74-8	Carbazole	< 199		µg/kg dry	199	45.8	1	"	"	"	"	"	X
59-50-7	4-Chloro-3-methylphenol	< 394		µg/kg dry	394	46.3	1	"	"	"	"	"	X
106-47-8	4-Chloroaniline	< 199		µg/kg dry	199	24.6	1	"	"	"	"	"	X
91-58-7	2-Chloronaphthalene	< 394		µg/kg dry	394	53.9	1	"	"	"	"	"	X
95-57-8	2-Chlorophenol	< 199		µg/kg dry	199	38.2	1	"	"	"	"	"	X
7005-72-3	4-Chlorophenyl phenyl ether	< 394		µg/kg dry	394	38.5	1	"	"	"	"	"	X
218-01-9	Chrysene	< 79.6		µg/kg dry	79.6	45.0	1	"	"	"	"	"	X
53-70-3	Dibenzo (a,h) anthracene	< 79.6		µg/kg dry	79.6	58.8	1	"	"	"	"	"	X
132-64-9	Dibenzofuran	< 199		µg/kg dry	199	53.6	1	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 394		µg/kg dry	394	47.0	1	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 394		µg/kg dry	394	42.5	1	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 394		µg/kg dry	394	44.7	1	"	"	"	"	"	X
91-94-1	3,3´-Dichlorobenzidine	< 394		µg/kg dry	394	43.5	1	"	"	"	"	"	X
120-83-2	2,4-Dichlorophenol	< 199		µg/kg dry	199	48.3	1	"	"	"	"	"	X
84-66-2	Diethyl phthalate	< 394		µg/kg dry	394	41.3	1	"	"	"	"	"	X
131-11-3	Dimethyl phthalate	< 394		µg/kg dry	394	44.3	1	"	"	"	"	"	X
105-67-9	2,4-Dimethylphenol	< 394		µg/kg dry	394	31.1	1	"	"	"	"	"	X
84-74-2	Di-n-butyl phthalate	< 394		µg/kg dry	394	42.1	1	"	"	"	"	"	X
534-52-1	4,6-Dinitro-2-methylphenol	< 394		µg/kg dry	394	56.4	1	"	"	"	"	"	X
51-28-5	2,4-Dinitrophenol	< 394		µg/kg dry	394	40.8	1	"	"	"	"	"	X
121-14-2	2,4-Dinitrotoluene	< 199		µg/kg dry	199	47.7	1	"	"	"	"	"	X
606-20-2	2,6-Dinitrotoluene	< 199		µg/kg dry	199	40.7	1	"	"	"	"	"	X
117-84-0	Di-n-octyl phthalate	< 394		µg/kg dry	394	58.6	1	"	"	"	"	"	X
206-44-0	Fluoranthene	< 79.6		µg/kg dry	79.6	46.6	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-7	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-14				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
86-73-7	Fluorene	< 79.6		µg/kg dry	79.6	51.4	1	SW846 8270D	13-Jul-20	14-Jul-20	BJJ	2001083	X
118-74-1	Hexachlorobenzene	< 199		µg/kg dry	199	50.1	1	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 199		µg/kg dry	199	50.1	1	"	"	"	"	"	X
77-47-4	Hexachlorocyclopentadiene	< 199		µg/kg dry	199	50.2	1	"	"	"	"	"	X
67-72-1	Hexachloroethane	< 199		µg/kg dry	199	45.0	1	"	"	"	"	"	X
193-39-5	Indeno (1,2,3-cd) pyrene	< 79.6		µg/kg dry	79.6	54.4	1	"	"	"	"	"	X
78-59-1	Isophorone	< 199		µg/kg dry	199	30.7	1	"	"	"	"	"	X
91-57-6	2-Methylnaphthalene	< 79.6		µg/kg dry	79.6	55.7	1	"	"	"	"	"	X
95-48-7	2-Methylphenol	< 394		µg/kg dry	394	31.6	1	"	"	"	"	"	X
108-39-4, 106-44-5	3 & 4-Methylphenol	< 394		µg/kg dry	394	30.9	1	"	"	"	"	"	X
91-20-3	Naphthalene	< 79.6		µg/kg dry	79.6	45.9	1	"	"	"	"	"	X
88-74-4	2-Nitroaniline	< 394		µg/kg dry	394	35.7	1	"	"	"	"	"	X
99-09-2	3-Nitroaniline	< 394		µg/kg dry	394	36.4	1	"	"	"	"	"	X
100-01-6	4-Nitroaniline	< 199		µg/kg dry	199	52.5	1	"	"	"	"	"	X
98-95-3	Nitrobenzene	< 199		µg/kg dry	199	46.0	1	"	"	"	"	"	X
88-75-5	2-Nitrophenol	< 199		µg/kg dry	199	34.8	1	"	"	"	"	"	X
100-02-7	4-Nitrophenol	< 1570		µg/kg dry	1570	52.4	1	"	"	"	"	"	X
62-75-9	N-Nitrosodimethylamine	< 199		µg/kg dry	199	26.0	1	"	"	"	"	"	X
621-64-7	N-Nitrosodi-n-propylamine	< 199		µg/kg dry	199	34.8	1	"	"	"	"	"	X
86-30-6	N-Nitrosodiphenylamine	< 394		µg/kg dry	394	40.1	1	"	"	"	"	"	X
87-86-5	Pentachlorophenol	< 394		µg/kg dry	394	46.9	1	"	"	"	"	"	X
85-01-8	Phenanthrene	< 79.6		µg/kg dry	79.6	45.1	1	"	"	"	"	"	X
108-95-2	Phenol	< 394		µg/kg dry	394	39.8	1	"	"	"	"	"	X
129-00-0	Pyrene	< 79.6		µg/kg dry	79.6	43.9	1	"	"	"	"	"	X
110-86-1	Pyridine	< 394		µg/kg dry	394	93.2	1	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 394		µg/kg dry	394	48.4	1	"	"	"	"	"	X
90-12-0	1-Methylnaphthalene	< 79.6		µg/kg dry	79.6	43.9	1	"	"	"	"	"	
95-95-4	2,4,5-Trichlorophenol	< 394		µg/kg dry	394	40.7	1	"	"	"	"	"	X
88-06-2	2,4,6-Trichlorophenol	< 199		µg/kg dry	199	48.7	1	"	"	"	"	"	X
82-68-8	Pentachloronitrobenzene	< 394		µg/kg dry	394	41.9	1	"	"	"	"	"	X
95-94-3	1,2,4,5-Tetrachlorobenzene	< 394		µg/kg dry	394	46.9	1	"	"	"	"	"	X
Surrogate recoveries:													
321-60-8	*2-Fluorobiphenyl*	*105*			*30-130 %*			"	"	"	"	"	
367-12-4	*2-Fluorophenol*	*90*			*30-130 %*			"	"	"	"	"	
4165-60-0	*Nitrobenzene-d5*	*88*			*30-130 %*			"	"	"	"	"	
4165-62-2	*Phenol-d5*	*101*			*30-130 %*			"	"	"	"	"	
1718-51-0	*Terphenyl-dl4*	*83*			*30-130 %*			"	"	"	"	"	
118-79-6	*2,4,6-Tribromophenol*	*63*			*30-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls Prepared by method SW846 3546													
12674-11-2	Aroclor-1016	< 23.8		µg/kg dry	23.8	17.1	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
11104-28-2	Aroclor-1221	< 23.8		µg/kg dry	23.8	7.02	1	"	"	"	"	"	X
11141-16-5	Aroclor-1232	< 23.8		µg/kg dry	23.8	6.58	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-7	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-14				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls													
53469-21-9	Aroclor-1242	< 23.8		µg/kg dry	23.8	2.26	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
12672-29-6	Aroclor-1248	< 23.8		µg/kg dry	23.8	7.43	1	"	"	"	"	"	X
11097-69-1	Aroclor-1254	< 23.8		µg/kg dry	23.8	18.5	1	"	"	"	"	"	X
11096-82-5	Aroclor-1260	< 23.8		µg/kg dry	23.8	5.11	1	"	"	"	"	"	X
37324-23-5	Aroclor-1262	< 23.8		µg/kg dry	23.8	5.54	1	"	"	"	"	"	X
11100-14-4	Aroclor-1268	< 23.8		µg/kg dry	23.8	5.06	1	"	"	"	"	"	X
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*74*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*68*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*86*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*76*			*30-150 %*			"	"	"	"	"	
Pesticides													
Organochlorine Pesticides Prepared by method SW846 3546			Z-2										
319-84-6	alpha-BHC	< 5.94		µg/kg dry	5.94	0.273	1	SW846 8081B	13-Jul-20	16-Jul-20	BJJ	2001088	X
319-85-7	beta-BHC	< 5.94		µg/kg dry	5.94	0.380	1	"	"	"	"	"	X
319-86-8	delta-BHC	< 5.94		µg/kg dry	5.94	0.309	1	"	"	"	"	"	X
58-89-9	gamma-BHC (Lindane)	< 3.57		µg/kg dry	3.57	0.630	1	"	"	"	"	"	X
76-44-8	Heptachlor	< 5.94		µg/kg dry	5.94	0.689	1	"	"	"	"	"	X
309-00-2	Aldrin	< 5.94		µg/kg dry	5.94	0.202	1	"	"	"	"	"	X
1024-57-3	Heptachlor epoxide	< 5.94		µg/kg dry	5.94	0.238	1	"	"	"	"	"	X
959-98-8	Endosulfan I	< 5.94		µg/kg dry	5.94	0.273	1	"	"	"	"	"	X
60-57-1	Dieldrin	< 5.94		µg/kg dry	5.94	0.285	1	"	"	"	"	"	X
72-55-9	4,4'-DDE (p,p')	< 5.94		µg/kg dry	5.94	0.309	1	"	"	"	"	"	X
72-20-8	Endrin	< 9.51		µg/kg dry	9.51	0.582	1	"	"	"	"	"	X
33213-65-9	Endosulfan II	< 9.51		µg/kg dry	9.51	0.380	1	"	"	"	"	"	X
72-54-8	4,4'-DDD (p,p')	< 9.51		µg/kg dry	9.51	0.499	1	"	"	"	"	"	X
1031-07-8	Endosulfan sulfate	< 9.51		µg/kg dry	9.51	0.867	1	"	"	"	"	"	X
50-29-3	4,4'-DDT (p,p')	< 9.51		µg/kg dry	9.51	4.08	1	"	"	"	"	"	X
72-43-5	Methoxychlor	< 9.51		µg/kg dry	9.51	0.642	1	"	"	"	"	"	X
53494-70-5	Endrin ketone	< 9.51		µg/kg dry	9.51	0.345	1	"	"	"	"	"	X
7421-93-4	Endrin aldehyde	< 9.51		µg/kg dry	9.51	1.50	1	"	"	"	"	"	X
5103-71-9	alpha-Chlordane	< 5.94		µg/kg dry	5.94	0.250	1	"	"	"	"	"	X
5103-74-2	gamma-Chlordane	< 5.94		µg/kg dry	5.94	0.297	1	"	"	"	"	"	X
8001-35-2	Toxaphene	< 119		µg/kg dry	119	83.8	1	"	"	"	"	"	X
57-74-9	Chlordane	< 23.8		µg/kg dry	23.8	2.99	1	"	"	"	"	"	X
15972-60-8	Alachlor	< 5.94		µg/kg dry	5.94	0.523	1	"	"	"	"	"	
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*79*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*64*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*51*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*50*			*30-150 %*			"	"	"	"	"	
Extractable Petroleum Hydrocarbons													

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-7 SC58794-14	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Extractable Petroleum Hydrocarbons													
Fingerprinting by GC Prepared by method SW846 3546													
	Total Petroleum Hydrocarbons	**170**		mg/kg dry	15.8	13.2	1	SW846 8100Mod.	14-Jul-20	15-Jul-20	BJJ	2001092	
Surrogate recoveries:													
84-15-1	*o-Terphenyl*	*84*			*40-140 %*			"	"	"	"	"	
3386-33-2	*1-Chlorooctadecane*	*113*			*40-140 %*			"	"	"	"	"	
Total Metals by EPA 6000/7000 Series Methods													
Prepared by method SW846 3050B													
7440-22-4	Silver	< 3.60		mg/kg dry	3.60	0.195	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7440-38-2	Arsenic	**48.6**		mg/kg dry	1.80	0.228	1	"	"	"	"	"	X
7440-39-3	Barium	**34.6**		mg/kg dry	1.20	0.142	1	"	"	"	"	"	X
7440-41-7	Beryllium	< 0.601		mg/kg dry	0.601	0.0301	1	"	"	"	"	"	X
7440-43-9	Cadmium	< 0.601		mg/kg dry	0.601	0.0311	1	"	"	"	"	"	X
7440-47-3	Chromium	**65.9**		mg/kg dry	1.20	0.160	1	"	"	"	"	"	X
7439-97-6	Mercury	< 0.128		mg/kg dry	0.128	0.0106	1	SW846 7471B	13-Jul-20	13-Jul-20	edt	2001079	X
Prepared by method SW846 3050B													
7440-02-0	Nickel	**44.8**		mg/kg dry	1.20	0.138	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7439-92-1	Lead	**28.6**		mg/kg dry	1.80	0.255	1	"	"	"	"	"	X
7440-36-0	Antimony	< 6.01		mg/kg dry	6.01	0.452	1	"	"	"	"	"	X
7782-49-2	Selenium	< 1.80		mg/kg dry	1.80	0.344	1	"	"	"	"	"	X
7440-28-0	Thallium	< 3.60		mg/kg dry	3.60	1.32	1	"	"	"	"	"	X
7440-62-2	Vanadium	**46.7**		mg/kg dry	1.80	0.320	1	"	"	17-Jul-20	"	"	X
7440-66-6	Zinc	**56.2**		mg/kg dry	3.60	0.930	1	"	"	15-Jul-20	"	"	X
General Chemistry Parameters													
	% Solids	**83.4**		%			1	SM2540 G (11) Mod.	10-Jul-20	14-Jul-20	PN	2001075	
Toxicity Characteristics													
	Ignitability by Definition	**Negative**		N/A			1	SW846 1030	10-Jul-20 17:23	10-Jul-20 21:00	PN	2001074	X
	pH	**5.71**	pH	pH Units			1	SW846 9045D	14-Jul-20 15:31	14-Jul-20 18:55	PN	2001081	X
Subcontracted Analyses													
Subcontracted Analyses Prepared by method SW8151A										Methylation date: 14-Jul-20			
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
93-76-5	2,4,5-T	< 80		ug/kg	80	80	10	SW8151A	14-Jul-20	15-Jul-20 19:05	M-CT007	537320A	
93-72-1	2,4,5-TP (Silvex)	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-75-7	2,4-D	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-82-6	2,4-DB	< 80		ug/kg	80	80	10	"	"	"	"	"	
75-99-0	Dalapon	< 80		ug/kg	80	80	10	"	"	"	"	"	
1918-00-9	Dicamba	< 80		ug/kg	80	80	10	"	"	"	"	"	
120-36-5	Dichloroprop	< 80		ug/kg	80	80	10	"	"	"	"	"	
88-85-7	Dinoseb	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-74-6	MCPA	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
7085-19-0	MCPP	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
Surrogate recoveries:													
19719-28-9	*% DCAA*	*85*			*30-150 %*			"	"	"	"	"	

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Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-7 SC58794-14	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Subcontracted Analyses													
Prepared by method SW846 7.3.3.1/90													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Cyanide	< 7		mg/kg	7	7	1	SW846 7.3.3.1/90	14-Jul-20	14-Jul-20 14:43	M-CT007	537292A	
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Sulfide	< 20		mg/kg	20	20	1	SW846 CH7	"	14-Jul-20 15:17	M-CT007	537292B	
Prepared by method SW846-React													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity	**Negative**		Pos/Neg			1	SW846-React	14-Jul-20 15:18	14-Jul-20 15:18	M-CT007	'[none]'	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-8	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-15				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
Prepared by method SW846 5035A Soil (high level)							Initial weight: 16.62 g						
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	< 60.5		µg/kg dry	60.5	33.1	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
67-64-1	Acetone	< 605		µg/kg dry	605	76.4	50	"	"	"	"	"	X
107-13-1	Acrylonitrile	< 60.5		µg/kg dry	60.5	21.8	50	"	"	"	"	"	X
71-43-2	Benzene	< 60.5		µg/kg dry	60.5	9.67	50	"	"	"	"	"	X
108-86-1	Bromobenzene	< 60.5		µg/kg dry	60.5	13.7	50	"	"	"	"	"	X
74-97-5	Bromochloromethane	< 60.5		µg/kg dry	60.5	8.64	50	"	"	"	"	"	X
75-27-4	Bromodichloromethane	< 60.5		µg/kg dry	60.5	15.6	50	"	"	"	"	"	X
75-25-2	Bromoform	< 60.5		µg/kg dry	60.5	12.9	50	"	"	"	"	"	X
74-83-9	Bromomethane	< 121		µg/kg dry	121	29.9	50	"	"	"	"	"	X
78-93-3	2-Butanone (MEK)	< 121		µg/kg dry	121	27.6	50	"	"	"	"	"	X
104-51-8	n-Butylbenzene	< 60.5		µg/kg dry	60.5	24.2	50	"	"	"	"	"	X
135-98-8	sec-Butylbenzene	< 60.5		µg/kg dry	60.5	18.6	50	"	"	"	"	"	X
98-06-6	tert-Butylbenzene	< 60.5		µg/kg dry	60.5	24.7	50	"	"	"	"	"	X
75-15-0	Carbon disulfide	< 121		µg/kg dry	121	22.4	50	"	"	"	"	"	X
56-23-5	Carbon tetrachloride	< 60.5		µg/kg dry	60.5	18.1	50	"	"	"	"	"	X
108-90-7	Chlorobenzene	< 60.5		µg/kg dry	60.5	7.31	50	"	"	"	"	"	X
75-00-3	Chloroethane	< 121		µg/kg dry	121	27.0	50	"	"	"	"	"	X
67-66-3	Chloroform	< 60.5		µg/kg dry	60.5	7.13	50	"	"	"	"	"	X
74-87-3	Chloromethane	< 121		µg/kg dry	121	71.8	50	"	"	"	"	"	X
95-49-8	2-Chlorotoluene	< 60.5		µg/kg dry	60.5	15.0	50	"	"	"	"	"	X
106-43-4	4-Chlorotoluene	< 60.5		µg/kg dry	60.5	10.9	50	"	"	"	"	"	X
96-12-8	1,2-Dibromo-3-chloropropane	< 121		µg/kg dry	121	23.9	50	"	"	"	"	"	X
124-48-1	Dibromochloromethane	< 60.5		µg/kg dry	60.5	9.55	50	"	"	"	"	"	X
106-93-4	1,2-Dibromoethane (EDB)	< 60.5		µg/kg dry	60.5	16.4	50	"	"	"	"	"	X
74-95-3	Dibromomethane	< 60.5		µg/kg dry	60.5	11.4	50	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 60.5		µg/kg dry	60.5	10.9	50	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 60.5		µg/kg dry	60.5	15.1	50	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 60.5		µg/kg dry	60.5	10.8	50	"	"	"	"	"	X
75-71-8	Dichlorodifluoromethane (Freon12)	< 121		µg/kg dry	121	79.1	50	"	"	"	"	"	X
75-34-3	1,1-Dichloroethane	< 60.5		µg/kg dry	60.5	14.0	50	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 60.5		µg/kg dry	60.5	15.8	50	"	"	"	"	"	X
75-35-4	1,1-Dichloroethene	< 60.5		µg/kg dry	60.5	15.5	50	"	"	"	"	"	X
156-59-2	cis-1,2-Dichloroethene	< 60.5		µg/kg dry	60.5	20.1	50	"	"	"	"	"	X
156-60-5	trans-1,2-Dichloroethene	< 60.5		µg/kg dry	60.5	13.8	50	"	"	"	"	"	X
78-87-5	1,2-Dichloropropane	< 60.5		µg/kg dry	60.5	21.0	50	"	"	"	"	"	X
142-28-9	1,3-Dichloropropane	< 60.5		µg/kg dry	60.5	19.1	50	"	"	"	"	"	X
594-20-7	2,2-Dichloropropane	< 60.5		µg/kg dry	60.5	15.9	50	"	"	"	"	"	X
563-58-6	1,1-Dichloropropene	< 60.5		µg/kg dry	60.5	18.5	50	"	"	"	"	"	X
10061-01-5	cis-1,3-Dichloropropene	< 60.5		µg/kg dry	60.5	14.3	50	"	"	"	"	"	X
10061-02-6	trans-1,3-Dichloropropene	< 60.5		µg/kg dry	60.5	24.6	50	"	"	"	"	"	X
100-41-4	Ethylbenzene	< 60.5		µg/kg dry	60.5	12.6	50	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 60.5		µg/kg dry	60.5	19.3	50	"	"	"	"	"	X
591-78-6	2-Hexanone (MBK)	< 121		µg/kg dry	121	40.2	50	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-8	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-15				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260							Initial weight: 16.62 g						
98-82-8	Isopropylbenzene	< 60.5		µg/kg dry	60.5	21.9	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
99-87-6	4-Isopropyltoluene	< 60.5		µg/kg dry	60.5	16.7	50	"	"	"	"	"	X
1634-04-4	Methyl tert-butyl ether	< 60.5		µg/kg dry	60.5	18.2	50	"	"	"	"	"	X
108-10-1	4-Methyl-2-pentanone (MIBK)	< 121		µg/kg dry	121	43.3	50	"	"	"	"	"	X
75-09-2	Methylene chloride	< 121		µg/kg dry	121	51.6	50	"	"	"	"	"	X
91-20-3	Naphthalene	< 60.5		µg/kg dry	60.5	17.5	50	"	"	"	"	"	X
103-65-1	n-Propylbenzene	< 60.5		µg/kg dry	60.5	15.1	50	"	"	"	"	"	X
100-42-5	Styrene	< 60.5		µg/kg dry	60.5	7.98	50	"	"	"	"	"	X
630-20-6	1,1,1,2-Tetrachloroethane	< 60.5		µg/kg dry	60.5	14.6	50	"	"	"	"	"	X
79-34-5	1,1,2,2-Tetrachloroethane	< 60.5		µg/kg dry	60.5	19.2	50	"	"	"	"	"	X
127-18-4	Tetrachloroethene	< 60.5		µg/kg dry	60.5	19.0	50	"	"	"	"	"	X
108-88-3	Toluene	< 60.5		µg/kg dry	60.5	9.73	50	"	"	"	"	"	X
87-61-6	1,2,3-Trichlorobenzene	< 60.5		µg/kg dry	60.5	14.1	50	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 60.5		µg/kg dry	60.5	9.97	50	"	"	"	"	"	X
108-70-3	1,3,5-Trichlorobenzene	< 60.5		µg/kg dry	60.5	9.55	50	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	< 60.5		µg/kg dry	60.5	14.6	50	"	"	"	"	"	X
79-00-5	1,1,2-Trichloroethane	< 60.5		µg/kg dry	60.5	18.7	50	"	"	"	"	"	X
79-01-6	Trichloroethene	< 60.5		µg/kg dry	60.5	10.3	50	"	"	"	"	"	X
75-69-4	Trichlorofluoromethane (Freon 11)	< 60.5		µg/kg dry	60.5	27.3	50	"	"	"	"	"	X
96-18-4	1,2,3-Trichloropropane	< 60.5		µg/kg dry	60.5	27.9	50	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	< 60.5		µg/kg dry	60.5	15.3	50	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	< 60.5		µg/kg dry	60.5	12.6	50	"	"	"	"	"	X
75-01-4	Vinyl chloride	< 60.5		µg/kg dry	60.5	29.7	50	"	"	"	"	"	X
179601-23-1	m,p-Xylene	< 121		µg/kg dry	121	35.5	50	"	"	"	"	"	X
95-47-6	o-Xylene	< 60.5		µg/kg dry	60.5	18.6	50	"	"	"	"	"	X
109-99-9	Tetrahydrofuran	< 121		µg/kg dry	121	44.2	50	"	"	"	"	"	
60-29-7	Ethyl ether	< 60.5		µg/kg dry	60.5	16.4	50	"	"	"	"	"	X
994-05-8	Tert-amyl methyl ether	< 60.5		µg/kg dry	60.5	33.4	50	"	"	"	"	"	
637-92-3	Ethyl tert-butyl ether	< 60.5		µg/kg dry	60.5	16.7	50	"	"	"	"	"	
108-20-3	Di-isopropyl ether	< 60.5		µg/kg dry	60.5	19.5	50	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	< 1210		µg/kg dry	1210	858	50	"	"	"	"	"	X
123-91-1	1,4-Dioxane	< 1210		µg/kg dry	1210	356	50	"	"	"	"	"	X
110-57-6	trans-1,4-Dichloro-2-buten e	< 302		µg/kg dry	302	39.9	50	"	"	"	"	"	X
64-17-5	Ethanol	< 12100		µg/kg dry	12100	1040	50	"	"	"	"	"	
Surrogate recoveries:													
460-00-4	*4-Bromofluorobenzene*	*103*			*70-130 %*			"	"	"	"	"	
2037-26-5	*Toluene-d8*	*106*			*70-130 %*			"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*108*			*70-130 %*			"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*107*			*70-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds Prepared by method SW846 3546													
83-32-9	Acenaphthene	< 76.5		µg/kg dry	76.5	40.6	1	SW846 8270D	13-Jul-20	14-Jul-20	BJJ	2001083	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-8	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-15				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
208-96-8	Acenaphthylene	< 76.5		µg/kg dry	76.5	39.9	1	SW846 8270D	13-Jul-20	14-Jul-20	BJJ	2001083	X
62-53-3	Aniline	< 379		µg/kg dry	379	24.1	1	"	"	"	"	"	X
120-12-7	Anthracene	< 76.5		µg/kg dry	76.5	44.0	1	"	"	"	"	"	X
103-33-3	Azobenzene/Diphenyldiazene	< 379		µg/kg dry	379	41.1	1	"	"	"	"	"	
92-87-5	Benzidine	< 757		µg/kg dry	757	24.1	1	"	"	"	"	"	X
56-55-3	Benzo (a) anthracene	< 76.5		µg/kg dry	76.5	43.0	1	"	"	"	"	"	X
50-32-8	Benzo (a) pyrene	< 76.5		µg/kg dry	76.5	52.3	1	"	"	"	"	"	X
205-99-2	Benzo (b) fluoranthene	< 76.5		µg/kg dry	76.5	57.6	1	"	"	"	"	"	X
191-24-2	Benzo (g,h,i) perylene	< 76.5		µg/kg dry	76.5	54.0	1	"	"	"	"	"	X
207-08-9	Benzo (k) fluoranthene	< 76.5		µg/kg dry	76.5	65.4	1	"	"	"	"	"	X
65-85-0	Benzoic acid	< 379		µg/kg dry	379	22.7	1	"	"	"	"	"	X
100-51-6	Benzyl alcohol	< 379		µg/kg dry	379	87.6	1	"	"	"	"	"	X
111-91-1	Bis(2-chloroethoxy)methane	< 379		µg/kg dry	379	38.2	1	"	"	"	"	"	X
111-44-4	Bis(2-chloroethyl)ether	< 192		µg/kg dry	192	35.4	1	"	"	"	"	"	X
108-60-1	Bis(2-chloroisopropyl)ether	< 192		µg/kg dry	192	30.7	1	"	"	"	"	"	X
117-81-7	Bis(2-ethylhexyl)phthalate	< 192		µg/kg dry	192	48.7	1	"	"	"	"	"	X
101-55-3	4-Bromophenyl phenyl ether	< 379		µg/kg dry	379	42.8	1	"	"	"	"	"	X
85-68-7	Butyl benzyl phthalate	< 379		µg/kg dry	379	38.0	1	"	"	"	"	"	X
86-74-8	Carbazole	< 192		µg/kg dry	192	44.0	1	"	"	"	"	"	X
59-50-7	4-Chloro-3-methylphenol	< 379		µg/kg dry	379	44.5	1	"	"	"	"	"	X
106-47-8	4-Chloroaniline	< 192		µg/kg dry	192	23.6	1	"	"	"	"	"	X
91-58-7	2-Chloronaphthalene	< 379		µg/kg dry	379	51.8	1	"	"	"	"	"	X
95-57-8	2-Chlorophenol	< 192		µg/kg dry	192	36.7	1	"	"	"	"	"	X
7005-72-3	4-Chlorophenyl phenyl ether	< 379		µg/kg dry	379	37.0	1	"	"	"	"	"	X
218-01-9	Chrysene	< 76.5		µg/kg dry	76.5	43.2	1	"	"	"	"	"	X
53-70-3	Dibenzo (a,h) anthracene	< 76.5		µg/kg dry	76.5	56.5	1	"	"	"	"	"	X
132-64-9	Dibenzofuran	< 192		µg/kg dry	192	51.5	1	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 379		µg/kg dry	379	45.2	1	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 379		µg/kg dry	379	40.8	1	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 379		µg/kg dry	379	43.0	1	"	"	"	"	"	X
91-94-1	3,3´-Dichlorobenzidine	< 379		µg/kg dry	379	41.9	1	"	"	"	"	"	X
120-83-2	2,4-Dichlorophenol	< 192		µg/kg dry	192	46.5	1	"	"	"	"	"	X
84-66-2	Diethyl phthalate	< 379		µg/kg dry	379	39.7	1	"	"	"	"	"	X
131-11-3	Dimethyl phthalate	< 379		µg/kg dry	379	42.6	1	"	"	"	"	"	X
105-67-9	2,4-Dimethylphenol	< 379		µg/kg dry	379	29.9	1	"	"	"	"	"	X
84-74-2	Di-n-butyl phthalate	< 379		µg/kg dry	379	40.5	1	"	"	"	"	"	X
534-52-1	4,6-Dinitro-2-methylphenol	< 379		µg/kg dry	379	54.3	1	"	"	"	"	"	X
51-28-5	2,4-Dinitrophenol	< 379		µg/kg dry	379	39.2	1	"	"	"	"	"	X
121-14-2	2,4-Dinitrotoluene	< 192		µg/kg dry	192	45.9	1	"	"	"	"	"	X
606-20-2	2,6-Dinitrotoluene	< 192		µg/kg dry	192	39.1	1	"	"	"	"	"	X
117-84-0	Di-n-octyl phthalate	< 379		µg/kg dry	379	56.3	1	"	"	"	"	"	X
206-44-0	Fluoranthene	< 76.5		µg/kg dry	76.5	44.8	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-8	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-15				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
86-73-7	Fluorene	< 76.5		µg/kg dry	76.5	49.4	1	SW846 8270D	13-Jul-20	14-Jul-20	BJJ	2001083	X
118-74-1	Hexachlorobenzene	< 192		µg/kg dry	192	48.2	1	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 192		µg/kg dry	192	48.2	1	"	"	"	"	"	X
77-47-4	Hexachlorocyclopentadiene	< 192		µg/kg dry	192	48.3	1	"	"	"	"	"	X
67-72-1	Hexachloroethane	< 192		µg/kg dry	192	43.2	1	"	"	"	"	"	X
193-39-5	Indeno (1,2,3-cd) pyrene	< 76.5		µg/kg dry	76.5	52.3	1	"	"	"	"	"	X
78-59-1	Isophorone	< 192		µg/kg dry	192	29.5	1	"	"	"	"	"	X
91-57-6	2-Methylnaphthalene	< 76.5		µg/kg dry	76.5	53.6	1	"	"	"	"	"	X
95-48-7	2-Methylphenol	< 379		µg/kg dry	379	30.4	1	"	"	"	"	"	X
108-39-4, 106-44-5	3 & 4-Methylphenol	< 379		µg/kg dry	379	29.7	1	"	"	"	"	"	X
91-20-3	Naphthalene	< 76.5		µg/kg dry	76.5	44.2	1	"	"	"	"	"	X
88-74-4	2-Nitroaniline	< 379		µg/kg dry	379	34.3	1	"	"	"	"	"	X
99-09-2	3-Nitroaniline	< 379		µg/kg dry	379	35.0	1	"	"	"	"	"	X
100-01-6	4-Nitroaniline	< 192		µg/kg dry	192	50.5	1	"	"	"	"	"	X
98-95-3	Nitrobenzene	< 192		µg/kg dry	192	44.3	1	"	"	"	"	"	X
88-75-5	2-Nitrophenol	< 192		µg/kg dry	192	33.5	1	"	"	"	"	"	X
100-02-7	4-Nitrophenol	< 1510		µg/kg dry	1510	50.4	1	"	"	"	"	"	X
62-75-9	N-Nitrosodimethylamine	< 192		µg/kg dry	192	25.0	1	"	"	"	"	"	X
621-64-7	N-Nitrosodi-n-propylamine	< 192		µg/kg dry	192	33.5	1	"	"	"	"	"	X
86-30-6	N-Nitrosodiphenylamine	< 379		µg/kg dry	379	38.5	1	"	"	"	"	"	X
87-86-5	Pentachlorophenol	< 379		µg/kg dry	379	45.1	1	"	"	"	"	"	X
85-01-8	Phenanthrene	< 76.5		µg/kg dry	76.5	43.4	1	"	"	"	"	"	X
108-95-2	Phenol	< 379		µg/kg dry	379	38.3	1	"	"	"	"	"	X
129-00-0	Pyrene	< 76.5		µg/kg dry	76.5	42.2	1	"	"	"	"	"	X
110-86-1	Pyridine	< 379		µg/kg dry	379	89.6	1	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 379		µg/kg dry	379	46.6	1	"	"	"	"	"	X
90-12-0	1-Methylnaphthalene	< 76.5		µg/kg dry	76.5	42.2	1	"	"	"	"	"	
95-95-4	2,4,5-Trichlorophenol	< 379		µg/kg dry	379	39.1	1	"	"	"	"	"	X
88-06-2	2,4,6-Trichlorophenol	< 192		µg/kg dry	192	46.8	1	"	"	"	"	"	X
82-68-8	Pentachloronitrobenzene	< 379		µg/kg dry	379	40.3	1	"	"	"	"	"	X
95-94-3	1,2,4,5-Tetrachlorobenzene	< 379		µg/kg dry	379	45.1	1	"	"	"	"	"	X
Surrogate recoveries:													
321-60-8	*2-Fluorobiphenyl*	*80*			*30-130 %*			"	"	"	"	"	
367-12-4	*2-Fluorophenol*	*88*			*30-130 %*			"	"	"	"	"	
4165-60-0	*Nitrobenzene-d5*	*84*			*30-130 %*			"	"	"	"	"	
4165-62-2	*Phenol-d5*	*97*			*30-130 %*			"	"	"	"	"	
1718-51-0	*Terphenyl-dl4*	*85*			*30-130 %*			"	"	"	"	"	
118-79-6	*2,4,6-Tribromophenol*	*79*			*30-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls Prepared by method SW846 3546													
12674-11-2	Aroclor-1016	< 23.0		µg/kg dry	23.0	16.6	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
11104-28-2	Aroclor-1221	< 23.0		µg/kg dry	23.0	6.79	1	"	"	"	"	"	X
11141-16-5	Aroclor-1232	< 23.0		µg/kg dry	23.0	6.37	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-8	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-15				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls													
53469-21-9	Aroclor-1242	< 23.0		µg/kg dry	23.0	2.18	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
12672-29-6	Aroclor-1248	< 23.0		µg/kg dry	23.0	7.18	1	"	"	"	"	"	X
11097-69-1	Aroclor-1254	< 23.0		µg/kg dry	23.0	17.9	1	"	"	"	"	"	X
11096-82-5	Aroclor-1260	< 23.0		µg/kg dry	23.0	4.94	1	"	"	"	"	"	X
37324-23-5	Aroclor-1262	< 23.0		µg/kg dry	23.0	5.35	1	"	"	"	"	"	X
11100-14-4	Aroclor-1268	< 23.0		µg/kg dry	23.0	4.90	1	"	"	"	"	"	X
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*90*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*81*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*85*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*75*			*30-150 %*			"	"	"	"	"	
Pesticides													
Organochlorine Pesticides Prepared by method SW846 3546			Z-2										
319-84-6	alpha-BHC	< 5.75		µg/kg dry	5.75	0.264	1	SW846 8081B	13-Jul-20	16-Jul-20	BJJ	2001088	X
319-85-7	beta-BHC	< 5.75		µg/kg dry	5.75	0.368	1	"	"	"	"	"	X
319-86-8	delta-BHC	< 5.75		µg/kg dry	5.75	0.299	1	"	"	"	"	"	X
58-89-9	gamma-BHC (Lindane)	< 3.45		µg/kg dry	3.45	0.609	1	"	"	"	"	"	X
76-44-8	Heptachlor	< 5.75		µg/kg dry	5.75	0.666	1	"	"	"	"	"	X
309-00-2	Aldrin	< 5.75		µg/kg dry	5.75	0.195	1	"	"	"	"	"	X
1024-57-3	Heptachlor epoxide	< 5.75		µg/kg dry	5.75	0.230	1	"	"	"	"	"	X
959-98-8	Endosulfan I	< 5.75		µg/kg dry	5.75	0.264	1	"	"	"	"	"	X
60-57-1	Dieldrin	< 5.75		µg/kg dry	5.75	0.276	1	"	"	"	"	"	X
72-55-9	4,4'-DDE (p,p')	< 5.75		µg/kg dry	5.75	0.299	1	"	"	"	"	"	X
72-20-8	Endrin	< 9.19		µg/kg dry	9.19	0.563	1	"	"	"	"	"	X
33213-65-9	Endosulfan II	< 9.19		µg/kg dry	9.19	0.368	1	"	"	"	"	"	X
72-54-8	4,4'-DDD (p,p')	< 9.19		µg/kg dry	9.19	0.483	1	"	"	"	"	"	X
1031-07-8	Endosulfan sulfate	< 9.19		µg/kg dry	9.19	0.839	1	"	"	"	"	"	X
50-29-3	4,4'-DDT (p,p')	< 9.19		µg/kg dry	9.19	3.94	1	"	"	"	"	"	X
72-43-5	Methoxychlor	< 9.19		µg/kg dry	9.19	0.620	1	"	"	"	"	"	X
53494-70-5	Endrin ketone	< 9.19		µg/kg dry	9.19	0.333	1	"	"	"	"	"	X
7421-93-4	Endrin aldehyde	< 9.19		µg/kg dry	9.19	1.45	1	"	"	"	"	"	X
5103-71-9	alpha-Chlordane	< 5.75		µg/kg dry	5.75	0.241	1	"	"	"	"	"	X
5103-74-2	gamma-Chlordane	< 5.75		µg/kg dry	5.75	0.287	1	"	"	"	"	"	X
8001-35-2	Toxaphene	< 115		µg/kg dry	115	81.1	1	"	"	"	"	"	X
57-74-9	Chlordane	< 23.0		µg/kg dry	23.0	2.89	1	"	"	"	"	"	X
15972-60-8	Alachlor	< 5.75		µg/kg dry	5.75	0.506	1	"	"	"	"	"	
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*68*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*69*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*54*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*52*			*30-150 %*			"	"	"	"	"	
Extractable Petroleum Hydrocarbons													

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-8 SC58794-15	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Extractable Petroleum Hydrocarbons													
Fingerprinting by GC Prepared by method SW846 3546													
	Total Petroleum Hydrocarbons	**111**		mg/kg dry	15.4	12.9	1	SW846 8100Mod.	14-Jul-20	15-Jul-20	BJJ	2001092	
Surrogate recoveries:													
84-15-1	*o-Terphenyl*	*77*			*40-140 %*			"	"	"	"	"	
3386-33-2	*1-Chlorooctadecane*	*103*			*40-140 %*			"	"	"	"	"	
Total Metals by EPA 6000/7000 Series Methods													
Prepared by method SW846 3050B													
7440-22-4	Silver	< 3.75		mg/kg dry	3.75	0.202	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7440-38-2	Arsenic	**48.7**		mg/kg dry	1.87	0.237	1	"	"	"	"	"	X
7440-39-3	Barium	**33.0**		mg/kg dry	1.25	0.147	1	"	"	"	"	"	X
7440-41-7	Beryllium	< 0.624		mg/kg dry	0.624	0.0313	1	"	"	"	"	"	X
7440-43-9	Cadmium	< 0.624		mg/kg dry	0.624	0.0323	1	"	"	"	"	"	X
7440-47-3	Chromium	**31.6**		mg/kg dry	1.25	0.166	1	"	"	"	"	"	X
7439-97-6	Mercury	< 0.115		mg/kg dry	0.115	0.0095	1	SW846 7471B	13-Jul-20	13-Jul-20	edt	2001079	X
Prepared by method SW846 3050B													
7440-02-0	Nickel	**47.7**		mg/kg dry	1.25	0.144	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7439-92-1	Lead	**21.0**		mg/kg dry	1.87	0.265	1	"	"	"	"	"	X
7440-36-0	Antimony	< 6.24		mg/kg dry	6.24	0.469	1	"	"	"	"	"	X
7782-49-2	Selenium	< 1.87		mg/kg dry	1.87	0.357	1	"	"	"	"	"	X
7440-28-0	Thallium	< 3.75		mg/kg dry	3.75	1.38	1	"	"	"	"	"	X
7440-62-2	Vanadium	**36.0**		mg/kg dry	1.87	0.332	1	"	"	17-Jul-20	"	"	X
7440-66-6	Zinc	**52.3**		mg/kg dry	3.75	0.966	1	"	"	15-Jul-20	"	"	X
General Chemistry Parameters													
	% Solids	**86.1**		%			1	SM2540 G (11) Mod.	10-Jul-20	14-Jul-20	PN	2001075	
Toxicity Characteristics													
	Ignitability by Definition	**Negative**		N/A			1	SW846 1030	10-Jul-20 17:23	10-Jul-20 21:00	PN	2001074	X
	pH	**5.56**	pH	pH Units			1	SW846 9045D	14-Jul-20 15:31	14-Jul-20 18:55	PN	2001081	X
Subcontracted Analyses													
Subcontracted Analyses Prepared by method SW8151A										Methylation date: 14-Jul-20			
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
93-76-5	2,4,5-T	< 80		ug/kg	80	80	10	SW8151A	14-Jul-20	15-Jul-20 19:29	M-CT007	537320A	
93-72-1	2,4,5-TP (Silvex)	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-75-7	2,4-D	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-82-6	2,4-DB	< 80		ug/kg	80	80	10	"	"	"	"	"	
75-99-0	Dalapon	< 80		ug/kg	80	80	10	"	"	"	"	"	
1918-00-9	Dicamba	< 80		ug/kg	80	80	10	"	"	"	"	"	
120-36-5	Dichloroprop	< 80		ug/kg	80	80	10	"	"	"	"	"	
88-85-7	Dinoseb	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-74-6	MCPA	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
7085-19-0	MCPP	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
Surrogate recoveries:													
19719-28-9	*% DCAA*	*84*			*30-150 %*			"	"	"	"	"	

This laboratory report is not valid without an authorized signature on the cover page.

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-8 SC58794-15	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Subcontracted Analyses													
Prepared by method SW846 7.3.3.1/90													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Cyanide	< 6		mg/kg	6	6	1	SW846 7.3.3.1/90	15-Jul-20	15-Jul-20 13:52	M-CT007	537434A	
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Sulfide	< 20		mg/kg	20	20	1	SW846 CH7	"	15-Jul-20 14:40	M-CT007	537434B	
Prepared by method SW846-React													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity	**Negative**		Pos/Neg			1	SW846-React	15-Jul-20 14:43	15-Jul-20 14:43	M-CT007	'[none]'	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-9	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-16				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
Prepared by method SW846 5035A Soil (high level)							Initial weight: 15.23 g						
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	< 76.0		µg/kg dry	76.0	41.7	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
67-64-1	Acetone	< 760		µg/kg dry	760	96.1	50	"	"	"	"	"	X
107-13-1	Acrylonitrile	< 76.0		µg/kg dry	76.0	27.5	50	"	"	"	"	"	X
71-43-2	Benzene	< 76.0		µg/kg dry	76.0	12.2	50	"	"	"	"	"	X
108-86-1	Bromobenzene	< 76.0		µg/kg dry	76.0	17.2	50	"	"	"	"	"	X
74-97-5	Bromochloromethane	< 76.0		µg/kg dry	76.0	10.9	50	"	"	"	"	"	X
75-27-4	Bromodichloromethane	< 76.0		µg/kg dry	76.0	19.6	50	"	"	"	"	"	X
75-25-2	Bromoform	< 76.0		µg/kg dry	76.0	16.3	50	"	"	"	"	"	X
74-83-9	Bromomethane	< 152		µg/kg dry	152	37.6	50	"	"	"	"	"	X
78-93-3	2-Butanone (MEK)	< 152		µg/kg dry	152	34.8	50	"	"	"	"	"	X
104-51-8	n-Butylbenzene	< 76.0		µg/kg dry	76.0	30.4	50	"	"	"	"	"	X
135-98-8	sec-Butylbenzene	< 76.0		µg/kg dry	76.0	23.3	50	"	"	"	"	"	X
98-06-6	tert-Butylbenzene	< 76.0		µg/kg dry	76.0	31.0	50	"	"	"	"	"	X
75-15-0	Carbon disulfide	< 152		µg/kg dry	152	28.1	50	"	"	"	"	"	X
56-23-5	Carbon tetrachloride	< 76.0		µg/kg dry	76.0	22.7	50	"	"	"	"	"	X
108-90-7	Chlorobenzene	< 76.0		µg/kg dry	76.0	9.20	50	"	"	"	"	"	X
75-00-3	Chloroethane	< 152		µg/kg dry	152	33.9	50	"	"	"	"	"	X
67-66-3	Chloroform	< 76.0		µg/kg dry	76.0	8.97	50	"	"	"	"	"	X
74-87-3	Chloromethane	< 152		µg/kg dry	152	90.3	50	"	"	"	"	"	X
95-49-8	2-Chlorotoluene	< 76.0		µg/kg dry	76.0	18.9	50	"	"	"	"	"	X
106-43-4	4-Chlorotoluene	< 76.0		µg/kg dry	76.0	13.8	50	"	"	"	"	"	X
96-12-8	1,2-Dibromo-3-chloropropane	< 152		µg/kg dry	152	30.0	50	"	"	"	"	"	X
124-48-1	Dibromochloromethane	< 76.0		µg/kg dry	76.0	12.0	50	"	"	"	"	"	X
106-93-4	1,2-Dibromoethane (EDB)	< 76.0		µg/kg dry	76.0	20.7	50	"	"	"	"	"	X
74-95-3	Dibromomethane	< 76.0		µg/kg dry	76.0	14.3	50	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 76.0		µg/kg dry	76.0	13.7	50	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 76.0		µg/kg dry	76.0	18.9	50	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 76.0		µg/kg dry	76.0	13.6	50	"	"	"	"	"	X
75-71-8	Dichlorodifluoromethane (Freon12)	< 152		µg/kg dry	152	99.5	50	"	"	"	"	"	X
75-34-3	1,1-Dichloroethane	< 76.0		µg/kg dry	76.0	17.6	50	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 76.0		µg/kg dry	76.0	19.9	50	"	"	"	"	"	X
75-35-4	1,1-Dichloroethene	< 76.0		µg/kg dry	76.0	19.5	50	"	"	"	"	"	X
156-59-2	cis-1,2-Dichloroethene	< 76.0		µg/kg dry	76.0	25.3	50	"	"	"	"	"	X
156-60-5	trans-1,2-Dichloroethene	< 76.0		µg/kg dry	76.0	17.3	50	"	"	"	"	"	X
78-87-5	1,2-Dichloropropane	< 76.0		µg/kg dry	76.0	26.4	50	"	"	"	"	"	X
142-28-9	1,3-Dichloropropane	< 76.0		µg/kg dry	76.0	24.0	50	"	"	"	"	"	X
594-20-7	2,2-Dichloropropane	< 76.0		µg/kg dry	76.0	20.0	50	"	"	"	"	"	X
563-58-6	1,1-Dichloropropene	< 76.0		µg/kg dry	76.0	23.3	50	"	"	"	"	"	X
10061-01-5	cis-1,3-Dichloropropene	< 76.0		µg/kg dry	76.0	17.9	50	"	"	"	"	"	X
10061-02-6	trans-1,3-Dichloropropene	< 76.0		µg/kg dry	76.0	31.0	50	"	"	"	"	"	X
100-41-4	Ethylbenzene	< 76.0		µg/kg dry	76.0	15.9	50	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 76.0		µg/kg dry	76.0	24.3	50	"	"	"	"	"	X
591-78-6	2-Hexanone (MBK)	< 152		µg/kg dry	152	50.6	50	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-9	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-16				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
							Initial weight: 15.23 g						
98-82-8	Isopropylbenzene	< 76.0		µg/kg dry	76.0	27.6	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
99-87-6	4-Isopropyltoluene	< 76.0		µg/kg dry	76.0	21.1	50	"	"	"	"	"	X
1634-04-4	Methyl tert-butyl ether	< 76.0		µg/kg dry	76.0	22.9	50	"	"	"	"	"	X
108-10-1	4-Methyl-2-pentanone (MIBK)	< 152		µg/kg dry	152	54.5	50	"	"	"	"	"	X
75-09-2	Methylene chloride	< 152		µg/kg dry	152	64.9	50	"	"	"	"	"	X
91-20-3	Naphthalene	< 76.0		µg/kg dry	76.0	22.1	50	"	"	"	"	"	X
103-65-1	n-Propylbenzene	< 76.0		µg/kg dry	76.0	18.9	50	"	"	"	"	"	X
100-42-5	Styrene	< 76.0		µg/kg dry	76.0	10.0	50	"	"	"	"	"	X
630-20-6	1,1,1,2-Tetrachloroethane	< 76.0		µg/kg dry	76.0	18.3	50	"	"	"	"	"	X
79-34-5	1,1,2,2-Tetrachloroethane	< 76.0		µg/kg dry	76.0	24.1	50	"	"	"	"	"	X
127-18-4	Tetrachloroethene	< 76.0		µg/kg dry	76.0	24.0	50	"	"	"	"	"	X
108-88-3	Toluene	< 76.0		µg/kg dry	76.0	12.2	50	"	"	"	"	"	X
87-61-6	1,2,3-Trichlorobenzene	< 76.0		µg/kg dry	76.0	17.7	50	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 76.0		µg/kg dry	76.0	12.5	50	"	"	"	"	"	X
108-70-3	1,3,5-Trichlorobenzene	< 76.0		µg/kg dry	76.0	12.0	50	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	< 76.0		µg/kg dry	76.0	18.4	50	"	"	"	"	"	X
79-00-5	1,1,2-Trichloroethane	< 76.0		µg/kg dry	76.0	23.5	50	"	"	"	"	"	X
79-01-6	Trichloroethene	< 76.0		µg/kg dry	76.0	13.0	50	"	"	"	"	"	X
75-69-4	Trichlorofluoromethane (Freon 11)	< 76.0		µg/kg dry	76.0	34.4	50	"	"	"	"	"	X
96-18-4	1,2,3-Trichloropropane	< 76.0		µg/kg dry	76.0	35.1	50	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	< 76.0		µg/kg dry	76.0	19.2	50	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	< 76.0		µg/kg dry	76.0	15.9	50	"	"	"	"	"	X
75-01-4	Vinyl chloride	< 76.0		µg/kg dry	76.0	37.4	50	"	"	"	"	"	X
179601-23-1	m,p-Xylene	< 152		µg/kg dry	152	44.7	50	"	"	"	"	"	X
95-47-6	o-Xylene	< 76.0		µg/kg dry	76.0	23.4	50	"	"	"	"	"	X
109-99-9	Tetrahydrofuran	< 152		µg/kg dry	152	55.6	50	"	"	"	"	"	
60-29-7	Ethyl ether	< 76.0		µg/kg dry	76.0	20.6	50	"	"	"	"	"	X
994-05-8	Tert-amyl methyl ether	< 76.0		µg/kg dry	76.0	42.1	50	"	"	"	"	"	
637-92-3	Ethyl tert-butyl ether	< 76.0		µg/kg dry	76.0	21.1	50	"	"	"	"	"	
108-20-3	Di-isopropyl ether	< 76.0		µg/kg dry	76.0	24.6	50	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	< 1520		µg/kg dry	1520	1080	50	"	"	"	"	"	X
123-91-1	1,4-Dioxane	< 1520		µg/kg dry	1520	448	50	"	"	"	"	"	X
110-57-6	trans-1,4-Dichloro-2-buten e	< 380		µg/kg dry	380	50.2	50	"	"	"	"	"	X
64-17-5	Ethanol	< 15200		µg/kg dry	15200	1310	50	"	"	"	"	"	
Surrogate recoveries:													
460-00-4	*4-Bromofluorobenzene*	*103*			*70-130 %*			"	"	"	"	"	
2037-26-5	*Toluene-d8*	*103*			*70-130 %*			"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*102*			*70-130 %*			"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*102*			*70-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds Prepared by method SW846 3546													
83-32-9	Acenaphthene	< 83.8		µg/kg dry	83.8	44.5	1	SW846 8270D	13-Jul-20	14-Jul-20	BJJ	2001083	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-9	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-16				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
208-96-8	Acenaphthylene	< 83.8		µg/kg dry	83.8	43.7	1	SW846 8270D	13-Jul-20	14-Jul-20	BJJ	2001083	X
62-53-3	Aniline	< 415		µg/kg dry	415	26.4	1	"	"	"	"	"	X
120-12-7	Anthracene	< 83.8		µg/kg dry	83.8	48.2	1	"	"	"	"	"	X
103-33-3	Azobenzene/Diphenyldiazene	< 415		µg/kg dry	415	45.0	1	"	"	"	"	"	
92-87-5	Benzidine	< 829		µg/kg dry	829	26.4	1	"	"	"	"	"	X
56-55-3	Benzo (a) anthracene	< 83.8		µg/kg dry	83.8	47.1	1	"	"	"	"	"	X
50-32-8	Benzo (a) pyrene	< 83.8		µg/kg dry	83.8	57.3	1	"	"	"	"	"	X
205-99-2	Benzo (b) fluoranthene	< 83.8		µg/kg dry	83.8	63.1	1	"	"	"	"	"	X
191-24-2	Benzo (g,h,i) perylene	< 83.8		µg/kg dry	83.8	59.2	1	"	"	"	"	"	X
207-08-9	Benzo (k) fluoranthene	< 83.8		µg/kg dry	83.8	71.6	1	"	"	"	"	"	X
65-85-0	Benzoic acid	< 415		µg/kg dry	415	24.9	1	"	"	"	"	"	X
100-51-6	Benzyl alcohol	< 415		µg/kg dry	415	96.0	1	"	"	"	"	"	X
111-91-1	Bis(2-chloroethoxy)methane	< 415		µg/kg dry	415	41.8	1	"	"	"	"	"	X
111-44-4	Bis(2-chloroethyl)ether	< 210		µg/kg dry	210	38.8	1	"	"	"	"	"	X
108-60-1	Bis(2-chloroisopropyl)ether	< 210		µg/kg dry	210	33.7	1	"	"	"	"	"	X
117-81-7	Bis(2-ethylhexyl)phthalate	< 210		µg/kg dry	210	53.4	1	"	"	"	"	"	X
101-55-3	4-Bromophenyl phenyl ether	< 415		µg/kg dry	415	46.9	1	"	"	"	"	"	X
85-68-7	Butyl benzyl phthalate	< 415		µg/kg dry	415	41.6	1	"	"	"	"	"	X
86-74-8	Carbazole	< 210		µg/kg dry	210	48.2	1	"	"	"	"	"	X
59-50-7	4-Chloro-3-methylphenol	< 415		µg/kg dry	415	48.7	1	"	"	"	"	"	X
106-47-8	4-Chloroaniline	< 210		µg/kg dry	210	25.9	1	"	"	"	"	"	X
91-58-7	2-Chloronaphthalene	< 415		µg/kg dry	415	56.8	1	"	"	"	"	"	X
95-57-8	2-Chlorophenol	< 210		µg/kg dry	210	40.2	1	"	"	"	"	"	X
7005-72-3	4-Chlorophenyl phenyl ether	< 415		µg/kg dry	415	40.6	1	"	"	"	"	"	X
218-01-9	Chrysene	< 83.8		µg/kg dry	83.8	47.4	1	"	"	"	"	"	X
53-70-3	Dibenzo (a,h) anthracene	< 83.8		µg/kg dry	83.8	61.9	1	"	"	"	"	"	X
132-64-9	Dibenzofuran	< 210		µg/kg dry	210	56.4	1	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 415		µg/kg dry	415	49.5	1	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 415		µg/kg dry	415	44.7	1	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 415		µg/kg dry	415	47.1	1	"	"	"	"	"	X
91-94-1	3,3´-Dichlorobenzidine	< 415		µg/kg dry	415	45.9	1	"	"	"	"	"	X
120-83-2	2,4-Dichlorophenol	< 210		µg/kg dry	210	50.9	1	"	"	"	"	"	X
84-66-2	Diethyl phthalate	< 415		µg/kg dry	415	43.5	1	"	"	"	"	"	X
131-11-3	Dimethyl phthalate	< 415		µg/kg dry	415	46.6	1	"	"	"	"	"	X
105-67-9	2,4-Dimethylphenol	< 415		µg/kg dry	415	32.8	1	"	"	"	"	"	X
84-74-2	Di-n-butyl phthalate	< 415		µg/kg dry	415	44.3	1	"	"	"	"	"	X
534-52-1	4,6-Dinitro-2-methylphenol	< 415		µg/kg dry	415	59.4	1	"	"	"	"	"	X
51-28-5	2,4-Dinitrophenol	< 415		µg/kg dry	415	43.0	1	"	"	"	"	"	X
121-14-2	2,4-Dinitrotoluene	< 210		µg/kg dry	210	50.2	1	"	"	"	"	"	X
606-20-2	2,6-Dinitrotoluene	< 210		µg/kg dry	210	42.8	1	"	"	"	"	"	X
117-84-0	Di-n-octyl phthalate	< 415		µg/kg dry	415	61.7	1	"	"	"	"	"	X
206-44-0	Fluoranthene	< 83.8		µg/kg dry	83.8	49.1	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-9	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-16				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
86-73-7	Fluorene	< 83.8		µg/kg dry	83.8	54.1	1	SW846 8270D	13-Jul-20	14-Jul-20	BJJ	2001083	X
118-74-1	Hexachlorobenzene	< 210		µg/kg dry	210	52.8	1	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 210		µg/kg dry	210	52.8	1	"	"	"	"	"	X
77-47-4	Hexachlorocyclopentadiene	< 210		µg/kg dry	210	52.9	1	"	"	"	"	"	X
67-72-1	Hexachloroethane	< 210		µg/kg dry	210	47.4	1	"	"	"	"	"	X
193-39-5	Indeno (1,2,3-cd) pyrene	< 83.8		µg/kg dry	83.8	57.3	1	"	"	"	"	"	X
78-59-1	Isophorone	< 210		µg/kg dry	210	32.3	1	"	"	"	"	"	X
91-57-6	2-Methylnaphthalene	< 83.8		µg/kg dry	83.8	58.7	1	"	"	"	"	"	X
95-48-7	2-Methylphenol	< 415		µg/kg dry	415	33.3	1	"	"	"	"	"	X
108-39-4, 106-44-5	3 & 4-Methylphenol	< 415		µg/kg dry	415	32.5	1	"	"	"	"	"	X
91-20-3	Naphthalene	< 83.8		µg/kg dry	83.8	48.4	1	"	"	"	"	"	X
88-74-4	2-Nitroaniline	< 415		µg/kg dry	415	37.6	1	"	"	"	"	"	X
99-09-2	3-Nitroaniline	< 415		µg/kg dry	415	38.3	1	"	"	"	"	"	X
100-01-6	4-Nitroaniline	< 210		µg/kg dry	210	55.3	1	"	"	"	"	"	X
98-95-3	Nitrobenzene	< 210		µg/kg dry	210	48.5	1	"	"	"	"	"	X
88-75-5	2-Nitrophenol	< 210		µg/kg dry	210	36.7	1	"	"	"	"	"	X
100-02-7	4-Nitrophenol	< 1660		µg/kg dry	1660	55.1	1	"	"	"	"	"	X
62-75-9	N-Nitrosodimethylamine	< 210		µg/kg dry	210	27.4	1	"	"	"	"	"	X
621-64-7	N-Nitrosodi-n-propylamine	< 210		µg/kg dry	210	36.7	1	"	"	"	"	"	X
86-30-6	N-Nitrosodiphenylamine	< 415		µg/kg dry	415	42.2	1	"	"	"	"	"	X
87-86-5	Pentachlorophenol	< 415		µg/kg dry	415	49.4	1	"	"	"	"	"	X
85-01-8	Phenanthrene	< 83.8		µg/kg dry	83.8	47.5	1	"	"	"	"	"	X
108-95-2	Phenol	< 415		µg/kg dry	415	42.0	1	"	"	"	"	"	X
129-00-0	Pyrene	< 83.8		µg/kg dry	83.8	46.2	1	"	"	"	"	"	X
110-86-1	Pyridine	< 415		µg/kg dry	415	98.1	1	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 415		µg/kg dry	415	51.0	1	"	"	"	"	"	X
90-12-0	1-Methylnaphthalene	< 83.8		µg/kg dry	83.8	46.2	1	"	"	"	"	"	
95-95-4	2,4,5-Trichlorophenol	< 415		µg/kg dry	415	42.8	1	"	"	"	"	"	X
88-06-2	2,4,6-Trichlorophenol	< 210		µg/kg dry	210	51.3	1	"	"	"	"	"	X
82-68-8	Pentachloronitrobenzene	< 415		µg/kg dry	415	44.1	1	"	"	"	"	"	X
95-94-3	1,2,4,5-Tetrachlorobenzene	< 415		µg/kg dry	415	49.4	1	"	"	"	"	"	X
Surrogate recoveries:													
321-60-8	*2-Fluorobiphenyl*	*70*			*30-130 %*			"	"	"	"	"	
367-12-4	*2-Fluorophenol*	*94*			*30-130 %*			"	"	"	"	"	
4165-60-0	*Nitrobenzene-d5*	*79*			*30-130 %*			"	"	"	"	"	
4165-62-2	*Phenol-d5*	*98*			*30-130 %*			"	"	"	"	"	
1718-51-0	*Terphenyl-dl4*	*92*			*30-130 %*			"	"	"	"	"	
118-79-6	*2,4,6-Tribromophenol*	*81*			*30-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls Prepared by method SW846 3546													
12674-11-2	Aroclor-1016	< 25.3		µg/kg dry	25.3	18.3	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
11104-28-2	Aroclor-1221	< 25.3		µg/kg dry	25.3	7.49	1	"	"	"	"	"	X
11141-16-5	Aroclor-1232	< 25.3		µg/kg dry	25.3	7.02	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-9	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-16				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls													
53469-21-9	Aroclor-1242	< 25.3		µg/kg dry	25.3	2.41	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
12672-29-6	Aroclor-1248	< 25.3		µg/kg dry	25.3	7.92	1	"	"	"	"	"	X
11097-69-1	Aroclor-1254	< 25.3		µg/kg dry	25.3	19.7	1	"	"	"	"	"	X
11096-82-5	Aroclor-1260	< 25.3		µg/kg dry	25.3	5.45	1	"	"	"	"	"	X
37324-23-5	Aroclor-1262	< 25.3		µg/kg dry	25.3	5.90	1	"	"	"	"	"	X
11100-14-4	Aroclor-1268	< 25.3		µg/kg dry	25.3	5.40	1	"	"	"	"	"	X
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*84*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*74*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*82*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*74*			*30-150 %*			"	"	"	"	"	
Pesticides													
Organochlorine Pesticides Prepared by method SW846 3546			Z-2										
319-84-6	alpha-BHC	< 6.34		µg/kg dry	6.34	0.291	1	SW846 8081B	13-Jul-20	16-Jul-20	BJJ	2001088	X
319-85-7	beta-BHC	< 6.34		µg/kg dry	6.34	0.405	1	"	"	"	"	"	X
319-86-8	delta-BHC	< 6.34		µg/kg dry	6.34	0.329	1	"	"	"	"	"	X
58-89-9	gamma-BHC (Lindane)	< 3.80		µg/kg dry	3.80	0.672	1	"	"	"	"	"	X
76-44-8	Heptachlor	< 6.34		µg/kg dry	6.34	0.735	1	"	"	"	"	"	X
309-00-2	Aldrin	< 6.34		µg/kg dry	6.34	0.215	1	"	"	"	"	"	X
1024-57-3	Heptachlor epoxide	< 6.34		µg/kg dry	6.34	0.253	1	"	"	"	"	"	X
959-98-8	Endosulfan I	< 6.34		µg/kg dry	6.34	0.291	1	"	"	"	"	"	X
60-57-1	Dieldrin	< 6.34		µg/kg dry	6.34	0.304	1	"	"	"	"	"	X
72-55-9	4,4'-DDE (p,p')	< 6.34		µg/kg dry	6.34	0.329	1	"	"	"	"	"	X
72-20-8	Endrin	< 10.1		µg/kg dry	10.1	0.621	1	"	"	"	"	"	X
33213-65-9	Endosulfan II	< 10.1		µg/kg dry	10.1	0.405	1	"	"	"	"	"	X
72-54-8	4,4'-DDD (p,p')	< 10.1		µg/kg dry	10.1	0.532	1	"	"	"	"	"	X
1031-07-8	Endosulfan sulfate	< 10.1		µg/kg dry	10.1	0.925	1	"	"	"	"	"	X
50-29-3	4,4'-DDT (p,p')	< 10.1		µg/kg dry	10.1	4.35	1	"	"	"	"	"	X
72-43-5	Methoxychlor	< 10.1		µg/kg dry	10.1	0.684	1	"	"	"	"	"	X
53494-70-5	Endrin ketone	< 10.1		µg/kg dry	10.1	0.367	1	"	"	"	"	"	X
7421-93-4	Endrin aldehyde	< 10.1		µg/kg dry	10.1	1.60	1	"	"	"	"	"	X
5103-71-9	alpha-Chlordane	< 6.34		µg/kg dry	6.34	0.266	1	"	"	"	"	"	X
5103-74-2	gamma-Chlordane	< 6.34		µg/kg dry	6.34	0.317	1	"	"	"	"	"	X
8001-35-2	Toxaphene	< 127		µg/kg dry	127	89.4	1	"	"	"	"	"	X
57-74-9	Chlordane	< 25.3		µg/kg dry	25.3	3.19	1	"	"	"	"	"	X
15972-60-8	Alachlor	< 6.34		µg/kg dry	6.34	0.558	1	"	"	"	"	"	
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*57*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*53*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*52*			*30-150 %*			"	"	"	"	"	
Extractable Petroleum Hydrocarbons													
Fingerprinting by GC													

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-9 SC58794-16	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Extractable Petroleum Hydrocarbons													
Fingerprinting by GC Prepared by method SW846 3546													
	Total Petroleum Hydrocarbons	**129**		mg/kg dry	16.8	14.0	1	SW846 8100Mod.	14-Jul-20	15-Jul-20	BJJ	2001092	
Surrogate recoveries:													
84-15-1	*o-Terphenyl*	*82*			*40-140 %*			"	"	"	"	"	
3386-33-2	*1-Chlorooctadecane*	*108*			*40-140 %*			"	"	"	"	"	
Total Metals by EPA 6000/7000 Series Methods													
Prepared by method SW846 3050B													
7440-22-4	Silver	< 3.77		mg/kg dry	3.77	0.203	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7440-38-2	Arsenic	**82.3**		mg/kg dry	1.88	0.238	1	"	"	"	"	"	X
7440-39-3	Barium	**29.1**		mg/kg dry	1.26	0.148	1	"	"	"	"	"	X
7440-41-7	Beryllium	< 0.628		mg/kg dry	0.628	0.0315	1	"	"	"	"	"	X
7440-43-9	Cadmium	< 0.628		mg/kg dry	0.628	0.0325	1	"	"	"	"	"	X
7440-47-3	Chromium	**24.7**		mg/kg dry	1.26	0.167	1	"	"	"	"	"	X
7439-97-6	Mercury	< 0.120		mg/kg dry	0.120	0.0100	1	SW846 7471B	13-Jul-20	13-Jul-20	edt	2001079	X
Prepared by method SW846 3050B													
7440-02-0	Nickel	**76.0**		mg/kg dry	1.26	0.144	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7439-92-1	Lead	**22.9**		mg/kg dry	1.88	0.266	1	"	"	"	"	"	X
7440-36-0	Antimony	< 6.28		mg/kg dry	6.28	0.472	1	"	"	"	"	"	X
7782-49-2	Selenium	< 1.88		mg/kg dry	1.88	0.359	1	"	"	"	"	"	X
7440-28-0	Thallium	< 3.77		mg/kg dry	3.77	1.38	1	"	"	"	"	"	X
7440-62-2	Vanadium	**39.4**		mg/kg dry	1.88	0.334	1	"	"	17-Jul-20	"	"	X
7440-66-6	Zinc	**64.7**		mg/kg dry	3.77	0.972	1	"	"	15-Jul-20	"	"	X
General Chemistry Parameters													
	% Solids	**78.7**		%			1	SM2540 G (11) Mod.	10-Jul-20	14-Jul-20	PN	2001075	
Toxicity Characteristics													
	Ignitability by Definition	**Negative**		N/A			1	SW846 1030	10-Jul-20 17:23	10-Jul-20 21:00	PN	2001074	X
	pH	**5.41**	pH	pH Units			1	SW846 9045D	14-Jul-20 15:31	14-Jul-20 18:55	PN	2001081	X
Subcontracted Analyses													
Subcontracted Analyses Prepared by method SW8151A									Methylation date: 14-Jul-20				
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
93-76-5	2,4,5-T	< 80		ug/kg	80	80	10	SW8151A	14-Jul-20	15-Jul-20 19:54	M-CT007	537320A	
93-72-1	2,4,5-TP (Silvex)	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-75-7	2,4-D	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-82-6	2,4-DB	< 80		ug/kg	80	80	10	"	"	"	"	"	
75-99-0	Dalapon	< 80		ug/kg	80	80	10	"	"	"	"	"	
1918-00-9	Dicamba	< 80		ug/kg	80	80	10	"	"	"	"	"	
120-36-5	Dichloroprop	< 80		ug/kg	80	80	10	"	"	"	"	"	
88-85-7	Dinoseb	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-74-6	MCPA	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
7085-19-0	MCPP	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
Surrogate recoveries:													
19719-28-9	*% DCAA*	*73*			*30-150 %*			"	"	"	"	"	

This laboratory report is not valid without an authorized signature on the cover page.

