Pre-Design Investigation Report
Old Upper Mountain Road Site
Operable Unit 01: Landfill – Old Upper Mountain Road Parcel
Operable Unit 02: Gulf Creek
Operable Unit 03: Landfill – Otto Park Place Parcel
State Superfund Project
Lockport, Niagara County
Site No. 932112

Prepared for

New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, New York 12233-7012

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June 2021
Version: FINAL
EA Project No. 14907.26

*EA Engineering, P.C. is affiliated with EA Engineering, Science, and Technology, Inc., PBC who does business as EA Science and Technology in the State of New York.

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NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

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LIST OF ACRONYMS AND ABBREVIATIONS

lb/ft^3	Pounds per cubic foot
µg/L	Microgram(s) per liter
AWQS	Ambient water quality standard
bgs	Below ground surface
cm/sec	Centimeters per second
CY	Cubic yards
EA	EA Engineering, P.C., and Its Affiliate EA Science and Technology
EDD	Electronic data deliverable
EDS	Environmental data services
ELAP	Environmental Laboratory Analytical Program
DUSR	Data Usability Summary Report
ft	Feet (foot)
GPS	Global positioning system
HPLC	High performance liquid chromatography
in.	Inch(es)
LEL	Lowest effect levels
MET	Modified elutriate test
mg/kg	milligrams per kilogram
mm	Millimeter(s)
No.	Number
NYSDEC	New York State Department of Environmental Conservation
OU	Operable unit
PDI	Pre-design investigation
pH	Potential hydrogen
PID	Photoionization detector
psi	Pounds per square inch
QA	Quality assurance

QC	Quality control
RI	Remedial investigation
RQD	Rock quality designation
SCG	Standards, criteria and guidance
SEL	Severe effects level
SI	Site investigation
SBLT	Sequential batch leachate test
SM	Silty sand
SPLP	Synthetic precipitation leaching procedure
SPT	Standard penetration test
SVOC	Semi-volatile organic compound
TAL	Target analyte list
TOC	Total organic convent
USCS	Unified soil classification system
UU	Unconsolidated Undrained
VOC	Volatile organic compound
WA	Work assignment

1. INTRODUCTION

The New York State Department of Environmental Conservation (NYSDEC) issued a Work Assignment (WA) to EA Engineering, P.C., and its affiliate EA Science and Technology (EA) to perform Pre-Design Investigation (PDI) Activities at the Old Upper Mountain Road site in Lockport, Niagara County, New York. The WA is being conducted under the NYSDEC State Superfund Standby Contract (WA Number [No.] D007624-26). Task 3 – Environmental Sampling and Implementation Activities.

The Old Upper Mountain Road site has been divided into three separate operable units (OUs) defined as follows:

- OU-1 is defined as the approximately 6 acres of landfill waste which make up the Old Upper Mountain Road site. Impacts associated with OU 1 and evaluated in the PDI include onsite surface and subsurface soil/fill material, and onsite groundwater.
- OU-2 is defined as surface water and sediment within Gulf Creek, from the area located at the toe of the slope of OU-1 to the area downstream where Gulf Creek meets Niagara Street.
- OU-3 is defined as the approximately 1 acre of landfill waste that makes up the portion of the Old Upper Mountain Road site located south and west of the Somerset rail line. Impacts associated with OU 3 and evaluated in the Remedial Investigation (RI) include onsite surface and subsurface soil/fill material, and onsite groundwater. No PDI activities were performed in OU-3.

1.1 SITE DESCRIPTION

The Old Upper Mountain Road site is located along Old Upper Mountain Road in both the town and city of Lockport, Niagara County, New York (Figure 1-1). The site is an irregularly shaped property consisting of seven parcels bisected by an active railroad track along the southern portion of the site. Main access to OU-1 and the headwaters of OU-2 is in the southern portion of the site along Old Upper Mountain Road. Access to the northern portion for OU-2 is from Niagara Street. Access to OU-3 is through a viaduct under another railroad track located just to the north of Otto Park Place (Figure 1-2).

The Old Upper Mountain Road site was reportedly operated as a municipal dump by the city of Lockport from 1921 to the 1950s. Access to the landfill during that time was from the viaduct under the railroad track just north of Otto Park Place. Garbage and other wastes were apparently dumped at the landfill, burned, and then pushed into the ravine. The city of Lockport moved its dumping operations in the 1950s to the area known today as the Lockport City Landfill (NYSDEC Site No. 932010).

The Old Upper Mountain Road site was reportedly used by the same clientele as the Lockport City Landfill, as there was only a shift in location between the two landfills in the 1950s.

Clientele reportedly included Harrison Radiator, VanDeMark Chemical, Milward Alloys, Vanchlor, Upson, and Cotton Batting. Different areas of the dump were reportedly assigned to different companies.

The site was initially discovered in 1993 during a routine inspection of the Lockport City Landfill located north of the Old Upper Mountain Road site, and downstream of the site along Gulf Creek. Evidence of ash and glass debris was noted throughout the top portion of the landfill, while recent dumping of trash/rubbish/tires was noted at the southern portion of the site. It was also noted during the inspection, that a significant quantity of waste had been pushed over the embankment into the ravine at the base which runs into Gulf Creek.

1.2 PROJECT OBJECTIVES

Sampling and site characterization activities completed as part of the PDI were designed to evaluate and confirm information on existing site geotechnical conditions, delineate sediment contamination within Gulf Creek and to evaluate treatability and materials handling requirements for the remedial design.

1.3 PROJECT BACKGROUND

A number of investigations have been performed at the Old Upper Mountain Road site since the site's discovery in 1993. The initial investigation of the site had been initiated by NYSDEC, after the discovery of ash and glass debris, as well as surface dumping of tires, trash, and other wastes onsite during a routine site inspection of the Lockport City Landfill, located to the north of the site in 1993. The initial soil and surface water investigation revealed elevated levels of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, and metals in surface water, sediment, and soil samples. Further investigations revealed elevated levels of VOCs in surface water samples and metals in soil samples. In 2007, the NYSDEC conducted a site investigation (SI). Soil borings were installed to determine the depth of fill material. Samples collected showed elevated concentrations of VOCs, SVOCs, pesticides, and target analyte list (TAL) metals. Lead was found to exceed the TCLP Regulatory Limit; thus, resulting in characterizing the site as containing hazardous waste.

The RI performed by EA in 2009-2010 fully characterized the extent of the fill material/within OU-1/OU-3, and further characterized the hydrogeologic conditions at the site (EA 2009). Additional characterization and delineation of surface water and sediment impacts was required in Gulf Creek (OU-2) following the RI, and a supplemental remedial investigation was performed by EA in 2011 (EA 2011b). Results of this investigation identified concentrations of TAL metals and SVOCs in site sediment which exceeded the corresponding SCGs. Iron was the only compound detected at levels above its respective Standards, Criteria, and Guidance values (SCGs) for Class D waters within surface water samples collected from Gulf Creek. TAL metals appeared to be the most prevalent, and widespread contaminants observed within the sediment and surface water of Gulf Creek, and related directly to the TAL metals observed within the onsite fill material.

1.4 REPORT ORGANIZATION

This PDI report has been organized into four sections. Section 1 provides an introduction including project background and objectives. Details of the pre-design investigation are provided in Section 2 followed by a discussion of the results in Section 3. A summary is presented in Section 4, including volume estimations. Report references are provided in Section 5.

2. PRE-DESIGN INVESTIGATION

The PDI site investigation activities involved sample collection in OU-1 and OU-2. The purpose of the PDI sampling program in OU-1 was to provide geotechnical engineering properties of the soil/fill material to support empirical relationships for the remedial design. The objective of the sampling program in OU-2 was to delineate the vertical and horizontal extent of impacted sediment in Gulf Creek to identify the dredging footprint, and support volume calculations for design. Treatability testing was also conducted on samples from OU-1 and OU-2 to support decisions on materials handling operations, and soil/sediment management processes during remediation. Treatability testing results will be presented in the Basis of Design report. PDI field activities were conducted from September – November 2014 and were conducted in accordance with DER-10 (NYSDEC 2010). Table 2-1a, 2-1b, and 2-2 summarize the field sampling and laboratory analyses performed on soils and sediment during the PDI. The sampling locations, including transects, test pits, soil borings, sediment borings, and composite sampling (of OU-2) are presented in Figures 2-1 through Figure 2-4.

2.1 OU-1 FILL MATERIAL CHARACTERIZATION

The OU-1 fill material characterization included lithology and geotechnical testing at eight soil borings and seven test pit locations. Data from these samples provide information on the engineering properties of the soil/fill material for use in the design of earthwork components; slope stability evaluations including existing conditions and final slope design; and to evaluate the effects of physical loading of OU-1 fill material for containment cell design. The soil borings and test pits locations were selected to provide representative lithological conditions across the site. Soil boring and test pit locations from this investigation, as well as historical RI sample locations, are depicted on Figure 2-1.

2.1.1 Site Preparation

From 22 September 2014 through 24 September 2014, NYSDEC standby contractor, National Vacuum, cleared brush around OU-1 and OU-2 in preparation of sampling activities. Brush was cleared using a skid steer with a front mounted brush hog and a chain saw. Clearing efforts were focused around soil boring locations in OU-1. Paths were also cut to gain access to OU-2.

2.1.2 Soil Borings

EA's subcontractor, SJB Services, Inc. of Buffalo, New York, installed eight geotechnical borings (SBs 27-34) to depths ranging from approximately 11.5 to 78.5 feet (ft) below ground surface (bgs) in OU-1. All soil borings were installed to the top of bedrock. Following auger refusal, a 5-ft bedrock core was collected in order to identify bedrock composition, conditions, and rock quality designation (RQD). Bedrock cores were collected at each location with the exception of SB -31, where the augers encountered debris at approximately 35-ft bgs, and the remaining borehole was drilled at an angle that prohibited bedrock coring. The locations of the borings are presented on Figure 2-1.

The eight soil borings were installed using hollow-stem augers while collecting continuous samples with a split spoon or Shelby tube sampler. During split spoon advancement standard penetration test (SPT) blow counts were recorded. The 2-inch (in.) (outside diameter) split spoons were driven 2 ft into the soil with a 140-pound hammer. The number of hammer blows required to drive the sampler in 6-in. intervals was recorded to determine the standard penetration value, referred to as the N-value (blows per foot). N-values correlate to a number of different design parameters including relative density, angle of withdrawal, friction, and shear strength.

Headspace from soil samples from each split spoon was measured with a photoionization detector (PID), and the lithology was recorded on the boring logs presented in Appendix A. In addition to the boring logs, photos were taken of samples from each boring location. Photos representative of the material and lithology found during sampling can be found in Appendix B.

The material from each 2-ft spoon was collected in 1 gallon ziploc bags and submitted for geotechnical analysis. One sample, at minimum, was collected from each spoon. Multiple samples were collected from an individual spoon if there were lithological variations. Differing materials were segregated, and multiple samples were submitted to the laboratory for geotechnical analysis. A summary of split spoon samples is included in Table 2-1a.

Following completion of the soil borings, the lithological log and sample intervals were reviewed for lithological variations. A total of 210 samples were collected from the 8 soil borings. Parameters, including Atterberg limits, moisture content, grain size, specific gravity, and relatively undisturbed (*in situ*) density, were selected for each sample to characterize properties of lithological variations at the site.

A Shelby tube sampler was used to collect undisturbed samples. Shelby tube samples were collected at locations where native soils were present as determined by visual identification in the field. Shelby tubes were driven 2.5 ft into undisturbed soils or until refusal, and allowed to rest for a minimum of 30 minutes before the sample was extracted. The Shelby tubes were then sealed with wax to prevent soil from shifting, and to maintain the integrity of the sample. Shelby tube samples were sent offsite, and analyzed for the following parameters: Atterberg limits, specific gravity, moisture content, in-place density, consolidation, unconsolidated undrained triaxial, consolidated undrained, direct shear, and hydraulic conductivity. Analyses for each sample interval were selected to provide representative characteristics of the onsite material. A total of 16 Shelby tube samples were collected from the 8 soil borings as outlined in Table 2-1b, and shown in soil boring logs in Appendix A.

Samples collected from split spoon and Shelby tubes were sent offsite for geotechnical testing by Test America, Inc. Field documentation included the completion of boring logs (Appendix A), a photo log (Appendix B), daily field reports (Appendix D), and a field book.

2.1.3 Test Pits

A total of seven test pits were excavated to provide a cross-sectional view of lithology (TP-01 through TP-07). Test pits TP-01-SWAMP through TP-04-SWAMP were dug at the toe of the slope in Gulf Creek. Test pits TP-05 through TP-07 were collected in the OU-1 upland area along the edge of the slope. The cross-sectional view allowed EA to identify the lithology, including the presence of native material, bedrock, and groundwater in Gulf Creek at the toe of the fill. The test pits also enabled the collection of larger volumes of fill material for geotechnical and treatability testing.

Samples were collected at the toe of the slope from each lithological layer, and analyzed for the following parameters: Atterberg limits, grain size, bulk density, and moisture content. Three composite samples were collected from each upland test pit and analyzed for: grain size, bulk density, moisture content, direct shear, compaction, hydraulic conductivity, sequential batch leachate test (SBLT), and synthetic precipitation leaching procedure (SPLP). An additional sample (TP-05-UPLAND-2) was collected from the shallow band of non-native clay found at TP-05. The additional sample was identified as grey clay with brown mottles, and analyzed for the same geotechnical parameters listed above. A total of 13 samples were collected from the toe of the slope and the upland test pits as detailed in Table 2-1a.

Lithologic logs were completed for each test pit and can be found in Appendix A. Photos of the test pits were taken to capture the excavation and the observed lithology. A photo log is presented in Appendix B.

2.2 OU-2 SEDIMENT CHARACTERIZATION

Sediment samples were collected in Gulf Creek in October 2014, to supplement historical data and further delineate the vertical and horizontal extent of site-related contamination to support the remedial design. Samples were also collected to evaluate geotechnical properties of the sediment. Data will be used to define the volumes and limits of sediment removal, and material management operations during remedial design.

The OU-2 field investigation was executed using a phased approach. The first phase involved a sediment thickness evaluation. A series of surveyed transects were established along Gulf Creek, and sediment thickness measurements were collected along each transect.

During the second phase, chemical and geotechnical data were collected along Gulf Creek, starting the toe of the slope and working downstream to Niagara Street. Sample locations were selected along each transect to provide representative samples of the sediment in Gulf Creek. Samples were analyzed for TAL metals. Approximately 30 percent of the samples were analyzed for total organic content (TOC). Geotechnical samples were collected at 24 locations to provide a representative analysis of the sediment composition. Sample locations and analysis are detailed in Table 2-2 and depicted on Figures 2-3a through 2-3c.

Results from the first two phases were used to select representative sample locations for treatability testing. Three composite samples were collected and subjected to a series of treatability tests to aid in material management decisions during design. The treatability tests are detailed in Section 2.3

2.2.1 Phase 1 – Sediment Thickness Evaluation

Prior to the sediment thickness evaluation, EA's subcontractor, Popli Design Group (Popli), installed a series of surveyed transects along Gulf Creek stationed every 150 ft from the toe of the slope located at the southern end of the site, near Old Upper Mountain Road, to the northern extent of the site at Niagara Street (Figure 2-2). The surveyed transects were used to guide the sediment thickness evaluation, as well as the sediment sampling efforts, are described in Sections 2.2.2 and 2.2.3.

EA began the sediment thickness evaluation on 29 September and continued through 1 October 2014. At each transect location water depth and sediment thickness was measured at 25 ft intervals along the width of the Gulf Creek. Sediment thickness and water depth were measured using a sounding rod and foldable engineers rule.

Sediment thickness was determined by manually pushing the sounding rod straight down into the sediment until it reached refusal. At each probe location sediment thickness, water depth, refusal depth, nature of refusal (i.e., clay vs. bedrock), and GPS coordinates were recorded on a field form, (forms are provided in Appendix D). A summary of the sediment thickness and water depth is provided on Table 2-3.

2.2.2 Phase 2 – Site Sediment Characterization

Following the sediment thickness evaluation, 62 sediment samples were collected at 47 locations, and analyzed for TAL metals including mercury (Figure 2-3a, b, and c). Locations were selected to fill spatial gaps in the historical data, as well to characterize the horizontal and vertical extent of contamination, at the site. A total of 22 TOC samples were collected from select locations, as well as 24 geotechnical samples, that were analyzed for parameters including: grain size, total organic carbon, organic matter, percent moisture, specific gravity, and Atterberg limits. Table 2-2 provides a summary of the sampling effort.

At each location sediment cores were collected to refusal. Data from the sediment thickness evaluation were used to provide the field team with an estimate of the total sample depth which was used to select the sampling equipment. If measured refusal depth was one ft or less, sampling was conducted using a long bladed transplanting spade; if measured refusal depth was greater than one ft, sampling was conducted using a direct-push manual corer, and liner with a self-retaining nose-cone. Sample intervals were selected based on core lithology, and the total depth of the sample to provide representative data for all lithological layers present at the site.

Sediment samples were collected starting at the toe of the slope in the south end of the site and advancing north toward Niagara Street. Locations were marked with a stake, and later surveyed (northings, eastings and elevation) by Popli Design Group. All non-dedicated sampling equipment was decontaminated between sample locations using high performance liquid chromatography (HPLC) Water, 10 percent nitric acid solution, and isopropyl alcohol.

A total of 62 sediment samples and 22 TOC samples, not including quality assurance (QA)/quality control (QC) samples, were collected and submitted to Hampton Clarke Veritech for chemical analyses. The 24 geotechnical samples were sent offsite to Test America, Inc. for analysis.

2.2.3 Phase 3 – Treatability Testing

In November 2014 EA collected composite sediment samples from Gulf Creek for sediment treatability testing (Section 2.3). The sample locations combined for each composite were selected based on the results of the chemical analyses (targeting locations with exceedances of standards), and were representative of the anticipated sediment to be removed from the creek.

An equal volume of sediment was collected from multiple locations between Transects 150-300 (6 locations), Transects 750-1,500 (5 locations), and Transects 3,450-4,050 (4 locations). The locations from each area were composited into 3 samples for treatability testing (Figure 2-4). Sediment composites were collected from the 0-1 ft depth interval using a long bladed transplanting spade. Samples were composited in 5-gallon buckets. The individual sample locations composited into the 3 representative samples are outlined in Table 2-4 and shown on Figure 2-4.

A surface water and sediment sample were collected from Transect 1,800 for the modified elutriate test (MET). The surface water sample was collected first, without disturbing the underlying sediment, by using a small cup to fill the larger 2.5-gallon sample containers. The sediment sample was collected in two 2.5-gallon buckets using the long bladed transplanting spade. The MET samples were sent to Test America, Inc. for analysis.

2.3 TREATABILITY TESTING

Treatability testing was conducted on samples from OU-1 and OU-2 to assess soil and sediment properties, and inform design decisions on dredged material placement operations and sediment management. The treatability testing was designed to evaluate dewatering processes, and assess the need for amendments to stabilize site soils and sediment. Testing was also conducted to assess the quality of water produced as effluent from dewatering, and leachate from sediments place in an up-land cell. The following tests were performed:

- ***Stabilization Testing with Portland Cement*** **–** Testing was to determine the amendment concentration needed to achieve appropriate geotechnical suitability for handling and placing materials, and to achieve geotechnical stability needed for the upland cell. A secondary objective was determining the optimal amendment concentration (by dry weight) for sediment stabilization to remove free liquid for transport (pass paint filter test).

- ***Leachate Testing (Sequential Batch Leachate Test [SBLT] and SPLP) –*** Leachate testing was conducted to evaluate the water quality of the leachate from the upland fill material and dredged material after placement in the upland cell at OU-1, and to determine the potential for groundwater impacts. Leachate testing was performed on the OU-1 fill material, sediment from OU-2 and amended sediment from OU-2. The leachate from the SBLT (four flushes), and SPLP testing was analyzed for the following parameters:

  - TAL metals
  - Mercury
  - SVOCs
  - TSS
  - Potential hydrogen (pH).

- ***Modified Elutriate Test –*** A Modified Elutriate Test was performed to assess the quality of surface water produced as effluent from the dewatering process.

2.3.1 OU-1

The Upland test pit soil samples were submitted for SBLT and SPLP testing. The data was used to evaluate the potential for groundwater impacts from water that would leach through the fill material.

2.3.2 OU-2

2.3.2.1 Un-amended OU-2 Sediment

Bulk sediment physical property testing was conducted on each of the 3 composite samples (Section 2.2.3) Composite 1, Composite 2, and Composite 3 to establish a baseline understanding of the dredged material geotechnical properties. This information will be used during design for comparison of pre-dredging, post-dredging, and dewatered material volumes, and will facilitate the mass balance evaluations to estimate final disposal volumes. The un-amended OU-2 samples were analyzed for the following parameters:

- Paint filter
- Moisture content
- Atterberg limits
- Grain size (with hydrometer)
- Specific gravity
- Bulk density
- Organic matter
- Consolidation tests
- Unconsolidated undrained.

SBLT and SPLP testing was also conducted on the raw (un-amended) composite samples from each of the areas.

2.3.2.2 OU-2 Sediment Amended with Portland Cement

Stabilization testing was conducted on the three composite samples from OU-2. Portland cement was mixed with site sediment at five dosage rates. Dosage rates varied by sample, and were selected based on the characteristics of each sediment sample. Mixtures were sampled at the following cure times: 0 day (the day of the mixture), 7 day, and 28 day. Following each time step, samples were analyzed for the following parameters:

- Paint filter
- Percent solids
- Atterberg limits
- Consolidation tests
- Unconfined compression testing.

Exhibit 1 table describes the handling of Composite Samples 1, 2, and 3.

Exhibit 1: Composite Sample Handling

<table>
<tr><th>Handling Location</th><th>Composite-1</th><th>Composite-2</th><th>Composite-3</th></tr>
<tr><td>Field</td><td colspan="3">Two five-gallon buckets were collected for each composite. The composite was comprised of multiple sample locations within each area. Sediments from a single sample location were placed in both buckets so that both contained equivalent volumes of sample from each location. Samples settled while in the field, and were decanted prior to transport from the site.</td></tr>
<tr><td>Office</td><td colspan="3">Samples settled overnight. In the morning both buckets were decanted. After decanting, enough volume had become available that both buckets could be combined into one five-gallon bucket for shipment to Test America.</td></tr>
<tr><td>Test America Laboratory</td><td colspan="3">Five-gallon buckets sent directly to Geotechnics</td></tr>
<tr><td>Geotechnics Laboratory</td><td colspan="2">Composite-1 and Composite-2 samples were decanted of free liquids one time after settling for a few days. Any obvious vegetation was removed from the sample, and the sample was homogenized using a drill mounted mixer. Cement was added based on dry weight of sample, and mixed with a drill mounted mixer. The samples were cured for specified time and analysis tests were run (weight and curing time shown in data report).</td><td>Composite-3 only had a small amount of free water and therefore, was NOT decanted. For sample preparation, any obvious vegetation was removed from the sample, and the sample was homogenized using a drill mounted mixer. Cement was added based on dry weight of sample, and mixed with a drill mounted mixer. The samples were cured for specified time, and analysis tests were run (weight and curing time shown in data report).</td></tr>
</table>

2.3.2.3 Modified Elutriate Testing on Un-amended Sediment

The final component of the treatability testing program was the MET which was designed to estimate water quality of the liquid generated from sediment dewatering processes. The sample was analyzed for both total and dissolved fractions. For the dissolved fraction, the supernatant was centrifuged and filtered to analyze the dissolved concentrations. Gulf Creek surface water and sediment was combined to create the elutriates. The dissolved and total fractions of supernatant were analyzed for the following:

- TAL metals
- Mercury
- SVOCs
- Total suspended solids
- Wet chemistry
- Potential hydrogen (pH).