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-9 SC58794-16	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Subcontracted Analyses													
Prepared by method SW846 7.3.3.1/90													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Cyanide	< 7		mg/kg	7	7	1	SW846 7.3.3.1/90	15-Jul-20	15-Jul-20 13:53	M-CT007	537434A	
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Sulfide	< 20		mg/kg	20	20	1	SW846 CH7	"	15-Jul-20 14:40	M-CT007	537434B	
Prepared by method SW846-React													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity	**Negative**		Pos/Neg			1	SW846-React	15-Jul-20 14:43	15-Jul-20 14:43	M-CT007	'[none]'	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-15	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-17				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
Prepared by method SW846 5035A Soil (high level)							Initial weight: 16.55 g						
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	< 69.5		µg/kg dry	69.5	38.1	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
67-64-1	Acetone	< 695		µg/kg dry	695	87.8	50	"	"	"	"	"	X
107-13-1	Acrylonitrile	< 69.5		µg/kg dry	69.5	25.1	50	"	"	"	"	"	X
71-43-2	Benzene	< 69.5		µg/kg dry	69.5	11.1	50	"	"	"	"	"	X
108-86-1	Bromobenzene	< 69.5		µg/kg dry	69.5	15.7	50	"	"	"	"	"	X
74-97-5	Bromochloromethane	< 69.5		µg/kg dry	69.5	9.93	50	"	"	"	"	"	X
75-27-4	Bromodichloromethane	< 69.5		µg/kg dry	69.5	17.9	50	"	"	"	"	"	X
75-25-2	Bromoform	< 69.5		µg/kg dry	69.5	14.9	50	"	"	"	"	"	X
74-83-9	Bromomethane	< 139		µg/kg dry	139	34.3	50	"	"	"	"	"	X
78-93-3	2-Butanone (MEK)	< 139		µg/kg dry	139	31.7	50	"	"	"	"	"	X
104-51-8	n-Butylbenzene	< 69.5		µg/kg dry	69.5	27.8	50	"	"	"	"	"	X
135-98-8	sec-Butylbenzene	< 69.5		µg/kg dry	69.5	21.3	50	"	"	"	"	"	X
98-06-6	tert-Butylbenzene	< 69.5		µg/kg dry	69.5	28.3	50	"	"	"	"	"	X
75-15-0	Carbon disulfide	< 139		µg/kg dry	139	25.7	50	"	"	"	"	"	X
56-23-5	Carbon tetrachloride	< 69.5		µg/kg dry	69.5	20.8	50	"	"	"	"	"	X
108-90-7	Chlorobenzene	< 69.5		µg/kg dry	69.5	8.41	50	"	"	"	"	"	X
75-00-3	Chloroethane	< 139		µg/kg dry	139	31.0	50	"	"	"	"	"	X
67-66-3	Chloroform	< 69.5		µg/kg dry	69.5	8.20	50	"	"	"	"	"	X
74-87-3	Chloromethane	< 139		µg/kg dry	139	82.5	50	"	"	"	"	"	X
95-49-8	2-Chlorotoluene	< 69.5		µg/kg dry	69.5	17.2	50	"	"	"	"	"	X
106-43-4	4-Chlorotoluene	< 69.5		µg/kg dry	69.5	12.6	50	"	"	"	"	"	X
96-12-8	1,2-Dibromo-3-chloropropane	< 139		µg/kg dry	139	27.4	50	"	"	"	"	"	X
124-48-1	Dibromochloromethane	< 69.5		µg/kg dry	69.5	11.0	50	"	"	"	"	"	X
106-93-4	1,2-Dibromoethane (EDB)	< 69.5		µg/kg dry	69.5	18.9	50	"	"	"	"	"	X
74-95-3	Dibromomethane	< 69.5		µg/kg dry	69.5	13.1	50	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 69.5		µg/kg dry	69.5	12.5	50	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 69.5		µg/kg dry	69.5	17.3	50	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 69.5		µg/kg dry	69.5	12.4	50	"	"	"	"	"	X
75-71-8	Dichlorodifluoromethane (Freon12)	< 139		µg/kg dry	139	90.9	50	"	"	"	"	"	X
75-34-3	1,1-Dichloroethane	< 69.5		µg/kg dry	69.5	16.0	50	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	< 69.5		µg/kg dry	69.5	18.2	50	"	"	"	"	"	X
75-35-4	1,1-Dichloroethene	< 69.5		µg/kg dry	69.5	17.8	50	"	"	"	"	"	X
156-59-2	cis-1,2-Dichloroethene	< 69.5		µg/kg dry	69.5	23.1	50	"	"	"	"	"	X
156-60-5	trans-1,2-Dichloroethene	< 69.5		µg/kg dry	69.5	15.8	50	"	"	"	"	"	X
78-87-5	1,2-Dichloropropane	< 69.5		µg/kg dry	69.5	24.1	50	"	"	"	"	"	X
142-28-9	1,3-Dichloropropane	< 69.5		µg/kg dry	69.5	22.0	50	"	"	"	"	"	X
594-20-7	2,2-Dichloropropane	< 69.5		µg/kg dry	69.5	18.3	50	"	"	"	"	"	X
563-58-6	1,1-Dichloropropene	< 69.5		µg/kg dry	69.5	21.3	50	"	"	"	"	"	X
10061-01-5	cis-1,3-Dichloropropene	< 69.5		µg/kg dry	69.5	16.4	50	"	"	"	"	"	X
10061-02-6	trans-1,3-Dichloropropene	< 69.5		µg/kg dry	69.5	28.3	50	"	"	"	"	"	X
100-41-4	Ethylbenzene	< 69.5		µg/kg dry	69.5	14.5	50	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 69.5		µg/kg dry	69.5	22.2	50	"	"	"	"	"	X
591-78-6	2-Hexanone (MBK)	< 139		µg/kg dry	139	46.2	50	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-15	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-17				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260													
						Initial weight: 16.55 g							
98-82-8	Isopropylbenzene	< 69.5		µg/kg dry	69.5	25.2	50	SW846 8260C	13-Jul-20	13-Jul-20	DDP	2001076	X
99-87-6	4-Isopropyltoluene	< 69.5		µg/kg dry	69.5	19.2	50	"	"	"	"	"	X
1634-04-4	Methyl tert-butyl ether	< 69.5		µg/kg dry	69.5	20.9	50	"	"	"	"	"	X
108-10-1	4-Methyl-2-pentanone (MIBK)	< 139		µg/kg dry	139	49.7	50	"	"	"	"	"	X
75-09-2	Methylene chloride	< 139		µg/kg dry	139	59.3	50	"	"	"	"	"	X
91-20-3	Naphthalene	< 69.5		µg/kg dry	69.5	20.1	50	"	"	"	"	"	X
103-65-1	n-Propylbenzene	< 69.5		µg/kg dry	69.5	17.3	50	"	"	"	"	"	X
100-42-5	Styrene	< 69.5		µg/kg dry	69.5	9.17	50	"	"	"	"	"	X
630-20-6	1,1,1,2-Tetrachloroethane	< 69.5		µg/kg dry	69.5	16.7	50	"	"	"	"	"	X
79-34-5	1,1,2,2-Tetrachloroethane	< 69.5		µg/kg dry	69.5	22.0	50	"	"	"	"	"	X
127-18-4	Tetrachloroethene	< 69.5		µg/kg dry	69.5	21.9	50	"	"	"	"	"	X
108-88-3	Toluene	< 69.5		µg/kg dry	69.5	11.2	50	"	"	"	"	"	X
87-61-6	1,2,3-Trichlorobenzene	< 69.5		µg/kg dry	69.5	16.2	50	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 69.5		µg/kg dry	69.5	11.5	50	"	"	"	"	"	X
108-70-3	1,3,5-Trichlorobenzene	< 69.5		µg/kg dry	69.5	11.0	50	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	< 69.5		µg/kg dry	69.5	16.8	50	"	"	"	"	"	X
79-00-5	1,1,2-Trichloroethane	< 69.5		µg/kg dry	69.5	21.5	50	"	"	"	"	"	X
79-01-6	Trichloroethene	< 69.5		µg/kg dry	69.5	11.9	50	"	"	"	"	"	X
75-69-4	Trichlorofluoromethane (Freon 11)	< 69.5		µg/kg dry	69.5	31.4	50	"	"	"	"	"	X
96-18-4	1,2,3-Trichloropropane	< 69.5		µg/kg dry	69.5	32.0	50	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	< 69.5		µg/kg dry	69.5	17.6	50	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	< 69.5		µg/kg dry	69.5	14.5	50	"	"	"	"	"	X
75-01-4	Vinyl chloride	< 69.5		µg/kg dry	69.5	34.2	50	"	"	"	"	"	X
179601-23-1	m,p-Xylene	< 139		µg/kg dry	139	40.8	50	"	"	"	"	"	X
95-47-6	o-Xylene	< 69.5		µg/kg dry	69.5	21.4	50	"	"	"	"	"	X
109-99-9	Tetrahydrofuran	< 139		µg/kg dry	139	50.8	50	"	"	"	"	"	
60-29-7	Ethyl ether	< 69.5		µg/kg dry	69.5	18.8	50	"	"	"	"	"	X
994-05-8	Tert-amyl methyl ether	< 69.5		µg/kg dry	69.5	38.4	50	"	"	"	"	"	
637-92-3	Ethyl tert-butyl ether	< 69.5		µg/kg dry	69.5	19.2	50	"	"	"	"	"	
108-20-3	Di-isopropyl ether	< 69.5		µg/kg dry	69.5	22.4	50	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	< 1390		µg/kg dry	1390	986	50	"	"	"	"	"	X
123-91-1	1,4-Dioxane	< 1390		µg/kg dry	1390	409	50	"	"	"	"	"	X
110-57-6	trans-1,4-Dichloro-2-buten e	< 347		µg/kg dry	347	45.8	50	"	"	"	"	"	X
64-17-5	Ethanol	< 13900		µg/kg dry	13900	1200	50	"	"	"	"	"	
Surrogate recoveries:													
460-00-4	*4-Bromofluorobenzene*	*104*			*70-130 %*			"	"	"	"	"	
2037-26-5	*Toluene-d8*	*104*			*70-130 %*			"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*106*			*70-130 %*			"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*105*			*70-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds Prepared by method SW846 3546													
83-32-9	Acenaphthene	< 82.3		µg/kg dry	82.3	43.7	1	SW846 8270D	13-Jul-20	14-Jul-20	BJJ	2001083	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-15	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-17				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
208-96-8	Acenaphthylene	< 82.3		µg/kg dry	82.3	42.9	1	SW846 8270D	13-Jul-20	14-Jul-20	BJJ	2001083	X
62-53-3	Aniline	< 407		µg/kg dry	407	25.9	1	"	"	"	"	"	X
120-12-7	Anthracene	< 82.3		µg/kg dry	82.3	47.4	1	"	"	"	"	"	X
103-33-3	Azobenzene/Diphenyldiazene	< 407		µg/kg dry	407	44.2	1	"	"	"	"	"	
92-87-5	Benzidine	< 814		µg/kg dry	814	25.9	1	"	"	"	"	"	X
56-55-3	Benzo (a) anthracene	< 82.3		µg/kg dry	82.3	46.3	1	"	"	"	"	"	X
50-32-8	Benzo (a) pyrene	< 82.3		µg/kg dry	82.3	56.3	1	"	"	"	"	"	X
205-99-2	Benzo (b) fluoranthene	< 82.3		µg/kg dry	82.3	61.9	1	"	"	"	"	"	X
191-24-2	Benzo (g,h,i) perylene	< 82.3		µg/kg dry	82.3	58.1	1	"	"	"	"	"	X
207-08-9	Benzo (k) fluoranthene	< 82.3		µg/kg dry	82.3	70.3	1	"	"	"	"	"	X
65-85-0	Benzoic acid	< 407		µg/kg dry	407	24.4	1	"	"	"	"	"	X
100-51-6	Benzyl alcohol	< 407		µg/kg dry	407	94.3	1	"	"	"	"	"	X
111-91-1	Bis(2-chloroethoxy)methane	< 407		µg/kg dry	407	41.1	1	"	"	"	"	"	X
111-44-4	Bis(2-chloroethyl)ether	< 206		µg/kg dry	206	38.1	1	"	"	"	"	"	X
108-60-1	Bis(2-chloroisopropyl)ether	< 206		µg/kg dry	206	33.1	1	"	"	"	"	"	X
117-81-7	Bis(2-ethylhexyl)phthalate	< 206		µg/kg dry	206	52.4	1	"	"	"	"	"	X
101-55-3	4-Bromophenyl phenyl ether	< 407		µg/kg dry	407	46.0	1	"	"	"	"	"	X
85-68-7	Butyl benzyl phthalate	< 407		µg/kg dry	407	40.8	1	"	"	"	"	"	X
86-74-8	Carbazole	< 206		µg/kg dry	206	47.4	1	"	"	"	"	"	X
59-50-7	4-Chloro-3-methylphenol	< 407		µg/kg dry	407	47.9	1	"	"	"	"	"	X
106-47-8	4-Chloroaniline	< 206		µg/kg dry	206	25.4	1	"	"	"	"	"	X
91-58-7	2-Chloronaphthalene	< 407		µg/kg dry	407	55.8	1	"	"	"	"	"	X
95-57-8	2-Chlorophenol	< 206		µg/kg dry	206	39.5	1	"	"	"	"	"	X
7005-72-3	4-Chlorophenyl phenyl ether	< 407		µg/kg dry	407	39.9	1	"	"	"	"	"	X
218-01-9	Chrysene	< 82.3		µg/kg dry	82.3	46.5	1	"	"	"	"	"	X
53-70-3	Dibenzo (a,h) anthracene	< 82.3		µg/kg dry	82.3	60.8	1	"	"	"	"	"	X
132-64-9	Dibenzofuran	< 206		µg/kg dry	206	55.4	1	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	< 407		µg/kg dry	407	48.6	1	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	< 407		µg/kg dry	407	43.9	1	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	< 407		µg/kg dry	407	46.3	1	"	"	"	"	"	X
91-94-1	3,3´-Dichlorobenzidine	< 407		µg/kg dry	407	45.0	1	"	"	"	"	"	X
120-83-2	2,4-Dichlorophenol	< 206		µg/kg dry	206	50.0	1	"	"	"	"	"	X
84-66-2	Diethyl phthalate	< 407		µg/kg dry	407	42.7	1	"	"	"	"	"	X
131-11-3	Dimethyl phthalate	< 407		µg/kg dry	407	45.8	1	"	"	"	"	"	X
105-67-9	2,4-Dimethylphenol	< 407		µg/kg dry	407	32.2	1	"	"	"	"	"	X
84-74-2	Di-n-butyl phthalate	< 407		µg/kg dry	407	43.6	1	"	"	"	"	"	X
534-52-1	4,6-Dinitro-2-methylphenol	< 407		µg/kg dry	407	58.4	1	"	"	"	"	"	X
51-28-5	2,4-Dinitrophenol	< 407		µg/kg dry	407	42.2	1	"	"	"	"	"	X
121-14-2	2,4-Dinitrotoluene	< 206		µg/kg dry	206	49.4	1	"	"	"	"	"	X
606-20-2	2,6-Dinitrotoluene	< 206		µg/kg dry	206	42.1	1	"	"	"	"	"	X
117-84-0	Di-n-octyl phthalate	< 407		µg/kg dry	407	60.6	1	"	"	"	"	"	X
206-44-0	Fluoranthene	< 82.3		µg/kg dry	82.3	48.2	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-15	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-17				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GCMS													
Semivolatile Organic Compounds													
86-73-7	Fluorene	< 82.3		µg/kg dry	82.3	53.2	1	SW846 8270D	13-Jul-20	14-Jul-20	BJJ	2001083	X
118-74-1	Hexachlorobenzene	< 206		µg/kg dry	206	51.8	1	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	< 206		µg/kg dry	206	51.8	1	"	"	"	"	"	X
77-47-4	Hexachlorocyclopentadiene	< 206		µg/kg dry	206	51.9	1	"	"	"	"	"	X
67-72-1	Hexachloroethane	< 206		µg/kg dry	206	46.5	1	"	"	"	"	"	X
193-39-5	Indeno (1,2,3-cd) pyrene	< 82.3		µg/kg dry	82.3	56.3	1	"	"	"	"	"	X
78-59-1	Isophorone	< 206		µg/kg dry	206	31.7	1	"	"	"	"	"	X
91-57-6	2-Methylnaphthalene	< 82.3		µg/kg dry	82.3	57.6	1	"	"	"	"	"	X
95-48-7	2-Methylphenol	< 407		µg/kg dry	407	32.7	1	"	"	"	"	"	X
108-39-4, 106-44-5	3 & 4-Methylphenol	< 407		µg/kg dry	407	32.0	1	"	"	"	"	"	X
91-20-3	Naphthalene	< 82.3		µg/kg dry	82.3	47.5	1	"	"	"	"	"	X
88-74-4	2-Nitroaniline	< 407		µg/kg dry	407	36.9	1	"	"	"	"	"	X
99-09-2	3-Nitroaniline	< 407		µg/kg dry	407	37.6	1	"	"	"	"	"	X
100-01-6	4-Nitroaniline	< 206		µg/kg dry	206	54.3	1	"	"	"	"	"	X
98-95-3	Nitrobenzene	< 206		µg/kg dry	206	47.6	1	"	"	"	"	"	X
88-75-5	2-Nitrophenol	< 206		µg/kg dry	206	36.0	1	"	"	"	"	"	X
100-02-7	4-Nitrophenol	< 1630		µg/kg dry	1630	54.2	1	"	"	"	"	"	X
62-75-9	N-Nitrosodimethylamine	< 206		µg/kg dry	206	26.9	1	"	"	"	"	"	X
621-64-7	N-Nitrosodi-n-propylamine	< 206		µg/kg dry	206	36.0	1	"	"	"	"	"	X
86-30-6	N-Nitrosodiphenylamine	< 407		µg/kg dry	407	41.5	1	"	"	"	"	"	X
87-86-5	Pentachlorophenol	< 407		µg/kg dry	407	48.5	1	"	"	"	"	"	X
85-01-8	Phenanthrene	< 82.3		µg/kg dry	82.3	46.6	1	"	"	"	"	"	X
108-95-2	Phenol	< 407		µg/kg dry	407	41.2	1	"	"	"	"	"	X
129-00-0	Pyrene	< 82.3		µg/kg dry	82.3	45.4	1	"	"	"	"	"	X
110-86-1	Pyridine	< 407		µg/kg dry	407	96.4	1	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	< 407		µg/kg dry	407	50.1	1	"	"	"	"	"	X
90-12-0	1-Methylnaphthalene	< 82.3		µg/kg dry	82.3	45.4	1	"	"	"	"	"	
95-95-4	2,4,5-Trichlorophenol	< 407		µg/kg dry	407	42.1	1	"	"	"	"	"	X
88-06-2	2,4,6-Trichlorophenol	< 206		µg/kg dry	206	50.3	1	"	"	"	"	"	X
82-68-8	Pentachloronitrobenzene	< 407		µg/kg dry	407	43.3	1	"	"	"	"	"	X
95-94-3	1,2,4,5-Tetrachlorobenzene	< 407		µg/kg dry	407	48.5	1	"	"	"	"	"	X
Surrogate recoveries:													
321-60-8	*2-Fluorobiphenyl*	*81*			*30-130 %*			"	"	"	"	"	
367-12-4	*2-Fluorophenol*	*86*			*30-130 %*			"	"	"	"	"	
4165-60-0	*Nitrobenzene-d5*	*77*			*30-130 %*			"	"	"	"	"	
4165-62-2	*Phenol-d5*	*96*			*30-130 %*			"	"	"	"	"	
1718-51-0	*Terphenyl-dl4*	*86*			*30-130 %*			"	"	"	"	"	
118-79-6	*2,4,6-Tribromophenol*	*42*			*30-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls Prepared by method SW846 3546													
12674-11-2	Aroclor-1016	< 24.9		µg/kg dry	24.9	17.9	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
11104-28-2	Aroclor-1221	< 24.9		µg/kg dry	24.9	7.35	1	"	"	"	"	"	X
11141-16-5	Aroclor-1232	< 24.9		µg/kg dry	24.9	6.89	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-15	1009.073	Soil	09-Jul-20 00:00	10-Jul-20
SC58794-17				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*MDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GC													
Polychlorinated Biphenyls													
53469-21-9	Aroclor-1242	< 24.9		µg/kg dry	24.9	2.36	1	SW846 8082A	13-Jul-20	15-Jul-20	BJJ	2001087	X
12672-29-6	Aroclor-1248	< 24.9		µg/kg dry	24.9	7.77	1	"	"	"	"	"	X
11097-69-1	Aroclor-1254	< 24.9		µg/kg dry	24.9	19.3	1	"	"	"	"	"	X
11096-82-5	Aroclor-1260	< 24.9		µg/kg dry	24.9	5.35	1	"	"	"	"	"	X
37324-23-5	Aroclor-1262	< 24.9		µg/kg dry	24.9	5.79	1	"	"	"	"	"	X
11100-14-4	Aroclor-1268	< 24.9		µg/kg dry	24.9	5.30	1	"	"	"	"	"	X
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*78*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*70*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*71*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*65*			*30-150 %*			"	"	"	"	"	
Pesticides													
Organochlorine Pesticides Prepared by method SW846 3546			Z-2										
319-84-6	alpha-BHC	< 6.22		µg/kg dry	6.22	0.286	1	SW846 8081B	13-Jul-20	16-Jul-20	BJJ	2001088	X
319-85-7	beta-BHC	< 6.22		µg/kg dry	6.22	0.398	1	"	"	"	"	"	X
319-86-8	delta-BHC	< 6.22		µg/kg dry	6.22	0.323	1	"	"	"	"	"	X
58-89-9	gamma-BHC (Lindane)	< 3.73		µg/kg dry	3.73	0.659	1	"	"	"	"	"	X
76-44-8	Heptachlor	< 6.22		µg/kg dry	6.22	0.721	1	"	"	"	"	"	X
309-00-2	Aldrin	< 6.22		µg/kg dry	6.22	0.211	1	"	"	"	"	"	X
1024-57-3	Heptachlor epoxide	< 6.22		µg/kg dry	6.22	0.249	1	"	"	"	"	"	X
959-98-8	Endosulfan I	< 6.22		µg/kg dry	6.22	0.286	1	"	"	"	"	"	X
60-57-1	Dieldrin	< 6.22		µg/kg dry	6.22	0.298	1	"	"	"	"	"	X
72-55-9	4,4'-DDE (p,p')	< 6.22		µg/kg dry	6.22	0.323	1	"	"	"	"	"	X
72-20-8	Endrin	< 9.95		µg/kg dry	9.95	0.609	1	"	"	"	"	"	X
33213-65-9	Endosulfan II	< 9.95		µg/kg dry	9.95	0.398	1	"	"	"	"	"	X
72-54-8	4,4'-DDD (p,p')	< 9.95		µg/kg dry	9.95	0.522	1	"	"	"	"	"	X
1031-07-8	Endosulfan sulfate	< 9.95		µg/kg dry	9.95	0.908	1	"	"	"	"	"	X
50-29-3	4,4'-DDT (p,p')	< 9.95		µg/kg dry	9.95	4.27	1	"	"	"	"	"	X
72-43-5	Methoxychlor	< 9.95		µg/kg dry	9.95	0.671	1	"	"	"	"	"	X
53494-70-5	Endrin ketone	< 9.95		µg/kg dry	9.95	0.361	1	"	"	"	"	"	X
7421-93-4	Endrin aldehyde	< 9.95		µg/kg dry	9.95	1.57	1	"	"	"	"	"	X
5103-71-9	alpha-Chlordane	< 6.22		µg/kg dry	6.22	0.261	1	"	"	"	"	"	X
5103-74-2	gamma-Chlordane	< 6.22		µg/kg dry	6.22	0.311	1	"	"	"	"	"	X
8001-35-2	Toxaphene	< 124		µg/kg dry	124	87.7	1	"	"	"	"	"	X
57-74-9	Chlordane	< 24.9		µg/kg dry	24.9	3.13	1	"	"	"	"	"	X
15972-60-8	Alachlor	< 6.22		µg/kg dry	6.22	0.547	1	"	"	"	"	"	
Surrogate recoveries:													
2051-24-3	*Decachlorobiphenyl (Sr)*	*66*			*30-150 %*			"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*56*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS)*	*41*			*30-150 %*			"	"	"	"	"	
877-09-8	*2,4,5,6-TC-M-Xylene (IS) [2C]*	*45*			*30-150 %*			"	"	"	"	"	
Extractable Petroleum Hydrocarbons													

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-15 SC58794-17	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Extractable Petroleum Hydrocarbons													
Fingerprinting by GC Prepared by method SW846 3546													
	Total Petroleum Hydrocarbons	**168**		mg/kg dry	16.7	13.9	1	SW846 8100Mod.	14-Jul-20	15-Jul-20	BJJ	2001092	
Surrogate recoveries:													
84-15-1	*o-Terphenyl*	*78*			*40-140 %*			"	"	"	"	"	
3386-33-2	*1-Chlorooctadecane*	*104*			*40-140 %*			"	"	"	"	"	
Total Metals by EPA 6000/7000 Series Methods													
Prepared by method SW846 3050B													
7440-22-4	Silver	< 3.80		mg/kg dry	3.80	0.205	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7440-38-2	Arsenic	**37.8**		mg/kg dry	1.90	0.241	1	"	"	"	"	"	X
7440-39-3	Barium	**46.3**		mg/kg dry	1.27	0.149	1	"	"	"	"	"	X
7440-41-7	Beryllium	< 0.633		mg/kg dry	0.633	0.0318	1	"	"	"	"	"	X
7440-43-9	Cadmium	< 0.633		mg/kg dry	0.633	0.0328	1	"	"	"	"	"	X
7440-47-3	Chromium	**31.5**		mg/kg dry	1.27	0.168	1	"	"	"	"	"	X
7439-97-6	Mercury	< 0.123		mg/kg dry	0.123	0.0102	1	SW846 7471B	13-Jul-20	13-Jul-20	edt	2001079	X
Prepared by method SW846 3050B													
7440-02-0	Nickel	**37.7**		mg/kg dry	1.27	0.146	1	SW846 6010C	15-Jul-20	15-Jul-20	EDT	2001078	X
7439-92-1	Lead	**25.9**		mg/kg dry	1.90	0.269	1	"	"	"	"	"	X
7440-36-0	Antimony	< 6.33		mg/kg dry	6.33	0.476	1	"	"	"	"	"	X
7782-49-2	Selenium	< 1.90		mg/kg dry	1.90	0.362	1	"	"	"	"	"	X
7440-28-0	Thallium	< 3.80		mg/kg dry	3.80	1.40	1	"	"	"	"	"	X
7440-62-2	Vanadium	**36.3**		mg/kg dry	1.90	0.337	1	"	"	17-Jul-20	"	"	X
7440-66-6	Zinc	**60.7**		mg/kg dry	3.80	0.980	1	"	"	15-Jul-20	"	"	X
General Chemistry Parameters													
	% Solids	**79.8**		%			1	SM2540 G (11) Mod.	10-Jul-20	14-Jul-20	PN	2001075	
Toxicity Characteristics													
	Ignitability by Definition	**Negative**		N/A			1	SW846 1030	10-Jul-20 17:23	10-Jul-20 21:00	PN	2001074	X
	pH	**5.69**	pH	pH Units			1	SW846 9045D	14-Jul-20 15:31	14-Jul-20 18:55	PN	2001081	X
Subcontracted Analyses													
Subcontracted Analyses Prepared by method SW8151A									Methylation date: 14-Jul-20				
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
93-76-5	2,4,5-T	< 80		ug/kg	80	80	10	SW8151A	14-Jul-20	15-Jul-20 21:08	M-CT007	537320A	
93-72-1	2,4,5-TP (Silvex)	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-75-7	2,4-D	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-82-6	2,4-DB	< 80		ug/kg	80	80	10	"	"	"	"	"	
75-99-0	Dalapon	< 80		ug/kg	80	80	10	"	"	"	"	"	
1918-00-9	Dicamba	< 80		ug/kg	80	80	10	"	"	"	"	"	
120-36-5	Dichloroprop	< 80		ug/kg	80	80	10	"	"	"	"	"	
88-85-7	Dinoseb	< 80		ug/kg	80	80	10	"	"	"	"	"	
94-74-6	MCPA	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
7085-19-0	MCPP	< 3300		ug/kg	3300	3300	10	"	"	"	"	"	
Surrogate recoveries:													
19719-28-9	*% DCAA*	*81*			*30-150 %*			"	"	"	"	"	

This laboratory report is not valid without an authorized signature on the cover page.

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SSS-15 SC58794-17	1009.073	Soil	09-Jul-20 00:00	10-Jul-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Subcontracted Analyses													
Prepared by method SW846 7.3.3.1/90													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Cyanide	< 7		mg/kg	7	7	1	SW846 7.3.3.1/90	15-Jul-20	15-Jul-20 13:56	M-CT007	537434A	
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity Sulfide	< 20		mg/kg	20	20	1	SW846 CH7	"	15-Jul-20 14:40	M-CT007	537434B	
Prepared by method SW846-React													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Reactivity	**Negative**		Pos/Neg			1	SW846-React	15-Jul-20 14:43	15-Jul-20 14:43	M-CT007	'[none]'	

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8260C										
Batch 2001076 - SW846 5035A Soil (high level)										
Blank (2001076-BLK1)					Prepared & Analyzed: 13-Jul-20					
1,1,2-Trichlorotrifluoroethane (Freon 113)	< 50.0		µg/kg wet	50.0						
Acetone	< 500		µg/kg wet	500						
Acrylonitrile	< 50.0		µg/kg wet	50.0						
Benzene	< 50.0		µg/kg wet	50.0						
Bromobenzene	< 50.0		µg/kg wet	50.0						
Bromochloromethane	< 50.0		µg/kg wet	50.0						
Bromodichloromethane	< 50.0		µg/kg wet	50.0						
Bromoform	< 50.0		µg/kg wet	50.0						
Bromomethane	< 100		µg/kg wet	100						
2-Butanone (MEK)	< 100		µg/kg wet	100						
n-Butylbenzene	< 50.0		µg/kg wet	50.0						
sec-Butylbenzene	< 50.0		µg/kg wet	50.0						
tert-Butylbenzene	< 50.0		µg/kg wet	50.0						
Carbon disulfide	< 100		µg/kg wet	100						
Carbon tetrachloride	< 50.0		µg/kg wet	50.0						
Chlorobenzene	< 50.0		µg/kg wet	50.0						
Chloroethane	< 100		µg/kg wet	100						
Chloroform	< 50.0		µg/kg wet	50.0						
Chloromethane	< 100		µg/kg wet	100						
2-Chlorotoluene	< 50.0		µg/kg wet	50.0						
4-Chlorotoluene	< 50.0		µg/kg wet	50.0						
1,2-Dibromo-3-chloropropane	< 100		µg/kg wet	100						
Dibromochloromethane	< 50.0		µg/kg wet	50.0						
1,2-Dibromoethane (EDB)	< 50.0		µg/kg wet	50.0						
Dibromomethane	< 50.0		µg/kg wet	50.0						
1,2-Dichlorobenzene	< 50.0		µg/kg wet	50.0						
1,3-Dichlorobenzene	< 50.0		µg/kg wet	50.0						
1,4-Dichlorobenzene	< 50.0		µg/kg wet	50.0						
Dichlorodifluoromethane (Freon12)	< 100		µg/kg wet	100						
1,1-Dichloroethane	< 50.0		µg/kg wet	50.0						
1,2-Dichloroethane	< 50.0		µg/kg wet	50.0						
1,1-Dichloroethene	< 50.0		µg/kg wet	50.0						
cis-1,2-Dichloroethene	< 50.0		µg/kg wet	50.0						
trans-1,2-Dichloroethene	< 50.0		µg/kg wet	50.0						
1,2-Dichloropropane	< 50.0		µg/kg wet	50.0						
1,3-Dichloropropane	< 50.0		µg/kg wet	50.0						
2,2-Dichloropropane	< 50.0		µg/kg wet	50.0						
1,1-Dichloropropene	< 50.0		µg/kg wet	50.0						
cis-1,3-Dichloropropene	< 50.0		µg/kg wet	50.0						
trans-1,3-Dichloropropene	< 50.0		µg/kg wet	50.0						
Ethylbenzene	< 50.0		µg/kg wet	50.0						
Hexachlorobutadiene	< 50.0		µg/kg wet	50.0						
2-Hexanone (MBK)	< 100		µg/kg wet	100						
Isopropylbenzene	< 50.0		µg/kg wet	50.0						
4-Isopropyltoluene	< 50.0		µg/kg wet	50.0						
Methyl tert-butyl ether	< 50.0		µg/kg wet	50.0						
4-Methyl-2-pentanone (MIBK)	< 100		µg/kg wet	100						
Methylene chloride	< 100		µg/kg wet	100						
Naphthalene	< 50.0		µg/kg wet	50.0						
n-Propylbenzene	< 50.0		µg/kg wet	50.0						

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8260C										
Batch 2001076 - SW846 5035A Soil (high level)										
Blank (2001076-BLK1)					Prepared & Analyzed: 13-Jul-20					
Styrene	< 50.0		µg/kg wet	50.0						
1,1,1,2-Tetrachloroethane	< 50.0		µg/kg wet	50.0						
1,1,2,2-Tetrachloroethane	< 50.0		µg/kg wet	50.0						
Tetrachloroethene	< 50.0		µg/kg wet	50.0						
Toluene	< 50.0		µg/kg wet	50.0						
1,2,3-Trichlorobenzene	< 50.0		µg/kg wet	50.0						
1,2,4-Trichlorobenzene	< 50.0		µg/kg wet	50.0						
1,3,5-Trichlorobenzene	< 50.0		µg/kg wet	50.0						
1,1,1-Trichloroethane	< 50.0		µg/kg wet	50.0						
1,1,2-Trichloroethane	< 50.0		µg/kg wet	50.0						
Trichloroethene	< 50.0		µg/kg wet	50.0						
Trichlorofluoromethane (Freon 11)	< 50.0		µg/kg wet	50.0						
1,2,3-Trichloropropane	< 50.0		µg/kg wet	50.0						
1,2,4-Trimethylbenzene	< 50.0		µg/kg wet	50.0						
1,3,5-Trimethylbenzene	< 50.0		µg/kg wet	50.0						
Vinyl chloride	< 50.0		µg/kg wet	50.0						
m,p-Xylene	< 100		µg/kg wet	100						
o-Xylene	< 50.0		µg/kg wet	50.0						
Tetrahydrofuran	< 100		µg/kg wet	100						
Ethyl ether	< 50.0		µg/kg wet	50.0						
Tert-amyl methyl ether	< 50.0		µg/kg wet	50.0						
Ethyl tert-butyl ether	< 50.0		µg/kg wet	50.0						
Di-isopropyl ether	< 50.0		µg/kg wet	50.0						
Tert-Butanol / butyl alcohol	< 1000		µg/kg wet	1000						
1,4-Dioxane	< 1000		µg/kg wet	1000						
trans-1,4-Dichloro-2-butene	< 250		µg/kg wet	250						
Ethanol	< 10000		µg/kg wet	10000						
Surrogate: 4-Bromofluorobenzene	*49.8*		µg/kg		*50.0*		*100*	*70-130*		
Surrogate: Toluene-d8	*52.5*		µg/kg		*50.0*		*105*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*53.0*		µg/kg		*50.0*		*106*	*70-130*		
Surrogate: Dibromofluoromethane	*53.1*		µg/kg		*50.0*		*106*	*70-130*		
LCS (2001076-BS1)					Prepared & Analyzed: 13-Jul-20					
1,1,2-Trichlorotrifluoroethane (Freon 113)	**26.0**		µg/kg		20.0		130	70-130		
Acetone	**24.3**		µg/kg		20.0		121	70-130		
Acrylonitrile	**23.5**		µg/kg		20.0		117	70-130		
Benzene	**22.7**		µg/kg		20.0		114	70-130		
Bromobenzene	**20.7**		µg/kg		20.0		104	70-130		
Bromochloromethane	**23.7**		µg/kg		20.0		118	70-130		
Bromodichloromethane	**24.1**		µg/kg		20.0		120	70-130		
Bromoform	**22.2**		µg/kg		20.0		111	70-130		
Bromomethane	**19.7**		µg/kg		20.0		98	70-130		
2-Butanone (MEK)	**26.5**	QC2	µg/kg		20.0		133	70-130		
n-Butylbenzene	**17.3**		µg/kg		20.0		86	70-130		
sec-Butylbenzene	**15.9**		µg/kg		20.0		80	70-130		
tert-Butylbenzene	**18.0**		µg/kg		20.0		90	70-130		
Carbon disulfide	**25.3**		µg/kg		20.0		126	70-130		
Carbon tetrachloride	**25.9**		µg/kg		20.0		130	70-130		
Chlorobenzene	**20.9**		µg/kg		20.0		104	70-130		
Chloroethane	**29.3**	QC2	µg/kg		20.0		147	70-130		
Chloroform	**23.8**		µg/kg		20.0		119	70-130		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8260C										
Batch 2001076 - SW846 5035A Soil (high level)										
LCS (2001076-BS1)						Prepared & Analyzed: 13-Jul-20				
Chloromethane	**26.6**	QC2	µg/kg		20.0		133	70-130		
2-Chlorotoluene	**20.8**		µg/kg		20.0		104	70-130		
4-Chlorotoluene	**21.1**		µg/kg		20.0		106	70-130		
1,2-Dibromo-3-chloropropane	**20.7**		µg/kg		20.0		104	70-130		
Dibromochloromethane	**23.6**		µg/kg		20.0		118	70-130		
1,2-Dibromoethane (EDB)	**24.1**		µg/kg		20.0		120	70-130		
Dibromomethane	**24.6**		µg/kg		20.0		123	70-130		
1,2-Dichlorobenzene	**20.4**		µg/kg		20.0		102	70-130		
1,3-Dichlorobenzene	**21.0**		µg/kg		20.0		105	70-130		
1,4-Dichlorobenzene	**19.8**		µg/kg		20.0		99	70-130		
Dichlorodifluoromethane (Freon12)	**29.9**	QC2	µg/kg		20.0		150	70-130		
1,1-Dichloroethane	**25.0**		µg/kg		20.0		125	70-130		
1,2-Dichloroethane	**24.0**		µg/kg		20.0		120	70-130		
1,1-Dichloroethene	**24.4**		µg/kg		20.0		122	70-130		
cis-1,2-Dichloroethene	**22.6**		µg/kg		20.0		113	70-130		
trans-1,2-Dichloroethene	**23.8**		µg/kg		20.0		119	70-130		
1,2-Dichloropropane	**22.1**		µg/kg		20.0		110	70-130		
1,3-Dichloropropane	**22.6**		µg/kg		20.0		113	70-130		
2,2-Dichloropropane	**24.4**		µg/kg		20.0		122	70-130		
1,1-Dichloropropene	**23.2**		µg/kg		20.0		116	70-130		
cis-1,3-Dichloropropene	**22.7**		µg/kg		20.0		114	70-130		
trans-1,3-Dichloropropene	**25.6**		µg/kg		20.0		128	70-130		
Ethylbenzene	**20.2**		µg/kg		20.0		101	70-130		
Hexachlorobutadiene	**15.8**		µg/kg		20.0		79	70-130		
2-Hexanone (MBK)	**29.9**	QC2	µg/kg		20.0		150	70-130		
Isopropylbenzene	**17.6**		µg/kg		20.0		88	70-130		
4-Isopropyltoluene	**16.2**		µg/kg		20.0		81	70-130		
Methyl tert-butyl ether	**22.3**		µg/kg		20.0		111	70-130		
4-Methyl-2-pentanone (MIBK)	**24.1**		µg/kg		20.0		121	70-130		
Methylene chloride	**23.4**		µg/kg		20.0		117	70-130		
Naphthalene	**16.0**		µg/kg		20.0		80	70-130		
n-Propylbenzene	**20.8**		µg/kg		20.0		104	70-130		
Styrene	**18.4**		µg/kg		20.0		92	70-130		
1,1,1,2-Tetrachloroethane	**21.8**		µg/kg		20.0		109	70-130		
1,1,2,2-Tetrachloroethane	**21.2**		µg/kg		20.0		106	70-130		
Tetrachloroethene	**23.7**		µg/kg		20.0		118	70-130		
Toluene	**21.8**		µg/kg		20.0		109	70-130		
1,2,3-Trichlorobenzene	**18.4**		µg/kg		20.0		92	70-130		
1,2,4-Trichlorobenzene	**18.5**		µg/kg		20.0		93	70-130		
1,3,5-Trichlorobenzene	**18.9**		µg/kg		20.0		94	70-130		
1,1,1-Trichloroethane	**24.0**		µg/kg		20.0		120	70-130		
1,1,2-Trichloroethane	**23.9**		µg/kg		20.0		120	70-130		
Trichloroethene	**21.8**		µg/kg		20.0		109	70-130		
Trichlorofluoromethane (Freon 11)	**28.0**	QC2	µg/kg		20.0		140	70-130		
1,2,3-Trichloropropane	**22.8**		µg/kg		20.0		114	70-130		
1,2,4-Trimethylbenzene	**18.0**		µg/kg		20.0		90	70-130		
1,3,5-Trimethylbenzene	**18.2**		µg/kg		20.0		91	70-130		
Vinyl chloride	**24.6**		µg/kg		20.0		123	70-130		
m,p-Xylene	**43.8**		µg/kg		40.0		110	70-130		
o-Xylene	**17.8**		µg/kg		20.0		89	70-130		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8260C										
Batch 2001076 - SW846 5035A Soil (high level)										
LCS (2001076-BS1)					Prepared & Analyzed: 13-Jul-20					
Tetrahydrofuran	**21.2**		µg/kg		20.0		106	70-130		
Ethyl ether	**23.0**		µg/kg		20.0		115	70-130		
Tert-amyl methyl ether	**23.6**		µg/kg		20.0		118	70-130		
Ethyl tert-butyl ether	**23.3**		µg/kg		20.0		116	70-130		
Di-isopropyl ether	**23.6**		µg/kg		20.0		118	70-130		
Tert-Butanol / butyl alcohol	**254**		µg/kg		200		127	70-130		
1,4-Dioxane	**234**		µg/kg		200		117	70-130		
trans-1,4-Dichloro-2-butene	**21.2**		µg/kg		20.0		106	70-130		
Ethanol	**476**		µg/kg		400		119	70-130		
Surrogate: 4-Bromofluorobenzene	*51.6*		µg/kg		*50.0*		*103*	*70-130*		
Surrogate: Toluene-d8	*52.4*		µg/kg		*50.0*		*105*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*53.0*		µg/kg		*50.0*		*106*	*70-130*		
Surrogate: Dibromofluoromethane	*54.7*		µg/kg		*50.0*		*109*	*70-130*		
LCS Dup (2001076-BSD1)					Prepared & Analyzed: 13-Jul-20					
1,1,2-Trichlorotrifluoroethane (Freon 113)	**26.3**	QC2	µg/kg		20.0		131	70-130	1	30
Acetone	**28.6**	QC2	µg/kg		20.0		143	70-130	16	30
Acrylonitrile	**24.0**		µg/kg		20.0		120	70-130	2	30
Benzene	**23.0**		µg/kg		20.0		115	70-130	1	30
Bromobenzene	**20.8**		µg/kg		20.0		104	70-130	0.3	30
Bromochloromethane	**24.4**		µg/kg		20.0		122	70-130	3	30
Bromodichloromethane	**23.2**		µg/kg		20.0		116	70-130	4	30
Bromoform	**22.5**		µg/kg		20.0		112	70-130	1	30
Bromomethane	**20.1**		µg/kg		20.0		101	70-130	2	30
2-Butanone (MEK)	**21.8**		µg/kg		20.0		109	70-130	19	30
n-Butylbenzene	**17.8**		µg/kg		20.0		89	70-130	3	30
sec-Butylbenzene	**16.6**		µg/kg		20.0		83	70-130	4	30
tert-Butylbenzene	**18.3**		µg/kg		20.0		92	70-130	2	30
Carbon disulfide	**25.7**		µg/kg		20.0		128	70-130	2	30
Carbon tetrachloride	**25.0**		µg/kg		20.0		125	70-130	4	30
Chlorobenzene	**21.4**		µg/kg		20.0		107	70-130	2	30
Chloroethane	**27.3**	QC2	µg/kg		20.0		137	70-130	7	30
Chloroform	**23.5**		µg/kg		20.0		118	70-130	0.9	30
Chloromethane	**27.5**	QC2	µg/kg		20.0		137	70-130	3	30
2-Chlorotoluene	**21.2**		µg/kg		20.0		106	70-130	2	30
4-Chlorotoluene	**22.1**		µg/kg		20.0		110	70-130	4	30
1,2-Dibromo-3-chloropropane	**22.2**		µg/kg		20.0		111	70-130	7	30
Dibromochloromethane	**24.3**		µg/kg		20.0		122	70-130	3	30
1,2-Dibromoethane (EDB)	**24.4**		µg/kg		20.0		122	70-130	1	30
Dibromomethane	**24.6**		µg/kg		20.0		123	70-130	0.1	30
1,2-Dichlorobenzene	**21.2**		µg/kg		20.0		106	70-130	4	30
1,3-Dichlorobenzene	**21.7**		µg/kg		20.0		108	70-130	3	30
1,4-Dichlorobenzene	**20.3**		µg/kg		20.0		101	70-130	3	30
Dichlorodifluoromethane (Freon12)	**29.9**	QC2	µg/kg		20.0		150	70-130	0.03	30
1,1-Dichloroethane	**25.0**		µg/kg		20.0		125	70-130	0.04	30
1,2-Dichloroethane	**23.7**		µg/kg		20.0		118	70-130	1	30
1,1-Dichloroethene	**24.1**		µg/kg		20.0		121	70-130	0.9	30
cis-1,2-Dichloroethene	**22.5**		µg/kg		20.0		113	70-130	0.2	30
trans-1,2-Dichloroethene	**24.3**		µg/kg		20.0		121	70-130	2	30
1,2-Dichloropropane	**22.4**		µg/kg		20.0		112	70-130	1	30
1,3-Dichloropropane	**22.5**		µg/kg		20.0		112	70-130	0.5	30

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8260C										
Batch 2001076 - SW846 5035A Soil (high level)										
LCS Dup (2001076-BSD1)						Prepared & Analyzed: 13-Jul-20				
2,2-Dichloropropane	**24.8**		µg/kg		20.0		124	70-130	2	30
1,1-Dichloropropene	**22.5**		µg/kg		20.0		113	70-130	3	30
cis-1,3-Dichloropropene	**22.9**		µg/kg		20.0		114	70-130	0.8	30
trans-1,3-Dichloropropene	**25.6**		µg/kg		20.0		128	70-130	0.04	30
Ethylbenzene	**20.8**		µg/kg		20.0		104	70-130	3	30
Hexachlorobutadiene	**16.6**		µg/kg		20.0		83	70-130	5	30
2-Hexanone (MBK)	**25.9**		µg/kg		20.0		130	70-130	14	30
Isopropylbenzene	**18.3**		µg/kg		20.0		92	70-130	4	30
4-Isopropyltoluene	**16.6**		µg/kg		20.0		83	70-130	3	30
Methyl tert-butyl ether	**23.0**		µg/kg		20.0		115	70-130	3	30
4-Methyl-2-pentanone (MIBK)	**24.5**		µg/kg		20.0		122	70-130	1	30
Methylene chloride	**22.9**		µg/kg		20.0		114	70-130	2	30
Naphthalene	**18.5**		µg/kg		20.0		92	70-130	14	30
n-Propylbenzene	**21.4**		µg/kg		20.0		107	70-130	3	30
Styrene	**18.7**		µg/kg		20.0		93	70-130	2	30
1,1,1,2-Tetrachloroethane	**22.4**		µg/kg		20.0		112	70-130	2	30
1,1,2,2-Tetrachloroethane	**21.8**		µg/kg		20.0		109	70-130	3	30
Tetrachloroethene	**23.2**		µg/kg		20.0		116	70-130	2	30
Toluene	**22.1**		µg/kg		20.0		111	70-130	2	30
1,2,3-Trichlorobenzene	**19.2**		µg/kg		20.0		96	70-130	4	30
1,2,4-Trichlorobenzene	**19.3**		µg/kg		20.0		96	70-130	4	30
1,3,5-Trichlorobenzene	**19.3**		µg/kg		20.0		97	70-130	3	30
1,1,1-Trichloroethane	**24.1**		µg/kg		20.0		121	70-130	0.7	30
1,1,2-Trichloroethane	**23.8**		µg/kg		20.0		119	70-130	0.6	30
Trichloroethene	**21.8**		µg/kg		20.0		109	70-130	0.1	30
Trichlorofluoromethane (Freon 11)	**27.6**	QC2	µg/kg		20.0		138	70-130	1	30
1,2,3-Trichloropropane	**22.6**		µg/kg		20.0		113	70-130	0.7	30
1,2,4-Trimethylbenzene	**18.8**		µg/kg		20.0		94	70-130	5	30
1,3,5-Trimethylbenzene	**18.5**		µg/kg		20.0		93	70-130	2	30
Vinyl chloride	**25.6**		µg/kg		20.0		128	70-130	4	30
m,p-Xylene	**45.2**		µg/kg		40.0		113	70-130	3	30
o-Xylene	**18.7**		µg/kg		20.0		93	70-130	5	30
Tetrahydrofuran	**23.4**		µg/kg		20.0		117	70-130	10	30
Ethyl ether	**22.7**		µg/kg		20.0		113	70-130	1	30
Tert-amyl methyl ether	**23.8**		µg/kg		20.0		119	70-130	0.8	30
Ethyl tert-butyl ether	**23.6**		µg/kg		20.0		118	70-130	1	30
Di-isopropyl ether	**24.2**		µg/kg		20.0		121	70-130	3	30
Tert-Butanol / butyl alcohol	**252**		µg/kg		200		126	70-130	1	30
1,4-Dioxane	**238**		µg/kg		200		119	70-130	2	30
trans-1,4-Dichloro-2-butene	**21.6**		µg/kg		20.0		108	70-130	2	30
Ethanol	**474**		µg/kg		400		119	70-130	0.4	30
Surrogate: 4-Bromofluorobenzene	*52.6*		µg/kg		*50.0*		*105*	*70-130*		
Surrogate: Toluene-d8	*51.9*		µg/kg		*50.0*		*104*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*51.8*		µg/kg		*50.0*		*104*	*70-130*		
Surrogate: Dibromofluoromethane	*54.1*		µg/kg		*50.0*		*108*	*70-130*		
Duplicate (2001076-DUP1)			**Source: SC58794-17**			Prepared & Analyzed: 13-Jul-20				
1,1,2-Trichlorotrifluoroethane (Freon 113)	< 69.5		µg/kg dry	69.5		BRL				30
Acetone	< 695		µg/kg dry	695		BRL				30
Acrylonitrile	< 69.5		µg/kg dry	69.5		BRL				30
Benzene	< 69.5		µg/kg dry	69.5		BRL				30

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8260C										
Batch 2001076 - SW846 5035A Soil (high level)										
Duplicate (2001076-DUP1)			**Source: SC58794-17**		Prepared & Analyzed: 13-Jul-20					
Bromobenzene	< 69.5		µg/kg dry	69.5		BRL				30
Bromochloromethane	< 69.5		µg/kg dry	69.5		BRL				30
Bromodichloromethane	< 69.5		µg/kg dry	69.5		BRL				30
Bromoform	< 69.5		µg/kg dry	69.5		BRL				30
Bromomethane	< 139		µg/kg dry	139		BRL				30
2-Butanone (MEK)	< 139		µg/kg dry	139		BRL				30
n-Butylbenzene	< 69.5		µg/kg dry	69.5		BRL				30
sec-Butylbenzene	< 69.5		µg/kg dry	69.5		BRL				30
tert-Butylbenzene	< 69.5		µg/kg dry	69.5		BRL				30
Carbon disulfide	< 139		µg/kg dry	139		BRL				30
Carbon tetrachloride	< 69.5		µg/kg dry	69.5		BRL				30
Chlorobenzene	< 69.5		µg/kg dry	69.5		BRL				30
Chloroethane	< 139		µg/kg dry	139		BRL				30
Chloroform	< 69.5		µg/kg dry	69.5		BRL				30
Chloromethane	< 139		µg/kg dry	139		BRL				30
2-Chlorotoluene	< 69.5		µg/kg dry	69.5		BRL				30
4-Chlorotoluene	< 69.5		µg/kg dry	69.5		BRL				30
1,2-Dibromo-3-chloropropane	< 139		µg/kg dry	139		BRL				30
Dibromochloromethane	< 69.5		µg/kg dry	69.5		BRL				30
1,2-Dibromoethane (EDB)	< 69.5		µg/kg dry	69.5		BRL				30
Dibromomethane	< 69.5		µg/kg dry	69.5		BRL				30
1,2-Dichlorobenzene	< 69.5		µg/kg dry	69.5		BRL				30
1,3-Dichlorobenzene	< 69.5		µg/kg dry	69.5		BRL				30
1,4-Dichlorobenzene	< 69.5		µg/kg dry	69.5		BRL				30
Dichlorodifluoromethane (Freon12)	< 139		µg/kg dry	139		BRL				30
1,1-Dichloroethane	< 69.5		µg/kg dry	69.5		BRL				30
1,2-Dichloroethane	< 69.5		µg/kg dry	69.5		BRL				30
1,1-Dichloroethene	< 69.5		µg/kg dry	69.5		BRL				30
cis-1,2-Dichloroethene	< 69.5		µg/kg dry	69.5		BRL				30
trans-1,2-Dichloroethene	< 69.5		µg/kg dry	69.5		BRL				30
1,2-Dichloropropane	< 69.5		µg/kg dry	69.5		BRL				30
1,3-Dichloropropane	< 69.5		µg/kg dry	69.5		BRL				30
2,2-Dichloropropane	< 69.5		µg/kg dry	69.5		BRL				30
1,1-Dichloropropene	< 69.5		µg/kg dry	69.5		BRL				30
cis-1,3-Dichloropropene	< 69.5		µg/kg dry	69.5		BRL				30
trans-1,3-Dichloropropene	< 69.5		µg/kg dry	69.5		BRL				30
Ethylbenzene	< 69.5		µg/kg dry	69.5		BRL				30
Hexachlorobutadiene	< 69.5		µg/kg dry	69.5		BRL				30
2-Hexanone (MBK)	< 139		µg/kg dry	139		BRL				30
Isopropylbenzene	< 69.5		µg/kg dry	69.5		BRL				30
4-Isopropyltoluene	< 69.5		µg/kg dry	69.5		BRL				30
Methyl tert-butyl ether	< 69.5		µg/kg dry	69.5		BRL				30
4-Methyl-2-pentanone (MIBK)	< 139		µg/kg dry	139		BRL				30
Methylene chloride	< 139		µg/kg dry	139		BRL				30
Naphthalene	< 69.5		µg/kg dry	69.5		BRL				30
n-Propylbenzene	< 69.5		µg/kg dry	69.5		BRL				30
Styrene	< 69.5		µg/kg dry	69.5		BRL				30
1,1,1,2-Tetrachloroethane	< 69.5		µg/kg dry	69.5		BRL				30
1,1,2,2-Tetrachloroethane	< 69.5		µg/kg dry	69.5		BRL				30
Tetrachloroethene	< 69.5		µg/kg dry	69.5		BRL				30

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8260C										
Batch 2001076 - SW846 5035A Soil (high level)										
Duplicate (2001076-DUP1)			**Source: SC58794-17**			Prepared & Analyzed: 13-Jul-20				
Toluene	< 69.5		µg/kg dry	69.5		BRL				30
1,2,3-Trichlorobenzene	< 69.5		µg/kg dry	69.5		BRL				30
1,2,4-Trichlorobenzene	< 69.5		µg/kg dry	69.5		BRL				30
1,3,5-Trichlorobenzene	< 69.5		µg/kg dry	69.5		BRL				30
1,1,1-Trichloroethane	< 69.5		µg/kg dry	69.5		BRL				30
1,1,2-Trichloroethane	< 69.5		µg/kg dry	69.5		BRL				30
Trichloroethene	< 69.5		µg/kg dry	69.5		BRL				30
Trichlorofluoromethane (Freon 11)	< 69.5		µg/kg dry	69.5		BRL				30
1,2,3-Trichloropropane	< 69.5		µg/kg dry	69.5		BRL				30
1,2,4-Trimethylbenzene	< 69.5		µg/kg dry	69.5		BRL				30
1,3,5-Trimethylbenzene	< 69.5		µg/kg dry	69.5		BRL				30
Vinyl chloride	< 69.5		µg/kg dry	69.5		BRL				30
m,p-Xylene	< 139		µg/kg dry	139		BRL				30
o-Xylene	< 69.5		µg/kg dry	69.5		BRL				30
Tetrahydrofuran	< 139		µg/kg dry	139		BRL				30
Ethyl ether	< 69.5		µg/kg dry	69.5		BRL				30
Tert-amyl methyl ether	< 69.5		µg/kg dry	69.5		BRL				30
Ethyl tert-butyl ether	< 69.5		µg/kg dry	69.5		BRL				30
Di-isopropyl ether	< 69.5		µg/kg dry	69.5		BRL				30
Tert-Butanol / butyl alcohol	< 1390		µg/kg dry	1390		BRL				30
1,4-Dioxane	< 1390		µg/kg dry	1390		BRL				30
trans-1,4-Dichloro-2-butene	< 347		µg/kg dry	347		BRL				30
Ethanol	< 13900		µg/kg dry	13900		BRL				30
Surrogate: 4-Bromofluorobenzene	*52.1*		µg/kg		*50.0*		*104*	*70-130*		
Surrogate: Toluene-d8	*53.8*		µg/kg		*50.0*		*108*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*53.9*		µg/kg		*50.0*		*108*	*70-130*		
Surrogate: Dibromofluoromethane	*52.9*		µg/kg		*50.0*		*106*	*70-130*		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8270D										
Batch 2001083 - SW846 3546										
Blank (2001083-BLK1)					Prepared & Analyzed: 13-Jul-20					
Acenaphthene	< 66.7		µg/kg wet	66.7						
Acenaphthylene	< 66.7		µg/kg wet	66.7						
Aniline	< 330		µg/kg wet	330						
Anthracene	< 66.7		µg/kg wet	66.7						
Azobenzene/Diphenyldiazene	< 330		µg/kg wet	330						
Benzidine	< 660		µg/kg wet	660						
Benzo (a) anthracene	< 66.7		µg/kg wet	66.7						
Benzo (a) pyrene	< 66.7		µg/kg wet	66.7						
Benzo (b) fluoranthene	< 66.7		µg/kg wet	66.7						
Benzo (g,h,i) perylene	< 66.7		µg/kg wet	66.7						
Benzo (k) fluoranthene	< 66.7		µg/kg wet	66.7						
Benzoic acid	< 330		µg/kg wet	330						
Benzyl alcohol	< 330		µg/kg wet	330						
Bis(2-chloroethoxy)methane	< 330		µg/kg wet	330						
Bis(2-chloroethyl)ether	< 167		µg/kg wet	167						
Bis(2-chloroisopropyl)ether	< 167		µg/kg wet	167						
Bis(2-ethylhexyl)phthalate	< 167		µg/kg wet	167						
4-Bromophenyl phenyl ether	< 330		µg/kg wet	330						
Butyl benzyl phthalate	< 330		µg/kg wet	330						
Carbazole	< 167		µg/kg wet	167						
4-Chloro-3-methylphenol	< 330		µg/kg wet	330						
4-Chloroaniline	< 167		µg/kg wet	167						
2-Chloronaphthalene	< 330		µg/kg wet	330						
2-Chlorophenol	< 167		µg/kg wet	167						
4-Chlorophenyl phenyl ether	< 330		µg/kg wet	330						
Chrysene	< 66.7		µg/kg wet	66.7						
Dibenzo (a,h) anthracene	< 66.7		µg/kg wet	66.7						
Dibenzofuran	< 167		µg/kg wet	167						
1,2-Dichlorobenzene	< 330		µg/kg wet	330						
1,3-Dichlorobenzene	< 330		µg/kg wet	330						
1,4-Dichlorobenzene	< 330		µg/kg wet	330						
3,3´-Dichlorobenzidine	< 330		µg/kg wet	330						
2,4-Dichlorophenol	< 167		µg/kg wet	167						
Diethyl phthalate	< 330		µg/kg wet	330						
Dimethyl phthalate	< 330		µg/kg wet	330						
2,4-Dimethylphenol	< 330		µg/kg wet	330						
Di-n-butyl phthalate	< 330		µg/kg wet	330						
4,6-Dinitro-2-methylphenol	< 330		µg/kg wet	330						
2,4-Dinitrophenol	< 330		µg/kg wet	330						
2,4-Dinitrotoluene	< 167		µg/kg wet	167						
2,6-Dinitrotoluene	< 167		µg/kg wet	167						
Di-n-octyl phthalate	< 330		µg/kg wet	330						
Fluoranthene	< 66.7		µg/kg wet	66.7						
Fluorene	< 66.7		µg/kg wet	66.7						
Hexachlorobenzene	< 167		µg/kg wet	167						
Hexachlorobutadiene	< 167		µg/kg wet	167						
Hexachlorocyclopentadiene	< 167		µg/kg wet	167						
Hexachloroethane	< 167		µg/kg wet	167						
Indeno (1,2,3-cd) pyrene	< 66.7		µg/kg wet	66.7						
Isophorone	< 167		µg/kg wet	167						

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8270D										
Batch 2001083 - SW846 3546										
Blank (2001083-BLK1)					Prepared & Analyzed: 13-Jul-20					
2-Methylnaphthalene	< 66.7		µg/kg wet	66.7						
2-Methylphenol	< 330		µg/kg wet	330						
3 & 4-Methylphenol	< 330		µg/kg wet	330						
Naphthalene	< 66.7		µg/kg wet	66.7						
2-Nitroaniline	< 330		µg/kg wet	330						
3-Nitroaniline	< 330		µg/kg wet	330						
4-Nitroaniline	< 167		µg/kg wet	167						
Nitrobenzene	< 167		µg/kg wet	167						
2-Nitrophenol	< 167		µg/kg wet	167						
4-Nitrophenol	< 1320		µg/kg wet	1320						
N-Nitrosodimethylamine	< 167		µg/kg wet	167						
N-Nitrosodi-n-propylamine	< 167		µg/kg wet	167						
N-Nitrosodiphenylamine	< 330		µg/kg wet	330						
Pentachlorophenol	< 330		µg/kg wet	330						
Phenanthrene	< 66.7		µg/kg wet	66.7						
Phenol	< 330		µg/kg wet	330						
Pyrene	< 66.7		µg/kg wet	66.7						
Pyridine	< 330		µg/kg wet	330						
1,2,4-Trichlorobenzene	< 330		µg/kg wet	330						
1-Methylnaphthalene	< 66.7		µg/kg wet	66.7						
2,4,5-Trichlorophenol	< 330		µg/kg wet	330						
2,4,6-Trichlorophenol	< 167		µg/kg wet	167						
Pentachloronitrobenzene	< 330		µg/kg wet	330						
1,2,4,5-Tetrachlorobenzene	< 330		µg/kg wet	330						
Surrogate: 2-Fluorobiphenyl	*1570*		µg/kg wet		*1670*		*94*	*30-130*		
Surrogate: 2-Fluorophenol	*1520*		µg/kg wet		*1670*		*91*	*30-130*		
Surrogate: Nitrobenzene-d5	*1510*		µg/kg wet		*1670*		*90*	*30-130*		
Surrogate: Phenol-d5	*1760*		µg/kg wet		*1670*		*106*	*30-130*		
Surrogate: Terphenyl-dl4	*1580*		µg/kg wet		*1670*		*95*	*30-130*		
Surrogate: 2,4,6-Tribromophenol	*1450*		µg/kg wet		*1670*		*87*	*30-130*		
LCS (2001083-BS1)					Prepared & Analyzed: 13-Jul-20					
Acenaphthene	**1430**		µg/kg wet	66.7	1670		86	40-140		
Acenaphthylene	**1420**		µg/kg wet	66.7	1670		85	40-140		
Aniline	**775**		µg/kg wet	330	1670		47	40-140		
Anthracene	**1510**		µg/kg wet	66.7	1670		90	40-140		
Azobenzene/Diphenyldiazene	**1470**		µg/kg wet	330	1670		88	40-140		
Benzidine	**663**		µg/kg wet	660	1670		40	40-140		
Benzo (a) anthracene	**1660**		µg/kg wet	66.7	1670		99	40-140		
Benzo (a) pyrene	**1820**		µg/kg wet	66.7	1670		109	40-140		
Benzo (b) fluoranthene	**1710**		µg/kg wet	66.7	1670		103	40-140		
Benzo (g,h,i) perylene	**1710**		µg/kg wet	66.7	1670		102	40-140		
Benzo (k) fluoranthene	**1680**		µg/kg wet	66.7	1670		101	40-140		
Benzoic acid	**1650**		µg/kg wet	330	1670		99	30-130		
Benzyl alcohol	**1350**		µg/kg wet	330	1670		81	40-140		
Bis(2-chloroethoxy)methane	**1360**		µg/kg wet	330	1670		82	40-140		
Bis(2-chloroethyl)ether	**1060**		µg/kg wet	167	1670		63	40-140		
Bis(2-chloroisopropyl)ether	**904**		µg/kg wet	167	1670		54	40-140		
Bis(2-ethylhexyl)phthalate	**1650**		µg/kg wet	167	1670		99	40-140		
4-Bromophenyl phenyl ether	**1440**		µg/kg wet	330	1670		86	40-140		
Butyl benzyl phthalate	**1660**		µg/kg wet	330	1670		100	40-140		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8270D										
Batch 2001083 - SW846 3546										
LCS (2001083-BS1)					Prepared & Analyzed: 13-Jul-20					
Carbazole	**1480**		µg/kg wet	167	1670		89	40-140		
4-Chloro-3-methylphenol	**1600**		µg/kg wet	330	1670		96	30-130		
4-Chloroaniline	**1020**		µg/kg wet	167	1670		61	40-140		
2-Chloronaphthalene	**1560**		µg/kg wet	330	1670		94	40-140		
2-Chlorophenol	**1240**		µg/kg wet	167	1670		75	30-130		
4-Chlorophenyl phenyl ether	**1250**		µg/kg wet	330	1670		75	40-140		
Chrysene	**1580**		µg/kg wet	66.7	1670		95	40-140		
Dibenzo (a,h) anthracene	**1760**		µg/kg wet	66.7	1670		106	40-140		
Dibenzofuran	**1840**		µg/kg wet	167	1670		111	40-140		
1,2-Dichlorobenzene	**1430**		µg/kg wet	330	1670		86	40-140		
1,3-Dichlorobenzene	**1310**		µg/kg wet	330	1670		78	40-140		
1,4-Dichlorobenzene	**1220**		µg/kg wet	330	1670		73	40-140		
3,3´-Dichlorobenzidine	**1720**		µg/kg wet	330	1670		103	40-140		
2,4-Dichlorophenol	**1310**		µg/kg wet	167	1670		79	30-130		
Diethyl phthalate	**1510**		µg/kg wet	330	1670		90	40-140		
Dimethyl phthalate	**1440**		µg/kg wet	330	1670		86	40-140		
2,4-Dimethylphenol	**1480**		µg/kg wet	330	1670		89	30-130		
Di-n-butyl phthalate	**1490**		µg/kg wet	330	1670		89	40-140		
4,6-Dinitro-2-methylphenol	**2110**		µg/kg wet	330	1670		126	30-130		
2,4-Dinitrophenol	**1990**		µg/kg wet	330	1670		120	30-130		
2,4-Dinitrotoluene	**1840**		µg/kg wet	167	1670		110	40-140		
2,6-Dinitrotoluene	**1260**		µg/kg wet	167	1670		76	40-140		
Di-n-octyl phthalate	**1710**		µg/kg wet	330	1670		103	40-140		
Fluoranthene	**1430**		µg/kg wet	66.7	1670		86	40-140		
Fluorene	**1130**		µg/kg wet	66.7	1670		68	40-140		
Hexachlorobenzene	**1590**		µg/kg wet	167	1670		96	40-140		
Hexachlorobutadiene	**1490**		µg/kg wet	167	1670		89	40-140		
Hexachlorocyclopentadiene	**1840**		µg/kg wet	167	1670		110	40-140		
Hexachloroethane	**1410**		µg/kg wet	167	1670		85	40-140		
Indeno (1,2,3-cd) pyrene	**1900**		µg/kg wet	66.7	1670		114	40-140		
Isophorone	**1240**		µg/kg wet	167	1670		75	40-140		
2-Methylnaphthalene	**1630**		µg/kg wet	66.7	1670		98	40-140		
2-Methylphenol	**1770**		µg/kg wet	330	1670		106	30-130		
3 & 4-Methylphenol	**1260**		µg/kg wet	330	1670		76	30-130		
Naphthalene	**1480**		µg/kg wet	66.7	1670		89	40-140		
2-Nitroaniline	**1290**		µg/kg wet	330	1670		77	40-140		
3-Nitroaniline	**1180**		µg/kg wet	330	1670		71	40-140		
4-Nitroaniline	**1390**		µg/kg wet	167	1670		84	40-140		
Nitrobenzene	**1430**		µg/kg wet	167	1670		86	40-140		
2-Nitrophenol	**1560**		µg/kg wet	167	1670		93	30-130		
4-Nitrophenol	**1730**		µg/kg wet	1320	1670		104	30-130		
N-Nitrosodimethylamine	**1020**		µg/kg wet	167	1670		61	40-140		
N-Nitrosodi-n-propylamine	**1120**		µg/kg wet	167	1670		67	40-140		
N-Nitrosodiphenylamine	**1400**		µg/kg wet	330	1670		84	40-140		
Pentachlorophenol	**1370**		µg/kg wet	330	1670		82	30-130		
Phenanthrene	**1450**		µg/kg wet	66.7	1670		87	40-140		
Phenol	**1360**		µg/kg wet	330	1670		81	30-130		
Pyrene	**1790**		µg/kg wet	66.7	1670		108	40-140		
Pyridine	**722**		µg/kg wet	330	1670		43	40-140		
1,2,4-Trichlorobenzene	**1600**		µg/kg wet	330	1670		96	40-140		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8270D										
Batch 2001083 - SW846 3546										
LCS (2001083-BS1)					Prepared & Analyzed: 13-Jul-20					
1-Methylnaphthalene	**1610**		µg/kg wet	66.7	1670		96	40-140		
2,4,5-Trichlorophenol	**1340**		µg/kg wet	330	1670		80	30-130		
2,4,6-Trichlorophenol	**1450**		µg/kg wet	167	1670		87	30-130		
Pentachloronitrobenzene	**1460**		µg/kg wet	330	1670		88	40-140		
1,2,4,5-Tetrachlorobenzene	**1360**		µg/kg wet	330	1670		81	40-140		
Surrogate: 2-Fluorobiphenyl	*1570*		µg/kg wet		*1670*		*94*	*30-130*		
Surrogate: 2-Fluorophenol	*1240*		µg/kg wet		*1670*		*74*	*30-130*		
Surrogate: Nitrobenzene-d5	*1470*		µg/kg wet		*1670*		*88*	*30-130*		
Surrogate: Phenol-d5	*1360*		µg/kg wet		*1670*		*82*	*30-130*		
Surrogate: Terphenyl-dl4	*1750*		µg/kg wet		*1670*		*105*	*30-130*		
Surrogate: 2,4,6-Tribromophenol	*1820*		µg/kg wet		*1670*		*109*	*30-130*		
LCS Dup (2001083-BSD1)					Prepared & Analyzed: 13-Jul-20					
Acenaphthene	**1490**		µg/kg wet	66.7	1670		89	40-140	4	30
Acenaphthylene	**1460**		µg/kg wet	66.7	1670		87	40-140	2	30
Aniline	**785**		µg/kg wet	330	1670		47	40-140	1	30
Anthracene	**1510**		µg/kg wet	66.7	1670		91	40-140	0.5	30
Azobenzene/Diphenyldiazene	**1530**		µg/kg wet	330	1670		92	40-140	4	30
Benzidine	**829**		µg/kg wet	660	1670		50	40-140	22	30
Benzo (a) anthracene	**1710**		µg/kg wet	66.7	1670		102	40-140	3	30
Benzo (a) pyrene	**1830**		µg/kg wet	66.7	1670		110	40-140	0.5	30
Benzo (b) fluoranthene	**1700**		µg/kg wet	66.7	1670		102	40-140	0.5	30
Benzo (g,h,i) perylene	**1710**		µg/kg wet	66.7	1670		102	40-140	0.06	30
Benzo (k) fluoranthene	**1750**		µg/kg wet	66.7	1670		105	40-140	4	30
Benzoic acid	**1650**		µg/kg wet	330	1670		99	30-130	0.3	30
Benzyl alcohol	**1370**		µg/kg wet	330	1670		82	40-140	1	30
Bis(2-chloroethoxy)methane	**1430**		µg/kg wet	330	1670		86	40-140	5	30
Bis(2-chloroethyl)ether	**1090**		µg/kg wet	167	1670		66	40-140	3	30
Bis(2-chloroisopropyl)ether	**923**		µg/kg wet	167	1670		55	40-140	2	30
Bis(2-ethylhexyl)phthalate	**1830**		µg/kg wet	167	1670		110	40-140	10	30
4-Bromophenyl phenyl ether	**1450**		µg/kg wet	330	1670		87	40-140	0.9	30
Butyl benzyl phthalate	**1680**		µg/kg wet	330	1670		101	40-140	1	30
Carbazole	**1490**		µg/kg wet	167	1670		90	40-140	0.5	30
4-Chloro-3-methylphenol	**1600**		µg/kg wet	330	1670		96	30-130	0.02	30
4-Chloroaniline	**1040**		µg/kg wet	167	1670		62	40-140	1	30
2-Chloronaphthalene	**1610**		µg/kg wet	330	1670		97	40-140	3	30
2-Chlorophenol	**1270**		µg/kg wet	167	1670		76	30-130	2	30
4-Chlorophenyl phenyl ether	**1260**		µg/kg wet	330	1670		76	40-140	0.9	30
Chrysene	**1620**		µg/kg wet	66.7	1670		97	40-140	3	30
Dibenzo (a,h) anthracene	**1770**		µg/kg wet	66.7	1670		106	40-140	0.7	30
Dibenzofuran	**1890**		µg/kg wet	167	1670		113	40-140	2	30
1,2-Dichlorobenzene	**1510**		µg/kg wet	330	1670		91	40-140	5	30
1,3-Dichlorobenzene	**1320**		µg/kg wet	330	1670		79	40-140	1	30
1,4-Dichlorobenzene	**1230**		µg/kg wet	330	1670		74	40-140	0.9	30
3,3´-Dichlorobenzidine	**1790**		µg/kg wet	330	1670		107	40-140	4	30
2,4-Dichlorophenol	**1360**		µg/kg wet	167	1670		82	30-130	4	30
Diethyl phthalate	**1500**		µg/kg wet	330	1670		90	40-140	0.7	30
Dimethyl phthalate	**1400**		µg/kg wet	330	1670		84	40-140	3	30
2,4-Dimethylphenol	**1510**		µg/kg wet	330	1670		91	30-130	2	30
Di-n-butyl phthalate	**1500**		µg/kg wet	330	1670		90	40-140	0.8	30
4,6-Dinitro-2-methylphenol	**2100**		µg/kg wet	330	1670		126	30-130	0.08	30

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8270D										
Batch 2001083 - SW846 3546										
LCS Dup (2001083-BSD1)					Prepared & Analyzed: 13-Jul-20					
2,4-Dinitrophenol	**2140**		µg/kg wet	330	1670		129	30-130	7	30
2,4-Dinitrotoluene	**1770**		µg/kg wet	167	1670		106	40-140	4	30
2,6-Dinitrotoluene	**1350**		µg/kg wet	167	1670		81	40-140	7	30
Di-n-octyl phthalate	**1730**		µg/kg wet	330	1670		104	40-140	0.9	30
Fluoranthene	**1460**		µg/kg wet	66.7	1670		88	40-140	2	30
Fluorene	**1170**		µg/kg wet	66.7	1670		70	40-140	3	30
Hexachlorobenzene	**1640**		µg/kg wet	167	1670		98	40-140	3	30
Hexachlorobutadiene	**1540**		µg/kg wet	167	1670		92	40-140	3	30
Hexachlorocyclopentadiene	**2270**		µg/kg wet	167	1670		136	40-140	21	30
Hexachloroethane	**1420**		µg/kg wet	167	1670		85	40-140	0.7	30
Indeno (1,2,3-cd) pyrene	**1910**		µg/kg wet	66.7	1670		114	40-140	0.4	30
Isophorone	**1260**		µg/kg wet	167	1670		76	40-140	1	30
2-Methylnaphthalene	**1680**		µg/kg wet	66.7	1670		101	40-140	3	30
2-Methylphenol	**1800**		µg/kg wet	330	1670		108	30-130	2	30
3 & 4-Methylphenol	**1230**		µg/kg wet	330	1670		74	30-130	2	30
Naphthalene	**1460**		µg/kg wet	66.7	1670		88	40-140	1	30
2-Nitroaniline	**1430**		µg/kg wet	330	1670		86	40-140	10	30
3-Nitroaniline	**1160**		µg/kg wet	330	1670		70	40-140	1	30
4-Nitroaniline	**1390**		µg/kg wet	167	1670		83	40-140	0.1	30
Nitrobenzene	**1520**		µg/kg wet	167	1670		91	40-140	6	30
2-Nitrophenol	**1640**		µg/kg wet	167	1670		98	30-130	5	30
4-Nitrophenol	**1810**		µg/kg wet	1320	1670		109	30-130	5	30
N-Nitrosodimethylamine	**739**	QC6	µg/kg wet	167	1670		44	40-140	32	30
N-Nitrosodi-n-propylamine	**1190**		µg/kg wet	167	1670		71	40-140	6	30
N-Nitrosodiphenylamine	**1370**		µg/kg wet	330	1670		82	40-140	3	30
Pentachlorophenol	**1320**		µg/kg wet	330	1670		79	30-130	4	30
Phenanthrene	**1490**		µg/kg wet	66.7	1670		90	40-140	3	30
Phenol	**1400**		µg/kg wet	330	1670		84	30-130	3	30
Pyrene	**1810**		µg/kg wet	66.7	1670		109	40-140	1	30
Pyridine	**1000**	QC6	µg/kg wet	330	1670		60	40-140	33	30
1,2,4-Trichlorobenzene	**1640**		µg/kg wet	330	1670		98	40-140	2	30
1-Methylnaphthalene	**1650**		µg/kg wet	66.7	1670		99	40-140	3	30
2,4,5-Trichlorophenol	**1290**		µg/kg wet	330	1670		78	30-130	4	30
2,4,6-Trichlorophenol	**1480**		µg/kg wet	167	1670		89	30-130	2	30
Pentachloronitrobenzene	**1350**		µg/kg wet	330	1670		81	40-140	8	30
1,2,4,5-Tetrachlorobenzene	**1410**		µg/kg wet	330	1670		85	40-140	4	30
Surrogate: 2-Fluorobiphenyl	*1590*		µg/kg wet		*1670*		*95*	*30-130*		
Surrogate: 2-Fluorophenol	*1220*		µg/kg wet		*1670*		*73*	*30-130*		
Surrogate: Nitrobenzene-d5	*1490*		µg/kg wet		*1670*		*89*	*30-130*		
Surrogate: Phenol-d5	*1400*		µg/kg wet		*1670*		*84*	*30-130*		
Surrogate: Terphenyl-dl4	*1750*		µg/kg wet		*1670*		*105*	*30-130*		
Surrogate: 2,4,6-Tribromophenol	*1840*		µg/kg wet		*1670*		*110*	*30-130*		
Duplicate (2001083-DUP1)			**Source: SC58794-01**		Prepared & Analyzed: 13-Jul-20					
Acenaphthene	< 74.4		µg/kg dry	74.4		BRL				30
Acenaphthylene	< 74.4		µg/kg dry	74.4		BRL				30
Aniline	< 368		µg/kg dry	368		BRL				30
Anthracene	< 74.4		µg/kg dry	74.4		BRL				30
Azobenzene/Diphenyldiazene	< 368		µg/kg dry	368		BRL				30
Benzidine	< 736		µg/kg dry	736		BRL				30
Benzo (a) anthracene	< 74.4		µg/kg dry	74.4		BRL				30

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8270D										
Batch 2001083 - SW846 3546										
Duplicate (2001083-DUP1)			**Source: SC58794-01**		Prepared & Analyzed: 13-Jul-20					
Benzo (a) pyrene	< 74.4		µg/kg dry	74.4		BRL				30
Benzo (b) fluoranthene	< 74.4		µg/kg dry	74.4		BRL				30
Benzo (g,h,i) perylene	< 74.4		µg/kg dry	74.4		BRL				30
Benzo (k) fluoranthene	< 74.4		µg/kg dry	74.4		BRL				30
Benzoic acid	< 368		µg/kg dry	368		BRL				30
Benzyl alcohol	< 368		µg/kg dry	368		BRL				30
Bis(2-chloroethoxy)methane	< 368		µg/kg dry	368		BRL				30
Bis(2-chloroethyl)ether	< 186		µg/kg dry	186		BRL				30
Bis(2-chloroisopropyl)ether	< 186		µg/kg dry	186		BRL				30
Bis(2-ethylhexyl)phthalate	< 186		µg/kg dry	186		BRL				30
4-Bromophenyl phenyl ether	< 368		µg/kg dry	368		BRL				30
Butyl benzyl phthalate	< 368		µg/kg dry	368		BRL				30
Carbazole	< 186		µg/kg dry	186		BRL				30
4-Chloro-3-methylphenol	< 368		µg/kg dry	368		BRL				30
4-Chloroaniline	< 186		µg/kg dry	186		BRL				30
2-Chloronaphthalene	< 368		µg/kg dry	368		BRL				30
2-Chlorophenol	< 186		µg/kg dry	186		BRL				30
4-Chlorophenyl phenyl ether	< 368		µg/kg dry	368		BRL				30
Chrysene	< 74.4		µg/kg dry	74.4		BRL				30
Dibenzo (a,h) anthracene	< 74.4		µg/kg dry	74.4		BRL				30
Dibenzofuran	< 186		µg/kg dry	186		BRL				30
1,2-Dichlorobenzene	< 368		µg/kg dry	368		BRL				30
1,3-Dichlorobenzene	< 368		µg/kg dry	368		BRL				30
1,4-Dichlorobenzene	< 368		µg/kg dry	368		BRL				30
3,3´-Dichlorobenzidine	< 368		µg/kg dry	368		BRL				30
2,4-Dichlorophenol	< 186		µg/kg dry	186		BRL				30
Diethyl phthalate	< 368		µg/kg dry	368		BRL				30
Dimethyl phthalate	< 368		µg/kg dry	368		BRL				30
2,4-Dimethylphenol	< 368		µg/kg dry	368		BRL				30
Di-n-butyl phthalate	< 368		µg/kg dry	368		BRL				30
4,6-Dinitro-2-methylphenol	< 368		µg/kg dry	368		BRL				30
2,4-Dinitrophenol	< 368		µg/kg dry	368		BRL				30
2,4-Dinitrotoluene	< 186		µg/kg dry	186		BRL				30
2,6-Dinitrotoluene	< 186		µg/kg dry	186		BRL				30
Di-n-octyl phthalate	< 368		µg/kg dry	368		BRL				30
Fluoranthene	< 74.4		µg/kg dry	74.4		BRL				30
Fluorene	< 74.4		µg/kg dry	74.4		BRL				30
Hexachlorobenzene	< 186		µg/kg dry	186		BRL				30
Hexachlorobutadiene	< 186		µg/kg dry	186		BRL				30
Hexachlorocyclopentadiene	< 186		µg/kg dry	186		BRL				30
Hexachloroethane	< 186		µg/kg dry	186		BRL				30
Indeno (1,2,3-cd) pyrene	< 74.4		µg/kg dry	74.4		BRL				30
Isophorone	< 186		µg/kg dry	186		BRL				30
2-Methylnaphthalene	< 74.4		µg/kg dry	74.4		BRL				30
2-Methylphenol	< 368		µg/kg dry	368		BRL				30
3 & 4-Methylphenol	< 368		µg/kg dry	368		BRL				30
Naphthalene	< 74.4		µg/kg dry	74.4		BRL				30
2-Nitroaniline	< 368		µg/kg dry	368		BRL				30
3-Nitroaniline	< 368		µg/kg dry	368		BRL				30
4-Nitroaniline	< 186		µg/kg dry	186		BRL				30

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8270D										
Batch 2001083 - SW846 3546										
Duplicate (2001083-DUP1)			**Source: SC58794-01**		Prepared & Analyzed: 13-Jul-20					
Nitrobenzene	< 186		µg/kg dry	186		BRL				30
2-Nitrophenol	< 186		µg/kg dry	186		BRL				30
4-Nitrophenol	< 1470		µg/kg dry	1470		BRL				30
N-Nitrosodimethylamine	< 186		µg/kg dry	186		BRL				30
N-Nitrosodi-n-propylamine	< 186		µg/kg dry	186		BRL				30
N-Nitrosodiphenylamine	< 368		µg/kg dry	368		BRL				30
Pentachlorophenol	< 368		µg/kg dry	368		BRL				30
Phenanthrene	< 74.4		µg/kg dry	74.4		BRL				30
Phenol	< 368		µg/kg dry	368		BRL				30
Pyrene	< 74.4		µg/kg dry	74.4		BRL				30
Pyridine	< 368		µg/kg dry	368		BRL				30
1,2,4-Trichlorobenzene	< 368		µg/kg dry	368		BRL				30
1-Methylnaphthalene	< 74.4		µg/kg dry	74.4		BRL				30
2,4,5-Trichlorophenol	< 368		µg/kg dry	368		BRL				30
2,4,6-Trichlorophenol	< 186		µg/kg dry	186		BRL				30
Pentachloronitrobenzene	< 368		µg/kg dry	368		BRL				30
1,2,4,5-Tetrachlorobenzene	< 368		µg/kg dry	368		BRL				30
Surrogate: 2-Fluorobiphenyl	*1710*		µg/kg dry		*1860*		*92*	*30-130*		
Surrogate: 2-Fluorophenol	*1620*		µg/kg dry		*1860*		*87*	*30-130*		
Surrogate: Nitrobenzene-d5	*1440*		µg/kg dry		*1860*		*78*	*30-130*		
Surrogate: Phenol-d5	*1830*		µg/kg dry		*1860*		*99*	*30-130*		
Surrogate: Terphenyl-dl4	*1660*		µg/kg dry		*1860*		*89*	*30-130*		
Surrogate: 2,4,6-Tribromophenol	*1610*		µg/kg dry		*1860*		*87*	*30-130*		
Matrix Spike (2001083-MS1)			**Source: SC58794-01**		Prepared & Analyzed: 13-Jul-20					
Acenaphthene	**1370**		µg/kg dry	74.5	1860	BRL	73	40-140		
Acenaphthylene	**1370**		µg/kg dry	74.5	1860	BRL	74	40-140		
Aniline	**690**	QM9	µg/kg dry	368	1860	BRL	37	40-140		
Anthracene	**1530**		µg/kg dry	74.5	1860	BRL	82	40-140		
Azobenzene/Diphenyldiazene	**1470**		µg/kg dry	368	1860	BRL	79	40-140		
Benzidine	**54.7**	QM9	µg/kg dry	737	1860	BRL	3	40-140		
Benzo (a) anthracene	**1690**		µg/kg dry	74.5	1860	BRL	91	40-140		
Benzo (a) pyrene	**1800**		µg/kg dry	74.5	1860	BRL	97	40-140		
Benzo (b) fluoranthene	**1890**		µg/kg dry	74.5	1860	BRL	102	40-140		
Benzo (g,h,i) perylene	**1710**		µg/kg dry	74.5	1860	BRL	92	40-140		
Benzo (k) fluoranthene	**1720**		µg/kg dry	74.5	1860	BRL	92	40-140		
Benzoic acid	**2730**	QM9	µg/kg dry	368	1860	BRL	147	30-130		
Benzyl alcohol	**1430**		µg/kg dry	368	1860	BRL	77	40-140		
Bis(2-chloroethoxy)methane	**1520**		µg/kg dry	368	1860	BRL	82	40-140		
Bis(2-chloroethyl)ether	**1200**		µg/kg dry	186	1860	BRL	64	40-140		
Bis(2-chloroisopropyl)ether	**975**		µg/kg dry	186	1860	BRL	52	40-140		
Bis(2-ethylhexyl)phthalate	**1660**		µg/kg dry	186	1860	BRL	89	40-140		
4-Bromophenyl phenyl ether	**1480**		µg/kg dry	368	1860	BRL	80	40-140		
Butyl benzyl phthalate	**1660**		µg/kg dry	368	1860	BRL	89	40-140		
Carbazole	**1500**		µg/kg dry	186	1860	BRL	81	40-140		
4-Chloro-3-methylphenol	**1720**		µg/kg dry	368	1860	BRL	92	30-130		
4-Chloroaniline	**929**		µg/kg dry	186	1860	BRL	50	40-140		
2-Chloronaphthalene	**1700**		µg/kg dry	368	1860	BRL	91	40-140		
2-Chlorophenol	**1370**		µg/kg dry	186	1860	BRL	74	30-130		
4-Chlorophenyl phenyl ether	**1250**		µg/kg dry	368	1860	BRL	67	40-140		
Chrysene	**1610**		µg/kg dry	74.5	1860	BRL	86	40-140		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8270D										
Batch 2001083 - SW846 3546										
Matrix Spike (2001083-MS1)			**Source: SC58794-01**		Prepared & Analyzed: 13-Jul-20					
Dibenzo (a,h) anthracene	**1780**		µg/kg dry	74.5	1860	BRL	96	40-140		
Dibenzofuran	**1790**		µg/kg dry	186	1860	BRL	96	40-140		
1,2-Dichlorobenzene	**1640**		µg/kg dry	368	1860	BRL	88	40-140		
1,3-Dichlorobenzene	**1430**		µg/kg dry	368	1860	BRL	77	40-140		
1,4-Dichlorobenzene	**1310**		µg/kg dry	368	1860	BRL	71	40-140		
3,3´-Dichlorobenzidine	**918**		µg/kg dry	368	1860	BRL	49	40-140		
2,4-Dichlorophenol	**1430**		µg/kg dry	186	1860	BRL	77	30-130		
Diethyl phthalate	**1400**		µg/kg dry	368	1860	BRL	75	40-140		
Dimethyl phthalate	**1580**		µg/kg dry	368	1860	BRL	85	40-140		
2,4-Dimethylphenol	**1360**		µg/kg dry	368	1860	BRL	73	30-130		
Di-n-butyl phthalate	**1520**		µg/kg dry	368	1860	BRL	82	40-140		
4,6-Dinitro-2-methylphenol	**2410**		µg/kg dry	368	1860	BRL	130	30-130		
2,4-Dinitrophenol	**2510**	QM9	µg/kg dry	368	1860	BRL	135	30-130		
2,4-Dinitrotoluene	**1650**		µg/kg dry	186	1860	BRL	89	40-140		
2,6-Dinitrotoluene	**1420**		µg/kg dry	186	1860	BRL	77	40-140		
Di-n-octyl phthalate	**1750**		µg/kg dry	368	1860	BRL	94	40-140		
Fluoranthene	**1480**		µg/kg dry	74.5	1860	BRL	80	40-140		
Fluorene	**1180**		µg/kg dry	74.5	1860	BRL	64	40-140		
Hexachlorobenzene	**1650**		µg/kg dry	186	1860	BRL	89	40-140		
Hexachlorobutadiene	**1610**		µg/kg dry	186	1860	BRL	86	40-140		
Hexachlorocyclopentadiene	**1810**		µg/kg dry	186	1860	BRL	98	40-140		
Hexachloroethane	**1490**		µg/kg dry	186	1860	BRL	80	40-140		
Indeno (1,2,3-cd) pyrene	**1830**		µg/kg dry	74.5	1860	BRL	98	40-140		
Isophorone	**1400**		µg/kg dry	186	1860	BRL	75	30-130		
2-Methylnaphthalene	**1750**		µg/kg dry	74.5	1860	BRL	94	40-140		
2-Methylphenol	**1890**		µg/kg dry	368	1860	BRL	102	30-130		
3 & 4-Methylphenol	**1350**		µg/kg dry	368	1860	BRL	72	30-130		
Naphthalene	**1570**		µg/kg dry	74.5	1860	BRL	84	40-140		
2-Nitroaniline	**1430**		µg/kg dry	368	1860	BRL	77	40-140		
3-Nitroaniline	**1020**		µg/kg dry	368	1860	BRL	55	40-140		
4-Nitroaniline	**1410**		µg/kg dry	186	1860	BRL	76	40-140		
Nitrobenzene	**1620**		µg/kg dry	186	1860	BRL	87	40-140		
2-Nitrophenol	**1620**		µg/kg dry	186	1860	BRL	87	30-130		
4-Nitrophenol	**1850**		µg/kg dry	1470	1860	BRL	100	30-130		
N-Nitrosodimethylamine	**894**		µg/kg dry	186	1860	BRL	48	40-140		
N-Nitrosodi-n-propylamine	**1250**		µg/kg dry	186	1860	BRL	67	40-140		
N-Nitrosodiphenylamine	**1570**		µg/kg dry	368	1860	BRL	85	40-140		
Pentachlorophenol	**1600**		µg/kg dry	368	1860	BRL	86	30-130		
Phenanthrene	**1510**		µg/kg dry	74.5	1860	BRL	81	40-140		
Phenol	**1460**		µg/kg dry	368	1860	BRL	79	30-130		
Pyrene	**1820**		µg/kg dry	74.5	1860	BRL	98	40-140		
Pyridine	**1180**		µg/kg dry	368	1860	BRL	64	40-140		
1,2,4-Trichlorobenzene	**1710**		µg/kg dry	368	1860	BRL	92	40-140		
1-Methylnaphthalene	**1720**		µg/kg dry	74.5	1860	BRL	93	40-140		
2,4,5-Trichlorophenol	**1440**		µg/kg dry	368	1860	BRL	77	30-130		
2,4,6-Trichlorophenol	**1540**		µg/kg dry	186	1860	BRL	83	30-130		
Pentachloronitrobenzene	**1490**		µg/kg dry	368	1860	BRL	80	40-140		
1,2,4,5-Tetrachlorobenzene	**1450**		µg/kg dry	368	1860	BRL	78	40-140		
Surrogate: 2-Fluorobiphenyl	*1650*		µg/kg dry		*1860*		*89*	*30-130*		
Surrogate: 2-Fluorophenol	*1300*		µg/kg dry		*1860*		*70*	*30-130*		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8270D										
Batch 2001083 - SW846 3546										
Matrix Spike (2001083-MS1)			**Source: SC58794-01**		Prepared & Analyzed: 13-Jul-20					
Surrogate: Nitrobenzene-d5	*1550*		µg/kg dry		*1860*		*83*	*30-130*		
Surrogate: Phenol-d5	*1470*		µg/kg dry		*1860*		*79*	*30-130*		
Surrogate: Terphenyl-dl4	*1730*		µg/kg dry		*1860*		*93*	*30-130*		
Surrogate: 2,4,6-Tribromophenol	*1600*		µg/kg dry		*1860*		*86*	*30-130*		
Matrix Spike Dup (2001083-MSD1)			**Source: SC58794-01**		Prepared & Analyzed: 13-Jul-20					
Acenaphthene	**1380**		µg/kg dry	74.2	1850	BRL	75	40-140	1	30
Acenaphthylene	**1400**		µg/kg dry	74.2	1850	BRL	75	40-140	2	30
Aniline	**600**	QM9	µg/kg dry	367	1850	BRL	32	40-140	14	30
Anthracene	**1480**		µg/kg dry	74.2	1850	BRL	80	40-140	3	30
Azobenzene/Diphenyldiazene	**1460**		µg/kg dry	367	1850	BRL	79	40-140	0.8	30
Benzidine	**54.9**	QM9	µg/kg dry	734	1850	BRL	3	40-140	0.3	30
Benzo (a) anthracene	**1630**		µg/kg dry	74.2	1850	BRL	88	40-140	3	30
Benzo (a) pyrene	**1790**		µg/kg dry	74.2	1850	BRL	97	40-140	0.3	30
Benzo (b) fluoranthene	**1810**		µg/kg dry	74.2	1850	BRL	98	40-140	4	30
Benzo (g,h,i) perylene	**1690**		µg/kg dry	74.2	1850	BRL	91	40-140	1	30
Benzo (k) fluoranthene	**1760**		µg/kg dry	74.2	1850	BRL	95	40-140	2	30
Benzoic acid	**2650**		µg/kg dry	367	1850	BRL	143	30-130	3	30
Benzyl alcohol	**1360**		µg/kg dry	367	1850	BRL	73	40-140	5	30
Bis(2-chloroethoxy)methane	**1420**		µg/kg dry	367	1850	BRL	77	40-140	7	30
Bis(2-chloroethyl)ether	**1100**		µg/kg dry	186	1850	BRL	59	40-140	8	30
Bis(2-chloroisopropyl)ether	**957**		µg/kg dry	186	1850	BRL	52	40-140	2	30
Bis(2-ethylhexyl)phthalate	**1750**		µg/kg dry	186	1850	BRL	94	40-140	5	30
4-Bromophenyl phenyl ether	**1410**		µg/kg dry	367	1850	BRL	76	40-140	5	30
Butyl benzyl phthalate	**1610**		µg/kg dry	367	1850	BRL	87	40-140	3	30
Carbazole	**1460**		µg/kg dry	186	1850	BRL	79	40-140	3	30
4-Chloro-3-methylphenol	**1620**		µg/kg dry	367	1850	BRL	87	30-130	6	30
4-Chloroaniline	**1010**		µg/kg dry	186	1850	BRL	55	40-140	9	30
2-Chloronaphthalene	**1630**		µg/kg dry	367	1850	BRL	88	40-140	4	30
2-Chlorophenol	**1330**		µg/kg dry	186	1850	BRL	72	30-130	3	30
4-Chlorophenyl phenyl ether	**1240**		µg/kg dry	367	1850	BRL	67	40-140	1	30
Chrysene	**1540**		µg/kg dry	74.2	1850	BRL	83	40-140	4	30
Dibenzo (a,h) anthracene	**1750**		µg/kg dry	74.2	1850	BRL	95	40-140	1	30
Dibenzofuran	**1710**		µg/kg dry	186	1850	BRL	92	40-140	5	30
1,2-Dichlorobenzene	**1470**		µg/kg dry	367	1850	BRL	79	40-140	11	30
1,3-Dichlorobenzene	**1390**		µg/kg dry	367	1850	BRL	75	40-140	3	30
1,4-Dichlorobenzene	**1280**		µg/kg dry	367	1850	BRL	69	40-140	3	30
3,3´-Dichlorobenzidine	**826**		µg/kg dry	367	1850	BRL	45	40-140	11	30
2,4-Dichlorophenol	**1350**		µg/kg dry	186	1850	BRL	73	30-130	6	30
Diethyl phthalate	**1320**		µg/kg dry	367	1850	BRL	71	40-140	6	30
Dimethyl phthalate	**1500**		µg/kg dry	367	1850	BRL	81	40-140	6	30
2,4-Dimethylphenol	**1200**		µg/kg dry	367	1850	BRL	65	30-130	13	30
Di-n-butyl phthalate	**1450**		µg/kg dry	367	1850	BRL	78	40-140	5	30
4,6-Dinitro-2-methylphenol	**2190**		µg/kg dry	367	1850	BRL	118	30-130	9	30
2,4-Dinitrophenol	**2290**		µg/kg dry	367	1850	BRL	123	30-130	9	30
2,4-Dinitrotoluene	**1550**		µg/kg dry	186	1850	BRL	83	40-140	6	30
2,6-Dinitrotoluene	**1380**		µg/kg dry	186	1850	BRL	74	40-140	3	30
Di-n-octyl phthalate	**1730**		µg/kg dry	367	1850	BRL	93	40-140	1	30
Fluoranthene	**1420**		µg/kg dry	74.2	1850	BRL	77	40-140	4	30
Fluorene	**1140**		µg/kg dry	74.2	1850	BRL	61	40-140	4	30
Hexachlorobenzene	**1560**		µg/kg dry	186	1850	BRL	84	40-140	5	30

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8270D										
Batch 2001083 - SW846 3546										
Matrix Spike Dup (2001083-MSD1)			**Source: SC58794-01**		Prepared & Analyzed: 13-Jul-20					
Hexachlorobutadiene	**1540**		µg/kg dry	186	1850	BRL	83	40-140	4	30
Hexachlorocyclopentadiene	**1620**		µg/kg dry	186	1850	BRL	88	40-140	11	30
Hexachloroethane	**1430**		µg/kg dry	186	1850	BRL	77	40-140	4	30
Indeno (1,2,3-cd) pyrene	**1810**		µg/kg dry	74.2	1850	BRL	98	40-140	0.7	30
Isophorone	**1320**		µg/kg dry	186	1850	BRL	71	30-130	6	30
2-Methylnaphthalene	**1690**		µg/kg dry	74.2	1850	BRL	91	40-140	3	30
2-Methylphenol	**1790**		µg/kg dry	367	1850	BRL	97	30-130	5	30
3 & 4-Methylphenol	**1260**		µg/kg dry	367	1850	BRL	68	30-130	7	30
Naphthalene	**1520**		µg/kg dry	74.2	1850	BRL	82	40-140	3	30
2-Nitroaniline	**1450**		µg/kg dry	367	1850	BRL	78	40-140	1	30
3-Nitroaniline	**1190**		µg/kg dry	367	1850	BRL	64	40-140	15	30
4-Nitroaniline	**1380**		µg/kg dry	186	1850	BRL	74	40-140	2	30
Nitrobenzene	**1520**		µg/kg dry	186	1850	BRL	82	40-140	6	30
2-Nitrophenol	**1600**		µg/kg dry	186	1850	BRL	86	30-130	1	30
4-Nitrophenol	**1840**		µg/kg dry	1470	1850	BRL	99	30-130	0.5	30
N-Nitrosodimethylamine	**825**		µg/kg dry	186	1850	BRL	44	40-140	8	30
N-Nitrosodi-n-propylamine	**1200**		µg/kg dry	186	1850	BRL	65	40-140	4	30
N-Nitrosodiphenylamine	**1420**		µg/kg dry	367	1850	BRL	77	40-140	10	30
Pentachlorophenol	**1490**		µg/kg dry	367	1850	BRL	81	30-130	7	30
Phenanthrene	**1420**		µg/kg dry	74.2	1850	BRL	77	40-140	6	30
Phenol	**1400**		µg/kg dry	367	1850	BRL	75	30-130	5	30
Pyrene	**1720**		µg/kg dry	74.2	1850	BRL	93	40-140	5	30
Pyridine	**910**		µg/kg dry	367	1850	BRL	49	40-140	26	30
1,2,4-Trichlorobenzene	**1650**		µg/kg dry	367	1850	BRL	89	40-140	4	30
1-Methylnaphthalene	**1700**		µg/kg dry	74.2	1850	BRL	91	40-140	2	30
2,4,5-Trichlorophenol	**1450**		µg/kg dry	367	1850	BRL	78	30-130	0.8	30
2,4,6-Trichlorophenol	**1470**		µg/kg dry	186	1850	BRL	79	30-130	5	30
Pentachloronitrobenzene	**1430**		µg/kg dry	367	1850	BRL	77	40-140	4	30
1,2,4,5-Tetrachlorobenzene	**1370**		µg/kg dry	367	1850	BRL	74	40-140	5	30
Surrogate: 2-Fluorobiphenyl	*1620*		µg/kg dry		*1850*		*87*	*30-130*		
Surrogate: 2-Fluorophenol	*1270*		µg/kg dry		*1850*		*69*	*30-130*		
Surrogate: Nitrobenzene-d5	*1540*		µg/kg dry		*1850*		*83*	*30-130*		
Surrogate: Phenol-d5	*1440*		µg/kg dry		*1850*		*78*	*30-130*		
Surrogate: Terphenyl-dl4	*1710*		µg/kg dry		*1850*		*92*	*30-130*		
Surrogate: 2,4,6-Tribromophenol	*1610*		µg/kg dry		*1850*		*87*	*30-130*		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8082A										
Batch 2001087 - SW846 3546										
Blank (2001087-BLK1)					Prepared: 13-Jul-20 Analyzed: 15-Jul-20					
Aroclor-1016	< 20.0		µg/kg wet	20.0						
Aroclor-1016 [2C]	< 20.0		µg/kg wet	20.0						
Aroclor-1221	< 20.0		µg/kg wet	20.0						
Aroclor-1221 [2C]	< 20.0		µg/kg wet	20.0						
Aroclor-1232	< 20.0		µg/kg wet	20.0						
Aroclor-1232 [2C]	< 20.0		µg/kg wet	20.0						
Aroclor-1242	< 20.0		µg/kg wet	20.0						
Aroclor-1242 [2C]	< 20.0		µg/kg wet	20.0						
Aroclor-1248	< 20.0		µg/kg wet	20.0						
Aroclor-1248 [2C]	< 20.0		µg/kg wet	20.0						
Aroclor-1254	< 20.0		µg/kg wet	20.0						
Aroclor-1254 [2C]	< 20.0		µg/kg wet	20.0						
Aroclor-1260	< 20.0		µg/kg wet	20.0						
Aroclor-1260 [2C]	< 20.0		µg/kg wet	20.0						
Aroclor-1262	< 20.0		µg/kg wet	20.0						
Aroclor-1262 [2C]	< 20.0		µg/kg wet	20.0						
Aroclor-1268	< 20.0		µg/kg wet	20.0						
Aroclor-1268 [2C]	< 20.0		µg/kg wet	20.0						
Surrogate: Decachlorobiphenyl (Sr)	*14.0*		µg/kg wet		*13.3*		*105*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*12.4*		µg/kg wet		*13.3*		*93*	*30-150*		
Surrogate: 2,4,5,6-TC-M-Xylene (IS)	*12.6*		µg/kg wet		*13.3*		*94*	*30-150*		
Surrogate: 2,4,5,6-TC-M-Xylene (IS) [2C]	*11.0*		µg/kg wet		*13.3*		*82*	*30-150*		
LCS (2001087-BS1)					Prepared: 13-Jul-20 Analyzed: 15-Jul-20					
Aroclor-1016	**146**		µg/kg wet	20.0	167		88	40-140		
Aroclor-1016 [2C]	**143**		µg/kg wet	20.0	167		86	40-140		
Aroclor-1260	**151**		µg/kg wet	20.0	167		91	40-140		
Aroclor-1260 [2C]	**139**		µg/kg wet	20.0	167		83	40-140		
Surrogate: Decachlorobiphenyl (Sr)	*13.2*		µg/kg wet		*13.3*		*99*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*12.3*		µg/kg wet		*13.3*		*92*	*30-150*		
Surrogate: 2,4,5,6-TC-M-Xylene (IS)	*12.3*		µg/kg wet		*13.3*		*92*	*30-150*		
Surrogate: 2,4,5,6-TC-M-Xylene (IS) [2C]	*11.4*		µg/kg wet		*13.3*		*85*	*30-150*		
LCS Dup (2001087-BSD1)					Prepared: 13-Jul-20 Analyzed: 15-Jul-20					
Aroclor-1016	**156**		µg/kg wet	20.0	167		94	40-140	6	30
Aroclor-1016 [2C]	**153**		µg/kg wet	20.0	167		92	40-140	7	30
Aroclor-1260	**157**		µg/kg wet	20.0	167		94	40-140	3	30
Aroclor-1260 [2C]	**150**		µg/kg wet	20.0	167		90	40-140	8	30
Surrogate: Decachlorobiphenyl (Sr)	*12.8*		µg/kg wet		*13.3*		*96*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*12.1*		µg/kg wet		*13.3*		*91*	*30-150*		
Surrogate: 2,4,5,6-TC-M-Xylene (IS)	*12.2*		µg/kg wet		*13.3*		*91*	*30-150*		
Surrogate: 2,4,5,6-TC-M-Xylene (IS) [2C]	*11.1*		µg/kg wet		*13.3*		*83*	*30-150*		
Duplicate (2001087-DUP1)			**Source: SC58794-02**		Prepared: 13-Jul-20 Analyzed: 15-Jul-20					
Aroclor-1016	< 22.2		µg/kg dry	22.2		BRL				30
Aroclor-1016 [2C]	< 22.2		µg/kg dry	22.2		BRL				30
Aroclor-1260	< 22.2		µg/kg dry	22.2		BRL				30
Aroclor-1260 [2C]	< 22.2		µg/kg dry	22.2		BRL				30
Surrogate: Decachlorobiphenyl (Sr)	*11.4*		µg/kg dry		*14.8*		*77*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*10.4*		µg/kg dry		*14.8*		*70*	*30-150*		
Surrogate: 2,4,5,6-TC-M-Xylene (IS)	*12.6*		µg/kg dry		*14.8*		*85*	*30-150*		
Surrogate: 2,4,5,6-TC-M-Xylene (IS) [2C]	*11.0*		µg/kg dry		*14.8*		*74*	*30-150*		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8082A										
Batch 2001087 - SW846 3546										
Matrix Spike (2001087-MS1)			**Source: SC58794-02**			Prepared: 13-Jul-20 Analyzed: 15-Jul-20				
Aroclor-1016	**156**		µg/kg dry	22.4	187	BRL	84	40-140		
Aroclor-1016 [2C]	**160**		µg/kg dry	22.4	187	BRL	86	40-140		
Aroclor-1260	**164**		µg/kg dry	22.4	187	BRL	88	40-140		
Aroclor-1260 [2C]	**155**		µg/kg dry	22.4	187	BRL	83	40-140		
Surrogate: Decachlorobiphenyl (Sr)	*13.3*		µg/kg dry		*14.9*		*89*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*13.0*		µg/kg dry		*14.9*		*87*	*30-150*		
Surrogate: 2,4,5,6-TC-M-Xylene (IS)	*12.0*		µg/kg dry		*14.9*		*81*	*30-150*		
Surrogate: 2,4,5,6-TC-M-Xylene (IS) [2C]	*11.6*		µg/kg dry		*14.9*		*78*	*30-150*		
Matrix Spike Dup (2001087-MSD1)			**Source: SC58794-02**			Prepared: 13-Jul-20 Analyzed: 15-Jul-20				
Aroclor-1016	**148**		µg/kg dry	21.3	178	BRL	83	40-140	6	30
Aroclor-1016 [2C]	**146**		µg/kg dry	21.3	178	BRL	82	40-140	9	30
Aroclor-1260	**157**		µg/kg dry	21.3	178	BRL	89	40-140	4	30
Aroclor-1260 [2C]	**148**		µg/kg dry	21.3	178	BRL	83	40-140	4	30
Surrogate: Decachlorobiphenyl (Sr)	*12.6*		µg/kg dry		*14.2*		*89*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*12.3*		µg/kg dry		*14.2*		*87*	*30-150*		
Surrogate: 2,4,5,6-TC-M-Xylene (IS)	*12.2*		µg/kg dry		*14.2*		*86*	*30-150*		
Surrogate: 2,4,5,6-TC-M-Xylene (IS) [2C]	*11.6*		µg/kg dry		*14.2*		*81*	*30-150*		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8081B										
Batch 2001088 - SW846 3546										
Blank (2001088-BLK1)					Prepared: 13-Jul-20 Analyzed: 16-Jul-20					
alpha-BHC	< 5.00		µg/kg wet	5.00						
alpha-BHC [2C]	< 5.00		µg/kg wet	5.00						
beta-BHC	< 5.00		µg/kg wet	5.00						
beta-BHC [2C]	< 5.00		µg/kg wet	5.00						
delta-BHC	< 5.00		µg/kg wet	5.00						
delta-BHC [2C]	< 5.00		µg/kg wet	5.00						
gamma-BHC (Lindane)	< 3.00		µg/kg wet	3.00						
gamma-BHC (Lindane) [2C]	< 3.00		µg/kg wet	3.00						
Heptachlor	< 5.00		µg/kg wet	5.00						
Heptachlor [2C]	< 5.00		µg/kg wet	5.00						
Aldrin	< 5.00		µg/kg wet	5.00						
Aldrin [2C]	< 5.00		µg/kg wet	5.00						
Heptachlor epoxide	< 5.00		µg/kg wet	5.00						
Heptachlor epoxide [2C]	< 5.00		µg/kg wet	5.00						
Endosulfan I	< 5.00		µg/kg wet	5.00						
Endosulfan I [2C]	< 5.00		µg/kg wet	5.00						
Dieldrin	< 5.00		µg/kg wet	5.00						
Dieldrin [2C]	< 5.00		µg/kg wet	5.00						
4,4'-DDE (p,p')	< 5.00		µg/kg wet	5.00						
4,4'-DDE (p,p') [2C]	< 5.00		µg/kg wet	5.00						
Endrin	< 8.00		µg/kg wet	8.00						
Endrin [2C]	< 8.00		µg/kg wet	8.00						
Endosulfan II	< 8.00		µg/kg wet	8.00						
Endosulfan II [2C]	< 8.00		µg/kg wet	8.00						
4,4'-DDD (p,p')	< 8.00		µg/kg wet	8.00						
4,4'-DDD (p,p') [2C]	< 8.00		µg/kg wet	8.00						
Endosulfan sulfate	< 8.00		µg/kg wet	8.00						
Endosulfan sulfate [2C]	< 8.00		µg/kg wet	8.00						
4,4'-DDT (p,p')	< 8.00		µg/kg wet	8.00						
4,4'-DDT (p,p') [2C]	< 8.00		µg/kg wet	8.00						
Methoxychlor	< 8.00		µg/kg wet	8.00						
Methoxychlor [2C]	< 8.00		µg/kg wet	8.00						
Endrin ketone	< 8.00		µg/kg wet	8.00						
Endrin ketone [2C]	< 8.00		µg/kg wet	8.00						
Endrin aldehyde	< 8.00		µg/kg wet	8.00						
Endrin aldehyde [2C]	< 8.00		µg/kg wet	8.00						
alpha-Chlordane	< 5.00		µg/kg wet	5.00						
alpha-Chlordane [2C]	< 5.00		µg/kg wet	5.00						
gamma-Chlordane	< 5.00		µg/kg wet	5.00						
gamma-Chlordane [2C]	< 5.00		µg/kg wet	5.00						
Toxaphene	< 100		µg/kg wet	100						
Toxaphene [2C]	< 100		µg/kg wet	100						
Chlordane	< 20.0		µg/kg wet	20.0						
Chlordane [2C]	< 20.0		µg/kg wet	20.0						
Alachlor	< 5.00		µg/kg wet	5.00						
Alachlor [2C]	< 5.00		µg/kg wet	5.00						
Surrogate: Decachlorobiphenyl (Sr)	*10.8*		µg/kg wet		*13.3*		*81*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*11.9*		µg/kg wet		*13.3*		*89*	*30-150*		
Surrogate: 2,4,5,6-TC-M-Xylene (IS)	*10.2*		µg/kg wet		*13.3*		*77*	*30-150*		
Surrogate: 2,4,5,6-TC-M-Xylene (IS) [2C]	*9.93*		µg/kg wet		*13.3*		*74*	*30-150*		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8081B										
Batch 2001088 - SW846 3546										
LCS (2001088-BS1)					Prepared: 13-Jul-20 Analyzed: 16-Jul-20					
alpha-BHC	**12.1**		µg/kg wet	5.00	13.3		90	40-140		
alpha-BHC [2C]	**12.5**		µg/kg wet	5.00	13.3		94	40-140		
beta-BHC	**12.4**		µg/kg wet	5.00	13.3		93	40-140		
beta-BHC [2C]	**13.9**		µg/kg wet	5.00	13.3		104	40-140		
delta-BHC	**8.43**		µg/kg wet	5.00	13.3		63	40-140		
delta-BHC [2C]	**8.82**		µg/kg wet	5.00	13.3		66	40-140		
gamma-BHC (Lindane)	**12.8**		µg/kg wet	3.00	13.3		96	40-140		
gamma-BHC (Lindane) [2C]	**12.7**		µg/kg wet	3.00	13.3		95	40-140		
Heptachlor	**12.2**		µg/kg wet	5.00	13.3		92	40-140		
Heptachlor [2C]	**13.0**		µg/kg wet	5.00	13.3		97	40-140		
Aldrin	**11.7**		µg/kg wet	5.00	13.3		88	40-140		
Aldrin [2C]	**12.1**		µg/kg wet	5.00	13.3		91	40-140		
Heptachlor epoxide	**11.7**		µg/kg wet	5.00	13.3		88	40-140		
Heptachlor epoxide [2C]	**12.3**		µg/kg wet	5.00	13.3		93	40-140		
Endosulfan I	**12.5**		µg/kg wet	5.00	13.3		94	40-140		
Endosulfan I [2C]	**13.2**		µg/kg wet	5.00	13.3		99	40-140		
Dieldrin	**12.0**		µg/kg wet	5.00	13.3		90	40-140		
Dieldrin [2C]	**13.2**		µg/kg wet	5.00	13.3		99	40-140		
4,4'-DDE (p,p')	**12.1**		µg/kg wet	5.00	13.3		91	40-140		
4,4'-DDE (p,p') [2C]	**13.1**		µg/kg wet	5.00	13.3		98	40-140		
Endrin	**15.1**		µg/kg wet	8.00	13.3		113	40-140		
Endrin [2C]	**16.1**		µg/kg wet	8.00	13.3		121	40-140		
Endosulfan II	**12.6**		µg/kg wet	8.00	13.3		95	40-140		
Endosulfan II [2C]	**14.1**		µg/kg wet	8.00	13.3		106	40-140		
4,4'-DDD (p,p')	**12.6**		µg/kg wet	8.00	13.3		95	40-140		
4,4'-DDD (p,p') [2C]	**13.7**		µg/kg wet	8.00	13.3		103	40-140		
Endosulfan sulfate	**12.9**		µg/kg wet	8.00	13.3		97	40-140		
Endosulfan sulfate [2C]	**14.3**		µg/kg wet	8.00	13.3		107	40-140		
4,4'-DDT (p,p')	**14.0**		µg/kg wet	8.00	13.3		105	40-140		
4,4'-DDT (p,p') [2C]	**14.4**		µg/kg wet	8.00	13.3		108	40-140		
Methoxychlor	**14.0**		µg/kg wet	8.00	13.3		105	40-140		
Methoxychlor [2C]	**14.1**		µg/kg wet	8.00	13.3		106	40-140		
Endrin ketone	**12.6**		µg/kg wet	8.00	13.3		94	40-140		
Endrin ketone [2C]	**14.0**		µg/kg wet	8.00	13.3		105	40-140		
Endrin aldehyde	**11.9**		µg/kg wet	8.00	13.3		89	40-140		
Endrin aldehyde [2C]	**14.0**		µg/kg wet	8.00	13.3		105	40-140		
alpha-Chlordane	**11.9**		µg/kg wet	5.00	13.3		89	40-140		
alpha-Chlordane [2C]	**13.2**		µg/kg wet	5.00	13.3		99	40-140		
gamma-Chlordane	**13.7**		µg/kg wet	5.00	13.3		103	40-140		
gamma-Chlordane [2C]	**13.5**		µg/kg wet	5.00	13.3		102	40-140		
Toxaphene	< 100		µg/kg wet	100				40-140		
Toxaphene [2C]	< 100		µg/kg wet	100				40-140		
Chlordane	< 20.0		µg/kg wet	20.0				40-140		
Chlordane [2C]	< 20.0		µg/kg wet	20.0				40-140		
Alachlor	**12.3**		µg/kg wet	5.00	13.3		92	40-140		
Alachlor [2C]	**12.7**		µg/kg wet	5.00	13.3		95	40-140		
Surrogate: Decachlorobiphenyl (Sr)	*11.1*		µg/kg wet		*13.3*		*83*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*11.3*		µg/kg wet		*13.3*		*85*	*30-150*		
Surrogate: 2,4,5,6-TC-M-Xylene (IS)	*10.3*		µg/kg wet		*13.3*		*77*	*30-150*		
Surrogate: 2,4,5,6-TC-M-Xylene (IS) [2C]	*10.4*		µg/kg wet		*13.3*		*78*	*30-150*		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8081B										
Batch 2001088 - SW846 3546										
LCS Dup (2001088-BSD1)					Prepared: 13-Jul-20 Analyzed: 16-Jul-20					
alpha-BHC	**12.0**		µg/kg wet	5.00	13.3		90	40-140	0.4	30
alpha-BHC [2C]	**12.1**		µg/kg wet	5.00	13.3		91	40-140	3	30
beta-BHC	**12.6**		µg/kg wet	5.00	13.3		94	40-140	2	30
beta-BHC [2C]	**12.6**		µg/kg wet	5.00	13.3		95	40-140	10	30
delta-BHC	**8.57**		µg/kg wet	5.00	13.3		64	40-140	2	30
delta-BHC [2C]	**8.75**		µg/kg wet	5.00	13.3		66	40-140	0.8	30
gamma-BHC (Lindane)	**12.2**		µg/kg wet	3.00	13.3		92	40-140	4	30
gamma-BHC (Lindane) [2C]	**12.3**		µg/kg wet	3.00	13.3		93	40-140	3	30
Heptachlor	**12.4**		µg/kg wet	5.00	13.3		93	40-140	1	30
Heptachlor [2C]	**12.6**		µg/kg wet	5.00	13.3		95	40-140	3	30
Aldrin	**11.7**		µg/kg wet	5.00	13.3		88	40-140	0	30
Aldrin [2C]	**11.9**		µg/kg wet	5.00	13.3		89	40-140	2	30
Heptachlor epoxide	**12.0**		µg/kg wet	5.00	13.3		90	40-140	2	30
Heptachlor epoxide [2C]	**12.2**		µg/kg wet	5.00	13.3		92	40-140	1	30
Endosulfan I	**12.9**		µg/kg wet	5.00	13.3		97	40-140	3	30
Endosulfan I [2C]	**13.3**		µg/kg wet	5.00	13.3		100	40-140	0.6	30
Dieldrin	**12.4**		µg/kg wet	5.00	13.3		93	40-140	4	30
Dieldrin [2C]	**13.3**		µg/kg wet	5.00	13.3		100	40-140	0.5	30
4,4'-DDE (p,p')	**12.6**		µg/kg wet	5.00	13.3		95	40-140	4	30
4,4'-DDE (p,p') [2C]	**13.3**		µg/kg wet	5.00	13.3		99	40-140	1	30
Endrin	**15.6**		µg/kg wet	8.00	13.3		117	40-140	4	30
Endrin [2C]	**17.1**		µg/kg wet	8.00	13.3		128	40-140	6	30
Endosulfan II	**13.0**		µg/kg wet	8.00	13.3		98	40-140	3	30
Endosulfan II [2C]	**14.2**		µg/kg wet	8.00	13.3		107	40-140	0.7	30
4,4'-DDD (p,p')	**13.2**		µg/kg wet	8.00	13.3		99	40-140	4	30
4,4'-DDD (p,p') [2C]	**13.9**		µg/kg wet	8.00	13.3		104	40-140	1	30
Endosulfan sulfate	**13.5**		µg/kg wet	8.00	13.3		101	40-140	5	30
Endosulfan sulfate [2C]	**14.8**		µg/kg wet	8.00	13.3		111	40-140	4	30
4,4'-DDT (p,p')	**14.8**		µg/kg wet	8.00	13.3		111	40-140	5	30
4,4'-DDT (p,p') [2C]	**15.0**		µg/kg wet	8.00	13.3		113	40-140	4	30
Methoxychlor	**14.7**		µg/kg wet	8.00	13.3		111	40-140	5	30
Methoxychlor [2C]	**14.2**		µg/kg wet	8.00	13.3		107	40-140	1	30
Endrin ketone	**13.3**		µg/kg wet	8.00	13.3		100	40-140	6	30
Endrin ketone [2C]	**14.0**		µg/kg wet	8.00	13.3		105	40-140	0.02	30
Endrin aldehyde	**11.9**		µg/kg wet	8.00	13.3		90	40-140	0.6	30
Endrin aldehyde [2C]	**13.7**		µg/kg wet	8.00	13.3		103	40-140	3	30
alpha-Chlordane	**12.3**		µg/kg wet	5.00	13.3		92	40-140	3	30
alpha-Chlordane [2C]	**12.4**		µg/kg wet	5.00	13.3		93	40-140	6	30
gamma-Chlordane	**12.3**		µg/kg wet	5.00	13.3		92	40-140	10	30
gamma-Chlordane [2C]	**12.8**		µg/kg wet	5.00	13.3		96	40-140	6	30
Toxaphene	< 100		µg/kg wet	100				40-140		30
Toxaphene [2C]	< 100		µg/kg wet	100				40-140		30
Chlordane	< 20.0		µg/kg wet	20.0				40-140		30
Chlordane [2C]	< 20.0		µg/kg wet	20.0				40-140		30
Alachlor	**12.7**		µg/kg wet	5.00	13.3		95	40-140	3	30
Alachlor [2C]	**12.5**		µg/kg wet	5.00	13.3		94	40-140	1	30
Surrogate: Decachlorobiphenyl (Sr)	*10.8*		µg/kg wet		*13.3*		*81*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*11.3*		µg/kg wet		*13.3*		*85*	*30-150*		
Surrogate: 2,4,5,6-TC-M-Xylene (IS)	*9.68*		µg/kg wet		*13.3*		*73*	*30-150*		
Surrogate: 2,4,5,6-TC-M-Xylene (IS) [2C]	*9.74*		µg/kg wet		*13.3*		*73*	*30-150*		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8081B										
Batch 2001088 - SW846 3546										
Duplicate (2001088-DUP1)			**Source: SC58794-02**		Prepared: 13-Jul-20 Analyzed: 16-Jul-20					
alpha-BHC	< 5.56		µg/kg dry	5.56		BRL				30
alpha-BHC [2C]	< 5.56		µg/kg dry	5.56		BRL				30
beta-BHC	< 5.56		µg/kg dry	5.56		BRL				30
beta-BHC [2C]	< 5.56		µg/kg dry	5.56		BRL				30
delta-BHC	< 5.56		µg/kg dry	5.56		BRL				30
delta-BHC [2C]	< 5.56		µg/kg dry	5.56		0.801				30
gamma-BHC (Lindane)	< 3.33		µg/kg dry	3.33		BRL				30
gamma-BHC (Lindane) [2C]	< 3.33		µg/kg dry	3.33		BRL				30
Heptachlor	< 5.56		µg/kg dry	5.56		BRL				30
Heptachlor [2C]	< 5.56		µg/kg dry	5.56		BRL				30
Aldrin	< 5.56		µg/kg dry	5.56		BRL				30
Aldrin [2C]	< 5.56		µg/kg dry	5.56		BRL				30
Heptachlor epoxide	**0.363**	J	µg/kg dry	5.56		0.382			5	30
Heptachlor epoxide [2C]	< 5.56		µg/kg dry	5.56		BRL				30
Endosulfan I	< 5.56		µg/kg dry	5.56		BRL				30
Endosulfan I [2C]	< 5.56		µg/kg dry	5.56		BRL				30
Dieldrin	< 5.56		µg/kg dry	5.56		BRL				30
Dieldrin [2C]	< 5.56		µg/kg dry	5.56		BRL				30
4,4'-DDE (p,p')	< 5.56		µg/kg dry	5.56		BRL				30
4,4'-DDE (p,p') [2C]	< 5.56		µg/kg dry	5.56		BRL				30
Endrin	< 8.89		µg/kg dry	8.89		BRL				30
Endrin [2C]	< 8.89		µg/kg dry	8.89		BRL				30
Endosulfan II	< 8.89		µg/kg dry	8.89		BRL				30
Endosulfan II [2C]	< 8.89		µg/kg dry	8.89		BRL				30
4,4'-DDD (p,p')	< 8.89		µg/kg dry	8.89		BRL				30
4,4'-DDD (p,p') [2C]	< 8.89		µg/kg dry	8.89		BRL				30
Endosulfan sulfate	< 8.89		µg/kg dry	8.89		BRL				30
Endosulfan sulfate [2C]	< 8.89		µg/kg dry	8.89		BRL				30
4,4'-DDT (p,p')	< 8.89		µg/kg dry	8.89		BRL				30
4,4'-DDT (p,p') [2C]	< 8.89		µg/kg dry	8.89		BRL				30
Methoxychlor	< 8.89		µg/kg dry	8.89		0.775				30
Methoxychlor [2C]	< 8.89		µg/kg dry	8.89		BRL				30
Endrin ketone	< 8.89		µg/kg dry	8.89		BRL				30
Endrin ketone [2C]	< 8.89		µg/kg dry	8.89		BRL				30
Endrin aldehyde	< 8.89		µg/kg dry	8.89		BRL				30
Endrin aldehyde [2C]	< 8.89		µg/kg dry	8.89		BRL				30
alpha-Chlordane	< 5.56		µg/kg dry	5.56		BRL				30
alpha-Chlordane [2C]	< 5.56		µg/kg dry	5.56		BRL				30
gamma-Chlordane	**0.637**	J	µg/kg dry	5.56		BRL				30
gamma-Chlordane [2C]	**0.370**	J	µg/kg dry	5.56		BRL				30
Toxaphene	< 111		µg/kg dry	111		BRL				30
Toxaphene [2C]	< 111		µg/kg dry	111		BRL				30
Chlordane	< 22.2		µg/kg dry	22.2		BRL				30
Chlordane [2C]	< 22.2		µg/kg dry	22.2		BRL				30
Alachlor	< 5.56		µg/kg dry	5.56		BRL				30
Alachlor [2C]	< 5.56		µg/kg dry	5.56		BRL				30
Surrogate: Decachlorobiphenyl (Sr)	*11.8*		µg/kg dry		*14.8*		*80*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*12.4*		µg/kg dry		*14.8*		*83*	*30-150*		
Surrogate: 2,4,5,6-TC-M-Xylene (IS)	*11.3*		µg/kg dry		*14.8*		*76*	*30-150*		
Surrogate: 2,4,5,6-TC-M-Xylene (IS) [2C]	*10.4*		µg/kg dry		*14.8*		*70*	*30-150*		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8081B										
Batch 2001088 - SW846 3546										
Matrix Spike (2001088-MS1)			**Source: SC58794-02**		Prepared: 13-Jul-20 Analyzed: 16-Jul-20					
alpha-BHC	**11.9**		µg/kg dry	5.56	14.8	BRL	80	30-150		
alpha-BHC [2C]	**12.7**		µg/kg dry	5.56	14.8	BRL	86	30-150		
beta-BHC	**13.1**		µg/kg dry	5.56	14.8	BRL	88	30-150		
beta-BHC [2C]	**13.3**		µg/kg dry	5.56	14.8	BRL	89	30-150		
delta-BHC	**8.64**		µg/kg dry	5.56	14.8	BRL	58	30-150		
delta-BHC [2C]	**9.33**		µg/kg dry	5.56	14.8	0.801	57	30-150		
gamma-BHC (Lindane)	**12.5**		µg/kg dry	3.34	14.8	BRL	84	30-150		
gamma-BHC (Lindane) [2C]	**12.6**		µg/kg dry	3.34	14.8	BRL	85	30-150		
Heptachlor	**12.5**		µg/kg dry	5.56	14.8	BRL	84	30-150		
Heptachlor [2C]	**13.7**		µg/kg dry	5.56	14.8	BRL	93	30-150		
Aldrin	**12.1**		µg/kg dry	5.56	14.8	BRL	81	30-150		
Aldrin [2C]	**13.4**		µg/kg dry	5.56	14.8	BRL	90	30-150		
Heptachlor epoxide	**12.5**		µg/kg dry	5.56	14.8	0.382	82	30-150		
Heptachlor epoxide [2C]	**13.4**		µg/kg dry	5.56	14.8	BRL	91	30-150		
Endosulfan I	**13.1**		µg/kg dry	5.56	14.8	BRL	88	30-150		
Endosulfan I [2C]	**13.6**		µg/kg dry	5.56	14.8	BRL	92	30-150		
Dieldrin	**12.7**		µg/kg dry	5.56	14.8	BRL	86	30-150		
Dieldrin [2C]	**13.5**		µg/kg dry	5.56	14.8	BRL	91	30-150		
4,4'-DDE (p,p')	**12.8**		µg/kg dry	5.56	14.8	BRL	86	30-150		
4,4'-DDE (p,p') [2C]	**13.7**		µg/kg dry	5.56	14.8	BRL	92	30-150		
Endrin	**16.1**		µg/kg dry	8.90	14.8	BRL	109	30-150		
Endrin [2C]	**17.4**		µg/kg dry	8.90	14.8	BRL	117	30-150		
Endosulfan II	**12.8**		µg/kg dry	8.90	14.8	BRL	87	30-150		
Endosulfan II [2C]	**13.9**		µg/kg dry	8.90	14.8	BRL	94	30-150		
4,4'-DDD (p,p')	**13.2**		µg/kg dry	8.90	14.8	BRL	89	30-150		
4,4'-DDD (p,p') [2C]	**14.1**		µg/kg dry	8.90	14.8	BRL	95	30-150		
Endosulfan sulfate	**13.6**		µg/kg dry	8.90	14.8	BRL	91	30-150		
Endosulfan sulfate [2C]	**14.8**		µg/kg dry	8.90	14.8	BRL	100	30-150		
4,4'-DDT (p,p')	**15.4**		µg/kg dry	8.90	14.8	BRL	104	30-150		
4,4'-DDT (p,p') [2C]	**16.6**		µg/kg dry	8.90	14.8	BRL	112	30-150		
Methoxychlor	**15.0**		µg/kg dry	8.90	14.8	0.775	96	30-150		
Methoxychlor [2C]	**15.5**		µg/kg dry	8.90	14.8	BRL	105	30-150		
Endrin ketone	**13.2**		µg/kg dry	8.90	14.8	BRL	89	30-150		
Endrin ketone [2C]	**14.8**		µg/kg dry	8.90	14.8	BRL	100	30-150		
Endrin aldehyde	**11.3**		µg/kg dry	8.90	14.8	BRL	76	30-150		
Endrin aldehyde [2C]	**13.0**		µg/kg dry	8.90	14.8	BRL	88	30-150		
alpha-Chlordane	**12.4**		µg/kg dry	5.56	14.8	BRL	83	30-150		
alpha-Chlordane [2C]	**12.7**		µg/kg dry	5.56	14.8	BRL	86	30-150		
gamma-Chlordane	**21.6**		µg/kg dry	5.56	14.8	BRL	146	30-150		
gamma-Chlordane [2C]	**13.3**		µg/kg dry	5.56	14.8	BRL	90	30-150		
Toxaphene	< 111		µg/kg dry	111		BRL		30-150		
Toxaphene [2C]	< 111		µg/kg dry	111		BRL		30-150		
Chlordane	< 22.2		µg/kg dry	22.2		BRL		30-150		
Chlordane [2C]	< 22.2		µg/kg dry	22.2		BRL		30-150		
Alachlor	**14.7**		µg/kg dry	5.56	14.8	BRL	99	30-150		
Alachlor [2C]	**12.0**		µg/kg dry	5.56	14.8	BRL	81	30-150		
Surrogate: Decachlorobiphenyl (Sr)	*10.2*		µg/kg dry		*14.8*		*69*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*12.8*		µg/kg dry		*14.8*		*86*	*30-150*		
Surrogate: 2,4,5,6-TC-M-Xylene (IS)	*10.5*		µg/kg dry		*14.8*		*71*	*30-150*		
Surrogate: 2,4,5,6-TC-M-Xylene (IS) [2C]	*9.76*		µg/kg dry		*14.8*		*66*	*30-150*		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8081B										
Batch 2001088 - SW846 3546										
Matrix Spike Dup (2001088-MSD1)			**Source: SC58794-02**		Prepared: 13-Jul-20 Analyzed: 16-Jul-20					
alpha-BHC	**12.5**		µg/kg dry	5.56	14.8	BRL	85	30-150	5	30
alpha-BHC [2C]	**13.2**		µg/kg dry	5.56	14.8	BRL	89	30-150	4	30
beta-BHC	**13.8**		µg/kg dry	5.56	14.8	BRL	93	30-150	6	30
beta-BHC [2C]	**13.8**		µg/kg dry	5.56	14.8	BRL	93	30-150	4	30
delta-BHC	**9.93**		µg/kg dry	5.56	14.8	BRL	67	30-150	14	30
delta-BHC [2C]	**9.81**		µg/kg dry	5.56	14.8	0.801	61	30-150	5	30
gamma-BHC (Lindane)	**13.3**		µg/kg dry	3.34	14.8	BRL	89	30-150	6	30
gamma-BHC (Lindane) [2C]	**13.2**		µg/kg dry	3.34	14.8	BRL	89	30-150	4	30
Heptachlor	**13.7**		µg/kg dry	5.56	14.8	BRL	92	30-150	9	30
Heptachlor [2C]	**13.8**		µg/kg dry	5.56	14.8	BRL	93	30-150	0.8	30
Aldrin	**13.2**		µg/kg dry	5.56	14.8	BRL	89	30-150	9	30
Aldrin [2C]	**13.0**		µg/kg dry	5.56	14.8	BRL	88	30-150	3	30
Heptachlor epoxide	**13.5**		µg/kg dry	5.56	14.8	0.382	88	30-150	7	30
Heptachlor epoxide [2C]	**13.8**		µg/kg dry	5.56	14.8	BRL	93	30-150	3	30
Endosulfan I	**13.9**		µg/kg dry	5.56	14.8	BRL	94	30-150	6	30
Endosulfan I [2C]	**14.5**		µg/kg dry	5.56	14.8	BRL	98	30-150	7	30
Dieldrin	**14.0**		µg/kg dry	5.56	14.8	BRL	94	30-150	10	30
Dieldrin [2C]	**14.3**		µg/kg dry	5.56	14.8	BRL	97	30-150	6	30
4,4'-DDE (p,p')	**13.9**		µg/kg dry	5.56	14.8	BRL	94	30-150	9	30
4,4'-DDE (p,p') [2C]	**14.7**		µg/kg dry	5.56	14.8	BRL	99	30-150	8	30
Endrin	**18.0**		µg/kg dry	8.90	14.8	BRL	121	30-150	11	30
Endrin [2C]	**18.6**		µg/kg dry	8.90	14.8	BRL	125	30-150	7	30
Endosulfan II	**14.4**		µg/kg dry	8.90	14.8	BRL	97	30-150	11	30
Endosulfan II [2C]	**14.8**		µg/kg dry	8.90	14.8	BRL	100	30-150	6	30
4,4'-DDD (p,p')	**14.8**		µg/kg dry	8.90	14.8	BRL	100	30-150	12	30
4,4'-DDD (p,p') [2C]	**15.4**		µg/kg dry	8.90	14.8	BRL	104	30-150	9	30
Endosulfan sulfate	**15.1**		µg/kg dry	8.90	14.8	BRL	102	30-150	11	30
Endosulfan sulfate [2C]	**15.3**		µg/kg dry	8.90	14.8	BRL	103	30-150	3	30
4,4'-DDT (p,p')	**17.3**		µg/kg dry	8.90	14.8	BRL	117	30-150	12	30
4,4'-DDT (p,p') [2C]	**17.4**		µg/kg dry	8.90	14.8	BRL	117	30-150	5	30
Methoxychlor	**14.9**		µg/kg dry	8.90	14.8	0.775	95	30-150	0.6	30
Methoxychlor [2C]	**16.3**		µg/kg dry	8.90	14.8	BRL	110	30-150	5	30
Endrin ketone	**14.7**		µg/kg dry	8.90	14.8	BRL	99	30-150	10	30
Endrin ketone [2C]	**16.2**		µg/kg dry	8.90	14.8	BRL	109	30-150	9	30
Endrin aldehyde	**12.8**		µg/kg dry	8.90	14.8	BRL	87	30-150	13	30
Endrin aldehyde [2C]	**13.8**		µg/kg dry	8.90	14.8	BRL	93	30-150	6	30
alpha-Chlordane	**13.4**		µg/kg dry	5.56	14.8	BRL	90	30-150	8	30
alpha-Chlordane [2C]	**13.6**		µg/kg dry	5.56	14.8	BRL	92	30-150	7	30
gamma-Chlordane	**15.5**		µg/kg dry	5.56	14.8	BRL	105	30-150	33	30
gamma-Chlordane [2C]	**13.8**		µg/kg dry	5.56	14.8	BRL	93	30-150	4	30
Toxaphene	< 111		µg/kg dry	111		BRL		30-150		30
Toxaphene [2C]	< 111		µg/kg dry	111		BRL		30-150		30
Chlordane	< 22.2		µg/kg dry	22.2		BRL		30-150		30
Chlordane [2C]	< 22.2		µg/kg dry	22.2		BRL		30-150		30
Alachlor	**14.2**		µg/kg dry	5.56	14.8	BRL	96	30-150	4	30
Alachlor [2C]	**12.7**		µg/kg dry	5.56	14.8	BRL	86	30-150	6	30
Surrogate: Decachlorobiphenyl (Sr)	*11.6*		µg/kg dry		*14.8*		*78*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*12.2*		µg/kg dry		*14.8*		*82*	*30-150*		
Surrogate: 2,4,5,6-TC-M-Xylene (IS)	*10.5*		µg/kg dry		*14.8*		*71*	*30-150*		
Surrogate: 2,4,5,6-TC-M-Xylene (IS) [2C]	*10.1*		µg/kg dry		*14.8*		*68*	*30-150*		

Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8100Mod.										
Batch 2001092 - SW846 3546										
Blank (2001092-BLK1)					Prepared: 14-Jul-20 Analyzed: 15-Jul-20					
Total Petroleum Hydrocarbons	< 13.3		mg/kg wet	13.3						
Surrogate: o-Terphenyl	*5.32*		mg/kg wet		*6.67*		*80*	*40-140*		
Surrogate: 1-Chlorooctadecane	*7.04*		mg/kg wet		*6.67*		*106*	*40-140*		
LCS (2001092-BS1)					Prepared: 14-Jul-20 Analyzed: 15-Jul-20					
Total Petroleum Hydrocarbons	**276**		mg/kg wet	13.3	333		83	40-140		
Surrogate: o-Terphenyl	*5.97*		mg/kg wet		*6.67*		*90*	*40-140*		
Surrogate: 1-Chlorooctadecane	*7.88*		mg/kg wet		*6.67*		*118*	*40-140*		
Duplicate (2001092-DUP1)			**Source: SC58794-03**		Prepared: 14-Jul-20 Analyzed: 15-Jul-20					
Total Petroleum Hydrocarbons	**107**		mg/kg dry	16.4		109			2	50
Surrogate: o-Terphenyl	*6.79*		mg/kg dry		*8.23*		*82*	*40-140*		
Surrogate: 1-Chlorooctadecane	*8.75*		mg/kg dry		*8.23*		*106*	*40-140*		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 6010C										
Batch 2001078 - SW846 3050B										
Blank (2001078-BLK1)					Prepared & Analyzed: 15-Jul-20					
Vanadium	< 1.47		mg/kg wet	1.47						
Nickel	< 0.977		mg/kg wet	0.977						
Zinc	< 2.93		mg/kg wet	2.93						
Selenium	< 1.47		mg/kg wet	1.47						
Lead	< 1.47		mg/kg wet	1.47						
Chromium	< 0.977		mg/kg wet	0.977						
Cadmium	< 0.488		mg/kg wet	0.488						
Antimony	< 4.88		mg/kg wet	4.88						
Beryllium	< 0.488		mg/kg wet	0.488						
Thallium	< 2.93		mg/kg wet	2.93						
Arsenic	< 1.47		mg/kg wet	1.47						
Silver	< 2.93		mg/kg wet	2.93						
Barium	< 0.977		mg/kg wet	0.977						
Duplicate (2001078-DUP1)			**Source: SC58794-02**		Prepared & Analyzed: 15-Jul-20					
Thallium	< 3.10		mg/kg dry	3.10		BRL				20
Vanadium	**23.9**		mg/kg dry	1.55		24.5			2	20
Selenium	< 1.55		mg/kg dry	1.55		BRL				20
Antimony	< 5.17		mg/kg dry	5.17		BRL				20
Lead	**21.4**		mg/kg dry	1.55		19.3			10	20
Nickel	**53.0**	QR6	mg/kg dry	1.03		71.4			30	20
Chromium	**19.8**		mg/kg dry	1.03		19.4			2	20
Cadmium	< 0.517		mg/kg dry	0.517		BRL				20
Beryllium	**0.264**	J	mg/kg dry	0.517		0.262			0.9	20
Arsenic	**49.0**		mg/kg dry	1.55		55.9			13	20
Silver	< 3.10		mg/kg dry	3.10		BRL				20
Zinc	**53.5**		mg/kg dry	3.10		58.5			9	20
Barium	**23.1**		mg/kg dry	1.03		22.5			3	20
Matrix Spike (2001078-MS1)			**Source: SC58794-02**		Prepared & Analyzed: 15-Jul-20					
Beryllium	**119**		mg/kg dry	0.528	132	0.262	90	75-125		
Vanadium	**156**		mg/kg dry	1.59	132	24.5	100	75-125		
Zinc	**171**		mg/kg dry	3.17	132	58.5	85	75-125		
Thallium	**117**		mg/kg dry	3.17	132	BRL	89	75-125		
Selenium	**104**		mg/kg dry	1.59	132	BRL	79	75-125		
Antimony	**67.7**	QM8	mg/kg dry	5.28	132	BRL	51	75-125		
Lead	**119**		mg/kg dry	1.59	132	19.3	76	75-125		
Nickel	**173**		mg/kg dry	1.06	132	71.4	77	75-125		
Cadmium	**106**		mg/kg dry	0.528	132	BRL	80	75-125		
Arsenic	**171**		mg/kg dry	1.59	132	55.9	87	75-125		
Silver	**104**		mg/kg dry	3.17	132	BRL	78	75-125		
Chromium	**150**		mg/kg dry	1.06	132	19.4	99	75-125		
Barium	**157**		mg/kg dry	1.06	132	22.5	102	75-125		
Matrix Spike Dup (2001078-MSD1)			**Source: SC58794-02**		Prepared & Analyzed: 15-Jul-20					
Selenium	**104**		mg/kg dry	1.60	134	BRL	78	75-125	0.2	20
Zinc	**170**		mg/kg dry	3.21	134	58.5	83	75-125	0.5	20
Antimony	**70.0**	QM8	mg/kg dry	5.35	134	BRL	52	75-125	3	20
Lead	**120**		mg/kg dry	1.60	134	19.3	75	75-125	0.4	20
Arsenic	**174**		mg/kg dry	1.60	134	55.9	89	75-125	2	20
Thallium	**117**		mg/kg dry	3.21	134	BRL	88	75-125	0.06	20
Silver	**104**		mg/kg dry	3.21	134	BRL	78	75-125	0.3	20
Nickel	**171**		mg/kg dry	1.07	134	71.4	75	75-125	1	20

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 6010C										
Batch 2001078 - SW846 3050B										
Matrix Spike Dup (2001078-MSD1)			**Source: SC58794-02**			Prepared & Analyzed: 15-Jul-20				
Chromium	**150**		mg/kg dry	1.07	134	19.4	98	75-125	0.1	20
Cadmium	**107**		mg/kg dry	0.535	134	BRL	80	75-125	1	20
Beryllium	**119**		mg/kg dry	0.535	134	0.262	89	75-125	0.3	20
Vanadium	**156**		mg/kg dry	1.60	134	24.5	98	75-125	0.003	20
Barium	**159**		mg/kg dry	1.07	134	22.5	102	75-125	1	20
Post Spike (2001078-PS1)			**Source: SC58794-02**			Prepared & Analyzed: 15-Jul-20				
Selenium	**120**		mg/kg dry	1.67	139	BRL	86	80-120		
Thallium	**130**		mg/kg dry	3.35	139	BRL	93	80-120		
Vanadium	**170**		mg/kg dry	1.67	139	24.5	105	80-120		
Antimony	**119**		mg/kg dry	5.58	139	BRL	86	80-120		
Lead	**134**		mg/kg dry	1.67	139	19.3	82	80-120		
Chromium	**157**		mg/kg dry	1.12	139	19.4	99	80-120		
Cadmium	**125**		mg/kg dry	0.558	139	BRL	89	80-120		
Beryllium	**133**		mg/kg dry	0.558	139	0.262	95	80-120		
Arsenic	**181**		mg/kg dry	1.67	139	55.9	90	80-120		
Silver	**113**		mg/kg dry	3.35	139	BRL	81	80-120		
Zinc	**177**		mg/kg dry	3.35	139	58.5	85	80-120		
Barium	**160**		mg/kg dry	1.12	139	22.5	99	80-120		
Reference (2001078-SRM1)						Prepared & Analyzed: 15-Jul-20				
Lead	**56.3**	QM9	mg/kg wet	1.50	68.4		82	82.9-117.1		
Antimony	**32.9**		mg/kg wet	5.00	83.1		40	25-196.4		
Selenium	**38.0**		mg/kg wet	1.50	46.3		82	79.2-120.6		
Thallium	**51.9**		mg/kg wet	3.00	54.2		96	80.7-119.5		
Zinc	**210**		mg/kg wet	3.00	245		86	80.7-119.3		
Beryllium	**83.5**		mg/kg wet	0.500	89.7		93	83.4-116.7		
Vanadium	**53.0**		mg/kg wet	1.50	54.0		98	79-121		
Nickel	**68.7**		mg/kg wet	1.00	82.9		83	82.4-117.4		
Cadmium	**113**		mg/kg wet	0.500	131		86	74-117		
Chromium	**148**		mg/kg wet	1.00	155		95	81.4-118		
Arsenic	**164**		mg/kg wet	1.50	187		88	82.7-117.3		
Silver	**55.8**		mg/kg wet	3.00	65.9		85	79.7-120.1		
Barium	**249**		mg/kg wet	1.00	250		99	82.6-117.8		
Reference (2001078-SRM2)						Prepared & Analyzed: 15-Jul-20				
Lead	**59.8**		mg/kg wet	1.50	69.1		86	82.9-117.1		
Antimony	**33.6**		mg/kg wet	5.00	83.9		40	25-196.4		
Nickel	**71.3**		mg/kg wet	1.00	83.7		85	82.4-117.4		
Selenium	**40.2**		mg/kg wet	1.50	46.7		86	79.2-120.6		
Vanadium	**55.8**		mg/kg wet	1.50	54.5		102	79-121		
Beryllium	**87.6**		mg/kg wet	0.500	90.6		97	83.4-116.7		
Zinc	**218**		mg/kg wet	3.00	247		88	80.7-119.3		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 6010C										
Batch 2001078 - SW846 3050B										
Reference (2001078-SRM2)					Prepared & Analyzed: 15-Jul-20					
Thallium	**55.0**		mg/kg wet	3.00	54.8		100	80.7-119.5		
Arsenic	**172**		mg/kg wet	1.50	189		91	82.7-117.3		
Silver	**57.6**		mg/kg wet	3.00	66.6		87	79.7-120.1		
Chromium	**154**		mg/kg wet	1.00	156		98	81.4-118		
Cadmium	**118**		mg/kg wet	0.500	132		89	74-117		
Barium	**259**		mg/kg wet	1.00	253		103	82.6-117.8		
SW846 7471B										
Batch 2001079 - EPA200/SW7000 Series										
Blank (2001079-BLK1)					Prepared & Analyzed: 13-Jul-20					
Mercury	< 0.114		mg/kg wet	0.114						
Duplicate (2001079-DUP1)			**Source: SC58794-01**		Prepared & Analyzed: 13-Jul-20					
Mercury	< 0.125		mg/kg dry	0.125		BRL				20
Matrix Spike (2001079-MS1)			**Source: SC58794-01**		Prepared & Analyzed: 13-Jul-20					
Mercury	**0.275**	QM7	mg/kg dry	0.0978	0.204	BRL	135	75-125		
Matrix Spike Dup (2001079-MSD1)			**Source: SC58794-01**		Prepared & Analyzed: 13-Jul-20					
Mercury	**0.241**		mg/kg dry	0.116	0.241	BRL	100	75-125	13	20
Post Spike (2001079-PS1)			**Source: SC58794-01**		Prepared & Analyzed: 13-Jul-20					
Mercury	**0.225**		mg/kg dry	0.115	0.241	BRL	94	80-120		
Reference (2001079-SRM1)					Prepared & Analyzed: 13-Jul-20					
Mercury	**1.79**	D	mg/kg wet	0.600	1.42		126	65-135		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SM2540 G (11) Mod.										
Batch 2001075 - General Preparation										
Duplicate (2001075-DUP1)			**Source: SC58794-01**			Prepared: 10-Jul-20 Analyzed: 14-Jul-20				
% Solids	**89.0**		%			89.3			0.4	5
Duplicate (2001075-DUP2)			**Source: SC58794-02**			Prepared: 10-Jul-20 Analyzed: 14-Jul-20				
% Solids	**90.1**		%			88.8			1	5
Duplicate (2001075-DUP3)			**Source: SC58794-03**			Prepared: 10-Jul-20 Analyzed: 14-Jul-20				
% Solids	**78.6**		%			80.1			2	5

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 9045D										
Batch 2001081 - General Preparation										
Duplicate (2001081-DUP1)			**Source: SC58794-01**			Prepared & Analyzed: 14-Jul-20				
pH	**5.96**		pH Units			5.99			0.5	5
Reference (2001081-SRM1)						Prepared & Analyzed: 14-Jul-20				
pH	**6.04**		pH Units		6.00		101	97.5-102.5		
Reference (2001081-SRM2)						Prepared & Analyzed: 14-Jul-20				
pH	**6.03**		pH Units		6.00		100	97.5-102.5		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW8151A										
Batch 537166A - SW8151A										
Blank (CG32331-BLK)					Prepared: 13-Jul-20 Analyzed: 14-Jul-20					
MCPP	**ND**		ug/kg	3300			ND	-		
MCPA	**ND**		ug/kg	3300			ND	-		
Dinoseb	**ND**		ug/kg	80			ND	-		
Dichloroprop	**ND**		ug/kg	80			ND	-		
Dicamba	**ND**		ug/kg	80			ND	-		
Dalapon	**ND**		ug/kg	80			ND	-		
2,4-DB	**ND**		ug/kg	80			ND	-		
2,4-D	**ND**		ug/kg	80			ND	-		
2,4,5-TP (Silvex)	**ND**		ug/kg	80			ND	-		
2,4,5-T	**ND**		ug/kg	80			ND	-		
Surrogate: % DCAA	*56*		ug/kg		*2000*		*56*	*30-150*		
LCS (CG32331-LCS)					Prepared: 13-Jul-20 Analyzed: 14-Jul-20					
2,4-D	**159.1**		ug/kg	80	200		80	40-140		30
Dicamba	**78.39**		ug/kg	80	100		78	40-140		30
2,4,5-TP (Silvex)	**78.41**		ug/kg	80	100		78	40-140		30
2,4-DB	**751.8**		ug/kg	80	1000		75	40-140		30
Dalapon	**65.02**		ug/kg	80	100		65	40-140		30
Dichloroprop	**184.8**		ug/kg	80	200		92	40-140		30
MCPP	**26120**		ug/kg	3300	30000		87	40-140		30
MCPA	**24560**		ug/kg	3300	30000		82	40-140		30
Dinoseb	**68.51**		ug/kg	80	100		69	10-110		20
2,4,5-T	**79.54**		ug/kg	80	100		80	40-140		30
Surrogate: % DCAA	*1286*		ug/kg		*2000*		*64*	*30-150*		
LCS Dup (CG32331-LCSD)			**Source: CG32331-LCS**		Prepared: 13-Jul-20 Analyzed: 14-Jul-20					
2,4-D	**180.3**		ug/kg	80	200		90	40-140	11.8	30
Dicamba	**78.02**		ug/kg	80	100		78	40-140	0.0	30
2,4,5-T	**87.28**		ug/kg	80	100		87	40-140	8.4	30
2,4,5-TP (Silvex)	**83.74**		ug/kg	80	100		84	40-140	7.4	30
Dalapon	**60.50**		ug/kg	80	100		60	40-140	8.0	30
2,4-DB	**826.8**		ug/kg	80	1000		83	40-140	10.1	30
Dichloroprop	**184.2**		ug/kg	80	200		92	40-140	0.0	30
Dinoseb	**70.63**		ug/kg	80	100		71	10-110	2.9	20
MCPA	**24850**		ug/kg	3300	30000		83	40-140	1.2	30
MCPP	**26980**		ug/kg	3300	30000		90	40-140	3.4	30
Surrogate: % DCAA	*1285*		ug/kg		*2000*		*64*	*30-150*		
Matrix Spike (CG32331-MS)			**Source: SC58794-06**		Prepared: 13-Jul-20 Analyzed: 14-Jul-20					
Dalapon	**65.39**		ug/kg	80	100	BRL	65	30-150		30
2,4,5-T	**83.50**		ug/kg	80	100	BRL	83	30-150		30
2,4,5-TP (Silvex)	**81.66**		ug/kg	80	100	BRL	82	30-150		30
2,4-DB	**848.8**		ug/kg	80	1000	BRL	85	30-150		30
Dicamba	**82.17**		ug/kg	80	100	BRL	82	30-150		30
Dichloroprop	**184.1**		ug/kg	80	200	BRL	92	30-150		30
Dinoseb	**75.89**		ug/kg	80	100	BRL	76	10-110		20
MCPA	**25340**		ug/kg	3300	30000	BRL	84	30-150		30
MCPP	**26510**		ug/kg	3300	30000	BRL	88	30-150		30
2,4-D	**169.9**		ug/kg	80	200	BRL	85	30-150		30
Surrogate: % DCAA	*1323*		ug/kg		*2000*		*66*	*30-150*		
Matrix Spike Dup (CG32331-MSD)			**Source: SC58794-06**		Prepared: 13-Jul-20 Analyzed: 14-Jul-20					
Dalapon	**65.78**		ug/kg	80	100	BRL	66	30-150	1.5	30

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW8151A										
Batch 537166A - SW8151A										
Matrix Spike Dup (CG32331-MSD)			**Source: SC58794-06**		Prepared: 13-Jul-20 Analyzed: 14-Jul-20					
2,4,5-T	**84.20**		ug/kg	80	100	BRL	84	30-150	1.2	30
MCPA	**25630**		ug/kg	3300	30000	BRL	85	30-150	1.2	30
Dinoseb	**78.86**		ug/kg	80	100	BRL	79	10-110	3.9	20
Dichloroprop	**195.8**		ug/kg	80	200	BRL	98	30-150	6.3	30
2,4-DB	**808.3**		ug/kg	80	1000	BRL	81	30-150	4.8	30
2,4-D	**171.1**		ug/kg	80	200	BRL	86	30-150	1.2	30
2,4,5-TP (Silvex)	**83.44**		ug/kg	80	100	BRL	83	30-150	1.2	30
MCPP	**27140**		ug/kg	3300	30000	BRL	90	30-150	2.2	30
Dicamba	**79.35**		ug/kg	80	100	BRL	79	30-150	3.7	30
Surrogate: % DCAA	*1320*		ug/kg		*2000*		*66*	*30-150*		
Batch 537320A - SW8151A										
Blank (CG33195-BLK)					Prepared: 14-Jul-20 Analyzed: 15-Jul-20					
2,4,5-T	**ND**		ug/kg	83			ND	-		
MCPA	**ND**		ug/kg	25000			ND	-		
Dinoseb	**ND**		ug/kg	83			ND	-		
Dichloroprop	**ND**		ug/kg	83			ND	-		
Dicamba	**ND**		ug/kg	83			ND	-		
Dalapon	**ND**		ug/kg	83			ND	-		
2,4-DB	**ND**		ug/kg	1700			ND	-		
2,4,5-TP (Silvex)	**ND**		ug/kg	83			ND	-		
MCPP	**ND**		ug/kg	25000			ND	-		
2,4-D	**ND**		ug/kg	170			ND	-		
Surrogate: % DCAA	*85*		ug/kg		*2000*		*85*	*30-150*		
LCS (CG33195-LCS)					Prepared: 14-Jul-20 Analyzed: 15-Jul-20					
2,4,5-T	**71.82**		ug/kg	83	100		72	40-140		30
2,4,5-TP (Silvex)	**68.89**		ug/kg	83	100		69	40-140		30
2,4-D	**142.4**		ug/kg	170	200		71	40-140		30
2,4-DB	**598.6**		ug/kg	1700	1000		60	40-140		30
Dalapon	**60.16**		ug/kg	83	100		60	40-140		30
Dicamba	**71.66**		ug/kg	83	100		72	40-140		30
Dichloroprop	**166.8**		ug/kg	83	200		83	40-140		30
Dinoseb	**39.15**	r	ug/kg	83	100		39	10-110		20
MCPP	**23770**		ug/kg	25000	30000		79	40-140		30
MCPA	**21880**		ug/kg	25000	30000		73	40-140		30
Surrogate: % DCAA	*1161*		ug/kg		*2000*		*58*	*30-150*		
LCS Dup (CG33195-LCSD)			**Source: CG33195-LCS**		Prepared: 14-Jul-20 Analyzed: 15-Jul-20					
2,4,5-TP (Silvex)	**82.44**		ug/kg	83	100		82	40-140	17.2	30
MCPP	**24500**		ug/kg	25000	30000		82	40-140	3.7	30
2,4,5-T	**87.03**		ug/kg	83	100		87	40-140	18.9	30
2,4-D	**164.0**		ug/kg	170	200		82	40-140	14.4	30
Dalapon	**61.29**		ug/kg	83	100		61	40-140	1.7	30
Dicamba	**82.87**		ug/kg	83	100		83	40-140	14.2	30
Dichloroprop	**189.0**		ug/kg	83	200		94	40-140	12.4	30
2,4-DB	**802.5**		ug/kg	1700	1000		80	40-140	28.6	30
MCPA	**25310**		ug/kg	25000	30000		84	40-140	14.0	30
Dinoseb	**75.51**	r	ug/kg	83	100		76	10-110	64.3	20
Surrogate: % DCAA	*1357*		ug/kg		*2000*		*68*	*30-150*		
SW846 7.3.3.1/90										

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 7.3.3.1/90										
Batch 537292A - SW846 7.3.3.1/90										
Blank (CG32326-BLK)						Prepared & Analyzed: 14-Jul-20				
Reactivity Cyanide	< 5		mg/kg	5			BRL	-		
Duplicate (CG32326-DUP)			**Source: SC58794-01**			Prepared & Analyzed: 14-Jul-20				
Reactivity Cyanide	< 6.0		mg/kg	6.0		BRL		-	NC	20
LCS (CG32326-LCS)						Prepared & Analyzed: 14-Jul-20				
Reactivity Cyanide	**0.4460**		mg/kg	5	0.44		101	80-120		20
Batch 537434A - SW846 7.3.3.1/90										
Blank (CG30622-BLK)						Prepared & Analyzed: 15-Jul-20				
Reactivity Cyanide	< 5		mg/kg	5			BRL	-		
LCS (CG30622-LCS)						Prepared & Analyzed: 15-Jul-20				
Reactivity Cyanide	**0.4390**		mg/kg	5	0.44		99.8	80-120		20
SW846 CH7										
Batch 537292B - SW846 7.3.3.1/90										
Blank (CG32326-BLK)						Prepared & Analyzed: 14-Jul-20				
Reactivity Sulfide	< 20		mg/kg	20			BRL	-		
Duplicate (CG32326-DUP)			**Source: SC58794-01**			Prepared & Analyzed: 14-Jul-20				
Reactivity Sulfide	< 20		mg/kg	20		BRL		-	NC	20
LCS (CG32326-LCS)						Prepared & Analyzed: 14-Jul-20				
Reactivity Sulfide	**0**		mg/kg	20	40		95.0	80-120		20
Batch 537434B - SW846 7.3.3.1/90										
Blank (CG30622-BLK)						Prepared & Analyzed: 15-Jul-20				
Reactivity Sulfide	< 20		mg/kg	20			BRL	-		
LCS (CG30622-LCS)						Prepared & Analyzed: 15-Jul-20				
Reactivity Sulfide	**0**		mg/kg	20	40		95.0	80-120		20

Analyte(s)	Column	% Breakdown	Limit

Notes and Definitions

D	Data reported from a dilution
QC2	Analyte out of acceptance range in QC spike but no reportable concentration present in sample.
QC6	Analyte is out of acceptance range in the QC spike but the total number of out of range analytes is within overall method criteria.
QM7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
QM8	The spike recovery exceeded the QC control limits for the MS and/or MSD. The batch was accepted based upon acceptable PS and /or LCS recovery.
QM9	The spike recovery for this QC sample is outside the established control limits. The sample results for the QC batch were accepted based on LCS/LCSD or SRM recoveries within the control limits.
QR6	The RPD exceeded the QC control limits; however precision is demonstrated with acceptable RPD values for MS/MSD.
r	This parameter is outside laboratory rpd specified recovery limits.
Z-2	The closing calibration verification was below control limits, <20%, for the analyte 4,4-DDT, but greater than 50% recovery. This low recovery is due to sample matrix interference, which was confirmed by re-analysis.
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference
[2C]	Indicates concentration was reported from the secondary, confirmation column.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
pH	The method for pH does not stipulate a specific holding time other than to state that the samples should be analyzed as soon as possible. For aqueous samples the 40 CFR 136 specifies a holding time of 15 minutes from sampling to analysis. Therefore all aqueous pH samples not analyzed in the field are considered out of hold time at the time of sample receipt. All soil samples are analyzed as soon as possible after sample receipt.

Interpretation of Total Petroleum Hydrocarbon Report

Petroleum identification is determined by comparing the GC fingerprint obtained from the sample with a library of GC fingerprints obtained from analyses of various petroleum products. Possible match categories are as follows:

Gasoline - includes regular, unleaded, premium, etc.
Fuel Oil #2 - includes home heating oil, #2 fuel oil, and diesel
Fuel Oil #4 - includes #4 fuel oil
Fuel Oil #6 - includes #6 fuel oil and bunker "C" oil
Motor Oil - includes virgin and waste automobile oil
Ligroin - includes mineral spirits, petroleum naphtha, vm&p naphtha
Aviation Fuel - includes kerosene, Jet A and JP-4
Other Oil - includes lubricating and cutting oil, and silicon oil

At times, the unidentified petroleum product is quantified using a calibration that most closely approximates the distribution of compounds in the sample. When this occurs, the result is qualified as Calculated as.

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic intervals. Concentrations, intervals, and criteria are method specific.