The Gulf Creek surface water sample was also analyzed independently of elutriate generation to establish a baseline condition for elutriate comparison. The surface water sample was analyzed for TAL metals, mercury, SVOCs, total suspended solids, wet chemistry and pH.

2.3.2.4 Stabilization of OU-2 Sediment Amended with OU-1 Fill Material

In addition to the stabilization testing performed with Portland cement, further testing was performed using a mixture from OU-1 fill material and sediment from OU-2. The purpose of the additional analysis was to determine if the sediment could be stabilized utilizing the onsite fill material. This study involved mixing 0, 5, and 10 percent dry weight fill material. The mixtures were sampled during 0 day (day of the mixture) and 7 day cure times. Following each time step samples were analyzed for the following parameters:

- Paint filter
- Percent solids
- Atterberg limits
- Consolidation tests
- Unconfined compression testing.

2.4 SITE SURVEY

Popli of Penfield, New York, a New York State licensed Land Surveyor, completed a site survey base map in February 2010 for OU-1 and OU-3 included in Appendix G. In October 2014, Popli remobilized to the site to complete a topographic survey for Gulf Creek in OU-2 from the toe of the slope downstream to Niagara Street. All structures along Gulf Creek; stream boundaries, the ravine edge, ponded areas and nearby roadways and utilities (manholes) were added onto the base map. In addition, Popli staked transects with Gulf Creek spaced every 150-ft which EA utilized to guide sampling and sediment thickness locations.

Following completions of borings, test pits and sediment samples each location was surveyed by Popli and incorporated into the base map. Vertical measurement was referenced to the National Geodetic Vertical Datum of 1988 and reported to the nearest 0.01 ft.

2.5 DATA MANAGEMENT

2.5.1 Field Data

Throughout all phases of the PDI field sampling events, notes were taken in indelible ink on the appropriate field sampling forms. Logs were completed for test pit observations, sediment transects, and OU-2 sediment sampling locations (Appendix C). Test pits and soil borings were photo documented (Appendix B). Daily field reports were completed summarizing the work completed each day (Appendix D). All field forms are saved electronically. Field notes were reviewed internally for completeness. The review included verification that records were present and complete for each day of field activities, the planned samples including field QC samples were collected, sample collection locations were documented, and meteorological data were provided for each day of field activities.

All sample locations and transects were surveyed and recorded using a hand-held global positioning system (GPS) while in the field. These data points and associated coordinates were imported into ArcGIS to make the data a usable and visual tool. Sample coordinates collected using the GPS were replaced with official Popli survey data when it became available.

2.5.2 Analytical Data

Upon receipt from the laboratory, the chemical analytical data results (Appendix F) were submitted to Environmental Data Services (EDS) for validation. Geotechnical data were not validated. The chemical data validation included a review of pertinent QA/QC data such as sample extraction and analysis, holding times, calibration, a review of laboratory blanks and QA/QC sample results, and a review of the analytical case narrative. The final product of the data validation review will be a Data Usability Summary Report (DUSR) that provides a thorough evaluation of the analytical data with the primary objective to determine whether or not the data, as presented, meets the site or project specific criteria for data quality and use (Appendix E). The DUSR is developed from the NYSDEC Analytical Services Protocol Category B data deliverable (NYSDEC 2000). The DUSR includes a compliance chart, a list of samples included in each sample delivery group, and recalculations of sample results.

Non-conforming QA/QC results were evaluated with respect to their implications for data reliability and usability, and data results were flagged accordingly on the results sheets. These qualifiers were entered into the site-specific database, and appear in the summary tables presented in this report. DUSRs for the analytical data packages are provided in Appendix E.

Data generated during this investigation will be archived in the New York State Environmental Information Management System as required by the NYSDEC. All data submitted will meet a standardized electronic data deliverable (EDD) format. Even though the geotechnical data were not validated, all data will be submitted to the Department. In addition to being archived by NYSDEC, EA will store all data generated during this investigation in a company database.

3. RESULTS

This section presents the analytical results and findings of the field activities conducted during the PDI. Soil and sediment samples were analyzed for compounds including TAL metals and TOC. Geotechnical testing included Atterberg limits, bulk density, grain size, moisture content, specific gravity, hydraulic conductivity, etc. Treatability testing, including SBLT, SPLP and MET, was conducted on site soils and sediment. A detailed breakdown of the environmental samples collected and analyzed is provided in Tables 2-1a, 2-1b, 2-2, and 2-4. Laboratory analytical methods were performed by Test America and HCV, both of which are Environmental Laboratory Analytical Program (ELAP)-certified laboratories. Test America performed treatability and geotechnical testing of the OU-1 and OU-2 samples. HCV performed TAL metals (including mercury) and TOC analyses. Analytical data from HCV was reported using Category B deliverables and the standard electronic data deliverable, and validated by EDS, an independent third party. Laboratory data reports and forms are provided in Appendix F.

3.1 OU-1 FILL MATERIAL CHARATERIZATION

The sampling program in OU-1 was designed to provide geotechnical engineering properties of the soil/fill material to support the remedial design. The fill material extends from the upland area by Old Upper Mountain Road and the railroad to the toe of the slope in Gulf Creek. A series of geotechnical borings and test pits samples were collected to support the remedial design. Detailed sample results are included in Tables 3-1a through 3-1e and are discussed further below.

3.1.1 OU-1 Lithological Characterization

Samples from the eight OU-1 geotechnical borings were collected in September and October 2014. For all eight borings, topsoil and organic material was encountered at grade and covered fill material. Fill material (primarily incinerator ash) was first encountered between 0.1 ft bgs and 2.25 bgs. The depth of fill material ranged from 3.9 ft at SB-33 (on the northwestern boundary of OU-1) to 68.7 ft at SB-31 (along the edge of the slope). The fill extended to a layer of native material consisting of silty clay. The depth to native material increased from the western and eastern boundaries of the upland area (4.3 ft at SB-33) to the edge of the slope (72 ft at SB-31). Depth to bedrock ranged from 11.3 ft bgs to 77.3 ft bgs at elevations of 580.9 ft above mean sea level (amsl) at the south western portion of the site alongside the rail road tracks to 510.1 ft amsl along the edge of slope (Figure 3-2). Blow counts at the bedrock interface increased rapidly compared to the rest of the core, indicating that bedrock is present and is not easily penetrable. During design and slope stability analyses the bedrock will be modelled as impenetrable. While this bedrock presence can increase stability of slopes, it also can be a cause of concern as sediments can have relatively low factors of safety at the interface with rock for certain interface conditions, which will be considered as part of design. Additionally, two split spoon intervals collected from SB-31 (74 ft bgs to 77.5 ft bgs) had an odor but no PID readings. The material collected in that interval was very dark in color with a sheen and hydrocarbon odor.

The seven test pits excavated in OU-1 (Figure 2-1) provided a cross-sectional view of lithology along the edge of the slope in the upland area and the toe of the slope in Gulf Creek. The cross-section of the upland test pits was comprised of a layer of top soil from the ground surface to approximately 1-ft bgs, below the top soil, ash and fill was observed to the bottom of the test pits at 12 ft bgs. At TP-05 a layer of clay was observed from 6 to 7 ft bgs. This isolated pocket of material is likely non-native clay due to its shallow depth below grade relative to the much deeper depths of native clay observed in adjacent soil borings around the upper edge of the slope.

The lithology observed in the test pits located at the toe of the slope in Gulf Creek (TP-01-SWAMP, TP-02-SWAMP, TP-03-SWAMP, and TP-04-SWAMP) included approximately 3 ft of fill (composed of broken glass, ash, tires, and little topsoil) which extended from the ground surface to a clay layer. The clay layer extended from 3 ft bgs to 6 ft bgs. Bedrock was observed at approximately 6 ft bgs. Groundwater was present at each test pit along the toe of the slope beginning around 1 ft bgs.

The uppermost bedrock formation underlying the Old Upper Mountain Road site is the Guelph Dolostone of the Lockport Group. Rock coring confirmed bedrock at the site consists of dolomite. Results from the bedrock cores indicate a range of bedrock quality across the site. Bedrock cores collected near the edge of the slope contained numerous natural fractures and the measured RQD values were lower than cores collected along the railroad and Old Upper Mountain Road. Cores collected along the railroad tracks and Old Upper Mountain Road contained fewer fractures indicating more competent rock. Rock quality designation ranged from very poor (0 percent RQD) at SB-30 and SB-32 to good (75.4 percent) at SB-27.

3.1.2 OU-1 Fill Material Classification

Grain size sieve analysis performed on the upland fill material allows for material classification using the Unified Soil Classification System. The Unified Soil Classification System (USCS) is a soil classification system used in engineering and geology to describe the texture and grain size of a soil. The classification system can be applied to most unconsolidated materials, and is represented by a two-letter symbol. Coarse grained soils are defined by more than 50 percent of the sample material being retained on, or above, No.200 (0.075 millimeters [mm]) sieve. Fine grained soils are defined by more than 50 percent of the sample material passing through, or below, No.200 (0.075 mm) sieve. Coarse grained soils are defined as gravels when > 50 percent of coarse fraction is retained on No. 4 (4.75 mm) sieve. Coarse grained soils are defined as sands when > 50 percent of coarse fraction passes through the No. 4 (4.75 mm) sieve. Fine grained soils with liquid limits > 50 are considered plastic, where fine grained soils with liquid limits < 50 are considered to exhibit low plasticity.

Samples collected from split spoons, Shelby tubes, and the test pits reported similar results. Grain size results show that 70 of the 73 analyses identified the material as coarse grained (i.e., more than 50 percent of material is larger than #200 sieve [0.075 mm]). Of those 70 analyses, 63 identified the predominant component as sand (i.e., more than 50 percent of coarse grain fraction is smaller than #4 sieve [4.75 mm]). The fill material is considered to include fines based on 15 percent passing the #200 sieve on average. Atterberg test performed on material passing #40 sieve (0.425 mm) has identified this portion of the fill material as a low plasticity silt (discussed further in Section 3.1.3). Based on these results, the general USCS classification for the OU-1 fill material is "SM," or silty sand, where "S" is the designation for sand and "M" is the designation for silt. It should be noted that the sieve analysis and subsequent classification is solely based on particle size, and not an indication of the actual sand or silt content of the fill; therefore, the material is predominantly fill and ash as a mixture of sand-sized and silt-sized particles. Exhibit 2 outlines the minimum, maximum, average and median of the geotechnical results reported for the split spoon, Shelby tube, and test pit samples.

Exhibit 2 OU-1 Fill Material Results Summary

Result	Minimum	Maximum	Average	Median
Liquid Limit (Atterberg)	27%	70%	38.7%	35%
Plastic Limit (Atterberg)	19%	30%	23.5%	24%
Plastic Index (Atterberg)	8%	40%	15.2%	11%
Moisture Content	2%	48.5%	19.5%	17.7%
Dry Density	0.8 g/cm^3	2.1 g/cm^3	1.3 g/cm^3	1.2 g/cm^3
	52.0 lb/ft^3	128.0 lb/ft^3	81.3 lb/ft^3	77.5 lb/ft^3
Specific Gravity	2.5	2.85	2.68	2.7

Grain size analysis of the toe of the slope test pit samples shows that the material in the 0-3ft bgs interval is mostly gravel-sized. This is due to the fact that the fill material was comprised largely of broken glass. Material encountered from approximately 3 to 6 ft bgs was identified in the field as native material. A summary of the geotechnical results for the toe of the slope test pit samples is shown below. A detailed account of the results is shown in Tables 3-1a and 3-1b. Particle size graphs can be found in Appendix H. Atterberg testing run on the native material indicated that the general USCS classification is "MH", or high plasticity silt (i.e., liquid limit greater than 50 percent) (Figure 3-1c).

Exhibit 3 OU-1 Toe of Slope Test Pit Results Summary

Result	Minimum	Maximum	Average	Median
Liquid Limit (Atterberg)	59 %	78 %	69.3 %	70%
Plastic Limit (Atterberg)	34 %	44 %	40.3 %	41.5%
Plastic Index (Atterberg)	21 %	34 %	29.0 %	30.5
Moisture Content	29.4%	64.4 %	46.1%	48.8%
Bulk Density	89.3 lb/ft^3	116.5 lb/ft^3	99.6 lb/ft^3	93.0 lb/ft^3
Percent Solids	35.6 %	70.6 %	53.88 %	51.2%

3.1.3 OU-1 Fine Material Descriptions

Testing for a material's Atterberg limits involves assessing the critical water contents of a fine-grained soil, such as its shrinkage limit, plastic limit, and liquid limit, to determine the water content at which that soil changes from a liquid to a plastic state. Coupling the Atterberg limit with moisture content helps determine the state of the material in question. Determination of water (moisture) content in the laboratory is performed by drying a sample and measuring the dry mass of solids to determine the mass of water lost. Water content is one of the most significant index properties used in establishing a correlation between soil behavior and its index properties.

In the soil borings, water content ranged from 2 percent to 48.5 percent with an average water content of 19.5 percent. The water content of 1.5 percent is dryer than average but not unusual for gravel above the water table. When compared to the liquid limit, the moisture content indicates that the OU-1 fill material will act granularly with some cohesive tendencies for samples with higher plasticity index and moisture contents results. The moisture content in the upland test pits had little variation and ranged from 21.3 percent to 23.9 percent, with an average of 23.07 percent. The upland test pits have approximately 10 percent less moisture than the OU-1 soil boring samples. This can be attributed to the fact that test pit samples only captured shallow material from 0-12 ft bgs. In the toe of slope test pits, moisture content ranged from 29.4 percent to 64.4 percent, with an average of 46.1 percent, and therefore will act granularly in most cases since the average plastic limit is 40.3 percent.

For split spoon samples, the liquid limit on average was 12.9 with a maximum of 43; therefore, when the moisture content is at or above these values the OU-1 material will behave more as a low strength material tending toward behavior as a liquid. The plastic limit on average was 8.5 with a maximum of 28. The plastic index is the difference between the liquid limit and plastic limit and is used to determine the behavior of the fill material. For OU-1 the fill had plasticity indexes on average of 11.9 and with a maximum of 18. Therefore, the material is classified as low plastic.

In the Shelby tubes, the liquid limit ranged from 34 to 70, with an average of 48.3. The plastic limit ranged from 24 to 30, with an average of 25.5. The plasticity index ranged from 10 to 40, with an average of 22.5. This indicates that the OU-1 native material is and behaves as a low to moderately plastic sediment. The liquid limit for the toe of slope test pits is higher than OU-1 geotechnical samples and upland test pit samples with a minimum of 59 percent, maximum of 78 percent, and average of 69.25 percent. The plastic limit ranged from 34 percent to 44 percent, with an average of 40.25 percent. The plastic index ranged from 21 percent to 49 percent, with an average of 34 percent, therefore the sediments are medium to highly plastic. A detailed account of the results is shown in Tables 3-1a and 3-1b.

The Atterberg limits of the Shelby tube and split spoons samples were plotted on a plasticity chart to classify the fines (Figure 3-1b). One Shelby tube sample was composed of material classified as “CH”, or inorganic, plastic clays. The remaining 12 samples plotted along the “ML” and “CL” line, indicating the material is inorganic silty clay with low to moderate plasticity.

3.1.4 OU-1 Other Parameters

3.1.4.1 Bulk Density

Bulk density is an indicator of the mass of water and solids in a given volume. Bulk density of soil is an approximation because the volume of the sampled material changes as a result of sample collection, handling, and testing. Bulk density is dependent on soil organic matter, soil texture, the specific gravity of soil mineral (sand, silt, and clay) and their packing arrangement. Split spoon bulk densities ranged from 67.0 lb/ft^3 to 122.5 lb/ft^3, with an average 90.5 lb/ft^3. The lower range of bulk densities measured in the OU-1 waste mass may be a result of the ash/organics observed during sample collection. Although, on average, the bulk density OU-1 waste mass is similar to the bulk density of sand. Shelby tube samples had a bulk density that ranged from 66.3 lb/ft^3 to 128 lb/ft^3, with an average of 100 lb/ft^3. This bulk density is higher than that seen in the geotechnical samples, and may indicate slightly more silts and clays present in the Shelby tube samples. The dry bulk density is the dry weight (dried at 110ºC) of an undisturbed soil sample divided by its field volume (ASTM Method D2937-94). Dry bulk density is inversely related to porosity (i.e., high porosity/more friable soil/less compacted soil has a lower bulk density). Dry bulk density of Shelby tube results ranged from 54.3 lb/ft^3 to 105 lb/ft^3, with an average of 85.7 lb/ft^3.

Upland test pit bulk density ranged from 72.8 lb/ft^3 to 119.5 lb/ft^3, with an average of 92.2 lb/ft^3. Toe of slope test pit bulk density ranged from 89.3 lb/ft^3 to 116.5 lb/ft^3, with an average of 99.6 lb/ft^3, which is lower than OU-1 and consistent with grain size analysis findings that the sediments are comprised of mostly gravel and broken glass. A detailed account of the results is shown in Tables 3-1a and 3-1b.

3.1.4.2 Specific Gravity

Specific gravity is the ratio of the mass of unit volume of soil at a stated temperature to the mass of the same volume of gas-free distilled water at a stated temperature. The specific gravity of a soil is used in the phase relationship of air, water, and solids in a given volume of the soil. The specific gravity, collected in samples from the soil borings, ranged from 2.5 to 2.85 with an average of 2.67. Exhibit 4 shows the typical ranges of specific gravity for various soil classifications. The average specific gravity measured from OU-1 fill material falls within the high end of sand. The specific gravity is an indicator of the composition of the material from the perspective of mineralogical versus other components, for instance, siliceous materials would be expected to have a specific gravity of 2.65, which iron ore or other heavy mineralogy would be expected to provide results higher than 2.65 and finally if materials are highly organic, specific gravity results lower than 2.65 would be expected.

Exhibit 4 Range of Specific Gravity

Soil Description	Typical Specific Gravity Range
Sand	2.63 – 2.67
Silt	2.65 – 2.7
Clay and silty clay	2.67 – 2.9
Organic soils	<2.0

A detailed account of the results is shown in Tables 3-1a and 3-1b.

3.1.4.3 Percent Solids

Both the upland and the toe of slope test pits were analyzed for percent solids. Percent solids, also referred to as dry matter, is the percent weight of the soil sample that represents dry material. It is calculated by subtracting percent moisture from 100 percent. In the upland test pits, percent solids had little variation and ranged from 76.1 percent to 78.7 percent, with an average of 76.92 percent. Percent solids in the toe of slope test pits ranged from 35.6 percent to 70.6 percent, with an average of 53.88 percent, which indicates that slightly more than half of the sample is made up of granular material. Material from the toe of slope test pits contains a significant amount of water. This is expected as it is the location where groundwater from the OU-1 slope daylights as a source of Gulf Creek. A detailed account of the results is shown in Tables 3-1a and 3-1b.

3.1.4.4 Hydraulic Conductivity/Permeability

Hydraulic conductivity indicates the ease at which water can move through pore spaces of an undisturbed soil sample. For the Shelby tube samples the hydraulic conductivity ranged from $1.x10^{-6}$ centimeters per second (cm/sec) to $6.1x10^{-5}$ cm/sec with an average of $2.16x10^{-5}$ cm/s. Permeability indicates the ability the materials have to transfer water, and ranged from $3.1x10^{-3}$ cm/sec to 0.17 cm/sec, with an average of 0.04 cm/sec. Therefore the Shelby tube samples, primarily composed of silts and clays, do not transfer water as readily as their permeability indicates, due to hydraulic conductivity values being lower than permeability. The hydraulic conductivity ranged from $3.2x10^{-7}$ cm/sec to $8.5x10^{-6}$ cm/sec, with an average of $3.5x10^{-6}$ cm/sec. The upland test pit soils do not transfer water as easily as the OU-1 soil boring samples. Both hydraulic conductivity and permeability values measured from fill samples fall with the “medium” range representative of fine sands. Exhibit 5 shows the classification of soils with respect to coefficients of permeability.

Exhibit 5 Classification of Soils According to their Coefficients of Permeability

Relative Permeability	Typical Soil	Value of *k* (cm/s)
High	Coarse gravel	$> 10^{-1}$
Medium	Sand, fine sand	10^{-1} to 10^{-3}
Low	Silty sand, dirty sand	10^{-3} to 10^{-5}
Very low	Silt, fine sandstone	10^{-5} to 10^{-7}
Practically impermeable	Clay	$< 10^{-7}$
Source: Terzaghi, 1967.		

A detailed account of the results is shown in Tables 3-1a and 3-1b.

3.1.4.5 Direct Shear

Direct shear testing is completed to determine the soil cohesion and angle of internal friction for soil samples. Friction angles are used during slope stability modelling for long term and short term models. Coarse drained layers rely on internal friction angles for slope stability. Soil cohesion is the force that holds together particles within a soil, and can be used to determine the undrained shear strength. Direct shear testing is applied to generally more drainable granular soil types as compared to less drainable finer grained silt and clay. Shear test data indicates that OU-1 fill has decent intrinsic strength characteristics. For OU-1 samples the cohesion ranged from 0 to 9.6 pounds per square inch (psi), with an outlier of 26.1 psi. The friction angle results ranged from 17.5° to 49.3°. For test pit samples the direct shear results for cohesion ranged from 0 to 2.53 psi, and friction angle results ranged from 34° to 42.2°. These values for cohesion are lower than the OU-1 geotechnical samples. The friction angle results for upland test pits were similar to the OU-1 samples. Figure 3-1d shows the sample locations and direct shear results. Direct shear testing result graphs can be found in Appendix H.

3.1.4.6 Unconsolidated Undrained Triaxial

Unconsolidated Undrained (UU) Triaxial testing is used to determine the undrained strength. UU-Triaxial testing is performed on cohesive soil. The test is intended to represent the shear strength conditions expected with the development of excess pore pressure from rapid loading or unloading of a fine-grained silt/clay soil. When planning the PDI sampling 13 UU tests were proposed, however, due to the nature of the granular fill onsite, only three UU samples and tests were suitable for this testing to be performed. The three UU tests were conducted on the clayey soil at the bedrock fill interface.

UU testing was completed on select Shelby Tube samples and results ranged from 17.64 psi to 36.97 psi for peak shear and 8.8 psi to 18.5 psi for undrained strength. Figure 3-1e shows the sample locations and direct shear results. Graphs of the UU results can be found in Appendix H.

3.1.4.7 Compaction Testing

Compaction testing is completed to determine the optimal moisture content in which a sediment sample will become most dense and achieve maximum dry density. Four upland test pits samples were tested to determine the optimum dry density and moisture content: TP-05 upland, TP-05 Upland 2, TP-06, and TP-07. The results were relatively consistent with an optimum moisture content ranging tom 11.6 percent to 15.2 percent, with an average of 12.95 percent. Results of the compaction testing were consistent with the average measured moisture content of 18 percent. The optimum dry density correlating to the moisture contents ranged from 105.6 lb/ft^3 to 112.4 lb/ft^3, with an average of 115.6 lb/ft^3. Results can be found in Appendix H.

3.1.5 OU-1 Treatability (Leaching) Testing

A sample of the observed fill material in each upland test pit (TP-05, TP-06, and TP-07) was collected for treatability testing including SBLT and SPLP. SBLT data is used to evaluate the potential for groundwater impacts from water that would leach through the fill material. SPLP data is used to estimate the site-specific adsorption-desorption potential of a contaminant that may impact ground water and is designed to determine the mobility of both organic and inorganic analytes present in liquids, soils, and wastes.

The 1-day run of the SBLT samples detected several metals and SVOCs. Aluminum concentrations of leachate from TP-05, TP-06, and TP-07 samples ranged from 46 µg/L to 330 µg/L, which is above the New York State Ambient Water Quality Standard (AWQS) of 100 µg/L. Concentrations of antimony also had exceedances in every sample ranging from 17 µg/L to 110 µg/L. Additionally, TP-07 samples reported exceedances for lead ranging from 66 µg/L to 83 µg/L. Concentrations of antimony, calcium, potassium, sodium, and barium increase with additional batch time. Exhibit 6 outlines which metals were detected each batch sample for each test pit.