SC 58741 EM

COC # 4610

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CHAIN OF CUSTODY RECORD

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Special Handling:

☑ Standard TAT - 7 to 10 business days
☐ Rush TAT - Date Needed:
- All TATs subject to laboratory approval. Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report to: Kevin Kavanaugh
ECMS, Inc.
288 Grove St. #391
Braintree, MA 02184

Project Mgr.: Kevin Kavanaugh

Invoice to: Kevin Kavanaugh
ECMS, Inc.
288 Grove St. #391
Braintree, MA 02184

P.O. No: RQN: 9802

Project No.: 1009.073
Site Name: Cashman School
Location: Amesbury, MA
Sampler(s): Kevin Kavanaugh

G=Grab C=Composite

Lab ID:	Sample ID:	Date:	Time:	Type	Matrix	Containers: 8 oz Amber Glass (none)	VOA Vial CH3OH	4 oz Amber Glass (none)						Analyses: 8081 Pesticides	8082 PCBs	8151 Herbicides	8260 Full List	8270 Full List	Ignitability-1030	MCP 14 Metals Total	pH	Reactivity Cyanide/Sulfide	TPH 8100 by GC			QA Reporting Notes: (check if needed)
SC58741-01	SS-1	7/9/2020		G	Soil	2	2							X	X	X	X	X	X	X	X	X	X			MA RCS-1
-02	SS-2	7/9/2020		G	Soil	2	2							X	X	X	X	X	X	X	X	X	X			MA RCS-1
-03	SSS-10	7/9/2020		G	Soil	2	2							X	X	X	X	X	X	X	X	X	X			MA RCS-1
-04	SSS-11	7/9/2020		G	Soil	2	2							X	X	X	X	X	X	X	X	X	X			MA RCS-1
-05	SSS-12	7/9/2020		G	Soil	2	2							X	X	X	X	X	X	X	X	X	X			MA RCS-1
-06	SSS-13	7/9/2020		G	Soil	2	2							X	X	X	X	X	X	X	X	X	X			MA RCS-1
-07	SSS-14	7/9/2020		G	Soil	2	2							X	X	X	X	X	X	X	X	X	X			MA RCS-1
-08	SSS-16	7/9/2020		G	Soil		2	••						X	X	X	X	X	X	X	X	X	X			MA RCS-1
-09	SSS-17	7/9/2020		G	Soil		2	••						X	X	X	X	X	X	X	X	X	X			MA RCS-1
-10	SSS-3	7/9/2020		G	Soil	2	2							X	X	X	X	X	X	X	X	X	X			MA RCS-1
-11	SSS-4	7/9/2020		G	Soil	2	2							X	X	X	X	X	X	X	X	X	X			MA RCS-1

☐ E-mail to:
EDD Format:

Condition upon receipt:
☐ Ambient ☒ Iced ☐ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

Relinquished by:	Received by:	Date:	Time:	Temp °C
	Storage Area 4°C	7/9/20	2:30 PM	3.3
		7/10/20	13:16	-1
		7/10/20	~~13:23~~ 15:38	2.3 +1.6

SC 38794 EM

COC # 4610

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CHAIN OF CUSTODY RECORD

Page 2 of 2

Special Handling:

- ☑ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed:

- All TATs subject to laboratory approval. Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report to: Kevin Kavanaugh
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Project Mgr.: Kevin Kavanaugh

Invoice to: Kevin Kavanaugh
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Braintree, MA 02184

P.O. No: RQN: 9802

Project No.: 1009.073
Site Name: Cashman School
Location: Amesbury, MA
Sampler(s): Kevin Kavanaugh

G=Grab C=Composite

Lab ID:	Sample ID:	Date:	Time:	Type	Matrix	Containers: 8 oz Amber Glass (none)	VOA Vial CH3OH	4 oz Amber Glass (none)						Analyses: 8081 Pesticides	8082 PCBs	8151 Herbicides	8260 Full List	8270 Full List	Ignitability-1030	MCP 14 Metals Total	pH	Reactivity Cyanide/Sulfide	TPH 8100 by GC			QA Reporting Notes: (check if needed)
-12	SSS-5	7/9/2020		G	Soil	2	2							X	X	X	X	X	X	X	X	X	X			☑ Provide MA DEP MCP CAM Report ☐ Provide CT DPH RCP Report **QA/QC Reporting Levels** Standard State specific reporting standards: Mass RCS-1 MA RCS-1
-13	SSS-6	7/9/2020		G	Soil	2	2							X	X	X	X	X	X	X	X	X	X			MA RCS-1
-14	SSS-7	7/9/2020		G	Soil	2	2							X	X	X	X	X	X	X	X	X	X			MA RCS-1
-15	SSS-8	7/9/2020		G	Soil	2	2							X	X	X	X	X	X	X	X	X	X			MA RCS-1
-16	SSS-9	7/9/2020		G	Soil	2	2							X	X	X	X	X	X	X	X	X	X			MA RCS-1
-17	SSS-15	7/9/2020		G	Soil	1	2	2						X	X	X	X	X	X	X	X	X	X			MA RCS-1

☐ E-mail to:
EDD Format:

Condition upon receipt:
☐ Ambient ☒ Iced ☐ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

Relinquished by:	Received by:	Date:	Time:	Temp °C
	Storage offsite 4°C	7/10/20	2:30 pm	3.3
		7/10/20	13:16	-1
		7/10/20	15:28	2.3

Batch Summary

'[none]'

Subcontracted Analyses

SC58794-01 (SS-1)
SC58794-02 (SS-2)
SC58794-03 (SSS-10)
SC58794-04 (SSS-11)
SC58794-05 (SSS-12)
SC58794-06 (SSS-13)
SC58794-07 (SSS-14)
SC58794-08 (SSS-16)
SC58794-09 (SSS-17)
SC58794-10 (SSS-3)
SC58794-11 (SSS-4)
SC58794-12 (SSS-5)
SC58794-13 (SSS-6)
SC58794-14 (SSS-7)
SC58794-15 (SSS-8)
SC58794-16 (SSS-9)
SC58794-17 (SSS-15)

2001074

Toxicity Characteristics

2001074-DUP1
SC58794-01 (SS-1)
SC58794-02 (SS-2)
SC58794-03 (SSS-10)
SC58794-04 (SSS-11)
SC58794-05 (SSS-12)
SC58794-06 (SSS-13)
SC58794-07 (SSS-14)
SC58794-08 (SSS-16)
SC58794-09 (SSS-17)
SC58794-10 (SSS-3)
SC58794-11 (SSS-4)
SC58794-12 (SSS-5)
SC58794-13 (SSS-6)
SC58794-14 (SSS-7)
SC58794-15 (SSS-8)
SC58794-16 (SSS-9)
SC58794-17 (SSS-15)

2001075

General Chemistry Parameters

2001075-DUP1
2001075-DUP2
2001075-DUP3
SC58794-01 (SS-1)
SC58794-02 (SS-2)
SC58794-03 (SSS-10)
SC58794-04 (SSS-11)
SC58794-05 (SSS-12)
SC58794-06 (SSS-13)
SC58794-07 (SSS-14)
SC58794-08 (SSS-16)
SC58794-09 (SSS-17)
SC58794-10 (SSS-3)
SC58794-11 (SSS-4)
SC58794-12 (SSS-5)
SC58794-13 (SSS-6)
SC58794-14 (SSS-7)
SC58794-15 (SSS-8)
SC58794-16 (SSS-9)
SC58794-17 (SSS-15)

2001076

Volatile Organic Compounds

2001076-BLK1
2001076-BS1
2001076-BSD1
2001076-DUP1
SC58794-01 (SS-1)
SC58794-02 (SS-2)
SC58794-03 (SSS-10)
SC58794-04 (SSS-11)
SC58794-05 (SSS-12)
SC58794-06 (SSS-13)
SC58794-07 (SSS-14)
SC58794-08 (SSS-16)
SC58794-09 (SSS-17)
SC58794-10 (SSS-3)
SC58794-11 (SSS-4)
SC58794-12 (SSS-5)
SC58794-13 (SSS-6)
SC58794-14 (SSS-7)
SC58794-15 (SSS-8)
SC58794-16 (SSS-9)
SC58794-17 (SSS-15)

2001078

Total Metals by EPA 6000/7000 Series Methods

2001078-BLK1
2001078-DUP1
2001078-MS1
2001078-MSD1
2001078-PS1
2001078-SRM1
2001078-SRM2
SC58794-01 (SS-1)
SC58794-02 (SS-2)
SC58794-03 (SSS-10)
SC58794-04 (SSS-11)
SC58794-05 (SSS-12)
SC58794-06 (SSS-13)
SC58794-07 (SSS-14)
SC58794-08 (SSS-16)
SC58794-09 (SSS-17)
SC58794-10 (SSS-3)
SC58794-11 (SSS-4)
SC58794-12 (SSS-5)
SC58794-13 (SSS-6)
SC58794-14 (SSS-7)
SC58794-15 (SSS-8)
SC58794-16 (SSS-9)
SC58794-17 (SSS-15)

2001079

Total Metals by EPA 6000/7000 Series Methods

2001079-BLK1
2001079-DUP1
2001079-MS1
2001079-MSD1
2001079-PS1
2001079-SRM1
SC58794-01 (SS-1)
SC58794-02 (SS-2)
SC58794-03 (SSS-10)
SC58794-04 (SSS-11)
SC58794-05 (SSS-12)
SC58794-06 (SSS-13)
SC58794-07 (SSS-14)
SC58794-08 (SSS-16)
SC58794-09 (SSS-17)
SC58794-10 (SSS-3)
SC58794-11 (SSS-4)
SC58794-12 (SSS-5)
SC58794-13 (SSS-6)
SC58794-14 (SSS-7)
SC58794-15 (SSS-8)
SC58794-16 (SSS-9)
SC58794-17 (SSS-15)

2001081

Toxicity Characteristics

2001081-DUP1
2001081-SRM1
2001081-SRM2
SC58794-01 (SS-1)
SC58794-02 (SS-2)
SC58794-03 (SSS-10)
SC58794-04 (SSS-11)
SC58794-05 (SSS-12)
SC58794-06 (SSS-13)
SC58794-07 (SSS-14)
SC58794-08 (SSS-16)
SC58794-09 (SSS-17)
SC58794-10 (SSS-3)
SC58794-11 (SSS-4)
SC58794-12 (SSS-5)
SC58794-13 (SSS-6)
SC58794-14 (SSS-7)
SC58794-15 (SSS-8)
SC58794-16 (SSS-9)
SC58794-17 (SSS-15)

2001083

Semivolatile Organic Compounds by GCMS

2001083-BLK1
2001083-BS1
2001083-BSD1
2001083-DUP1
2001083-MS1
2001083-MSD1
SC58794-01 (SS-1)
SC58794-02 (SS-2)
SC58794-03 (SSS-10)
SC58794-04 (SSS-11)
SC58794-05 (SSS-12)
SC58794-06 (SSS-13)
SC58794-07 (SSS-14)
SC58794-08 (SSS-16)
SC58794-09 (SSS-17)
SC58794-10 (SSS-3)
SC58794-11 (SSS-4)
SC58794-12 (SSS-5)
SC58794-13 (SSS-6)
SC58794-14 (SSS-7)
SC58794-15 (SSS-8)
SC58794-16 (SSS-9)
SC58794-17 (SSS-15)

2001087

Semivolatile Organic Compounds by GC

2001087-BLK1
2001087-BS1
2001087-BSD1
2001087-DUP1
2001087-MS1
2001087-MSD1
SC58794-01 (SS-1)
SC58794-02 (SS-2)
SC58794-03 (SSS-10)
SC58794-04 (SSS-11)
SC58794-05 (SSS-12)
SC58794-06 (SSS-13)
SC58794-07 (SSS-14)
SC58794-08 (SSS-16)
SC58794-09 (SSS-17)
SC58794-10 (SSS-3)
SC58794-11 (SSS-4)
SC58794-12 (SSS-5)
SC58794-13 (SSS-6)
SC58794-14 (SSS-7)
SC58794-15 (SSS-8)
SC58794-16 (SSS-9)
SC58794-17 (SSS-15)

2001088

Pesticides

2001088-BLK1
2001088-BS1
2001088-BSD1
2001088-DUP1
2001088-MS1
2001088-MSD1
SC58794-01 (SS-1)
SC58794-02 (SS-2)
SC58794-03 (SSS-10)
SC58794-04 (SSS-11)
SC58794-05 (SSS-12)
SC58794-06 (SSS-13)
SC58794-07 (SSS-14)
SC58794-08 (SSS-16)
SC58794-09 (SSS-17)
SC58794-10 (SSS-3)
SC58794-11 (SSS-4)
SC58794-12 (SSS-5)
SC58794-13 (SSS-6)
SC58794-14 (SSS-7)
SC58794-15 (SSS-8)
SC58794-16 (SSS-9)
SC58794-17 (SSS-15)

2001092

Extractable Petroleum Hydrocarbons

2001092-BLK1
2001092-BS1
2001092-DUP1
SC58794-01 (SS-1)
SC58794-02 (SS-2)
SC58794-03 (SSS-10)
SC58794-04 (SSS-11)
SC58794-05 (SSS-12)
SC58794-06 (SSS-13)
SC58794-07 (SSS-14)
SC58794-08 (SSS-16)
SC58794-09 (SSS-17)
SC58794-10 (SSS-3)
SC58794-11 (SSS-4)
SC58794-12 (SSS-5)
SC58794-13 (SSS-6)
SC58794-14 (SSS-7)
SC58794-15 (SSS-8)
SC58794-16 (SSS-9)
SC58794-17 (SSS-15)

537166A

Subcontracted Analyses

CG32331-BLK
CG32331-LCS
CG32331-LCSD
CG32331-MS
CG32331-MSD
SC58794-01 (SS-1)
SC58794-02 (SS-2)
SC58794-03 (SSS-10)
SC58794-04 (SSS-11)
SC58794-05 (SSS-12)
SC58794-06 (SSS-13)
SC58794-07 (SSS-14)
SC58794-08 (SSS-16)
SC58794-09 (SSS-17)
SC58794-10 (SSS-3)

537292A

Subcontracted Analyses

CG32326-BLK
CG32326-DUP
CG32326-LCS
SC58794-01 (SS-1)
SC58794-02 (SS-2)
SC58794-03 (SSS-10)
SC58794-04 (SSS-11)
SC58794-05 (SSS-12)
SC58794-06 (SSS-13)
SC58794-07 (SSS-14)
SC58794-08 (SSS-16)
SC58794-09 (SSS-17)
SC58794-10 (SSS-3)
SC58794-11 (SSS-4)
SC58794-12 (SSS-5)
SC58794-13 (SSS-6)
SC58794-14 (SSS-7)

537292B

Subcontracted Analyses

CG32326-BLK
CG32326-DUP
CG32326-LCS
SC58794-01 (SS-1)
SC58794-02 (SS-2)
SC58794-03 (SSS-10)
SC58794-04 (SSS-11)
SC58794-05 (SSS-12)
SC58794-06 (SSS-13)
SC58794-07 (SSS-14)
SC58794-08 (SSS-16)
SC58794-09 (SSS-17)
SC58794-10 (SSS-3)
SC58794-11 (SSS-4)
SC58794-12 (SSS-5)
SC58794-13 (SSS-6)
SC58794-14 (SSS-7)

537320A

Subcontracted Analyses

CG33195-BLK
CG33195-LCS
CG33195-LCSD
SC58794-11 (SSS-4)
SC58794-12 (SSS-5)
SC58794-13 (SSS-6)
SC58794-14 (SSS-7)
SC58794-15 (SSS-8)
SC58794-16 (SSS-9)
SC58794-17 (SSS-15)

537434A

Subcontracted Analyses

CG30622-BLK
CG30622-LCS
SC58794-15 (SSS-8)
SC58794-16 (SSS-9)
SC58794-17 (SSS-15)

537434B

Subcontracted Analyses

CG30622-BLK
CG30622-LCS
SC58794-15 (SSS-8)
SC58794-16 (SSS-9)
SC58794-17 (SSS-15)

eurofins | Environment Testing New England

☑ Final Report
☐ Revised Report

Report Date:
20-Aug-20 17:12

Laboratory Report
SC59063

ECMS, Inc.
639 Granite Street, Suite 407
Braintree, MA 02184
Attn: Kevin Kavanaugh

Project: Cashman School - Amesbury, MA
Project #: 1009.073

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.
All applicable NELAC requirements have been met.

Massachusetts # RI907
New York # 11393
Rhode Island # LAI00368
USDA # P330-20-00109

Authorized by:

Agnes Huntley
Project Manager

Eurofins Environment Testing New England holds primary certification in the State of Massachusetts for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of Massachusetts does not offer certification for all analytes. Please refer to our website for specific certification holdings in each state.
Please note that this report contains 17 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Eurofins Environment Testing New England.

Eurofins Environment Testing New England is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Eurofins Environment Testing New England is currently accredited for the specific method or analyte indicated. Please refer to our "Quality" web page at www.eurofinsus.com/Spectrum for a full listing of our current certifications and fields of accreditation.

Please contact the Laboratory or Technical Director at 413-789-9018 with any questions regarding the data contained in this laboratory report.

Sample Summary

Work Order: SC59063

Project: Cashman School - Amesbury, MA

Project Number: 1009.073

Laboratory ID	Client Sample ID	Matrix	Date Sampled	Date Received
SC59063-01	SSS-26	Soil	12-Aug-20 08:40	13-Aug-20 17:30
SC59063-02	SSS-27	Soil	12-Aug-20 08:45	13-Aug-20 17:30
SC59063-03	SSS-28	Soil	12-Aug-20 09:15	13-Aug-20 17:30
SC59063-04	SSS-29	Soil	12-Aug-20 09:35	13-Aug-20 17:30
SC59063-05	SSS-30	Soil	12-Aug-20 09:45	13-Aug-20 17:30
SC59063-06	SSS-31	Soil	12-Aug-20 10:00	13-Aug-20 17:30
SC59063-07	SSS-32	Soil	12-Aug-20 10:15	13-Aug-20 17:30
SC59063-08	SSS-33	Soil	12-Aug-20 10:30	13-Aug-20 17:30

MassDEP Analytical Protocol Certification Form

Laboratory Name: Eurofins Spectrum Analytical, Inc.	**Project #:** 1009.073
Project Location: Cashman School - Amesbury, MA	**RTN:**
This form provides certifications for the following data set:	SC59063-01 through SC59063-08
Matrices: Soil	

CAM Protocol

8260 VOC CAM II A	✓ 7470/7471 Hg CAM III B	MassDEP VPH CAM IV A	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
✓ 6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9012 Total Cyanide/PAC CAM VI A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

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

Responses to questions G, H and I below are required for "Presumptive Certainty" status

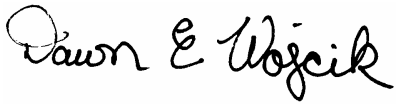
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	Yes ✓ No

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

H	Were all QC 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 are addressed in a case narrative on the cover page of this report.

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.



Dawn E. Wojcik
Laboratory Director
Date: 8/20/2020

CASE NARRATIVE:

Data has been reported to the RDL. This report excludes estimated concentrations detected below the RDL and above the MDL (J-Flag).

All non-detects and all results below the reporting limit are reported as "<" (less than) the reporting limit in this report.

The samples were received 2.4 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of +/- 1.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group. If method or program required MS/MSD/Dup were not performed, sufficient sample was not provided to the laboratory.

MADEP has published a list of analytical methods (CAM) which provides a series of recommended protocols for the acquisition, analysis and reporting of analytical data in support of MCP decisions. "Presumptive Certainty" can be established only for those methods published by the MADEP in the MCP CAM. The compounds and/or elements reported were specifically requested by the client on the Chain of Custody and in some cases may not include the full analyte list as defined in the method. Regulatory limits may not be achieved if specific method and/or technique was not requested on the Chain of Custody.

According to WSC-CAM 5/2009 Rev.1, Table 11 A-1, recovery for some VOC analytes have been deemed potentially difficult. Although they may still be within the recommended recovery range, a range has been set based on historical control limits.

Some target analytes which are not listed as exceptions in the Summary of CAM Reporting Limits may exceed the recommended RL based on sample initial volume or weight provided, % moisture content, or responsiveness of a particular analyte to purge and trap instrumentation.

See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.

SW846 6010C

Laboratory Control Samples:

2001427 SRM/SRMD

Lead percent recoveries (176/81) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially high bias:

SSS-26
SSS-27
SSS-28
SSS-29
SSS-30
SSS-31
SSS-32
SSS-33

Silver percent recoveries (82/72) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

SSS-26
SSS-27
SSS-28
SSS-29
SSS-30
SSS-31
SSS-32
SSS-33

Spikes:

2001427-MS1 *Source: SC59063-06*

SW846 6010C

Spikes:

2001427-MS1 *Source: SC59063-06*

The spike recovery exceeded the QC control limits for the MS and/or MSD. The batch was accepted based upon acceptable PS and /or LCS recovery.

Antimony

2001427-MSD1 *Source: SC59063-06*

The spike recovery exceeded the QC control limits for the MS and/or MSD. The batch was accepted based upon acceptable PS and /or LCS recovery.

Antimony

Duplicates:

2001427-DUP1 *Source: SC59063-06*

MRL raised to correlate to batch QC reporting limits.

Vanadium
Zinc

Samples:

SC59063-01 *SSS-26*

MRL raised to correlate to batch QC reporting limits.

Vanadium
Zinc

SC59063-02 *SSS-27*

MRL raised to correlate to batch QC reporting limits.

Vanadium
Zinc

SC59063-03 *SSS-28*

MRL raised to correlate to batch QC reporting limits.

Vanadium

SC59063-04 *SSS-29*

MRL raised to correlate to batch QC reporting limits.

Vanadium
Zinc

SC59063-05 *SSS-30*

MRL raised to correlate to batch QC reporting limits.

Vanadium
Zinc

SC59063-06 *SSS-31*

MRL raised to correlate to batch QC reporting limits.

Vanadium
Zinc

SC59063-07 *SSS-32*

SW846 6010C

Samples:

SC59063-07 *SSS-32*

MRL raised to correlate to batch QC reporting limits.

Vanadium
Zinc

SC59063-08 *SSS-33*

MRL raised to correlate to batch QC reporting limits.

Vanadium
Zinc

SW846 7471B

Spikes:

2001428-MSD1 *Source: SC59063-03*

The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

Mercury

Sample Acceptance Check Form

Client:	ECMS, Inc.
Project:	Cashman School - Amesbury, MA / 1009.073
Work Order:	SC59063
Sample(s) received on:	8/13/2020

The following outlines the condition of samples for the attached Chain of Custody upon receipt.

	Yes	No	N/A
Were custody seals present?	☐	☑	☐
Were custody seals intact?	☐	☐	☑
Were samples received at a temperature of ≤ 6°C?	☑	☐	☐
Were samples refrigerated upon transfer to laboratory representative?	☑	☐	☐
Were sample containers received intact?	☑	☐	☐
Were samples properly labeled (labels affixed to sample containers and include sample ID, site location, and/or project number and the collection date)?	☑	☐	☐
Were samples accompanied by a Chain of Custody document?	☑	☐	☐
Does Chain of Custody document include proper, full, and complete documentation, which shall include sample ID, site location, and/or project number, date and time of collection, collector's name, preservation type, sample matrix and any special remarks concerning the sample?	☑	☐	☐
Did sample container labels agree with Chain of Custody document?	☑	☐	☐
Were samples received within method-specific holding times?	☑	☐	☐

Summary of Hits

Lab ID: SC59063-01 **Client ID:** SSS-26

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Arsenic	56.1		1.60	mg/kg	SW846 6010C
Barium	24.6		1.07	mg/kg	SW846 6010C
Chromium	32.0		1.07	mg/kg	SW846 6010C
Lead	40.0		1.60	mg/kg	SW846 6010C
Nickel	52.2		1.07	mg/kg	SW846 6010C
Vanadium	33.5	R06	2.35	mg/kg	SW846 6010C
Zinc	56.6	R06	26.7	mg/kg	SW846 6010C
Mercury	0.0764		0.0344	mg/kg	SW846 7471B

Lab ID: SC59063-02 **Client ID:** SSS-27

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Arsenic	65.5		1.65	mg/kg	SW846 6010C
Barium	26.8		1.10	mg/kg	SW846 6010C
Chromium	32.8		1.10	mg/kg	SW846 6010C
Lead	35.4		1.65	mg/kg	SW846 6010C
Nickel	61.9		1.10	mg/kg	SW846 6010C
Vanadium	29.4	R06	2.42	mg/kg	SW846 6010C
Zinc	57.7	R06	27.5	mg/kg	SW846 6010C
Mercury	0.0655		0.0312	mg/kg	SW846 7471B

Lab ID: SC59063-03 **Client ID:** SSS-28

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Arsenic	4.89		1.48	mg/kg	SW846 6010C
Barium	16.4		0.985	mg/kg	SW846 6010C
Chromium	7.71		0.985	mg/kg	SW846 6010C
Lead	2.80		1.48	mg/kg	SW846 6010C
Nickel	4.15		0.985	mg/kg	SW846 6010C
Vanadium	7.97	R06	2.17	mg/kg	SW846 6010C
Zinc	7.36		2.95	mg/kg	SW846 6010C

Lab ID: SC59063-04 **Client ID:** SSS-29

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Arsenic	27.7		1.56	mg/kg	SW846 6010C
Barium	37.3		1.04	mg/kg	SW846 6010C
Beryllium	0.590		0.521	mg/kg	SW846 6010C
Chromium	35.6		1.04	mg/kg	SW846 6010C
Lead	29.6		1.56	mg/kg	SW846 6010C
Nickel	25.4		1.04	mg/kg	SW846 6010C
Vanadium	33.9	R06	2.29	mg/kg	SW846 6010C
Zinc	44.5	R06	26.1	mg/kg	SW846 6010C
Mercury	0.0650		0.0336	mg/kg	SW846 7471B

Lab ID: SC59063-05 **Client ID:** SSS-30

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Arsenic	31.2		1.70	mg/kg	SW846 6010C
Barium	33.3		1.14	mg/kg	SW846 6010C
Chromium	32.3		1.14	mg/kg	SW846 6010C
Lead	25.9		1.70	mg/kg	SW846 6010C
Nickel	25.6		1.14	mg/kg	SW846 6010C
Vanadium	29.7	R06	2.50	mg/kg	SW846 6010C
Zinc	38.6	R06	28.4	mg/kg	SW846 6010C
Mercury	0.0583		0.0356	mg/kg	SW846 7471B

Lab ID: SC59063-06 **Client ID:** SSS-31

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Arsenic	74.8		1.71	mg/kg	SW846 6010C
Barium	32.1		1.14	mg/kg	SW846 6010C
Chromium	60.3		1.14	mg/kg	SW846 6010C
Lead	32.3		1.71	mg/kg	SW846 6010C
Nickel	41.3		1.14	mg/kg	SW846 6010C
Vanadium	23.6	R06	2.51	mg/kg	SW846 6010C
Zinc	66.2	R06	28.5	mg/kg	SW846 6010C
Mercury	0.541		0.0217	mg/kg	SW846 7471B

Lab ID: SC59063-07 **Client ID:** SSS-32

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Arsenic	89.6		1.58	mg/kg	SW846 6010C
Barium	26.2		1.05	mg/kg	SW846 6010C
Chromium	50.5		1.05	mg/kg	SW846 6010C
Lead	30.7		1.58	mg/kg	SW846 6010C
Nickel	41.2		1.05	mg/kg	SW846 6010C
Vanadium	24.2	R06	2.31	mg/kg	SW846 6010C
Zinc	62.2	R06	26.3	mg/kg	SW846 6010C
Mercury	0.471		0.0296	mg/kg	SW846 7471B

Lab ID: SC59063-08 **Client ID:** SSS-33

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Arsenic	62.3		1.67	mg/kg	SW846 6010C
Barium	27.9		1.11	mg/kg	SW846 6010C
Chromium	24.7		1.11	mg/kg	SW846 6010C
Lead	13.7		1.67	mg/kg	SW846 6010C
Nickel	52.9		1.11	mg/kg	SW846 6010C
Vanadium	23.4	R06	2.45	mg/kg	SW846 6010C
Zinc	64.5	R06	27.8	mg/kg	SW846 6010C

Please note that because there are no reporting limits associated with hazardous waste characterizations or micro analyses, this summary does not include hits from these analyses if included in this work order.

Sample Identification
SSS-26
SC59063-01

Client Project #: 1009.073 | Matrix: Soil | Collection Date/Time: 12-Aug-20 08:40 | Received: 13-Aug-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Total Metals by EPA 6000/7000 Series Methods													
Prepared by method SW846 3050B													
7440-22-4	Silver	< 3.20		mg/kg dry	3.20	0.173	1	SW846 6010C	17-Aug-20	20-Aug-20	PMH/EDT	2001427	
7440-38-2	Arsenic	**56.1**		mg/kg dry	1.60	0.203	1	"	"	19-Aug-20	"	"	
7440-39-3	Barium	**24.6**		mg/kg dry	1.07	0.126	1	"	"	"	"	"	
7440-41-7	Beryllium	< 0.534		mg/kg dry	0.534	0.0268	1	"	"	"	"	"	
7440-43-9	Cadmium	< 0.534		mg/kg dry	0.534	0.0277	1	"	"	"	"	"	
7440-47-3	Chromium	**32.0**		mg/kg dry	1.07	0.142	1	"	"	"	"	"	
7439-97-6	Mercury	**0.0764**		mg/kg dry	0.0344	0.0095	1	SW846 7471B	"	20-Aug-20	edt	2001428	
Prepared by method SW846 3050B													
7440-02-0	Nickel	**52.2**		mg/kg dry	1.07	0.123	1	SW846 6010C	"	19-Aug-20	EDT	2001427	
7439-92-1	Lead	**40.0**		mg/kg dry	1.60	0.226	1	"	"	"	"	"	
7440-36-0	Antimony	< 5.34		mg/kg dry	5.34	0.402	1	"	"	"	"	"	
7782-49-2	Selenium	< 1.60		mg/kg dry	1.60	0.306	1	"	"	"	"	"	
7440-28-0	Thallium	< 3.20		mg/kg dry	3.20	1.18	1	"	"	"	"	"	
7440-62-2	Vanadium	**33.5**	R06	mg/kg dry	2.35	0.284	1	"	"	"	"	"	
7440-66-6	Zinc	**56.6**	R06	mg/kg dry	26.7	0.827	1	"	"	"	"	"	
General Chemistry Parameters													
	% Solids	**93.3**		%			1	SM2540 G (11) Mod.	13-Aug-20	17-Aug-20	PN	2001425	

Sample Identification
SSS-27
SC59063-02

Client Project #: 1009.073 | Matrix: Soil | Collection Date/Time: 12-Aug-20 08:45 | Received: 13-Aug-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Total Metals by EPA 6000/7000 Series Methods													
Prepared by method SW846 3050B													
7440-22-4	Silver	< 3.30		mg/kg dry	3.30	0.178	1	SW846 6010C	17-Aug-20	20-Aug-20	PMH/EDT	2001427	
7440-38-2	Arsenic	**65.5**		mg/kg dry	1.65	0.209	1	"	"	19-Aug-20	"	"	
7440-39-3	Barium	**26.8**		mg/kg dry	1.10	0.130	1	"	"	"	"	"	
7440-41-7	Beryllium	< 0.550		mg/kg dry	0.550	0.0276	1	"	"	"	"	"	
7440-43-9	Cadmium	< 0.550		mg/kg dry	0.550	0.0285	1	"	"	"	"	"	
7440-47-3	Chromium	**32.8**		mg/kg dry	1.10	0.146	1	"	"	"	"	"	
7439-97-6	Mercury	**0.0655**		mg/kg dry	0.0312	0.0087	1	SW846 7471B	"	20-Aug-20	edt	2001428	
Prepared by method SW846 3050B													
7440-02-0	Nickel	**61.9**		mg/kg dry	1.10	0.126	1	SW846 6010C	"	19-Aug-20	EDT	2001427	
7439-92-1	Lead	**35.4**		mg/kg dry	1.65	0.233	1	"	"	"	"	"	
7440-36-0	Antimony	< 5.50		mg/kg dry	5.50	0.413	1	"	"	"	"	"	
7782-49-2	Selenium	< 1.65		mg/kg dry	1.65	0.314	1	"	"	"	"	"	
7440-28-0	Thallium	< 3.30		mg/kg dry	3.30	1.21	1	"	"	"	"	"	
7440-62-2	Vanadium	**29.4**	R06	mg/kg dry	2.42	0.292	1	"	"	"	"	"	
7440-66-6	Zinc	**57.7**	R06	mg/kg dry	27.5	0.851	1	"	"	"	"	"	
General Chemistry Parameters													
	% Solids	**93.1**		%			1	SM2540 G (11) Mod.	13-Aug-20	17-Aug-20	PN	2001425	

Sample Identification
SSS-28
SC59063-03

Client Project #: 1009.073 | Matrix: Soil | Collection Date/Time: 12-Aug-20 09:15 | Received: 13-Aug-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Total Metals by EPA 6000/7000 Series Methods													
Prepared by method SW846 3050B													
7440-22-4	Silver	< 2.95		mg/kg dry	2.95	0.160	1	SW846 6010C	17-Aug-20	20-Aug-20	PMH/EDT	2001427	
7440-38-2	Arsenic	**4.89**		mg/kg dry	1.48	0.187	1	"	"	19-Aug-20	"	"	
7440-39-3	Barium	**16.4**		mg/kg dry	0.985	0.116	1	"	"	"	"	"	
7440-41-7	Beryllium	< 0.492		mg/kg dry	0.492	0.0247	1	"	"	"	"	"	
7440-43-9	Cadmium	< 0.492		mg/kg dry	0.492	0.0255	1	"	"	"	"	"	
7440-47-3	Chromium	**7.71**		mg/kg dry	0.985	0.131	1	"	"	"	"	"	
7439-97-6	Mercury	< 0.0337		mg/kg dry	0.0337	0.0094	1	SW846 7471B	"	20-Aug-20	edt	2001428	
Prepared by method SW846 3050B													
7440-02-0	Nickel	**4.15**		mg/kg dry	0.985	0.113	1	SW846 6010C	"	19-Aug-20	EDT	2001427	
7439-92-1	Lead	**2.80**		mg/kg dry	1.48	0.209	1	"	"	"	"	"	
7440-36-0	Antimony	< 4.92		mg/kg dry	4.92	0.370	1	"	"	"	"	"	
7782-49-2	Selenium	< 1.48		mg/kg dry	1.48	0.282	1	"	"	"	"	"	
7440-28-0	Thallium	< 2.95		mg/kg dry	2.95	1.09	1	"	"	"	"	"	
7440-62-2	Vanadium	**7.97**	R06	mg/kg dry	2.17	0.262	1	"	"	"	"	"	
7440-66-6	Zinc	**7.36**		mg/kg dry	2.95	0.762	1	"	"	20-Aug-20	"	"	
General Chemistry Parameters													
	% Solids	**95.6**		%			1	SM2540 G (11) Mod.	13-Aug-20	17-Aug-20	PN	2001425	

Sample Identification
SSS-29
SC59063-04

Client Project #: 1009.073 | Matrix: Soil | Collection Date/Time: 12-Aug-20 09:35 | Received: 13-Aug-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Total Metals by EPA 6000/7000 Series Methods													
Prepared by method SW846 3050B													
7440-22-4	Silver	< 3.13		mg/kg dry	3.13	0.169	1	SW846 6010C	17-Aug-20	20-Aug-20	PMH/EDT	2001427	
7440-38-2	Arsenic	**27.7**		mg/kg dry	1.56	0.198	1	"	"	19-Aug-20	"	"	
7440-39-3	Barium	**37.3**		mg/kg dry	1.04	0.123	1	"	"	"	"	"	
7440-41-7	Beryllium	**0.590**		mg/kg dry	0.521	0.0262	1	"	"	"	"	"	
7440-43-9	Cadmium	< 0.521		mg/kg dry	0.521	0.0270	1	"	"	"	"	"	
7440-47-3	Chromium	**35.6**		mg/kg dry	1.04	0.139	1	"	"	"	"	"	
7439-97-6	Mercury	**0.0650**		mg/kg dry	0.0336	0.0093	1	SW846 7471B	"	20-Aug-20	edt	2001428	
Prepared by method SW846 3050B													
7440-02-0	Nickel	**25.4**		mg/kg dry	1.04	0.120	1	SW846 6010C	"	19-Aug-20	EDT	2001427	
7439-92-1	Lead	**29.6**		mg/kg dry	1.56	0.221	1	"	"	"	"	"	
7440-36-0	Antimony	< 5.21		mg/kg dry	5.21	0.392	1	"	"	"	"	"	
7782-49-2	Selenium	< 1.56		mg/kg dry	1.56	0.298	1	"	"	"	"	"	
7440-28-0	Thallium	< 3.13		mg/kg dry	3.13	1.15	1	"	"	"	"	"	
7440-62-2	Vanadium	**33.9**	R06	mg/kg dry	2.29	0.277	1	"	"	"	"	"	
7440-66-6	Zinc	**44.5**	R06	mg/kg dry	26.1	0.807	1	"	"	"	"	"	
General Chemistry Parameters													
	% Solids	**89.8**		%			1	SM2540 G (11) Mod.	13-Aug-20	17-Aug-20	PN	2001425	

Sample Identification
SSS-30
SC59063-05

Client Project #: 1009.073 | Matrix: Soil | Collection Date/Time: 12-Aug-20 09:45 | Received: 13-Aug-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Total Metals by EPA 6000/7000 Series Methods													
Prepared by method SW846 3050B													
7440-22-4	Silver	< 3.41		mg/kg dry	3.41	0.184	1	SW846 6010C	17-Aug-20	20-Aug-20	PMH/EDT	2001427	
7440-38-2	Arsenic	**31.2**		mg/kg dry	1.70	0.216	1	"	"	19-Aug-20	"	"	
7440-39-3	Barium	**33.3**		mg/kg dry	1.14	0.134	1	"	"	"	"	"	
7440-41-7	Beryllium	< 0.568		mg/kg dry	0.568	0.0285	1	"	"	"	"	"	
7440-43-9	Cadmium	< 0.568		mg/kg dry	0.568	0.0294	1	"	"	"	"	"	
7440-47-3	Chromium	**32.3**		mg/kg dry	1.14	0.151	1	"	"	"	"	"	
7439-97-6	Mercury	**0.0583**		mg/kg dry	0.0356	0.0099	1	SW846 7471B	"	20-Aug-20	edt	2001428	
Prepared by method SW846 3050B													
7440-02-0	Nickel	**25.6**		mg/kg dry	1.14	0.131	1	SW846 6010C	"	19-Aug-20	EDT	2001427	
7439-92-1	Lead	**25.9**		mg/kg dry	1.70	0.241	1	"	"	"	"	"	
7440-36-0	Antimony	< 5.68		mg/kg dry	5.68	0.427	1	"	"	"	"	"	
7782-49-2	Selenium	< 1.70		mg/kg dry	1.70	0.325	1	"	"	"	"	"	
7440-28-0	Thallium	< 3.41		mg/kg dry	3.41	1.25	1	"	"	"	"	"	
7440-62-2	Vanadium	**29.7**	R06	mg/kg dry	2.50	0.302	1	"	"	"	"	"	
7440-66-6	Zinc	**38.6**	R06	mg/kg dry	28.4	0.880	1	"	"	"	"	"	
General Chemistry Parameters													
	% Solids	**84.7**		%			1	SM2540 G (11) Mod.	13-Aug-20	17-Aug-20	PN	2001425	

Sample Identification
SSS-31
SC59063-06

Client Project #: 1009.073 | Matrix: Soil | Collection Date/Time: 12-Aug-20 10:00 | Received: 13-Aug-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Total Metals by EPA 6000/7000 Series Methods													
Prepared by method SW846 3050B													
7440-22-4	Silver	< 3.42		mg/kg dry	3.42	0.185	1	SW846 6010C	17-Aug-20	20-Aug-20	PMH/EDT	2001427	
7440-38-2	Arsenic	**74.8**		mg/kg dry	1.71	0.216	1	"	"	19-Aug-20	"	"	
7440-39-3	Barium	**32.1**		mg/kg dry	1.14	0.134	1	"	"	"	"	"	
7440-41-7	Beryllium	< 0.570		mg/kg dry	0.570	0.0286	1	"	"	"	"	"	
7440-43-9	Cadmium	< 0.570		mg/kg dry	0.570	0.0295	1	"	"	"	"	"	
7440-47-3	Chromium	**60.3**		mg/kg dry	1.14	0.152	1	"	"	"	"	"	
7439-97-6	Mercury	**0.541**		mg/kg dry	0.0217	0.0060	1	SW846 7471B	"	20-Aug-20	edt	2001428	
Prepared by method SW846 3050B													
7440-02-0	Nickel	**41.3**		mg/kg dry	1.14	0.131	1	SW846 6010C	"	19-Aug-20	EDT	2001427	
7439-92-1	Lead	**32.3**		mg/kg dry	1.71	0.241	1	"	"	"	"	"	
7440-36-0	Antimony	< 5.70		mg/kg dry	5.70	0.428	1	"	"	"	"	"	
7782-49-2	Selenium	< 1.71		mg/kg dry	1.71	0.326	1	"	"	"	"	"	
7440-28-0	Thallium	< 3.42		mg/kg dry	3.42	1.26	1	"	"	"	"	"	
7440-62-2	Vanadium	**23.6**	R06	mg/kg dry	2.51	0.303	1	"	"	"	"	"	
7440-66-6	Zinc	**66.2**	R06	mg/kg dry	28.5	0.882	1	"	"	"	"	"	
General Chemistry Parameters													
	% Solids	**90.2**		%			1	SM2540 G (11) Mod.	13-Aug-20	17-Aug-20	PN	2001425	

Sample Identification
SSS-32
SC59063-07

Client Project #: 1009.073 | Matrix: Soil | Collection Date/Time: 12-Aug-20 10:15 | Received: 13-Aug-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Total Metals by EPA 6000/7000 Series Methods													
Prepared by method SW846 3050B													
7440-22-4	Silver	< 3.15		mg/kg dry	3.15	0.170	1	SW846 6010C	17-Aug-20	20-Aug-20	PMH/EDT	2001427	
7440-38-2	Arsenic	**89.6**		mg/kg dry	1.58	0.200	1	"	"	19-Aug-20	"	"	
7440-39-3	Barium	**26.2**		mg/kg dry	1.05	0.124	1	"	"	"	"	"	
7440-41-7	Beryllium	< 0.525		mg/kg dry	0.525	0.0264	1	"	"	"	"	"	
7440-43-9	Cadmium	< 0.525		mg/kg dry	0.525	0.0272	1	"	"	"	"	"	
7440-47-3	Chromium	**50.5**		mg/kg dry	1.05	0.140	1	"	"	"	"	"	
7439-97-6	Mercury	**0.471**		mg/kg dry	0.0296	0.0082	1	SW846 7471B	"	20-Aug-20	edt	2001428	
Prepared by method SW846 3050B													
7440-02-0	Nickel	**41.2**		mg/kg dry	1.05	0.121	1	SW846 6010C	"	19-Aug-20	EDT	2001427	
7439-92-1	Lead	**30.7**		mg/kg dry	1.58	0.223	1	"	"	"	"	"	
7440-36-0	Antimony	< 5.25		mg/kg dry	5.25	0.395	1	"	"	"	"	"	
7782-49-2	Selenium	< 1.58		mg/kg dry	1.58	0.300	1	"	"	"	"	"	
7440-28-0	Thallium	< 3.15		mg/kg dry	3.15	1.16	1	"	"	"	"	"	
7440-62-2	Vanadium	**24.2**	R06	mg/kg dry	2.31	0.279	1	"	"	"	"	"	
7440-66-6	Zinc	**62.2**	R06	mg/kg dry	26.3	0.813	1	"	"	"	"	"	
General Chemistry Parameters													
	% Solids	**94.9**		%			1	SM2540 G (11) Mod.	13-Aug-20	17-Aug-20	PN	2001425	

Sample Identification
SSS-33
SC59063-08

Client Project #: 1009.073 | Matrix: Soil | Collection Date/Time: 12-Aug-20 10:30 | Received: 13-Aug-20

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Total Metals by EPA 6000/7000 Series Methods													
Prepared by method SW846 3050B													
7440-22-4	Silver	< 3.33		mg/kg dry	3.33	0.180	1	SW846 6010C	17-Aug-20	20-Aug-20	PMH/EDT	2001427	
7440-38-2	Arsenic	**62.3**		mg/kg dry	1.67	0.211	1	"	"	19-Aug-20	"	"	
7440-39-3	Barium	**27.9**		mg/kg dry	1.11	0.131	1	"	"	"	"	"	
7440-41-7	Beryllium	< 0.556		mg/kg dry	0.556	0.0279	1	"	"	"	"	"	
7440-43-9	Cadmium	< 0.556		mg/kg dry	0.556	0.0288	1	"	"	"	"	"	
7440-47-3	Chromium	**24.7**		mg/kg dry	1.11	0.148	1	"	"	"	"	"	
7439-97-6	Mercury	< 0.0305		mg/kg dry	0.0305	0.0085	1	SW846 7471B	"	20-Aug-20	edt	2001428	
Prepared by method SW846 3050B													
7440-02-0	Nickel	**52.9**		mg/kg dry	1.11	0.128	1	SW846 6010C	"	19-Aug-20	EDT	2001427	
7439-92-1	Lead	**13.7**		mg/kg dry	1.67	0.236	1	"	"	"	"	"	
7440-36-0	Antimony	< 5.56		mg/kg dry	5.56	0.418	1	"	"	"	"	"	
7782-49-2	Selenium	< 1.67		mg/kg dry	1.67	0.318	1	"	"	"	"	"	
7440-28-0	Thallium	< 3.33		mg/kg dry	3.33	1.23	1	"	"	"	"	"	
7440-62-2	Vanadium	**23.4**	R06	mg/kg dry	2.45	0.296	1	"	"	"	"	"	
7440-66-6	Zinc	**64.5**	R06	mg/kg dry	27.8	0.860	1	"	"	"	"	"	
General Chemistry Parameters													
	% Solids	**89.6**		%			1	SM2540 G (11) Mod.	13-Aug-20	17-Aug-20	PN	2001425	

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 6010C										
Batch 2001427 - SW846 3050B										
Blank (2001427-BLK1)					Prepared: 17-Aug-20 Analyzed: 19-Aug-20					
Selenium	< 1.58		mg/kg wet	1.58						
Arsenic	< 1.58		mg/kg wet	1.58						
Silver	< 3.16		mg/kg wet	3.16						
Zinc	< 26.3		mg/kg wet	26.3						
Thallium	< 3.16		mg/kg wet	3.16						
Antimony	< 5.27		mg/kg wet	5.27						
Lead	< 1.58		mg/kg wet	1.58						
Nickel	< 1.05		mg/kg wet	1.05						
Chromium	< 1.05		mg/kg wet	1.05						
Cadmium	< 0.527		mg/kg wet	0.527						
Beryllium	< 0.527		mg/kg wet	0.527						
Vanadium	< 2.32		mg/kg wet	2.32						
Barium	< 1.05		mg/kg wet	1.05						
Duplicate (2001427-DUP1)			**Source: SC59063-06**		Prepared: 17-Aug-20 Analyzed: 19-Aug-20					
Lead	**33.9**		mg/kg dry	1.74		32.3			5	20
Antimony	< 5.79		mg/kg dry	5.79		BRL				20
Silver	< 3.47		mg/kg dry	3.47		BRL				20
Zinc	**67.8**	R06	mg/kg dry	29.0		66.2			2	20
Vanadium	**24.2**	R06	mg/kg dry	2.55		23.6			2	20
Thallium	< 3.47		mg/kg dry	3.47		BRL				20
Nickel	**42.4**		mg/kg dry	1.16		41.3			3	20
Chromium	**61.9**		mg/kg dry	1.16		60.3			3	20
Cadmium	< 0.579		mg/kg dry	0.579		BRL				20
Beryllium	**0.412**	J	mg/kg dry	0.579		0.404			2	20
Arsenic	**77.4**		mg/kg dry	1.74		74.8			3	20
Selenium	< 1.74		mg/kg dry	1.74		BRL				20
Barium	**34.1**		mg/kg dry	1.16		32.1			6	20
Matrix Spike (2001427-MS1)			**Source: SC59063-06**		Prepared: 17-Aug-20 Analyzed: 19-Aug-20					
Cadmium	**129**		mg/kg dry	0.593	148	BRL	87	75-125		
Silver	**114**		mg/kg dry	3.56	148	BRL	77	75-125		
Zinc	**205**		mg/kg dry	29.6	148	66.2	94	75-125		
Vanadium	**161**		mg/kg dry	2.61	148	23.6	93	75-125		
Thallium	**139**		mg/kg dry	3.56	148	BRL	94	75-125		
Selenium	**135**		mg/kg dry	1.78	148	BRL	91	75-125		
Antimony	**89.6**	QM8	mg/kg dry	5.93	148	BRL	60	75-125		
Lead	**160**		mg/kg dry	1.78	148	32.3	86	75-125		
Chromium	**215**		mg/kg dry	1.19	148	60.3	104	75-125		
Beryllium	**141**		mg/kg dry	0.593	148	0.404	95	75-125		
Arsenic	**211**		mg/kg dry	1.78	148	74.8	92	75-125		
Nickel	**164**		mg/kg dry	1.19	148	41.3	83	75-125		
Barium	**192**		mg/kg dry	1.19	148	32.1	108	75-125		
Matrix Spike Dup (2001427-MSD1)			**Source: SC59063-06**		Prepared: 17-Aug-20 Analyzed: 19-Aug-20					
Cadmium	**123**		mg/kg dry	0.565	141	BRL	87	75-125	5	20
Arsenic	**209**		mg/kg dry	1.70	141	74.8	95	75-125	1	20
Thallium	**132**		mg/kg dry	3.39	141	BRL	94	75-125	5	20
Beryllium	**132**		mg/kg dry	0.565	141	0.404	93	75-125	6	20
Silver	**107**		mg/kg dry	3.39	141	BRL	76	75-125	7	20
Vanadium	**152**		mg/kg dry	2.49	141	23.6	91	75-125	5	20
Selenium	**127**		mg/kg dry	1.70	141	BRL	90	75-125	6	20
Antimony	**81.7**	QM8	mg/kg dry	5.65	141	BRL	58	75-125	9	20

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 6010C										
Batch 2001427 - SW846 3050B										
Matrix Spike Dup (2001427-MSD1)			**Source: SC59063-06**			Prepared: 17-Aug-20 Analyzed: 19-Aug-20				
Lead	**153**		mg/kg dry	1.70	141	32.3	85	75-125	4	20
Nickel	**158**		mg/kg dry	1.13	141	41.3	82	75-125	4	20
Chromium	**205**		mg/kg dry	1.13	141	60.3	102	75-125	5	20
Zinc	**197**		mg/kg dry	28.3	141	66.2	92	75-125	4	20
Barium	**182**		mg/kg dry	1.13	141	32.1	106	75-125	5	20
Reference (2001427-SRM1)						Prepared: 17-Aug-20 Analyzed: 19-Aug-20				
Thallium	**81.9**		mg/kg wet	3.00	77.3		106	74.4-109.4		
Lead	**139**	QM9	mg/kg wet	1.50	79.0		176	73-116.9		
Vanadium	**86.0**		mg/kg wet	2.20	88.9		97	73.8-112.5		
Silver	**28.7**		mg/kg wet	3.00	35.0		82	79.3-117.3		
Selenium	**35.3**		mg/kg wet	1.50	38.5		92	74.1-112.2		
Antimony	**52.8**		mg/kg wet	5.00	195		27	4.8-102.6		
Chromium	**138**		mg/kg wet	1.00	132		104	72.3-111.6		
Cadmium	**125**		mg/kg wet	0.500	127		98	75.2-106.7		
Beryllium	**100**		mg/kg wet	0.500	94.9		105	76.8-108.1		
Arsenic	**79.2**		mg/kg wet	1.50	88.9		89	76.1-107.7		
Nickel	**52.6**		mg/kg wet	1.00	55.7		94	75.8-107.8		
Zinc	**330**		mg/kg wet	25.0	336		98	75.8-112		
Barium	**296**		mg/kg wet	1.00	273		108	77.2-110.3		
Reference (2001427-SRM2)						Prepared: 17-Aug-20 Analyzed: 19-Aug-20				
Nickel	**57.1**		mg/kg wet	1.00	65.7		87	75.8-107.8		
Silver	**29.9**	QM9	mg/kg wet	3.00	41.3		72	79.3-117.3		
Zinc	**350**		mg/kg wet	25.0	396		88	75.8-112		
Vanadium	**88.2**		mg/kg wet	2.20	105		84	73.8-112.5		
Thallium	**89.6**		mg/kg wet	3.00	91.2		98	74.4-109.4		
Selenium	**36.7**		mg/kg wet	1.50	45.5		81	74.1-112.2		
Lead	**75.6**		mg/kg wet	1.50	93.2		81	73-116.9		
Chromium	**148**		mg/kg wet	1.00	156		95	72.3-111.6		
Cadmium	**138**		mg/kg wet	0.500	150		92	75.2-106.7		
Beryllium	**112**		mg/kg wet	0.500	112		100	76.8-108.1		
Arsenic	**82.4**		mg/kg wet	1.50	105		79	76.1-107.7		
Antimony	**56.4**		mg/kg wet	5.00	230		25	4.8-102.6		
Barium	**292**		mg/kg wet	1.00	323		91	77.2-110.3		
SW846 7471B										
Batch 2001428 - EPA200/SW7000 Series										
Blank (2001428-BLK1)						Prepared: 17-Aug-20 Analyzed: 20-Aug-20				

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 7471B										
Batch 2001428 - EPA200/SW7000 Series										
Blank (2001428-BLK1)						Prepared: 17-Aug-20 Analyzed: 20-Aug-20				
Mercury	< 0.0302		mg/kg wet	0.0302						
Duplicate (2001428-DUP1)			**Source: SC59063-03**			Prepared: 17-Aug-20 Analyzed: 20-Aug-20				
Mercury	< 0.0282		mg/kg dry	0.0282		BRL				20
Matrix Spike (2001428-MS1)			**Source: SC59063-03**			Prepared: 17-Aug-20 Analyzed: 20-Aug-20				
Mercury	**0.260**		mg/kg dry	0.0307	0.213	BRL	122	75-125		
Matrix Spike Dup (2001428-MSD1)			**Source: SC59063-03**			Prepared: 17-Aug-20 Analyzed: 20-Aug-20				
Mercury	**0.260**	QM7	mg/kg dry	0.0296	0.206	BRL	126	75-125	0.2	20
Reference (2001428-SRM1)						Prepared: 17-Aug-20 Analyzed: 20-Aug-20				
Mercury	**9.10**	D	mg/kg wet	0.600	9.38		97	42.1-100		

Notes and Definitions

D	Data reported from a dilution
QM7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
QM8	The spike recovery exceeded the QC control limits for the MS and/or MSD. The batch was accepted based upon acceptable PS and /or LCS recovery.
QM9	The spike recovery for this QC sample is outside the established control limits. The sample results for the QC batch were accepted based on LCS/LCSD or SRM recoveries within the control limits.
R06	MRL raised to correlate to batch QC reporting limits.
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic intervals. Concentrations, intervals, and criteria are method specific.

SC 59063 EM

eurofins

CHAIN OF CUSTODY RECORD

Page 1 of 1

Special Handling:

☑ Standard TAT - 7 to 10 business days
☐ Rush TAT - Date Needed:

- All TATs subject to laboratory approval. Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report to: Kevin Kavanaugh
ECMS, Inc.
288 Grove Street #391
Braintree, MA 02184

Project Mgr.: Kevin Kavanaugh

Invoice to: Kevin Kavanaugh
ECMS, Inc.
288 Grove Street #391
Braintree, MA 02184

P.O. No: RQN: 9802

Project No.: 1009.073
Site Name: Cashman School
Location: Amesbury, MA
Sampler(s): Kevin Kavanaugh

G=Grab C=Composite

Lab ID:	Sample ID:	Date:	Time:	Type	Matrix	Containers: 4 oz Amber Glass (none)	Analyses: MCP 14 Metals Total	QA Reporting Notes: (check if needed)
SC59063-01	SSS-26	8/12/2020	08:40	G	Soil	1	X	MA RCS-1
-02	SSS-27	8/12/2020	08:45	G	Soil	1	X	MA RCS-1
-03	SSS-28	8/12/2020	09:15	G	Soil	1	X	MA RCS-1
-04	SSS-29	8/12/2020	09:35	G	Soil	1	X	MA RCS-1
-05	SSS-30	8/12/2020	09:45	G	Soil	1	X	MA RCS-1
-06	SSS-31	8/12/2020	10:00	G	Soil	1	X	MA RCS-1
-07	SSS-32	8/12/2020	10:15	G	Soil	1	X	MA RCS-1
-08	SSS-33	8/12/2020	10:30	G	Soil	1	X	MA RCS-1

QA Reporting Notes (check if needed):
☑ Provide MA DEP MCP CAM Rep
☐ Provide CT DPH RCP Report

QA/QC Reporting Levels
Standard

State specific reporting standard
MA RCS-1

☐ E-mail to:
EDD Format:

Condition upon receipt:
☐ Ambient ☐ Iced ☑ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

Relinquished by:	Received by:	Date:	Time:
	Storage after 4°C	8/12/20	15:35
		8/13/20	13:18
		8/13/20	17:8

1-cl/+1/2.4 #6

Batch Summary

2001425

General Chemistry Parameters

SC59063-01 (SSS-26)
SC59063-02 (SSS-27)
SC59063-03 (SSS-28)
SC59063-04 (SSS-29)
SC59063-05 (SSS-30)
SC59063-06 (SSS-31)
SC59063-07 (SSS-32)
SC59063-08 (SSS-33)

2001427

Total Metals by EPA 6000/7000 Series Methods

2001427-BLK1
2001427-DUP1
2001427-MS1
2001427-MSD1
2001427-SRM1
2001427-SRM2
SC59063-01 (SSS-26)
SC59063-02 (SSS-27)
SC59063-03 (SSS-28)
SC59063-04 (SSS-29)
SC59063-05 (SSS-30)
SC59063-06 (SSS-31)
SC59063-07 (SSS-32)
SC59063-08 (SSS-33)

2001428

Total Metals by EPA 6000/7000 Series Methods

2001428-BLK1
2001428-DUP1
2001428-MS1
2001428-MSD1
2001428-SRM1
SC59063-01 (SSS-26)
SC59063-02 (SSS-27)
SC59063-03 (SSS-28)
SC59063-04 (SSS-29)
SC59063-05 (SSS-30)
SC59063-06 (SSS-31)
SC59063-07 (SSS-32)
SC59063-08 (SSS-33)

APPENDIX I

COPY OF MASSDEP SOIL SAMPLE ALPHA LABORATORY REPORT

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, Naphthalene
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.
EPA TO-12 Non-methane organics
EPA 3C Fixed gases
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.

Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Department of Environmental Protection
Senator William X. Wall Experiment Station

Sample Tracking & Chain-of-Custody Record

Cooler Temperature at Receipt _____ °C

WES Sample Log-In Batch # _____

Agency-Bureau-Division-Region	Project Description	Analytical Laboratory (for samples sent to a laboratory other than WES)
Bureau: MassDEP	Name: Cashman School	Name:
Division/Unit: BWSC	Coordinator: Gidd 1198	Address:
☐ DEP WES ☐ DEP Boston	Phone #: 857-5218	
☒ DEP NERO ☐ DEP SERO	Fax #::	Contact:
☐ DEP CERO ☐ DEP WERO	RTN:	MA Cert#:
☐ Other Agency:	Case #:	Phone #:

Sample Lab ID (Batch # above plus # below)	Sample Field ID	Site Name	Field Locator (Within Site)	Sample Matrix Code*	Collector (last name, first initial)	Collection Date	Collection Time	Sample Preserv. Code #**	G/C***	Chlorine Residual (yes/no)	Analysis Requested
1	DEP S-1	Cashman School	Ath/league	SOIL	Giddings	8/12/20	8:15	N/A	G	—	AS
2	DEP S-2	↓	Field Ath/league	↓	↓	↓	8:30	↓	↓	—	
3	DEP S-3		Background				8:40			—	
4	DEP S4		Background				8:45			—	

Remarks:

Chain of Custody: *(Required, including signatures, for all samples submitted to WES Laboratories)*

Relinquished by:					Received by:				
Printed name	*Signature*	*Org.*	*Date*	*Time*	*Printed name*	*Signature*	*Org.*	*Date*	*Time*
Paul Giddings		MassDEP	8/13/20	9:56a		GEOFFREY GRACE	WNL	8/12/20	9:56

*** Matrix Codes**
AC = Air Canister
ACT = Air Cartridge Tube
AF = Air Filter
CPL = Commercial Product Liquid
CPS = Commercial Product Solid
DW = Drinking Water *(Treatment or distrib system)*
FBT = Fish/Biological Tissue
FEC = Feces/fecal matter
GRYW = Gray water
GW = Ground water
GWS = GW source for DW *(Incl. private wells)*
IWW = Industrial wastewater *(raw or treated)*
LL = Landfill leachate
LW = Liquid waste
ME = Marine/estuarine water
PT = Proficiency test sample
SED =-Sediment
SOIL = Soil
SRW = Surface water
SRWS = SRW source for DW
STW = Storm water/CSO
SW = Solid waste
TB or FB= Trip or field blank *(usually Type I Reagent Water)*
UN = Unspecified water/wastewater
WO = Waste oil
WW = Domestic wastewater *(raw or treated)*
WWS = Wastewater sludge *(raw or treated biosolids)*

**** Sample Preserv Codes**
1 = Cool ≤ 4° C
2 = pH < 2 with H_2SO_4
3 = pH < 2 with HNO_3
4 = pH < 2 with HCl
5 = pH > 12 with NaOH
6 = Ascorbic acid
7 = Filtered (0.45-µm pore size)
8 = Sodium thiosulfate ($Na_2S_2O_3$)
9 = Mercuric chloride ($HgCl_2$)
10 = Sodium sulfite (Na_2S)
11 = Ammonium chloride (NH_4Cl)
12 = Ethylenediamine
13 = EDTA
14 = Methanol
15 = Reagent Water (Type I)

***** G/C = Grab/Composite**

Rev. #3.1, March 2007
Document1

APPENDIX J

ARSENIC AND URANIUM IN WATER FROM PRIVATE WELL COMPLETED IN BEDROCK OF EAST-CENTRAL MASSACHUSETTS – CONCENTRATIONS, CORRELATIONS WITH BEDROCK UNITS, AND ESTIMATED PROBABILITY MAPS, JOHN A. COLMAN, USGS, SCIENTIFIC INVESTIGATIONS REPORT 2011-5013

USGS
science for a changing world

Prepared in cooperation with the
Massachusetts Department of Environmental Protection
and the Massachusetts Department of Public Health

Arsenic and Uranium in Water from Private Wells Completed in Bedrock of East-Central Massachusetts—Concentrations, Correlations with Bedrock Units, and Estimated Probability Maps

Scientific Investigations Report 2011–5013

U.S. Department of the Interior
U.S. Geological Survey

Cover photos:

A quartz-diorite bedrock formation at the road cut northeast of the I-495, I-290 intersection, in Marlborough, Massachusetts. Photos by Marcus Waldron.

Arsenic and Uranium in Water from Private Wells Completed in Bedrock of East-Central Massachusetts—Concentrations, Correlations with Bedrock Units, and Estimated Probability Maps

By John A. Colman

Prepared in cooperation with the
Massachusetts Department of Environmental Protection and the
Massachusetts Department of Public Health

Scientific Investigations Report 2011–5013

U.S. Department of the Interior
U.S. Geological Survey

U.S. Department of the Interior
KEN SALAZAR, Secretary

U.S. Geological Survey
Marcia K. McNutt, Director

U.S. Geological Survey, Reston, Virginia: 2011

Suggested citation:

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Contents

Figures

Tables

Conversion Factors and Datums

Multiply	By	To obtain
	Area	
square kilometer (km^2)	0.6214	square mile (mi^2)

Temperature in degrees Celsius (°C) can be converted to degrees Fahrenheit (°F) as follows: $°F = (1.8 \times °C) + 32$
Specific conductance is given in microsiemens per centimeter at 25 degrees Celsius (µS/cm at 25 °C).
Concentrations of chemical constituents in water are given in micrograms per liter (µg/L).

Acronyms and Additional Abbreviations

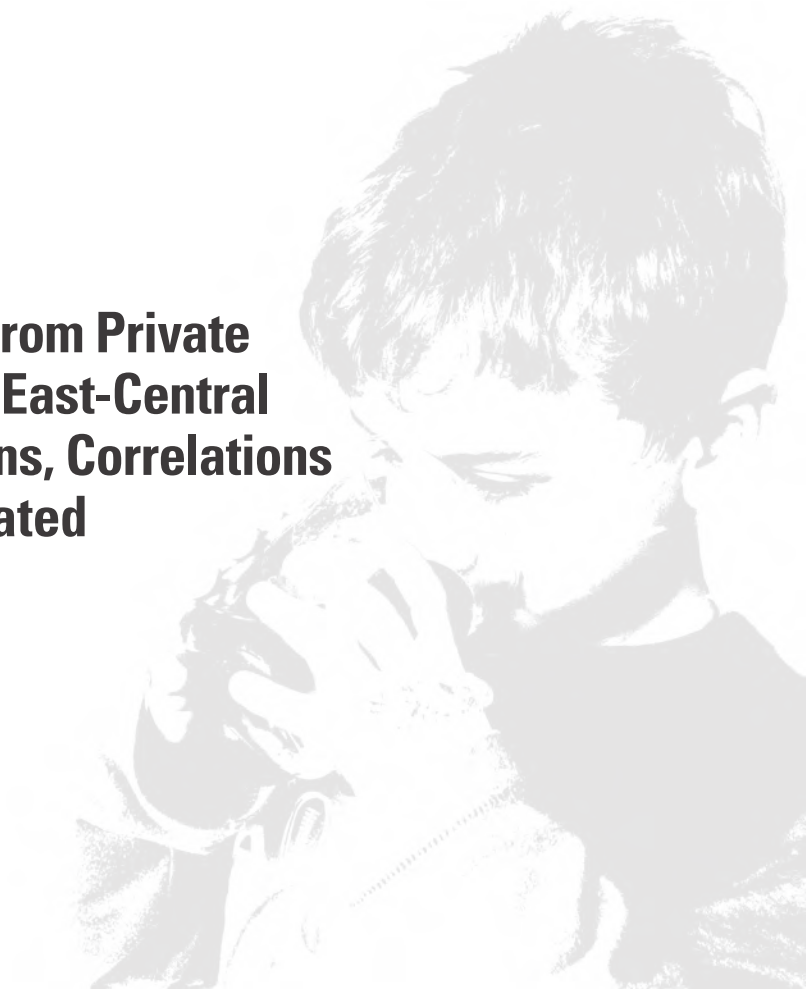
ANOVA	analysis of variance
GIS	Geographic Information System
MDEP	Massachusetts Department of Environmental Protection
MDPH	Massachusetts Department of Public Health
MCL	maximum contaminant level
µg/L	micrograms per liter
µS/cm	microsiemens per centimeter
mL	milliliter
NWQL	National Water Quality Laboratory
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey

Acknowledgments

This investigation would not have been possible without the participation of the many well users who sent in water samples for analysis. Discussion and project planning with the late Elaine Krueger was instrumental for development of the project. Support from the Massachusetts Department of Environmental Protection and the Massachusetts Department of Public Health is greatly appreciated.

Arsenic and Uranium in Water from Private Wells Completed in Bedrock of East-Central Massachusetts—Concentrations, Correlations with Bedrock Units, and Estimated Probability Maps

By John A. Colman



Abstract

Two U.S. Environmental Protection Agency drinking-water standards for public supplies involving groundwater contaminants that may derive from bedrock sources were promulgated between 2003 and 2006. A new arsenic drinking-water standard, a maximum contaminant level (MCL) of 10 micrograms per liter, became effective in January 2006. The non-radon radionuclides final standard took effect in December 2003, with an MCL for uranium of 30 micrograms per liter. This investigation, conducted in cooperation with the Massachusetts Department of Environmental Protection and the Massachusetts Department of Public Health, assessed the concentration ranges of arsenic and uranium in bedrock wells with reference to the new concentration standards, and associations of arsenic and uranium with bedrock units of the wells of east-central Massachusetts. The investigation focused on east-central Massachusetts, because State public bedrock-well databases indicate that arsenic concentrations in bedrock well water are elevated in that area. The project exploited the wide areal coverage of private wells to give the first detailed look at concentration distributions of arsenic and uranium through the high-arsenic zone of Massachusetts. The results establish statistical probabilities for elevated concentrations by bedrock unit at the scale of the State geologic map (1:250,000), which can guide future well-water testing, treatment, and supply development.

Well sampling was from 478 randomly selected wells by private-well users who were sent sampling-kit bottles with instructions and a water-use questionnaire. Results indicated that 13 percent of the randomly selected wells contained water with concentrations greater than the drinking-water standard established for public wells for arsenic, and 3.5 percent were greater than the standard for uranium. Arsenic and uranium did not in general co-occur in water of a given well. Of the wells with concentrations exceeding the standards, the questionnaire results indicated that 66 percent were being used for drinking water without treatment for arsenic, and 93 percent were being used without treatment for uranium.

Statistical analysis of the results indicated that distributions of arsenic and uranium concentrations grouped by bedrock unit were log normal. Statistically significant differences were found among distributions by bedrock unit for both arsenic and uranium. However, a zone of elevated concentrations of arsenic was found in groundwater west of the Clinton-Newbury fault (a boundary between two geologic terranes), where correlation between arsenic concentrations and the bedrock units was not significant.

Increased sampling in the investigation was directed in the regions of three 1:24,000 (7.5-minute) quadrangles where recent detailed geologic mapping had been conducted. Improved correlations of arsenic and uranium with bedrock unit were measured for two of the three quadrangles compared to the correlations made for the statewide map.

Cumulative distribution frequencies of concentrations grouped by rock unit or area (zone of elevated arsenic concentration) were used to assess the probability of wells having concentrations exceeding the drinking-water standards. The probabilities were mapped and applied to the estimated number of private wells in the study area to determine the likely number of wells in the study area with concentrations exceeding the standards. For arsenic and uranium, respectively, about 5,700 and 3,300 wells were estimated to contain concentrations exceeding the standards. Estimates for arsenic may approach the total number for the State, because the study area covered the principal known area of elevated arsenic concentrations.

Introduction

Two U.S. Environmental Protection Agency (USEPA) drinking-water standards involving groundwater contaminants that may derive from bedrock sources were promulgated between 2003 and 2006. A new maximum contaminant level (MCL) standard of 10 micrograms per liter (µg/L) for arsenic in drinking water became effective in February 2002, with compliance required by January 2006. The non-radon radionuclides final rule took effect in December 2003, with an MCL for uranium of 30 µg/L. The standards apply to public water supplies. In Massachusetts, the Massachusetts Department of Environmental Protection (MDEP) recommends that the standards also be used as guidelines for private supplies (Massachusetts Department of Environmental Protection, 2008).

Private water supply in Massachusetts, exclusive of the sand and gravel aquifers of the southeastern part of the State, is obtained primarily from wells drilled in bedrock (Hansen and Simcox, 1994). Bedrock water sources also are used for small commercial water supplies and, in some locations, for moderate to large municipal and industrial supplies (Hansen and Simcox, 1994; Lyford, and others 2003). Tens of thousands of private and public bedrock wells are used in the State —91,000 private bedrock wells were estimated for the bedrock geologic units investigated in this study.

Arsenic has long been known to be present in water from bedrock wells in east-central Massachusetts (Zuena and Keane, 1985; Ayotte and others, 2003; 2006), and the State straddles an arsenic belt that extends from Connecticut to New Brunswick, Canada. Elevated uranium concentrations in water from bedrock wells have been associated with igneous rock throughout New England, but also are present in water from other crystalline rock aquifers in the region (Ayotte and others, 2007). This investigation, conducted by the U.S. Geological Survey (USGS) in cooperation with the Massachusetts Department of Environmental Protection (MDEP) and the Massachusetts Department of Public Health (MDPH), was designed to assess the concentration ranges and associations of arsenic and uranium with reference to the new concentration standards and to the classifications of the bedrock geologic units (hereafter bedrock units) in which the wells are drilled. The results can be used to establish statistical probabilities for elevated concentrations by bedrock unit, which can guide future well-water testing, treatment, and supply development.

Purpose and Scope

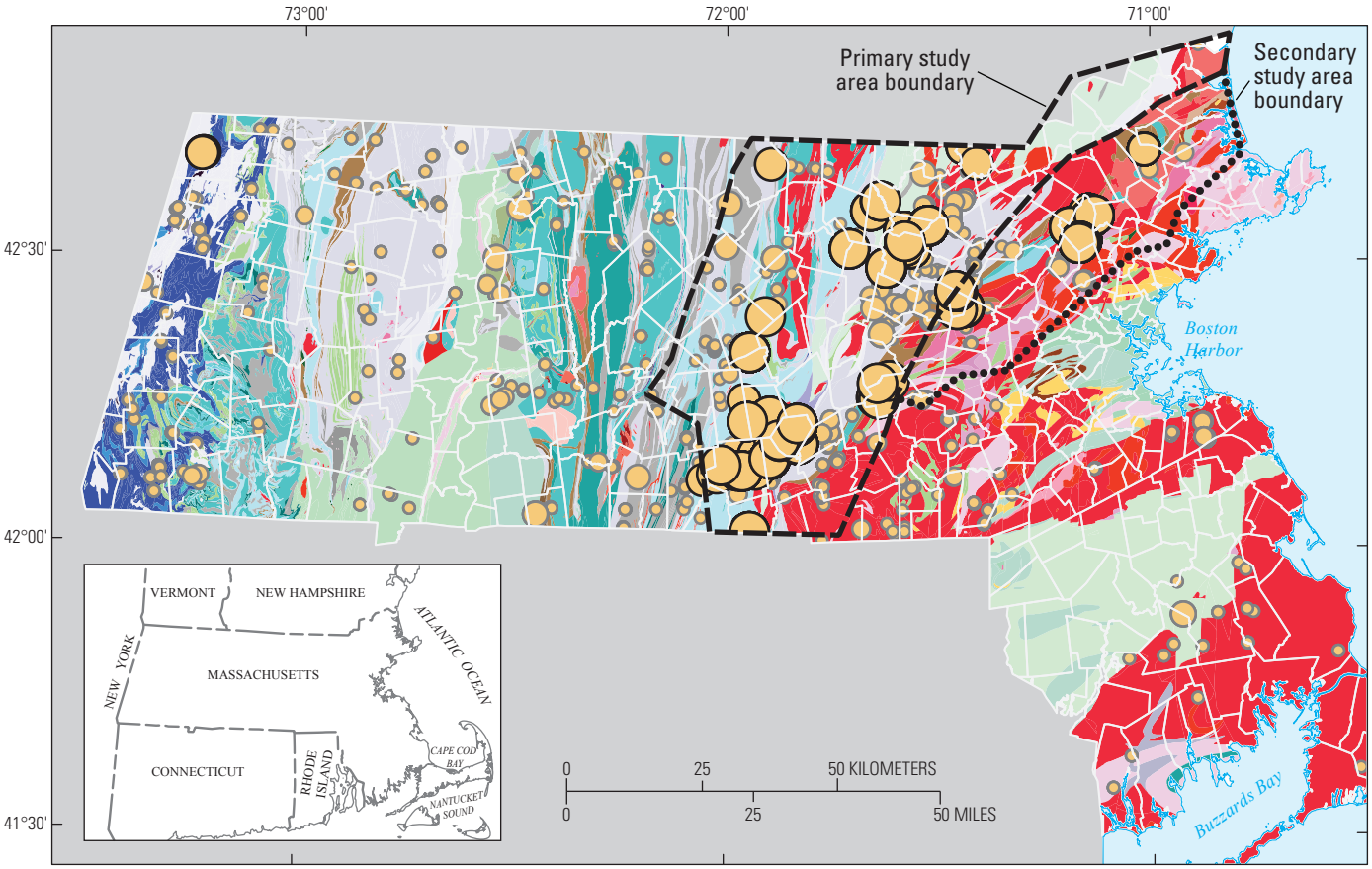
Information about bedrock associations of arsenic and uranium with bedrock well water are needed in Massachusetts to guide future well-water testing, treatment, and supply development. Probability distributions of well-water contaminants by bedrock unit will indicate the likelihood of contamination at a given concentration. Maps of these probabilities can be used to determine the likelihood of the presence of elevated arsenic or uranium concentrations in water of new wells in a given location or for directing testing priorities for existing wells.

The study encompasses the east-central arsenic belt in Massachusetts (fig. 1), the location of nearly all contamination of bedrock wells in the State by arsenic from a natural source. Many but not all wells contaminated by uranium are included in the same area, although igneous rocks, and likely uranium contamination, also occur outside the arsenic belt.

The principal focus of this report is the collection and interpretation of new data from 478 private bedrock wells. The amount of existing unpublished MDEP data from public bedrock wells is large, however, and may substantially supplement the number of observations per bedrock unit. The public bedrock-well data were used for qualitative analysis of the extent of contamination of bedrock units. The newly collected data were used to compute statistics of contaminant distribution. A reporting goal is to produce maps showing the probability statistic that concentrations of arsenic or uranium in well water exceed the drinking-water standards.

Health Effects of Arsenic and Uranium

Health effects from exposure to elevated concentrations of arsenic in drinking water have been established from studies in countries with very elevated levels of arsenic in water supplies, especially Taiwan (Smith and others, 1992; Lamm and others, 2003). Inorganic arsenic is well documented as a human carcinogen of the bladder, lungs, and skin (Centeno and others, 2007). Inorganic arsenic has also been demonstrated to affect many other organ systems, including the gastrointestinal, hepatic, cardiovascular, nervous, renal, and hematopoietic systems. A recent interest in arsenic in drinking water in the northeastern part of the United States relates to possible correlations with increased rates of bladder cancer in the region (Devasa and others, 1999; Ayotte and others, 2006). Epidemiological results demonstrating links between arsenic and health problems involve concentrations greater than the current USEPA drinking-water standard by an order of magnitude or more (National Research Council, 2001). Risk levels at



Base geology from Zen and others (1983), digitized by Nicholson and others (2007), scale 1:250,000, NAD 1983, StatePlane Massachusetts Mainland FIPS 2001, Lambert Conformal Conic projection

EXPLANATION

Town boundary

Arsenic, in micrograms per liter—Black-border symbols indicate concentrations greater than the U.S. Environmental Protection Agency public drinking-water standard

- < 1
- 1 – < 5
- 5 – < 10
- 10 – < 20
- 20 – 1,000

Figure 1. Arsenic concentrations in public bedrock wells in Massachusetts, 2008. Data from the Massachusetts Department of Environmental Protection. See figure 3 and appendix 1 for explanation of bedrock units in the east-central part of Massachusetts. <, less than

the standard are determined by extrapolation from the higher exposure studies. The National Research Council review for the National Academy of Science estimated the bladder cancer risk at about 12 to 23 per 10,000 persons with lifetime consumption of drinking water at 10 µg/L, the current public supply drinking-water standard. Lung cancer risk is estimated at about 14 to 19 per 10,000 persons at 10 µg/L (National Research Council, 2001).

Little is known about the long-term health effects on humans of exposure to low-level environmental uranium. Studies of occupationally exposed persons, such as uranium miners, have shown that the major health effect of uranium in the body is renal (kidney) toxicity (Leggett, 1989; Taylor and Taylor, 1997).

A discussion of the health effects of uranium in New England can also consider the effects of radium and radon, which are associated with uranium in crystalline bedrock aquifers (Ayotte and others, 2007). The association arises from the radioactive decay chain of uranium, which results in radium, through several radioactive decay product precursors. Radium decays directly to short-half-lived radon (3.8 days). Decay of radon results in four short-lived daughters and then longer-lived lead (22 years). Where uranium in drinking water is measured greater than the standard, analyses for radium and radon also could be done. Depending on the analysis technique, differential costs of analyses of the radionuclides means that uranium analysis may be an inexpensive indicator (when compared to gross alpha analysis) for determining the presence or absence of other radionuclides.

Previous Investigations

Several previous water-quality investigations exist for arsenic in New England and areas of Massachusetts. Investigations of uranium are more limited and cover the entire Northeast. The first published investigation to address the concerns of arsenic concentrations in private bedrock wells of New England referred to southeastern New Hampshire (Boudette and others, 1985). Bedrock and anthropogenic sources were analyzed, and the conclusion was drawn that the source was probably anthropogenic. A similar investigation of arsenic wells in Buxton, Maine, concluded that the likely source was bedrock (Marvinney and others, 1994). A three-town investigation in southern New Hampshire, very similar to the present Massachusetts investigation, reported the percentages of arsenic samples with concentrations greater than the 10 µg/L standard by bedrock unit (Montgomery and others, 2003). Several New England-based investigations have evaluated the risk for arsenic occurrence in the region—number of wells affected and probability maps of concentrations greater than or equal to 5 µg/L (for example, Karagas and others, 2002; Ayotte and others, 2003; 2006). Ayotte (2006) used a logistic regression based on many geologic, hydrologic, and anthropologic statistics for the region. A nationwide investigation of contaminants in private wells of selected aquifers included distribution plots of arsenic concentrations for the New England bedrock aquifer (DeSimone, 2009). The New England aquifer was the only aquifer investigated in the eastern United States with elevated concentrations of arsenic in private wells.

One survey of arsenic in private wells from Massachusetts is available from an investigation in Pepperell, Massachusetts (SEA Consultants, 1985). Water was analyzed from 300 wells, and 12 percent of them had concentrations that exceeded the 50-µg/L USEPA standard that was in effect at that time. Attempts to distinguish natural sources of arsenic in bedrock from anthropogenic sources, such as pesticides applied to orchards, were not successful.

Finally, a geologically based review of arsenic presence in the Northeast was published by Peters (2008). The investigation discusses arsenic presence in overburden and bedrock wells from natural and anthropogenic sources. Peters (2008) showed that arsenic concentrations were not correlated with iron concentrations in bedrock well water, and that elevated arsenic concentrations were associated with contacts between metamorphic and intrusive igneous rock.

Uranium was included in the DeSimone (2009) survey of private wells, including several overstandard samples in the New England crystalline-rock aquifers, but the study involved few samples from Massachusetts. In an investigation summarizing uranium and radon data from the northern United States, a correlation was found between uranium, radium, and radon in the New England bedrock aquifer (Ayotte and others 2007). Of the nine northern aquifers investigated, median concentrations of radon and uranium were highest and third highest, respectively, in the New England bedrock aquifer.

Investigative Design

The investigative design followed that of Montgomery and others (2003) in southeastern New Hampshire, addressing the correlations between bedrock units and concentrations of arsenic and uranium. The intent in this study was to cover the known elevated-arsenic areas in Massachusetts so that the assessment of arsenic contamination in the State would be advanced as much as possible. However, future studies may be necessary to characterize other parts of the State with limited areas of elevated arsenic.

Study Area

The primary study area (fig. 1), in east-central Massachusetts, was chosen to include the area of elevated results (greater than or equal to the USEPA drinking-water standard for public supplies, 10 µg/L) of arsenic in public wells (primarily bedrock) published from the MDEP database (Ayotte and others, 2003). Data reviewed after initiation of the project (J.A. Cerutti, Massachusetts Department of Environmental Protection, written commun., 2008; Ayotte,

2006) indicated additional elevated concentrations to the east of the principal study area and one elevated value in the northwest (fig. 1). The primary study area was augmented with a secondary study area (fig. 1) to cover the elevated concentrations in the east. By including the areas of known elevated concentration, the investigation would define arsenic occurrence in the principal areas of Massachusetts where concentrations could be expected to exceed the drinking-water standard.

Although the project study areas were determined on the basis of concentrations of arsenic in bedrock wells, the areas were also appropriate for investigation of uranium (fig. 2). MDEP data show that the arsenic-defined areas include many of the elevated concentrations of uranium in the State. The MDEP uranium coverage is less extensive than that for arsenic, so uranium concentrations are unknown in some areas. Not all of the bedrock units that may have elevated uranium were characterized in the present investigation; however, enough elevated-concentration units were included that correlations between uranium and bedrock unit would be apparent if uranium were controlled by rock type.

The distribution of bedrock units of crystalline igneous and metamorphic rocks in the study area is complex (fig. 3). The study area is crossed by major faults that divide parts of three geologic terranes that include the Merrimack belt, the Nashoba zone and the Milford-Dedham zone (Hatch, 1991, p. v, fig. 2). The primary study area includes most of the Merrimack belt, which extends from the Connecticut Valley belt (indicated by the Merrimack belt western boundary in fig. 3) to the Clinton-Newbury fault (fig. 3), and the western half of the Nashoba zone, which extends from the Clinton-Newbury fault to the Bloody Bluff fault (fig. 3). The secondary study area includes the remainder of the Nashoba zone and the western edge of the Milford-Dedham zone, which begins at the Bloody Bluff fault and extends to the east.

Geologic units are as defined in the digitized version (Nicholson and others, 2007) of the bedrock map of Massachusetts (Zen and others, 1983). The use of these maps to define geologic units for wells is, of course, only as accurate as could be determined from a 1:250,000-scale map. There is the chance that wells near a bedrock boundary may not be correctly assigned to a bedrock unit. Bedrock wells are on the order of 100 m deep and unscreened in their bedrock portions. As such, they may encounter geologic units at depth that are different from units as mapped at the surface. But, due to the scale of the map (1:250,000), only the major rock type is shown at the location of the borehole. For example, a borehole study in a 305-m deep well in Tyngsborough, Mass., is located in the Ayer Granite bedrock unit SOad, but the borehole contains xenoliths of the host metasedimentary Berwick Formation (unit Sb) (Pierce and others, 2007). The level of detail seen in boreholes cannot be displayed on a State-scale map, and detailed studies of individual boreholes are beyond the scope of this regional study.

Sampling Distribution

Well locations were chosen for the study areas by stratified random selection across the bedrock units. Previous arsenic-concentration data (Ayotte and others, 2003; Joseph Cerutti, unpub. data, 2008) indicated that arsenic was more prevalent in the 69 bedrock units of the primary study area, so more sampling was directed at this area. One sampling objective was to collect at least seven samples per bedrock unit so that statistical inference could be made even for small units. So that large units would have coverage throughout their extent, a second objective was applied to supplement the initial seven samples by an additional one sample per 20 km^2 for units 20 km^2 and larger. The largest unit, the Paxton Formation (Sp), is 822 km^2, so the sampling objective for this unit was 48 wells. In the secondary area, the selection objective was 5 wells for each of the 12 bedrock units investigated.

Although a minimum of seven sites per unit in the primary study area was desired, some small units did not have this number of private wells (or even residences) available. Also, areas with public water supplies were necessarily excluded from the investigation, which left gaps in data for some units. These unavoidable exclusions of sampled areas biased the study toward areas where bedrock wells existed.

Wells were selected using randomly generated geo-coordinates and matching closest Google-Earth determined locations of well addresses to well lists provided by the Massachusetts Department of Conservation and Recreation. Locations of the selected sites were moved from the street locations provided by Google Earth to positions of the building at that address using field observations of addresses and buildings, and georeferenced ORTHO photos (Massachusetts Office of Geographic Information (MassGIS), 2005).

Increased sampling in the investigation was directed in the regions of three 1:24,000 (7.5 minute) quadrangles where recent detailed geologic mapping had been conducted. Comparisons of correlations of arsenic and uranium with geologic units based on 1:250,000-scale mapping to those based on more recent 1:24,000-scale mapping could indicate the efficacy of remapping for arsenic and uranium delineation and for correlation with bedrock.

Sample Collection and the Well-User Questionnaire

Samples were collected by private well users during spring and summer of 2009, using bottles included in a sampling kit mailed to the residence at the location of the well. The kit included two labeled 125-mL bottles, a business reply Tyvek® envelope, and a questionnaire to determine water-use practices at the site, as well as to inform the bottle recipients about the program and how to collect the water sample (app. 2). Twice as many sampling kits were mailed out compared to the number required to meet the sampling

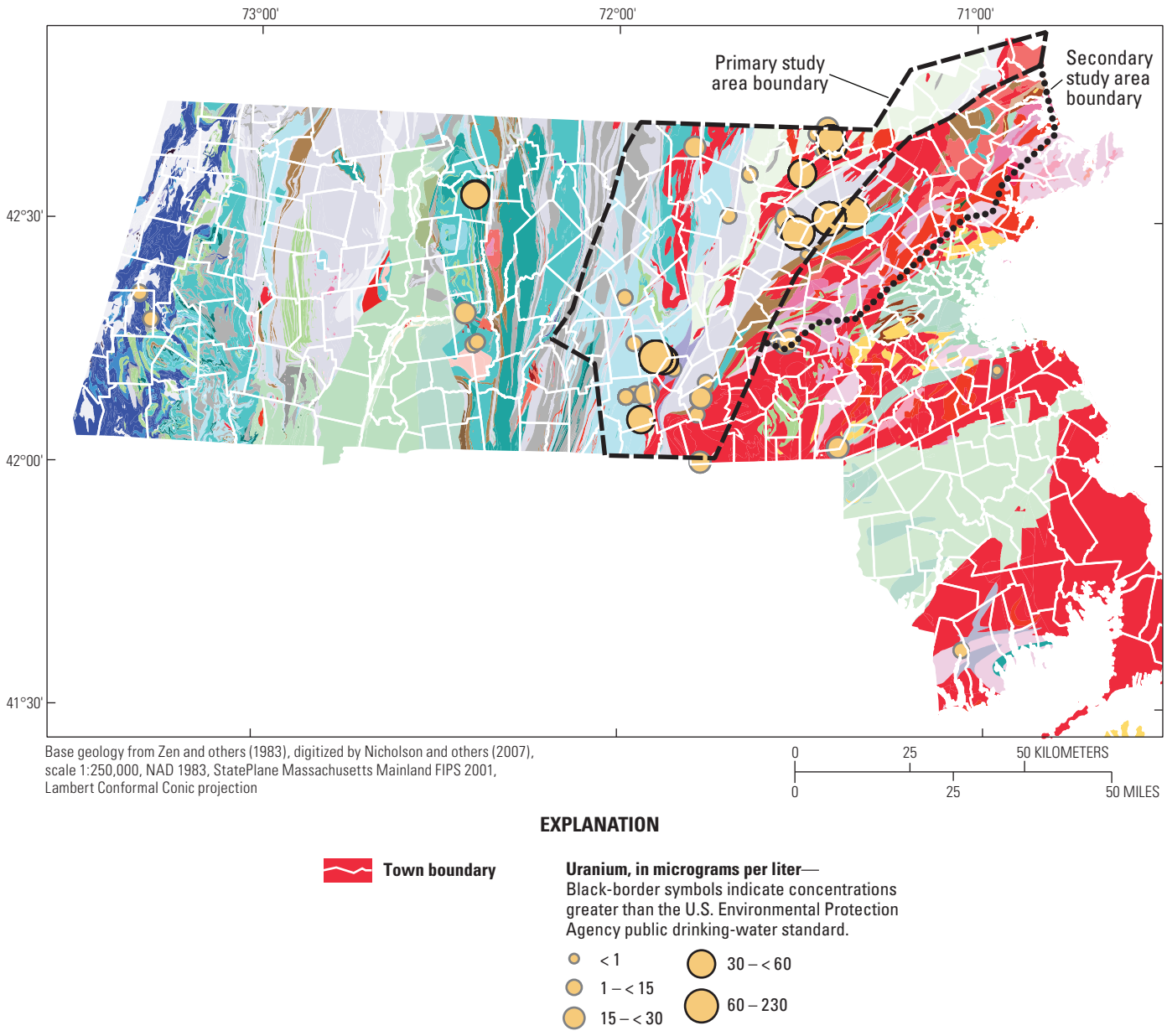


Figure 2. Uranium concentrations in public bedrock wells in Massachusetts, 2008. Data from the Massachusetts Department of Environmental Protection. See figure 3 and appendix 1 for explanation of bedrock units in the east-central part of Massachusetts. <, less than

objective for each rock type. A 50-percent return rate was expected, based on return rates from a similar investigation in New Hampshire (Montgomery and others, 2003). Well users were given 1 month to reply before a followup card was sent. If no reply had been received by 2 months after the followup card, the site was dropped from the study.

Sample Processing and Analytical Methods

All samples were collected by the residents living at the addresses selected for sampling. The samples were returned in a Tyvek® envelope by mail to the USGS office in Northborough, Mass. Samples intended for trace-constituent analysis were acidified to a pH less than 2 in the Northborough laboratory with 0.4-mL analytical-grade concentrated nitric acid (HNO_3). The acidified samples were sent to the USGS National Water Quality Laboratory (NWQL) in Denver, Colo., for analysis as listed in table 1. At the laboratory, samples were subject to an in-bottle acid digestion before analysis so that results represented total constituent values.

Supplemental Data

Additional data (1997 to 2007) on arsenic and uranium in bedrock wells were retrieved from the database of the MDEP (Joseph Cerutti, unpub. data, 2008) (figs. 1 and 2). The data were from analyses of water in public wells and were screened to include only data from bedrock wells. Although the results likely were relevant to the investigation, some differences prevented a simple combination of the data with that collected during this investigation. Different and multiple laboratories (State certified) were used for the analyses for MDEP data than were used for the USGS data. Greater water use may be expected from the public wells in the MDEP database compared to the private wells in the USGS database. The MDEP data were used to help define the areal distribution of arsenic and uranium but were not used in statistical summaries of occurrence of these constituents.

Statistical Comparisons

Parametric statistical tests were used, which are appropriate if normality or any other specific distribution (log normal in this investigation) can be assumed (Iman and Conover, 1983). Analysis of associations of concentration with bedrock unit was determined by one-way analysis of variance (ANOVA) on log-transformed concentration data, using the statistical software package Minitab 16®. Cumulative distribution functions with 95-percent confidence intervals were determined for concentration populations grouped by bedrock unit by fitting data to a log-normal distribution, using the statistical software package Minitab 16® with the options for distribution analysis, and arbitrary data censoring. For bedrock units with fewer than five analyses with concentrations exceeding the analytical reporting limit, the option to assume a common scale was used in the distribution fitting.

The statistical software package SPLUS® was used to compare geologic mapping techniques and the correlation with arsenic and uranium concentrations. The comparisons were made with a multiple linear regression of log-transformed data.

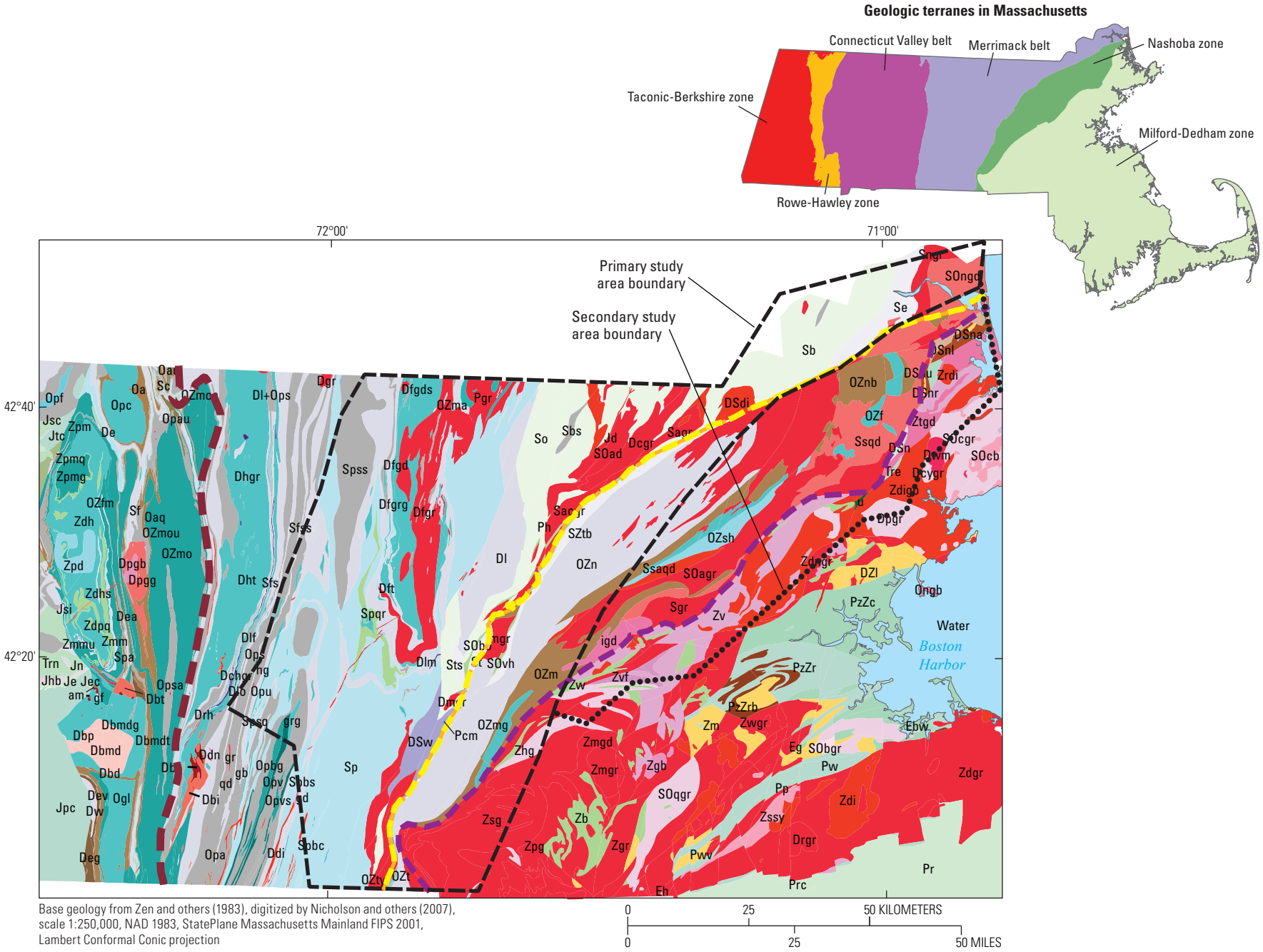
Arsenic and Uranium Concentrations and Correlations with Bedrock Units

The ranges and correlations of arsenic and uranium concentrations among bedrock units are the focus of this project. The project objective is to use the correlations to guide future well-water testing, treatment, and supply development.

Quality Assurance and Other Data Attributes

During the investigation, 60 quality-assurance samples were analyzed for iron, manganese, arsenic, and uranium. The quality-assurance samples included sampling-bottle and preservation-acid blanks, a standard-reference sample, resampling, duplicate sampling, and sample splits (table 2). Quality-assurance results of the blank samples showed that possible contamination did not occur during sampling, during sample handing, or from sampling materials (the bottles and preservation acid). All concentrations measured for the four sampling-bottle blanks during the study were below the reporting limits (table 1) for the respective analytes (table 2). Four samples of standard reference solution (USGS T-195) submitted to the NWQL as blind samples were generally within 5 percent of the known values. Average percent errors (average, in percent, of the absolute difference between replicate pairs divided by the average of the replicates) increased for all elements in the comparison series: split samples, duplicate samples separated by 5 minutes, and duplicate samples separated by months (average interval of 80 days). The error increase reflected variability in samples over time—small, but measureable for samples collected within 5 minutes, and larger for samples collected months apart.

Variability of concentrations over time was investigated by analysis of 48 duplicate samples. USGS personnel visited 12 randomly chosen wells where three samples were collected at each well: duplicate samples within 5 minutes and a third sample to compare with the original sample collected by the well user. Results showed that repeatability for samples collected sequentially at one visit was very good, but that substantial variation can occur for a well sampled over time (fig. 4). Sampling error from additional sources is possible in resampling over time, including the possibility of sampling from different water taps by mistake.



Base geology from Zen and others (1983), digitized by Nicholson and others (2007), scale 1:250,000, NAD 1983, StatePlane Massachusetts Mainland FIPS 2001, Lambert Conformal Conic projection

EXPLANATION

Rock type	Bedrock
alkali-granite (alaskite)	Dcygr Dpgr SOcgr SOqgr Zagr Zhg
amphibolite	am Dea Oa Opa OZm OZmoa OZnb Spa
andesite	DSna
argillite	Ebw Eh PzZc
arkose	Jm Jn Trn
augen gneiss	Opau
basalt	DSnl
biotite gneiss	Opau Opvs OZfm OZmo Zpm Zpmg
calc-silicate rock	Sfs
conglomerate	Jec
dacite	Dbd
diabase	Jd
diorite	Ddi Ddn di DSdi Ssaqd Zdi Zdigb Zrdi
felsic gneiss	Dlf Opf
felsic metavolcanic rock	Zvf
gabbro	Dpgb gb Ongb Zgb
gneiss	Drh OZsh OZtf Zpd
granite	Dcgr Cmgr Drgr gr mgr Pgr Sacgr Sagr Sgr Sngr SOad SOagr Zdgr Zdngr Zgr Zmgd Zmgr Zpg Zsg Zwgr
granitic gneiss	Dbmdg Dchgr Dfgd Dfgds Dfgrg Dhgr Dht grg Ogl Opc OZf OZmg Zdh

Rock type	Bedrock
granodiorite	Dgd gd igd Ztgd
granofels	De gf Sf Sp Spbc Spbs
granulite	Deg
hornblendite	Dbh Oau
mafic gneiss	Dchh Dlo hg Opv
mafic volcanic rock	PzZrb
marble	Dlm
metasedimentary rock	Sb So
metavolcanic rock	Zv
mica schist	Dev Dl+Ops Ops Opsa OZty Sbs Sfss
monzonite	Dwm
mudstone	DSnu
mylonite	Jfg
paragneiss	OZma
pegmatite	Dpe
peridotite	Dbp OZmou Zmmu
phyllite	Dgm Se SObo Sts SZtb
porphyry	SObgr
quartz diorite	Dbi
quartz monzodiorite	Dbmd Dbmdt

Rock type	Bedrock
quartzite	Eg Oaq PZfmg SOvh Soqr St Zb Zdpq Zpmq Zw
rhyolite	DSnr DZl Pwv Zm
sandstone	Je Jsm Jt Pr Prc
schist	Dl Dw OZn OZt Spsq Zdhs Zmm
sedimentary breccia	Jma
sedimentary rock	DSn
serpentinite	u
slate	DSw Pcm
syenite	SOcb Zssy
tonalite	Dbt Dft Dpgg SOngd Ssqd
tuff	Jgb
ultramafic intrusive rock	Opu

Merrimack belt western boundary

Bloody Bluff fault

Clinton-Newbury fault

Figure 3. Bedrock units and principal faults in the project study area of east-central Massachusetts. See appendix 1 for explanation of bedrock units. Map colors from Moyer and others, 2005.

Table 1. Chemical analytical methods used in the arsenic and uranium study, east-central Massachusetts, 2009.

[NWQL, U.S. Geological Survey National Water Quality Laboratory, Denver, Colo.; NA, not applicable; ºC, degrees Celsius]

Constituent	Units	Method	Reporting limit	Method reference
Acid neutralizing capacity	Milligrams per liter as calcium carbonate	Auto titrator at the USGS Northborough lab	NA	Rounds, 2006
Conductance	Microsiemens per centimeter at 25 °C	Orion conductance probe at the USGS Northborough lab	NA	Radtke and others, 2005
pH	pH log units	Initial pH from alkalinity titration at the USGS Northborough lab	NA	Ritz and Collins, 2008
Arsenic	Micrograms per liter	In-bottle acid digestion followed by collision/reaction cell inductively coupled plasma/collider mass spectrometry at NWQL	0.2	Garbarino and others, 2006; Garbarino and Struzeski, 1998
Iron	Micrograms per liter	In-bottle acid digestion followed by inductively coupled plasma-atomic emission spectroscopy at NWQL	14	Garbarino and others, 2006; Garbarino and Struzeski, 1998
Manganese	Micrograms per liter	In-bottle acid digestion followed by inductively coupled plasma/collider mass spectrometry at NWQL	0.4	Garbarino and others, 2006; Garbarino and Struzeski, 1998
Uranium	Micrograms per liter	In-bottle acid digestion followed by inductively coupled plasma/mass spectrometry at NWQL	0.02	Garbarino and others, 2006; Garbarino and Struzeski, 1998

Return Rates for the Water Samples

Of the total 1,580 sample kits sent to well users, samples from 478 wells were returned, a 30-percent return rate. The low return rate resulted in several bedrock units that had too few samples for statistical analysis.

Water Use and Water Quality at Sampled Wells

Results from the returned questionnaires indicate that 91 percent of the respondents use their well water for drinking. Many users treat the water in some way including softening, radon removal, arsenic removal, and reverse osmosis. Of the respondents with wells having arsenic concentrations exceeding the drinking-water standard, however, 66 percent were using water for drinking without treatment. Of the respondents with wells having uranium concentrations exceeding the standard, 93 percent were using water for drinking without treatment. The statistic included one respondent that was not using the water for drinking because it had not been tested. Thus, none of the respondents with wells having uranium concentrations exceeding the standard were treating the water for uranium removal.

Arsenic Concentrations

Arsenic concentrations in the complete dataset ranged from less than 0.2 µg/L (less than the laboratory reporting limit) in 24 percent of all samples tested to 1,540 µg/L. Of the 344 randomly selected samples (excluding intensive quadrangle sampling), 13 percent exceeded the 10 µg/L drinking-water standard. For randomly selected samples from the primary study area, a slightly larger fraction of samples,

Table 2. Quality-assurance results for arsenic, iron, manganese, and uranium.

[USGS, U.S. Geological Survey]

Quality-assurance measure	Details	Number of samples	Result
Bottle blanks	Sample bottles had been sent out in mailers, and were preserved with acid	4	All concentrations were less than the method detection limit
Standard reference samples	USGS standard reference water sample, number T-195	4	Mean relative errors were Arsenic: 4.9 percent Iron: 2.4 percent Manganese: 0.62 percent Uranium: 5.6 percent
Sample splits	One sample split for two analyses	13	Mean relative errors were Arsenic: 3.8 percent Iron: 1.8 percent Manganese: 6.2 percent Uranium: 0.74 percent
Duplicates at one time	Samples collected sequentially on one sampling occasion	13	Mean relative errors were Arsenic: 5.8 percent Iron: 11.3 percent Manganese: 15.1 percent Uranium: 3.3 percent
Duplicates over time	Two samples collected on different sampling days	13	Mean relative errors were Arsenic: 49.5 percent Iron: 80.1 percent Manganese: 61.2 percent Uranium: 74.3 percent

15 percent, exceeded the standard. Concentrations of arsenic were not elevated in the 18 samples west of the primary study area, but some elevated concentrations were measured in the secondary study area, located east of the primary study area (fig. 5). Elevated concentrations can exist near low concentrations in the same bedrock unit, similar to distributions measured in other New England studies (Montgomery and others, 2003).

Arsenic Correlations with Bedrock Units

Arsenic concentrations in well water vary depending on the bedrock unit (fig. 6). Generally, concentrations are not narrowly distributed but rather extend above and below the median concentration for the bedrock unit by an order of magnitude or more. Although there are no bedrock units with elevated concentrations that do not also include low concentrations, there are some units with only low concentrations. One of the lowest-concentration units, Ops, is on the western edge of the study area, confirming the western limit to the elevated-concentration area in east-central Massachusetts. Each of the rock classifications of metamorphic, metamorphic with igneous intrusive, and igneous includes low-concentration and elevated-concentration units.

The variation within a bedrock unit indicates that median concentrations cannot be used for accurate predictions of concentrations in a unit. Concentrations in bedrock units are generally log normally distributed, so parametric statistical tests can be used to determine whether bedrock units and concentrations are related, or if distributions among bedrock units are significantly different. If a relation exists, probabilities of a bedrock well containing a given concentration may be calculated for each bedrock unit from cumulative distribution frequencies.

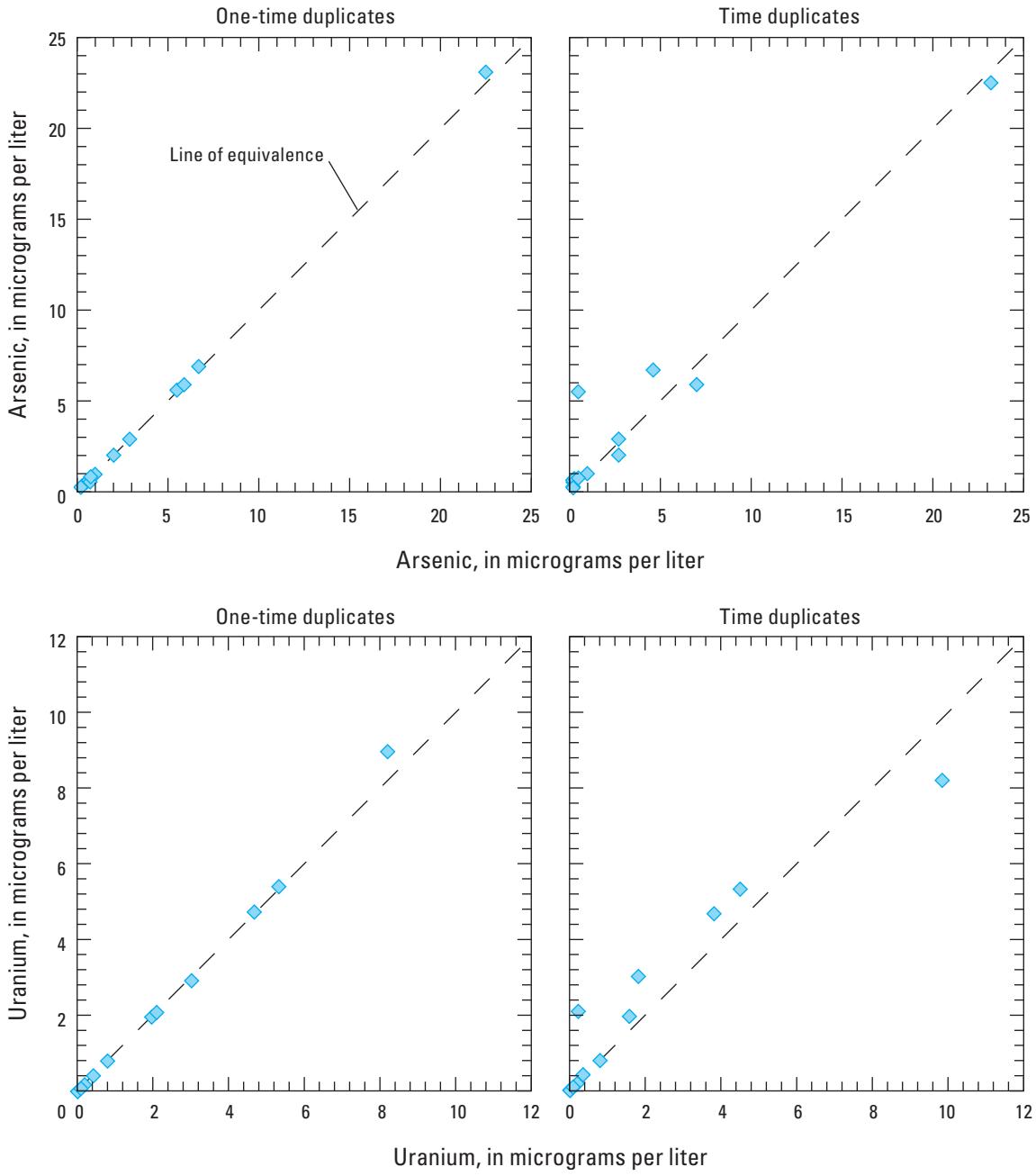


Figure 4. Arsenic and uranium sample duplicates collected on the same day and after about 80 days, east-central Massachusetts, 2009.

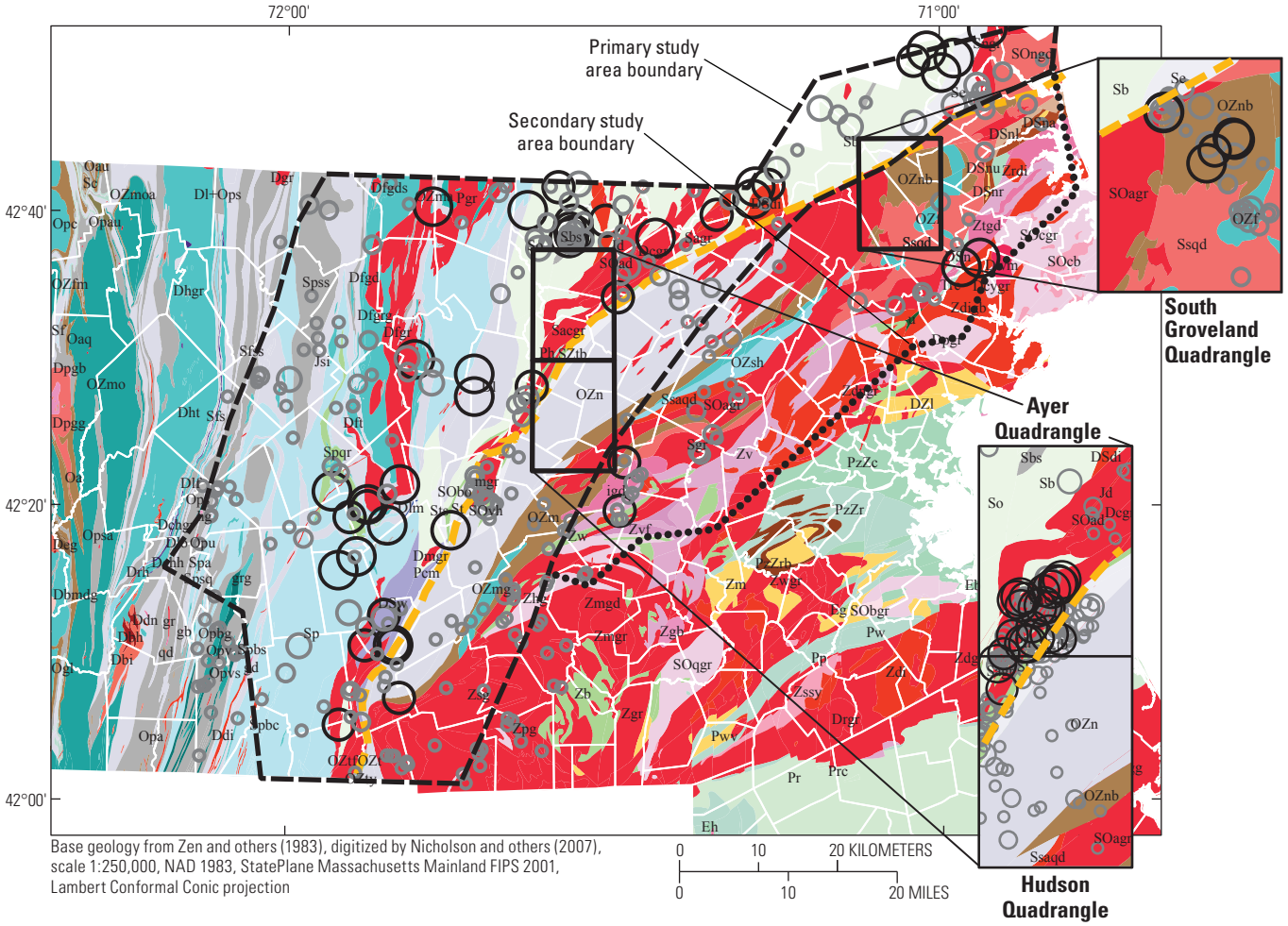


Figure 5. Arsenic concentrations in east-central Massachusetts, 2009. Sampling coverage was increased in the areas of the insert maps where geology was mapped at the 1:24,000 scale. See figure 3 and appendix 1 for explanation of bedrock units. <, less than

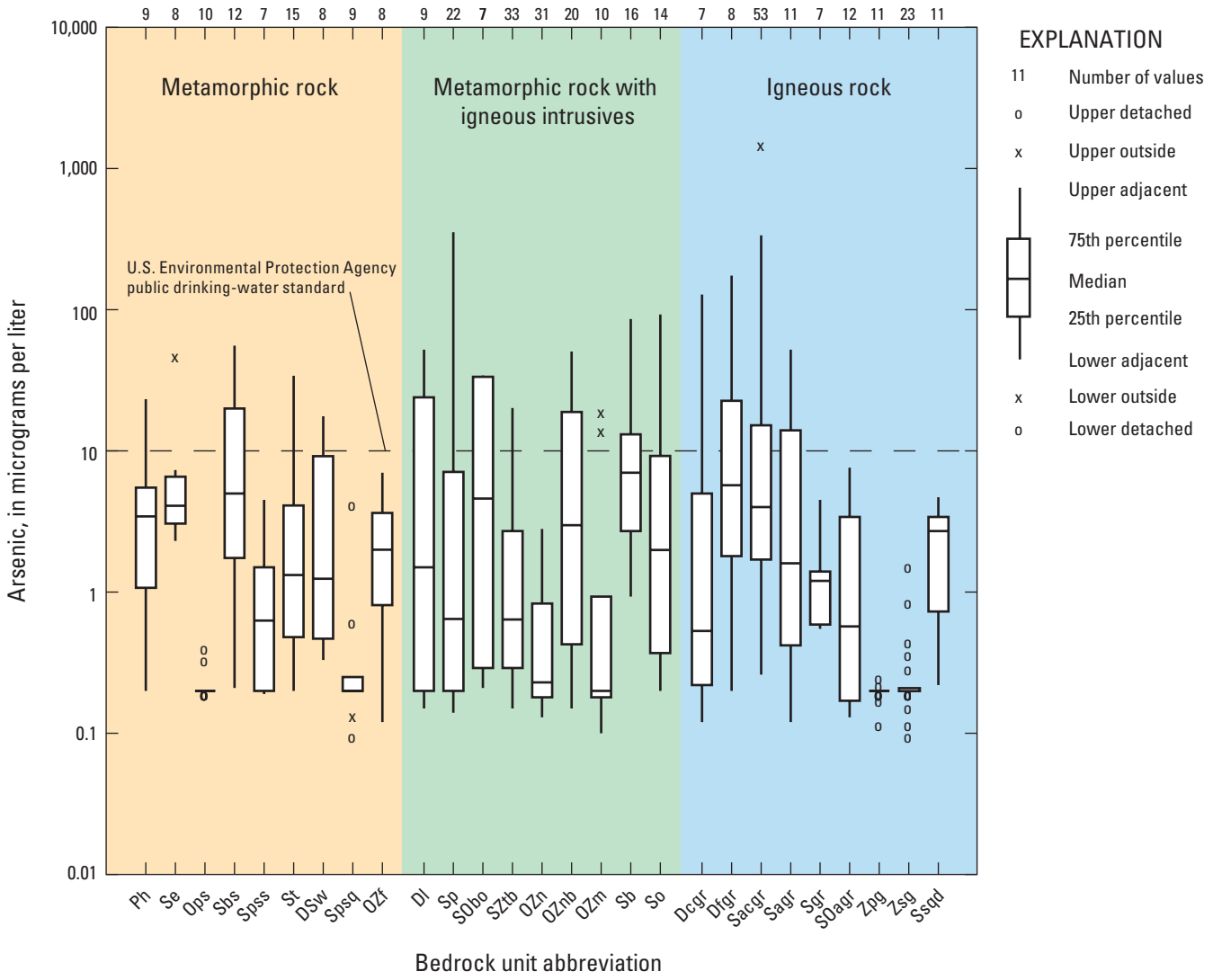


Figure 6. Distribution of arsenic concentrations by bedrock unit, with seven or more samples, in the primary and secondary study areas, east-central Massachusetts, 2009. See figure 3 and appendix 1 for explanation of bedrock units.

Arsenic concentrations north and west of the Clinton-Newbury fault are elevated (fig. 5). The fault marks a boundary between the Merrimack belt and Nashoba zone (fig. 3), and bedrock units do not extend across the fault boundary. The elevated arsenic concentrations extend approximately 20 km west and northwest of the fault. Within the 20-km zone, elevated concentrations were measured across a variety of bedrock unit rock types. Beyond the 20-km distance, sometimes within a rock type that has elevated concentrations near the fault, concentrations decrease. Lower concentrations of arsenic were measured in the large bedrock unit (OZn) east of the Clinton-Newbury fault. However, some elevated arsenic concentrations occur east of the fault, particularly in the OZnb unit.

An elevated-concentration area was defined as being bounded on the east by the Clinton-Newbury fault and extending westward to include all the concentrations measured greater than 10 µg/L (fig. 7). MDEP data were combined with the USGS data to define the western part of the elevated-concentration area. One-way ANOVA analysis was used to assess the relations between concentration and bedrock unit in the elevated-concentration area. Within the elevated-concentration area, there was no statistically significant difference at the 5-percent level between log-transformed concentration distributions, grouped by bedrock unit (fig. 8).

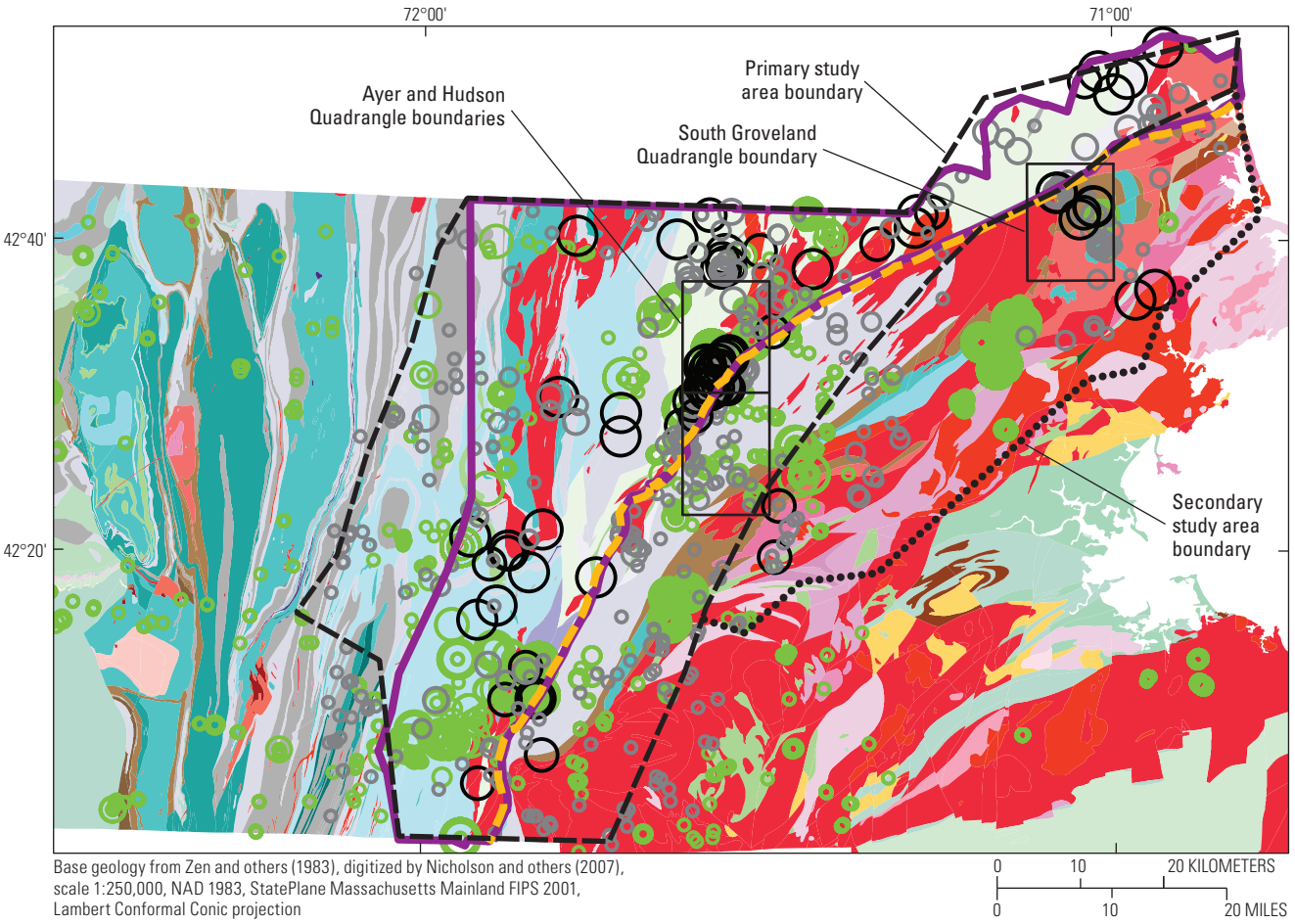


Figure 7. Arsenic concentrations, including Massachusetts Department of Environmental Protection data, showing elevated concentrations west of the Clinton-Newbury fault, east-central Massachusetts. <, less than

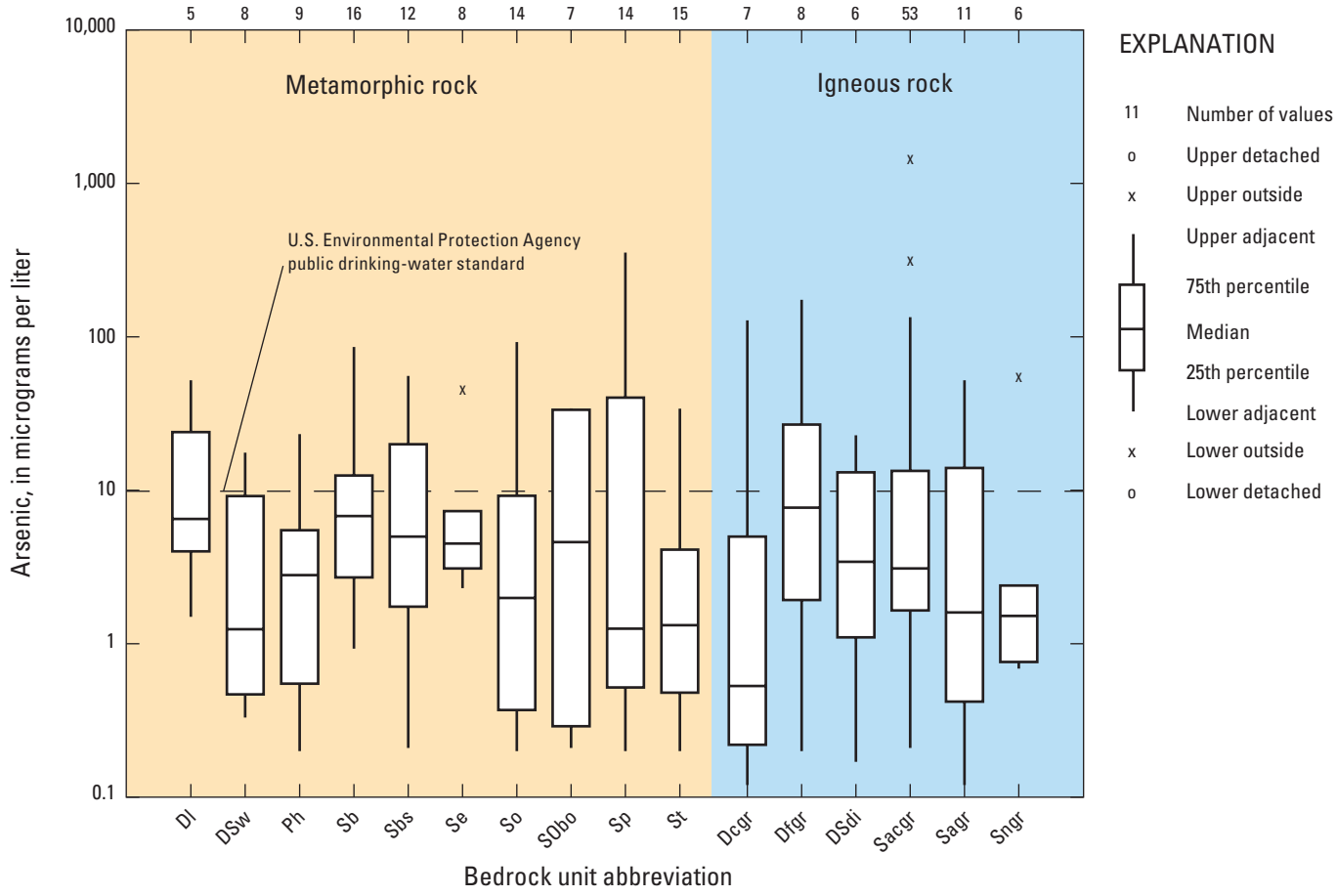


Figure 8. Distribution of arsenic concentrations by rock type in the elevated-concentration area, where differences in concentrations by unit were not significant, east-central Massachusetts. See figure 3 and appendix 1 for explanation of bedrock units.

Two of the bedrock units (Sp and Dl) inside the elevated-concentration area also extend outside the elevated-concentration area, where no concentrations exceeded the standard (fig. 9). Comparison of the data in the two units that cross the area boundary indicated that the difference across the elevated-concentration boundary, but within a bedrock unit, was statistically significant (fig. 10). These statistics indicate that the high-concentration area is within the Merrimack belt, but does not extend to the western boundary of the belt (fig. 9).

Three bedrock units with seven or more samples (Ops, Spss, and Spsq) were west or mostly west of the elevated-arsenic area. Concentrations in these bedrock units were significantly different from the grouped elevated arsenic area adjacent to the west.

A different pattern is observed east of the fault. Most striking is the difference between the bedrock unit SZtb, aligned with the Clinton-Newbury fault, and the bedrock unit OZn, adjacent to the east (fig. 5). Because of extra sampling in the area of the remapped quadrangles, there is an excellent

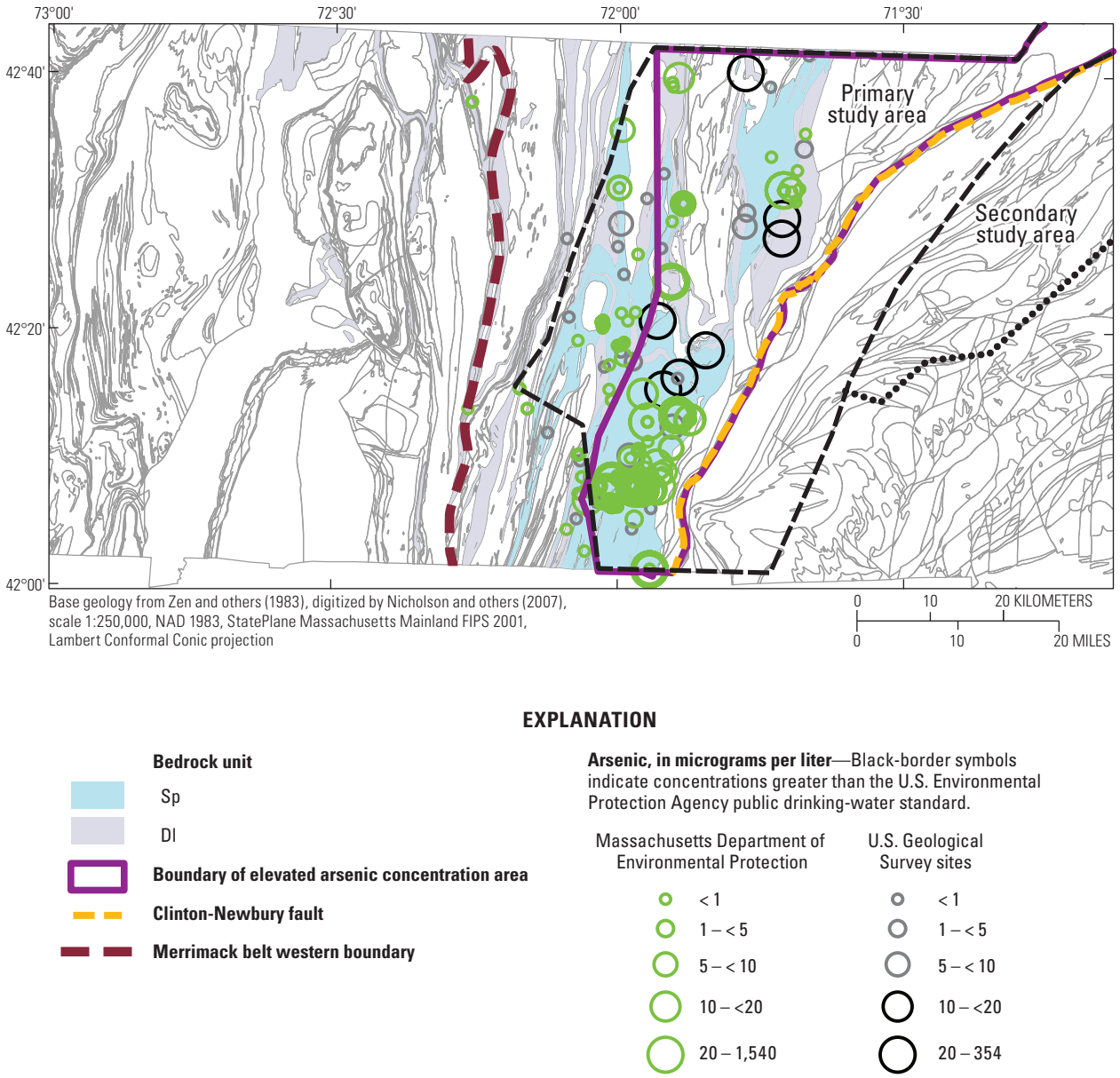


Figure 9. Arsenic concentrations inside and outside the elevated-arsenic area in bedrock units Dl and Sp. Data from the U.S. Geological Survey and the Massachusetts Department of Environmental Protection. See figure 3 and appendix 1 for explanation of bedrock units. <, less than

visual indication of arsenic concentration association with geology (inset map, fig. 5). One-way ANOVA analysis shows significant concentration differences between lower-concentration (OZn, Zhg, Zpg, Zsg, and Zw) and higher-concentration (SZtb and OZnb) units. The amphibolite-bearing rocks, OZnb, have elevated arsenic. Although not used for statistics, the MDEP dataset includes elevated concentrations in the southern parts of the amphibolite unit (fig. 7), which appears to indicate that the association is rock specific, not region specific as was found in the elevated concentration area in the west.

One-way ANOVA analysis of log-arsenic concentration in the rocks east of the Clinton-Newbury fault indicates that the arsenic concentrations in the OZnb unit are significantly higher than in the OZn unit (fig. 11). In this region east of the Clinton-Newbury fault, the mapped bedrock units indictate the distribution of arsenic concentrations. The OZnb unit extends well outside the primary study area and, as such, extends the area where elevated arsenic concentrations may be expected in Massachusetts from previous estimates (Ayotte and others, 2003).

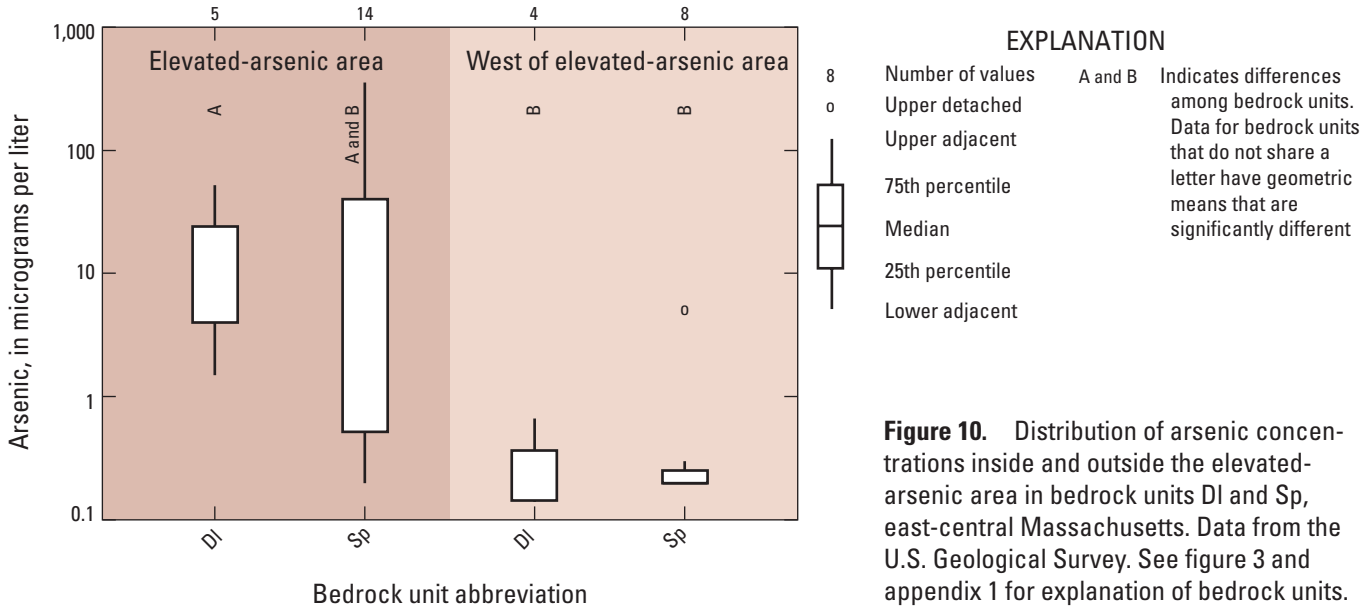


Figure 10. Distribution of arsenic concentrations inside and outside the elevated-arsenic area in bedrock units Dl and Sp, east-central Massachusetts. Data from the U.S. Geological Survey. See figure 3 and appendix 1 for explanation of bedrock units.

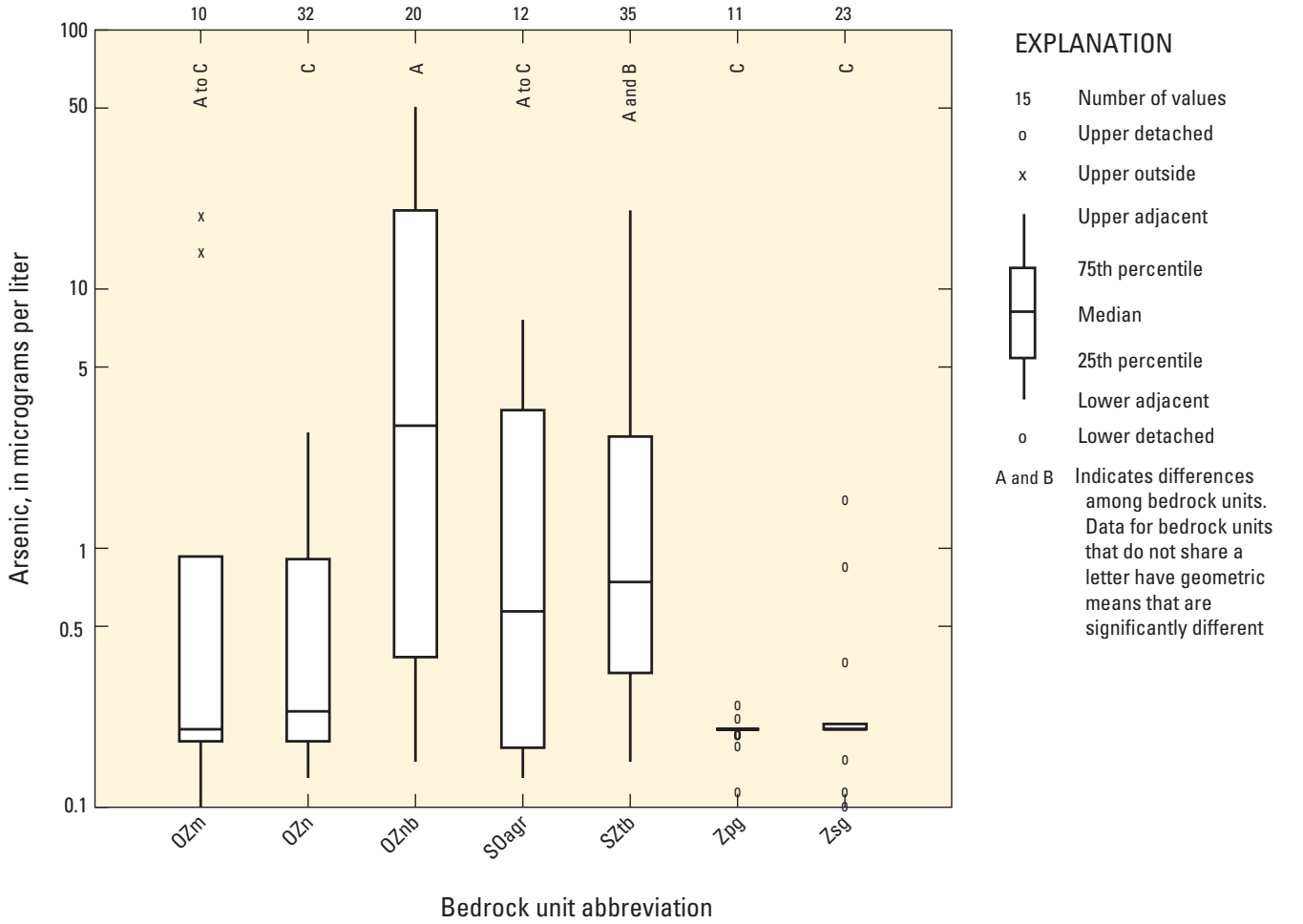


Figure 11. Distribution of arsenic concentrations by bedrock unit east of the Clinton-Newbury fault, east-central Massachusetts. See figure 3 and appendix 1 for explanation of bedrock units.

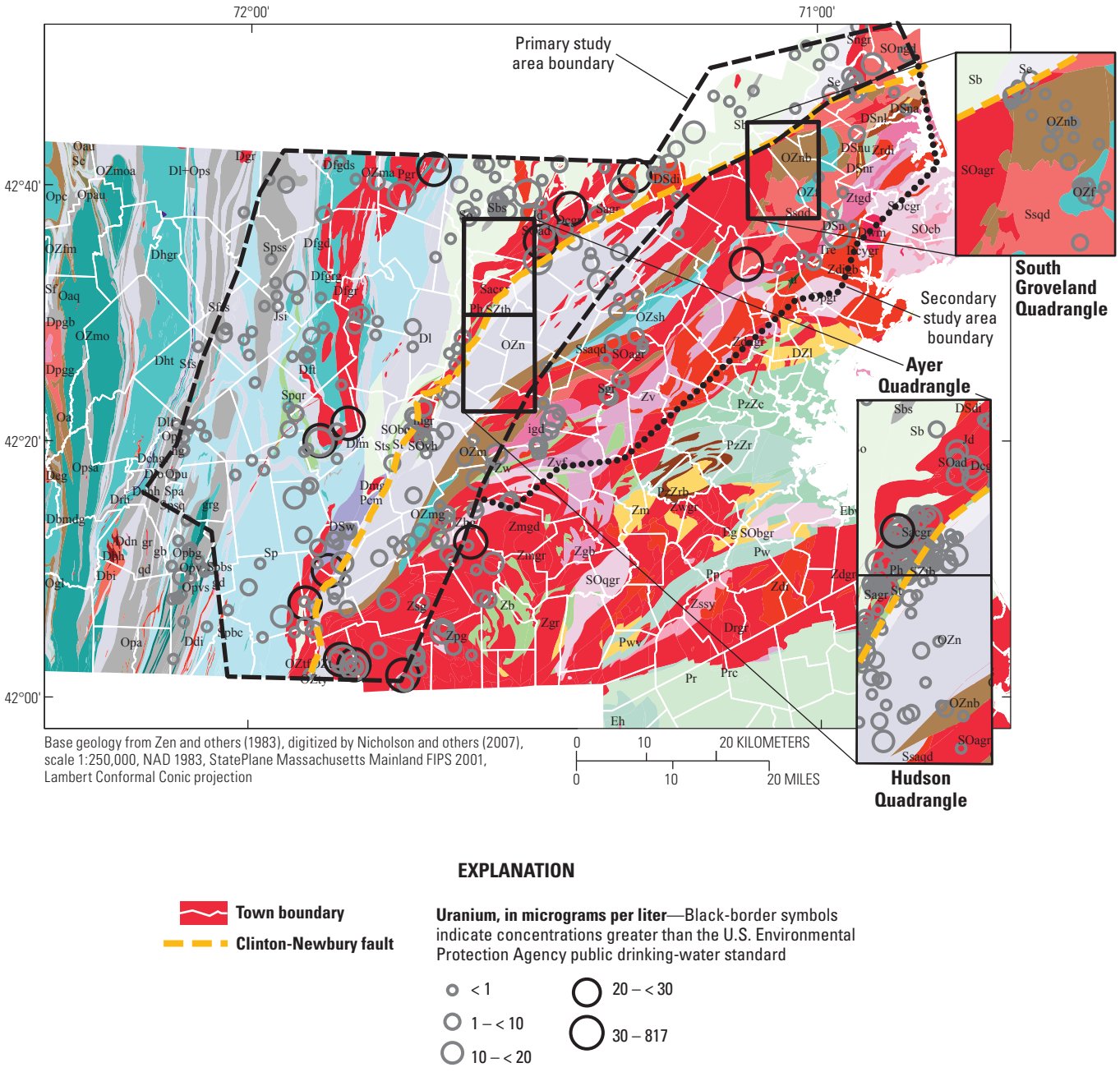


Figure 12. Uranium concentrations in east-central Massachusetts, 2009. Sampling coverage was increased in the areas of the insert maps where geology was mapped at the 1:24,000 scale. See figure 3 and appendix 1 for explanation of bedrock units. <, less than

Uranium Concentrations

Uranium concentrations ranged from less than the analytical reporting limit, 0.02 µg/L, to 817 µg/L. The low reporting limit allows description of uranium concentration variability in virtually all ranges of occurrence. Of 344 samples from the stratified random sampling, 12 samples (3.5 percent) exceeded the drinking-water standard of 30 µg/L. With the samples from the intensive sampling included, concentrations in 13 of the total of 478 samples (2.7 percent) were greater than the drinking-water standard. Elevated concentrations of uranium were widely distributed across the study area (fig. 12). As with arsenic, elevated uranium concentrations can be in close proximity to low concentrations in the same unit. Some units, however, had consistently low concentrations.

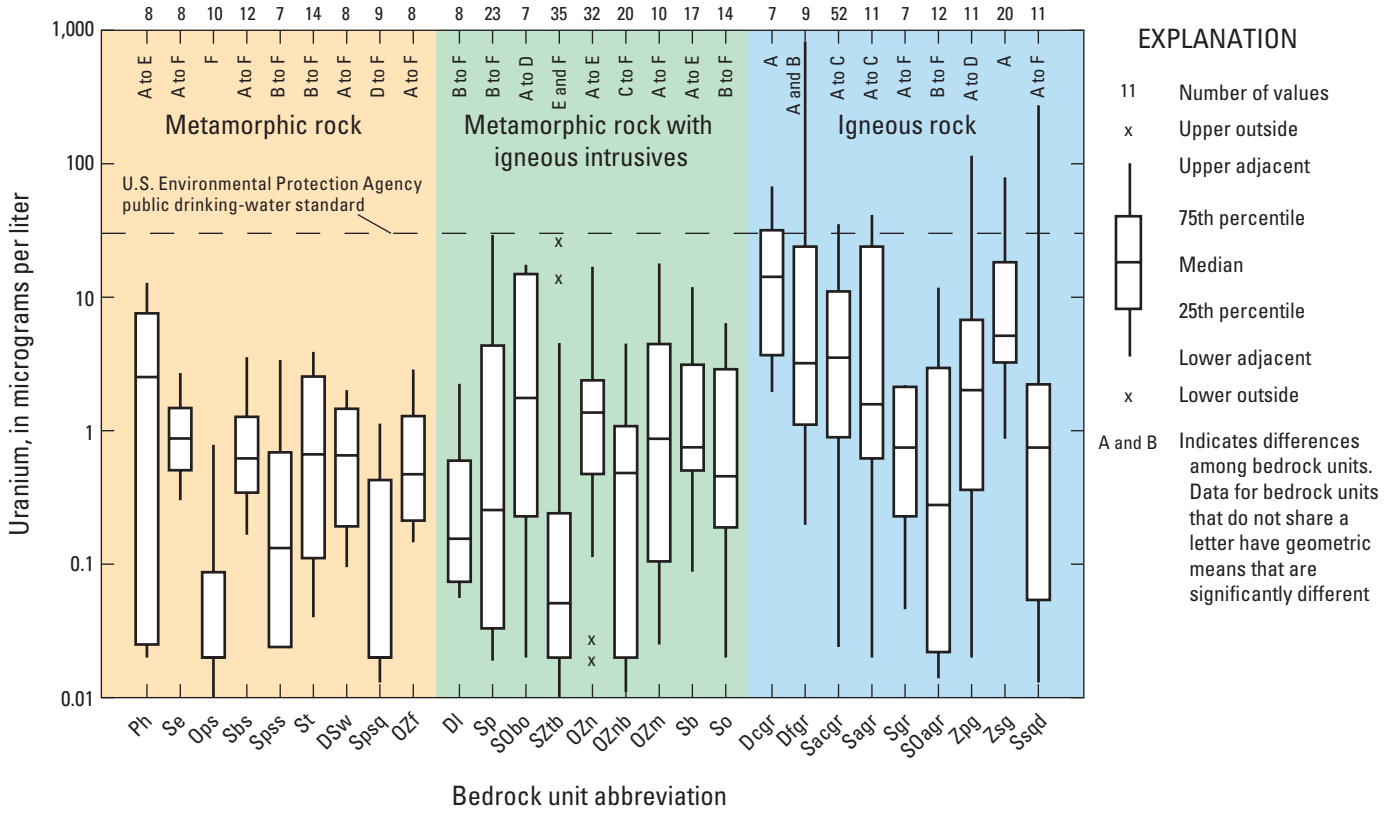


Figure 13. Distribution of uranium concentrations by bedrock unit, with seven or more samples, in the primary and secondary study area, east-central Massachusetts, 2009. See figure 3 and appendix 1 for explanation of bedrock units.

Uranium Correlations with Bedrock Units

Variation of uranium concentration by bedrock unit is apparent in units sampled seven or more times, a threshold used to increase statistical significance (fig. 13). Median concentrations are generally greater in igneous rock than in metamorphic rock (fig. 13). Concentrations in metamorphic rock intruded by igneous rock were intermediate. Concentrations were lowest in the unintruded metamorphic rock. Uranium concentrations exceeded the 30 µg/L drinking-water standard only in the igneous units.

The visual differences (fig. 13) were confirmed by one-way ANOVA analysis applied to the log-transformed uranium concentrations for bedrock units with seven or more samples, using rock type as a discrete independent variable. Significant differences were noted in concentrations among the rock types, indicating the association of rock type with distribution of uranium concentrations. Several bedrock units west of the Clinton-Newbury fault, such as Dcgr and Dl, were significantly different from each other.

Bedrock units classified as metamorphic, but intruded by igneous rocks, occasionally might be expected to reflect the elevated igneous concentrations. Well boreholes might intersect igneous rock even though the unit was classified as metamorphic, although this investigation did not find standard exceedences in metamorphic rock intruded by igneous rock. Intruded rock, however, did include concentrations that were greater than in unintruded rock.

Detailed Geologic Quadrangle Mapping of Bedrock Units

Several of the 1:24,000 quadrangles within the study area were remapped recently (three are shown in fig. 14). Some of the contacts between bedrock units are changed on the new maps compared to the State map (Zen and others, 1983; Nicholson and others, 2007). Bedrock unit identifications of some of the polygons also have changed. Correlations between arsenic and uranium concentration and the remapped units may be stronger than that of the State map if the newly identified units more accurately represent rock boundaries and if the concentrations are controlled by bedrock unit type.

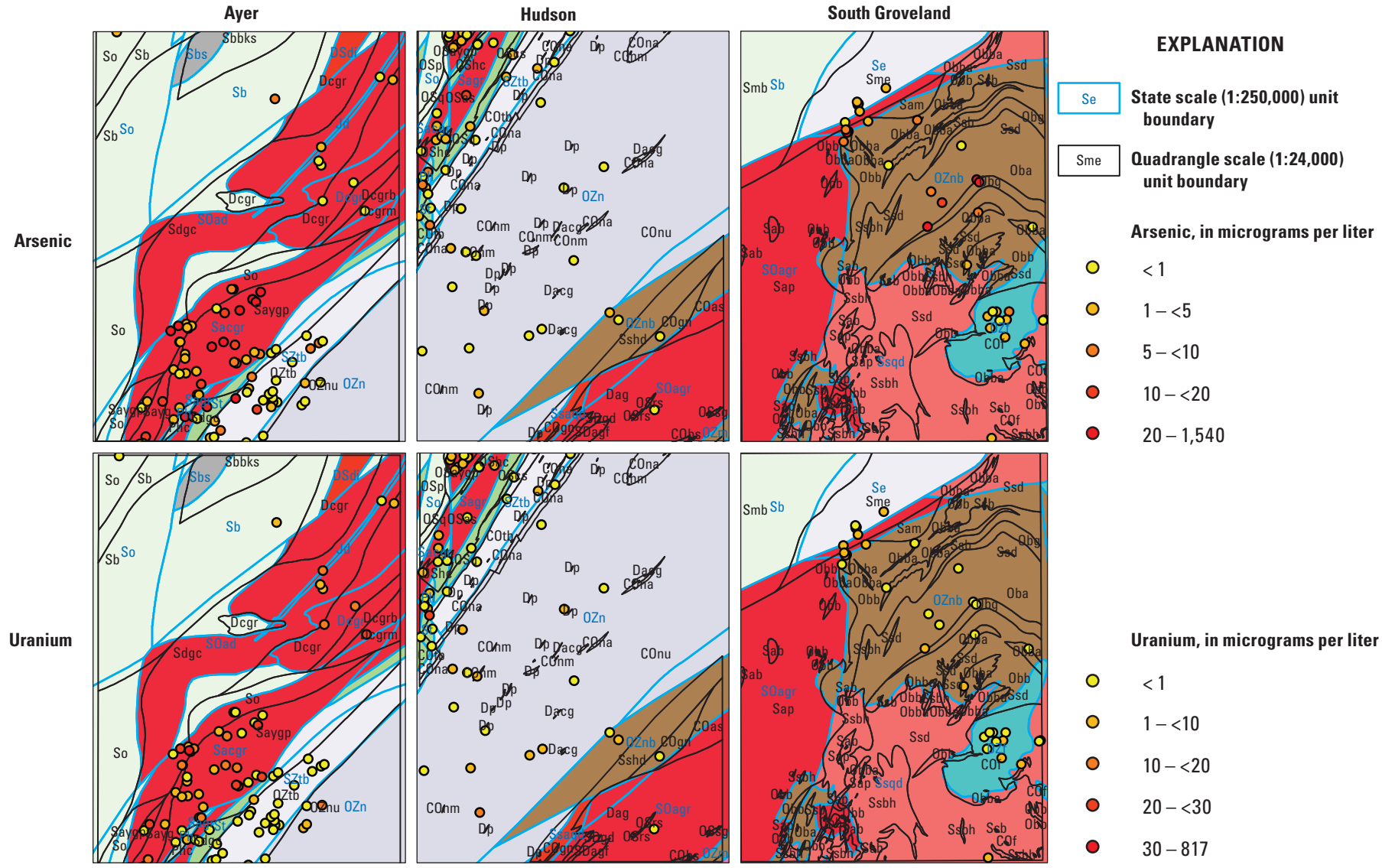


Figure 14. Details of change in geologic remapping of the Ayer, Hudson, and South Groveland 7.5-minute quadrangles compared to the statewide mapping of Zen and others (1983). <, less than

This effort reflects an attempt to test if the analysis of arsenic and uranium concentrations might be scale-dependent, as the 1:250,000 statewide map and 1:24,000 quadrangles differ significantly in scale. In New Hampshire, statewide analysis of well yield found that detailed (1:24,000) geologic maps improved the results of a predictive well-yield probability model over a statewide (1:250,000) model (Moore and others, 2002).

Correlations were compared by considering adjusted R-squared values for multiple linear regression of log concentration on bedrock unit for each pair of maps, that is, the map of Zen and others (1983) published in digital form by Nicholson and others (2007) compared to (1) the Ayer quadrangle (Kopera, 2006), (2) the Hudson quadrangle (Kopera, 2005) and (3) the South Groveland quadrangle (Castle and others, 2005) (table 3). Changes in renaming bedrock units alone would not change the value of the adjusted R-squared. Only a regrouping of well sites could change the R-squared value.

The adjusted R-squared value is a measure of the fraction of variance in the data that is explained by the regression variables. Results of the regressions indicate that no more variance of log-arsenic concentration is explained in the Ayer and Hudson quadrangles by the detailed (1:24,000) geologic mapping than by the statewide (1:250,000) mapping. For uranium, the adjusted R-squared value is about the same for the two mapping scales in the Ayer quadrangle but increases in the Hudson quadrangle with the 1:24,000 mapping. In the South Groveland quadrangle, more variance is explained with the new mapping than the old for both arsenic and uranium. One explanation for these results is the Clinton-Newbury fault that cuts though each quadrangle. In the Ayer and Hudson quadrangles, about half of the wells were in the elevated-arsenic zone where correlation with individual bedrock units was lacking. In the South Groveland quadrangle, only four wells were in the high arsenic zone, and all of these were in the same bedrock unit. Thus, arsenic would not improve with remapping for Ayer and Hudson because of a general lack of correlation by bedrock unit in much of the quadrangles. Uranium, by contrast, improved in two of the quadrangles with remapping and stayed about the same in the third. Overall, these results suggest that detailed mapping improves the ability to explain variance in uranium concentrations by bedrock unit, but that when variability in arsenic concentrations occurs at the terrane-scale, detailed mapping is less useful.

Table 3. Constituent correlation with bedrock units in statewide scale (1:250,000) and quadrangle scale (1:24,000), east-central Massachusetts.

[As, arsenic; U, uranium]

Geologic quadrangle	Regression	Adjusted R-squared	P value
Ayer	Log As, statewide scale	0.31	0.0001
Ayer	Log As, quadrangle scale	0.15	0.0198
Ayer	Log U, statewide scale	0.59	0.0000
Ayer	Log U, quadrangle scale	0.53	0.0000
Hudson	Log As, statewide scale	0.06	0.1952
Hudson	Log As, quadrangle scale	0.04	0.2997
Hudson	Log U, statewide scale	0.16	0.0225
Hudson	Log U, quadrangle scale	0.32	0.0010
South Groveland	Log As, statewide scale	0.03	0.3375
South Groveland	Log As, quadrangle scale	0.22	0.0578
South Groveland	Log U, statewide scale	0.05	0.2673
South Groveland	Log U, quadrangle scale	0.17	0.1006

Water-Quality Correlations with Ancillary Constituents

Analysis of ancillary constituents, acid neutralizing capacity, iron, manganese, and conductance was used to assess geochemical associations of arsenic and uranium occurrences. This was done using two-parameter plots (fig. 15). The plot matrix shows virtually no correlations among constituents. Some constituents appear to be mutually exclusive, particularly arsenic and iron, uranium and iron, and arsenic and uranium (fig. 15). This is in contrast to the relation found in overburden samples, where arsenic and iron are commonly correlated (Stollenwerk and Colman, 2003).

Peters (2008) attributes the difference in iron-arsenic association between overburden and bedrock as reflecting the lack of organic carbon likely present in bedrock units. Iron and arsenic associate in coatings deposited from oxic weathering of arsenic minerals, such as arsenopyrite. These coatings remain in place unless reducing conditions occur, such as associated with the presence of anthropogenic organic carbon (Stollenwerk and Colman, 2003; Peters, 2008). Iron concentrations were elevated in the water of some of the tested wells. The reducing conditions associated with these wells, however, were likely associated with sediments of wetlands or lakes that are providing recharge to the bedrock.