Exhibit 6 List of Metals Detected in Each Run of each Test Pit Sample

Run	Metal Analytes Detected Above AWQS		
	TP-05	**TP-06**	**TP-07**
1	Aluminum, antimony	Aluminum, antimony	Antimony, lead
2	Aluminum, antimony	Aluminum, antimony	Antimony, lead
3	Aluminum, antimony	Aluminum, antimony	Aluminum, antimony, lead
4	Aluminum, antimony	Aluminum, antimony	Aluminum, antimony, lead

The SPLP analyses detected aluminum, barium, cadmium, calcium, chromium, copper, iron, lead, magnesium, nickel, potassium, silver, sodium, and zinc in leachate from all three test pits. Vanadium was detected only in the sample from TP-06-UPLAND, selenium was detected in the sample from TP-05-UPLAND and TP-06-UPLAND, and antimony was detected in the sample from TP-07-UPLAND. The following table shows the metals detected above standard and CVOCs detected in each test pit sample.

Exhibit 7 List of Analytes Detected Above Standards for each Test Pit Sample

Test Pit ID	TP-05	TP-06	TP-07
Metal Analytes Detected Above AWQS Standard	Aluminum	Aluminum	Aluminum
CVOC Analytes Detected	bis(2-Ethylhexyl) phthalate, butyl benzyl phthalate, fluoranthene, phenanthrene, pyrene	2-Methylnaphthalene , bis(2-ethylhexyl) phthalate, butyl benzyl phthalate, fluoranthene, naphthalene ,phenanthrene, pyrene	Bis(2-ethylhexyl) phthalate, butyl benzyl phthalate

SBLT and SPLP results are fully outlined in Table 3-1d and 3-1e.

3.2 OU-2 SEDIMENT CHARACTERIZATION

3.2.1 Phase 1: Manual Probing

Transects were stationed every 150 ft from the toe of the slope located at the southern end of the site, near Old Upper Mountain Road, to the Northern extent of the site at Niagara Street (Figure 2-2). At each transect location water depth and sediment thickness was measured at 25 ft intervals along the width of the Gulf Creek.

Sediment thickness, water depth, refusal depth, nature of refusal (i.e., clay vs. bedrock) and GPS coordinates, were recorded on a field form, these forms are provided in Appendix D. Table 2-3 provides a summary of the sediment thickness and water depth at each location. Sediment thickness varied across the site with the maximum thickness (7.2 ft) measured at Location 0-600-6 just downstream of the OU-1 upland site northern boundary. Minimal sediment thickness (less than 6-in.) was measured between transects 0-2400 and 0-3300, where the stream channel is primarily a gravelly stream bed with limited sediment deposits.

The water present on site varies in channel form and depth along the length of Gulf Creek as described below. In a number of areas along Gulf Creek (as detailed below) pockets of deeper ponded water prevented access on foot and complete water depth information was not collected across the full transect. Measured water depths ranged from 0 up to 2 ft deep (0-3450-2).

Observations during the manual probing effort identified the following conditions from upstream to downstream:

Upstream Section:

- **Transect 0 to Transect 450**: The upstream area, at the southern portion of the creek, begins with a small stream channel and widespread, shallow ponded water and debris. Sediment thicknesses between 0.08 and 1.5 ft were observed. Water depth ranged from 0 ft to 0.33 ft.
- **Transect 450 – 900**: Two stream channels appear on the east and west sides of Gulf Creek between transect 450 and 600. These channels continue beyond transect 900 amongst abundant phragmites and moderate to deep sediment thicknesses between 0.8 and 7.2 ft. Shallow standing water was observed in the stream channels. Water depth ranged from 0 ft to 1.42 ft. Water depths deeper than 1.42 ft were observed along this reach at locations that were inaccessible on foot.
- **Transect 900– 1,350**: Dryer and rockier than Transects 600-900, with two main channels on the east and west banks. Sediment thickness was moderate, between 0.17 and 3.25 ft. Water depth ranged from 0 ft to 0.5 ft. Water depths deeper than 0.5 ft were observed along this reach at locations that were inaccessible on foot.
- **Transect 1,350 – 1,800**: Just beyond transect 1,350, the eastern and western channels converge to form one main channel consisting of a deeper, open water area. Sediment thickness was recorded on the east and west banks of the open water as the full transect was not accessible on foot. Sediment thicknesses measured were between 2.0 and 5.5 ft. Water depths measures ranged from 0 ft to 0.42 ft.

Mid-Stream Section:

- **Transects 1,800 – 3,300**: At transect 1,800, the stream channel narrows with and includes either a clayey bottom (1,950 – 2,100), or a rocky bottom (2,100 – 3,150).

Sediment thickness is shallow, generally less than 0.5 ft, and no more than 2.08 ft. Water depth ranged from 0 ft to 0.45 ft.

Downstream Section:

- **Transects 3,300 – 3,750**: At the northern extent of Gulf Creek, after transect 3,300, the main channel splits into two channels separated by wetland areas and a flood plain. This area includes a large phragmites wetland with open water channels on each side and smaller channels cutting across. Sediment thickness in the phragmites was consistently high, often between 4 and 5 ft. Water depth ranged from 0 ft to 2 ft. Water depths deeper than 2 ft were observed along this reach at locations that were inaccessible on foot.

- **Transects 3,750 – 4,350**: The area beyond transect 3,750 is similar to the previous area. Two channels exist on either side of the valley separated by vegetation and phragmites on each side. Sediment thickness in the phragmites was consistently high, ranging up to 4 to 5 ft at some locations. Water depth ranged from 0 ft to 0.75 ft.

A summary of the sediment thickness and water depth is provided on Table 2-3. Figure 2-2 shows sediment thickness as it varies along Gulf Creek.

3.2.2 Phase 2: Sediment Cores

Sixty-two sediment samples were collected at 47 locations and analyzed for TAL Metals including mercury (Figures 2-3a through 2-3c). A total of 22 TOC samples were collected from select locations as well as 24 geotechnical samples that were analyzed for parameters including: grain size, total organic carbon, organic matter, percent moisture, specific gravity, and Atterberg limits. A summary of the analytical results for sediment samples is provided in Table 3-2a, and shown on Figures 3-2a through 3-2c.

3.2.2.1 OU-2 Lithology

The upstream section of gulf creek was characterized by soft, saturated, non-cohesive silts, and sandy silts with some organic matter. Silty clays were typically found 2 ft bgs and below. The mid-stream section was found to have some areas with clay found in the first foot of sediment and other areas with sandy silts and gravel. As previously mentioned, the mid-steam section had generally less sediment thickness than the upstream and downstream sections of Gulf Creek. In the stream channels in the downstream section, clay was identified in the first 0.5 ft, under a thin layer of silt. OU-2 boring logs can be found in Appendix C.

3.2.2.2 Target Analyte List Metals

Sediment sample TAL metal analytical results were compared to the lowest effect levels (LEL) and severe effect levels (SEL) found in Table 2 of the NYSDEC *Technical Guidance for Screening Contaminated Sediments* (NYSDEC 1999). Overall, 12 TAL metals were reported at concentrations above LELs, all 12 were also above SELs (Table 3-2a). Exceedances were reported for antimony, arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, silver, and zinc. Eleven of these (with the exception of silver) were identified during previous investigation at concentrations that were above LELs in 2007, November 2009, May 2010, and August 2010.

Each location sampled reported at least one metal above the SELs. Sediment samples collected at SD-300 reported the most TAL metals above LELs and SELs. The most prevalent of the aforementioned metals above the SEL standards were lead and zinc. The average reported concentrations of lead and zinc were 1,796 mg/kg and 2,944 mg/kg, respectively. Lead concentrations ranged from 63 mg/kg (SD-4050-2-3.5-4) to 45,000 (SD-300-3-0-1), and zinc values ranged from 110 mg/kg (SD-2250-1-0-0.5) to 35,000- mg/kg (SD-300-2-0-1). The specific TAL metals reported in sediment samples correlate with the TAL metals observed within the onsite fill material (OU-1) as shown in the SRI investigation. A summary of TAL metals results is provided in Table 3-2a. Figures 3-2a and 3-2b show the extent of lead and zinc contamination in Gulf Creek sediments.

The concentration of lead in Gulf Creek sediment is generally higher near the upland site as compared to the downstream end by Niagara Street. No clear patterns were observed with sample depth.

The spatial distribution of zinc closely follows that of lead (Figure 3-2b). Zinc concentrations decrease from south to north. Zinc concentrations are typically higher in deeper sediments south of Transect 1,800 in the southern portion of the site. North of Transect 3,450 higher concentrations of zinc were observed in the surface intervals.

Analytical data from sediment samples confirms contaminants of concern impacts throughout the entire length of Gulf Creek. The volume of contaminated sediment were estimated first by generating two dimensional shapes in CAD for ranges of sediment depth intervals (i.e. 0’-0.5’, 0.5’-1.0’, etc). The area of each of those shapes was then calculated and multiplied by average sediment depth and summed together to estimate total sediment volume of 35,000 cubic yards (cy). The volume estimated in the RI, in contrast, was approximately 17,000 cy (EA 2011a, 2011b). Most of the volume increase is associated with sediment thickness in the downstream portion of Gulf Creek. The majority of the total sediment volume is located in the upstream (Transect 0 – 1,800) and downstream (Transects 3,300 – 4,200) sections of Gulf Creek. Due to the shallow sediment thickness in the midstream section of Gulf Creek, only a small portion of the estimated sediment contaminated sediment volume is located between Transects 1,800 and 3,300. The upstream area contains approximately 13,000 cy of sediment, the middle 500 cy, and the downstream area 21,500 cy.

3.2.2.3 Total Organic Carbon/Ash Content

Of the 22 TOC samples, results ranged from 12,000 mg/kg (SD-4200-1-0-0.25) to 160,000 mg/kg (SD-1800-1-2.5-4), with an average concentration of 69,384 mg/kg. The median TOC was 13 percent TOC, which presents an additional challenge to predicting the long term geotechnical properties and performance as organic material degrades. The ash content ranged from 47.6 percent to 98.8 percent with an average of 86.4 percent. Ash content is the matter remaining after burning off the organic matter for TOC analysis. Figure 3-2c shows sample locations and concentrations of TOC along Gulf Creek.

3.2.2.4 Geotechnical Parameters

The 24 geotechnical samples were analyzed for grain size, organic matter, ash content, percent moisture, specific gravity, and Atterberg limits. Grain size analyses of the samples showed that the majority of sediment sampled was in the range of silt and clay. Samples collected from SD-150-2 and SD-3450-3 were mostly sand. Detailed results are provided in Table 3-2b.

The liquid limit ranged from 38 percent to 117 percent, with an average of 73 percent. The plastic limit ranged from 25 percent to 97 percent with an average of 47.7 percent. The Plastic Index ranged from 12 percent to 41 percent with an average of 25.8 percent indicating the sediments are low to moderately plastic. When plotted on a plasticity chart (Figure 3-2d), the Atterberg limits indicate that sediment samples are classified as “ML” or “MH”: low to high plasticity silt. The moisture content ranged from 31.8 percent to 755.2 percent with an average of 178.6 percent. While 755.2 percent was an outlier there were many samples which were above 100 percent. This will affect its soil behavior including but not limited to consolidation, dewatering, and slope stability; however, it is important to clarify that moisture content can exceed 100 percent for wet and/or organic-rich sediment due to the value representing a mass ratio of mass of water to mass of solids. The bulk density ranged from 63.2 lb/ft^3 to 121.8 lb/ft^3, with an average of 87.0 lb/ft^3. Lastly, the specific gravity had a larger range than OU-1 samples and ranged from 2.1 to 2.8 with an average of 2.6. Consistent with the classification of OU-1 materials, the average OU-2 specific gravity results fall within the high end of sand. This also implies that from a geotechnical perspective, the sediment is not “organic rich” with plant material as a component of the sediment matrix, but may contain other components. There is some general discrepancy in the specific gravity results and organic matter results (the later reported by the laboratory in terms of ash content in Exhibit 8), which may be related to the overall composition of the sediment. Graphs of the geotechnical results can be found in Appendix I.

Exhibit 8 OU-2 Sediment results summary

Result	Minimum	Maximum	Average	Median
Liquid Limit (Atterberg)	38 %	117 %	73 %	81.5 %
Plastic Limit (Atterberg)	25 %	97 %	47.7 %	49 %
Plastic Index (Atterberg)	12 %	41 %	25.8 %	24 %
Moisture Content	31.8 %	755.2 %	178.6 %	112.45 %
Ash Content	47.6 %	98.8 %	86.4 %	87 %
Bulk Density	63.2 lbs/ft^3	121.8 lbs/ft^3	87.0 lbs/ft^3	78.2 lbs/ft^3
Specific Gravity	1.6	2.8	2.1	2.5

3.2.3 Phase 3: Sediment Treatability (Leaching) Testing

At the time of this report the final treatability testing results were not complete. A detailed discussion of the treatability testing results and evaluation will be included in the Basis of Design report.

3.2.3.1 OU-2 Treatability Testing Results (SBLT)

Three composite samples were collected for treatability testing included SBLT from OU-2. SBLT data is used to evaluate the potential for groundwater and surface water impacts from water that would leach through the sediment material.

The 1-day run of the SBLT samples detected several metals and SVOCs. Aluminum concentrations of leachate from Composite-1, Composite-2, and Composite-3 samples ranged from 56 µg/L to 7,400 µg/L, which is above the New York State AWQS of 100 µg/L. Concentrations of iron, manganese, and sodium in the 1-day run also exceeded AWQS standards in samples Composite-1 and Composite-2. The following table outlines which metals were detected in each batch sample for each composite. SBLT results are fully outlined in Table 3-2c.

Exhibit 9: List of Metal Analytes Detected in Each Run of Each Composite

Run	Metal Analytes Detected Above AWQS		
	Composite-1	Composite-2	Composite-3
1	Aluminum, iron, manganese, sodium	Aluminum, iron, manganese, sodium	Manganese, sodium
2	Aluminum, antimony, sodium	Aluminum, antimony, iron, manganese	N/A
3	Aluminum, antimony	Aluminum, antimony, iron, manganese	N/A
4	Aluminum, antimony	Aluminum, iron, manganese,	N/A

3.2.3.2 OU-2 Treatability Testing Results (SPLP)

Composite samples Composite-1, Composite-2, Composite-3 were also run for SPLP. SPLP data is used to estimate the site-specific adsorption-desorption potential of a contaminant that may impact ground water, and is designed to determine the mobility of both organic and inorganic analytes present in liquids, soils, and wastes.

The SPLP analyses detected aluminum, barium, calcium, copper, iron, magnesium, manganese, nickel, potassium, and sodium in leachate from all three samples.

Vanadium was detected only in the samples from Composite-1 and Composite-3, lead was detected in the sample from Composite-2 and Composite-3, and zinc was detected in the sample from Composite-2. Exhibit 10 shows the metals detected above standard and CVOCs detected in each composite sample. SPLP results are fully outlined in Table 3-2d.

Exhibit 10 List of Analytes Detected Above Standards for Each Composite Sample

Test Pit ID	Composite-1	Composite-2	Composite-3
Metal Analytes Detected Above AWQS Standard	Aluminum, antimony, iron	Iron, sodium	——
CVOC Analytes Detected	2-Methylnaphthalene, butyl benzyl phthalate, caprolactam, diethyl phthalate, fluoranthene	2-Methylnaphthalene, carbazole, dibenzofuran, diethyl phthalate, naphthalene, phenanthrene	2-Methylnaphthalene, carbazole, diethyl phthalate, fluorine, naphthalene, phenanthrene

The potential for leaching will be addressed in the remedial design.

3.3 SITE SURVEY

Popli completed a site survey base map in February 2010 for OU-1 and OU-3. For the PDI, Popli remobilized to the site to complete a topographic survey for Gulf Creek in OU-2 from the toe of the slope downstream to Niagara Street. Following completions of borings, test pits and sediment samples each were located, surveyed and incorporated into the base map. Appendix G includes the base map created by Popli. This survey will serve as the basis for design drawings.

4. SUMMARY AND DESIGN CONSIDERATIONS

4.1 OU-1 PDI RESULTS SUMMARY

The OU-1 fill material characterization included lithology and geotechnical testing at eight soil borings and seven test pit locations. In summary, the USCS classification identified the material size as consistent with a silty sand (SM), Atterberg testing identified the <40 (0.42 mm) sieve component as a low plasticity silt, and the average moisture content of the fill material measured to be 18 percent, which is less than the plastic limit, meaning that the material behaves as a solid. This value is also close to the optimal moisture content determined through compaction testing of 12.95 percent. The materials had an average hydraulic conductivity consistent with the soil classification of silty sand (fine sand). The geotechnical results were similar for all sampling methods (split spoons, Shelby tubes, and test pits), indicating a strong dataset. Results from the direct shear tests indicate that material has intrinsic strength characteristics.

In general, the upland test pit data correlated with the OU-1 soil boring USCS classification, identifying material size consistent with a SM. The toe of slope test pits identified the transition between OU-1 fill and OU-2 sediment (increased plasticity and moisture content). Shallow groundwater and bedrock was encountered in the toe of slope test pits at 1 ft bgs and 6 ft bgs, respectively. Debris, such as tires, cars, and appliances, was ubiquitous throughout toe of slope test pits and will factor into design.

A sample of the observed fill material in each upland test pit (TP-05, TP-06, and TP-07) was collected for SBLT and SPLP treatability testing. SBLT data was used to evaluate the potential for groundwater impacts from water that would leach through the un-amended fill material. Exceedances of aluminum and antimony were observed in material from upland TP-05, TP-06, and TP-07. Aluminum ranged from 46 µg/L to 330 µg/L (AWQS of 100 µg/L), and antimony ranged from 17 µg/L to 110 µg/L (AWQS of 3 µg/L). Lead exceeded in TP-07 ranging from 66 µg/L to 83 µg/L (AWQS of 25 µg/L).

SPLP data will be used to estimate the site-specific adsorption-desorption potential of a contaminant that may impact ground water. The test is designed to determine the mobility of both organic and inorganic analytes present in liquids, soils, and wastes. Exceedances of aluminum in all three pits ranged from 190 µg/L to 220 µg/L (AWQS of 100 µg/L). Lead exceedances ranged from 8 µg/L at TP-06 to 35 µg/L at TP-07 (AWQS of 25 µg/L). Bis(2-Ethylhexyl)phthalate exceeded in TP-07 at 9.9 µg/L (AWQS of 5 µg/L). The potential for contaminant of concern leaching will be addressed in the design.

4.2 OU-2 PDI RESULTS SUMMARY

Phase 1 of the OU-2 investigation included measuring sediment thickness across the site. Overall, sediment thickness varied across the site, with a maximum thickness of 7.2 ft measured approximately 600 ft downstream of the OU-1 toe of slope. Minimal sediment thickness (less than 6-in.) was measured in Gulf Creek, approximately 2,400 to 3,300 ft from the OU-1 toe of slope, where the stream channel is primarily a gravelly stream bed with limited sediment deposits. The water present on site varies in channel form and depth along the length of Gulf Creek. Water depths measured ranged from 0 up to 2 ft deep (transect location 0-3450-2); however, water depths in ponded areas (not accessible on foot) are likely deeper than 2ft.

During Phase 2 of the OU-2 investigation, chemical sampling was completed at 51 locations (63 total samples) and 24 samples were collected for geotechnical analysis. Chemical results were compared to the LEL, and SEL from the NYSDEC *Technical Guidance for Screening Contaminated Sediments*. Results indicated the presence of 12 different metals with concentrations above LELs and SELs at each sample location. Lead and zinc were the most prevalent; with average reported concentrations of 1,796 mg/kg and 2,944 mg/kg, respectively. Overall, lead concentrations ranged from 63 mg/kg (SD-4050-2-3.5-4) to 45,000 (SD-300-3-0-1) and zinc values ranged from 110 mg/kg (SD-2250-1-0-0.5) to 35,000- mg/kg (SD-300-2-0-1). Analytical data from OU-2 sediment sampling confirmed COC impacts throughout the entire length of Gulf Creek.

Geotechnical analyses and USCS classification of the sediments in OU-2 identified the material as MH. The average moisture content of the sediment was measured to be 180 percent which is well above the liquid limit, indicating that the material behaves as a liquid. The volume of water entrained in the OU-2 sediments is estimated at approximately 80 gallons/cy.

OU-2 SBLT analysis detected four metals exceeding NYSDEC AWQS standards including aluminum, antimony, iron, and manganese. The SPLP analyses detected aluminum, barium, calcium, copper, iron, magnesium, manganese, nickel, potassium, and sodium in leachate from all three samples. Several SVOCs were also detected in the SPLP testing of OU-2 samples.

Results from Phase 3, the treatability testing, will be presented in the Basis of Design report and will include the presentation of the data as well as the findings associated with sediment amendment. This testing included amending OU-2 sediment with Portland cement, in addition to OU-1 fill in various combinations. Amended combinations were tested for leachability and strength characteristics.

Based on the investigation completed within OU-2, sediment volumes were estimated first by generating two dimensional shapes in CAD for ranges of sediment depth intervals (i.e., 0-0.5 ft, 0.5-1.0 ft, etc). The area of each of those shapes was then calculated and multiplied by average sediment depth, and summed together to estimate total sediment volume. The volume estimated in the RI was approximately 17,000 cy (EA 2011a, 2011b). The PDI survey indicates that sediment volume is 35,000 cy. Most of the volume increase is associated with sediment thickness in the downstream portion of Gulf Creek. The majority of the total sediment volume is located in the upstream (Transect 0 – 1800), and downstream (Transects 3100 – 4200) sections of Gulf Creek. The upstream area contains approximately 13,000 cy of sediment, the middle 500 cy, and the downstream area 21,500 cy.