Bedrock Units, Geologic Terranes, and Geologic Sources of Arsenic and Uranium

The MDEP and the USGS data indicate that elevated arsenic in bedrock well water is associated primarily with two terranes in Massachusetts, the Merrimack belt and the Nashoba zone (figs. 1, 3, and 5). Within the terranes of elevated arsenic concentration, arsenic appeared to be correlated with bedrock

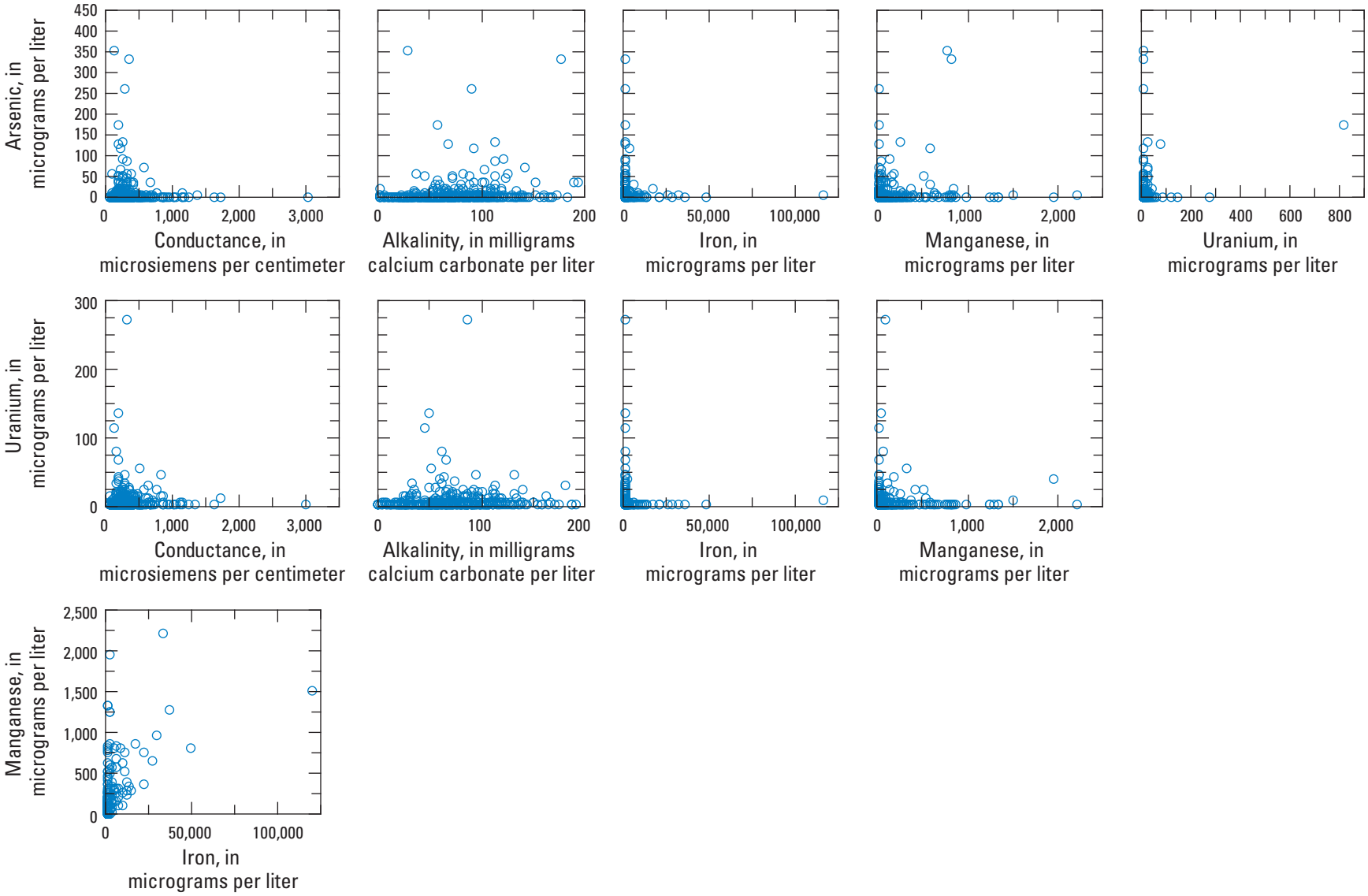


Figure 15. Associations among constituents measured in bedrock wells in east-central Massachusetts, 2009.

units in some parts of the study area and not correlated in other parts (note the elevated-concentration area of fig. 7). Sources of the arsenic in the areas that correlated with bedrock units could be in the rock protolith; however, the arsenic source in areas without bedrock correlation could have resulted from relatively equal redistribution of arsenic by metamorphic and/or metasomatic fluids from an original rock source (Henke, 2009). Although associated with the Merrimack belt, the elevated arsenic did not extend to the western border of the belt (fig. 9). The processes responsible for distributing the arsenic that is present in well water did not operate throughout the terrane.

In the Nashoba zone, where correlation between bedrock unit and arsenic concentrations was more prevalent, bedrock units with elevated arsenic extended to the Bloody Bluff fault, the eastern boundary of the zone. Two elevated arsenic concentrations were measured east of the Bloody Bluff fault in the Milford-Dedham zone, indicating that elevated arsenic concentrations are possible east of the Nashoba zone. Little previous data on arsenic in bedrock wells is available from this area where much of the water supply is public.

In the north, the elevated-arsenic area in Massachusetts abuts New Hampshire towns included in the private bedrock-well study by Montgomery and others (2003). In contrast to Massachusetts where units were grouped for concentration-probability analysis, units were grouped by fraction of samples greater than 10 µg/L in the New Hampshire study. The different statistical approaches prevent exact comparisons of data between the two States. Clearly, however, both States have elevated arsenic concentrations in the border area.

The association of igneous rock with uranium results from its deposition during magma cooling (Keevil and others, 1944). Uranium is one of the last elements to come out of solution, and it associates with rock surfaces from which mobilization into well water can occur. A report on uranium potential in two-mica granites of New England indicates that certain mineralized granites in New Hampshire and Massachusetts contain secondary uranyl-phosphate minerals (Boudette, 1977). Mobilization of uranium can occur in oxic conditions that are common in New England bedrock aquifers.

Maps of Estimated Probability for Elevated Arsenic and Uranium in Groundwater

Arsenic

Determination of probability of wells yielding water with arsenic concentration greater than the USEPA public drinking-water standard (10 µg/L) could help guide development of new supplies—domestic and public—and the testing of existing wells. Because of correlations of arsenic with bedrock unit and with groups of bedrock units described in a previous section on correlations, concentration distributions can be defined by bedrock unit. Cumulative distribution functions can be used to determine overstandard probabilities as well as probabilities of wells yielding water at levels of concentration greater than any given value (fig. 16). The distribution for each unit fits a log-normal distribution, and 95-percent confidence intervals based on the log-normal distribution can be computed (apps. 3 and 4).

The confidence interval of probability estimates depends on the number of samples for the bedrock unit and the concentration for which the probability is of interest. Probability distributions based on randomly selected samples of a population become more accurate as the sample size gets larger. Therefore, confidence intervals are a function of the number of samples. Finally, the probabilities can

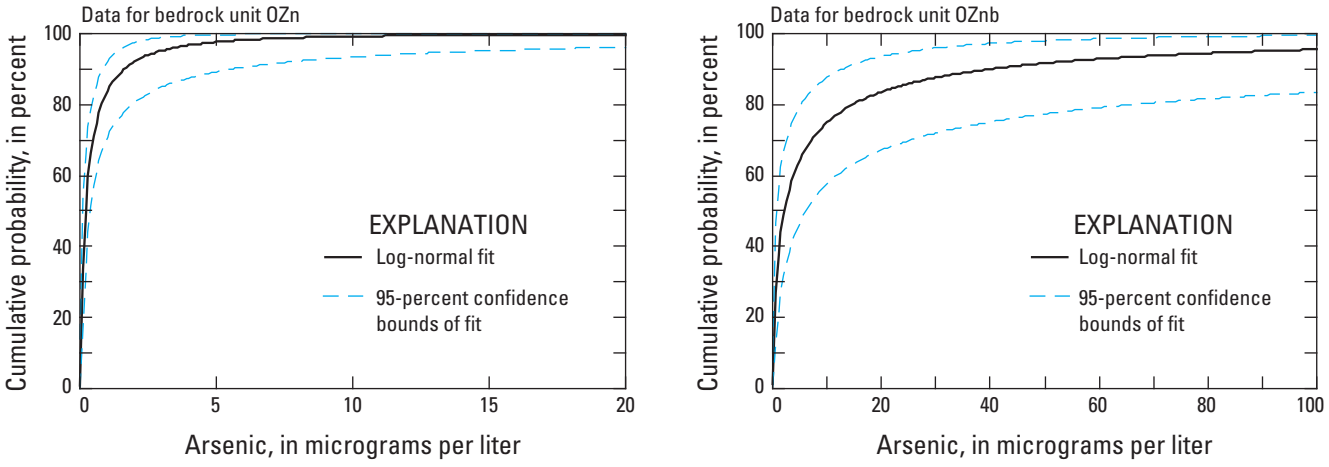


Figure 16. Cumulative probabilities for arsenic for two bedrock units east of the Clinton-Newbury fault.

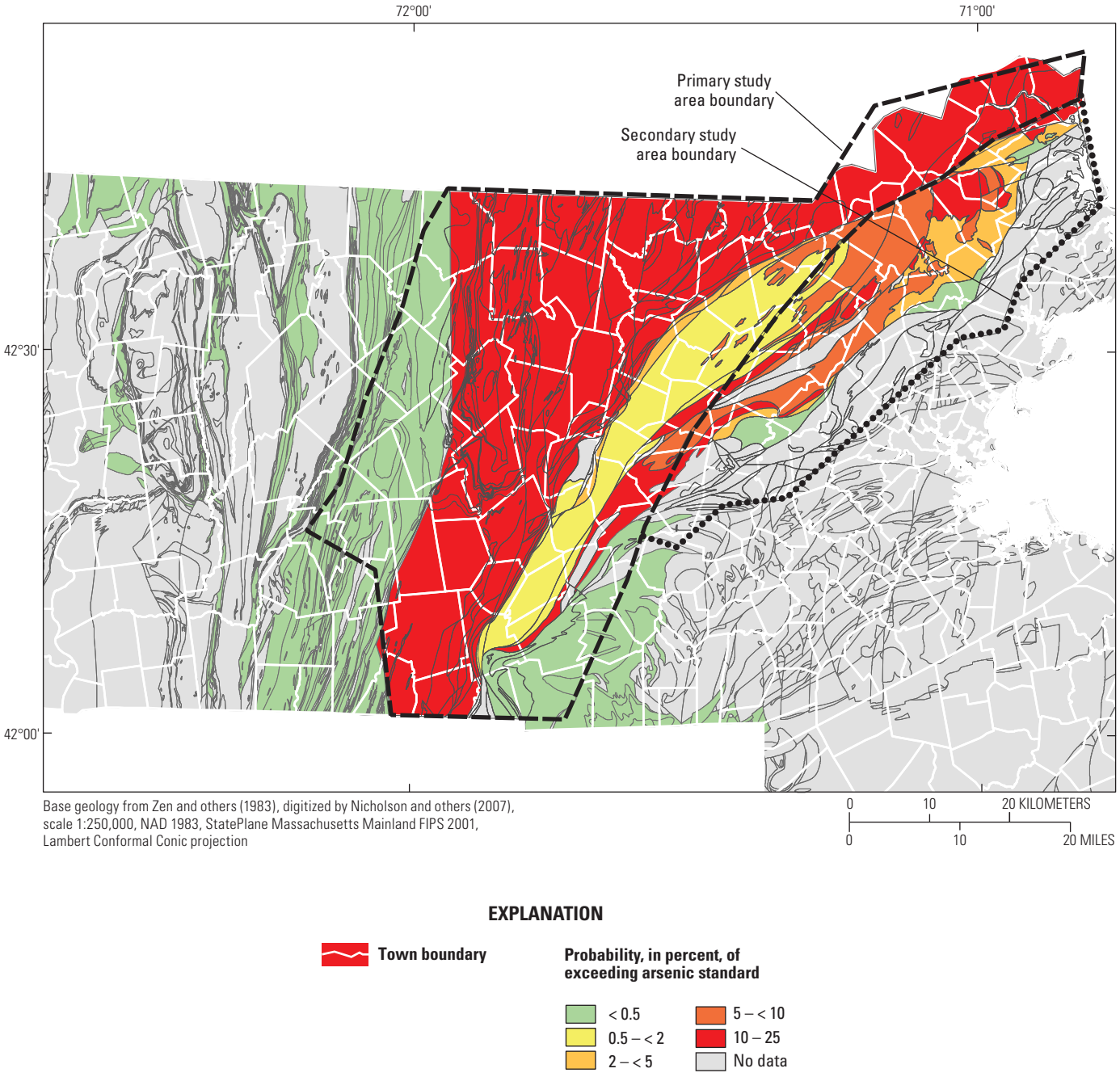


Figure 17. Probabilities of arsenic concentrations in bedrock well water being greater than 10 micrograms per liter, the U.S. Environmental Protection Agency drinking-water standard for public supplies, east-central Massachusetts. <, less than

be mapped so that areas with higher or lower probabilities of concentration than a given level (such as the USEPA drinking-water standard for public water supply) can be known (fig. 17). For example, the probability that a well in the OZn bedrock unit will contain water with an arsenic concentration greater than 10 µg/L (equal to 100 percent minus the cumulative probabililty) is low—0.79 percent with 95-percent confidence interval of 0.05 to 6.6 percent (fig. 16 and app. 3). The probability that a well will contain water with arsenic concentration greater than 10 µg/L for OZnb, an elevated-concentration unit, is 26 percent with a 95-percent confidence interval of 13 to 43 percent.

Bedrock units in the elevated-concentration area (fig. 7) were grouped for computing cumulative probabilities. The probability of well water being greater than 10 µg/L for the elevated-concentration grouping of units was 23 percent, exceeded only by OZnb at 25 percent.

Uranium

In this study, uranium is more generally correlated to bedrock unit than is arsenic, so uranium associations can be mapped exclusively by bedrock unit. Distributions of uranium concentration in a bedrock unit are log normal. Cumulative log-normal distributions indicate the probability of concentrations occurring for the whole range of concentrations, including the probability of exceeding 30 µg/L, the USEPA drinking-water standard for public supplies. The 95-percent confidence intervals of the probability estimates can also be determined from the log-normal fits (fig. 18, apps. 5 and 6). The uncertainty of the predictions—that is, the size of the confidence interval—decreases at high and low ends of the concentration range (fig. 18).

Example probabilities of encountering a concentration greater than 30 µg/L (fig. 18) range from 0.0001 percent (95-percent confidence interval of 0.0 to 0.005 percent) for Ops, to 21 percent (95-percent confidence interval of 5.5 to 50 percent) for Dcgr. Areas with granitic rock have higher probabilities (figs. 5 and 19).

Estimates of the Number of Wells that Exceed USEPA Drinking-Water Standards

Estimates of the number of wells affected can be determined by the product of the probability for well water to exceed the USEPA standard and the estimated number of wells per bedrock unit.

Estimates of private well distributions were made for the MDPH by Weston & Sampson Engineers, Inc., during 2005 (fig. 20). Potential private wells were identified by cross-referencing addresses in property-tax-assessment databases

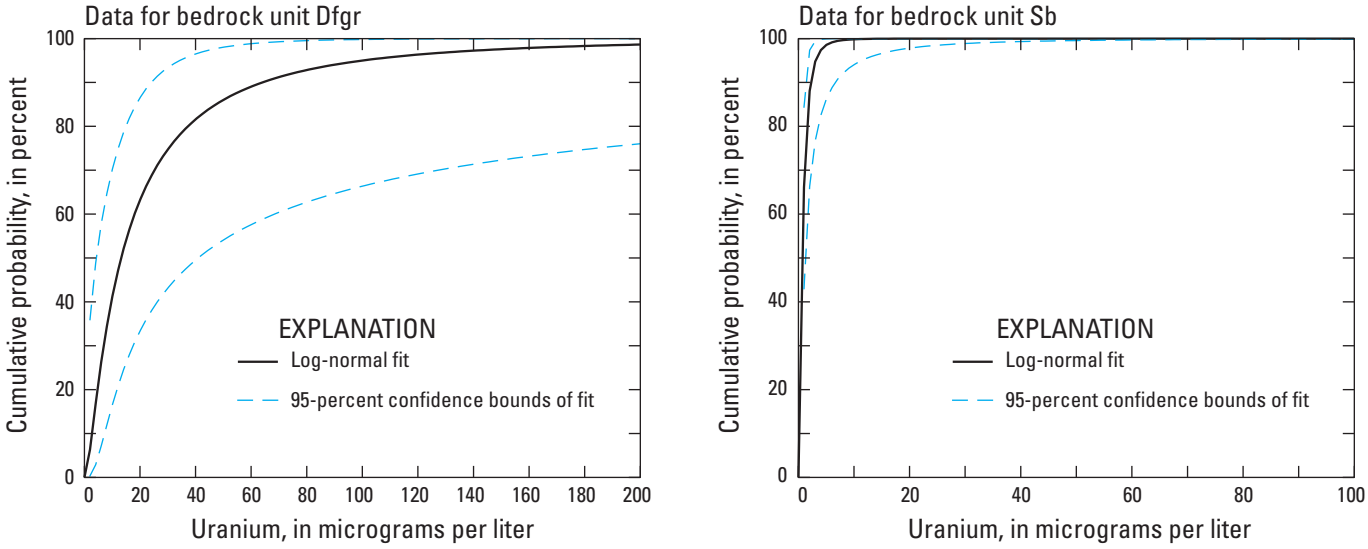


Figure 18. Cumulative log-normal distribution functions for uranium in an elevated-concentration bedrock unit, Dfgr, and a low-concentration bedrock unit, Sb, east-central Massachusetts.

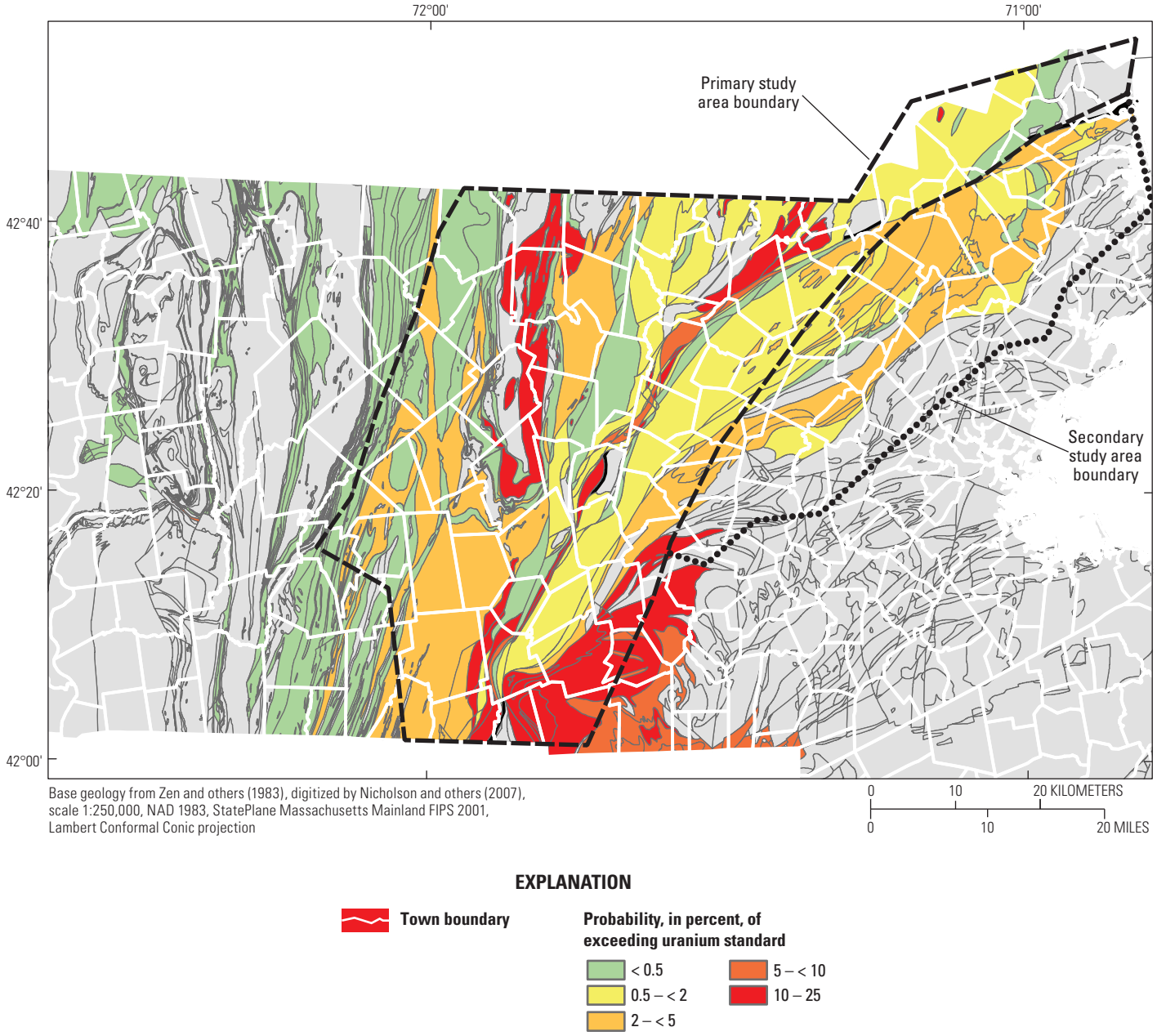


Figure 19. Probabilities of uranium concentrations in bedrock well water being greater than 30 micrograms per liter, the U.S. Environmental Protection Agency drinking water standard for public supplies, east-central Massachusetts. <, less than

with those in water-billing databases. The addresses in the tax-assessment databases that did not have a match in the water-billing databases were classified as potential private wells. In communities not served by a public water supply, all addresses contained in the tax-assessment data were classified as potential private wells. For the purposes of the estimate, all the inferred private wells were assumed to be bedrock wells. All the potential private well addresses were geocoded using the GDT/TeleAtlas Batch Geocoding Service®.

Not all towns in the study area were included in the MDPH inferred private-well investigation (fig. 20). The 1990 census, which provided information about households per census track and percentage of households on public or private water, was used to supplement well estimates in locations not covered by MDPH (U.S. Census, 1992). The census areas in towns not covered by the MDPH study were intersected with the bedrock data using Geographic Information System (GIS) techniques to delineate parts of census tracts that were in each

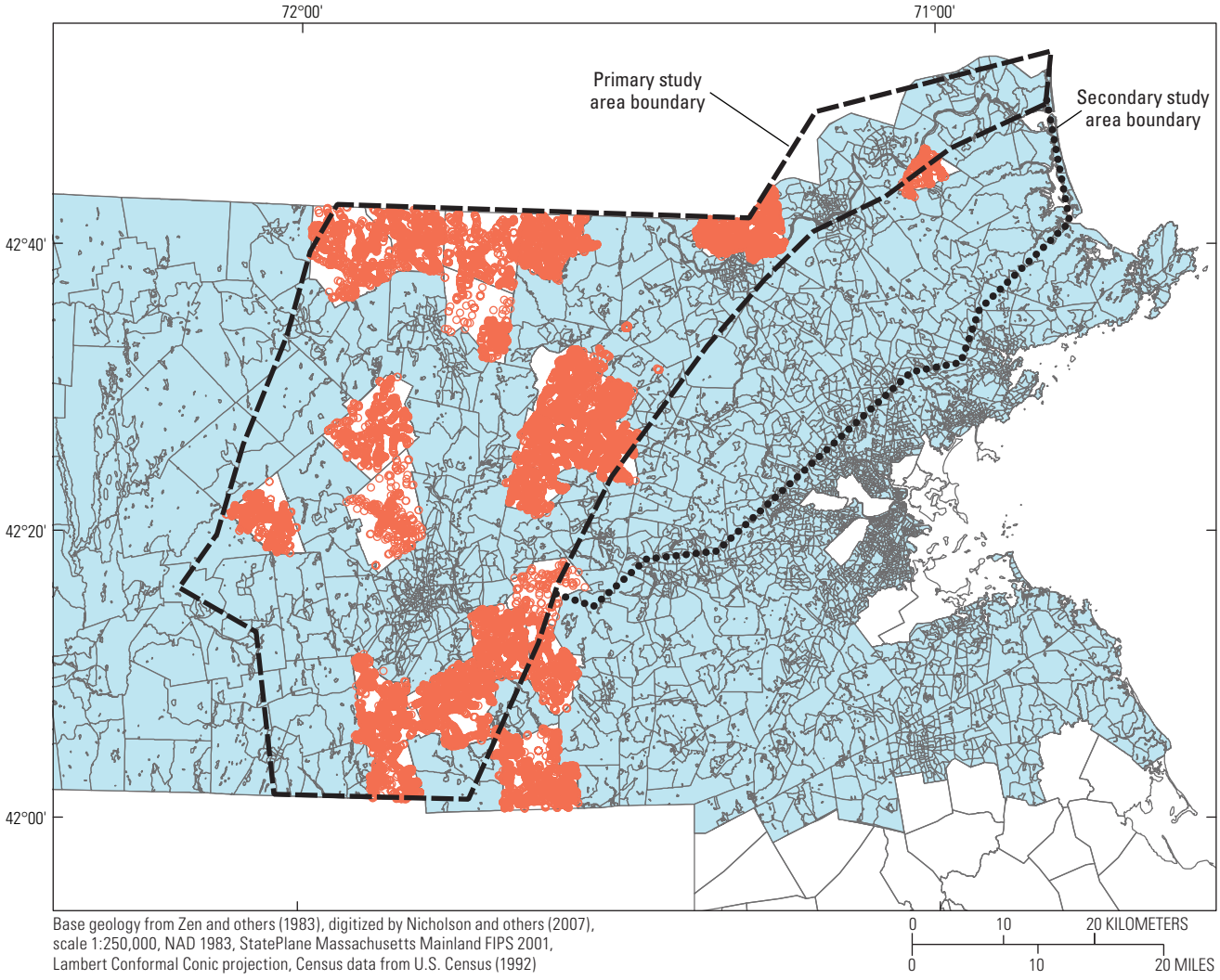


Figure 20. Inferred locations of private wells and census tracts for towns not included in the inferred private-well study, east-central Massachusetts.

Table 4. Number of wells in each bedrock unit and estimates of number of wells exceeding the arsenic and uranium U.S. Environmental Protection Agency drinking-water standards for public supplies, east-central Massachusetts.

[* , bedrock unit within the high-arsenic zone; —, no data; MDPH, Massachusetts Department of Public Health; µg/L, micrograms per liter; standard, U.S.Environmental Protection Agency public drinking-water standard]

Bedrock unit	Total number of MDPH wells	Total number of estimated census wells	Probability of arsenic concentrations greater than 10 µg/L, in percent	Probability of uranium concentrations greater than 30 µg/L, in percent	Estimated number of wells exceeding the 10 µg/L standard for arsenic	Estimated number of wells exceeding the 30 µg/L standard for uranium
Grouped elevated-arsenic units	13,500	5,763	23.08	—	4,445	—
Dcgr*	418	1,275	—	21.01	—	356
Dfgr*	1,522	702	—	13.97	—	311
Dl	2,010	8,024	0.00	0.03	0	3
DSw*	382	629	—	0.13	—	1
Ops	770	7,707	0.10	0.00	8	0
OZf	0	507	7.64	0.01	39	0
OZm	735	679	10.83	4.64	153	66
OZn	7,007	5,621	0.79	0.89	100	113
OZnb	930	1,357	25.50	0.70	583	16
Ph*	60	0	—	11.99	—	7
Sacgr*	884	373	—	8.43	—	106
Sagr*	971	1,013	—	12.54	—	249
Sb*	2,315	4,594	—	0.69	—	47
Sbs*	67	133	—	0.00	—	0
Se*	305	492	—	0.00	—	0
Sgr	0	533	0.00	0.64	0	3
So*	1,374	2,406	—	1.55	—	59
SOagr	569	2,326	6.92	4.11	200	119
SObo*	0	236	—	12.42	—	29
Sp	2,862	10,343	0.00	4.61	0	609
Spsq	85	238	0.14	0.07	0	0
Spss	908	723	0.38	0.18	6	3
Ssqd	224	2,982	4.63	2.53	148	81
St*	245	150	—	0.76	—	3
SZtb	861	464	3.68	0.17	49	2
Zpg	2,197	1,361	0.02	6.94	1	247
Zsg	5,012	2,972	0.10	10.61	8	847
Totals	**32,713**	**57,840**			**5,741**	**3,277**

bedrock unit. The number of wells per census tract was then adjusted by the proportional area of the tract that was in the bedrock unit. Finally, all the wells in the parts of tracts in a bedrock unit were added to determine the number of wells in each unit. The number of wells estimated to exceed a standard was determined by multiplying the probability of exceeding a standard for that bedrock unit by the sum of the number of wells determined from the MDPH assessment and the census assessment (table 4).

Arsenic

For arsenic, no probability was given in table 4 for bedrock units that were within the elevated-arsenic area. Rather, the probabilities for the units in this area are covered by the grouped-units estimate (top of table 4).

The number of wells with arsenic concentrations that exceeded the USEPA drinking-water standard was estimated to be 5,741. Because the study area covered most of the known elevated-concentration areas for the State, this estimate is likely appropriate for the entire State. Several small units within the study area did not have enough data for probability statistics to be computed; however, these would not greatly alter the total.

Uranium

For uranium, correlations were strictly with bedrock units rather than grouped units (table 4). The number of wells with uranium concentrations that exceeded the standard for uranium was estimated to be 3,277. Most of these wells are in igneous rock. Because units west of the Clinton-Newbury fault were not grouped on an areal basis for uranium, several more bedrock units were excluded from the calculation of probability statistics than for arsenic.

Igneous bedrock units in Massachusetts are not confined to the primary and secondary study areas of this investigation. The statewide number of wells affected by uranium is likely larger than the number reported herein, based on the bedrock units in the study areas.

Implications for New Supplies, Testing, and Treatment

Locating Future Bedrock Water Supplies

Few private well owners have options regarding choosing locations that have favorable bedrock. For private supply, the probability maps (figs. 17 and 19) can be used to guide well-water testing.

Although the data collected were from private wells, the data could be used to assess conditions likely in public as well as private bedrock water supplies. Commonly, there are several site options for locating public wells. Consideration of the bedrock unit when selecting sites for public supplies could result in substantially decreased probabilities of concentrations exceeding the drinking-water standard. Towns that straddle the Clinton-Newbury fault, such as Harvard and Westford, could make use of the result that there is a lower probability of elevated arsenic concentration in the rocks east of the fault than those to the west.

Directing Resources for Water Testing

The numbers of overstandard water supplies without treatment can be computed by using the fraction of households currently using water without treatment for arsenic (66 percent of 5,741 = 3,789) and uranium (93 percent of 3,277 = 3,047). If testing could be directed toward the elevated-concentration areas, these numbers of untreated supplies would presumably decrease. By testing all wells that are in bedrock units with probabilities of elevated arsenic concentration greater than 10 percent, 90 percent of the wells exceeding the standard could be identified. Applied to data collected in this investigation, for example, all but two wells exceeding the standard (which are in SZtb with concentrations of 10 and 20 µg/L) would have been tested. This approach is likely to include testing of the highest concentration wells, because the elevated concentrations are associated with bedrock units that have the highest probabilities of overstandard concentrations. For example, of the two wells that were missed by this approach, one had a concentration at the standard and one had a concentration twice the standard; the highest concentration well tested in this study had a concentration 150 times the standard.

Because health risk increases with increasing concentration, a testing routine that likely includes the highest concentrations is beneficial. The 10-percent probability testing algorithm would result in testing 26 percent of all the wells estimated to be in the study areas. As a fraction of wells statewide, the percentage of wells tested would, of course, be much smaller.

For uranium, to determine 90 percent of wells greater than the standard, all units with overstandard probability of 4 percent or greater would need to be analyzed. This would involve testing about 40 percent of the wells in the study area.

Defining Natural Background Concentrations

A problem for site-contamination assessment in areas where arsenic occurs naturally is whether concentrations at a given site are caused by natural conditions or are the result of human-induced activity. In cases where there is a possibility that the bedrock has been contaminated with anthropogenic arsenic, the distribution frequencies of concentration for a given bedrock unit could be used to assess whether or not the distribution frequency of concentration at a site that is suspected of contamination is significantly different from natural conditions.

Summary

This investigation is the first regional-scale study of arsenic concentrations in water from private wells completed in bedrock throughout east-central Massachusetts, the region of elevated-arsenic concentrations in the State. Measurements of uranium concentrations also were included in the investigation, because uranium, similar to arsenic, likely has a bedrock source. Although private water supplies are not subject to new U.S. Environmental Protection Agency (USEPA) drinking-water standards for public-water supplies, such as those established for arsenic and uranium in the last 7 years of 10 and 30 micrograms per liter, respectively, the standards are thresholds whereby private well users can assess the need for water treatment. Concentration data are needed for arsenic and uranium concentrations to (1) assess the geographic distribution of elevated concentrations, (2) guide testing of existing supplies, and (3) develop new supplies. These needs were addressed by correlating concentrations of arsenic and uranium with bedrock units and applying the correlations to the mapped distributions of wells. For arsenic, the number of overstandard wells estimated by these methods in the study area would account for most of the overstandard wells in the State. For uranium, the number of overstandard wells estimated for the study area would be less than the total for the State, because bedrock units with elevated concentrations of uranium are also expected outside of the region of this study.

Samples were collected by private well users that responded to sampling kits that were mailed to randomly selected well addresses. An instruction sheet and water-use questionnaire were included in the sampling kit. Of the wells randomly sampled, 13 percent had concentrations that exceeded the drinking-water standard for arsenic, and 3.5 percent exceeded the drinking-water standard for uranium.

One-way ANOVA analysis of log-transformed concentration data indicated significant differences for arsenic and for uranium concentration populations grouped by bedrock unit in most of the study area. However, an area of elevated arsenic concentrations was identified west of the Clinton-Newbury fault, where there were no significant differences in arsenic concentrations among the bedrock units. Lack of correlation with individual bedrock units in this area could have resulted from relatively equal redistribution of arsenic by metamorphic and/or metasomatic fluids.

Concentrations of arsenic and uranium fit log-normal distributions for populations separated by bedrock unit. For each bedrock unit, log-normal fits of the data were used to determine probabilities of concentrations exceeding the drinking-water standards. Overstandard probabilities were as great as 26 percent for arsenic in a unit containing amphibolite and 21 percent for uranium in a granitic unit.

Water-use data from the well users indicated that most of the overstandard wells were being used for drinking water without treatment—66 percent for arsenic and 93 percent for uranium. This data together with probability and well-distribution data were used to estimate the potential total number of wells in the study area used for drinking water without treatment: approximately 3,800 for arsenic and 3,000 for uranium.

Probability and well-distribution data were also used to determine the sampling effort required to locate 90 percent of the estimated overstandard wells. For arsenic, this could be achieved by sampling wells in those bedrock units with an overstandard probability of 10 percent or greater. This would involve sampling 26 percent of the total number of wells in the study area. For uranium, 90 percent of overstandard wells could be determined by sampling wells in bedrock units with an overstandard probability of 4 percent or greater. This would involve sampling 40 percent of all the wells in the study area.

Increased sampling in the investigation was directed in the regions of three 1:24,000 quadrangles where recent detailed geologic mapping had been conducted. Improved correlations of arsenic and uranium with bedrock unit were measured for two of the three quadrangles compared to the correlations made with the statewide map.

The correlations with bedrock are compatible with a natural bedrock source of the contaminants. By addressing the potential for contamination of bedrock wells in areas of increased contamination probability, well owners and resource managers can better assess risk.

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Appendix 1. Abbreviations and Descriptions for Bedrock Units in and Adjacent to the Study Area

Appendix 1. Abbreviations and descriptions for bedrock units in and adjacent to the study area.

[Fm, formation; Mbr, member; bedrock unit abbreviations and descriptions are from Zen and others, 1983]

Bedrock unit abbreviation	Age	Bedrock unit descriptions
Cbw	Cambrian	Braintree Argillite and Weymouth Fm—argillite, with some rare limestone
Cg	Cambrian	Green Lodge Fm of Rhodes and Graves (1931)—quartzite and slate
Ch	Cambrian	Hoppin Fm—quartzite, argillite, and minor limestone
cu	Unknown age	Cumberlandite—rock containing magnetite, ilmenite, olivine, labradorite, and spinel
Dcgr	Devonian	Chelmsford Granite—muscovite-biotite granite
Dchgr	Devonian	Coys Hill Porphyritic Granite Gneiss—microcline granite gneiss
Dchh	Devonian	Coys Hill Porphyritic Granite Gneiss— hornblende gneiss inclusions
Dcygr	Devonian	Cherry Hill Granite—alaskite granite containing ferro-hornblende
Ddi	Devonian	Hardwick Tonalite: Biotite-hornblende diorite and quartz-bearing diorite
Ddn	Devonian	Hardwick Tonalite: Meladiorite and norite
Dfgd	Devonian	Fitchburg Complex—biotite granodiorite to tonalite gneiss
Dfgds	Devonian	Fitchburg Complex—biotite-muscovite granitic gneiss with mica schist and feldspathic granulite inclusions
Dfgr	Devonian	Fitchburg Complex—muscovite-biotite granite
Dfgrg	Devonian	Fitchburg Complex—biotite-muscovite granite to granodiorite gneiss
Dft	Devonian	Fitchburg Complex—biotite-hornblende tonalite inclusions
Dgd	Devonian	Granodiorite
Dgr	Devonian	Biotite-muscovite granite
Dhgr	Devonian	Hardwick Tonalite—porhyritic microcline-biotite granite gneiss
Dht	Devonian	Hardwick Tonalite—biotite tonalite to granodiorite gneiss
Dl	Devonian	Littleton Fm
Dl+Ops	Devonian	Littleton and Partridge Fms, interfolded
Dl+Ops	Devonian	Partridge Fm—interfolded Littleton and Partridge Fms
Dlf	Devonian	Littleton Fm—quartz-feldspar-garnet gneiss, probably felsic metavolcanic rock
Dlm	Devonian	Littleton Fm—calcitic marble
Dlo	Devonian	Littleton Fm—orthopyroxene-biotite gneiss, probably intermediate metavolcanic rock
Dmgr	Devonian	Muscovite-biotite granite
DOgr	Devonian/Ordovician	Alkalic granite in Franklin
Dpgr	Devonian	Peabody Granite—alkalic granite containing ferro-hornblende
Drgr	Devonian	Granite of Rattlesnake Hill pluton—biotite-granite and fine-grained riebeckite granite
Drh	Devonian	Hardwick Tonalite: Biotite-garnet-feldspar gneiss of Ragged Hill
DSdi	Devonian/Silurian	Diorite and tonalite
DSn	Devonian/Silurian	Newbury Volcanic Complex—undivided sedimentray and volcanic rocks
DSna	Devonian/Silurian	Newbury Volcanic Complex—porphyritic andesite, includes tuffaceous mudstone
DSnl	Devonian/Silurian	Newbury Volcanic Complex—basalt, andesite, rhyolite, and tuff
DSnr	Devonian/Silurian	Newbury Volcanic Complex—micrographic rhyolite
DSnu	Devonian/Silurian	Newbury Volcanic Complex—calcareous mudstone, red mudstone, and siliceous siltstone
DSw	Devonian/Silurian	Worcester Fm—carbonaceous slate and phyllite and minor metagraywacke
Dwm	Devonian	Wenham Monzonite—monzonite containing ferro-hornblende
DZl	Devonian	Lynn Volcanic Complex—rhyolite, agglomerate, and tuff
fgr	Unknown age	Fine-grained granite and granite porphyry

Appendix 1. Abbreviations and descriptions for bedrock units in and adjacent to the study area. —Continued

[Fm, formation; Mbr, member; bedrock unit abbreviations and descriptions are from Zen and others, 1983]

Bedrock unit abbreviation	Age	Bedrock unit descriptions
gb	Precambrian to Paleozoic	Hornblende-olivine gabbro
Cbw	Cambrian	Braintree Argillite and Weymouth Fm—argillite, with some rare limestone
Cg	Cambrian	Green Lodge Fm of Rhodes and Graves (1931)—quartzite and slate
Ch	Cambrian	Hoppin Fm—quartzite, argillite, and minor limestone
cu	Unknown age	Cumberlandite—rock containing magnetite, ilmenite, olivine, labradorite, and spinel
Dcgr	Devonian	Chelmsford Granite—muscovite-biotite granite
Dchgr	Devonian	Coys Hill Porphyritic Granite Gneiss—microcline granite gneiss
Dchh	Devonian	Coys Hill Porphyritic Granite Gneiss— hornblende gneiss inclusions
Dcygr	Devonian	Cherry Hill Granite—alaskite granite containing ferro-hornblende
Ddi	Devonian	Hardwick Tonalite: Biotite-hornblende diorite and quartz-bearing diorite
Ddn	Devonian	Hardwick Tonalite: Meladiorite and norite
Dfgd	Devonian	Fitchburg Complex—biotite granodiorite to tonalite gneiss
Dfgds	Devonian	Fitchburg Complex—biotite-muscovite granitic gneiss with mica schist and feldspathic granulite inclusions
Dfgr	Devonian	Fitchburg Complex—muscovite-biotite granite
Dfgrg	Devonian	Fitchburg Complex—biotite-muscovite granite to granodiorite gneiss
Dft	Devonian	Fitchburg Complex—biotite-hornblende tonalite inclusions
Dgd	Devonian	Granodiorite
Dgr	Devonian	Biotite-muscovite granite
Dhgr	Devonian	Hardwick Tonalite—porhyritic microcline-biotite granite gneiss
Dht	Devonian	Hardwick Tonalite—biotite tonalite to granodiorite gneiss
Dl	Devonian	Littleton Fm
Dl+Ops	Devonian	Littleton and Partridge Fms, interfolded
Dl+Ops	Devonian	Partridge Fm—interfolded Littleton and Partridge Fms
Dlf	Devonian	Littleton Fm—quartz-feldspar-garnet gneiss, probably felsic metavolcanic rock
Dlm	Devonian	Littleton Fm—calcitic marble
Dlo	Devonian	Littleton Fm—orthopyroxene-biotite gneiss, probably intermediate metavolcanic rock
Dmgr	Devonian	Muscovite-biotite granite
DOgr	Devonian/Ordovician	Alkalic granite in Franklin
Dpgr	Devonian	Peabody Granite—alkalic granite containing ferro-hornblende
Drgr	Devonian	Granite of Rattlesnake Hill pluton—biotite-granite and fine-grained riebeckite granite
Drh	Devonian	Hardwick Tonalite: Biotite-garnet-feldspar gneiss of Ragged Hill
DSdi	Devonian/Silurian	Diorite and tonalite
DSn	Devonian/Silurian	Newbury Volcanic Complex—undivided sedimentray and volcanic rocks
DSna	Devonian/Silurian	Newbury Volcanic Complex—porphyritic andesite, includes tuffaceous mudstone
DSnl	Devonian/Silurian	Newbury Volcanic Complex—basalt, andesite, rhyolite, and tuff
DSnr	Devonian/Silurian	Newbury Volcanic Complex—micrographic rhyolite
DSnu	Devonian/Silurian	Newbury Volcanic Complex—calcareous mudstone, red mudstone, and siliceous siltstone
DSw	Devonian/Silurian	Worcester Fm—carbonaceous slate and phyllite and minor metagraywacke
Dwm	Devonian	Wenham Monzonite—monzonite containing ferro-hornblende
DZl	Devonian	Lynn Volcanic Complex—rhyolite, agglomerate, and tuff

Appendix 1. Abbreviations and descriptions for bedrock units in and adjacent to the study area. —Continued

[Fm, formation; Mbr, member; bedrock unit abbreviations and descriptions are from Zen and others, 1983]

Bedrock unit abbreviation	Age	Bedrock unit descriptions
fgr	Unknown age	Fine-grained granite and granite porphyry
gb	Precambrian to Paleozoic	Hornblende-olivine gabbro
gd	Precambrian to Paleozoic	Granodiorite
gr	Precambrian to Paleozoic	Granite
grg	Devonian	Biotite granitic gneiss
hg	Precambrian to Paleozoic	Hornblende-plagioclase gneiss
igd	Precambrian to Paleozoic	Granodiorite of the Indian Head pluton—biotite granodiorite and hornblende-biotite tonalite
Jd	Jurassic	Diabase dikes and sills
Jsi	Jurassic	Silicified fault-breccia or strongly silicified metamorphic rocks
K	Cretaceous	Cretaceous sediments—clay, silt, sand, and gravel, mostly non-marine and near-shore
mgr	Precambrian to Silurian	Muscovite granite
Ogl	Ordovician	Glastonbury Gneiss—granitic gneiss
Ongb	Ordovician	Nahant Gabbro and gabbro at Salem Neck—labradorite-pyroxene gabbro, hornblende gabbro, and hornblende diorite
Opa	Ordovician	Partridge Fm—amphibolite
Opau	Ordovician	Partridge Fm—sillimanite-feldspar augen gneiss
Opbg	Ordovician	Partridge Fm—biotite gneiss
Opc	Ordovician	Pauchaug Gneiss—granitic gneiss
Opf	Ordovician	Partridge Fm—felsic gneiss, metavolcanic, and minor amphibolite
Ops	Ordovician	Partridge Fm—sulfidic mica schist and subordinate amphibolite
Opsa	Ordovician	Partridge Fm—sulfidic mica schist and abundant amphibolite
Opsc	Ordovician	Partridge Fm—sulfidic schist and abundant calc-silicate
Opsg	Ordovician	Partridge Fm—felsic gneiss and schist
Opu	Ordovician	Partridge Fm—ultramafic lenses, commonly hornblendite
Opv	Ordovician	Partridge Fm—mafic and felsic gneisses, metavolcanic, with calc-silicate granofels
Opvs	Ordovician	Partridge Fm—biotite gneiss, metavolcanic; minor amphibolite and sulfidic schist
OZf	Neoproterozoic	Fish Brook Gneiss—biotite-plagioclase quartz gneiss
OZm	Neoproterozoic	Marlboro Fm—amphibolite, biotite schist and gneiss, minor calc-silicate granofels and felsic granofels
OZma	Neoproterozoic	Massabesic Gneiss Complex—biotite feldspar paragneiss intruded by potassium-feldspar-rich gneiss
OZmg	Neoproterozoic	Marlboro Fm—feldspathic gneiss
OZn	Neoproterozoic	Nashoba Fm—sillimanite schist and gneiss, partly sulfidc, amphibolite, biotite gneiss, calc-silicate gneiss, and marble
OZnb	Neoproterozoic	Nashoba Fm: Boxford Mbr—massive amphibolite, minor biotite gneiss
OZq	Neoproterozoic	Quinebaug Fm—amphibolite, biotite, and hornblende gneiss, felsic gneiss, and calc-silicate gneiss
OZsh	Neoproterozoic	Shawsheen Gneiss—sillimanite gneiss, sulfidic at base; minor amphibolite
OZt	Neoproterozoic	Tatnic Hill Fm—sulfidic sillimanite schist, sillimanite schist and gneiss, biotite gneiss; minor amphibolite, calc-silicate gneiss and marble
OZtf	Neoproterozoic	Tatnic Hill Fm: Fly Pond Mbr—calc-silicate gneiss and marble

Appendix 1. Abbreviations and descriptions for bedrock units in and adjacent to the study area. —Continued

[Fm, formation; Mbr, member; bedrock unit abbreviations and descriptions are from Zen and others, 1983]

Bedrock unit abbreviation	Age	Bedrock unit descriptions
OZty	Neoproterozoic	Tatnic Hill Fm: Yantic Mbr—grey mica schist
Pcm	Pennsylvanian	Coal Mine Brook Fm—carbonaceous slate and garnet phyllite; lens of meta-anthracite; conglomerate and arkose
Pd	Pennsylvanian	Dighton Conglomerate—coarse conglomerate having sandy matrix; minor sandstone
Pgr	Pennsylvanian	Biotite granite, with magnetite-bearing pegmatite
Ph	Pennsylvanian	Harvard Conglomerate—conglomerate and chloritoid-hematite phyllite
Pp	Pennsylvanian	Pondville Conglomerate—quartz conglomerate having abundant sandy matrix; boulder conglomerate; arkose
Pr	Pennsylvanian	Rhode Island Fm—sandstone, graywacke, shale, and conglomerate; minor beds of meta-antracite
Prc	Pennsylvanian	Rhode Island Fm—conglomerate, sandstone, and graywacke
Pw	Pennsylvanian	Wamsutta Fm—red to pink conglomerate, graywacke, sandstone, and shale
Pwv	Pennsylvanian	Wamsutta Fm—rhyolite and mafic volcanic rocks
PZb	Unknown age	Bellingham Conglomerate—red and gray metamorphosed conglomerate, sandstone, graywacke, and shale
PzZc	Proterozoic Z to earliest Paleozoic	Cambridge Argillite—gray argillite and minor quartzite; rare sandstone and conglomerate
PzZr	Proterozoic Z to earliest Paleozoic	Roxbury Conglomerate—conglomerate, sandstone, siltstone, argillite, and melaphyre
PzZrb	Proterozoic Z to earliest Paleozoic	Roxbury Conglomerate—melaphyre
q	Unknown age	Massive quartz and silicified rock
qd	Precambrian to Phanerozoic	Quartz diorite
Sacgr	Silurian	Ayer Granite—Clinton facies, porphyritic biotite granite
Sagr	Silurian	Ayer Granite—granite to tonalite
Sb	Silurian	Berwick Fm—metamorphosed calcareous sandstone, silstone, and minor muscovite schist (1 polygon)
Sb	Silurian	Berwick Fm—metamorphosed calcareous sandstone, silstone, and minor muscovite schist
Sbs	Silurian	Berwick Fm—mica schist
Se	Silurian	Eliot Fm—phyllite and calcareous phyllite
Sfs	Silurian	Fitch Fm—sulfidic calc-silicate and minor sulfidic schist
Sfss	Silurian	Fitch Fm—sulfidic mica schist
Sgr	Silurian	Rusty-weathering biotite granite to granodiorite
Sngr	Silurian	Newburyport Complex—porphyritic granite with microcline phenocrysts
So	Silurian	Oakdale Fm—metamorphosed pelitic and calcareous siltsone and muscovite schist
SOad	Silurian	Ayer Granite—Devens-Long Pond facies, porphyritic gneissic biotite granite and granodiorite
SOagr	Silurian	Andover Granite—muscovite-biotite granite
SObgr	Silurian	Blue Hill Granite Porphyry—microperthite-quartz porphyry
SObo	Silurian	Boylston Schist—carbonaceous phyllite and schist, locally sulfidic; quartzite; calc-silicate beds
SOcb	Silurian	Cape Ann Complex: Beverly Syenite
SOcgr	Silurian	Cape Ann Complex—alkalic granite to quartz syenite containing ferro-hornblende
SOcsm	Silurian	Cape Ann Complex: Squam Granite—monzodiorite
SOk	Silurian	Kittery Fm—quartzite, partly calcareous; phyllite, schist

Appendix 1. Abbreviations and descriptions for bedrock units in and adjacent to the study area. —Continued

[Fm, formation; Mbr, member; bedrock unit abbreviations and descriptions are from Zen and others, 1983]

Bedrock unit abbreviation	Age	Bedrock unit descriptions
SOngd	Silurian	Newburyport Complex—tonalite and granodiorite
SOqgr	Silurian	Quincy Granite—alkalic granite containing riebeckite and aegirine
SOrh	Silurian	Reubens Hill Fm—amphibolite, hornblende-chlorite schist, and feldspathic schist; includes metamorphosed diorite
SOvh	Silurian	Vaughn Hills Quartzite—quartzite, phyllite, conglomerate, and chlorite schist
Sp	Silurian	Paxton Fm—biotite granofels, calc-silicate granofels, and sulfidic schist
Spa	Silurian	Paxton Fm—amphibolite
Spbc	Silurian	Paxton Fm—diopside calc-silicate granofels
Spbs	Silurian	Paxton Fm: Bigelow Brook Mbr—biotite granofels, sulfidic schist, and minor calc-silicate granofels
Spqr	Silurian	Paxton Fm—rusty-weathering sulfidic quartzite and sulfidic schist
Spso	Silurian	Paxton Fm: Southbridge Mbr—biotite granofels and calc-silicate granofels
Spsq	Silurian	Paxton Fm—sulfidic magnesian biotite and magnesian cordierite schist and sillimanite quartzite
Spss	Silurian	Paxton Fm—sulfidic mica schist
Ssaqd	Silurian	Straw Hollow Diorite and Assabet Quartz Diorite, undifferentiated—biotite-hornblende diorite and quartz diorite
Ssqd	Silurian	Sharpners Pond Diorite—biotite-hornblende tonalite and diorite
St	Silurian	Tower Hill Quartzite—quartzite and phyllite
Sts	Silurian	Tower Hill Quartzite—gray phyllite
SZtb	Silurian	Tadmuck Brook Schist—andalusite phyllite and sillimanite schist, partly sulfidic; local quartzite
T	Tertiary	Tertiary sediments—unconsolidated sand, silt, and clay in discontinuous patches
TRe	Triassic	Red arkosic conglomerate, sandstone, and siltstone
u	Precambrian to Phanerozoic	Serpentinite
Zagr	Neoproterozoic	Alaskite—mafic-poor gneissic granite, commonly containing muscovite
Zb	Proterozoic Z	Blackstone Group—undivided, quartzite, schist, phyllite, marble, and metavolcanic rocks
Zbq	Proterozoic Z	Blackstone Group: Quinnville Quartzite
Zbs	Proterozoic Z	Blackstone Group—mica schist and phyllite
Zbv	Proterozoic Z	Blackstone Group—greenstone and amphibolite
Zdgr	Proterozoic Z	Dedham Granite—granite; includes dioritic rock
Zdi	Proterozoic Z	Diorite—hornblende diorite metamorhosed in part to amphibolite and hornblende gneiss
Zdigb	Proterozoic Z	Diorite and gabbro—complex of diorite and gabbro, sub. metavolcanic rocks and intrusive granite and granodiorite
Zdngr	Proterozoic Z	Dedham Granite—granite to granodiorite
Zegr	Proterozoic Z	Esmond Granite—biotite granite
Zfgr	Proterozoic Z	Granite of the Fall River pluton—biotite granite, in part mafic poor
Zfm	Proterozoic Z	Felsic and mafic volcanic rocks
Zgb	Proterozoic Z	Gabbro—hornblende gabbro and hornblende-pyroxene gabbro metamorphosed in part to hornblende gneiss and amphibolite
Zgg	Proterozoic Z	Granite, gneiss, and schist, undivided—plutonic and metamorphic rocks
Zgmgd	Proterozoic Z	Grant Mills Granodiorite—porphyritic granodiorite

Appendix 1. Abbreviations and descriptions for bedrock units in and adjacent to the study area. —Continued

[Fm, formation; Mbr, member; bedrock unit abbreviations and descriptions are from Zen and others, 1983]

Bedrock unit abbreviation	Age	Bedrock unit descriptions
Zgn	Proterozoic Z	Biotite gneiss near New Bedford—feldspathic gneiss
Zgr	Proterozoic Z	Biotite granite
Zgs	Proterozoic Z	Gneiss and schist near New Bedford—hornblende and biotite schist and gneiss, amphibolite
Zhg	Proterozoic Z	Hope Valley Alaskite Gneiss—mafic-poor gneissic granite, locally containing muscovite
Zm	Proterozoic Z	Mattapan Volcanic Complex—rhyolite, melaphyre, agglomerate, and tuff
Zmgd	Proterozoic Z	Milford Granite—seriate to subporphyritic granite to granodiorite, locally gneissic
Zmgr	Proterozoic Z	Milford Granite—biotite granite, locally gneissic
Zp	Proterozoic Z	Plainfield Fm—quartzite, pelitic schist, minor calc-silicate rock and amphibolite
Zpg	Proterozoic Z	Ponaganset Gneiss—gneissic biotite granite containing megacrysts of microcline
Zpgr	Proterozoic Z	Porphyritic granite—seriate to porphyritic biotite granite with epidote and sphene and mafic inclusions
Zrdi	Proterozoic Z	Diorite at Rowley—hornblende diorite
Zsg	Proterozoic Z	Scituate Granite Gneiss—gneissic granite containing biotite
Zssy	Proterozoic Z	Sharon Syenite—syenite containing microperthite, oligoclase, and clinopyroxene, mixed with ferro-gabbro
Ztgd	Proterozoic Z	Topsfield Granodiorite—porphyritic granodiorite
Zv	Proterozoic Z	Metamorphosed mafic to felsic flow, and volcaniclastic and hypabyssal intrusive rocks
Zvf	Proterozoic Z	Metamorphosed felsic metavolcanic rocks
Zw	Proterozoic Z	Westboro Fm—quartzite, schist, calc-silicate quartzite, and amphibolite
Zwgr	Proterozoic Z	Westwood Granite

Appendix 2. Letter to Potential Participants in the Study

Appendix 2. Letter to potential participants in the study.

OMB Control Number 1028-0086

USGS Study on Arsenic and Uranium in Bedrock Wells of East Central Massachusetts

Dear Resident Well User:

The U.S. Geological Survey (USGS) and the Massachusetts Department of Environmental Protection (MDEP) are conducting a study of drinking water to assess the extent of possible elevated concentrations of naturally occurring arsenic and uranium in bedrock aquifers that provide drinking water in east central Massachusetts. The well at your address has been chosen by a random selection process to be included in the study.

The study, conducted by John Colman, U.S. Geological Survey (508 490 5027), will indicate relationships between arsenic and uranium concentrations and type of bedrock in which a well is drilled. This information will help guide future water-supply development, well-water testing, and estimates of total numbers of wells affected.

Your participation is completely voluntary, and results from your well will be kept completely confidential (by Exemption 9, well data is not subject to the Freedom of Information Act) and will only be used for the purpose of this study.

We will report results to you with information about health effects of drinking water greater than standards and ways to decrease concentrations. If you have any questions, please do not hesitate to contact the project leader John Colman at: (508) 490 5027.

Questionnaires will be mailed to a small number of the selected well addresses by the Massachusetts Department of Public Health (MDPH). The MDPH questionnaire offers a second program of biomonitoring for some participants concerned about uranium and arsenic effects on health. Participation in the MDPH program is also voluntary and is not required for well testing by USGS.

In Parts 1 and 3 of the survey we want to know a little about your water and where it comes from. In Part 2, there are instructions about how to collect a water sample. When you are done, please use the enclosed business reply envelope to mail your survey and water samples back to the USGS. **Please mail in the bottles and survey soon, if possible within 2 weeks. If it goes longer, however, we are still interested.**

PART 1 - Water Sources and Supplies

The majority of residential water supply wells in east-central Massachusetts are private wells that tap ground water aquifers in fractured bedrock formations. In the first part of this study, we would like to ask you a few questions about your water source and supply.

1. Is your home supplied with water from a private (bedrock) well?

   ☐ Yes (go to question 2)

   ☐ No. My house supply is town water or another source other than bedrock well.

   Please **STOP** here. You do not have to mail back bottles or a water sample.

Appendix 2. Letter to potential participants in the study.—Continued

2. Is your well water treated?

☐ Yes

What is the treatment? _____

☐ No

3. How many people are in your household? *(This question is to determine the amount of water use in your household).*

_____ People live in this household .

4. Do you use your well water for drinking water and/or cooking?

☐ Yes

☐ No, because of water quality issues (Select all that apply):

☐ **Arsenic** ☐ **Uranium**

☐ **Iron** ☐ **Sediment**

☐ **Manganese** ☐ **Taste**

☐ **Other**_____

Part 2 - Water Sampling Instructions

Although collecting a water sample is a relatively simple task, there are several steps that must be taken to ensure accurate results. Please follow the instructions in steps 1-6 below to complete the next section of the survey.

Sampling Objective

The objective is to get a water sample that represents the water in the bedrock aquifer as closely as possible, so please select a tap that does not have treatment. Both bottles should be filled from the same faucet, one that does not have a water treatment system. Sample bottle screw threads and cap should not be contaminated with dirt from hands or the tap.

Once the bottles are filled, please mail the samples and questionnaire in the enclosed, prepaid business reply envelope.

Appendix 2. Letter to potential participants in the study.—Continued

Instructions

1. Collect your water sample **in the sample containers provided by the USGS**. Samples collected in any other container will not meet lab standards and cannot be processed.
2. **Choose a location to sample your water.** If you **do not** have any water treatment devices, such as a water softener or a reverse osmosis filter, take the sample from a cold water tap where you get your drinking water. If you **do** have treatment devices on your water system, (other than a whole-house filter for sediment) please locate a faucet which is attached to the water line before the treatment system.
3. Please avoid contamination of your samples, and do not touch the inside of the bottle or cap.
4. **Turn on the cold water and let it run for 1 minute** to flush the water out of the pipes. Turn the faucet down to a pencil size stream of water and fill the sample container.
5. Place the bottles and your completed survey in the enclosed postage-paid, business-reply envelope.
6. Mail the envelope to the USGS.

PART 3 - Location and Time of Water Sample

Please tell us where and when you collected the water for this sample.

- ☐ Basement Faucet
- ☐ Outside Spigot
- ☐ Bathroom Faucet
- ☐ Kitchen Faucet
- ☐ Other _____

Date and time of sampling_____

We would like to conduct follow-up sampling with a visit to a small number of participants. Would you be willing to participate in the follow-up visit?

- ☐ Yes, I would like to participate in a follow-up visit.
  Please contact me by phone: _____
  Or by email: _____
- ☐ No, I would not like to participate in a follow-up visit.

We would like to thank you for taking the time to participate in this important study.

PAPERWORK REDUCTION ACT STATEMENT: The Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et. seq.) requires us to inform you that this information is being collected to inform a study on arsenic and uranium in bedrock wells of east central Massachusetts. The estimated burden for this collection of information is estimated to average 20 minutes per response, including the time for reviewing instructions, answering questions, collecting water samples. The response to this request is voluntary. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB Control Number. Comments regarding the burden estimate or any other aspect of this collection of information should be directed to: John Colman at (508) 490 5027.

Appendix 3. Probability of Arsenic Exceeding a Given Concentration by Bedrock Unit

Appendix 3. Probability of arsenic exceeding a given concentration, by bedrock unit.

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Arsenic, in micrograms per liter	Grouped bedrock units with elevated arsenic concentration			Bedrock unit abbreviation					
				Ops*			OZf		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
1	0.66442	0.60023	0.72414	0.03526	0.00377	0.17241	0.55522	0.27338	0.81066
2	0.52993	0.46620	0.59290	0.01398	0.00108	0.09179	0.36942	0.15070	0.64306
3	0.44855	0.38670	0.51167	0.00764	0.00049	0.06006	0.27105	0.09073	0.54658
4	0.39190	0.33202	0.45446	0.00484	0.00027	0.04334	0.21023	0.05795	0.48441
5	0.34942	0.29143	0.41117	0.00334	0.00017	0.03316	0.16912	0.03875	0.44042
6	0.31604	0.25983	0.37687	0.00244	0.00011	0.02639	0.13965	0.02687	0.40719
7	0.28893	0.23440	0.34879	0.00186	0.00008	0.02161	0.11763	0.01919	0.38091
8	0.26637	0.21342	0.32525	0.00146	0.00006	0.01809	0.10064	0.01406	0.35941
9	0.24723	0.19578	0.30515	0.00117	0.00004	0.01540	0.08721	0.01051	0.34138
10	**0.23076**	**0.18073**	**0.28772**	**0.00096**	**0.00003**	**0.01329**	**0.07637**	**0.00801**	**0.32594**
11	0.21641	0.16771	0.27242	0.00080	0.00003	0.01161	0.06748	0.00619	0.31252
12	0.20376	0.15633	0.25886	0.00068	0.00002	0.01024	0.06008	0.00486	0.30069
13	0.19253	0.14630	0.24673	0.00058	0.00002	0.00910	0.05384	0.00386	0.29017
14	0.18247	0.13739	0.23581	0.00050	0.00001	0.00815	0.04854	0.00310	0.28071
15	0.17341	0.12942	0.22590	0.00043	0.00001	0.00735	0.04399	0.00251	0.27214
16	0.16520	0.12225	0.21687	0.00038	0.00001	0.00666	0.04005	0.00205	0.26434
17	0.15772	0.11576	0.20860	0.00034	0.00001	0.00607	0.03661	0.00169	0.25718
18	0.15088	0.10986	0.20098	0.00030	0.00001	0.00555	0.03360	0.00140	0.25058
19	0.14459	0.10448	0.19395	0.00027	0.00001	0.00510	0.03094	0.00117	0.24447
20	0.13878	0.09954	0.18742	0.00024	0.00001	0.00470	0.02857	0.00099	0.23879
21	0.13341	0.09501	0.18135	0.00022	0.00001	0.00435	0.02647	0.00084	0.23349
22	0.12843	0.09082	0.17568	0.00020	0.00000	0.00403	0.02459	0.00071	0.22853
23	0.12379	0.08694	0.17037	0.00018	0.00000	0.00375	0.02289	0.00061	0.22387
24	0.11945	0.08334	0.16540	0.00016	0.00000	0.00350	0.02136	0.00052	0.21949
25	0.11540	0.08000	0.16072	0.00015	0.00000	0.00327	0.01998	0.00045	0.21535
26	0.11160	0.07687	0.15631	0.00014	0.00000	0.00307	0.01872	0.00039	0.21143
27	0.10802	0.07396	0.15215	0.00013	0.00000	0.00288	0.01758	0.00034	0.20772
28	0.10466	0.07123	0.14821	0.00012	0.00000	0.00271	0.01653	0.00030	0.20419
29	0.10149	0.06866	0.14448	0.00011	0.00000	0.00256	0.01557	0.00026	0.20083
30	0.09849	0.06625	0.14093	0.00010	0.00000	0.00241	0.01469	0.00023	0.19763
31	0.09565	0.06398	0.13756	0.00009	0.00000	0.00228	0.01388	0.00020	0.19458
32	0.09296	0.06184	0.13436	0.00009	0.00000	0.00216	0.01313	0.00018	0.19166
33	0.09040	0.05982	0.13130	0.00008	0.00000	0.00205	0.01244	0.00016	0.18886
34	0.08798	0.05791	0.12839	0.00008	0.00000	0.00195	0.01180	0.00014	0.18618
35	0.08567	0.05609	0.12560	0.00007	0.00000	0.00185	0.01120	0.00012	0.18361

Appendix 3. Probability of arsenic exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Arsenic, in micrograms per liter	Grouped bedrock units with elevated arsenic concentration			Bedrock unit abbreviation					
				Ops*			OZf		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
36	0.08346	0.05438	0.12293	0.00007	0.00000	0.00176	0.01065	0.00011	0.18113
37	0.08136	0.05274	0.12038	0.00006	0.00000	0.00168	0.01014	0.00010	0.17875
38	0.07936	0.05119	0.11793	0.00006	0.00000	0.00160	0.00966	0.00009	0.17646
39	0.07744	0.04972	0.11558	0.00006	0.00000	0.00153	0.00921	0.00008	0.17425
40	0.07561	0.04831	0.11332	0.00005	0.00000	0.00146	0.00879	0.00007	0.17212
41	0.07385	0.04697	0.11115	0.00005	0.00000	0.00140	0.00840	0.00006	0.17006
42	0.07216	0.04569	0.10906	0.00005	0.00000	0.00134	0.00803	0.00006	0.16807
43	0.07055	0.04446	0.10705	0.00004	0.00000	0.00129	0.00768	0.00005	0.16615
44	0.06900	0.04329	0.10512	0.00004	0.00000	0.00123	0.00736	0.00005	0.16428
45	0.06750	0.04217	0.10325	0.00004	0.00000	0.00119	0.00705	0.00004	0.16248
46	0.06607	0.04110	0.10144	0.00004	0.00000	0.00114	0.00676	0.00004	0.16073
47	0.06469	0.04007	0.09970	0.00004	0.00000	0.00110	0.00649	0.00004	0.15903
48	0.06336	0.03908	0.09802	0.00003	0.00000	0.00105	0.00623	0.00003	0.15738
49	0.06208	0.03813	0.09639	0.00003	0.00000	0.00102	0.00599	0.00003	0.15578
50	0.06084	0.03722	0.09481	0.00003	0.00000	0.00098	0.00576	0.00003	0.15423
55	0.05526	0.03316	0.08765	0.00002	0.00000	0.00082	0.00478	0.00002	0.14706
60	0.05054	0.02978	0.08147	0.00002	0.00000	0.00070	0.00402	0.00001	0.14075
65	0.04647	0.02692	0.07609	0.00002	0.00000	0.00060	0.00341	0.00001	0.13514
70	0.04295	0.02447	0.07136	0.00001	0.00000	0.00052	0.00293	0.00001	0.13011
75	0.03987	0.02237	0.06716	0.00001	0.00000	0.00046	0.00253	0.00000	0.12556
80	0.03715	0.02054	0.06341	0.00001	0.00000	0.00040	0.00221	0.00000	0.12143
85	0.03474	0.01894	0.06005	0.00001	0.00000	0.00036	0.00194	0.00000	0.11764
90	0.03258	0.01752	0.05700	0.00001	0.00000	0.00032	0.00171	0.00000	0.11416
95	0.03065	0.01627	0.05424	0.00001	0.00000	0.00029	0.00152	0.00000	0.11094
100	0.02890	0.01515	0.05172	0.00001	0.00000	0.00026	0.00136	0.00000	0.10796
110	0.02587	0.01325	0.04729	0.00000	0.00000	0.00021	0.00109	0.00000	0.10259
120	0.02334	0.01170	0.04351	0.00000	0.00000	0.00018	0.00090	0.00000	0.09788
130	0.02120	0.01041	0.04026	0.00000	0.00000	0.00015	0.00074	0.00000	0.09370
140	0.01937	0.00932	0.03744	0.00000	0.00000	0.00013	0.00062	0.00000	0.08997
150	0.01779	0.00841	0.03495	0.00000	0.00000	0.00011	0.00053	0.00000	0.08660
160	0.01641	0.00762	0.03275	0.00000	0.00000	0.00010	0.00045	0.00000	0.08354
170	0.01520	0.00694	0.03079	0.00000	0.00000	0.00009	0.00039	0.00000	0.08075
180	0.01413	0.00635	0.02904	0.00000	0.00000	0.00008	0.00034	0.00000	0.07819
190	0.01318	0.00583	0.02746	0.00000	0.00000	0.00007	0.00030	0.00000	0.07582
200	0.01233	0.00538	0.02602	0.00000	0.00000	0.00006	0.00026	0.00000	0.07364

Appendix 3. Probability of arsenic exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Arsenic, in micrograms per liter	Grouped bedrock units with elevated arsenic concentration			Bedrock unit abbreviation					
				Ops*			OZf		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
210	0.01157	0.00497	0.02472	0.00000	0.00000	0.00005	0.00023	0.00000	0.07161
220	0.01087	0.00461	0.02352	0.00000	0.00000	0.00005	0.00020	0.00000	0.06971
230	0.01025	0.00429	0.02243	0.00000	0.00000	0.00004	0.00018	0.00000	0.06794
240	0.00968	0.00400	0.02142	0.00000	0.00000	0.00004	0.00016	0.00000	0.06628
250	0.00916	0.00374	0.02050	0.00000	0.00000	0.00004	0.00015	0.00000	0.06472
260	0.00868	0.00350	0.01964	0.00000	0.00000	0.00003	0.00013	0.00000	0.06325
270	0.00824	0.00329	0.01884	0.00000	0.00000	0.00003	0.00012	0.00000	0.06186
280	0.00784	0.00309	0.01810	0.00000	0.00000	0.00003	0.00011	0.00000	0.06055
290	0.00747	0.00291	0.01740	0.00000	0.00000	0.00003	0.00010	0.00000	0.05930
300	0.00712	0.00275	0.01676	0.00000	0.00000	0.00002	0.00009	0.00000	0.05811

Appendix 3. Probability of arsenic exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Arsenic, in micrograms per liter	Bedrock unit abbreviation								
	OZm			OZn			OZnb		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
1	0.23792	0.07581	0.50313	0.16282	0.07832	0.29137	0.63210	0.44055	0.79514
2	0.19207	0.05460	0.44482	0.07879	0.02495	0.19331	0.51498	0.33884	0.68819
3	0.16795	0.04320	0.41687	0.04795	0.01088	0.15020	0.44518	0.27992	0.62072
4	0.15207	0.03587	0.39961	0.03262	0.00562	0.12468	0.39654	0.23959	0.57260
5	0.14047	0.03069	0.38756	0.02373	0.00322	0.10742	0.35986	0.20970	0.53578
6	0.13144	0.02681	0.37852	0.01807	0.00199	0.09480	0.33080	0.18642	0.50628
7	0.12413	0.02380	0.37140	0.01422	0.00130	0.08510	0.30699	0.16769	0.48187
8	0.11803	0.02137	0.36559	0.01148	0.00089	0.07737	0.28700	0.15224	0.46118
9	0.11283	0.01938	0.36074	0.00946	0.00063	0.07103	0.26990	0.13926	0.44331
10	**0.10832**	**0.01771**	**0.35659**	**0.00792**	**0.00046**	**0.06573**	**0.25505**	**0.12819**	**0.42764**
11	0.10435	0.01630	0.35299	0.00672	0.00034	0.06122	0.24199	0.11862	0.41375
12	0.10082	0.01508	0.34983	0.00577	0.00026	0.05733	0.23039	0.11026	0.40129
13	0.09765	0.01402	0.34701	0.00501	0.00020	0.05393	0.22000	0.10291	0.39003
14	0.09478	0.01309	0.34449	0.00438	0.00015	0.05093	0.21063	0.09638	0.37979
15	0.09217	0.01227	0.34221	0.00386	0.00012	0.04827	0.20211	0.09055	0.37040
16	0.08977	0.01154	0.34013	0.00342	0.00010	0.04589	0.19434	0.08530	0.36175
17	0.08756	0.01088	0.33823	0.00305	0.00008	0.04374	0.18720	0.08057	0.35374
18	0.08552	0.01029	0.33647	0.00274	0.00007	0.04179	0.18063	0.07627	0.34630
19	0.08361	0.00975	0.33485	0.00247	0.00005	0.04001	0.17454	0.07235	0.33935
20	0.08184	0.00926	0.33335	0.00224	0.00005	0.03839	0.16889	0.06877	0.33285
21	0.08018	0.00882	0.33194	0.00203	0.00004	0.03689	0.16363	0.06547	0.32674
22	0.07862	0.00841	0.33062	0.00185	0.00003	0.03551	0.15871	0.06244	0.32098
23	0.07715	0.00803	0.32939	0.00170	0.00003	0.03423	0.15410	0.05964	0.31555
24	0.07576	0.00768	0.32823	0.00156	0.00002	0.03305	0.14977	0.05704	0.31040
25	0.07445	0.00736	0.32713	0.00143	0.00002	0.03194	0.14569	0.05463	0.30552
26	0.07320	0.00706	0.32609	0.00132	0.00002	0.03091	0.14185	0.05238	0.30088
27	0.07202	0.00679	0.32511	0.00123	0.00001	0.02995	0.13821	0.05028	0.29646
28	0.07089	0.00653	0.32417	0.00114	0.00001	0.02904	0.13477	0.04832	0.29224
29	0.06982	0.00629	0.32328	0.00106	0.00001	0.02819	0.13151	0.04648	0.28821
30	0.06880	0.00606	0.32243	0.00099	0.00001	0.02739	0.12841	0.04476	0.28435
31	0.06782	0.00585	0.32162	0.00092	0.00001	0.02663	0.12545	0.04314	0.28065
32	0.06688	0.00565	0.32084	0.00086	0.00001	0.02591	0.12264	0.04161	0.27711
33	0.06598	0.00546	0.32010	0.00081	0.00001	0.02523	0.11996	0.04017	0.27370
34	0.06511	0.00528	0.31939	0.00076	0.00001	0.02459	0.11740	0.03881	0.27042
35	0.06428	0.00511	0.31870	0.00071	0.00001	0.02398	0.11494	0.03752	0.26726

Appendix 3. Probability of arsenic exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Arsenic, in micrograms per liter	Bedrock unit abbreviation								
	OZm			OZn			OZnb		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
36	0.06348	0.00495	0.31804	0.00067	0.00000	0.02339	0.11260	0.03631	0.26422
37	0.06271	0.00480	0.31741	0.00063	0.00000	0.02284	0.11035	0.03515	0.26128
38	0.06197	0.00466	0.31680	0.00060	0.00000	0.02231	0.10819	0.03405	0.25844
39	0.06125	0.00452	0.31621	0.00056	0.00000	0.02181	0.10612	0.03301	0.25570
40	0.06056	0.00439	0.31564	0.00053	0.00000	0.02132	0.10412	0.03202	0.25305
41	0.05989	0.00427	0.31509	0.00050	0.00000	0.02086	0.10220	0.03108	0.25048
42	0.05924	0.00415	0.31455	0.00048	0.00000	0.02042	0.10036	0.03018	0.24799
43	0.05861	0.00404	0.31404	0.00045	0.00000	0.02000	0.09858	0.02932	0.24558
44	0.05801	0.00393	0.31354	0.00043	0.00000	0.01959	0.09686	0.02850	0.24324
45	0.05742	0.00383	0.31305	0.00041	0.00000	0.01920	0.09521	0.02771	0.24097
46	0.05685	0.00374	0.31258	0.00039	0.00000	0.01882	0.09361	0.02696	0.23876
47	0.05629	0.00364	0.31213	0.00037	0.00000	0.01846	0.09206	0.02624	0.23661
48	0.05575	0.00355	0.31168	0.00035	0.00000	0.01811	0.09057	0.02556	0.23452
49	0.05523	0.00347	0.31125	0.00034	0.00000	0.01778	0.08912	0.02490	0.23249
50	0.05472	0.00338	0.31083	0.00032	0.00000	0.01745	0.08772	0.02426	0.23051
55	0.05236	0.00302	0.30889	0.00026	0.00000	0.01600	0.08133	0.02145	0.22133
60	0.05028	0.00271	0.30718	0.00021	0.00000	0.01476	0.07581	0.01912	0.21319
65	0.04843	0.00246	0.30564	0.00018	0.00000	0.01370	0.07099	0.01717	0.20589
70	0.04676	0.00224	0.30426	0.00015	0.00000	0.01277	0.06674	0.01551	0.19930
75	0.04525	0.00205	0.30300	0.00012	0.00000	0.01196	0.06297	0.01409	0.19331
80	0.04387	0.00189	0.30185	0.00011	0.00000	0.01124	0.05959	0.01286	0.18782
85	0.04261	0.00175	0.30079	0.00009	0.00000	0.01060	0.05654	0.01178	0.18277
90	0.04145	0.00162	0.29981	0.00008	0.00000	0.01003	0.05378	0.01084	0.17810
95	0.04037	0.00151	0.29890	0.00007	0.00000	0.00951	0.05128	0.01001	0.17376
100	0.03937	0.00141	0.29805	0.00006	0.00000	0.00905	0.04898	0.00928	0.16972
110	0.03757	0.00124	0.29650	0.00005	0.00000	0.00823	0.04494	0.00803	0.16240
120	0.03598	0.00111	0.29514	0.00004	0.00000	0.00754	0.04149	0.00702	0.15593
130	0.03457	0.00099	0.29391	0.00003	0.00000	0.00696	0.03851	0.00620	0.15015
140	0.03330	0.00089	0.29280	0.00003	0.00000	0.00645	0.03590	0.00551	0.14494
150	0.03215	0.00081	0.29179	0.00002	0.00000	0.00601	0.03361	0.00493	0.14022
160	0.03111	0.00074	0.29086	0.00002	0.00000	0.00562	0.03158	0.00443	0.13591
170	0.03016	0.00068	0.29000	0.00002	0.00000	0.00527	0.02976	0.00401	0.13195
180	0.02928	0.00063	0.28921	0.00001	0.00000	0.00497	0.02813	0.00364	0.12830
190	0.02848	0.00058	0.28847	0.00001	0.00000	0.00469	0.02665	0.00332	0.12492
200	0.02773	0.00054	0.28778	0.00001	0.00000	0.00444	0.02531	0.00304	0.12178

Appendix 3. Probability of arsenic exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Arsenic, in micrograms per liter	Bedrock unit abbreviation								
	OZm			OZn			OZnb		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
210	0.02703	0.00050	0.28713	0.00001	0.00000	0.00422	0.02409	0.00280	0.11885
220	0.02638	0.00047	0.28652	0.00001	0.00000	0.00401	0.02297	0.00258	0.11610
230	0.02577	0.00044	0.28595	0.00001	0.00000	0.00382	0.02195	0.00238	0.11353
240	0.02519	0.00041	0.28541	0.00001	0.00000	0.00365	0.02100	0.00221	0.11110
250	0.02465	0.00038	0.28489	0.00001	0.00000	0.00349	0.02012	0.00206	0.10881
260	0.02414	0.00036	0.28440	0.00001	0.00000	0.00335	0.01931	0.00192	0.10665
270	0.02366	0.00034	0.28393	0.00000	0.00000	0.00321	0.01856	0.00179	0.10460
280	0.02320	0.00032	0.28349	0.00000	0.00000	0.00308	0.01786	0.00167	0.10266
290	0.02277	0.00031	0.28307	0.00000	0.00000	0.00297	0.01720	0.00157	0.10080
300	0.02236	0.00029	0.28266	0.00000	0.00000	0.00286	0.01658	0.00147	0.09904