5. REFERENCES

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FIGURES

Figures

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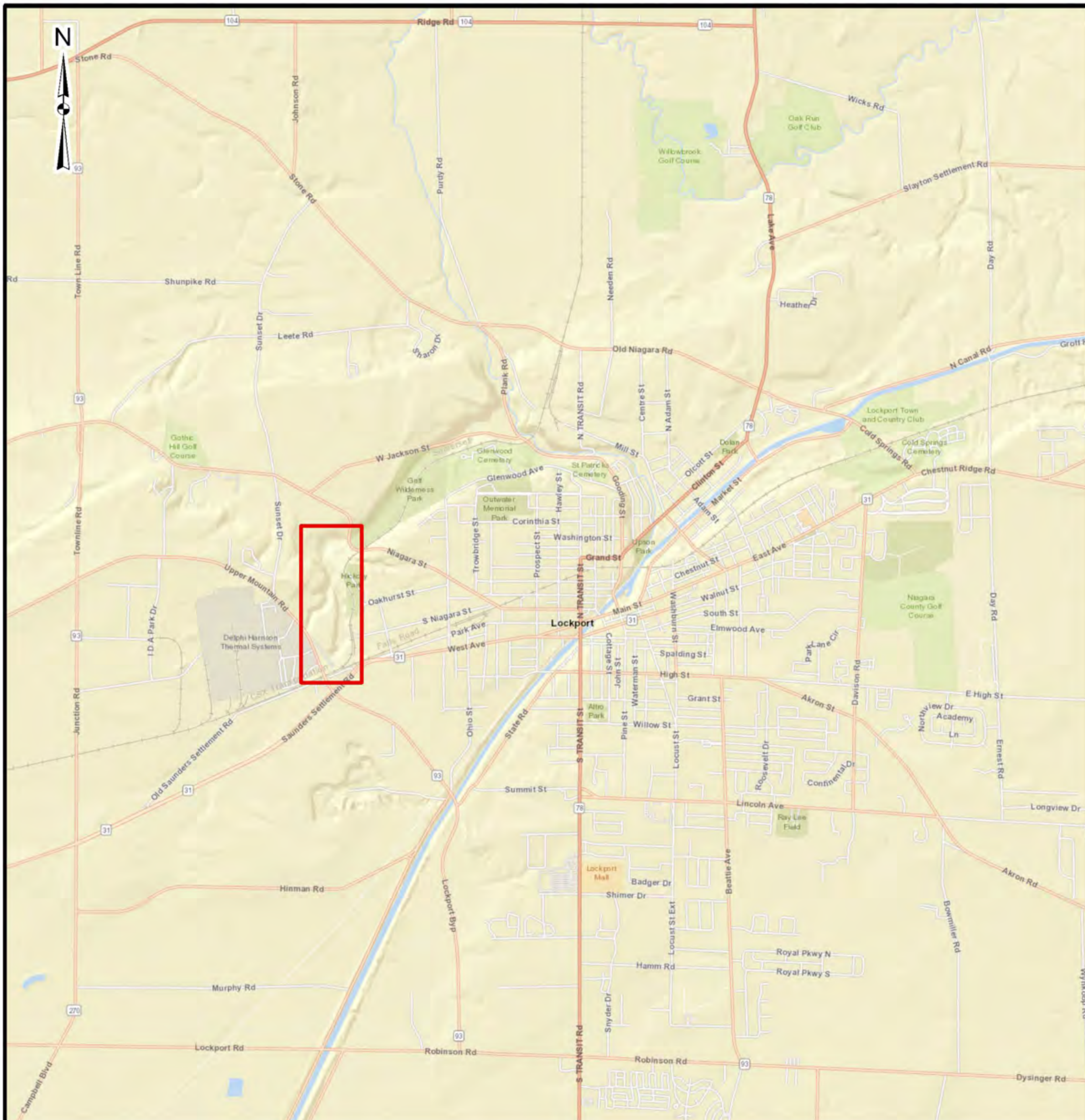

Legend

Old Upper Mountain Road Site Location

Miles
0 0.45 0.9 1.8

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

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FIGURE 1-1
General Site Location

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	SCALE:	DATE:	PROJECT NO:	FILE NO:
DC	HAW	HAW	JAV	AS SHOWN	APRIL 2021	14907.26	GIS/PROJECTS/ FIGURE1-1.MXD

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FIGURE 1-2
Operable Units Approximate Boundaries

Feet
0 250 500 1,000

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	PROJECT NO:	DATE:	SCALE:	FILE NO:
DC	HAW	HAW	JAV	14907.26	APRIL 2021	AS SHOWN	GIS/PROJECTS/ FIGURE1-2.MXD

Legend

- Operable Unit 1 - Approximate Boundary
- Operable Unit 2 - Approximate Boundary
- Operable Unit 3 - Approximate Boundary

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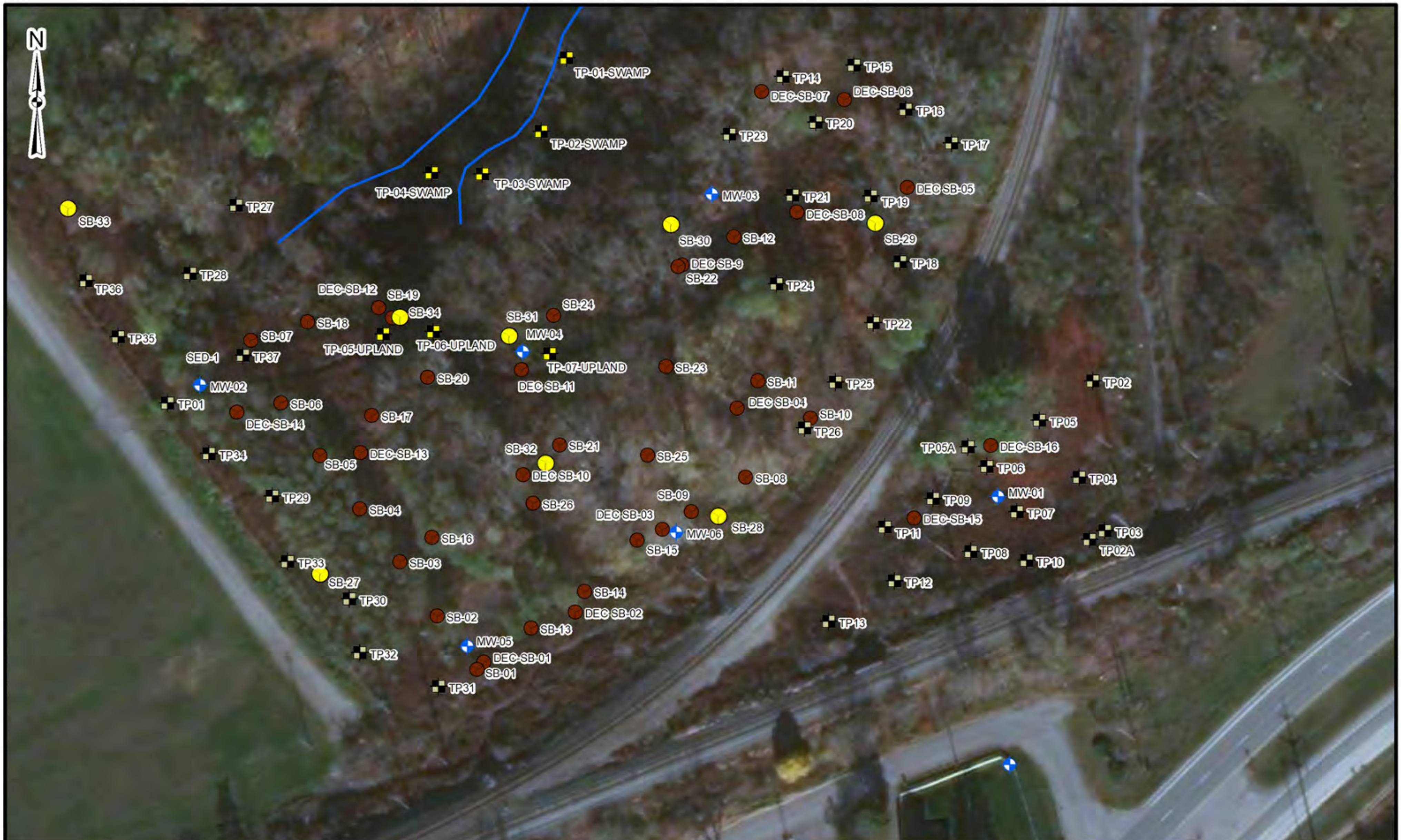

Legend

- Historical Soil Boring
- Historical Monitoring Well; Monitoring Supply Well
- Historical Test Pit
- 2014 Soil Boring Location
- 2014 Test Pit Location

Feet
0 50 100 200

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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FIGURE 2-1
OU-1 Soil Boring and Test Pit Locations

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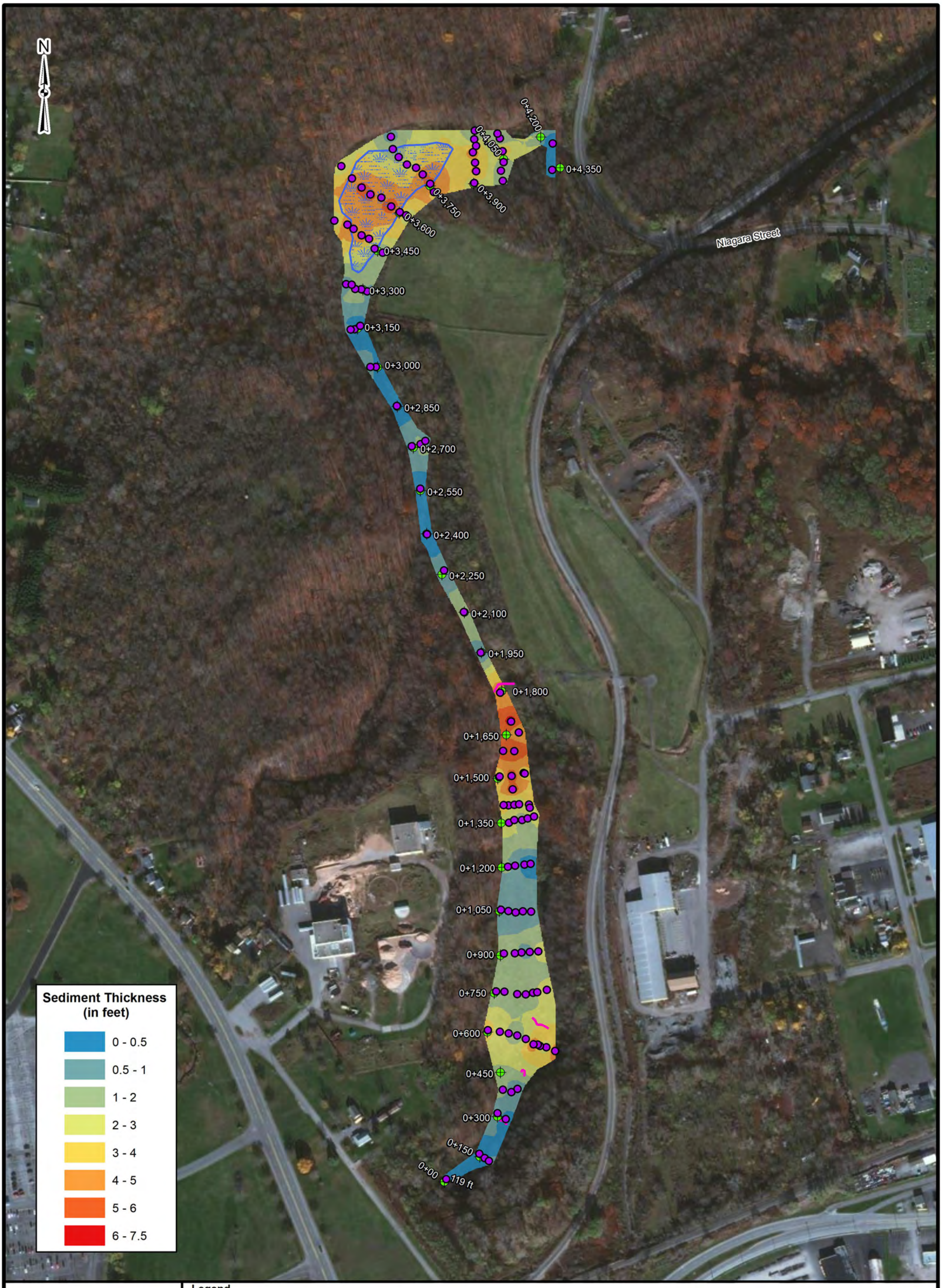

Legend

- Station
- Transect Point Location
- Former Beaver Dam

Feet: 0, 150, 300, 600

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User Community

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Figure 2-2
OU-2 Transects

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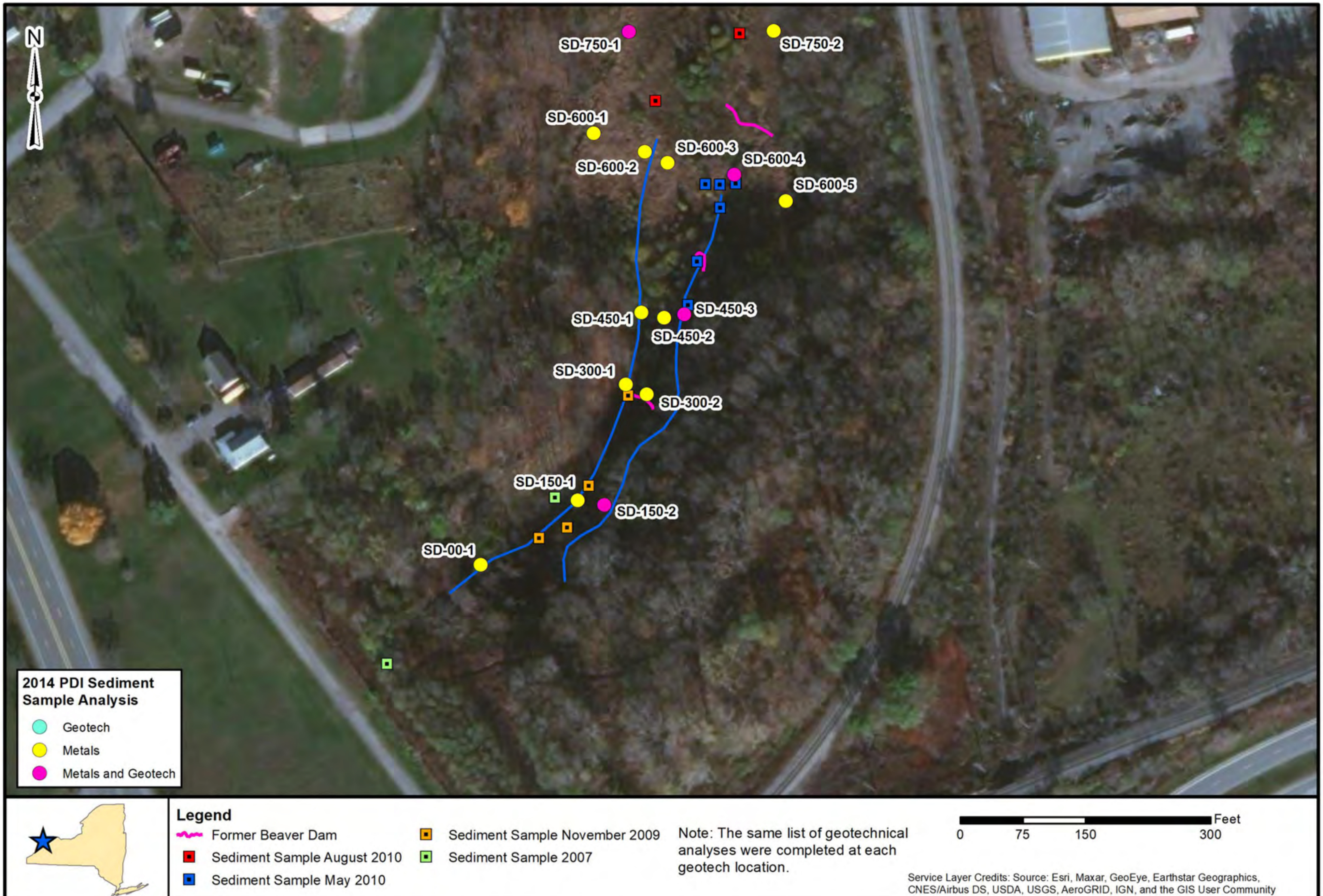

Note: The same list of geotechnical analyses were completed at each geotech location.

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Figure 2-3A
Sediment Sampling Locations
Area 1: Gulf Creek Adjacent to OU-1

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Legend

- Former Beaver Dam
- Sediment Sample August 2010
- Sediment Sample May 2010
- Sediment Sample November 2009
- Sediment Sample 2007

Note: The same list of geotechnical analyses were completed at each geotech location.

0 100 200 400 Feet

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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FIGURE 2-3B
Sediment Sampling Locations
Area 2: Gulf Creek Midsection

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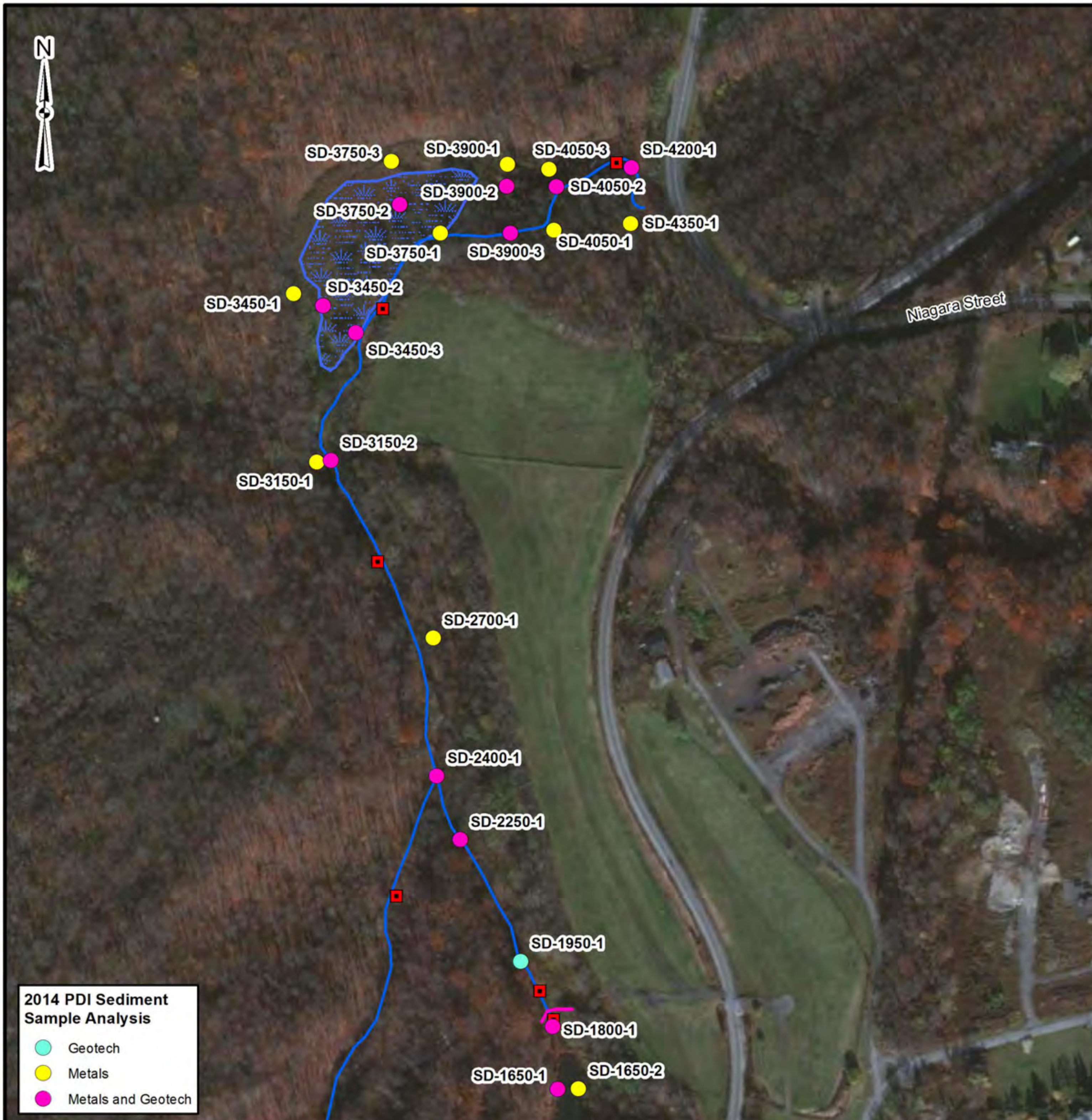

Legend

- Sediment Sample August 2010
- Sediment Sample May 2010
- Sediment Sample November 2009
- Sediment Sample 2007
- Former Beaver Dam

Note: The same list of geotechnical analyses were completed at each geotech location.

0 150 300 600 Feet

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FIGURE 2-3C
Sediment Sampling Locations
Area 3: Gulf Creek Adjacent to Lockport City Landfill

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DC	ALK	HAW	JVU	AS SHOWN	APRIL 2021	14907.26	G:\Projects\State&Local\NYSDEC - D007624\D007624 - 14907.26

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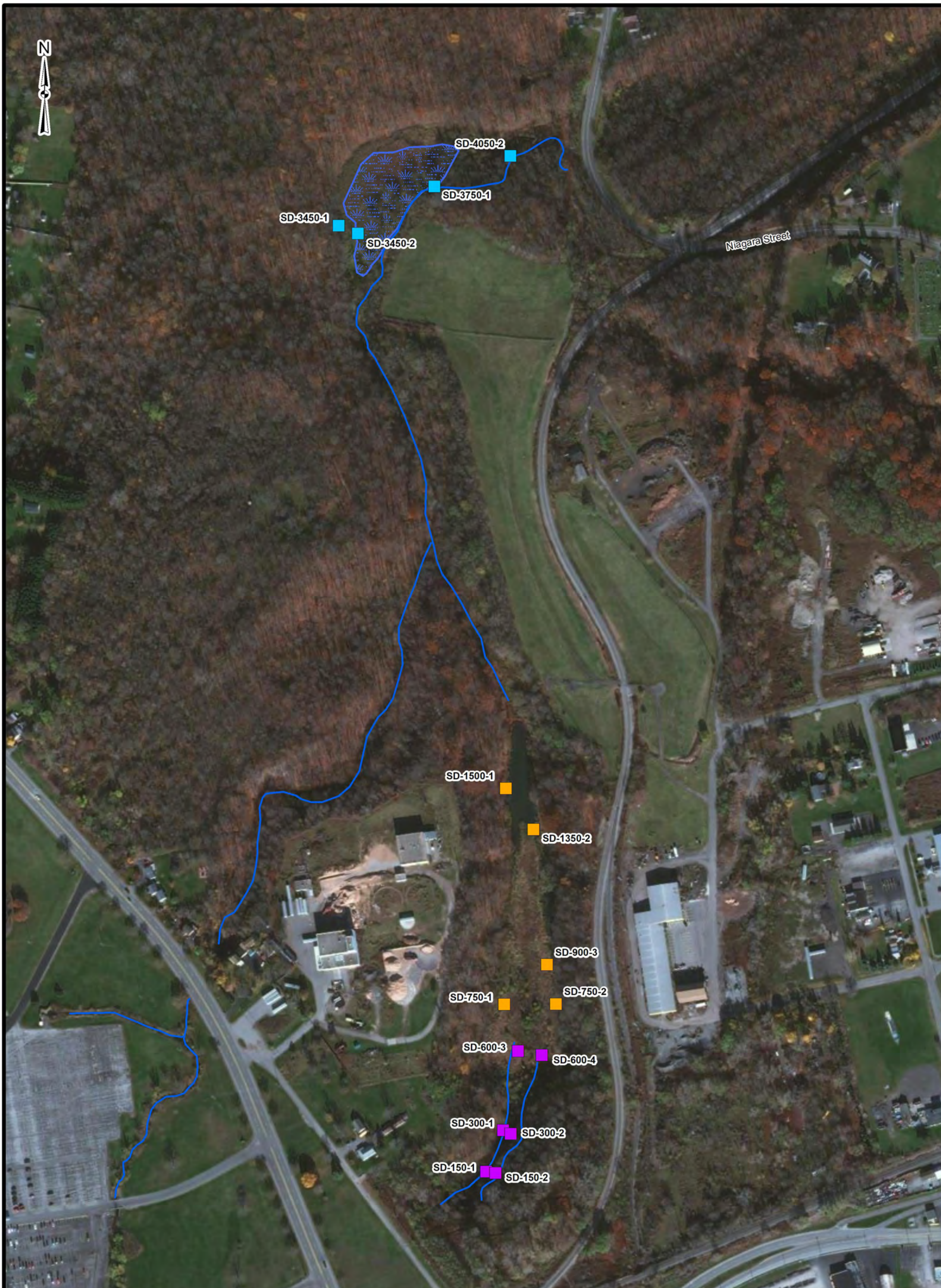

Treatability Testing

- Composite 1
- Composite 2
- Composite 3

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Feet: 0 150 300 600

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FIGURE 2-4
Sediment Sampling
Treatability Study Locations

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	SCALE:	DATE:	PROJECT NO:	FILE NO:
DC	HAW	HAW	JVU	AS SHOWN	APRIL 2021	14907.26	G:\Projects\State&Local\NYSDEC - D007624\D007624 - Work Assignments\14907.26 - Old Upper Mountain Road RD