Appendix 3. Probability of arsenic exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Arsenic, in micrograms per liter	Bedrock unit abbreviation								
	Sgr			SOagr			Spsq		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
1	0.43165	0.15898	0.74354	0.32722	0.14632	0.56242	0.06350	0.01045	0.22900
2	0.06143	0.01062	0.21710	0.22397	0.08084	0.45292	0.02471	0.00212	0.14221
3	0.00952	0.00061	0.07257	0.17337	0.05237	0.39760	0.01316	0.00066	0.10868
4	0.00179	0.00004	0.02970	0.14228	0.03691	0.36223	0.00811	0.00026	0.09011
5	0.00040	0.00000	0.01393	0.12094	0.02746	0.33686	0.00546	0.00012	0.07803
6	0.00010	0.00000	0.00719	0.10525	0.02121	0.31738	0.00390	0.00006	0.06940
7	0.00003	0.00000	0.00399	0.09318	0.01686	0.30173	0.00291	0.00003	0.06287
8	0.00001	0.00000	0.00234	0.08358	0.01370	0.28876	0.00224	0.00002	0.05771
9	0.00000	0.00000	0.00143	0.07575	0.01134	0.27773	0.00177	0.00001	0.05351
10	**0.00000**	**0.00000**	**0.00091**	**0.06923**	**0.00952**	**0.26820**	**0.00142**	**0.00001**	**0.05001**
11	0.00000	0.00000	0.00060	0.06371	0.00809	0.25983	0.00117	0.00001	0.04704
12	0.00000	0.00000	0.00040	0.05898	0.00695	0.25239	0.00097	0.00000	0.04447
13	0.00000	0.00000	0.00028	0.05487	0.00602	0.24571	0.00082	0.00000	0.04223
14	0.00000	0.00000	0.00020	0.05127	0.00527	0.23967	0.00069	0.00000	0.04026
15	0.00000	0.00000	0.00014	0.04809	0.00463	0.23416	0.00060	0.00000	0.03850
16	0.00000	0.00000	0.00010	0.04526	0.00410	0.22911	0.00052	0.00000	0.03692
17	0.00000	0.00000	0.00008	0.04273	0.00366	0.22445	0.00045	0.00000	0.03549
18	0.00000	0.00000	0.00006	0.04045	0.00327	0.22013	0.00040	0.00000	0.03420
19	0.00000	0.00000	0.00004	0.03838	0.00294	0.21611	0.00035	0.00000	0.03301
20	0.00000	0.00000	0.00003	0.03650	0.00266	0.21236	0.00031	0.00000	0.03192
21	0.00000	0.00000	0.00003	0.03478	0.00241	0.20884	0.00028	0.00000	0.03092
22	0.00000	0.00000	0.00002	0.03321	0.00219	0.20553	0.00025	0.00000	0.02999
23	0.00000	0.00000	0.00002	0.03176	0.00200	0.20241	0.00022	0.00000	0.02912
24	0.00000	0.00000	0.00001	0.03042	0.00183	0.19946	0.00020	0.00000	0.02832
25	0.00000	0.00000	0.00001	0.02918	0.00168	0.19667	0.00018	0.00000	0.02756
26	0.00000	0.00000	0.00001	0.02803	0.00155	0.19401	0.00017	0.00000	0.02686
27	0.00000	0.00000	0.00001	0.02695	0.00143	0.19149	0.00015	0.00000	0.02620
28	0.00000	0.00000	0.00001	0.02595	0.00132	0.18908	0.00014	0.00000	0.02557
29	0.00000	0.00000	0.00000	0.02502	0.00123	0.18678	0.00013	0.00000	0.02498
30	0.00000	0.00000	0.00000	0.02414	0.00114	0.18458	0.00012	0.00000	0.02443
31	0.00000	0.00000	0.00000	0.02332	0.00106	0.18247	0.00011	0.00000	0.02390
32	0.00000	0.00000	0.00000	0.02254	0.00099	0.18045	0.00010	0.00000	0.02340
33	0.00000	0.00000	0.00000	0.02181	0.00092	0.17851	0.00009	0.00000	0.02292
34	0.00000	0.00000	0.00000	0.02112	0.00086	0.17665	0.00009	0.00000	0.02247
35	0.00000	0.00000	0.00000	0.02047	0.00081	0.17485	0.00008	0.00000	0.02204

Appendix 3. Probability of arsenic exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Arsenic, in micrograms per liter	Bedrock unit abbreviation								
	Sgr			SOagr			Spsq		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
36	0.00000	0.00000	0.00000	0.01986	0.00076	0.17312	0.00007	0.00000	0.02162
37	0.00000	0.00000	0.00000	0.01927	0.00071	0.17145	0.00007	0.00000	0.02123
38	0.00000	0.00000	0.00000	0.01872	0.00067	0.16984	0.00006	0.00000	0.02085
39	0.00000	0.00000	0.00000	0.01819	0.00063	0.16828	0.00006	0.00000	0.02049
40	0.00000	0.00000	0.00000	0.01769	0.00060	0.16678	0.00006	0.00000	0.02014
41	0.00000	0.00000	0.00000	0.01721	0.00056	0.16532	0.00005	0.00000	0.01981
42	0.00000	0.00000	0.00000	0.01675	0.00053	0.16390	0.00005	0.00000	0.01949
43	0.00000	0.00000	0.00000	0.01632	0.00050	0.16253	0.00005	0.00000	0.01918
44	0.00000	0.00000	0.00000	0.01590	0.00048	0.16120	0.00004	0.00000	0.01888
45	0.00000	0.00000	0.00000	0.01551	0.00045	0.15991	0.00004	0.00000	0.01860
46	0.00000	0.00000	0.00000	0.01512	0.00043	0.15866	0.00004	0.00000	0.01832
47	0.00000	0.00000	0.00000	0.01476	0.00041	0.15744	0.00004	0.00000	0.01806
48	0.00000	0.00000	0.00000	0.01441	0.00039	0.15625	0.00003	0.00000	0.01780
49	0.00000	0.00000	0.00000	0.01408	0.00037	0.15509	0.00003	0.00000	0.01755
50	0.00000	0.00000	0.00000	0.01375	0.00035	0.15397	0.00003	0.00000	0.01731
55	0.00000	0.00000	0.00000	0.01232	0.00028	0.14875	0.00002	0.00000	0.01622
60	0.00000	0.00000	0.00000	0.01112	0.00022	0.14412	0.00002	0.00000	0.01527
65	0.00000	0.00000	0.00000	0.01011	0.00018	0.13996	0.00002	0.00000	0.01445
70	0.00000	0.00000	0.00000	0.00925	0.00015	0.13619	0.00001	0.00000	0.01373
75	0.00000	0.00000	0.00000	0.00851	0.00013	0.13277	0.00001	0.00000	0.01308
80	0.00000	0.00000	0.00000	0.00786	0.00011	0.12962	0.00001	0.00000	0.01251
85	0.00000	0.00000	0.00000	0.00729	0.00009	0.12673	0.00001	0.00000	0.01198
90	0.00000	0.00000	0.00000	0.00679	0.00008	0.12405	0.00001	0.00000	0.01151
95	0.00000	0.00000	0.00000	0.00634	0.00007	0.12155	0.00001	0.00000	0.01108
100	0.00000	0.00000	0.00000	0.00594	0.00006	0.11922	0.00000	0.00000	0.01068
110	0.00000	0.00000	0.00000	0.00526	0.00005	0.11500	0.00000	0.00000	0.00998
120	0.00000	0.00000	0.00000	0.00470	0.00004	0.11124	0.00000	0.00000	0.00938
130	0.00000	0.00000	0.00000	0.00423	0.00003	0.10788	0.00000	0.00000	0.00886
140	0.00000	0.00000	0.00000	0.00383	0.00002	0.10484	0.00000	0.00000	0.00839
150	0.00000	0.00000	0.00000	0.00349	0.00002	0.10207	0.00000	0.00000	0.00798
160	0.00000	0.00000	0.00000	0.00320	0.00002	0.09954	0.00000	0.00000	0.00762
170	0.00000	0.00000	0.00000	0.00295	0.00001	0.09721	0.00000	0.00000	0.00729
180	0.00000	0.00000	0.00000	0.00272	0.00001	0.09505	0.00000	0.00000	0.00699
190	0.00000	0.00000	0.00000	0.00253	0.00001	0.09305	0.00000	0.00000	0.00671
200	0.00000	0.00000	0.00000	0.00235	0.00001	0.09118	0.00000	0.00000	0.00646

Appendix 3. Probability of arsenic exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Arsenic, in micrograms per liter	Bedrock unit abbreviation								
	Sgr			SOagr			Spsq		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
210	0.00000	0.00000	0.00000	0.00220	0.00001	0.08942	0.00000	0.00000	0.00623
220	0.00000	0.00000	0.00000	0.00206	0.00001	0.08778	0.00000	0.00000	0.00602
230	0.00000	0.00000	0.00000	0.00193	0.00001	0.08624	0.00000	0.00000	0.00583
240	0.00000	0.00000	0.00000	0.00182	0.00000	0.08478	0.00000	0.00000	0.00564
250	0.00000	0.00000	0.00000	0.00171	0.00000	0.08339	0.00000	0.00000	0.00547
260	0.00000	0.00000	0.00000	0.00162	0.00000	0.08208	0.00000	0.00000	0.00531
270	0.00000	0.00000	0.00000	0.00153	0.00000	0.08084	0.00000	0.00000	0.00517
280	0.00000	0.00000	0.00000	0.00145	0.00000	0.07966	0.00000	0.00000	0.00503
290	0.00000	0.00000	0.00000	0.00138	0.00000	0.07853	0.00000	0.00000	0.00489
300	0.00000	0.00000	0.00000	0.00131	0.00000	0.07745	0.00000	0.00000	0.00477

Appendix 3. Probability of arsenic exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Arsenic, in micrograms per liter	Bedrock unit abbreviation								
	Spss			Ssqd			SZtb		
	Probability of concentration being greater than concentration listed	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
1	0.23273	0.06670	0.51638	0.64322	0.38238	0.84930	0.44216	0.31151	0.57949
2	0.09457	0.01492	0.32491	0.40139	0.19993	0.63395	0.26095	0.15832	0.38996
3	0.04903	0.00450	0.24303	0.27074	0.10603	0.51066	0.17621	0.09343	0.29462
4	0.02895	0.00165	0.19660	0.19308	0.05819	0.43523	0.12812	0.06020	0.23651
5	0.01857	0.00069	0.16620	0.14340	0.03328	0.38371	0.09772	0.04117	0.19710
6	0.01262	0.00032	0.14451	0.10983	0.01980	0.34569	0.07710	0.02941	0.16851
7	0.00896	0.00016	0.12816	0.08619	0.01221	0.31611	0.06240	0.02172	0.14678
8	0.00658	0.00008	0.11533	0.06898	0.00776	0.29222	0.05152	0.01648	0.12970
9	0.00496	0.00005	0.10495	0.05611	0.00507	0.27240	0.04323	0.01277	0.11591
10	**0.00382**	**0.00003**	**0.09636**	**0.04628**	**0.00339**	**0.25560**	**0.03676**	**0.01009**	**0.10455**
11	0.00300	0.00002	0.08913	0.03863	0.00232	0.24112	0.03161	0.00809	0.09504
12	0.00239	0.00001	0.08294	0.03257	0.00162	0.22848	0.02744	0.00657	0.08696
13	0.00194	0.00001	0.07758	0.02771	0.00115	0.21731	0.02403	0.00540	0.08001
14	0.00159	0.00000	0.07289	0.02377	0.00082	0.20735	0.02119	0.00449	0.07397
15	0.00131	0.00000	0.06874	0.02053	0.00060	0.19840	0.01880	0.00376	0.06869
16	0.00110	0.00000	0.06505	0.01785	0.00044	0.19031	0.01679	0.00318	0.06403
17	0.00092	0.00000	0.06174	0.01561	0.00033	0.18294	0.01506	0.00271	0.05988
18	0.00078	0.00000	0.05875	0.01372	0.00025	0.17620	0.01358	0.00232	0.05618
19	0.00067	0.00000	0.05604	0.01212	0.00019	0.17000	0.01229	0.00200	0.05284
20	0.00058	0.00000	0.05357	0.01076	0.00015	0.16427	0.01117	0.00174	0.04984
21	0.00050	0.00000	0.05131	0.00958	0.00011	0.15897	0.01019	0.00151	0.04711
22	0.00043	0.00000	0.04923	0.00857	0.00009	0.15403	0.00932	0.00133	0.04462
23	0.00038	0.00000	0.04731	0.00769	0.00007	0.14943	0.00856	0.00117	0.04235
24	0.00033	0.00000	0.04554	0.00693	0.00006	0.14512	0.00787	0.00103	0.04026
25	0.00029	0.00000	0.04389	0.00625	0.00004	0.14108	0.00727	0.00091	0.03834
26	0.00026	0.00000	0.04236	0.00567	0.00004	0.13728	0.00672	0.00081	0.03657
27	0.00023	0.00000	0.04093	0.00515	0.00003	0.13370	0.00623	0.00072	0.03493
28	0.00021	0.00000	0.03959	0.00468	0.00002	0.13032	0.00579	0.00065	0.03341
29	0.00018	0.00000	0.03833	0.00428	0.00002	0.12713	0.00539	0.00058	0.03200
30	0.00016	0.00000	0.03715	0.00391	0.00002	0.12409	0.00503	0.00052	0.03068
31	0.00015	0.00000	0.03604	0.00358	0.00001	0.12122	0.00470	0.00047	0.02945
32	0.00013	0.00000	0.03499	0.00329	0.00001	0.11848	0.00440	0.00043	0.02830
33	0.00012	0.00000	0.03400	0.00303	0.00001	0.11588	0.00412	0.00039	0.02722
34	0.00011	0.00000	0.03306	0.00279	0.00001	0.11339	0.00387	0.00035	0.02620
35	0.00010	0.00000	0.03217	0.00258	0.00001	0.11102	0.00364	0.00032	0.02525

Appendix 3. Probability of arsenic exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Arsenic, in micrograms per liter	Bedrock unit abbreviation								
	Spss			Ssqd			SZtb		
	Probability of concentration being greater than concentration listed	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
36	0.00009	0.00000	0.03133	0.00239	0.00001	0.10875	0.00342	0.00029	0.02435
37	0.00008	0.00000	0.03053	0.00221	0.00000	0.10658	0.00323	0.00027	0.02351
38	0.00008	0.00000	0.02977	0.00205	0.00000	0.10450	0.00305	0.00025	0.02271
39	0.00007	0.00000	0.02904	0.00191	0.00000	0.10251	0.00288	0.00023	0.02195
40	0.00006	0.00000	0.02834	0.00177	0.00000	0.10059	0.00272	0.00021	0.02123
41	0.00006	0.00000	0.02768	0.00165	0.00000	0.09875	0.00258	0.00019	0.02055
42	0.00005	0.00000	0.02705	0.00154	0.00000	0.09698	0.00244	0.00018	0.01991
43	0.00005	0.00000	0.02644	0.00144	0.00000	0.09527	0.00232	0.00016	0.01930
44	0.00005	0.00000	0.02586	0.00135	0.00000	0.09363	0.00220	0.00015	0.01871
45	0.00004	0.00000	0.02530	0.00126	0.00000	0.09205	0.00210	0.00014	0.01816
46	0.00004	0.00000	0.02477	0.00118	0.00000	0.09052	0.00199	0.00013	0.01763
47	0.00004	0.00000	0.02426	0.00111	0.00000	0.08905	0.00190	0.00012	0.01712
48	0.00003	0.00000	0.02376	0.00104	0.00000	0.08762	0.00181	0.00011	0.01664
49	0.00003	0.00000	0.02329	0.00098	0.00000	0.08624	0.00173	0.00010	0.01618
50	0.00003	0.00000	0.02283	0.00092	0.00000	0.08491	0.00165	0.00010	0.01574
55	0.00002	0.00000	0.02078	0.00069	0.00000	0.07884	0.00132	0.00007	0.01380
60	0.00002	0.00000	0.01905	0.00053	0.00000	0.07360	0.00107	0.00005	0.01222
65	0.00001	0.00000	0.01757	0.00041	0.00000	0.06904	0.00089	0.00004	0.01090
70	0.00001	0.00000	0.01630	0.00032	0.00000	0.06502	0.00074	0.00003	0.00980
75	0.00001	0.00000	0.01519	0.00026	0.00000	0.06145	0.00062	0.00002	0.00886
80	0.00001	0.00000	0.01421	0.00021	0.00000	0.05826	0.00053	0.00002	0.00805
85	0.00000	0.00000	0.01334	0.00017	0.00000	0.05539	0.00045	0.00001	0.00736
90	0.00000	0.00000	0.01256	0.00014	0.00000	0.05279	0.00039	0.00001	0.00675
95	0.00000	0.00000	0.01186	0.00011	0.00000	0.05042	0.00034	0.00001	0.00622
100	0.00000	0.00000	0.01124	0.00010	0.00000	0.04826	0.00030	0.00001	0.00575
110	0.00000	0.00000	0.01015	0.00007	0.00000	0.04444	0.00023	0.00001	0.00496
120	0.00000	0.00000	0.00923	0.00005	0.00000	0.04118	0.00018	0.00000	0.00432
130	0.00000	0.00000	0.00846	0.00004	0.00000	0.03836	0.00015	0.00000	0.00380
140	0.00000	0.00000	0.00780	0.00003	0.00000	0.03589	0.00012	0.00000	0.00337
150	0.00000	0.00000	0.00722	0.00002	0.00000	0.03372	0.00010	0.00000	0.00301
160	0.00000	0.00000	0.00672	0.00002	0.00000	0.03178	0.00008	0.00000	0.00271
170	0.00000	0.00000	0.00628	0.00001	0.00000	0.03005	0.00007	0.00000	0.00245
180	0.00000	0.00000	0.00588	0.00001	0.00000	0.02850	0.00006	0.00000	0.00222
190	0.00000	0.00000	0.00553	0.00001	0.00000	0.02709	0.00005	0.00000	0.00203
200	0.00000	0.00000	0.00522	0.00001	0.00000	0.02581	0.00004	0.00000	0.00186

Appendix 3. Probability of arsenic exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Arsenic, in micrograms per liter	Bedrock unit abbreviation								
	Spss			Ssqd			SZtb		
	Probability of concentration being greater than concentration listed	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
210	0.00000	0.00000	0.00493	0.00001	0.00000	0.02464	0.00004	0.00000	0.00171
220	0.00000	0.00000	0.00467	0.00001	0.00000	0.02356	0.00003	0.00000	0.00158
230	0.00000	0.00000	0.00444	0.00000	0.00000	0.02257	0.00003	0.00000	0.00146
240	0.00000	0.00000	0.00422	0.00000	0.00000	0.02166	0.00003	0.00000	0.00135
250	0.00000	0.00000	0.00402	0.00000	0.00000	0.02082	0.00002	0.00000	0.00126
260	0.00000	0.00000	0.00384	0.00000	0.00000	0.02003	0.00002	0.00000	0.00118
270	0.00000	0.00000	0.00367	0.00000	0.00000	0.01930	0.00002	0.00000	0.00110
280	0.00000	0.00000	0.00352	0.00000	0.00000	0.01862	0.00002	0.00000	0.00103
290	0.00000	0.00000	0.00337	0.00000	0.00000	0.01798	0.00001	0.00000	0.00097
300	0.00000	0.00000	0.00324	0.00000	0.00000	0.01738	0.00001	0.00000	0.00091

Appendix 3. Probability of arsenic exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Arsenic, in micrograms per liter	Bedrock unit abbreviation					
	Zpg*			Zsg		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
1	0.01393	0.00098	0.09648	0.04051	0.00712	0.14958
2	0.00446	0.00022	0.04351	0.01576	0.00089	0.12002
3	0.00213	0.00008	0.02561	0.00848	0.00020	0.10841
4	0.00122	0.00004	0.01708	0.00529	0.00006	0.10152
5	0.00078	0.00002	0.01227	0.00361	0.00002	0.09673
6	0.00053	0.00001	0.00926	0.00261	0.00001	0.09310
7	0.00038	0.00001	0.00724	0.00197	0.00000	0.09020
8	0.00028	0.00001	0.00582	0.00153	0.00000	0.08780
9	0.00022	0.00000	0.00478	0.00122	0.00000	0.08577
10	**0.00017**	**0.00000**	**0.00400**	**0.00099**	**0.00000**	**0.08400**
11	0.00014	0.00000	0.00339	0.00082	0.00000	0.08245
12	0.00011	0.00000	0.00291	0.00069	0.00000	0.08107
13	0.00009	0.00000	0.00252	0.00059	0.00000	0.07982
14	0.00008	0.00000	0.00220	0.00050	0.00000	0.07869
15	0.00007	0.00000	0.00194	0.00044	0.00000	0.07766
16	0.00006	0.00000	0.00172	0.00038	0.00000	0.07670
17	0.00005	0.00000	0.00154	0.00033	0.00000	0.07582
18	0.00004	0.00000	0.00138	0.00030	0.00000	0.07500
19	0.00004	0.00000	0.00125	0.00026	0.00000	0.07424
20	0.00003	0.00000	0.00113	0.00023	0.00000	0.07352
21	0.00003	0.00000	0.00103	0.00021	0.00000	0.07285
22	0.00003	0.00000	0.00094	0.00019	0.00000	0.07221
23	0.00002	0.00000	0.00086	0.00017	0.00000	0.07161
24	0.00002	0.00000	0.00079	0.00016	0.00000	0.07104
25	0.00002	0.00000	0.00073	0.00014	0.00000	0.07050
26	0.00002	0.00000	0.00068	0.00013	0.00000	0.06998
27	0.00001	0.00000	0.00063	0.00012	0.00000	0.06949
28	0.00001	0.00000	0.00058	0.00011	0.00000	0.06901
29	0.00001	0.00000	0.00054	0.00010	0.00000	0.06856
30	0.00001	0.00000	0.00051	0.00009	0.00000	0.06813
31	0.00001	0.00000	0.00047	0.00009	0.00000	0.06771
32	0.00001	0.00000	0.00044	0.00008	0.00000	0.06731
33	0.00001	0.00000	0.00042	0.00008	0.00000	0.06693
34	0.00001	0.00000	0.00039	0.00007	0.00000	0.06656
35	0.00001	0.00000	0.00037	0.00007	0.00000	0.06620

Appendix 3. Probability of arsenic exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Arsenic, in micrograms per liter	Bedrock unit abbreviation					
	Zpg*			Zsg		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
36	0.00001	0.00000	0.00035	0.00006	0.00000	0.06585
37	0.00001	0.00000	0.00033	0.00006	0.00000	0.06551
38	0.00001	0.00000	0.00031	0.00005	0.00000	0.06519
39	0.00001	0.00000	0.00029	0.00005	0.00000	0.06488
40	0.00001	0.00000	0.00028	0.00005	0.00000	0.06457
41	0.00000	0.00000	0.00026	0.00004	0.00000	0.06427
42	0.00000	0.00000	0.00025	0.00004	0.00000	0.06399
43	0.00000	0.00000	0.00024	0.00004	0.00000	0.06371
44	0.00000	0.00000	0.00023	0.00004	0.00000	0.06344
45	0.00000	0.00000	0.00022	0.00004	0.00000	0.06317
46	0.00000	0.00000	0.00021	0.00003	0.00000	0.06291
47	0.00000	0.00000	0.00020	0.00003	0.00000	0.06266
48	0.00000	0.00000	0.00019	0.00003	0.00000	0.06242
49	0.00000	0.00000	0.00018	0.00003	0.00000	0.06218
50	0.00000	0.00000	0.00017	0.00003	0.00000	0.06195
55	0.00000	0.00000	0.00014	0.00002	0.00000	0.06086
60	0.00000	0.00000	0.00011	0.00002	0.00000	0.05988
65	0.00000	0.00000	0.00010	0.00001	0.00000	0.05900
70	0.00000	0.00000	0.00008	0.00001	0.00000	0.05820
75	0.00000	0.00000	0.00007	0.00001	0.00000	0.05746
80	0.00000	0.00000	0.00006	0.00001	0.00000	0.05677
85	0.00000	0.00000	0.00005	0.00001	0.00000	0.05614
90	0.00000	0.00000	0.00005	0.00001	0.00000	0.05554
95	0.00000	0.00000	0.00004	0.00001	0.00000	0.05499
100	0.00000	0.00000	0.00004	0.00000	0.00000	0.05447
110	0.00000	0.00000	0.00003	0.00000	0.00000	0.05351
120	0.00000	0.00000	0.00002	0.00000	0.00000	0.05265
130	0.00000	0.00000	0.00002	0.00000	0.00000	0.05187
140	0.00000	0.00000	0.00002	0.00000	0.00000	0.05116
150	0.00000	0.00000	0.00001	0.00000	0.00000	0.05051
160	0.00000	0.00000	0.00001	0.00000	0.00000	0.04990
170	0.00000	0.00000	0.00001	0.00000	0.00000	0.04934
180	0.00000	0.00000	0.00001	0.00000	0.00000	0.04882
190	0.00000	0.00000	0.00001	0.00000	0.00000	0.04833
200	0.00000	0.00000	0.00001	0.00000	0.00000	0.04787

Appendix 3. Probability of arsenic exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Arsenic, in micrograms per liter	Bedrock unit abbreviation					
	Zpg*			Zsg		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
210	0.00000	0.00000	0.00001	0.00000	0.00000	0.04743
220	0.00000	0.00000	0.00000	0.00000	0.00000	0.04702
230	0.00000	0.00000	0.00000	0.00000	0.00000	0.04663
240	0.00000	0.00000	0.00000	0.00000	0.00000	0.04626
250	0.00000	0.00000	0.00000	0.00000	0.00000	0.04591
260	0.00000	0.00000	0.00000	0.00000	0.00000	0.04557
270	0.00000	0.00000	0.00000	0.00000	0.00000	0.04525
280	0.00000	0.00000	0.00000	0.00000	0.00000	0.04494
290	0.00000	0.00000	0.00000	0.00000	0.00000	0.04464
300	0.00000	0.00000	0.00000	0.00000	0.00000	0.04436

Appendix 4. Arsenic Log-Normal Fit Statistics by Bedrock Unit

Appendix 4. Arsenic log-normal fit statistics by bedrock unit.

[CI, confidence interval; %, percent; *, fewer than five analyses were above the analytical reporting limit and the Minitab option to assume a common scale was used in the distribution fitting]

Grouped bedrock units with elevated-arsenic concentration					Bedrock unit abbreviation				
					Ops*				
Censoring information	Count				Censoring information	Count			
Uncensored value	142				Uncensored value	2			
Left censored value	13				Left censored value	8			
Parameter estimates					Parameter estimates				
Parameter	Estimate	Standard error	95% normal CI		Parameter	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Location	0.842088	0.160891	0.526746	1.15743	Location	-3.21928	0.787011	-4.7618	-1.67677
Scale	1.98346	0.122107	1.75801	2.23782	Scale	1.78003	0.0901298	1.61186	1.96574
Log-likelihood		-484.214			Log-likelihood		-4.305		
Goodness-of-fit					Goodness-of-fit				
Anderson-Darling (adjusted)	0.431				Anderson-Darling (adjusted)	2.245			
Correlation coefficient	0.999				Correlation coefficient	1			
Characteristics of distribution					Characteristics of distribution				
Descriptor	Estimate	Standard error	95% normal CI		Descriptor	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Mean	16.5957	4.65715	9.57473	28.7649	Mean	0.194946	0.152905	0.041906	0.906885
Standard deviation	117.486	59.1549	43.7925	315.189	Standard deviation	0.93028	0.759049	0.18797	4.60404
Median	2.32121	0.373462	1.69341	3.18174	Median	0.0399836	0.0314676	0.0085502	0.186977
First quartile (Q1)	0.609123	0.113368	0.422943	0.877259	First quartile (Q1)	0.0120355	0.0095863	0.0025262	0.0573391
Third quartile (Q3)	8.84551	1.54983	6.27455	12.4699	Third quartile (Q3)	0.132832	0.103893	0.0286776	0.615262
Interquartile range (IQR)	8.23639	1.48626	5.78278	11.7311	Interquartile range (IQR)	0.120796	0.0944301	0.0261001	0.559067

Appendix 4. Arsenic log-normal fit statistics by bedrock unit.—Continued

[CI, confidence interval; %, percent; *, fewer than five analyses were above the analytical reporting limit and the Minitab option to assume a common scale was used in the distribution fitting]

Bedrock unit abbreviation									
OZf					OZm				
Censoring information	Count				Censoring information	Count			
Uncensored value	7				Uncensored value	4			
Left censored value	1				Left censored value	6			
Distribution	Log normal				Distribution	Log normal			
Parameter estimates					Parameter estimates				
Parameter	Estimate	Standard error	95% normal CI		Parameter	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Location	0.203812	0.537881	-0.850415	1.25804	Location	-3.14197	2.2943	-7.63872	1.35477
Scale	1.46776	0.444717	0.810489	2.65803	Scale	4.40671	2.19624	1.65915	11.7042
Log-likelihood	-19.146				Log-likelihood	-20.355			
Goodness-of-fit					Goodness-of-fit				
Anderson-Darling (adjusted)	3.106				Anderson-Darling (adjusted)	2.122			
Correlation coefficient	0.922				Correlation coefficient	0.956			
Characteristics of distribution					Characteristics of distribution				
Descriptor	Estimate	Standard error	95% normal CI		Descriptor	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Mean	3.60011	2.6815	0.836197	15.4997	Mean	711.633	5.84×10^{3}	0.0000725	6.99×10^{9}
Standard deviation	9.93912	13.636	0.675371	146.269	Standard deviation	1.17×10^{7}	2.09×10^{8}	0	1.68×10^{22}
Median	1.22607	0.659479	0.427238	3.51852	Median	0.0431974	0.0991078	0.0004814	3.87586
First quartile (Q1)	0.455585	0.306663	0.121789	1.70424	First quartile (Q1)	0.0022111	0.0077461	0.0000023	2.1211
Third quartile (Q3)	3.29959	1.82372	1.11684	9.7483	Third quartile (Q3)	0.843922	1.3722	0.0348552	20.4332
Interquartile range (IQR)	2.84401	1.67949	0.89385	9.04891	Interquartile range (IQR)	0.841711	1.36804	0.0348095	20.353

Appendix 4. Arsenic log-normal fit statistics by bedrock unit.—Continued

[CI, confidence interval; %, percent; *, fewer than five analyses were above the analytical reporting limit and the Minitab option to assume a common scale was used in the distribution fitting]

Bedrock unit abbreviation									
OZn					OZnb				
Censoring information	Count				Censoring information	Count			
Uncensored value	19				Uncensored value	17			
Left censored value	12				Left censored value	3			
Distribution	Log normal				Distribution	Log normal			
Parameter estimates					Parameter estimates				
Parameter	Estimate	Standard error	95% normal CI		Parameter	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Location	-1.58309	0.352176	-2.27334	-0.892837	Location	0.779948	0.531552	-0.261874	1.82177
Scale	1.6106	0.349339	1.05283	2.46384	Scale	2.31159	0.437248	1.59552	3.34903
Log-likelihood	-33.677				Log-likelihood	-67.412			
Goodness-of-fit					Goodness-of-fit				
Anderson-Darling (adjusted)	3.307				Anderson-Darling (adjusted)	1.281			
Correlation coefficient	0.981				Correlation coefficient	0.98			
Characteristics of distribution					Characteristics of distribution				
Descriptor	Estimate	Standard error	95% normal CI		Descriptor	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Mean	0.751202	0.37721	0.280759	2.00993	Mean	31.5531	33.5261	3.93202	253.203
Standard deviation	2.64349	2.77567	0.337609	20.6986	Standard deviation	455.321	914.887	8.87111	2.34×10^4
Median	0.20534	0.0723157	0.102968	0.409492	Median	2.18136	1.1595	0.769608	6.18279
First quartile (Q1)	0.0692924	0.035228	0.0255822	0.187687	First quartile (Q1)	0.458775	0.297545	0.128689	1.63553
Third quartile (Q3)	0.608499	0.193027	0.326771	1.13312	Third quartile (Q3)	10.3718	5.85262	3.43193	31.3452
Interquartile range (IQR)	0.539207	0.180896	0.279377	1.04069	Interquartile range (IQR)	9.91304	5.69917	3.21246	30.5898

Appendix 4. Arsenic log-normal fit statistics by bedrock unit.—Continued

[CI, confidence interval; %, percent; *, fewer than five analyses were above the analytical reporting limit and the Minitab option to assume a common scale was used in the distribution fitting]

Bedrock unit abbreviation									
Sgr					SOagr				
Censoring information	Count				Censoring information	Count			
Uncensored value	7				Uncensored value	7			
Left censored value	0				Left censored value	5			
Distribution	Log normal				Distribution	Log normal			
Parameter estimates					Parameter estimates				
Parameter	Estimate	Standard error	95% normal CI		Parameter	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Location	-0.0870687	0.221555	-0.521308	0.347171	Location	-0.996819	0.724544	-2.4169	0.423261
Scale	0.505699	0.101615	0.341076	0.749778	Scale	2.22697	0.632122	1.27674	3.88443
Log-likelihood	-9.715				Log-likelihood	-24.772			
Goodness-of-fit					Goodness-of-fit				
Anderson-Darling (adjusted)	3.111				Anderson-Darling (adjusted)	1.726			
Correlation coefficient	0.954				Correlation coefficient	0.947			
Characteristics of distribution					Characteristics of distribution				
Descriptor	Estimate	Standard error	95% normal CI		Descriptor	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Mean	1.04164	0.20888	0.703116	1.54315	Mean	4.40564	5.98493	0.307381	63.1452
Standard deviation	0.562298	0.142746	0.341884	0.924815	Standard deviation	52.4085	140.438	0.274442	1.00×10^4
Median	0.916614	0.20308	0.593743	1.41506	Median	0.369052	0.267394	0.0891978	1.52693
First quartile (Q1)	0.651709	0.171367	0.389252	1.09113	First quartile (Q1)	0.0821762	0.078262	0.0127084	0.531378
Third quartile (Q3)	1.2892	0.252714	0.877936	1.89311	Third quartile (Q3)	1.6574	1.17954	0.410814	6.68669
Interquartile range (IQR)	0.637489	0.136533	0.418955	0.970013	Interquartile range (IQR)	1.57523	1.14191	0.380445	6.5222

Appendix 4. Arsenic log-normal fit statistics by bedrock unit.—Continued

[CI, confidence interval; %, percent; *, fewer than five analyses were above the analytical reporting limit and the Minitab option to assume a common scale was used in the distribution fitting]

Bedrock unit abbreviation									
Spsq*					Spss				
Censoring information	Count				Censoring information	Count			
Uncensored value	4				Uncensored value	5			
Left censored value	5				Left censored value	2			
Distribution	Log normal				Distribution	Log normal			
Parameter estimates					Parameter estimates				
Parameter	Estimate	Standard error	95% normal CI		Parameter	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Location	-2.41045	0.846842	-4.07023	-0.750667	Location	-0.867381	0.508521	-1.86406	0.129302
Scale	1.57953	0.495804	0.853772	2.92223	Scale	1.18838	0.332903	0.686285	2.0578
Log-likelihood	-10.109				Log-likelihood	-10.976			
Goodness-of-fit					Goodness-of-fit				
Anderson-Darling (adjusted)	2.121				Anderson-Darling (adjusted)	2.799			
Correlation coefficient	0.966				Correlation coefficient	0.982			
Characteristics of distribution					Characteristics of distribution				
Descriptor	Estimate	Standard error	95% normal CI		Descriptor	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Mean	0.312551	0.199818	0.0892766	1.09422	Mean	0.851069	0.428686	0.317112	2.28411
Standard deviation	1.04229	1.26353	0.0968518	11.2168	Standard deviation	1.4997	1.27936	0.281753	7.98256
Median	0.0897751	0.0760253	0.0170735	0.472051	Median	0.42005	0.213604	0.155041	1.13803
First quartile (Q1)	0.0309363	0.0342062	0.0035424	0.270172	First quartile (Q1)	0.188449	0.119276	0.0545049	0.651556
Third quartile (Q3)	0.260522	0.171901	0.0714813	0.9495	Third quartile (Q3)	0.936287	0.436567	0.375418	2.33509
Interquartile range (IQR)	0.229585	0.144786	0.0667025	0.790216	Interquartile range (IQR)	0.747838	0.362431	0.289256	1.93345

Appendix 4. Arsenic log-normal fit statistics by bedrock unit.—Continued

[CI, confidence interval; %, percent; *, fewer than five analyses were above the analytical reporting limit and the Minitab option to assume a common scale was used in the distribution fitting]

Bedrock unit abbreviation									
Ssqd					SZtb				
Censoring information	Count				Censoring information	Count			
Uncensored value	11				Uncensored value	29			
Left censored value	0				Left censored value	4			
Distribution	Log normal				Distribution	Log normal			
Parameter estimates					Parameter estimates				
Parameter	Estimate	Standard error	95% normal CI		Parameter	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Location	0.412493	0.343881	-0.261502	1.08649	Location	-0.203752	0.250689	-0.695093	0.287588
Scale	1.1237	0.320478	0.642518	1.96522	Scale	1.40051	0.187371	1.07747	1.8204
Log-likelihood	-21.008				Log-likelihood	-62.075			
Goodness-of-fit					Goodness-of-fit				
Anderson-Darling (adjusted)	2.392				Anderson-Darling (adjusted)	0.892			
Correlation coefficient	0.951				Correlation coefficient	0.992			
Characteristics of distribution					Characteristics of distribution				
Descriptor	Estimate	Standard error	95% normal CI		Descriptor	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Mean	2.8401	1.28763	1.16794	6.90631	Mean	2.17486	0.715688	1.1411	4.14514
Standard deviation	4.52184	3.94286	0.818658	24.9763	Standard deviation	5.3757	3.10934	1.7302	16.7023
Median	1.51058	0.51946	0.769894	2.96385	Median	0.815664	0.204478	0.499028	1.33321
First quartile (Q1)	0.707917	0.308919	0.30098	1.66505	First quartile (Q1)	0.317149	0.0951949	0.176104	0.571161
Third quartile (Q3)	3.22333	1.20405	1.55005	6.70291	Third quartile (Q3)	2.09778	0.545174	1.26051	3.49117
Interquartile range (IQR)	2.51541	1.10396	1.06423	5.94541	Interquartile range (IQR)	1.78063	0.49387	1.03392	3.06662

Appendix 4. Arsenic log-normal fit statistics by bedrock unit.—Continued

[CI, confidence interval; %, percent; *, fewer than five analyses were above the analytical reporting limit and the Minitab option to assume a common scale was used in the distribution fitting]

Bedrock unit abbreviation									
Zpg*					Zsg				
Censoring information	Count				Censoring information	Count			
Uncensored value	2				Uncensored value	7			
Left censored value	9				Left censored value	16			
Distribution	Log normal				Distribution	Log normal			
Parameter estimates					Parameter estimates				
Parameter	Estimate	Standard error	95% normal CI		Parameter	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Location	-3.66411	0.771435	-5.17609	-2.15212	Location	-2.98176	0.999948	-4.94162	-1.0219
Scale	1.66617	0.100537	1.48032	1.87534	Scale	1.70893	0.748103	0.724607	4.03039
Log-likelihood	-3.006				Log-likelihood	-14.871			
Goodness-of-fit					Goodness-of-fit				
Anderson-Darling (adjusted)	2.214				Anderson-Darling (adjusted)	2.733			
Correlation coefficient	1				Correlation coefficient	0.982			
Characteristics of distribution					Characteristics of distribution				
Descriptor	Estimate	Standard error	95% normal CI		Descriptor	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Mean	0.102689	0.0779394	0.0231993	0.454541	Mean	0.218376	0.130661	0.0675934	0.705514
Standard deviation	0.398461	0.313134	0.0854009	1.85913	Standard deviation	0.914828	1.64495	0.0269649	31.037
Median	0.0256271	0.0197696	0.0056501	0.116237	Median	0.0507034	0.0507008	0.007143	0.35991
First quartile (Q1)	0.0083298	0.0065524	0.0017826	0.0389236	First quartile (Q1)	0.016012	0.0234942	0.0009026	0.284057
Third quartile (Q3)	0.0788433	0.0600783	0.0177073	0.351056	Third quartile (Q3)	0.160557	0.0958063	0.049855	0.517073
Interquartile range (IQR)	0.0705135	0.0536348	0.0158789	0.313129	Interquartile range (IQR)	0.144545	0.0768037	0.0510177	0.409532

Appendix 5. Probability of Uranium Exceeding a Given Concentration by Bedrock Unit

Appendix 5. Probability of uranium exceeding a given concentration by bedrock unit.

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	Dcgr			Dfgr			Dl		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
1	0.95614	0.51366	0.99964	0.64549	0.32667	0.88405	0.15706	0.03907	0.40068
2	0.88401	0.43605	0.99464	0.53055	0.24734	0.79848	0.06707	0.00759	0.28505
3	0.81477	0.38671	0.98120	0.46145	0.20378	0.73716	0.03710	0.00226	0.23244
4	0.75269	0.34946	0.96018	0.41300	0.17473	0.69003	0.02333	0.00085	0.20043
5	0.69779	0.31902	0.93403	0.37627	0.15347	0.65213	0.01588	0.00037	0.17825
6	0.64925	0.29304	0.90509	0.34705	0.13703	0.62065	0.01140	0.00018	0.16167
7	0.60617	0.27025	0.87509	0.32303	0.12384	0.59389	0.00852	0.00010	0.14867
8	0.56776	0.24991	0.84521	0.30281	0.11296	0.57073	0.00656	0.00005	0.13812
9	0.53332	0.23154	0.81621	0.28545	0.10381	0.55040	0.00517	0.00003	0.12932
10	0.50229	0.21481	0.78853	0.27033	0.09599	0.53235	0.00416	0.00002	0.12185
11	0.47420	0.19950	0.76239	0.25702	0.08921	0.51615	0.00340	0.00001	0.11540
12	0.44867	0.18543	0.73789	0.24516	0.08328	0.50151	0.00282	0.00001	0.10976
13	0.42537	0.17247	0.71502	0.23452	0.07804	0.48817	0.00237	0.00001	0.10476
14	0.40402	0.16051	0.69373	0.22490	0.07337	0.47595	0.00201	0.00000	0.10031
15	0.38440	0.14947	0.67395	0.21615	0.06918	0.46470	0.00172	0.00000	0.09631
16	0.36631	0.13925	0.65557	0.20815	0.06541	0.45429	0.00148	0.00000	0.09268
17	0.34958	0.12980	0.63849	0.20079	0.06199	0.44461	0.00129	0.00000	0.08937
18	0.33407	0.12106	0.62261	0.19400	0.05887	0.43558	0.00112	0.00000	0.08635
19	0.31966	0.11296	0.60782	0.18771	0.05602	0.42713	0.00099	0.00000	0.08356
20	0.30623	0.10545	0.59404	0.18186	0.05341	0.41920	0.00087	0.00000	0.08099
21	0.29369	0.09850	0.58116	0.17640	0.05100	0.41173	0.00078	0.00000	0.07860
22	0.28197	0.09206	0.56912	0.17129	0.04877	0.40469	0.00069	0.00000	0.07638
23	0.27098	0.08609	0.55784	0.16650	0.04670	0.39802	0.00062	0.00000	0.07431
24	0.26066	0.08055	0.54726	0.16199	0.04478	0.39170	0.00056	0.00000	0.07236
25	0.25095	0.07541	0.53731	0.15775	0.04299	0.38569	0.00050	0.00000	0.07054
26	0.24181	0.07064	0.52794	0.15374	0.04132	0.37997	0.00046	0.00000	0.06882
27	0.23319	0.06621	0.51910	0.14994	0.03976	0.37453	0.00042	0.00000	0.06721
28	0.22505	0.06209	0.51074	0.14635	0.03830	0.36932	0.00038	0.00000	0.06568
29	0.21735	0.05827	0.50284	0.14293	0.03692	0.36435	0.00035	0.00000	0.06423
30	**0.21005**	**0.05471**	**0.49534**	**0.13968**	**0.03562**	**0.35958**	**0.00032**	**0.00000**	**0.06285**
31	0.20313	0.05140	0.48822	0.13659	0.03440	0.35501	0.00029	0.00000	0.06155
32	0.19657	0.04832	0.48146	0.13364	0.03325	0.35062	0.00027	0.00000	0.06031
33	0.19033	0.04545	0.47502	0.13082	0.03216	0.34640	0.00025	0.00000	0.05912
34	0.18439	0.04277	0.46887	0.12813	0.03113	0.34234	0.00023	0.00000	0.05799
35	0.17874	0.04028	0.46301	0.12555	0.03015	0.33843	0.00021	0.00000	0.05691

Appendix 5. Probability of uranium exceeding a given concentration by bedrock unit. —Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	Dcgr			Dfgr			Dl		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
36	0.17335	0.03795	0.45740	0.12308	0.02922	0.33466	0.00020	0.00000	0.05588
37	0.16821	0.03577	0.45204	0.12071	0.02834	0.33103	0.00018	0.00000	0.05489
38	0.16331	0.03374	0.44690	0.11843	0.02750	0.32751	0.00017	0.00000	0.05394
39	0.15862	0.03185	0.44196	0.11624	0.02670	0.32411	0.00016	0.00000	0.05302
40	0.15413	0.03007	0.43723	0.11414	0.02593	0.32082	0.00015	0.00000	0.05215
41	0.14984	0.02841	0.43267	0.11211	0.02521	0.31764	0.00014	0.00000	0.05130
42	0.14573	0.02686	0.42829	0.11016	0.02451	0.31455	0.00013	0.00000	0.05049
43	0.14179	0.02540	0.42407	0.10828	0.02385	0.31156	0.00012	0.00000	0.04971
44	0.13801	0.02404	0.42001	0.10646	0.02321	0.30866	0.00011	0.00000	0.04896
45	0.13438	0.02275	0.41608	0.10470	0.02260	0.30584	0.00011	0.00000	0.04823
46	0.13090	0.02155	0.41229	0.10301	0.02202	0.30310	0.00010	0.00000	0.04752
47	0.12755	0.02043	0.40863	0.10137	0.02146	0.30044	0.00009	0.00000	0.04684
48	0.12433	0.01937	0.40508	0.09978	0.02093	0.29785	0.00009	0.00000	0.04619
49	0.12123	0.01837	0.40165	0.09824	0.02041	0.29533	0.00008	0.00000	0.04555
50	0.11825	0.01743	0.39833	0.09676	0.01992	0.29287	0.00008	0.00000	0.04493
55	0.10488	0.01351	0.38316	0.08995	0.01770	0.28149	0.00006	0.00000	0.04212
60	0.09366	0.01058	0.36997	0.08406	0.01586	0.27140	0.00005	0.00000	0.03968
65	0.08415	0.00836	0.35838	0.07890	0.01430	0.26236	0.00004	0.00000	0.03754
70	0.07600	0.00667	0.34806	0.07434	0.01297	0.25420	0.00003	0.00000	0.03565
75	0.06897	0.00537	0.33880	0.07028	0.01183	0.24678	0.00002	0.00000	0.03397
80	0.06286	0.00435	0.33042	0.06664	0.01083	0.23999	0.00002	0.00000	0.03245
85	0.05751	0.00355	0.32278	0.06335	0.00996	0.23375	0.00002	0.00000	0.03108
90	0.05281	0.00292	0.31578	0.06037	0.00919	0.22798	0.00001	0.00000	0.02983
95	0.04864	0.00241	0.30932	0.05765	0.00851	0.22263	0.00001	0.00000	0.02869
100	0.04493	0.00201	0.30335	0.05516	0.00790	0.21764	0.00001	0.00000	0.02765
110	0.03865	0.00141	0.29260	0.05076	0.00687	0.20862	0.00001	0.00000	0.02579
120	0.03356	0.00101	0.28316	0.04699	0.00603	0.20064	0.00001	0.00000	0.02419
130	0.02938	0.00073	0.27479	0.04373	0.00534	0.19352	0.00000	0.00000	0.02279
140	0.02590	0.00054	0.26728	0.04087	0.00476	0.18712	0.00000	0.00000	0.02156
150	0.02298	0.00040	0.26048	0.03835	0.00427	0.18131	0.00000	0.00000	0.02047
160	0.02050	0.00031	0.25429	0.03610	0.00385	0.17601	0.00000	0.00000	0.01949
170	0.01839	0.00024	0.24862	0.03409	0.00349	0.17115	0.00000	0.00000	0.01860
180	0.01656	0.00018	0.24339	0.03229	0.00318	0.16666	0.00000	0.00000	0.01780
190	0.01498	0.00014	0.23855	0.03065	0.00290	0.16251	0.00000	0.00000	0.01708
200	0.01361	0.00011	0.23404	0.02916	0.00266	0.15865	0.00000	0.00000	0.01641

Appendix 5. Probability of uranium exceeding a given concentration by bedrock unit. —Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	Dcgr			Dfgr			Dl		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
210	0.01240	0.00009	0.22983	0.02780	0.00245	0.15505	0.00000	0.00000	0.01579
220	0.01134	0.00007	0.22589	0.02655	0.00226	0.15168	0.00000	0.00000	0.01523
230	0.01040	0.00006	0.22219	0.02541	0.00210	0.14852	0.00000	0.00000	0.01470
240	0.00956	0.00005	0.21869	0.02435	0.00195	0.14554	0.00000	0.00000	0.01422
250	0.00881	0.00004	0.21539	0.02337	0.00181	0.14273	0.00000	0.00000	0.01376
260	0.00815	0.00003	0.21227	0.02245	0.00169	0.14007	0.00000	0.00000	0.01334
270	0.00755	0.00003	0.20930	0.02161	0.00158	0.13755	0.00000	0.00000	0.01294
280	0.00700	0.00002	0.20648	0.02082	0.00148	0.13516	0.00000	0.00000	0.01257
290	0.00651	0.00002	0.20379	0.02007	0.00139	0.13289	0.00000	0.00000	0.01222
300	0.00607	0.00002	0.20122	0.01938	0.00130	0.13073	0.00000	0.00000	0.01189

Appendix 5. Probability of uranium exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	DSw			Ops*			OZf		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
1	0.27948	0.09368	0.55948	0.0035097	0.0002758	0.0263434	0.22587	0.07024	0.48763
2	0.14055	0.02225	0.44187	0.0009592	0.0000546	0.0097475	0.08718	0.01214	0.32133
3	0.08590	0.00696	0.39223	0.0004182	0.0000196	0.005111	0.04339	0.00294	0.25130
4	0.05806	0.00263	0.36239	0.0002247	0.0000091	0.0031409	0.02476	0.00089	0.21056
5	0.04181	0.00114	0.34152	0.0001362	0.0000049	0.0021176	0.01542	0.00032	0.18314
6	0.03145	0.00054	0.32567	0.0000894	0.0000029	0.0015181	0.01021	0.00013	0.16310
7	0.02444	0.00028	0.31299	0.0000621	0.0000019	0.0011371	0.00708	0.00006	0.14764
8	0.01948	0.00015	0.30248	0.000045	0.0000013	0.0008804	0.00509	0.00003	0.13527
9	0.01584	0.00009	0.29355	0.0000337	0.0000009	0.0006995	0.00376	0.00001	0.12510
10	0.01309	0.00005	0.28580	0.000026	0.0000007	0.0005675	0.00285	0.00001	0.11655
11	0.01097	0.00003	0.27898	0.0000204	0.0000005	0.0004683	0.00220	0.00000	0.10924
12	0.00930	0.00002	0.27290	0.0000163	0.0000004	0.0003921	0.00173	0.00000	0.10290
13	0.00797	0.00001	0.26742	0.0000133	0.0000003	0.0003324	0.00138	0.00000	0.09735
14	0.00689	0.00001	0.26245	0.000011	0.0000002	0.0002847	0.00111	0.00000	0.09243
15	0.00600	0.00001	0.25790	0.0000091	0.0000002	0.0002462	0.00091	0.00000	0.08804
16	0.00526	0.00000	0.25372	0.0000077	0.0000001	0.0002146	0.00075	0.00000	0.08409
17	0.00464	0.00000	0.24984	0.0000066	0.0000001	0.0001884	0.00062	0.00000	0.08052
18	0.00412	0.00000	0.24624	0.0000056	0.0000001	0.0001665	0.00052	0.00000	0.07727
19	0.00368	0.00000	0.24288	0.0000049	0.0000001	0.000148	0.00044	0.00000	0.07429
20	0.00329	0.00000	0.23973	0.0000042	0.0000001	0.0001322	0.00038	0.00000	0.07156
21	0.00296	0.00000	0.23676	0.0000037	0.0000001	0.0001187	0.00032	0.00000	0.06904
22	0.00268	0.00000	0.23397	0.0000033	0.0000001	0.000107	0.00028	0.00000	0.06670
23	0.00243	0.00000	0.23132	0.0000029	0.0000000	0.0000969	0.00024	0.00000	0.06453
24	0.00221	0.00000	0.22882	0.0000026	0.0000000	0.0000881	0.00021	0.00000	0.06251
25	0.00202	0.00000	0.22643	0.0000023	0.0000000	0.0000803	0.00018	0.00000	0.06062
26	0.00184	0.00000	0.22417	0.000002	0.0000000	0.0000734	0.00016	0.00000	0.05885
27	0.00169	0.00000	0.22200	0.0000018	0.0000000	0.0000674	0.00014	0.00000	0.05719
28	0.00156	0.00000	0.21993	0.0000017	0.0000000	0.000062	0.00012	0.00000	0.05563
29	0.00143	0.00000	0.21795	0.0000015	0.0000000	0.0000572	0.00011	0.00000	0.05416
30	**0.00133**	**0.00000**	**0.21606**	**0.0000014**	0.0000000	**0.0000528**	**0.00010**	**0.00000**	**0.05276**
31	0.00123	0.00000	0.21423	0.0000012	0.0000000	0.000049	0.00009	0.00000	0.05145
32	0.00114	0.00000	0.21248	0.0000011	0.0000000	0.0000455	0.00008	0.00000	0.05020
33	0.00106	0.00000	0.21079	0.000001	0.0000000	0.0000423	0.00007	0.00000	0.04901
34	0.00099	0.00000	0.20917	0.0000009	0.0000000	0.0000394	0.00006	0.00000	0.04788
35	0.00092	0.00000	0.20760	0.0000009	0.0000000	0.0000368	0.00006	0.00000	0.04681

Appendix 5. Probability of uranium exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	DSw			Ops*			OZf		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
36	0.00086	0.00000	0.20608	0.0000008	0.0000001	0.0000344	0.00005	0.00000	0.04578
37	0.00080	0.00000	0.20462	0.0000007	0.0000001	0.0000323	0.00005	0.00000	0.04480
38	0.00075	0.00000	0.20320	0.0000007	0.0000000	0.0000303	0.00004	0.00000	0.04387
39	0.00071	0.00000	0.20183	0.0000006	0.0000000	0.0000285	0.00004	0.00000	0.04297
40	0.00066	0.00000	0.20050	0.0000006	0.0000000	0.0000268	0.00004	0.00000	0.04211
41	0.00062	0.00000	0.19921	0.0000005	0.0000000	0.0000252	0.00003	0.00000	0.04129
42	0.00059	0.00000	0.19796	0.0000005	0.0000000	0.0000238	0.00003	0.00000	0.04050
43	0.00055	0.00000	0.19674	0.0000005	0.0000000	0.0000225	0.00003	0.00000	0.03974
44	0.00052	0.00000	0.19555	0.0000004	0.0000000	0.0000213	0.00003	0.00000	0.03901
45	0.00049	0.00000	0.19440	0.0000004	0.0000000	0.0000201	0.00002	0.00000	0.03831
46	0.00047	0.00000	0.19328	0.0000004	0.0000001	0.0000191	0.00002	0.00000	0.03764
47	0.00044	0.00000	0.19219	0.0000004	0.0000001	0.0000181	0.00002	0.00000	0.03699
48	0.00042	0.00000	0.19113	0.0000003	0.0000000	0.0000172	0.00002	0.00000	0.03636
49	0.00040	0.00000	0.19009	0.0000003	0.0000000	0.0000163	0.00002	0.00000	0.03575
50	0.00038	0.00000	0.18908	0.0000003	0.0000000	0.0000155	0.00002	0.00000	0.03516
55	0.00029	0.00000	0.18436	0.0000002	0.0000000	0.0000123	0.00001	0.00000	0.03251
60	0.00023	0.00000	0.18014	0.0000002	0.0000000	0.0000099	0.00001	0.00000	0.03024
65	0.00019	0.00000	0.17633	0.0000001	0.0000000	0.000008	0.00001	0.00000	0.02827
70	0.00015	0.00000	0.17286	0.0000001	0.0000000	0.0000067	0.00000	0.00000	0.02654
75	0.00013	0.00000	0.16967	0.0000001	0.0000000	0.0000056	0.00000	0.00000	0.02502
80	0.00011	0.00000	0.16673	0.0000001	0.0000001	0.0000047	0.00000	0.00000	0.02367
85	0.00009	0.00000	0.16401	0.0000001	0.0000001	0.000004	0.00000	0.00000	0.02245
90	0.00008	0.00000	0.16148	0.0000000	0.0000000	0.0000035	0.00000	0.00000	0.02136
95	0.00007	0.00000	0.15911	0.0000000	0.0000000	0.000003	0.00000	0.00000	0.02036
100	0.00006	0.00000	0.15689	0.0000000	0.0000000	0.0000026	0.00000	0.00000	0.01946
110	0.00004	0.00000	0.15282	0.0000000	0.0000000	0.000002	0.00000	0.00000	0.01787
120	0.00003	0.00000	0.14918	0.0000000	0.0000000	0.0000016	0.00000	0.00000	0.01652
130	0.00003	0.00000	0.14590	0.0000000	0.0000000	0.0000013	0.00000	0.00000	0.01536
140	0.00002	0.00000	0.14290	0.0000000	0.0000000	0.000001	0.00000	0.00000	0.01434
150	0.00002	0.00000	0.14016	0.0000000	0.0000000	0.0000009	0.00000	0.00000	0.01346
160	0.00001	0.00000	0.13763	0.0000001	0.0000001	0.0000007	0.00000	0.00000	0.01267
170	0.00001	0.00000	0.13529	0.0000001	0.0000001	0.0000006	0.00000	0.00000	0.01197
180	0.00001	0.00000	0.13311	0.0000000	0.0000000	0.0000005	0.00000	0.00000	0.01133
190	0.00001	0.00000	0.13107	0.0000000	0.0000000	0.0000004	0.00000	0.00000	0.01077
200	0.00001	0.00000	0.12916	0.0000000	0.0000000	0.0000004	0.00000	0.00000	0.01025

Appendix 5. Probability of uranium exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	DSw			Ops*			OZf		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
210	0.00001	0.00000	0.12737	0.0000000	0.0000000	0.0000003	0.00000	0.00000	0.00978
220	0.00001	0.00000	0.12567	0.0000000	0.0000000	0.0000003	0.00000	0.00000	0.00935
230	0.00000	0.00000	0.12407	0.0000000	0.0000000	0.0000003	0.00000	0.00000	0.00895
240	0.00000	0.00000	0.12255	0.0000000	0.0000000	0.0000002	0.00000	0.00000	0.00859
250	0.00000	0.00000	0.12111	0.0000000	0.0000000	0.0000002	0.00000	0.00000	0.00825
260	0.00000	0.00000	0.11973	0.0000001	0.0000001	0.0000002	0.00000	0.00000	0.00794
270	0.00000	0.00000	0.11842	0.0000001	0.0000001	0.0000002	0.00000	0.00000	0.00764
280	0.00000	0.00000	0.11717	0.0000000	0.0000000	0.0000001	0.00000	0.00000	0.00737
290	0.00000	0.00000	0.11597	0.0000000	0.0000000	0.0000001	0.00000	0.00000	0.00712
300	0.00000	0.00000	0.11482	0.0000000	0.0000000	0.0000001	0.00000	0.00000	0.00688

Appendix 5. Probability of uranium exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	OZm			OZn			OZnb		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
1	0.39299	0.18635	0.63622	0.50445	0.36570	0.64266	0.20132	0.09010	0.36931
2	0.28816	0.11589	0.53119	0.31779	0.20138	0.45578	0.12168	0.04290	0.26921
3	0.23368	0.08203	0.47528	0.22434	0.12633	0.35520	0.08700	0.02593	0.21925
4	0.19878	0.06210	0.43859	0.16880	0.08553	0.29148	0.06729	0.01758	0.18780
5	0.17401	0.04905	0.41184	0.13241	0.06099	0.24710	0.05453	0.01276	0.16567
6	0.15529	0.03993	0.39107	0.10700	0.04518	0.21425	0.04559	0.00970	0.14902
7	0.14054	0.03324	0.37425	0.08842	0.03446	0.18887	0.03899	0.00763	0.13592
8	0.12856	0.02816	0.36021	0.07437	0.02691	0.16864	0.03392	0.00616	0.12529
9	0.11860	0.02420	0.34821	0.06346	0.02142	0.15212	0.02991	0.00507	0.11643
10	0.11016	0.02104	0.33778	0.05479	0.01732	0.13836	0.02667	0.00424	0.10892
11	0.10291	0.01847	0.32859	0.04778	0.01420	0.12673	0.02399	0.00360	0.10245
12	0.09659	0.01635	0.32039	0.04202	0.01179	0.11676	0.02175	0.00309	0.09681
13	0.09104	0.01458	0.31301	0.03724	0.00988	0.10813	0.01984	0.00268	0.09183
14	0.08611	0.01308	0.30630	0.03321	0.00836	0.10058	0.01821	0.00235	0.08740
15	0.08171	0.01180	0.30018	0.02979	0.00713	0.09392	0.01679	0.00207	0.08343
16	0.07774	0.01070	0.29454	0.02687	0.00613	0.08800	0.01555	0.00183	0.07985
17	0.07415	0.00975	0.28933	0.02434	0.00530	0.08272	0.01446	0.00164	0.07660
18	0.07088	0.00892	0.28449	0.02214	0.00461	0.07797	0.01349	0.00147	0.07362
19	0.06790	0.00819	0.27998	0.02022	0.00403	0.07367	0.01263	0.00132	0.07090
20	0.06515	0.00754	0.27575	0.01853	0.00354	0.06978	0.01185	0.00120	0.06839
21	0.06262	0.00697	0.27178	0.01703	0.00313	0.06622	0.01115	0.00109	0.06607
22	0.06028	0.00646	0.26805	0.01571	0.00277	0.06297	0.01052	0.00100	0.06392
23	0.05811	0.00600	0.26451	0.01452	0.00247	0.05999	0.00995	0.00091	0.06191
24	0.05609	0.00559	0.26117	0.01346	0.00221	0.05724	0.00942	0.00084	0.06004
25	0.05421	0.00522	0.25800	0.01250	0.00198	0.05470	0.00894	0.00077	0.05829
26	0.05244	0.00488	0.25498	0.01164	0.00178	0.05234	0.00850	0.00071	0.05665
27	0.05079	0.00457	0.25210	0.01086	0.00160	0.05016	0.00809	0.00066	0.05510
28	0.04923	0.00429	0.24935	0.01015	0.00145	0.04812	0.00772	0.00061	0.05364
29	0.04777	0.00404	0.24673	0.00951	0.00132	0.04623	0.00737	0.00057	0.05227
30	**0.04639**	**0.00380**	**0.24421**	**0.00892**	**0.00120**	**0.04445**	**0.00705**	**0.00053**	**0.05097**
31	0.04508	0.00359	0.24180	0.00838	0.00109	0.04279	0.00675	0.00050	0.04973
32	0.04385	0.00339	0.23948	0.00789	0.00100	0.04123	0.00647	0.00046	0.04856
33	0.04268	0.00321	0.23726	0.00743	0.00091	0.03976	0.00621	0.00043	0.04745
34	0.04157	0.00304	0.23511	0.00702	0.00084	0.03838	0.00596	0.00041	0.04639
35	0.04051	0.00288	0.23304	0.00663	0.00077	0.03708	0.00573	0.00038	0.04538

Appendix 5. Probability of uranium exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	OZm			OZn			OZnb		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
36	0.03950	0.00274	0.23105	0.00627	0.00071	0.03584	0.00552	0.00036	0.04442
37	0.03855	0.00260	0.22912	0.00594	0.00065	0.03468	0.00532	0.00034	0.04350
38	0.03763	0.00248	0.22726	0.00563	0.00060	0.03358	0.00513	0.00032	0.04262
39	0.03676	0.00236	0.22546	0.00535	0.00056	0.03253	0.00495	0.00030	0.04177
40	0.03592	0.00225	0.22372	0.00508	0.00052	0.03154	0.00478	0.00029	0.04096
41	0.03512	0.00215	0.22202	0.00483	0.00048	0.03060	0.00462	0.00027	0.04019
42	0.03435	0.00205	0.22038	0.00460	0.00045	0.02970	0.00446	0.00026	0.03944
43	0.03362	0.00196	0.21879	0.00439	0.00041	0.02885	0.00432	0.00024	0.03872
44	0.03291	0.00188	0.21725	0.00418	0.00039	0.02803	0.00418	0.00023	0.03803
45	0.03223	0.00180	0.21574	0.00399	0.00036	0.02725	0.00405	0.00022	0.03737
46	0.03158	0.00173	0.21428	0.00382	0.00034	0.02651	0.00393	0.00021	0.03673
47	0.03095	0.00166	0.21286	0.00365	0.00031	0.02580	0.00381	0.00020	0.03611
48	0.03035	0.00159	0.21148	0.00349	0.00029	0.02512	0.00370	0.00019	0.03551
49	0.02977	0.00153	0.21013	0.00334	0.00028	0.02447	0.00359	0.00018	0.03494
50	0.02921	0.00147	0.20881	0.00320	0.00026	0.02385	0.00349	0.00017	0.03438
55	0.02667	0.00121	0.20270	0.00261	0.00019	0.02109	0.00304	0.00014	0.03185
60	0.02453	0.00102	0.19725	0.00216	0.00014	0.01881	0.00268	0.00012	0.02968
65	0.02268	0.00086	0.19234	0.00181	0.00011	0.01691	0.00238	0.00010	0.02780
70	0.02108	0.00074	0.18788	0.00153	0.00009	0.01530	0.00213	0.00008	0.02615
75	0.01967	0.00064	0.18381	0.00131	0.00007	0.01392	0.00192	0.00007	0.02469
80	0.01843	0.00056	0.18006	0.00112	0.00005	0.01273	0.00174	0.00006	0.02338
85	0.01732	0.00049	0.17660	0.00098	0.00004	0.01169	0.00159	0.00005	0.02221
90	0.01633	0.00043	0.17338	0.00085	0.00004	0.01078	0.00145	0.00004	0.02115
95	0.01544	0.00038	0.17039	0.00075	0.00003	0.00998	0.00134	0.00004	0.02019
100	0.01464	0.00034	0.16758	0.00066	0.00002	0.00927	0.00123	0.00003	0.01932
110	0.01323	0.00028	0.16247	0.00052	0.00002	0.00807	0.00106	0.00003	0.01778
120	0.01206	0.00023	0.15791	0.00042	0.00001	0.00709	0.00092	0.00002	0.01647
130	0.01105	0.00019	0.15381	0.00034	0.00001	0.00629	0.00081	0.00002	0.01533
140	0.01019	0.00016	0.15009	0.00028	0.00001	0.00562	0.00072	0.00001	0.01435
150	0.00944	0.00013	0.14669	0.00024	0.00001	0.00505	0.00064	0.00001	0.01348
160	0.00878	0.00011	0.14357	0.00020	0.00000	0.00457	0.00058	0.00001	0.01271
170	0.00820	0.00010	0.14068	0.00017	0.00000	0.00415	0.00052	0.00001	0.01202
180	0.00769	0.00009	0.13800	0.00015	0.00000	0.00380	0.00047	0.00001	0.01140
190	0.00723	0.00008	0.13551	0.00013	0.00000	0.00348	0.00043	0.00001	0.01084
200	0.00681	0.00007	0.13318	0.00011	0.00000	0.00320	0.00039	0.00001	0.01033

Appendix 5. Probability of uranium exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	OZm			OZn			OZnb		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
210	0.00644	0.00006	0.13099	0.00010	0.00000	0.00296	0.00036	0.00000	0.00987
220	0.00610	0.00005	0.12893	0.00008	0.00000	0.00274	0.00033	0.00000	0.00944
230	0.00579	0.00005	0.12698	0.00007	0.00000	0.00255	0.00031	0.00000	0.00905
240	0.00550	0.00004	0.12514	0.00007	0.00000	0.00238	0.00029	0.00000	0.00869
250	0.00524	0.00004	0.12340	0.00006	0.00000	0.00222	0.00027	0.00000	0.00836
260	0.00500	0.00003	0.12174	0.00005	0.00000	0.00208	0.00025	0.00000	0.00805
270	0.00478	0.00003	0.12016	0.00005	0.00000	0.00195	0.00023	0.00000	0.00776
280	0.00457	0.00003	0.11866	0.00004	0.00000	0.00183	0.00022	0.00000	0.00749
290	0.00438	0.00003	0.11722	0.00004	0.00000	0.00173	0.00021	0.00000	0.00724
300	0.00421	0.00002	0.11585	0.00003	0.00000	0.00163	0.00019	0.00000	0.00700

Appendix 5. Probability of uranium exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	Ph			Sacgr			Sagr		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
1	0.47220	0.23247	0.72282	0.69951	0.59142	0.79240	0.57749	0.33202	0.79539
2	0.38398	0.16877	0.64392	0.55401	0.44593	0.65820	0.46876	0.24920	0.69856
3	0.33475	0.13536	0.59782	0.46387	0.35942	0.57089	0.40572	0.20238	0.63909
4	0.30141	0.11388	0.56571	0.40076	0.30036	0.50822	0.36234	0.17092	0.59719
5	0.27663	0.09862	0.54129	0.35345	0.25703	0.46036	0.32983	0.14795	0.56534
6	0.25715	0.08711	0.52173	0.31637	0.22376	0.42223	0.30418	0.13029	0.53991
7	0.24126	0.07806	0.50549	0.28639	0.19737	0.39093	0.28322	0.11624	0.51890
8	0.22794	0.07073	0.49165	0.26155	0.17592	0.36463	0.26564	0.10476	0.50111
9	0.21654	0.06466	0.47963	0.24061	0.15816	0.34213	0.25060	0.09519	0.48574
10	0.20662	0.05954	0.46903	0.22267	0.14321	0.32261	0.23755	0.08710	0.47226
11	0.19789	0.05515	0.45957	0.20712	0.13048	0.30546	0.22606	0.08015	0.46030
12	0.19012	0.05135	0.45104	0.19351	0.11951	0.29025	0.21586	0.07413	0.44956
13	0.18314	0.04803	0.44328	0.18147	0.10997	0.27664	0.20672	0.06885	0.43985
14	0.17682	0.04509	0.43618	0.17076	0.10162	0.26438	0.19846	0.06420	0.43099
15	0.17106	0.04248	0.42963	0.16116	0.09424	0.25325	0.19095	0.06006	0.42286
16	0.16578	0.04013	0.42357	0.15251	0.08768	0.24311	0.18409	0.05637	0.41537
17	0.16092	0.03802	0.41792	0.14466	0.08183	0.23382	0.17778	0.05304	0.40841
18	0.15643	0.03611	0.41265	0.13752	0.07657	0.22526	0.17196	0.05003	0.40194
19	0.15225	0.03437	0.40770	0.13099	0.07183	0.21735	0.16657	0.04730	0.39589
20	0.14836	0.03277	0.40305	0.12499	0.06754	0.21001	0.16156	0.04481	0.39021
21	0.14472	0.03131	0.39866	0.11947	0.06363	0.20319	0.15689	0.04254	0.38487
22	0.14130	0.02996	0.39450	0.11437	0.06007	0.19682	0.15251	0.04045	0.37983
23	0.13809	0.02872	0.39055	0.10964	0.05681	0.19085	0.14841	0.03852	0.37507
24	0.13507	0.02757	0.38680	0.10524	0.05381	0.18526	0.14455	0.03675	0.37054
25	0.13221	0.02649	0.38323	0.10115	0.05106	0.18000	0.14092	0.03510	0.36625
26	0.12950	0.02549	0.37981	0.09733	0.04851	0.17504	0.13748	0.03357	0.36215
27	0.12693	0.02456	0.37655	0.09375	0.04616	0.17036	0.13423	0.03215	0.35825
28	0.12448	0.02369	0.37343	0.09039	0.04397	0.16593	0.13115	0.03082	0.35452
29	0.12216	0.02287	0.37043	0.08724	0.04195	0.16174	0.12822	0.02958	0.35095
30	**0.11994**	**0.02210**	**0.36755**	**0.08428**	**0.04006**	**0.15776**	**0.12543**	**0.02842**	**0.34752**
31	0.11782	0.02137	0.36477	0.08148	0.03829	0.15397	0.12278	0.02734	0.34423
32	0.11580	0.02069	0.36211	0.07884	0.03665	0.15036	0.12025	0.02631	0.34107
33	0.11386	0.02004	0.35953	0.07634	0.03511	0.14693	0.11783	0.02535	0.33803
34	0.11200	0.01943	0.35705	0.07398	0.03366	0.14365	0.11552	0.02445	0.33510
35	0.11021	0.01886	0.35465	0.07174	0.03230	0.14052	0.11330	0.02359	0.33228

Appendix 5. Probability of uranium exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	Ph			Sacgr			Sagr		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
36	0.10850	0.01831	0.35233	0.06961	0.03103	0.13752	0.11118	0.02278	0.32955
37	0.10685	0.01779	0.35008	0.06758	0.02983	0.13465	0.10914	0.02202	0.32691
38	0.10526	0.01729	0.34790	0.06566	0.02869	0.13189	0.10719	0.02129	0.32436
39	0.10373	0.01682	0.34579	0.06383	0.02762	0.12925	0.10530	0.02061	0.32189
40	0.10226	0.01637	0.34374	0.06208	0.02661	0.12672	0.10349	0.01995	0.31950
41	0.10083	0.01594	0.34175	0.06041	0.02566	0.12428	0.10175	0.01933	0.31718
42	0.09946	0.01553	0.33981	0.05881	0.02475	0.12193	0.10007	0.01874	0.31493
43	0.09813	0.01514	0.33793	0.05729	0.02389	0.11967	0.09844	0.01818	0.31274
44	0.09684	0.01476	0.33610	0.05583	0.02308	0.11749	0.09688	0.01765	0.31061
45	0.09559	0.01440	0.33432	0.05443	0.02230	0.11539	0.09536	0.01713	0.30855
46	0.09438	0.01406	0.33258	0.05309	0.02156	0.11337	0.09390	0.01665	0.30654
47	0.09321	0.01373	0.33089	0.05180	0.02086	0.11141	0.09248	0.01618	0.30458
48	0.09208	0.01341	0.32924	0.05056	0.02020	0.10952	0.09111	0.01573	0.30267
49	0.09098	0.01311	0.32762	0.04938	0.01956	0.10769	0.08979	0.01531	0.30081
50	0.08991	0.01281	0.32605	0.04823	0.01895	0.10592	0.08850	0.01490	0.29900
55	0.08498	0.01150	0.31870	0.04313	0.01630	0.09786	0.08261	0.01309	0.29056
60	0.08067	0.01041	0.31210	0.03886	0.01415	0.09092	0.07750	0.01160	0.28303
65	0.07685	0.00948	0.30611	0.03524	0.01240	0.08488	0.07301	0.01035	0.27623
70	0.07343	0.00868	0.30064	0.03215	0.01094	0.07957	0.06904	0.00930	0.27004
75	0.07036	0.00799	0.29562	0.02947	0.00972	0.07486	0.06549	0.00841	0.26438
80	0.06757	0.00739	0.29097	0.02713	0.00869	0.07066	0.06230	0.00764	0.25918
85	0.06504	0.00686	0.28666	0.02508	0.00781	0.06688	0.05942	0.00698	0.25435
90	0.06271	0.00639	0.28263	0.02327	0.00705	0.06347	0.05679	0.00639	0.24987
95	0.06058	0.00597	0.27887	0.02165	0.00639	0.06037	0.05440	0.00588	0.24569
100	0.05860	0.00560	0.27532	0.02021	0.00582	0.05754	0.05220	0.00543	0.24177
110	0.05506	0.00496	0.26883	0.01775	0.00487	0.05257	0.04830	0.00467	0.23462
120	0.05199	0.00443	0.26301	0.01573	0.00413	0.04834	0.04495	0.00406	0.22824
130	0.04928	0.00398	0.25773	0.01405	0.00354	0.04471	0.04203	0.00356	0.22249
140	0.04687	0.00361	0.25292	0.01263	0.00306	0.04154	0.03947	0.00315	0.21726
150	0.04471	0.00329	0.24850	0.01143	0.00266	0.03876	0.03721	0.00280	0.21248
160	0.04277	0.00301	0.24441	0.01039	0.00234	0.03630	0.03518	0.00251	0.20809
170	0.04101	0.00277	0.24062	0.00949	0.00207	0.03411	0.03336	0.00226	0.20402
180	0.03940	0.00256	0.23709	0.00871	0.00183	0.03215	0.03172	0.00204	0.20025
190	0.03793	0.00237	0.23378	0.00802	0.00164	0.03038	0.03023	0.00186	0.19672
200	0.03657	0.00221	0.23068	0.00741	0.00147	0.02878	0.02887	0.00169	0.19343

Appendix 5. Probability of uranium exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	Ph			Sacgr			Sagr		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
210	0.03532	0.00206	0.22775	0.00687	0.00132	0.02732	0.02762	0.00155	0.19033
220	0.03416	0.00192	0.22499	0.00639	0.00120	0.02599	0.02647	0.00143	0.18741
230	0.03308	0.00180	0.22237	0.00596	0.00109	0.02477	0.02541	0.00131	0.18466
240	0.03207	0.00170	0.21989	0.00557	0.00099	0.02365	0.02443	0.00122	0.18205
250	0.03113	0.00160	0.21753	0.00522	0.00090	0.02262	0.02352	0.00113	0.17958
260	0.03024	0.00151	0.21527	0.00490	0.00083	0.02166	0.02268	0.00105	0.17723
270	0.02941	0.00143	0.21312	0.00460	0.00076	0.02077	0.02188	0.00097	0.17499
280	0.02863	0.00135	0.21107	0.00434	0.00070	0.01994	0.02114	0.00091	0.17285
290	0.02789	0.00128	0.20910	0.00410	0.00065	0.01917	0.02045	0.00085	0.17080
300	0.02719	0.00122	0.20721	0.00387	0.00060	0.01845	0.01980	0.00080	0.16885