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OLD UPPER MOUNTAIN ROAD (932112) PRE-DESIGN INVESTIGATION REPORT LOCKPORT, NEW YORK			FIGURE 3-1a Interpreted Bedrock Contour Map		
PROJECT MGR: DFC	DESIGNED BY: DFC	CREATED BY: EGC	CHECKED BY: JAV	PROJECT NO: 1490726	DATE: APRIL 2021

Scale: 0 25 50 100 Feet

SCALE: AS SHOWN

FILE NO: GIS\Projects\FIGURE3-8.MXD

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Legend

Bedrock Elevation Contours - Known (ft amsl)

Bedrock Elevation Contours - Interpreted (ft amsl)

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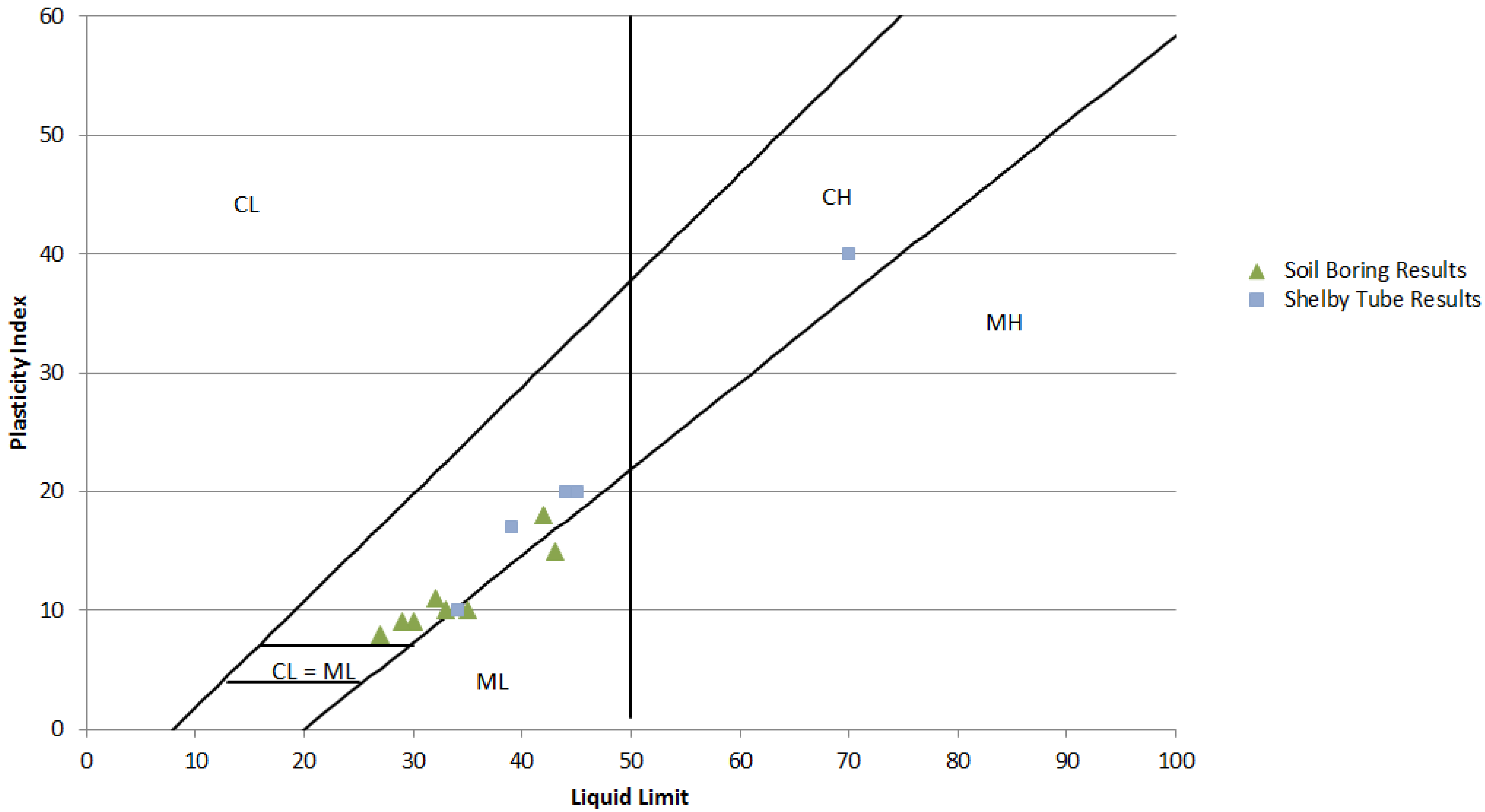
Figure 3-1b Plasticity Chart - Fill Material Samples



OLD UPPER MOUNTAIN ROAD (932112) PRE-DESIGN INVESTIGATION REPORT LOCKPORT, NEW YORK			Figure 3-1b Plasticity Chart – Fill Material Samples			File No.. G:\Projects\State&Local\ GIS
Project Mgr. DFC	Designed By EGC	Created By EGC	Checked By RAC	Scale As Shown	Date April 2021	Project No. 14907.26

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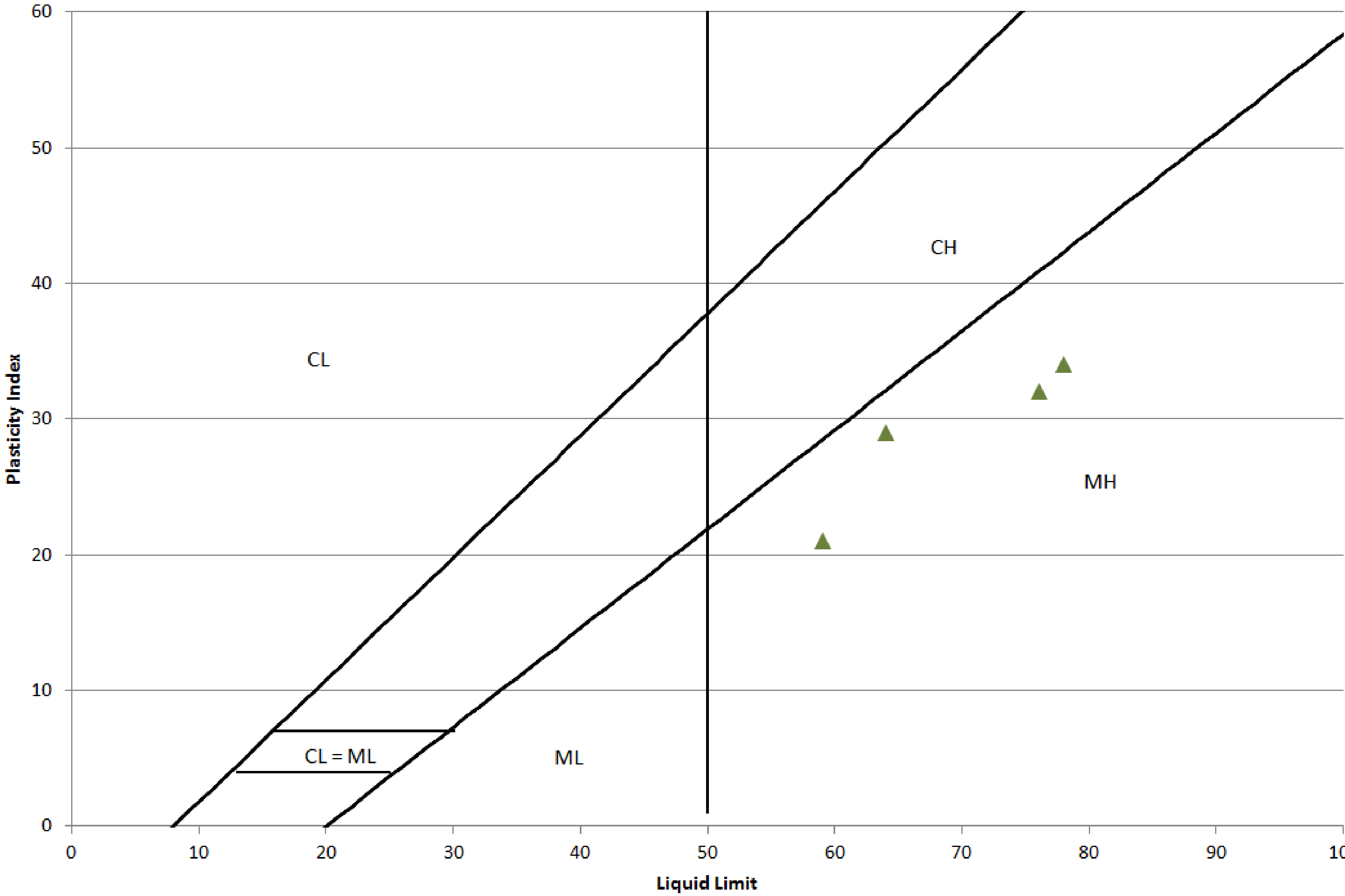
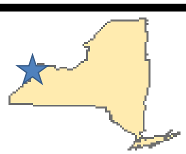
Figure 3-1c Plasticity Chart - Toe of Slope Test Pits





OLD UPPER MOUNTAIN ROAD (932112) PRE-DESIGN INVESTIGATION REPORT LOCKPORT, NEW YORK			Figure 3-1c Plasticity Chart – Toe of Slope Test Pits			File No.. G:\Projects\State&Lo cal\ PDI_Report
Project Mgr. DFC	Designed By EGC	Created By EGC	Checked By RAC	Scale As Shown	Date April 2021	Project No. 14907.26

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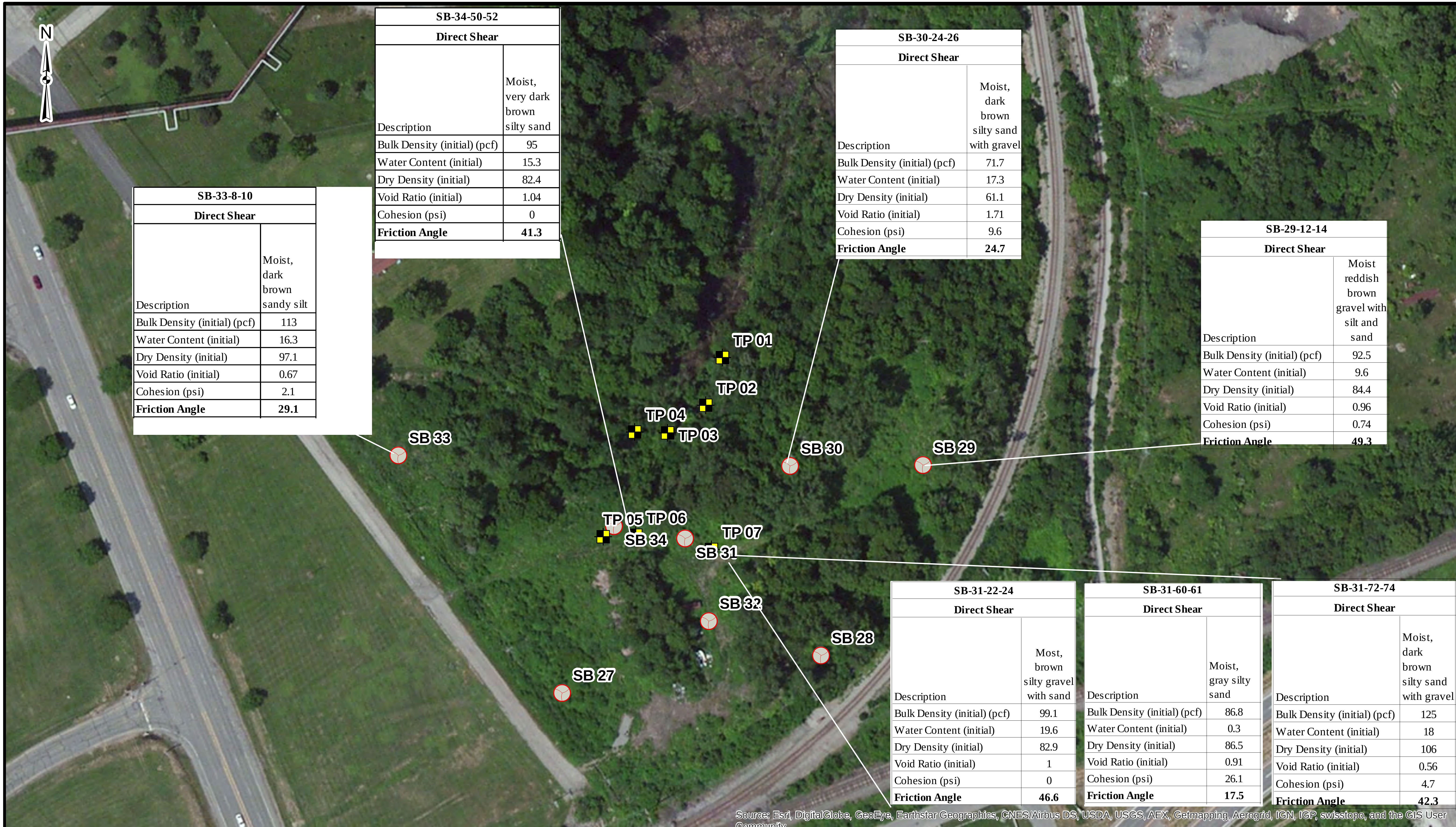

SB-34-50-52

Direct Shear

Description	Moist, very dark brown silty sand
Bulk Density (initial) (pcf)	95
Water Content (initial)	15.3
Dry Density (initial)	82.4
Void Ratio (initial)	1.04
Cohesion (psi)	0
Friction Angle	**41.3**

SB-30-24-26

Direct Shear

Description	Moist, dark brown silty sand with gravel
Bulk Density (initial) (pcf)	71.7
Water Content (initial)	17.3
Dry Density (initial)	61.1
Void Ratio (initial)	1.71
Cohesion (psi)	9.6
Friction Angle	**24.7**

SB-33-8-10

Direct Shear

Description	Moist, dark brown sandy silt
Bulk Density (initial) (pcf)	113
Water Content (initial)	16.3
Dry Density (initial)	97.1
Void Ratio (initial)	0.67
Cohesion (psi)	2.1
Friction Angle	**29.1**

SB-29-12-14

Direct Shear

Description	Moist reddish brown gravel with silt and sand
Bulk Density (initial) (pcf)	92.5
Water Content (initial)	9.6
Dry Density (initial)	84.4
Void Ratio (initial)	0.96
Cohesion (psi)	0.74
Friction Angle	**49.3**

SB-31-22-24

Direct Shear

Description	Most, brown silty gravel with sand
Bulk Density (initial) (pcf)	99.1
Water Content (initial)	19.6
Dry Density (initial)	82.9
Void Ratio (initial)	1
Cohesion (psi)	0
Friction Angle	**46.6**

SB-31-60-61

Direct Shear

Description	Moist, gray silty sand
Bulk Density (initial) (pcf)	86.8
Water Content (initial)	0.3
Dry Density (initial)	86.5
Void Ratio (initial)	0.91
Cohesion (psi)	26.1
Friction Angle	**17.5**

SB-31-72-74

Direct Shear

Description	Moist, dark brown silty sand with gravel
Bulk Density (initial) (pcf)	125
Water Content (initial)	18
Dry Density (initial)	106
Void Ratio (initial)	0.56
Cohesion (psi)	4.7
Friction Angle	**42.3**

Legend

Soil Boring

Test Pit

Feet 0 55 110 220

OLD UPPER MOUNTAIN ROAD (932112)
REMEDIAL INVESTIGATION REPORT
LOCKPORT, NEW YORK

FIGURE 3-1d
Direct Shear Results

Source: NYS GIS Clearing House

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PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	PROJECT NO:	DATE:	SCALE:	FILE NO:
DFC	EGC	EGC	RAC	14907.26	APRIL 2021	AS SHOWN	GIS\Projects\ FIGUREX.MXD

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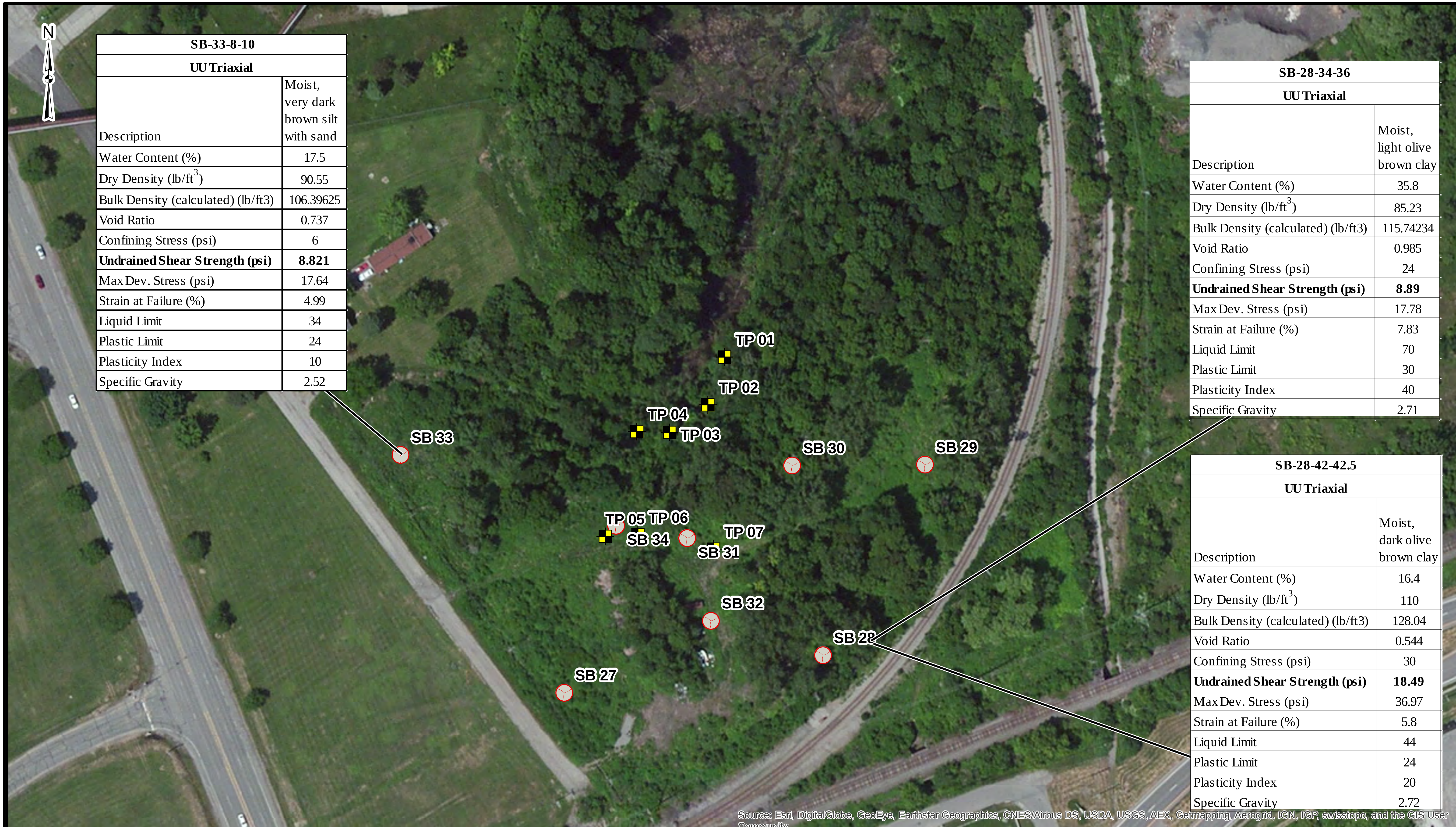
SB-33-8-10	
UU Triaxial	
Description	Moist, very dark brown silt with sand
Water Content (%)	17.5
Dry Density (lb/ft^3)	90.55
Bulk Density (calculated) (lb/ft3)	106.39625
Void Ratio	0.737
Confining Stress (psi)	6
Undrained Shear Strength (psi)	**8.821**
Max Dev. Stress (psi)	17.64
Strain at Failure (%)	4.99
Liquid Limit	34
Plastic Limit	24
Plasticity Index	10
Specific Gravity	2.52

SB-28-34-36	
UU Triaxial	
Description	Moist, light olive brown clay
Water Content (%)	35.8
Dry Density (lb/ft^3)	85.23
Bulk Density (calculated) (lb/ft3)	115.74234
Void Ratio	0.985
Confining Stress (psi)	24
Undrained Shear Strength (psi)	**8.89**
Max Dev. Stress (psi)	17.78
Strain at Failure (%)	7.83
Liquid Limit	70
Plastic Limit	30
Plasticity Index	40
Specific Gravity	2.71

SB-28-42-42.5	
UU Triaxial	
Description	Moist, dark olive brown clay
Water Content (%)	16.4
Dry Density (lb/ft^3)	110
Bulk Density (calculated) (lb/ft3)	128.04
Void Ratio	0.544
Confining Stress (psi)	30
Undrained Shear Strength (psi)	**18.49**
Max Dev. Stress (psi)	36.97
Strain at Failure (%)	5.8
Liquid Limit	44
Plastic Limit	24
Plasticity Index	20
Specific Gravity	2.72



Legend

- Soil Boring
- Test Pit

OLD UPPER MOUNTAIN ROAD (932112)
REMEDIAL INVESTIGATION REPORT
LOCKPORT, NEW YORK

FIGURE 3-1e
UU Triaxial Results

Feet: 0 55 110 220

Source: NYS GIS Clearing House

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	PROJECT NO:	DATE:	SCALE:	FILE NO:
DFC	EGC	EGC	RAC	14907.26	APRIL 2021	AS SHOWN	GIS\Projects\ FIGUREX.MXD

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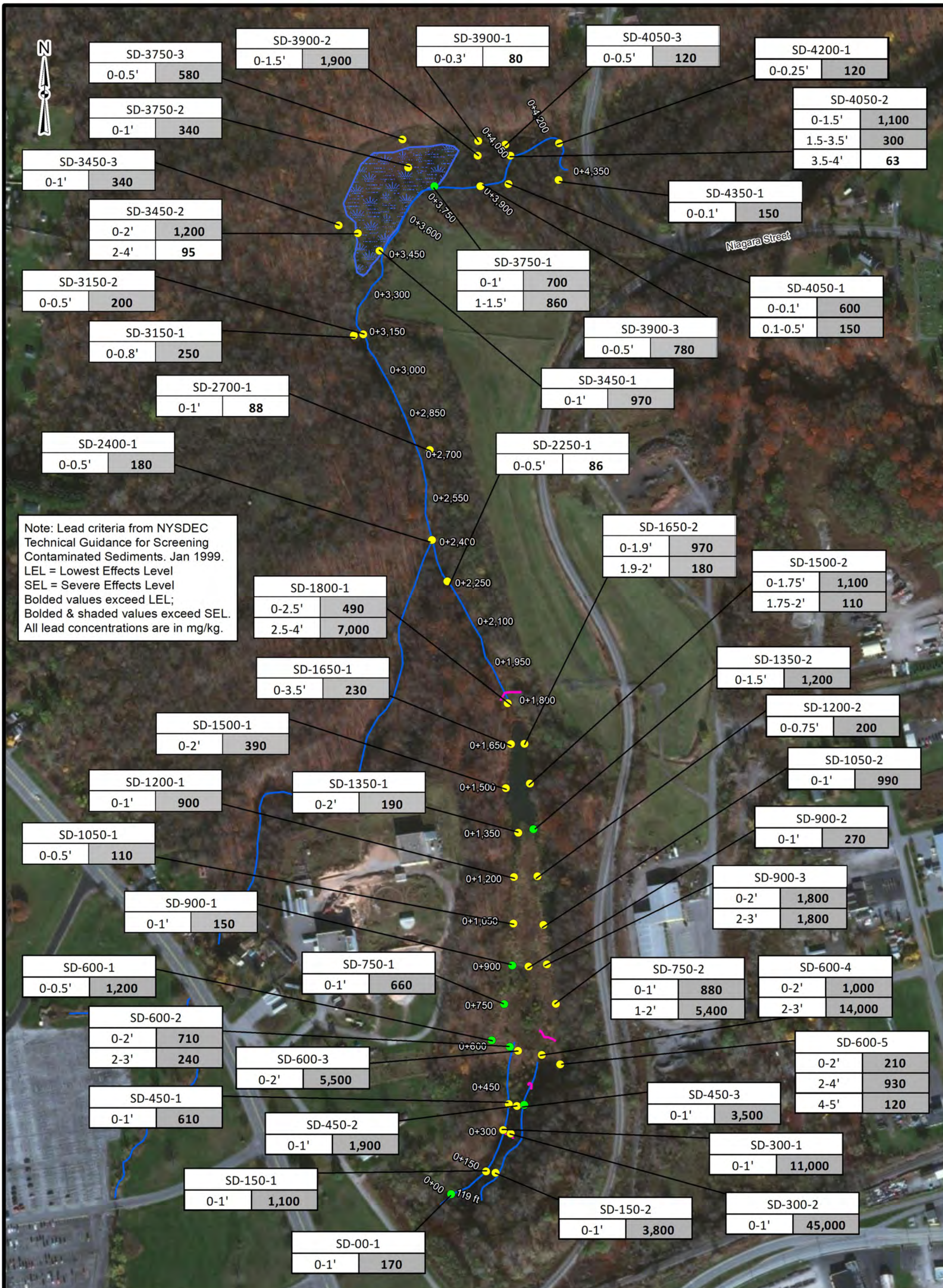
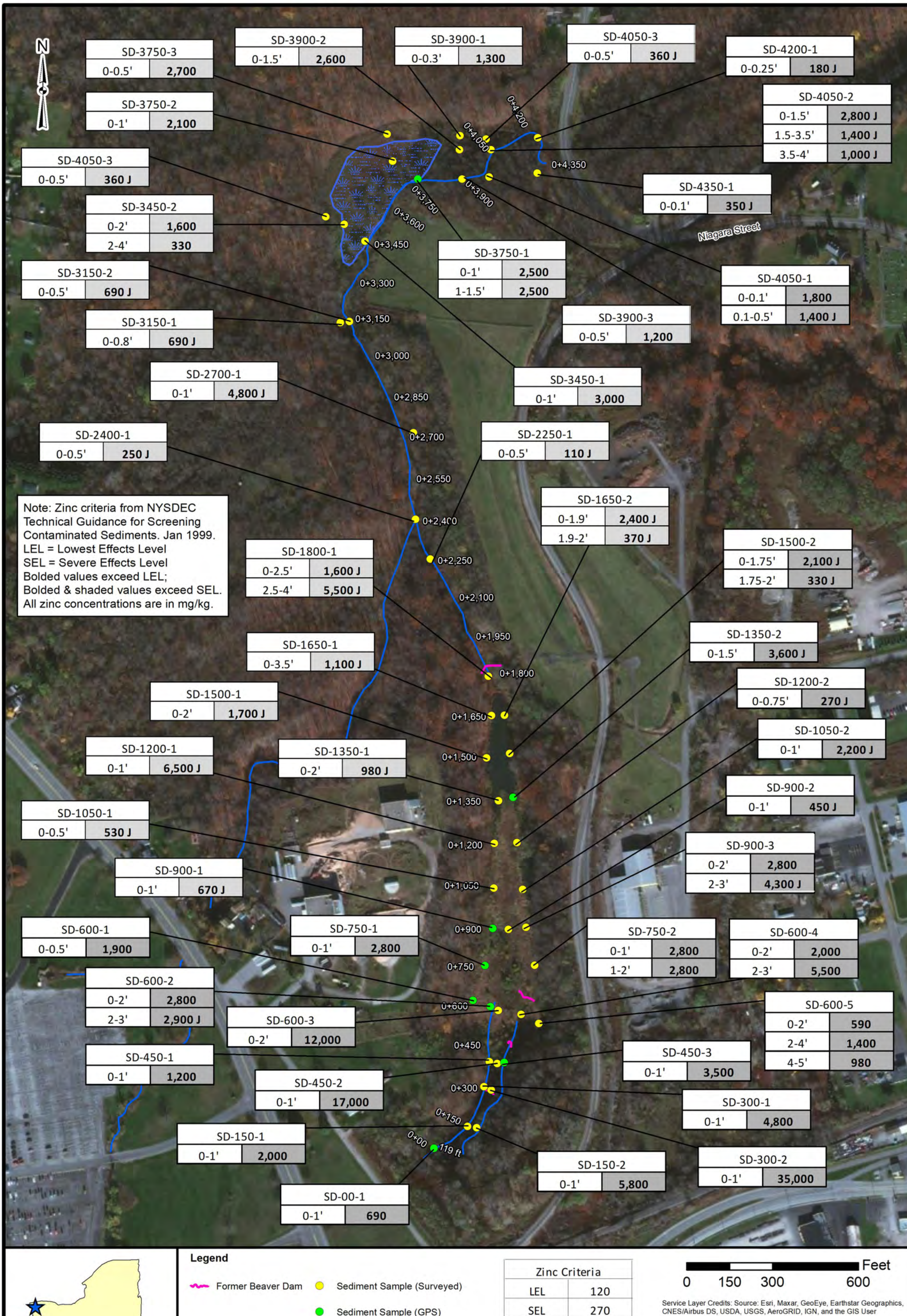


OLD UPPER MOUNTAIN ROAD (932112)
PRE-DESIGN INVESTIGATION
LOCKPORT, NEW YORK

FIGURE 3-2a
Lead in Sediment

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	SCALE:	DATE:	PROJECT NO:	FILE NO:
DC	HAW	HAW	JVU	AS SHOWN	APRIL 2021	14907.26	G:\Projects\State&Local\NYSDEC - D007624\D007624 - Work Assignments\14907.26 - Old Upper Mountain Road RD



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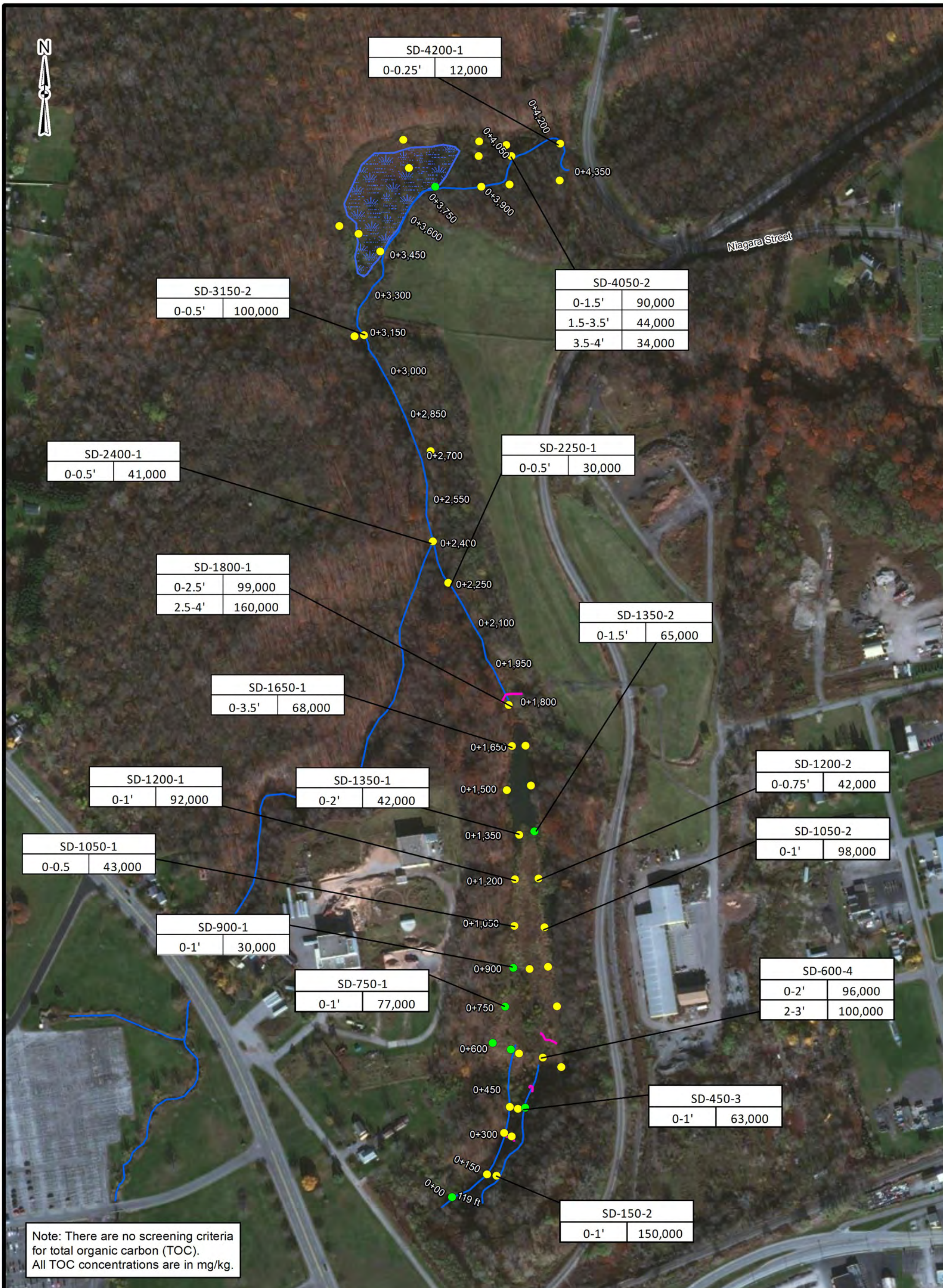
OLD UPPER MOUNTAIN ROAD (932112)
PRE-DESIGN INVESTIGATION
LOCKPORT, NEW YORK

FIGURE 3-2b
Zinc in Sediment

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	SCALE:	DATE:	PROJECT NO:	FILE NO:
DC	HAW	HAW	JVU	AS SHOWN	APRIL 2021	14907.26	G:\Projects\State&Local\NYSDEC - D007624\D007624 - Work Assignments\14907.26 - Old Upper Mountain Road RD



Legend

Former Beaver Dam

Sediment Sample (Surveyed)

Sediment Sample (GPS)

Feet
0 150 300 600

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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OLD UPPER MOUNTAIN ROAD (932112)
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FIGURE 3-2c
Total Organic Carbon in Sediment

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	SCALE:	DATE:	PROJECT NO:	FILE NO:
DC	HAW	HAW	JVU	AS SHOWN	APRIL 2021	14907.26	G:\Projects\State&Local\NYSDEC - D007624\D007624 - Work Assignments\ 14907.26 - Old Upper Mountain Road RD

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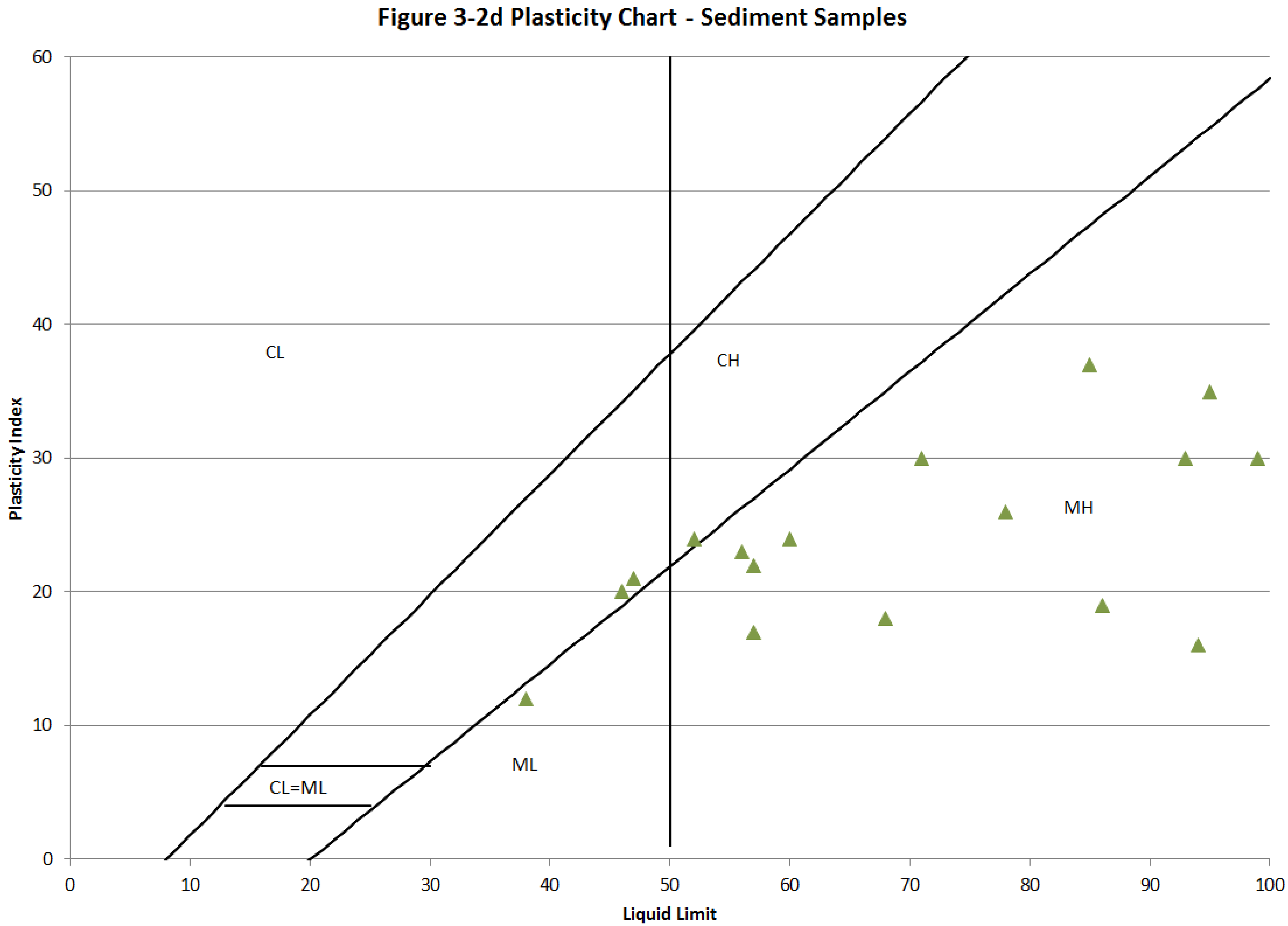

OLD UPPER MOUNTAIN ROAD (932112) PRE-DESIGN INVESTIGATION REPORT LOCKPORT, NEW YORK			Figure 3-2d Plasticity Chart – Sediment Samples			File No.. G:\Projects\State&Lo cal\ PDI_Report
Project Mgr. DFC	Designed By EGC	Created By EGC	Checked By RAC	Scale As Shown	Date April 2021	Project No. 14907.26

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TABLES

Tables

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Table 2-1a: Summary of OU-1 Field Program - Split Spoon Samples

Sampling Location/ID Number	Sample Date	Sample ID	Sample Type	Analytical Group
SB-32	9/25/2014	SB-32-0-0.25	Grab	Moisture content
	9/25/2014	SB-32-0.25-0.8	Grab	Moisture content
	9/25/2014	SB-32-0.8-1.1	Grab	Moisture content
	9/25/2014	SB-32-1.1.1.25	Grab	Moisture content
	9/25/2014	SB-32-2-2.2	Grab	Moisture content
	9/25/2014	SB-32-2.2-2.8	Grab	Moisture content
	9/25/2014	SB-32-4-6	Grab	Grain size, specific gravity, bulk density, moisture content
	9/25/2014	SB-32-6-8	Grab	Moisture content
	9/25/2014	SB-32-8-10	Grab	Grain size, specific gravity, bulk density, moisture content
	9/25/2014	SB-32-10-12	Grab	Moisture content
	9/25/2014	SB-32-12-14	Grab	Grain size, specific gravity, bulk density, moisture content
	9/25/2014	SB-32-14-16	Grab	Moisture content
	9/25/2014	SB-32-16-18	Grab	Moisture content
	9/25/2014	SB-32-20-22	Grab	Grain size, bulk density, moisture content
	9/25/2014	SB-32-22-24	Grab	Moisture content
	9/25/2014	SB-32-24-26	Grab	Grain size, specific gravity, bulk density, moisture content
	9/25/2014	SB-32-26-28	Grab	Moisture content
	9/25/2014	SB-32-28-30	Grab	Moisture content
	9/25/2014	SB-32-30-32	Grab	Grain size, moisture content
	9/25/2014	SB-32-32-34	Grab	Grain size, bulk density, moisture content
	9/25/2014	SB-32-34-36	Grab	Moisture content
	9/25/2014	SB-32-36-38	Grab	Grain size, bulk density, moisture content
	9/25/2014	SB-32-38-40	Grab	Moisture content, direct shear
	9/25/2014	SB-32-40-42	Grab	Grain size, bulk density, moisture content
	9/25/2014	SB-32-42-44	Grab	Grain size, bulk density, moisture content
	9/25/2014	SB-32-44-46	Grab	Moisture content
	9/25/2014	SB-32-46-48	Grab	Grain size, specific gravity, bulk density, moisture content
	9/25/2014	SB-32-48-50	Grab	Moisture content
	9/25/2014	SB-32-50-52	Grab	Moisture content
	9/25/2014	SB-32-52-54	Grab	Grain size, bulk density, moisture content, direct shear
	9/25/2014	SB-32-54-56	Grab	Moisture content
	9/25/2014	SB-32-56-58	Grab	Atterberg limits, grain size, specific gravity, bulk density, moisture content
	9/25/2014	SB-32-58-60	Grab	Moisture content
	9/25/2014	SB-60-60.5	Grab	Moisture content
	9/25/2014	SB-60.6-61	Grab	Moisture content
	9/25/2014	SB-32-62-63.3	Grab	Grain size, specific gravity, bulk density, moisture content
SB-27	9/30/2014	SB-27-0-2	Grab	Moisture content
	9/30/2014	SB-27-2-4	Grab	Moisture content
	9/30/2014	SB-27-4-6	Grab	Grain size, moisture content, direct shear
	9/30/2014	SB-27-6-8	Grab	Atterberg limits, moisture content, direct shear
	9/30/2014	SB-27-8-10	Grab	Grain size, moisture content, direct shear
	9/30/2014	SB-27-10-12	Grab	Atterberg limits, moisture content
SB-33	9/30/2014	SB-33-0-2	Grab	Moisture content
	9/30/2014	SB-33-2-4	Grab	Grain size, bulk density, moisture content
	9/30/2014	SB-33-4-4.7	Grab	Atterberg limits, moisture content
	9/30/2014	SB-33-4.7-4.9	Grab	Moisture content
	10/1/2014	SB-33-11-11.5	Grab	Moisture content
SB-34	9/29/2014	SB-34-0-2	Grab	Moisture content
	9/29/2014	SB-34-2-4	Grab	Grain size, bulk density, moisture content
	9/29/2014	SB-34-4-6	Grab	Atterberg limits, moisture content
	9/29/2014	SB-34-6-8	Grab	Grain size, moisture content
	9/29/2014	SB-34-8-10	Grab	Moisture content
	9/29/2014	SB-34-10-12	Grab	Atterberg limits, specific gravity, moisture content
	9/29/2014	SB-34-12-14	Grab	Grain size, moisture content
	9/29/2014	SB-34-14-16	Grab	Moisture content
	9/29/2014	SB-34-16-18	Grab	Grain size, specific gravity, bulk density, moisture content, direct shear
	9/29/2014	SB-34-18-20	Grab	Moisture content
	9/29/2014	SB-34-20-22	Grab	Moisture content
	9/29/2014	SB-34-22-24	Grab	Grain size, moisture content
	9/29/2014	SB-34-24-26	Grab	Moisture content
	9/29/2014	SB-34-26-28	Grab	Grain size, specific gravity, bulk density, moisture content
	9/29/2014	SB-34-28-30	Grab	Moisture content
	9/29/2014	SB-34-30-32	Grab	Grain size, moisture content
	9/29/2014	SB-34-32-34	Grab	Atterberg limits, moisture content

Table 2-1a: Summary of OU-1 Field Program - Split Spoon Samples

Sampling Location/ID Number	Sample Date	Sample ID	Sample Type	Analytical Group
SB-34	9/29/2014	SB-34-34-36	Grab	Moisture content
	9/29/2014	SB-34-36-38	Grab	Atterberg limits, moisture content
	9/29/2014	SB-34-38-40	Grab	Moisture content
	9/29/2014	SB-34-40-42	Grab	Grain size, bulk density, moisture content
	9/29/2014	SB-34-42-44	Grab	Moisture content
	9/29/2014	SB-34-44-46	Grab	Grain size, moisture content
	9/29/2014	SB-34-46-48	Grab	Moisture content
	9/29/2014	SB-34-48-48.5	Grab	Grain size, bulk density, moisture content
	9/29/2014	SB-34-48.5-49	Grab	Moisture content
	9/29/2014	SB-34-52-54	Grab	Moisture content
	9/29/2014	SB-34-54-56	Grab	Grain size, bulk density, moisture content
	9/29/2014	SB-34-56-58	Grab	Moisture content
	9/29/2014	SB-34-58-60	Grab	Grain size, bulk density, moisture content
SB-31	9/23/2014	SB-31-0.1-0.8	Grab	Moisture content
	9/23/2014	SB-31-2-4	Grab	Grain size, bulk density, moisture content
	9/23/2014	SB-31-4-6	Grab	Atterberg limit, specific gravity, bulk density, moisture content
	9/23/2014	SB-31-6-8	Grab	Atterberg limit, moisture content
	9/23/2014	SB-31-8-10	Grab	Grain size, bulk density, moisture content, direct shear
	9/23/2014	SB-31-10-10.6	Grab	Atterberg limits, specific gravity, bulk density, moisture content
	9/23/2014	SB-31-10.6-10.8	Grab	Moisture content
	9/23/2014	SB-31-12-14	Grab	Grain size, moisture content
	9/23/2014	SB-31-14-16	Grab	Moisture content
	9/23/2014	SB-31-16-18	Grab	Grain size, specific gravity, bulk density, moisture content
	9/23/2014	SB-31-18-20	Grab	Grain size, moisture content
	9/23/2014	SB-31-20-22	Grab	Moisture content
	9/23/2014	SB-31-24-24.2	Grab	Grain size, moisture content, direct shear
	9/23/2014	SB-31-24.2-25	Grab	Grain size, moisture content, direct shear
	9/23/2014	SB-31-26-28	Grab	Moisture content
	9/23/2014	SB-31-28-30	Grab	Moisture content
	9/23/2014	SB-31-30-32	Grab	Atterberg limits, grain size, specific gravity, bulk density, moisture content
	9/23/2014	SB-31-32-34	Grab	Moisture content
	9/23/2014	SB-31-34-36	Grab	Moisture content
	9/23/2014	SB-31-36-38	Grab	Grain size, bulk density, moisture content
	9/23/2014	SB-31-38-40	Grab	Moisture content
	9/23/2014	SB-31-40-42	Grab	Moisture content
	9/24/2014	SB-31-42-44	Grab	Grain size, bulk density, specific gravity, moisture content
	9/24/2014	SB-31-44-46	Grab	Moisture content
	9/24/2014	SB-31-46-48	Grab	Grain size, bulk density, moisture content
	9/24/2014	SB-31-48-50	Grab	Moisture content
	9/24/2014	SB-31-50-52	Grab	Grain size, moisture content
	9/24/2014	SB-31-52-53	Grab	Moisture content
	9/24/2014	SB-31-53-53.5	Grab	Moisture content
	9/24/2014	SB-31-54-56	Grab	Grain size, bulk density, specific gravity, moisture content
	9/24/2014	SB-31-56-58	Grab	Moisture content
	9/24/2014	SB-31-61-62	Grab	Moisture content
	9/24/2014	SB-31-62-64	Grab	Moisture content
	9/24/2014	SB-31-64-64.2	Grab	Moisture content
	9/24/2014	SB-31-64.2-65.75	Grab	Moisture content
	9/24/2014	SB-31-66-68	Grab	Moisture content
	9/24/2014	SB-31-68-68.2	Grab	Moisture content
	9/24/2014	SB-31-68.2-68.5	Grab	Moisture content
	9/24/2014	SB-31-70-72	Grab	Moisture content
	9/24/2014	SB-31-74-76	Grab	Moisture content
	9/24/2014	SB-31-76-76.8	Grab	Moisture content
	9/24/2014	SB-31-76.8-77.5	Grab	Moisture content
SB-29	9/23/2014	SB-29-0-0.3	Grab	Moisture content
	9/23/2014	SB-29-0.3-1.2	Grab	Moisture content
	9/23/2014	SB-29-2-4	Grab	Bulk density, moisture content
	9/23/2014	SB-29-4-6	Grab	Atterberg limits, grain size, specific gravity, moisture content, direct shear
	9/23/2014	SB-29-8-10	Grab	Grain size, bulk density, moisture content
	9/23/2014	SB-29-10-10.2	Grab	Moisture content
	9/23/2014	SB-29-10.2-10.8	Grab	Moisture content
	9/23/2014	SB-29-12-14	Grab	Atterberg limits, specific gravity, bulk density, moisture content