Appendix 5. Probability of uranium exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	Sb			Sbs			Se		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
1	0.44502	0.26442	0.63806	0.28874	0.12867	0.50739	0.35132	0.14117	0.62230
2	0.27017	0.13088	0.45922	0.09640	0.02179	0.27875	0.09921	0.01598	0.33459
3	0.18684	0.07521	0.36649	0.04108	0.00484	0.18692	0.03476	0.00195	0.22850
4	0.13866	0.04725	0.30833	0.02030	0.00133	0.13758	0.01425	0.00029	0.17273
5	0.10768	0.03156	0.26777	0.01108	0.00043	0.10695	0.00654	0.00005	0.13793
6	0.08634	0.02205	0.23754	0.00651	0.00016	0.08622	0.00327	0.00001	0.11407
7	0.07090	0.01596	0.21397	0.00403	0.00006	0.07136	0.00175	0.00000	0.09668
8	0.05933	0.01188	0.19497	0.00261	0.00003	0.06025	0.00099	0.00000	0.08345
9	0.05040	0.00904	0.17928	0.00175	0.00001	0.05168	0.00058	0.00000	0.07308
10	0.04335	0.00702	0.16607	0.00121	0.00001	0.04490	0.00036	0.00000	0.06473
11	0.03768	0.00554	0.15476	0.00086	0.00000	0.03943	0.00022	0.00000	0.05789
12	0.03305	0.00443	0.14495	0.00062	0.00000	0.03494	0.00015	0.00000	0.05218
13	0.02921	0.00359	0.13636	0.00046	0.00000	0.03120	0.00010	0.00000	0.04735
14	0.02600	0.00294	0.12876	0.00034	0.00000	0.02804	0.00007	0.00000	0.04323
15	0.02328	0.00243	0.12199	0.00026	0.00000	0.02536	0.00005	0.00000	0.03967
16	0.02095	0.00203	0.11590	0.00020	0.00000	0.02305	0.00003	0.00000	0.03656
17	0.01895	0.00171	0.11041	0.00016	0.00000	0.02105	0.00002	0.00000	0.03384
18	0.01721	0.00145	0.10542	0.00012	0.00000	0.01930	0.00002	0.00000	0.03144
19	0.01570	0.00123	0.10086	0.00010	0.00000	0.01777	0.00001	0.00000	0.02930
20	0.01437	0.00106	0.09668	0.00008	0.00000	0.01641	0.00001	0.00000	0.02738
21	0.01319	0.00091	0.09284	0.00006	0.00000	0.01520	0.00001	0.00000	0.02566
22	0.01215	0.00079	0.08929	0.00005	0.00000	0.01413	0.00001	0.00000	0.02411
23	0.01122	0.00069	0.08600	0.00004	0.00000	0.01316	0.00000	0.00000	0.02271
24	0.01039	0.00060	0.08294	0.00004	0.00000	0.01229	0.00000	0.00000	0.02143
25	0.00965	0.00053	0.08009	0.00003	0.00000	0.01150	0.00000	0.00000	0.02026
26	0.00898	0.00047	0.07742	0.00003	0.00000	0.01079	0.00000	0.00000	0.01919
27	0.00837	0.00041	0.07493	0.00002	0.00000	0.01014	0.00000	0.00000	0.01821
28	0.00782	0.00037	0.07258	0.00002	0.00000	0.00955	0.00000	0.00000	0.01730
29	0.00732	0.00033	0.07038	0.00002	0.00000	0.00901	0.00000	0.00000	0.01647
30	**0.00686**	**0.00029**	**0.06830**	**0.00001**	**0.00000**	**0.00851**	**0.00000**	**0.00000**	**0.01570**
31	0.00644	0.00026	0.06634	0.00001	0.00000	0.00805	0.00000	0.00000	0.01498
32	0.00606	0.00023	0.06448	0.00001	0.00000	0.00763	0.00000	0.00000	0.01431
33	0.00571	0.00021	0.06273	0.00001	0.00000	0.00724	0.00000	0.00000	0.01369
34	0.00539	0.00019	0.06106	0.00001	0.00000	0.00687	0.00000	0.00000	0.01311
35	0.00509	0.00017	0.05947	0.00001	0.00000	0.00654	0.00000	0.00000	0.01257

Appendix 5. Probability of uranium exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	Sb			Sbs			Se		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
36	0.00481	0.00016	0.05797	0.00001	0.00000	0.00623	0.00000	0.00000	0.01206
37	0.00456	0.00014	0.05653	0.00001	0.00000	0.00594	0.00000	0.00000	0.01158
38	0.00432	0.00013	0.05516	0.00000	0.00000	0.00566	0.00000	0.00000	0.01113
39	0.00410	0.00012	0.05386	0.00000	0.00000	0.00541	0.00000	0.00000	0.01071
40	0.00389	0.00011	0.05261	0.00000	0.00000	0.00517	0.00000	0.00000	0.01032
41	0.00370	0.00010	0.05141	0.00000	0.00000	0.00495	0.00000	0.00000	0.00994
42	0.00352	0.00009	0.05027	0.00000	0.00000	0.00474	0.00000	0.00000	0.00959
43	0.00336	0.00008	0.04917	0.00000	0.00000	0.00455	0.00000	0.00000	0.00925
44	0.00320	0.00008	0.04812	0.00000	0.00000	0.00436	0.00000	0.00000	0.00893
45	0.00306	0.00007	0.04711	0.00000	0.00000	0.00419	0.00000	0.00000	0.00863
46	0.00292	0.00006	0.04614	0.00000	0.00000	0.00403	0.00000	0.00000	0.00835
47	0.00279	0.00006	0.04520	0.00000	0.00000	0.00387	0.00000	0.00000	0.00808
48	0.00267	0.00006	0.04430	0.00000	0.00000	0.00372	0.00000	0.00000	0.00782
49	0.00256	0.00005	0.04344	0.00000	0.00000	0.00359	0.00000	0.00000	0.00758
50	0.00245	0.00005	0.04260	0.00000	0.00000	0.00346	0.00000	0.00000	0.00734
55	0.00200	0.00003	0.03884	0.00000	0.00000	0.00289	0.00000	0.00000	0.00632
60	0.00165	0.00002	0.03566	0.00000	0.00000	0.00246	0.00000	0.00000	0.00551
65	0.00138	0.00002	0.03292	0.00000	0.00000	0.00211	0.00000	0.00000	0.00484
70	0.00117	0.00001	0.03056	0.00000	0.00000	0.00182	0.00000	0.00000	0.00429
75	0.00100	0.00001	0.02848	0.00000	0.00000	0.00159	0.00000	0.00000	0.00383
80	0.00086	0.00001	0.02665	0.00000	0.00000	0.00140	0.00000	0.00000	0.00344
85	0.00075	0.00001	0.02503	0.00000	0.00000	0.00124	0.00000	0.00000	0.00310
90	0.00065	0.00000	0.02357	0.00000	0.00000	0.00110	0.00000	0.00000	0.00282
95	0.00057	0.00000	0.02226	0.00000	0.00000	0.00099	0.00000	0.00000	0.00257
100	0.00051	0.00000	0.02108	0.00000	0.00000	0.00089	0.00000	0.00000	0.00235
110	0.00040	0.00000	0.01902	0.00000	0.00000	0.00073	0.00000	0.00000	0.00199
120	0.00032	0.00000	0.01730	0.00000	0.00000	0.00061	0.00000	0.00000	0.00171
130	0.00026	0.00000	0.01584	0.00000	0.00000	0.00051	0.00000	0.00000	0.00148
140	0.00022	0.00000	0.01458	0.00000	0.00000	0.00044	0.00000	0.00000	0.00129
150	0.00018	0.00000	0.01349	0.00000	0.00000	0.00037	0.00000	0.00000	0.00114
160	0.00015	0.00000	0.01254	0.00000	0.00000	0.00032	0.00000	0.00000	0.00101
170	0.00013	0.00000	0.01169	0.00000	0.00000	0.00028	0.00000	0.00000	0.00090
180	0.00011	0.00000	0.01095	0.00000	0.00000	0.00025	0.00000	0.00000	0.00081
190	0.00010	0.00000	0.01028	0.00000	0.00000	0.00022	0.00000	0.00000	0.00073
200	0.00008	0.00000	0.00968	0.00000	0.00000	0.00020	0.00000	0.00000	0.00066

Appendix 5. Probability of uranium exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	Sb			Sbs			Se		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
210	0.00007	0.00000	0.00913	0.00000	0.00000	0.00018	0.00000	0.00000	0.00060
220	0.00007	0.00000	0.00864	0.00000	0.00000	0.00016	0.00000	0.00000	0.00055
230	0.00006	0.00000	0.00819	0.00000	0.00000	0.00014	0.00000	0.00000	0.00051
240	0.00005	0.00000	0.00778	0.00000	0.00000	0.00013	0.00000	0.00000	0.00046
250	0.00005	0.00000	0.00741	0.00000	0.00000	0.00012	0.00000	0.00000	0.00043
260	0.00004	0.00000	0.00706	0.00000	0.00000	0.00011	0.00000	0.00000	0.00040
270	0.00004	0.00000	0.00675	0.00000	0.00000	0.00010	0.00000	0.00000	0.00037
280	0.00003	0.00000	0.00645	0.00000	0.00000	0.00009	0.00000	0.00000	0.00034
290	0.00003	0.00000	0.00618	0.00000	0.00000	0.00008	0.00000	0.00000	0.00032
300	0.00003	0.00000	0.00592	0.00000	0.00000	0.00008	0.00000	0.00000	0.00030

Appendix 5. Probability of uranium exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	Sgr			So			SOagr		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
1	0.31386	0.10546	0.61071	0.32432	0.15913	0.53458	0.27049	0.11302	0.49520
2	0.18569	0.03382	0.51582	0.21113	0.08202	0.41552	0.20019	0.06910	0.42098
3	0.12859	0.01344	0.47890	0.15735	0.05103	0.35351	0.16471	0.04947	0.38190
4	0.09632	0.00620	0.45806	0.12521	0.03497	0.31333	0.14218	0.03819	0.35605
5	0.07572	0.00318	0.44411	0.10365	0.02546	0.28437	0.12621	0.03085	0.33704
6	0.06153	0.00176	0.43385	0.08815	0.01934	0.26212	0.11412	0.02570	0.32214
7	0.05124	0.00104	0.42584	0.07645	0.01515	0.24429	0.10457	0.02190	0.30999
8	0.04347	0.00064	0.41932	0.06730	0.01216	0.22956	0.09677	0.01898	0.29977
9	0.03744	0.00041	0.41385	0.05996	0.00995	0.21711	0.09025	0.01667	0.29099
10	0.03264	0.00027	0.40917	0.05393	0.00827	0.20639	0.08470	0.01481	0.28333
11	0.02874	0.00019	0.40509	0.04891	0.00697	0.19703	0.07991	0.01327	0.27653
12	0.02553	0.00013	0.40147	0.04465	0.00594	0.18876	0.07571	0.01199	0.27045
13	0.02285	0.00009	0.39824	0.04100	0.00511	0.18139	0.07200	0.01090	0.26496
14	0.02058	0.00007	0.39532	0.03785	0.00444	0.17475	0.06870	0.00997	0.25995
15	0.01864	0.00005	0.39266	0.03509	0.00388	0.16874	0.06572	0.00916	0.25536
16	0.01698	0.00004	0.39022	0.03266	0.00342	0.16326	0.06303	0.00846	0.25112
17	0.01553	0.00003	0.38797	0.03051	0.00303	0.15823	0.06058	0.00784	0.24720
18	0.01426	0.00002	0.38588	0.02859	0.00269	0.15360	0.05834	0.00729	0.24354
19	0.01314	0.00002	0.38394	0.02686	0.00241	0.14931	0.05629	0.00680	0.24013
20	0.01215	0.00001	0.38212	0.02531	0.00217	0.14533	0.05439	0.00637	0.23692
21	0.01127	0.00001	0.38041	0.02390	0.00196	0.14162	0.05263	0.00597	0.23391
22	0.01048	0.00001	0.37880	0.02262	0.00177	0.13815	0.05099	0.00562	0.23106
23	0.00978	0.00001	0.37728	0.02145	0.00161	0.13489	0.04947	0.00530	0.22837
24	0.00914	0.00001	0.37584	0.02038	0.00147	0.13183	0.04804	0.00500	0.22581
25	0.00856	0.00000	0.37447	0.01940	0.00134	0.12894	0.04671	0.00474	0.22338
26	0.00804	0.00000	0.37317	0.01849	0.00123	0.12622	0.04545	0.00449	0.22107
27	0.00756	0.00000	0.37193	0.01765	0.00113	0.12363	0.04427	0.00427	0.21886
28	0.00713	0.00000	0.37074	0.01687	0.00105	0.12119	0.04316	0.00406	0.21675
29	0.00673	0.00000	0.36960	0.01615	0.00097	0.11886	0.04210	0.00387	0.21473
30	**0.00636**	**0.00000**	**0.36851**	**0.01548**	**0.00089**	**0.11664**	**0.04110**	**0.00369**	**0.21279**
31	0.00602	0.00000	0.36747	0.01485	0.00083	0.11453	0.04015	0.00352	0.21093
32	0.00571	0.00000	0.36646	0.01427	0.00077	0.11252	0.03925	0.00337	0.20914
33	0.00542	0.00000	0.36549	0.01372	0.00072	0.11059	0.03840	0.00323	0.20742
34	0.00515	0.00000	0.36456	0.01320	0.00067	0.10874	0.03758	0.00309	0.20576
35	0.00491	0.00000	0.36366	0.01272	0.00063	0.10698	0.03680	0.00297	0.20415

Appendix 5. Probability of uranium exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	Sgr			So			SOagr		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
36	0.00467	0.00000	0.36278	0.01226	0.00059	0.10528	0.03605	0.00285	0.20261
37	0.00446	0.00000	0.36194	0.01183	0.00055	0.10365	0.03534	0.00274	0.20111
38	0.00426	0.00000	0.36113	0.01143	0.00052	0.10208	0.03466	0.00264	0.19966
39	0.00407	0.00000	0.36034	0.01104	0.00048	0.10057	0.03400	0.00254	0.19826
40	0.00389	0.00000	0.35957	0.01068	0.00046	0.09912	0.03338	0.00245	0.19690
41	0.00373	0.00000	0.35882	0.01034	0.00043	0.09772	0.03277	0.00236	0.19559
42	0.00357	0.00000	0.35810	0.01001	0.00041	0.09637	0.03219	0.00228	0.19431
43	0.00343	0.00000	0.35740	0.00970	0.00038	0.09506	0.03163	0.00220	0.19306
44	0.00329	0.00000	0.35672	0.00941	0.00036	0.09380	0.03110	0.00213	0.19186
45	0.00316	0.00000	0.35605	0.00913	0.00034	0.09257	0.03058	0.00206	0.19068
46	0.00304	0.00000	0.35540	0.00886	0.00032	0.09139	0.03008	0.00199	0.18954
47	0.00292	0.00000	0.35477	0.00860	0.00031	0.09025	0.02960	0.00193	0.18842
48	0.00281	0.00000	0.35415	0.00836	0.00029	0.08914	0.02913	0.00187	0.18734
49	0.00271	0.00000	0.35355	0.00813	0.00028	0.08806	0.02868	0.00181	0.18628
50	0.00261	0.00000	0.35296	0.00791	0.00026	0.08702	0.02824	0.00176	0.18525
55	0.00219	0.00000	0.35022	0.00693	0.00021	0.08222	0.02626	0.00152	0.18044
60	0.00186	0.00000	0.34776	0.00613	0.00017	0.07803	0.02455	0.00133	0.17614
65	0.00160	0.00000	0.34552	0.00547	0.00013	0.07433	0.02307	0.00117	0.17226
70	0.00139	0.00000	0.34347	0.00492	0.00011	0.07102	0.02176	0.00104	0.16872
75	0.00121	0.00000	0.34159	0.00445	0.00009	0.06806	0.02060	0.00093	0.16549
80	0.00107	0.00000	0.33984	0.00404	0.00008	0.06538	0.01956	0.00084	0.16250
85	0.00095	0.00000	0.33822	0.00370	0.00007	0.06294	0.01862	0.00076	0.15974
90	0.00085	0.00000	0.33670	0.00339	0.00006	0.06071	0.01778	0.00069	0.15717
95	0.00076	0.00000	0.33527	0.00313	0.00005	0.05866	0.01701	0.00063	0.15477
100	0.00068	0.00000	0.33393	0.00289	0.00004	0.05676	0.01630	0.00058	0.15252
110	0.00056	0.00000	0.33146	0.00249	0.00003	0.05338	0.01506	0.00050	0.14840
120	0.00047	0.00000	0.32923	0.00218	0.00002	0.05044	0.01400	0.00043	0.14472
130	0.00040	0.00000	0.32720	0.00192	0.00002	0.04785	0.01308	0.00037	0.14141
140	0.00034	0.00000	0.32534	0.00170	0.00002	0.04556	0.01228	0.00033	0.13839
150	0.00029	0.00000	0.32362	0.00152	0.00001	0.04350	0.01157	0.00029	0.13562
160	0.00025	0.00000	0.32202	0.00137	0.00001	0.04165	0.01094	0.00026	0.13308
170	0.00022	0.00000	0.32054	0.00124	0.00001	0.03997	0.01037	0.00023	0.13072
180	0.00019	0.00000	0.31914	0.00113	0.00001	0.03844	0.00986	0.00021	0.12853
190	0.00017	0.00000	0.31784	0.00103	0.00001	0.03704	0.00940	0.00019	0.12649
200	0.00015	0.00000	0.31660	0.00095	0.00001	0.03575	0.00898	0.00017	0.12457

Appendix 5. Probability of uranium exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	Sgr			So			SOagr		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
210	0.00014	0.00000	0.31543	0.00087	0.00000	0.03456	0.00859	0.00016	0.12277
220	0.00012	0.00000	0.31433	0.00080	0.00000	0.03346	0.00824	0.00014	0.12107
230	0.00011	0.00000	0.31327	0.00074	0.00000	0.03243	0.00792	0.00013	0.11947
240	0.00010	0.00000	0.31227	0.00069	0.00000	0.03147	0.00761	0.00012	0.11795
250	0.00009	0.00000	0.31131	0.00064	0.00000	0.03057	0.00734	0.00011	0.11651
260	0.00008	0.00000	0.31039	0.00060	0.00000	0.02973	0.00708	0.00011	0.11513
270	0.00008	0.00000	0.30951	0.00056	0.00000	0.02894	0.00683	0.00010	0.11382
280	0.00007	0.00000	0.30867	0.00053	0.00000	0.02820	0.00661	0.00009	0.11257
290	0.00006	0.00000	0.30786	0.00050	0.00000	0.02749	0.00639	0.00009	0.11138
300	0.00006	0.00000	0.30707	0.00047	0.00000	0.02683	0.00620	0.00008	0.11023

Appendix 5. Probability of uranium exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	SObo			Sp			Spsq*		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
1	0.48976	0.21348	0.77127	0.29427	0.16239	0.46127	0.0595698	0.011175	0.202584
2	0.39909	0.15728	0.68945	0.21950	0.10626	0.38165	0.0294494	0.0043667	0.123926
3	0.34817	0.12548	0.64337	0.18137	0.07987	0.33930	0.0186571	0.0023951	0.089506
4	0.31358	0.10434	0.61246	0.15701	0.06409	0.31122	0.0132263	0.0015282	0.069838
5	0.28781	0.08910	0.58970	0.13966	0.05349	0.29057	0.0100116	0.0010642	0.05704
6	0.26754	0.07753	0.57195	0.12650	0.04583	0.27442	0.0079139	0.0007848	0.048033
7	0.25097	0.06843	0.55754	0.11606	0.04003	0.26127	0.0064526	0.000603	0.041346
8	0.23707	0.06108	0.54550	0.10753	0.03547	0.25024	0.0053853	0.0004777	0.036188
9	0.22517	0.05502	0.53521	0.10038	0.03180	0.24080	0.0045774	0.0003876	0.032091
10	0.21482	0.04994	0.52626	0.09429	0.02877	0.23257	0.0039482	0.0003206	0.02876
11	0.20570	0.04562	0.51838	0.08902	0.02624	0.22530	0.003447	0.0002694	0.026002
12	0.19758	0.04190	0.51134	0.08440	0.02408	0.21881	0.0030402	0.0002293	0.023682
13	0.19028	0.03867	0.50501	0.08032	0.02223	0.21296	0.0027047	0.0001975	0.021705
14	0.18367	0.03584	0.49927	0.07667	0.02062	0.20765	0.0024243	0.0001717	0.020001
15	0.17765	0.03335	0.49401	0.07338	0.01921	0.20279	0.0021871	0.0001506	0.01852
16	0.17213	0.03113	0.48918	0.07041	0.01796	0.19832	0.0019846	0.000133	0.01722
17	0.16705	0.02915	0.48472	0.06771	0.01685	0.19419	0.0018099	0.0001183	0.016071
18	0.16235	0.02737	0.48057	0.06523	0.01586	0.19036	0.0016582	0.0001058	0.015049
19	0.15798	0.02576	0.47670	0.06295	0.01496	0.18678	0.0015255	0.0000951	0.014135
20	0.15391	0.02430	0.47307	0.06085	0.01415	0.18343	0.0014086	0.000086	0.013312
21	0.15010	0.02297	0.46967	0.05890	0.01342	0.18029	0.001305	0.000078	0.012569
22	0.14653	0.02176	0.46646	0.05708	0.01274	0.17733	0.0012128	0.0000711	0.011894
23	0.14317	0.02065	0.46342	0.05539	0.01213	0.17454	0.0011303	0.000065	0.011279
24	0.14000	0.01962	0.46055	0.05381	0.01157	0.17190	0.0010562	0.0000596	0.010716
25	0.13700	0.01868	0.45782	0.05233	0.01104	0.16939	0.0009893	0.0000549	0.0102
26	0.13417	0.01781	0.45523	0.05093	0.01056	0.16701	0.0009287	0.0000506	0.009725
27	0.13148	0.01700	0.45275	0.04962	0.01012	0.16474	0.0008736	0.0000469	0.009286
28	0.12893	0.01625	0.45039	0.04838	0.00970	0.16258	0.0008234	0.0000435	0.008879
29	0.12649	0.01555	0.44812	0.04720	0.00932	0.16051	0.0007775	0.0000404	0.008502
30	**0.12417**	**0.01490**	**0.44596**	**0.04609**	**0.00896**	**0.15853**	**0.0007354**	**0.0000377**	**0.008151**
31	0.12196	0.01429	0.44388	0.04504	0.00862	0.15663	0.0006967	0.0000352	0.007824
32	0.11984	0.01371	0.44188	0.04403	0.00830	0.15481	0.000661	0.0000329	0.007518
33	0.11781	0.01318	0.43995	0.04308	0.00801	0.15307	0.000628	0.0000309	0.007232
34	0.11586	0.01268	0.43810	0.04217	0.00773	0.15138	0.0005975	0.000029	0.006964
35	0.11400	0.01220	0.43631	0.04130	0.00746	0.14976	0.0005692	0.0000272	0.006712

Appendix 5. Probability of uranium exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	SObo			Sp			Spsq*		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
36	0.11221	0.01176	0.43458	0.04047	0.00722	0.14820	0.0005428	0.0000257	0.006475
37	0.11048	0.01133	0.43291	0.03968	0.00698	0.14670	0.0005183	0.0000242	0.006251
38	0.10882	0.01094	0.43130	0.03891	0.00676	0.14524	0.0004954	0.0000229	0.00604
39	0.10722	0.01056	0.42973	0.03818	0.00655	0.14383	0.000474	0.0000216	0.005841
40	0.10568	0.01020	0.42822	0.03748	0.00635	0.14247	0.000454	0.0000205	0.005653
41	0.10419	0.00987	0.42675	0.03681	0.00616	0.14116	0.0004352	0.0000194	0.005474
42	0.10275	0.00955	0.42532	0.03616	0.00598	0.13988	0.0004176	0.0000184	0.005305
43	0.10136	0.00924	0.42393	0.03554	0.00581	0.13864	0.0004011	0.0000175	0.005144
44	0.10001	0.00895	0.42259	0.03494	0.00565	0.13744	0.0003855	0.0000167	0.004991
45	0.09871	0.00867	0.42128	0.03436	0.00549	0.13627	0.0003708	0.0000159	0.004845
46	0.09745	0.00841	0.42000	0.03380	0.00534	0.13514	0.0003569	0.0000151	0.004706
47	0.09623	0.00816	0.41876	0.03326	0.00520	0.13403	0.0003438	0.0000144	0.004574
48	0.09504	0.00792	0.41755	0.03274	0.00507	0.13296	0.0003314	0.0000138	0.004448
49	0.09389	0.00769	0.41637	0.03224	0.00494	0.13192	0.0003197	0.0000132	0.004327
50	0.09277	0.00747	0.41521	0.03175	0.00481	0.13090	0.0003085	0.0000126	0.004212
55	0.08762	0.00651	0.40984	0.02953	0.00426	0.12618	0.0002608	0.0000102	0.003704
60	0.08312	0.00573	0.40503	0.02762	0.00381	0.12199	0.0002233	0.0000084	0.00329
65	0.07913	0.00508	0.40068	0.02596	0.00343	0.11823	0.0001933	0.000007	0.002946
70	0.07556	0.00454	0.39672	0.02449	0.00311	0.11483	0.0001689	0.0000059	0.002657
75	0.07236	0.00408	0.39308	0.02319	0.00283	0.11173	0.0001488	0.000005	0.002412
80	0.06945	0.00369	0.38972	0.02203	0.00260	0.10890	0.0001321	0.0000043	0.002201
85	0.06681	0.00335	0.38660	0.02098	0.00239	0.10628	0.000118	0.0000038	0.002018
90	0.06439	0.00305	0.38369	0.02003	0.00221	0.10386	0.000106	0.0000033	0.001859
95	0.06216	0.00280	0.38096	0.01916	0.00205	0.10161	0.0000957	0.0000029	0.001719
100	0.06010	0.00257	0.37840	0.01837	0.00191	0.09952	0.0000868	0.0000026	0.001595
110	0.05642	0.00219	0.37371	0.01698	0.00167	0.09571	0.0000724	0.000002	0.001386
120	0.05322	0.00189	0.36950	0.01578	0.00147	0.09234	0.0000611	0.0000016	0.001217
130	0.05040	0.00165	0.36568	0.01475	0.00131	0.08932	0.0000523	0.0000014	0.001079
140	0.04790	0.00145	0.36219	0.01384	0.00118	0.08659	0.0000452	0.0000011	0.000965
150	0.04566	0.00128	0.35898	0.01305	0.00106	0.08411	0.0000394	0.000001	0.000868
160	0.04364	0.00114	0.35601	0.01233	0.00097	0.08185	0.0000346	0.0000008	0.000786
170	0.04181	0.00102	0.35325	0.01170	0.00088	0.07976	0.0000307	0.0000007	0.000715
180	0.04015	0.00092	0.35068	0.01112	0.00081	0.07784	0.0000273	0.0000006	0.000654
190	0.03862	0.00083	0.34826	0.01060	0.00075	0.07605	0.0000245	0.0000005	0.0006
200	0.03722	0.00076	0.34599	0.01013	0.00069	0.07439	0.000022	0.0000005	0.000553

Appendix 5. Probability of uranium exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	SObo			Sp			Spsq*		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
210	0.03592	0.00069	0.34384	0.00970	0.00064	0.07283	0.0000199	0.0000004	0.000512
220	0.03472	0.00063	0.34181	0.00930	0.00060	0.07137	0.0000181	0.0000004	0.000475
230	0.03360	0.00058	0.33989	0.00893	0.00056	0.07000	0.0000165	0.0000003	0.000442
240	0.03256	0.00054	0.33806	0.00859	0.00052	0.06871	0.0000151	0.0000003	0.000413
250	0.03159	0.00050	0.33631	0.00828	0.00049	0.06749	0.0000139	0.0000003	0.000386
260	0.03067	0.00046	0.33465	0.00798	0.00046	0.06633	0.0000128	0.0000002	0.000362
270	0.02981	0.00043	0.33305	0.00771	0.00043	0.06523	0.0000118	0.0000002	0.000341
280	0.02901	0.00040	0.33153	0.00745	0.00041	0.06418	0.0000109	0.0000002	0.000321
290	0.02824	0.00037	0.33006	0.00721	0.00038	0.06319	0.0000101	0.0000002	0.000303
300	0.02752	0.00035	0.32865	0.00699	0.00036	0.06224	0.0000094	0.0000002	0.000286

Appendix 5. Probability of uranium exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	Spss			Ssqd			St		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
1	0.10803	0.01801	0.35292	0.33125	0.15099	0.56326	0.26746	0.12567	0.46258
2	0.05713	0.00474	0.28624	0.22783	0.08919	0.44186	0.16133	0.05813	0.34187
3	0.03757	0.00185	0.25586	0.17694	0.06207	0.37577	0.11419	0.03347	0.28195
4	0.02733	0.00088	0.23708	0.14558	0.04675	0.33218	0.08731	0.02158	0.24424
5	0.02109	0.00048	0.22379	0.12400	0.03693	0.30050	0.06996	0.01493	0.21764
6	0.01693	0.00028	0.21367	0.10811	0.03014	0.27607	0.05786	0.01085	0.19756
7	0.01398	0.00018	0.20555	0.09586	0.02519	0.25646	0.04896	0.00817	0.18170
8	0.01179	0.00012	0.19883	0.08611	0.02145	0.24025	0.04218	0.00634	0.16875
9	0.01012	0.00008	0.19313	0.07814	0.01852	0.22656	0.03684	0.00502	0.15793
10	0.00880	0.00006	0.18819	0.07149	0.01619	0.21479	0.03255	0.00406	0.14871
11	0.00774	0.00004	0.18384	0.06586	0.01429	0.20452	0.02903	0.00333	0.14073
12	0.00687	0.00003	0.17998	0.06103	0.01273	0.19547	0.02610	0.00277	0.13374
13	0.00615	0.00002	0.17650	0.05683	0.01141	0.18740	0.02362	0.00233	0.12756
14	0.00554	0.00002	0.17335	0.05315	0.01030	0.18016	0.02151	0.00198	0.12203
15	0.00502	0.00001	0.17047	0.04990	0.00934	0.17360	0.01969	0.00169	0.11705
16	0.00458	0.00001	0.16783	0.04700	0.00852	0.16763	0.01811	0.00146	0.11255
17	0.00419	0.00001	0.16538	0.04440	0.00781	0.16217	0.01672	0.00127	0.10844
18	0.00386	0.00001	0.16311	0.04206	0.00718	0.15714	0.01550	0.00111	0.10468
19	0.00356	0.00001	0.16100	0.03994	0.00662	0.15250	0.01442	0.00098	0.10121
20	0.00330	0.00000	0.15902	0.03800	0.00613	0.14819	0.01345	0.00087	0.09801
21	0.00307	0.00000	0.15716	0.03624	0.00570	0.14418	0.01258	0.00077	0.09504
22	0.00286	0.00000	0.15540	0.03462	0.00530	0.14044	0.01180	0.00069	0.09228
23	0.00267	0.00000	0.15375	0.03312	0.00495	0.13693	0.01109	0.00061	0.08970
24	0.00251	0.00000	0.15218	0.03174	0.00463	0.13364	0.01044	0.00055	0.08728
25	0.00235	0.00000	0.15069	0.03047	0.00434	0.13054	0.00986	0.00050	0.08502
26	0.00221	0.00000	0.14927	0.02928	0.00408	0.12761	0.00932	0.00045	0.08288
27	0.00209	0.00000	0.14792	0.02817	0.00384	0.12485	0.00883	0.00041	0.08087
28	0.00197	0.00000	0.14663	0.02714	0.00362	0.12223	0.00838	0.00037	0.07897
29	0.00187	0.00000	0.14540	0.02617	0.00342	0.11974	0.00796	0.00034	0.07717
30	**0.00177**	**0.00000**	**0.14422**	**0.02527**	**0.00324**	**0.11738**	**0.00758**	**0.00031**	**0.07546**
31	0.00168	0.00000	0.14308	0.02442	0.00307	0.11513	0.00722	0.00029	0.07384
32	0.00160	0.00000	0.14199	0.02362	0.00291	0.11298	0.00689	0.00026	0.07230
33	0.00152	0.00000	0.14094	0.02286	0.00277	0.11093	0.00658	0.00024	0.07083
34	0.00145	0.00000	0.13993	0.02215	0.00263	0.10897	0.00630	0.00022	0.06942
35	0.00138	0.00000	0.13896	0.02147	0.00251	0.10709	0.00603	0.00021	0.06808

Appendix 5. Probability of uranium exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	Spss			Ssqd			St		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
36	0.00132	0.00000	0.13802	0.02083	0.00239	0.10529	0.00578	0.00019	0.06680
37	0.00126	0.00000	0.13711	0.02023	0.00228	0.10357	0.00554	0.00018	0.06557
38	0.00121	0.00000	0.13623	0.01965	0.00218	0.10191	0.00532	0.00017	0.06439
39	0.00116	0.00000	0.13538	0.01911	0.00208	0.10031	0.00511	0.00015	0.06326
40	0.00111	0.00000	0.13456	0.01859	0.00199	0.09878	0.00492	0.00014	0.06218
41	0.00107	0.00000	0.13376	0.01809	0.00191	0.09730	0.00473	0.00013	0.06113
42	0.00103	0.00000	0.13299	0.01762	0.00183	0.09587	0.00456	0.00013	0.06013
43	0.00099	0.00000	0.13223	0.01717	0.00176	0.09450	0.00440	0.00012	0.05916
44	0.00095	0.00000	0.13150	0.01673	0.00169	0.09317	0.00424	0.00011	0.05822
45	0.00091	0.00000	0.13079	0.01632	0.00162	0.09189	0.00409	0.00010	0.05732
46	0.00088	0.00000	0.13010	0.01592	0.00156	0.09064	0.00396	0.00010	0.05645
47	0.00085	0.00000	0.12943	0.01555	0.00150	0.08944	0.00382	0.00009	0.05561
48	0.00082	0.00000	0.12877	0.01518	0.00145	0.08828	0.00370	0.00009	0.05480
49	0.00079	0.00000	0.12813	0.01483	0.00139	0.08715	0.00358	0.00008	0.05401
50	0.00077	0.00000	0.12751	0.01450	0.00134	0.08606	0.00347	0.00008	0.05325
55	0.00065	0.00000	0.12460	0.01300	0.00113	0.08105	0.00297	0.00006	0.04978
60	0.00056	0.00000	0.12200	0.01176	0.00096	0.07668	0.00258	0.00005	0.04677
65	0.00049	0.00000	0.11966	0.01070	0.00083	0.07284	0.00226	0.00004	0.04414
70	0.00043	0.00000	0.11753	0.00980	0.00072	0.06943	0.00199	0.00003	0.04182
75	0.00038	0.00000	0.11557	0.00902	0.00063	0.06637	0.00177	0.00002	0.03975
80	0.00034	0.00000	0.11377	0.00835	0.00055	0.06362	0.00159	0.00002	0.03789
85	0.00030	0.00000	0.11210	0.00775	0.00049	0.06111	0.00143	0.00002	0.03622
90	0.00027	0.00000	0.11055	0.00722	0.00044	0.05883	0.00130	0.00001	0.03469
95	0.00025	0.00000	0.10910	0.00675	0.00039	0.05674	0.00118	0.00001	0.03330
100	0.00022	0.00000	0.10774	0.00633	0.00035	0.05481	0.00108	0.00001	0.03203
110	0.00019	0.00000	0.10525	0.00561	0.00029	0.05137	0.00091	0.00001	0.02977
120	0.00016	0.00000	0.10303	0.00502	0.00024	0.04839	0.00077	0.00001	0.02783
130	0.00014	0.00000	0.10102	0.00452	0.00021	0.04578	0.00067	0.00000	0.02614
140	0.00012	0.00000	0.09919	0.00410	0.00018	0.04348	0.00058	0.00000	0.02465
150	0.00010	0.00000	0.09752	0.00375	0.00015	0.04142	0.00051	0.00000	0.02333
160	0.00009	0.00000	0.09597	0.00344	0.00013	0.03957	0.00045	0.00000	0.02216
170	0.00008	0.00000	0.09454	0.00317	0.00012	0.03789	0.00040	0.00000	0.02110
180	0.00007	0.00000	0.09321	0.00293	0.00010	0.03637	0.00036	0.00000	0.02014
190	0.00007	0.00000	0.09196	0.00272	0.00009	0.03498	0.00033	0.00000	0.01927
200	0.00006	0.00000	0.09080	0.00253	0.00008	0.03370	0.00029	0.00000	0.01847

Appendix 5. Probability of uranium exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	Spss			Ssqd			St		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
210	0.00005	0.00000	0.08970	0.00237	0.00007	0.03253	0.00027	0.00000	0.01774
220	0.00005	0.00000	0.08866	0.00222	0.00006	0.03144	0.00024	0.00000	0.01707
230	0.00004	0.00000	0.08768	0.00209	0.00006	0.03043	0.00022	0.00000	0.01645
240	0.00004	0.00000	0.08675	0.00196	0.00005	0.02948	0.00021	0.00000	0.01587
250	0.00004	0.00000	0.08587	0.00185	0.00005	0.02860	0.00019	0.00000	0.01533
260	0.00003	0.00000	0.08503	0.00175	0.00004	0.02778	0.00017	0.00000	0.01483
270	0.00003	0.00000	0.08422	0.00166	0.00004	0.02701	0.00016	0.00000	0.01436
280	0.00003	0.00000	0.08346	0.00157	0.00004	0.02628	0.00015	0.00000	0.01393
290	0.00003	0.00000	0.08272	0.00150	0.00003	0.02559	0.00014	0.00000	0.01351
300	0.00003	0.00000	0.08202	0.00142	0.00003	0.02495	0.00013	0.00000	0.01313

Appendix 5. Probability of uranium exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	SZtb			Zpg			Zsg		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
1	0.0700933	0.0257274	0.158045	0.49898	0.26915	0.72915	0.92117	0.78082	0.97987
2	0.0383324	0.0105027	0.108813	0.38066	0.18437	0.61461	0.80805	0.63687	0.91795
3	0.026002	0.0058299	0.086296	0.31565	0.14087	0.54642	0.71006	0.53474	0.84611
4	0.0194307	0.0037291	0.072746	0.27262	0.11357	0.49918	0.62873	0.45674	0.77806
5	0.0153589	0.002593	0.063483	0.24138	0.09466	0.46369	0.56117	0.39469	0.71735
6	0.0125982	0.001906	0.05666	0.21738	0.08075	0.43561	0.50451	0.34407	0.66421
7	0.01061	0.0014581	0.051377	0.19820	0.07007	0.41260	0.45649	0.30207	0.61787
8	0.0091146	0.0011495	0.047139	0.18245	0.06163	0.39324	0.41537	0.26677	0.57735
9	0.0079521	0.0009279	0.043648	0.16922	0.05478	0.37663	0.37985	0.23682	0.54174
10	0.0070249	0.0007635	0.040712	0.15792	0.04913	0.36215	0.34890	0.21119	0.51024
11	0.0062697	0.0006382	0.038202	0.14814	0.04439	0.34936	0.32173	0.18912	0.48222
12	0.005644	0.0005406	0.036025	0.13957	0.04037	0.33795	0.29773	0.17000	0.45712
13	0.005118	0.0004631	0.034117	0.13199	0.03691	0.32767	0.27641	0.15334	0.43452
14	0.0046704	0.0004006	0.032428	0.12523	0.03391	0.31835	0.25735	0.13875	0.41406
15	0.0042854	0.0003495	0.030919	0.11916	0.03129	0.30984	0.24025	0.12593	0.39545
16	0.0039512	0.0003072	0.029563	0.11367	0.02899	0.30202	0.22483	0.11461	0.37843
17	0.0036588	0.0002719	0.028336	0.10868	0.02694	0.29480	0.21087	0.10458	0.36282
18	0.003401	0.000242	0.027219	0.10412	0.02512	0.28811	0.19818	0.09566	0.34843
19	0.0031723	0.0002166	0.026197	0.09994	0.02349	0.28188	0.18662	0.08770	0.33513
20	0.0029683	0.0001948	0.025258	0.09608	0.02201	0.27606	0.17604	0.08058	0.32280
21	0.0027852	0.000176	0.024392	0.09252	0.02068	0.27060	0.16634	0.07418	0.31132
22	0.0026202	0.0001597	0.023591	0.08921	0.01948	0.26548	0.15742	0.06843	0.30062
23	0.0024709	0.0001454	0.022846	0.08614	0.01838	0.26064	0.14920	0.06324	0.29061
24	0.0023352	0.0001328	0.022152	0.08327	0.01737	0.25607	0.14160	0.05854	0.28123
25	0.0022114	0.0001217	0.021504	0.08058	0.01645	0.25175	0.13456	0.05428	0.27241
26	0.002098	0.0001119	0.020897	0.07807	0.01560	0.24764	0.12802	0.05041	0.26411
27	0.001994	0.0001032	0.020326	0.07570	0.01482	0.24374	0.12195	0.04689	0.25629
28	0.0018982	0.0000953	0.019789	0.07347	0.01410	0.24002	0.11629	0.04367	0.24890
29	0.0018097	0.0000883	0.019283	0.07137	0.01343	0.23647	0.11100	0.04073	0.24190
30	**0.0017279**	**0.000082**	**0.018805**	**0.06939**	**0.01281**	**0.23308**	**0.10606**	**0.03804**	**0.23527**
31	0.0016519	0.0000763	0.018352	0.06751	0.01223	0.22984	0.10144	0.03557	0.22897
32	0.0015812	0.0000711	0.017922	0.06572	0.01169	0.22673	0.09711	0.03331	0.22299
33	0.0015154	0.0000664	0.017515	0.06403	0.01119	0.22375	0.09304	0.03122	0.21729
34	0.0014539	0.0000621	0.017127	0.06242	0.01072	0.22088	0.08921	0.02929	0.21186
35	0.0013964	0.0000582	0.016757	0.06089	0.01027	0.21813	0.08561	0.02751	0.20668

Appendix 5. Probability of uranium exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	SZtb			Zpg			Zsg		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
36	0.0013426	0.0000547	0.016405	0.05943	0.00986	0.21547	0.08221	0.02587	0.20173
37	0.001292	0.0000514	0.016068	0.05803	0.00947	0.21292	0.07900	0.02435	0.19700
38	0.0012444	0.0000484	0.015746	0.05670	0.00911	0.21045	0.07598	0.02294	0.19247
39	0.0011997	0.0000456	0.015438	0.05543	0.00876	0.20807	0.07311	0.02163	0.18813
40	0.0011574	0.000043	0.015143	0.05421	0.00843	0.20577	0.07040	0.02042	0.18396
41	0.0011176	0.0000407	0.01486	0.05304	0.00813	0.20354	0.06784	0.01929	0.17997
42	0.0010799	0.0000385	0.014589	0.05191	0.00784	0.20139	0.06540	0.01823	0.17613
43	0.0010442	0.0000365	0.014327	0.05084	0.00756	0.19930	0.06309	0.01725	0.17244
44	0.0010104	0.0000346	0.014076	0.04980	0.00730	0.19728	0.06089	0.01634	0.16889
45	0.0009784	0.0000328	0.013834	0.04881	0.00705	0.19531	0.05880	0.01548	0.16547
46	0.0009479	0.0000312	0.013601	0.04785	0.00682	0.19341	0.05681	0.01468	0.16217
47	0.000919	0.0000297	0.013377	0.04692	0.00659	0.19156	0.05492	0.01393	0.15899
48	0.0008914	0.0000283	0.01316	0.04603	0.00638	0.18976	0.05311	0.01323	0.15593
49	0.0008652	0.0000269	0.012951	0.04518	0.00618	0.18801	0.05139	0.01257	0.15296
50	0.0008401	0.0000257	0.012749	0.04435	0.00598	0.18631	0.04974	0.01195	0.15010
55	0.0007308	0.0000205	0.011832	0.04060	0.00514	0.17845	0.04254	0.00937	0.13714
60	0.0006426	0.0000166	0.011046	0.03741	0.00446	0.17149	0.03673	0.00745	0.12606
65	0.0005702	0.0000137	0.010364	0.03466	0.00391	0.16528	0.03197	0.00600	0.11648
70	0.00051	0.0000114	0.009766	0.03226	0.00345	0.15969	0.02803	0.00488	0.10812
75	0.0004593	0.0000097	0.009237	0.03016	0.00307	0.15462	0.02473	0.00400	0.10076
80	0.0004162	0.0000082	0.008766	0.02829	0.00275	0.14999	0.02195	0.00332	0.09423
85	0.0003791	0.0000071	0.008342	0.02663	0.00247	0.14575	0.01958	0.00277	0.08841
90	0.0003469	0.0000061	0.00796	0.02513	0.00223	0.14183	0.01755	0.00233	0.08318
95	0.0003189	0.0000053	0.007613	0.02378	0.00203	0.13820	0.01580	0.00197	0.07846
100	0.0002942	0.0000047	0.007296	0.02256	0.00185	0.13483	0.01428	0.00167	0.07419
110	0.0002531	0.0000037	0.006738	0.02043	0.00155	0.12873	0.01178	0.00123	0.06674
120	0.0002203	0.0000029	0.006262	0.01864	0.00132	0.12336	0.00985	0.00092	0.06048
130	0.0001936	0.0000024	0.005851	0.01711	0.00113	0.11857	0.00831	0.00070	0.05515
140	0.0001717	0.0000019	0.005492	0.01579	0.00098	0.11428	0.00709	0.00055	0.05057
150	0.0001533	0.0000016	0.005176	0.01464	0.00086	0.11040	0.00609	0.00043	0.04659
160	0.0001379	0.0000014	0.004896	0.01363	0.00076	0.10686	0.00528	0.00034	0.04310
170	0.0001247	0.0000012	0.004644	0.01274	0.00067	0.10362	0.00460	0.00027	0.04002
180	0.0001133	0.000001	0.004418	0.01195	0.00060	0.10064	0.00403	0.00022	0.03730
190	0.0001035	0.0000009	0.004214	0.01123	0.00054	0.09788	0.00355	0.00018	0.03486
200	0.0000949	0.0000007	0.004027	0.01059	0.00048	0.09533	0.00315	0.00015	0.03267

Appendix 5. Probability of uranium exceeding a given concentration, by bedrock unit.—Continued

[Probabilities with bold typeface apply to concentrations at the U.S. Environmental Protection Agency drinking-water standard for public supplies. Multiply probability values by 100 to obtain percent probability; *, fewer than five analyses were above the analytical reporting limit and the option to assume a common scale was used in the distribution fitting]

Uranium, in micrograms per liter	Bedrock unit abbreviation								
	SZtb			Zpg			Zsg		
	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound	Probability of concentration being greater than concentration listed in first column	Lower 95-percent confidence bound	Upper 95-percent confidence bound
210	0.0000874	0.0000006	0.003857	0.01001	0.00044	0.09295	0.00280	0.00012	0.03070
220	0.0000807	0.0000006	0.003701	0.00949	0.00040	0.09072	0.00251	0.00010	0.02892
230	0.0000748	0.0000005	0.003557	0.00901	0.00036	0.08863	0.00225	0.00009	0.02730
240	0.0000695	0.0000004	0.003424	0.00857	0.00033	0.08667	0.00202	0.00007	0.02582
250	0.0000648	0.0000004	0.0033	0.00816	0.00030	0.08483	0.00183	0.00006	0.02446
260	0.0000605	0.0000004	0.003186	0.00779	0.00028	0.08308	0.00166	0.00005	0.02322
270	0.0000567	0.0000003	0.003079	0.00745	0.00026	0.08143	0.00151	0.00004	0.02207
280	0.0000532	0.0000003	0.002979	0.00713	0.00024	0.07987	0.00137	0.00004	0.02102
290	0.00005	0.0000003	0.002885	0.00683	0.00022	0.07838	0.00125	0.00003	0.02004
300	0.0000471	0.0000002	0.002797	0.00655	0.00020	0.07697	0.00115	0.00003	0.01913

Appendix 6. Uranium Log-Normal Fit Statistics by Bedrock Unit

Appendix 6. Uranium log-normal fit statistics by bedrock unit.

[CI, confidence interval; %, percent; *, fewer than five analyses were above the analytical reporting limit and the Minitab option to assume a common scale was used in the distribution fitting]

Bedrock unit abbreviation									
Dcgr					Dfgr				
Censoring information	Count				Censoring information	Count			
Uncensored value	7				Uncensored value	8			
Left censored value	0				Left censored value	0			
Distribution	Log normal				Distribution	Log normal			
Parameter estimates					Parameter estimates				
Parameter	Estimate	Standard error	95% normal CI		Parameter	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Location	2.31035	0.548184	1.23593	3.38477	Location	0.872357	0.890096	-0.872199	2.61691
Scale	1.35299	0.49093	0.664417	2.75519	Scale	2.33772	0.529608	1.49953	3.64445
Log-likelihood	-29.247				Log-likelihood	-32.057			
Goodness-of-fit					Goodness-of-fit				
Anderson-Darling (adjusted)	3.306				Anderson-Darling (adjusted)	2.951			
Correlation coefficient	0.957				Correlation coefficient	0.973			
Characteristics of distribution					Characteristics of distribution				
Descriptor	Estimate	Standard error	95% normal CI		Descriptor	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Mean	25.1698	17.4269	6.47937	97.7751	Mean	36.7756	45.1462	3.31599	407.855
Standard deviation	57.6032	78.2128	4.02436	824.511	Standard deviation	564.077	1.30×10^3	6.16399	5.16×10^4
Median	10.0779	5.52457	3.44157	29.5112	Median	2.39254	2.12959	0.418031	13.6934
First quartile (Q1)	4.04616	2.97585	0.957207	17.1033	First quartile (Q1)	0.494398	0.531543	0.0601067	4.06659
Third quartile (Q3)	25.1016	13.2678	8.90814	70.7318	Third quartile (Q3)	11.5782	9.57458	2.28952	58.5518
Interquartile range (IQR)	21.0554	12.088	6.83416	64.8697	Interquartile range (IQR)	11.0838	9.18399	2.1847	56.2328

Appendix 6. Uranium log-normal fit statistics by bedrock unit.—Continued

[CI, confidence interval; %, percent; *, fewer than five analyses were above the analytical reporting limit and the Minitab option to assume a common scale was used in the distribution fitting]

Bedrock unit abbreviation									
Dl					**DSw**				
Censoring information	**Count**				**Censoring information**	**Count**			
Uncensored value	9				Uncensored value	8			
Left censored value	0				Left censored value	0			
Distribution	Log normal				Distribution	Log normal			
Parameter estimates					**Parameter estimates**				
Parameter	**Estimate**	**Standard error**	**95% normal CI**		**Parameter**	**Estimate**	**Standard error**	**95% normal CI**	
			Lower	**Upper**				**Lower**	**Upper**
Location	-1.42001	0.492276	-2.38486	-0.455172	Location	-0.82093	0.518637	-1.83744	0.19558
Scale	1.4107	0.415304	0.792216	2.51203	Scale	1.40474	0.552648	0.64971	3.0372
Log-likelihood	-4.421				Log-likelihood	-32.057			
Goodness-of-fit					**Goodness-of-fit**				
Anderson-Darling (adjusted)	2.64				Anderson-Darling (adjusted)	2.878			
Correlation coefficient	0.982				Correlation coefficient	0.989			
Characteristics of distribution					**Characteristics of distribution**				
Descriptor	**Estimate**	**Standard error**	**95% normal CI**		**Descriptor**	**Estimate**	**Standard error**	**95% normal CI**	
			Lower	**Upper**				**Lower**	**Upper**
Mean	0.653782	0.421119	0.184991	2.31055	Mean	1.18024	0.943965	0.246135	5.65936
Standard deviation	1.64306	1.99408	0.152267	17.7297	Standard deviation	2.93744	4.72115	0.12586	68.5566
Median	0.24171	0.118988	0.0921021	0.634339	Median	0.440022	0.228212	0.159225	1.21602
First quartile (Q1)	0.0933392	0.0592101	0.0269216	0.323614	First quartile (Q1)	0.170604	0.122943	0.0415511	0.700477
Third quartile (Q3)	0.625932	0.306129	0.240006	1.63242	Third quartile (Q3)	1.13491	0.618028	0.390328	3.29984
Interquartile range (IQR)	0.532592	0.279416	0.19047	1.48924	Interquartile range (IQR)	0.964306	0.588827	0.291375	3.19138

Appendix 6. Uranium log-normal fit statistics by bedrock unit.—Continued

[CI, confidence interval; %, percent; *, fewer than five analyses were above the analytical reporting limit and the Minitab option to assume a common scale was used in the distribution fitting]

Bedrock unit abbreviation									
Ops*					OZf				
Censoring information	Count				Censoring information	Count			
Uncensored value	3				Uncensored value	8			
Left censored value	7				Left censored value	0			
Distribution	Log normal				Distribution	Log normal			
Parameter estimates					Parameter estimates				
Parameter	Estimate	Standard error	95% normal CI		Parameter	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Location	-4.59511	0.651571	-5.87217	-3.31806	Location	-0.861046	0.430412	-1.70464	-0.0174541
Scale	1.70447	0.0790912	1.55629	1.86675	Scale	1.14421	0.3512	0.626965	2.0882
Log-likelihood		-7.89			Log-likelihood		-6.792		
Goodness-of-fit					Goodness-of-fit				
Anderson-Darling (adjusted)		1.393			Anderson-Darling (adjusted)		2.89		
Correlation coefficient		0.86			Correlation coefficient		0.986		
Characteristics of distribution					Characteristics of distribution				
Descriptor	Estimate	Standard error	95% normal CI		Descriptor	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Mean	0.0431743	0.0280004	0.0121111	0.15391	Mean	0.813481	0.388955	0.318682	2.07653
Standard deviation	0.179415	0.121157	0.0477589	0.674006	Standard deviation	1.3375	1.20545	0.228632	7.82445
Median	0.0101011	0.0065816	0.0028168	0.0362231	Median	0.42272	0.181944	0.181838	0.982697
First quartile (Q1)	0.0031995	0.002113	0.0008769	0.0116741	First quartile (Q1)	0.195381	0.108958	0.0654924	0.58287
Third quartile (Q3)	0.0318898	0.0206335	0.0089723	0.113345	Third quartile (Q3)	0.914585	0.379014	0.405954	2.0605
Interquartile range (IQR)	0.0286903	0.0185514	0.0080787	0.101889	Interquartile range (IQR)	0.719205	0.330712	0.292041	1.77117

Appendix 6. Uranium log-normal fit statistics by bedrock unit.—Continued

[CI, confidence interval; %, percent; *, fewer than five analyses were above the analytical reporting limit and the Minitab option to assume a common scale was used in the distribution fitting]

Bedrock unit abbreviation									
OZm					OZn				
Censoring information	Count				Censoring information	Count			
Uncensored value	10				Uncensored value	30			
Left censored value	0				Left censored value	1			
Distribution	Log normal				Distribution	Log normal			
Parameter estimates					Parameter estimates				
Parameter	Estimate	Standard error	95% normal CI		Parameter	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Location	-0.655272	0.788995	-2.20167	0.89113	Location	0.0159391	0.258203	-0.490129	0.522007
Scale	2.41324	0.682883	1.3859	4.20212	Scale	1.42905	0.185068	1.1087	1.84197
Log-likelihood	-18.878				Log-likelihood	-62.614			
Goodness-of-fit					Goodness-of-fit				
Anderson-Darling (adjusted)	2.451				Anderson-Darling (adjusted)	1.108			
Correlation coefficient	0.977				Correlation coefficient	0.973			
Characteristics of distribution					Characteristics of distribution				
Descriptor	Estimate	Standard error	95% normal CI		Descriptor	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Mean	9.55049	15.6289	0.386439	236.032	Mean	2.82083	0.990952	1.41694	5.61568
Standard deviation	175.384	559.999	0.33582	9.16×10^4	Standard deviation	7.30561	4.39151	2.24898	23.7315
Median	0.519301	0.409726	0.110618	2.43788	Median	1.01607	0.262351	0.612547	1.68541
First quartile (Q1)	0.10198	0.102956	0.0140984	0.737666	First quartile (Q1)	0.387538	0.115277	0.21633	0.694244
Third quartile (Q3)	2.64437	2.13213	0.544513	12.8421	Third quartile (Q3)	2.66398	0.734496	1.55182	4.57318
Interquartile range (IQR)	2.54239	2.08213	0.51067	12.6574	Interquartile range (IQR)	2.27644	0.668797	1.27991	4.04884

Appendix 6. Uranium log-normal fit statistics by bedrock unit.—Continued

[CI, confidence interval; %, percent; *, fewer than five analyses were above the analytical reporting limit and the Minitab option to assume a common scale was used in the distribution fitting]

Bedrock unit abbreviation									
OZnb					Ph				
Censoring information	Count				Censoring information	Count			
Uncensored value	14				Uncensored value	8			
Left censored value	6				Left censored value	1			
Distribution	Log normal				Distribution	Log normal			
Parameter estimates					Parameter estimates				
Parameter	Estimate	Standard error	95% normal CI		Parameter	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Location	-1.75943	0.483527	-2.70713	-0.811735	Location	-1.75943	0.483527	-2.70713	-0.811735
Scale	2.1023	0.305023	1.58196	2.7938	Scale	2.1023	0.305023	1.58196	2.7938
Log-likelihood	-34.212				Log-likelihood	-25.95			
Goodness-of-fit					Goodness-of-fit				
Anderson-Darling (adjusted)	1.676				Anderson-Darling (adjusted)	2.642			
Correlation coefficient	0.857				Correlation coefficient	0.896			
Characteristics of distribution					Characteristics of distribution				
Descriptor	Estimate	Standard error	95% normal CI		Descriptor	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Mean	1.56895	1.24124	0.332813	7.39637	Mean	91.6336	231.335	0.650347	1.29×10^4
Standard deviation	14.2135	19.3858	0.981158	205.902	Standard deviation	1.04×10^4	5.03×10^4	0.801103	1.35×10^8
Median	0.172143	0.0832357	0.0667283	0.444087	Median	0.806891	0.840909	0.104647	6.2216
First quartile (Q1)	0.0416934	0.0221509	0.0147177	0.118112	First quartile (Q1)	0.101305	0.123643	0.0092627	1.10796
Third quartile (Q3)	0.71074	0.369306	0.256697	1.96789	Third quartile (Q3)	6.42687	7.16985	0.721764	57.2274
Interquartile range (IQR)	0.669046	0.354301	0.236969	1.88895	Interquartile range (IQR)	6.32557	7.09744	0.701505	57.0385

Appendix 6. Uranium log-normal fit statistics by bedrock unit.—Continued

[CI, confidence interval; %, percent; *, fewer than five analyses were above the analytical reporting limit and the Minitab option to assume a common scale was used in the distribution fitting]

Bedrock unit abbreviation									
Sacgr					Sagr				
Censoring information	Count				Censoring information	Count			
Uncensored value	53				Uncensored value	10			
Left censored value	0				Left censored value	1			
Distribution	Log normal				Distribution	Log normal			
Parameter estimates					Parameter estimates				
Parameter	Estimate	Standard error	95% normal CI		Parameter	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Location	0.936261	0.246092	0.45393	1.41859	Location	0.494757	0.780732	-1.03545	2.02496
Scale	1.79023	0.178323	1.47273	2.17619	Scale	2.5312	0.64904	1.53131	4.18396
Log-likelihood	-157.38				Log-likelihood	-36.858			
Goodness-of-fit					Goodness-of-fit				
Anderson-Darling (adjusted)	1.382				Anderson-Darling (adjusted)	2.278			
Correlation coefficient	0.959				Correlation coefficient	0.969			
Characteristics of distribution					Characteristics of distribution				
Descriptor	Estimate	Standard error	95% normal CI		Descriptor	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Mean	12.6636	5.00803	5.83356	27.4903	Mean	40.3759	68.0789	1.48213	1.10×10^3
Standard deviation	61.5898	42.368	15.9942	237.167	Standard deviation	993.15	3.22×10^3	1.7375	5.68×10^4
Median	2.55043	0.62764	1.57449	4.1313	Median	1.6401	1.28048	0.355067	7.57584
First quartile (Q1)	0.762438	0.212005	0.442097	1.3149	First quartile (Q1)	0.29745	0.286112	0.0451501	1.95961
Third quartile (Q3)	8.53142	2.3009	5.02868	14.474	Third quartile (Q3)	9.04329	7.44166	1.80251	45.3706
Interquartile range (IQR)	7.76898	2.17703	4.4858	13.4551	Interquartile range (IQR)	8.74584	7.29465	1.70545	44.8501

Appendix 6. Uranium log-normal fit statistics by bedrock unit.—Continued

[CI, confidence interval; %, percent; *, fewer than five analyses were above the analytical reporting limit and the Minitab option to assume a common scale was used in the distribution fitting]

Bedrock unit abbreviation									
Sb					Sbs				
Censoring information	Count				Censoring information	Count			
Uncensored value	16				Uncensored value	12			
Left censored value	0				Left censored value	0			
Distribution	Log normal				Distribution	Log normal			
Parameter estimates					Parameter estimates				
Parameter	Estimate	Standard error	95% normal CI		Parameter	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Location	-0.202141	0.371811	-0.930878	0.526595	Location	-0.518142	0.27691	-1.06087	0.0245912
Scale	1.46215	0.283057	1.00048	2.13686	Scale	0.930099	0.211768	0.595285	1.45323
Log-likelihood	-27.626				Log-likelihood	-11.145			
Goodness-of-fit					Goodness-of-fit				
Anderson-Darling (adjusted)	1.715				Anderson-Darling (adjusted)	2.019			
Correlation coefficient	0.97				Correlation coefficient	0.994			
Characteristics of distribution					Characteristics of distribution				
Descriptor	Estimate	Standard error	95% normal CI		Descriptor	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Mean	2.37929	1.19732	0.88736	6.3796	Mean	0.917962	0.27353	0.511902	1.64612
Standard deviation	6.50789	5.81329	1.13003	37.4792	Standard deviation	1.07649	0.582141	0.372989	3.10685
Median	0.816979	0.303762	0.394208	1.69316	Median	0.595626	0.164935	0.346153	1.0249
First quartile (Q1)	0.304725	0.136503	0.126651	0.733174	First quartile (Q1)	0.31807	0.108532	0.162958	0.620827
Third quartile (Q3)	2.19036	0.844705	1.02861	4.66421	Third quartile (Q3)	1.11539	0.31097	0.645817	1.92637
Interquartile range (IQR)	1.88563	0.772188	0.845045	4.20759	Interquartile range (IQR)	0.797316	0.261822	0.418903	1.51757

Appendix 6. Uranium log-normal fit statistics by bedrock unit.—Continued

[CI, confidence interval; %, percent; *, fewer than five analyses were above the analytical reporting limit and the Minitab option to assume a common scale was used in the distribution fitting]

Bedrock unit abbreviation									
Se					Sgr				
Censoring information	Count				Censoring information	Count			
Uncensored value	8				Uncensored value	7			
Left censored value	0				Left censored value	0			
Distribution	Log normal				Distribution	Log normal			
Parameter estimates					Parameter estimates				
Parameter	Estimate	Standard error	95% normal CI		Parameter	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Location	-0.292614	0.287496	-0.856096	0.270868	Location	-0.822002	0.675265	-2.1455	0.501493
Scale	0.766477	0.228921	0.426849	1.37633	Scale	1.69502	0.788348	0.681216	4.21761
Log-likelihood		-7.605			Log-likelihood		-8.001		
Goodness-of-fit					Goodness-of-fit				
Anderson-Darling (adjusted)		2.986			Anderson-Darling (adjusted)		3.238		
Correlation coefficient		0.963			Correlation coefficient		0.974		
Characteristics of distribution					Characteristics of distribution				
Descriptor	Estimate	Standard error	95% normal CI		Descriptor	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Mean	1.00113	0.282716	0.57559	1.74128	Mean	1.84882	2.39012	0.146717	23.2976
Standard deviation	0.895135	0.489043	0.306795	2.61174	Standard deviation	7.55348	19.7808	0.0445706	1.28×10^3
Median	0.74631	0.214561	0.424817	1.3111	Median	0.439551	0.296813	0.11701	1.65118
First quartile (Q1)	0.445038	0.164209	0.215935	0.917215	First quartile (Q1)	0.140117	0.137691	0.0204188	0.961507
Third quartile (Q3)	1.25153	0.346937	0.726907	2.15478	Third quartile (Q3)	1.37888	0.986436	0.339304	5.60359
Interquartile range (IQR)	0.806491	0.286032	0.402448	1.61618	Interquartile range (IQR)	1.23877	0.961806	0.270456	5.6739

Appendix 6. Uranium log-normal fit statistics by bedrock unit.—Continued

[CI, confidence interval; %, percent; *, fewer than five analyses were above the analytical reporting limit and the Minitab option to assume a common scale was used in the distribution fitting]

Bedrock unit abbreviation									
So					SOagr				
Censoring information	Count				Censoring information	Count			
Uncensored value	12				Uncensored value	10			
Left censored value	2				Left censored value	2			
Distribution	Log normal				Distribution	Log normal			
Parameter estimates					Parameter estimates				
Parameter	Estimate	Standard error	95% normal CI		Parameter	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Location	-0.910549	0.544193	-1.97715	0.156049	Location	-1.84542	0.919828	-3.64825	-0.0425933
Scale	1.99838	0.413305	1.3324	2.99726	Scale	3.01868	0.795339	1.80115	5.05924
Log-likelihood	-25.899				Log-likelihood	-19.087			
Goodness-of-fit					Goodness-of-fit				
Anderson-Darling (adjusted)	1.719				Anderson-Darling (adjusted)	2.108			
Correlation coefficient	0.968				Correlation coefficient	0.969			
Characteristics of distribution					Characteristics of distribution				
Descriptor	Estimate	Standard error	95% normal CI		Descriptor	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Mean	2.96306	2.75646	0.478508	18.3481	Mean	15.0412	35.1856	0.153493	1.47×10^3
Standard deviation	21.6215	36.4911	0.791215	590.851	Standard deviation	1.43×10^3	6.66×10^3	0.157509	1.30×10^7
Median	0.402303	0.218931	0.138464	1.16888	Median	0.157959	0.145295	0.0260366	0.958301
First quartile (Q1)	0.104513	0.0670819	0.029705	0.367718	First quartile (Q1)	0.02062	0.0242945	0.0020484	0.207574
Third quartile (Q3)	1.54858	0.897307	0.497413	4.82117	Third quartile (Q3)	1.21003	1.13483	0.192528	7.60502
Interquartile range (IQR)	1.44407	0.859624	0.449662	4.63757	Interquartile range (IQR)	1.18941	1.12275	0.186997	7.56538

Appendix 6. Uranium log-normal fit statistics by bedrock unit.—Continued

[CI, confidence interval; %, percent; *, fewer than five analyses were above the analytical reporting limit and the Minitab option to assume a common scale was used in the distribution fitting]

Bedrock unit abbreviation									
SObo					Sp				
Censoring information	Count				Censoring information	Count			
Uncensored value	6				Uncensored value	17			
Left censored value	1				Left censored value	5			
Distribution	Log normal				Distribution	Log normal			
Parameter estimates					Parameter estimates				
Parameter	Estimate	Standard error	95% normal CI		Parameter	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Location	-0.077395	1.18885	-2.40749	2.2527	Location	-1.60967	0.664053	-2.91119	-0.308154
Scale	3.01338	1.16867	1.40908	6.44427	Scale	2.9756	0.556342	2.06266	4.29262
Log-likelihood		-21.941			Log-likelihood		-41.869		
Goodness-of-fit					Goodness-of-fit				
Anderson-Darling (adjusted)		3.218			Anderson-Darling (adjusted)		1.409		
Correlation coefficient		0.982			Correlation coefficient		0.984		
Characteristics of distribution					Characteristics of distribution				
Descriptor	Estimate	Standard error	95% normal CI		Descriptor	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Mean	86.7332	297.632	0.104044	7.23×10^4	Mean	16.7339	27.7695	0.647216	432.658
Standard deviation	8.13×10^3	5.57×10^4	0.0119581	5.52×10^9	Standard deviation	1.40×10^3	4.55×10^3	2.40745	8.14×10^5
Median	0.925524	1.10031	0.0900407	9.51342	Median	0.199953	0.132779	0.0544107	0.734802
First quartile (Q1)	0.121251	0.191379	0.0054977	2.67421	First quartile (Q1)	0.0268715	0.0221378	0.0053461	0.135066
Third quartile (Q3)	7.06462	8.87495	0.602233	82.8731	Third quartile (Q3)	1.48786	1.03601	0.380072	5.82452
Interquartile range (IQR)	6.94337	8.80026	0.579067	83.2552	Interquartile range (IQR)	1.46099	1.0246	0.36957	5.77562

Appendix 6. Uranium log-normal fit statistics by bedrock unit.—Continued

[CI, confidence interval; %, percent; *, fewer than five analyses were above the analytical reporting limit and the Minitab option to assume a common scale was used in the distribution fitting]

Bedrock unit abbreviation									
Spsq*					Spss				
Censoring information	Count				Censoring information	Count			
Uncensored value	4				Uncensored value	7			
Left censored value	5				Left censored value	0			
Distribution	Log normal				Distribution	Log normal			
Parameter estimates					Parameter estimates				
Parameter	Estimate	Standard error	95% normal CI		Parameter	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Location	-3.26786	0.765784	-4.76876	-1.76695	Location	-2.5205	0.796308	-4.08124	-0.959767
Scale	2.09694	0.118607	1.87689	2.34278	Scale	2.09694	0.118607	1.87689	2.34278
Log-likelihood	-11.6				Log-likelihood	-1.372			
Goodness-of-fit					Goodness-of-fit				
Anderson-Darling (adjusted)	1.645				Anderson-Darling (adjusted)	2.819			
Correlation coefficient	0.948				Correlation coefficient	0.998			
Characteristics of distribution					Characteristics of distribution				
Descriptor	Estimate	Standard error	95% normal CI		Descriptor	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Mean	0.343254	0.271361	0.0728944	1.61635	Mean	0.724747	0.587722	0.147883	3.55185
Standard deviation	3.07434	2.73261	0.538474	17.5525	Standard deviation	6.49117	5.83285	1.11544	37.7744
Median	0.038088	0.0291672	0.0084909	0.170854	Median	0.0804192	0.0640385	0.0168866	0.382982
First quartile (Q1)	0.0092585	0.0071735	0.0020278	0.0422721	First quartile (Q1)	0.0195484	0.0157948	0.0040119	0.0952511
Third quartile (Q3)	0.156689	0.119878	0.0349793	0.701883	Third quartile (Q3)	0.330833	0.262209	0.0699794	1.56404
Interquartile range (IQR)	0.14743	0.112868	0.0328802	0.661059	Interquartile range (IQR)	0.311285	0.246747	0.0658315	1.47191

Appendix 6. Uranium log-normal fit statistics by bedrock unit.—Continued

[CI, confidence interval; %, percent; *, fewer than five analyses were above the analytical reporting limit and the Minitab option to assume a common scale was used in the distribution fitting]

Bedrock unit abbreviation									
Ssqd					St				
Censoring information	Count				Censoring information	Count			
Uncensored value	10				Uncensored value	14			
Left censored value	1				Left censored value	1			
Distribution	Log normal				Distribution	Log normal			
Parameter estimates					Parameter estimates				
Parameter	Estimate	Standard error	95% normal CI		Parameter	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Location	-0.977338	0.709125	-2.3672	0.412522	Location	-1.16725	0.499365	-2.14599	-0.188511
Scale	2.23919	0.386238	1.59686	3.13989	Scale	1.88108	0.379981	1.26609	2.7948
Log-likelihood	-26.615				Log-likelihood	-20.191			
Goodness-of-fit					Goodness-of-fit				
Anderson-Darling (adjusted)	2.275				Anderson-Darling (adjusted)	1.712			
Correlation coefficient	0.975				Correlation coefficient	0.985			
Characteristics of distribution					Characteristics of distribution				
Descriptor	Estimate	Standard error	95% normal CI		Descriptor	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Mean	4.61653	4.38346	0.717942	29.6854	Mean	1.82574	1.42605	0.394987	8.43907
Standard deviation	56.4465	94.6883	2.10744	1.51×10^3	Standard deviation	10.5537	15.1096	0.637893	174.606
Median	0.376312	0.266852	0.093743	1.51062	Median	0.311222	0.155413	0.116953	0.828192
First quartile (Q1)	0.0831052	0.0683251	0.0165887	0.416337	First quartile (Q1)	0.0875086	0.0531504	0.0266105	0.287772
Third quartile (Q3)	1.70399	1.16261	0.447404	6.48982	Third quartile (Q3)	1.10685	0.565689	0.406499	3.01384
Interquartile range (IQR)	1.62088	1.11047	0.423246	6.20742	Interquartile range (IQR)	1.01935	0.535954	0.363726	2.85672

Appendix 6. Uranium log-normal fit statistics by bedrock unit.—Continued

[CI, confidence interval; %, percent; *, fewer than five analyses were above the analytical reporting limit and the Minitab option to assume a common scale was used in the distribution fitting]

Bedrock unit abbreviation									
SZtb					Zpg				
Censoring information	Count				Censoring information	Count			
Uncensored value	21				Uncensored value	10			
Left censored value	12				Left censored value	1			
Distribution	Log normal				Distribution	Log normal			
Parameter estimates					Parameter estimates				
Parameter	Estimate	Standard error	95% normal CI		Parameter	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Location	-3.4627	0.477822	-4.39922	-2.52619	Location	-0.005913	0.71992	-1.41693	1.4051
Scale	2.34744	0.380468	1.70857	3.22519	Scale	2.30151	0.483285	1.52501	3.47339
Log-likelihood	-18.676				Log-likelihood	-33.305			
Goodness-of-fit					Goodness-of-fit				
Anderson-Darling (adjusted)	1.832				Anderson-Darling (adjusted)	2.335			
Correlation coefficient	0.966				Correlation coefficient	0.958			
Characteristics of distribution					Characteristics of distribution				
Descriptor	Estimate	Standard error	95% normal CI		Descriptor	Estimate	Standard error	95% normal CI	
			Lower	Upper				Lower	Upper
Mean	0.492893	0.403814	0.0989431	2.45539	Mean	14.0493	16.4147	1.42277	138.73
Standard deviation	7.73496	12.7591	0.305047	196.133	Standard deviation	198.055	429.793	2.81588	1.39×10^4
Median	0.0313449	0.0149773	0.012287	0.0799632	Median	0.994104	0.715676	0.242457	4.07595
First quartile (Q1)	0.0064348	0.0040499	0.0018742	0.0220932	First quartile (Q1)	0.210502	0.180952	0.0390432	1.13492
Third quartile (Q3)	0.152685	0.0669433	0.064654	0.360577	Third quartile (Q3)	4.6947	3.35313	1.15784	19.0357
Interquartile range (IQR)	0.14625	0.0646419	0.0614992	0.347795	Interquartile range (IQR)	4.4842	3.23448	1.09071	18.4358

Appendix 6. Uranium log-normal fit statistics by bedrock unit.—Continued

[CI, confidence interval; %, percent; *, fewer than five analyses were above the analytical reporting limit and the Minitab option to assume a common scale was used in the distribution fitting]

Bedrock unit abbreviation				
Zsg				
Censoring information	Count			
Uncensored value	23			
Left censored value	0			
Distribution	Log normal			
Parameter estimates				
Parameter	Estimate	Standard error	95% normal CI	
			Lower	Upper
Location	1.80621	0.268843	1.27929	2.33314
Scale	1.2783	0.201315	0.938816	1.74055
Log-likelihood	-81.557			
Goodness-of-fit				
Anderson-Darling (adjusted)	1.276			
Correlation coefficient	0.989			
Characteristics of distribution				
Descriptor	Estimate	Standard error	95% normal CI	
			Lower	Upper
Mean	13.7803	4.78246	6.97989	27.2062
Standard deviation	27.9866	16.9035	8.56714	91.4248
Median	6.08735	1.63654	3.59408	10.3102
First quartile (Q1)	2.57027	0.813775	1.38191	4.78056
Third quartile (Q3)	14.4171	4.10789	8.24788	25.2007
Interquartile range (IQR)	11.8468	3.68061	6.44387	21.7799

Prepared by the Pembroke and the Ft. Lauderdale
Publishing Service Centers

For more information concerning this report, contact:

Director
U.S. Geological Survey
Massachusetts-Rhode Island Water Science Center
10 Bearfoot Road
Northborough, MA 01532
dc_ma@usgs.gov

or visit our Web site at:
http://ma.water.usgs.gov

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APPENDIX K

COPY OF PUBLIC NOTIFICATION LETTERS & LEGAL NOTICE

Environmental & Construction Management Services, Inc.

288 Grove Street, #391
Braintree, Massachusetts 02184

Phone: (617) 338-2121
www.ecmsinc.com

September 17, 2020

Mayor Kassandra Gove
Amesbury City Hall
62 Friend Street
Amesbury, Massachusetts 01913-2884

Re: Release Notification Retraction
Charles C. Cashman Elementary School
193 Lions Mouth Road
Amesbury, Massachusetts 01904
Former MassDEP RTN 3-36397
***ECMS* Project No. 1289.001**

Dear Mayor Gove:

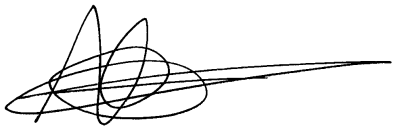
This letter has been prepared by *Environmental & Construction Management Services, Inc. (ECMS)* on behalf of Charles C. Cashman Elementary School pursuant to the requirements of the Massachusetts Contingency Plan (MCP), 310 CMR 40.0000, Section 40.1403 Minimum Public Involvement Activities in Response Actions.

The purpose of this letter is to inform you that Release Notification that was provided to the Commonwealth of Massachusetts Department of Environmental Protection (MassDEP) associated with the detection of arsenic in the soils at the Charles C. Cashman Elementary School has been retracted. The arsenic was determined to be naturally occurring and is therefore outside the scope of the MCP. The MassDEP concurs with the natural origin of the material and requested that a retraction be filed for the site.

Should you have any questions or require additional information or a copy of the entire report documents, please contact the MassDEP, Northeast Regional Office (NERO), Bureau of Waste Site Cleanup in Wilmington, Massachusetts at (978) 694-3220 or obtained if available via MassDEP at http://public.dep.state.ma.us/wsc_viewer.

Sincerely,

*For **Environmental & Construction Management Services, Inc.** by*



Kevin J. Kavanaugh, L.S.P., CHMM
Principal Environmental Engineer

cc: MassDEP Northeast Regional Office – Bureau of Waste Site Cleanup, Wilmington
Chief Kenneth Berkenbush, Interim Health Director Amesbury Board of Health Department
Sharon McDermot, Chair - Amesbury Zoning Board of Appeals

Environmental & Construction Management Services, Inc.

288 Grove Street, #391
Braintree, Massachusetts 02184

Phone: (617) 338-2121
www.ecmsinc.com

September 17, 2020

Chief Kenneth Berkenbush, Interim Health Director
Amesbury City Hall
62 Friend Street
Amesbury, Massachusetts 01913-2884

Re: Release Notification Retraction
Charles C. Cashman Elementary School
193 Lions Mouth Road
Amesbury, Massachusetts 01904
Former MassDEP RTN 3-36397
***ECMS* Project No. 1289.001**

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Sincerely,

*For **Environmental & Construction Management Services, Inc.** by*

Kevin J. Kavanaugh, L.S.P., CHMM
Principal Environmental Engineer

cc: MassDEP Northeast Regional Office – Bureau of Waste Site Cleanup, Wilmington
City of Amesbury Mayor Kassandra Gove
Sharon McDermot, Chair - Amesbury Zoning Board of Appeals

Environmental & Construction Management Services, Inc.

288 Grove Street, #391
Braintree, Massachusetts 02184

Phone: (617) 338-2121
www.ecmsinc.com

September 17, 2020

Sharon McDermot, Chair Zoning Board of Appeals
Amesbury City Hall
62 Friend Street
Amesbury, Massachusetts 01913-2884

Re: Release Notification Retraction
Charles C. Cashman Elementary School
193 Lions Mouth Road
Amesbury, Massachusetts 01904
Former MassDEP RTN 3-36397
***ECMS* Project No. 1289.001**

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Sincerely,

*For **Environmental & Construction Management Services, Inc.** by*

Kevin J. Kavanaugh, L.S.P., CHMM
Principal Environmental Engineer

cc: MassDEP Northeast Regional Office – Bureau of Waste Site Cleanup, Wilmington
City of Amesbury Mayor Kassandra Gove
Chief Kenneth Berkenbush, Interim Health Director Amesbury Board of Health Department