Table 2-1a: Summary of OU-1 Field Program - Split Spoon Samples

Sampling Location/ID Number	Sample Date	Sample ID	Sample Type	Analytical Group
SB-28	9/26/2014	SB-28-0-0.1	Grab	Moisture content
	9/26/2014	SB-28-0.1-1.25	Grab	Moisture content
	9/26/2014	SB-28-2-2.9	Grab	Grain size, specific gravity, moisture content
	9/26/2014	SB-28-2.9-3	Grab	Moisture content
	9/26/2014	SB-28-4-6	Grab	Grain size, bulk density, moisture content
	9/26/2014	SB-28-6-8	Grab	Grain size, specific gravity, moisture content
	9/26/2014	SB-28-8-10	Grab	Moisture content
	9/26/2014	SB-28-12-14	Grab	Atterberg limits, specific gravity, bulk density, moisture content
	9/26/2014	SB-28-14-16	Grab	Grain size, moisture content, direct shear
	9/26/2014	SB-28-16-16.7	Grab	Grain size, moisture content
	9/26/2014	SB-28-16.7-16.9	Grab	Moisture content
	9/26/2014	SB-28-16.9-17	Grab	Moisture content
	9/26/2014	SB-28-18-20	Grab	Moisture content
	9/26/2014	SB-28-20-20.3	Grab	Grain size, moisture content
	9/26/2014	SB-28-20.3-20.6	Grab	Moisture content
	9/26/2014	SB-28-20.6-21.25	Grab	Moisture content
	9/26/2014	SB-28-22-24	Grab	Atterberg limits, grain size, specific gravity, moisture content
	9/26/2014	SB-28-24-24.1	Grab	Moisture content
	9/26/2014	SB-28-24.1-24.5	Grab	Moisture content
	9/26/2014	SB-28-26-26.2	Grab	Moisture content
	9/26/2014	SB-28-26.2-27.5	Grab	Moisture content
	9/26/2014	SB-28-28-28.75	Grab	Grain size, specific gravity, moisture content
	9/26/2014	SB-28-28.75-29.5	Grab	Moisture content
	9/26/2014	SB-28-30-30.1	Grab	Moisture content
	9/26/2014	SB-28-30.1-30.8	Grab	Moisture content
	9/26/2014	SB-28-30.8-31.5	Grab	Moisture content
	9/26/2014	SB-28-32-34	Grab	Grain size, bulk density, moisture content
	9/26/2014	SB-28-36-36.3	Grab	Moisture content
	9/26/2014	SB-28-36.3-37	Grab	Atterberg limits, specific gravity, moisture content
	9/26/2014	SB-28-38.5-40	Grab	Grain size, moisture content
	9/26/2014	SB-28-40-42	Grab	Atterberg limits, specific gravity, bulk density, moisture content
	9/26/2014	SB-28-42.5-44	Grab	Moisture content
	9/26/2014	SB-28-44-45.5	Grab	Atterberg limits, specific gravity, moisture content
SB-30	9/22/2014	SB-30-0-10	Grab	Atterberg limits, grain size, specific gravity, bulk density, moisture content, direct shear
	9/22/2014	SB-30-10-14	Grab	Atterberg limits, specific gravity, bulk density, moisture content
	9/22/2014	SB-30-14-16	Grab	Moisture content
	9/22/2014	SB-30-16-18	Grab	Grain size, moisture content
	9/22/2014	SB-30-18-20	Grab	Moisture content
	9/22/2014	SB-30-20-22	Grab	Atterberg limits, grain size, specific gravity, bulk density, moisture content
	9/22/2014	SB-30-22-24	Grab	Moisture content
	9/22/2014	SB-30-26-28	Grab	Moisture content
	9/22/2014	SB-30-28-30	Grab	Moisture content
	9/22/2014	SB-30-30-32	Grab	Moisture content
	9/22/2014	SB-30-32-34	Grab	Grain size, specific gravity, bulk density, moisture content, direct shear
	9/22/2014	SB-30-34-36	Grab	Moisture content
	9/22/2014	SB-30-36-38	Grab	Grain size, moisture content
	9/22/2014	SB-30-38-40	Grab	Moisture content
	9/22/2014	SB-30-40-42	Grab	Grain size, bulk density, moisture content, direct shear
	9/22/2014	SB-30-42-44	Grab	Moisture content
	9/22/2014	SB-30-44-46	Grab	Grain size, specific gravity, bulk density, moisture content
	9/22/2014	SB-30-46-48	Grab	Moisture content
	9/22/2014	SB-30-48-50	Grab	Grain size, specific gravity, bulk density, moisture content
	9/22/2014	SB-30-50-52	Grab	Moisture content
	9/22/2014	SB-30-52-54	Grab	Atterberg limits, moisture content
	9/22/2014	SB-30-54-56	Grab	Grain size, specific gravity, moisture content

Table 2-1a: Summary of OU-1 Field Program - Split Spoon Samples

Sampling Location/ID Number	Sample Date	Sample ID	Sample Type	Analytical Group
TP-01	10/2/2014	TP-01-SWAMP-2-3	Grab	Grain size, bulk density, moisture content
	10/2/2014	TP-01-SWAMP-3-4	Grab	Atterberg limits, moisture content
TP-02	10/2/2014	TP-02-SWAMP-0.5-1	Grab	Grain size, bulk density, moisture content
	10/2/2014	TP-02-SWAMP-1-3	Grab	Atterberg limits, moisture content
TP-03	10/2/2014	TP-03-SWAMP-0-0.5	Grab	Moisture content
	10/2/2014	TP-03-SWAMP-0.5-3	Grab	Grain size, bulk density, moisture content
	10/2/2014	TP-03-SWAMP-3-6	Grab	Atterberg limits, moisture content
TP-04	10/2/2014	TP-04-SWAMP-0-3	Grab	Moisture content
	10/2/2014	TP-04-SWAMP-3-6	Grab	Atterberg limits, moisture content
TP-05	10/2/2014	TP-05-UPLAND	Grab	Grain size, bulk density, moisture content, SBLT, SPLP
	10/2/2014	TP-05-UPLAND-2	Grab	Grain size, bulk density, moisture content
TP-06	10/2/2014	TP-06-UPLAND	Grab	Grain size, bulk density, moisture content, SBLT, SPLP
TP-07	10/2/2014	TP-07-UPLAND	Grab	Grain size, bulk density, moisture content, SBLT, SPLP

Table 2.1b : Summary of OU-1 Field Program – Shelby Tube Samples

Sampling Location/ID Number	Sample Date	Sample ID	Sample Type	Analytical Group
SB-31	9/23/2014	SB-31-22-24-1.5 ft	Grab	Atterberg limits, moisture content, in place density, UU Triaxial
	9/24/2014	SB-31-58-60-2 ft	Grab	Atterberg limits, specific gravity, moisture content, in place density, consolidation, consolidated undrained pore pressure
	9/24/2014	SB-31-60-61-1 ft	Grab	Atterberg limits, moisture content, in place density, UU Triaxial
SB-34	9/29/2014	SB-34-50-52-2 ft	Grab	Atterberg limits, moisture content, in place density, UU Triaxial
SB-29	9/23/2014	SB-29-6-7-1.5 ft	Grab	Atterberg limits, moisture content, in place density, UU Triaxial
	9/23/2014	SB-29-12-14-1 ft	Grab	Atterberg limits, moisture content, in place density, UU Triaxial, Hydraulic conductivity
SB-33	9/30/2014	SB-33-6-8-1.5 ft	Grab	Atterberg limits, moisture content, specific gravity, UU Triaxial
	9/30/2014	SB-33-8-10-1.5 ft	Grab	Atterberg limits, specific gravity, moisture content, in place density, consoldidated undrained pore pressure
	9/30/2014	SB-33-10-11-1.5 ft	Grab	Atterberg limits, moisture content, in place density, consolidation, UU triaxial
SB-27	9/30/2014	SB-27-12-13.8-0.6 ft	Grab	Atterberg limits, specific gravity, moisture content, in place density, consolidation, UU triaxial
SB-30	9/22/2012	SB-30-24-26-2 ft	Grab	Atterberg limits, moisture content, in place density, UU triaxial, hydraulic conductivity
SB-32	9/25/2014	SB-32-18-20-2 ft	Grab	Atterberg limits, moisture content, in place density, UU triaxial
SB-31	9/24/2014	SB-31-72-74-0.9 ft	Grab	Atterberg limits, specific gravity, moisture content, in place density, consolidation, consolidated undrained pore pressure
SB-28	9/26/2014	SB-28-34-36-1 ft	Grab	Atterberg limits, specific gravity, moisture content, in place density, consolidation, consolidated undrained pore pressure
	9/26/2014	SB-28-38-38.5-0.5 ft	Grab	Atterberg limits, moisture content, in place density, UU triaxial
	9/26/2014	SB-28-42-42.5-0.5 ft	Grab	Atterberg limits, specific gravity, moisture content, in place density, UU triaxial

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Table 2-2: Summary of OU-2 Field Program

Sediment Core Detail			Sample Detail			
Transect	Location ID Number	Depth (ft. bgs)	Analytical Group: TAL Metals + Hg	Analytical Group: TOC	Analytical Group: Geotechnical	QA/QC Samples
0	SD-00-1	0'-1'	X			
150	SD-150-1	0'-1'	X			
	SD-150-2	0'-1'	X	X	X	
300	SD-300-1	0'-1'	X			
	SD-300-2	0'-1'	X			
450	SD-450-1	0'-1'	X			
	SD-450-2	0'-1'	X			
	SD-450-3	0'-1'	X	X	X	
600	SD-600-1	0'-0.5'	X			
	SD-600-2	0'-2'	X			
		2'-3'				
	SD-600-3	0'-2'	X			
	SD-600-4	0'-2'	X	X	X	
		2'-3'	X	X		
	SD-600-5	0'-2'	X			
		2'-4'	X			
		4-'5'				
750	SD-750-1	0'-1'	X	X	X	
	SD-750-2	0'-1'	X			
		1'-2'	X			
900	SD-900-1	0'-1'	X	X	X	MS/MSD/ DUP-100214-1
	SD-900-2	0'-1'	X			
	SD-900-3	0'-2'	X			
		2'-3'	X			
1050	SD-1050-1	0'-0.5'	X	X		
	SD-1050-2	0'-1'	X	X	X	
	SD-1050-3	0'-2'			X	
1200	SD-1200-1	0'-1'	X	X	X	
	SD-1200-2	0'-0.75'	X	X	X	
1350	SD-1350-1	0'-2'	X	X	X	
	SD-1350-2	0'-1.5'	X	X		
	SD-1350-3	0'-2'			X	
1500	SD-1500-1	0'-2'	X			
	SD-1500-2	0'-1.75'	X			
	SD-1500-2	1.75'-2'	X			
1650	SD-1650-1	0'-3.5'	X	X	X	
	SD-1650-2	0'-1.9'	X			
		1.9'-2'	X			
1800	SD-1800-1	0'-2.5'	X	X	X	DUP-100214-2
		2.5'-4'	X	X		
1950	SD-1950-1	0'-2'			X	

Table 2-2: Summary of OU-2 Field Program

Sediment Core Detail			Sample Detail			
Transect	Location ID Number	Depth (ft. bgs)	Analytical Group			QA/QC Samples
			TAL Metals + Hg	TOC	Geotechnical	
2250	SD-2250-1	0'-.5'	X	X	X	
2400	SD-2400-1	0'-0.5'	X	X	X	
2700	SD-2700-1	0'-1'	X			MS/MSD
3150	SD-3150-1	0'-0.8'	X			DUP-100214-3
	SD-3150-2	0'-0.5'	X	X	X	
3450	SD-3450-1	0'-1'	X			
	SD-3450-2	0'-2'	X		X	
		2'-4'	X			
	SD-3450-3	0'-1'	X		X	
3750	SD-3750-1	0'-1'	X			
		1'-1.5'	X			
	SD-3750-2	0'-1'	X		X	
	SD-3750-3	0'-0.5'	X			
3900	SD-3900-1	0'-0.3'	X			MS/MSD
	SD-3900-2	0'-1.5'	X		X	
	SD-3900-3	0'-0.5'	X		X	
4050	SD-4050-1	0'-0.1'	X			
		0.1'-0.5'	X			
	SD-4050-2	0'-1.5'	X	X		
		1.5'-3.5'	X	X	X	
		3.5'-4'	X	X		
	SD-4050-3	0'-0.5'	X			
4200	SD-4200-1	0'-0.25'	X	X	X	MS/MSD/ DUP-100314
4350	SD-4350-1	0'-0.1'	X			

Notes:
Geotechnical analysis included Atterberg limits, grain size, specific gravity, bulk density, moisture content, relatively undisturbed density, unconsolidated undrained triaxial, consolidation, and direct shear

Table 2-3: OU-2 Sediment Thickness Results

	Sediment Thickness										Water Depth[1]									
Transect	Probe Locations from West to East Along Transect										Location									
	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
0-0000	0.08										0									
0-0150	0.08	0.33	0.83								0.17	0.02	0.02							
0-0300	1.08	0									0.21	0.25								
0-0450	1.5	0.42	0.73								0.33	0	0.02							
0-0600	4.17	2.42	2	0.25	2.17	7.2	4.5	1.5	2	6	0.42	0.08	0.08	0.42	0.17	0.67	0.5	0	0	0
0-0750	1.67	2.25	1.17	1.58	1.50	2.50	2.58				1.42	0.25	0	0	0	0	0			
0-0900	3.58	0.25	0.83	1.50	1.17						0	0	0	0	0.17					
0-1050	0.71	0.58	1.04	0.71	1.08						0	0.21	0	0	0					
0-1200	1.33	0.92	0.17	0.17							0.08	0	0	0.13						
0-1350	3.25	1.96	0.17	2.17	2.17						0.5	0	0	0.17	0					
0-1400	4.50	3.50	1.00	2.50	5.50	1.50					0.08	0.67	0.5	0.5	0.08	0				
0-1500	2.00	4.50	3.00	4.50							0.08	0.33	0.42	0						
0-1650	5.50	4.00									0	0.25								
0-1800	4.25										0.25									
0-1950	0.67										0.45									
0-2100	1.42										0.29									
0-2250	0.67										0.19									
0-2400	0.17										0.25									
0-2550	0.17										0.33									
0-2700	0.42	2.08	0.54								0.33	0	0							
0-2850	0.00										0.19									
0-3000	0.00	0.125									0.29	0								
0-3150	0.83	0.08	0.33								0	0.21	0							
0-3300	0.50	1.96	1.63	1.02	0.54						0	0.38	0.88	0	0.25					
0-3450	1.33	1.00	4.00	5.08	5.33	5.42	1.50				0	2	0	0	0	0	0.58			
0-3600	1.17	5.00	6.13	4.92	5.25	5.50	4.33	1.92			0	0.29	0	0	0	0	0.5	0		
0-3750	3.75	5.83	5.67	3.00	2.67	1.50	1.50	0.42			0	1.5	0	0	0	0	0	0.5		
0-3900	0.67	0.67	4.00	5.27	4.04	4.75	2.25				0	0.13	0	0	0.33	0	0.42			
0-4050	1.33	1.42	1.08	5.17	0.17	1.67					0.58	0.08	0.17	0	0.75	0				
0-4200	0.17										0.38									
0-4350	0.00										0.17									

1. Water depths were recorded at locations that could be accessed on foot. Deeper water existed along Gulf Creek in ponded areas and deeper sections of the channel.

Table 2-4: OU-2 Treatability Testing Sampling Summary

Sediment Core Detail		Sample Detail					
		Analytical Group					
Composite Sample ID	**Sample Location**	**TAL Metals + Hg**	**SVOCs**	**TOC, TSS and pH**	**Sequential Batch Leachate Test (SBLT)**	**Synthetic Precipitation Leaching Procedure (SPLP)**	**Bulk Physical Properties**
AOC-1 (Composite 1)	SD-150-1	X	X	X	X	X	X
	SD-150-2						
	SD-300-1						
	SD-300-2						
	SD-600-3						
	SD-600-4						
AOC-2 (Composite 2)	SD-750-1	X	X	X	X	X	X
	SD-750-2						
	SD-900-3						
	SD-1350-2						
	SD-1500-1						
AOC-3 (Composite 3)	SD-3450-1	X	X	X	X	X	X
	SD-3450-2						
	SD-3750-1						
	SD-4050-2						

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Table 3-1a: OU-1 Physical Characteristics of Soil Boring & Test Pit Results

		SB-27				SB-28														
Sieve Analysis	**UNITS**	**4-6**	**6-8**	**8-10**	**10-12**	**2-2.9**	**04-06**	**06-08**	**10-12**	**12-14**	**14-16**	**16-16.7**	**20-20.3**	**22-24**	**28-28.75**	**32-34**	**36.3-37**	**38.5-40**	**40-42**	**44-45.5**
Gravel	%	27.4	---	19	---	44.7	20	25.8	17.4	---	14.5	13.2	14	40.9	6.1	16.4	---	6.4	---	---
Sand	%	46.4	---	46.5	---	37.5	44.5	36.7	48.7	---	52.6	60.2	45.7	38.6	41.2	44.4	---	43.7	---	---
Coarse Sand	%	10	---	15.5	---	9.7	10.5	10.7	12.7	---	14.7	17.1	9.5	7.3	5.5	9.4	---	10.4	---	---
Medium Sand	%	16.7	---	14.3	---	11.1	16	13.5	16.7	---	19.6	20.6	14.8	12.5	10.2	15.7	---	21.1	---	---
Fine Sand	%	19.7	---	16.7	---	16.7	18	12.5	19.3	---	18.3	22.5	21.4	18.8	25.5	19.3	---	12.2	---	---
Silt	%	21.6	---	25.2	---	12.7	22.8	25.4	20.5	---	20.1	18.2	34.6	12.1	45	22.7	---	35	---	---
Clay	%	4.6	---	9.3	---	5.1	12.7	12.1	13.4	---	12.8	8.4	5.7	8.4	7.7	16.5	---	14.9	---	---
Atterberg Limits																				
Liquid Limit	%	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	33	---	43	30
Plastic Limit	%	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	23	---	28	21
Plasticity Index	%	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	10	---	15	9
Percent Moisture[1]	%	12.4	13.5	12.6	17.2	14.6	16.3	2.0	19.4	16.2	23.6	19.7	40.2	17.7	28.1	48.5	12.6	9.9	17.3	7.0
Percent Solids[2]	%	---	---	---	---	---	83.7	98	80.6	83.8	76.4	80.3	59.8	82.3	71.9	51.5	87.4	90.1	82.7	93
Density																				
Dry Density	g/cc	---	---	0.953	---	---	1.04	---	0.989	1.12	---	---	---	---	---	1.04	---	---	1.47	---
Hydraulic Conductivity [3]	cm/sec	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Specific Gravity	Unitless	---	---		---	2.56	---	---	---	2.69	---	---	---	2.84	2.71	---	2.78	---	2.77	2.78

[1] Analyzed using method ASTM D2216
[2] Calculated by subtracting percent moisture from 100.
[3] Analyzed using method ASTM D5084
[4] Analyzed using method ASTM D2937; Lab calculated as dry density
-- = Sample not tested for constituent

Table 3-1a: OU-1 Physical Characteristics of Soil Boring & Test Pit Results

		SB-29				SB-30											
Sieve Analysis	**UNITS**	**2-4**	**4-6**	**8-10**	**12-14**	**0-10**	**10-14**	**16-18**	**20-22**	**22-24**	**32-34**	**36-38**	**40-42**	**44-46**	**48-50**	**52-54**	**54-56**
Gravel	%	---	19.5	34.6	---	20	---	16	30.5	---	15.2	15	7.6	18.4	46.8	---	17.4
Sand	%	---	48.8	48.8	---	49.1	---	56.6	50	---	53.4	53.3	55	64.1	39.4	---	25.9
Coarse Sand	%	---	13.1	17.6	---	15.8	---	13.4	12.7	---	12.3	5.2	8.4	8.9	12.6	---	10.6
Medium Sand	%	---	18.4	15.4	---	17.6	---	19.1	15.3	---	15.7	9	9.4	11.3	11.4	---	7.8
Fine Sand	%	---	17.1	15.8	---	15.7	---	24.1	22	---	25.4	39.1	37.2	43.9	15.4	---	7.5
Silt	%	---	25.6	13.3	---	19.9	---	19.5	13.9	---	25.8	25.8	29.3	12.1	10.4	---	36.2
Clay	%	---	6.1	3.3	---	11	---	7.9	5.6	---	5.6	5.9	8.1	5.4	3.4	---	20.5
Atterberg Limits																	
Liquid Limit	%	---	---	---	39	35	---	---	---	29	---	---	---	---	---	---	---
Plastic Limit	%	---	---	---	22	25	---	---	---	20	---	---	---	---	---	---	---
Plasticity Index	%	---	---	---	17	10	---	---	---	9	---	---	---	---	---	---	---
Percent Moisture[1]	%	22.9	6.1	16.6	12.1	20.6	22.7	14.9	23.2	24.9	23	9.4	16.4	8.1	12	12.2	10.1
Percent Solids[2]	%	---	---	---	---	79.4	77.3	85.1	76.8	75.1	77	90.6	83.6	91.9	88	87.8	89.9
Density																	
Dry Density	g/cc	1.07	---	1.31	1.75	1.18	1.03	---	1.22	1.17	1.18	---	1.3	1.53	1.44	---	---
Hydraulic Conductivity [3]	cm/sec	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Specific Gravity	Unitless	---	---	---	2.82	2.59	2.61	---	2.52	---	2.76	---	---	2.84	2.85	---	2.77

[1] Analyzed using method ASTM D2216
[2] Calculated by subtracting percent moisture
[3] Analyzed using method ASTM D5084
[4] Analyzed using method ASTM D2937; La
-- = Sample not tested for constituent

Table 3-1a: OU-1 Physical Characteristics of Soil Boring & Test Pit Results

		SB-31															
Sieve Analysis	**UNITS**	**02-04**	**04-06**	**06-08**	**08-10**	**10-10.6**	**12-14**	**16-18**	**18-20**	**24-24.2**	**24.2-25**	**30-32**	**36-38**	**42-44**	**46-48**	**50-52**	**54-56**
Gravel	%	30	---	---	15.1	---	35.4	13.3	20.3	23.5	19.3	21	32	24.5	35.8	14.3	13.6
Sand	%	38.4	---	---	66.5	---	47.9	58.9	49.3	51.6	58.6	50.5	47.5	47.6	39.1	57.3	53.2
Coarse Sand	%	7.7	---	---	13.2	---	13.2	23.3	18.5	15.6	15.7	15	18.9	13.3	13.1	16.2	16
Medium Sand	%	11.9	---	---	22.7	---	14.5	18.1	14.5	16.7	21.2	16	14.9	16.5	12.4	18.6	18.6
Fine Sand	%	18.8	---	---	30.6	---	20.2	17.5	16.3	19.3	21.7	19.5	13.7	17.8	13.6	22.5	18.6
Silt	%	23.3	---	---	13.1	---	11.4	18.1	20.4	21.1	18.1	20.8	15.2	17.8	15.6	17	19.2
Clay	%	8.3	---	---	5.3	---	5.3	9.7	10	3.9	4	7.7	5.3	10.1	9.5	11.4	14
Atterberg Limits																	
Liquid Limit	%	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Plastic Limit	%	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Plasticity Index	%	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Percent Moisture[1]	%	12.8	15.7	14.8	10.9	13	10.6	27.5	32.8	9.6	15	21.7	20.5	39.3	34	24.9	34.2
Percent Solids[2]	%	87.2	84.3	85.2	89.1	87	89.4	72.5	67.2	90.4	85	78.3	79.5	60.7	66	75.1	65.8
Density																	
Dry Density	g/cc	1.16	1.18	---	1.4	1.28	---	0.954	---	---	---	1.31	1.41	1.17	0.979	---	0.832
Hydraulic Conductivity [3]	cm/sec	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Specific Gravity	Unitless	---	2.75	---	---	2.72	---	2.54	---	---	---	2.58	---	2.56	---	---	2.51

[1] Analyzed using method ASTM D2216
[2] Calculated by subtracting percent moisture
[3] Analyzed using method ASTM D5084
[4] Analyzed using method ASTM D2937; La
-- = Sample not tested for constituent

Table 3-1a: OU-1 Physical Characteristics of Soil Boring & Test Pit Results

		SB-32																	
Sieve Analysis	**UNITS**	**0.25-0.8**	**04-06**	**08-10**	**12-14**	**16-18**	**20-22**	**24-26**	**28-30**	**30-32**	**32-34**	**36-38**	**40-42**	**42-44**	**46-48**	**52-54**	**54-56**	**56-58**	**62-63.3**
Gravel	%	17.2	31.4	14.8	52.4	15.1	17	24	31	19.9	27.2	16.7	29	26.4	28.6	32.9	---	26.2	---
Sand	%	66.1	48.1	64.5	35.5	67.1	56.8	50.9	50.1	61.6	47.8	60.1	49.3	52.2	46.9	52.3	---	57.3	---
Coarse Sand	%	7.7	13.3	6.8	6.9	28.1	15.5	13.7	20	24.3	13.1	14.6	12.6	14	15.3	12	---	20.2	---
Medium Sand	%	9.9	15.7	13.3	8.1	25.4	21.4	20.7	15.1	19.7	16.7	23.3	14.6	16.2	15.3	19.4	---	19.6	---
Fine Sand	%	48.5	19.1	44.4	20.5	13.6	19.9	16.5	15	17.6	18	22.2	22.1	22	16.3	20.9	---	17.5	---
Silt	%	11.2	14	13.7	7.7	14.2	18.9	16.8	12.3	12	16.7	17.3	15.9	16.3	17.7	12	---	11.8	---
Clay	%	5.5	6.5	7.0	4.4	3.6	7.3	8.3	6.6	6.5	8.3	5.9	5.8	5.1	6.8	2.8	---	4.7	---
Atterberg Limits																			
Liquid Limit	%	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	42
Plastic Limit	%	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	24
Plasticity Index	%	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	18
Percent Moisture[1]	%	8.8	27.7	17.7	17.7	8.9	24.5	22	12.2	14	22.6	19	13.5	18.8	25.4	11.7	15.5	19.4	15.2
Percent Solids[2]	%	---	72.3	82.3	82.3	91.1	75.5	78	87.8	86	77.4	81	86.5	81.2	74.6	88.3	---	---	---
Density																			
Dry Density	g/cc	1.4	1.15	1.34	1.25	---	0.928	0.997	---	---	1.02	0.992	1.42	1.15	0.992	1.47	1.07	1.4	1.56
Hydraulic Conductivity [3]	cm/sec	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Specific Gravity	Unitless	---	2.79	2.71	---	---	---	2.61	---	---	---	---	---	---	---	---	---	---	2.78

[1] Analyzed using method ASTM D2216
[2] Calculated by subtracting percent moisture
[3] Analyzed using method ASTM D5084
[4] Analyzed using method ASTM D2937; La
-- = Sample not tested for constituent

Table 3-1a: OU-1 Physical Characteristics of Soil Boring & Test Pit Results

		SB-33		SB-34														
Sieve Analysis	**UNITS**	**2-4**	**4-4.7**	**2-4**	**6-8**	**10-12**	**12-14**	**16-18**	**22-24**	**26-28**	**30-32**	**32-34**	**36-38**	**40-42**	**44-46**	**48-48.5**	**54-56**	**58-60**
Gravel	%	30.6	---	58.3	30.1	---	37.3	19.9	19.1	24.8	41.5	---	---	18.2	26.7	11.8	19.8	25
Sand	%	27.2	---	22.2	38.8	---	47.2	50.3	53.8	45.3	43.5	---	---	52.2	49	63.4	51.4	47.6
Coarse Sand	%	13.5	---	8.3	14.6	---	21	14.6	19.7	14.4	16.8	---	---	16.4	15.1	17.4	17.2	12.8
Medium Sand	%	0	---	6.5	12.5	---	16.2	17.6	17.4	15.5	15	---	---	17.4	16.5	22.4	17.5	16.5
Fine Sand	%	13.7	---	7.4	11.7	---	10	18.1	16.7	15.4	11.9	---	---	18.4	17.4	23.6	16.7	18.3
Silt	%	35.7	---	13.9	24.6	---	8.8	20.2	16.1	19.2	10.5	---	---	20.5	16.1	18.4	19.3	20.6
Clay	%	6.5	---	5.7	6.5	---	6.7	9.6	11	10.7	4.3	---	---	9.1	8.2	6.4	9.5	6.8
Atterberg Limits																		
Liquid Limit	%	---	32	---	---	27	---	---	---	---	---	---	---	---	---	---	---	---
Plastic Limit	%	---	21	---	---	19	---	---	---	---	---	---	---	---	---	---	---	---
Plasticity Index	%	---	11	---	---	8	---	---	---	---	---	---	---	---	---	---	---	---
Percent Moisture[1]	%	5.7	7.7	10.1	24.3	13.5	16.3	27.3	29.8	26	17.9	22.4	30.8	28.5	37	17.1	33.6	21.7
Percent Solids[2]	%	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	65.9	78.3
Density																		
Dry Density	g/cc	1.5	---	1.24	---	---	---	1.12	---	1.11	---	---	---	0.971	---	1.32	1.11	1.51
Hydraulic Conductivity [3]	cm/sec	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Specific Gravity	Unitless	---	---	---	---	2.7	---	2.55	---	2.5	---	---	---	---	---	---	---	---

[1] Analyzed using method ASTM D2216
[2] Calculated by subtracting percent moisture
[3] Analyzed using method ASTM D5084
[4] Analyzed using method ASTM D2937; La
-- = Sample not tested for constituent

Table 3-1a: OU-1 Physical Characteristics of Soil Boring & Test Pit Results

		TP-01-SWAMP		TP-02-SWAMP		TP-03-SWAMP		TP-04-SWAMP	TP-05-UPLAND	TP-05-UPLAND-2	TP-06-UPLAND	TP-07-UPLAND
Sieve Analysis	**UNITS**	**2-3**	**3-4**	**0.5-1**	**1-3**	**0.5-3**	**3-6**	**3-6**	**NA**	**NA**	**NA**	**NA**
Gravel	%	68.6	---	30	---	18.6	---	---	16.3	14	21.2	32.1
Sand	%	18.8	---	42.8	---	52.1	---	---	43	28.4	49.2	48.9
Coarse Sand	%	6.2	---	16.9	---	15.9	---	---	11.5	3.5	17.2	16.7
Medium Sand	%	4.6	---	13.9	---	13.9	---	---	13.4	7	14	14.2
Fine Sand	%	8	---	12	---	22.3	---	---	18.1	17.9	18	18
Silt	%	7.5	---	19.8	---	18.9	---	---	26.4	37.6	19.9	11.5
Clay	%	5.1	---	7.4	---	10.4	---	---	14.3	20	9.7	7.5
Atterberg Limits												
Liquid Limit	%	---	64	---	76	---	59	78	---	---	---	---
Plastic Limit	%	---	34	---	44	---	39	44	---	---	---	---
Plasticity Index	%	---	29	---	32	---	21	34	---	---	---	---
Percent Moisture[1]	%	64.4	48.8	32.3	29.4	50.8	40.5	56.6	21.3	23.5	23.9	23.6
Percent Solids[2]	%	35.6	51.2	67.7	70.6	49.2	59.5	43.4	78.7	76.5	76.1	76.4
Density												
Dry Density	g/cc	0.87	---	1.41	---	0.988	---	---	1.33	1.55	0.941	0.98
Hydraulic Conductivity [3]	cm/sec	---	---	---	---	---	---	---	8.50E-06	3.20E-07	6.10E-07	4.50E-06
Specific Gravity	Unitless	---	---	---	---	---	---	---	---	---	---	---

[1] Analyzed using method ASTM D2216
[2] Calculated by subtracting percent moisture
[3] Analyzed using method ASTM D5084
[4] Analyzed using method ASTM D2937; La
-- = Sample not tested for constituent

Table 3-1b: OU-1 Physical Characteristics of Soil - Shelby Tube Results

		SB-27	SB-28			SB-29		SB-30	SB-31				SB-32	SB-33			SB-34
Sieve Analysis	**UNITS**	**12-13.8**	**34-36**	**38-38.5**	**42-42.5**	**6-8**	**12-14**	**24-26**	**22-24**	**58-60**	**60-61**	**72-74**	**18-20**	**6-8**	**8-10**	**10-11**	**50-52**
Gravel	%	7.6	--	--	--	10.70	62.8	32.6	45.7	10.4	13	18.8	9.4	11.4	6.5	13.1	14.8
Sand	%	32.4	--	--	--	63.5	29.2	39.4	42.2	50.6	55.5	62	50.7	29	61.7	52.1	63.2
Silt & Clay	%	60	--	--	--	25.8	8	28	12.1	39	31.5	19.2	39.9	59.6	31.8	34.8	22
Atterbrerg Limits																	
Liquid Limit	%	--	70	45	44	--	--	--	--	--	--	--	--	--	34	--	--
Plastic Limit	%	--	30	25	24	--	--	--	--	--	--	--	--	--	24	--	--
Plasticity Index	%	--	40	20	20	--	--	--	--	--	--	--	--	--	10	--	--
Percent Moisture[1]	%	17	32.5	11.3	25.1	11.5	1.5	16.8	19.6	33.2	26.1	18	22	16.3	16.8	19.1	11.3
Density																	
Permeability [2]	cm/sec	--	--	--	--	0.0092	0.17	--	0.014	--	0.0049	--	--	--	--	--	0.0031
Hydraulic Conductivity [3]	cm/sec	--	--	--	--	--	--	6.10E-05	--	--	--	--	--	2.40E-06	1.50E-06	--	--
Bulk Density (as-sampled) [4]	lb/ft^3	123	119	123	128	94.6	92.5	71.7	--	76.3	86.8	108	66.3	113	111.3	90.6	95
Dry Density (prepared) [5]	lb/ft^3	105	90.55	100	99.9	93.7	91.2	61.1	--	57.3	86.5	91.6	54.3	97.1	99.1	76.1	82.4
Specific Gravity[6]	Unitless	--	2.71	2.66	2.72	--	--	--	--	--	--	--	--	2.6	2.52	--	2.69

[1] Analyzed using method ASTM D2216

[2] Analyzed using method ASTM D2434 (Contant Head)

[3] Analyzed using method ASTM D5084 (Flexible Wall Permeameter)

[4] Analyzed using method ASTM D7263

[5] Analyzed using method ASTM D2937; Lab calculated as dry density

[6] Analyzed using ASTM D854

-- = Sample not tested for constituent

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Table 3-1c: OU-1 Moisture Content Results

Sample ID	% Moisture	Sample ID	% Moisture	Sample ID	% Moisture
SB-27-0-2	11.4	SB-29- 10-10.2	19.1	SB-31-16-18	27.5
SB-27-10-12	17.2	SB-29- 12-14	12.1	SB-31-18-20	32.8
SB-27-2-4	9.5	SB-29- 2-4	22.9	SB-31-20-22	27.2
SB-27-4-6	12.4	SB-29- 4-6	6.1	SB-31-24.0-24.2	9.6
SB-27-6-8	13.5	SB-29- 8-10	16.6	SB-31-24.2-25	15
SB-27-8-10	12.6	SB-29-0.3-1.2	22.3	SB-31-26-28	15.4
SB-28-0.1-1.25	12.2	SB-29-0-0.3	17.2	SB-31-28-30	21.1
SB-28-0-0.1	34.5	SB-29-10.2-10.8	17.4	SB-31-30-32	21.7
SB-28-04-06	16.3	SB-30-0-10	20.6	SB-31-32-34	37
SB-28-06-08	2	SB-30-10-14	22.7	SB-31-34-36	23.9
SB-28-08-10	17.8	SB-30-14-16	21.9	SB-31-36-38	20.5
SB-28-10-12	19.4	SB-30-16-18	14.9	SB-31-38-40	25.3
SB-28-12-14	16.2	SB-30-18-20	16.7	SB-31-40-42	17.8
SB-28-14-16	23.6	SB-30-20-22	23.2	SB-31-42-44	39.3
SB-28-16.7-16.9	22.8	SB-30-22-24	24.9	SB-31-44-46	32.8
SB-28-16.9-17	20.9	SB-30-26-28	16	SB-31-46-48	34
SB-28-16-16.7	19.7	SB-30-28-30	16.4	SB-31-48-50	23.1
SB-28-18-20	21.5	SB-30-30-32	20.5	SB-31-50-52	24.9
SB-28-2.9-3	10.7	SB-30-32-34	23	SB-31-52-53	20.7
SB-28-20.3-20.6	25.4	SB-30-34-36	12.2	SB-31-53-53.5	21.7
SB-28-20.6-21.5	31.8	SB-30-36-38	9.4	SB-31-54-56	34.2
SB-28-20-20.3	40.2	SB-30-38-40	8.5	SB-31-56-58	33.9
SB-28-2-2.9	14.6	SB-30-40-42	16.4	SB-31-61-62	19.7
SB-28-22-24	17.7	SB-30-42-44	10.2	SB-31-62-64	23.3
SB-28-24.1-24.5	19.3	SB-30-44-46	8.1	SB-31-64.2-65.75	33.5
SB-28-24-24.1	14.4	SB-30-46-48	8.9	SB-31-64-64.2	24.2
SB-28-26.2-27.5	38.8	SB-30-48-50	12	SB-31-66-68	24.5
SB-28-26-26.2	16.9	SB-30-50-52	14.6	SB-31-68.2-68.5	28.8
SB-28-28.75-29.5	23.7	SB-30-52-54	12.2	SB-31-68-68.2	26.6
SB-28-28-28.75	28.1	SB-30-54-56	10.1	SB-31-70-72	25
SB-28-30.1-30.8	23.1	SB-31-0.1-0.8	6.5	SB-31-74-76	22.9
SB-28-30.8-31.5	44.2	SB-31-0-0.1	21.5	SB-31-76.8-77.5	22.8
SB-28-30-30.1	22.5	SB-31-02-04	12.8	SB-31-76-76.8	33.7
SB-28-32-34	48.5	SB-31-04-06	15.7	SB-32-0.25-0.8	8.8
SB-28-36-36.3	23.9	SB-31-06-08	14.8	SB-32-0.8-1.1	2.6
SB-28-36.3-37	12.6	SB-31-08-10	10.9	SB-32-0-0.25	9.8
SB-28-38.5-40	9.9	SB-31-10.6-10.8	22.1	SB-32-04-06	27.7
SB-28-40-42	17.3	SB-31-10-10.6	13	SB-32-06-08	19.6
SB-28-42.5-44	10.5	SB-31-12-14	10.6	SB-32-08-10	17.7
SB-28-44-45.5	7	SB-31-14-16	23.1	SB-32-1.1-1.25	18.9

Table 3-1c: OU-1 Moisture Content Results

Sample ID	% Moisture	Sample ID	% Moisture
SB-32-10-12	14.3	SB-34-28-30	21.6
SB-32-12-14	17.7	SB-34-30-32	17.9
SB-32-14-16	24.3	SB-34-32-34	22.4
SB-32-16-18	8.9	SB-34-34-36	27.7
SB-32-2.2-2.8	33.8	SB-34-36-38	30.8
SB-32-20-22	24.5	SB-34-38-40	34.1
SB-32-2-2.2	12.9	SB-34-40-42	28.5
SB-32-22-24	21.9	SB-34-42-44	23.1
SB-32-24-26	22	SB-34-44-46	37
SB-32-26-28	22.9	SB-34-4-6	17.6
SB-32-28-30	12.2	SB-34-46-48	29.5
SB-32-30-32	14	SB-34-48.5-49	10.9
SB-32-32-34	22.6	SB-34-48-48.5	17.1
SB-32-34-36	22	SB-34-52-54	17.8
SB-32-36-38	19	SB-34-54-56	34.1
SB-32-38-40	16.2	SB-34-56-58	33.6
SB-32-40-42	13.5	SB-34-58-60	21.7
SB-32-42-44	18.8	SB-34-6-8	24.3
SB-32-44-46	23.7	SB-34-8-10	19.3
SB-32-46-48	25.4	TP-01-SWAMP-2-3	64.4
SB-32-48-50	25.1	TP-01-SWAMP-3-4	48.8
SB-32-50-52	18	TP-02-SWAMP-0.5-1	32.3
SB-32-52-54	11.7	TP-02-SWAMP-1-3	29.4
SB-32-54-56	15.5	TP-03-SWAMP-0.5-3	50.8
SB-32-56-58	19.4	TP-03-SWAMP-0-0.5	90
SB-32-58-60	21.6	TP-03-SWAMP-3-6	40.5
SB-32-60.5-61	16.6	TP-04-SWAMP-0-3	28.6
SB-32-60-60.5	25.6	TP-04-SWAMP-3-6	56.6
SB-32-62-63.3	15.2	TP-05-UPLAND	21.3
SB-33-0-2	8	TP-05-UPLAND-2	23.5
SB-33-11-11.5	8.4	TP-06-UPLAND	23.9
SB-33-2-4	5.7	TP-07-UPLAND	23.6
SB-33-4.7-4.9	10		
SB-33-4-4.7	7.7		
SB-34-0-2	30.2		
SB-34-10-12	13.5		
SB-34-12-14	16.3		
SB-34-14-16	29.8		
SB-34-16-18	27.3		
SB-34-18-20	46.2		
SB-34-20-22	29.4		
SB-34-22-24	29.8		
SB-34-2-4	10.1		
SB-34-24-26	26.3		
SB-34-26-28	26		

Table 3-1d: OU-1 Results of Sequential Batch Leachate Testing

	Standard	Units	TP-05-UPLAND				TP-06-UPLAND				TP-07-UPLAND			
			24 hour	48 hour	72 hour	96 hour	24 hour	48 hour	72 hour	96 hour	24 hour	48 hour	72 hour	96 hour
pH	--	--	7.95	8.25	8.15	8.32	7.85	8.1	8.12	8	8.17	8.34	8.56	8.77
Total Suspended Solids	--	mg/L	2	2 U	2 U	2 U	2.8	2	2	2.4	2.8	2 U	2	3.6
Aluminum	100	µg/L	**140 J**	**140 J**	**430**	**350**	**180 J**	**110 J**	**160 J**	**330**	**79 J**	**46 J**	**100 J**	**100 J**
Antimony	3	µg/L	**17**	**32**	**45**	**53**	**16**	**23**	**30**	**33**	**44**	**85**	**110**	**91**
Arsenic	25	µg/L	10 U	10 U	10 U	10 U	10 U	**3.1 J**	**3.5 J**	**3.1 J**	10 U	10 U	10 U	10 U
Barium	1,000	µg/L	**92 J**	**120 J**	**120 J B**	**110 J B**	**94 J**	**82 J**	**87 J B**	**98 J B**	**140 J**	**170 J**	**170 J B**	**230 B**
Beryllium	3	µg/L	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
Cadmium	5	µg/L	**0.2 J**	**0.2 J**	**0.22 J B**	**0.17 J B**	**0.34 J**	**0.18 J**	**0.24 J B**	**0.33 J B**	**0.45 J**	**0.28 J**	**0.3 J B**	**0.31 J B**
Calcium	-	µg/L	**46,000**	**36,000**	**29,000**	**24,000**	**36,000**	**30,000**	**27,000**	**22,000**	**44,000**	**38,000**	**27,000**	**22,000**
Chromium	50	µg/L	5 U	**3.7 J**	**2.3 J**	5 U	**12**	**8.1**	**7.6**	**4.9 J**	**1.2 J**	**1.2 J**	5 U	**2.9 J**
Cobalt	5	µg/L	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Copper	200	µg/L	**19 J**	**14 J**	**21 J B**	**15 J B**	**19 J**	**15 J**	**19 J B**	**25 B**	**58**	**38**	**41 B**	**36 B**
Iron	300	µg/L	**56 J**	**39 J**	**190**	**80 J**	**200**	**97 J**	**150**	**310**	**35 J**	**17 J**	**17 J**	**52 J**
Lead	25	µg/L	**12**	**14**	**23**	**18**	**10**	**5.4 J**	**6.5 J**	**13**	**66**	**83**	**74**	**79**
Magnesium	35,000	µg/L	**4,300 J**	**3,200 J**	**2,600 J**	**2,200 J**	**4,000 J**	**3,200 J**	**2,800 J**	**2,400 J**	**5,700**	**5,400**	**4,300 J**	**3,700 J**
Manganese	300	µg/L	**1.9 J**	**2.1 J**	**4.3 J**	**3.8 J**	**170**	**2 J**	**2.7 J**	**4.9 J**	**5.6 J**	**5.8 J**	**3.8 J**	**4.1 J**
Mercury	0.7	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	**0.048 J**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100	µg/L	**1.3 J B**	**1.2 J B**	1 U	40 U	**2 J B**	**0.6 J B**	40 U	40 U	**11 J B**	**6.4 J B**	**3.8 J**	**9.7 J**
Potassium	-	µg/L	**12,000**	**7,800**	**5,600**	**4,200 J**	**8,700**	**6,300**	**5,100**	**3,900 J**	**4,800 J**	**4,200 J**	**3,500 J**	**3,100 J**
Selenium	10	µg/L	10 U	**2.7 J**	**2.1 J B**	**3.6 J B**	**1.9 J**	**2.7 J**	**3.9 J B**	10 U	10 U	10 U	10 U	**3.4 J B**
Silver	50	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	**0.31 J**	**0.36 J**
Sodium	20,000	µg/L	**2,200 J**	**1,200 J**	**4,500 J**	**3,700 J**	**2,400 J**	**1,200 J**	**3,000 J**	**2,500 J**	**2,200 J**	**1,500 J**	**2,300 J**	**2,200 J**
Thallium	0.5	µg/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20	20 U	20 U	20 U	20 U
Vanadium	14	µg/L	**2.1 J**	**1.2 J**	50 U	50 U	**1.4 J**	**1.7 J**	**1.4 J**	**1.9**	**2.1 J**	50 U	50 U	50 U
Zinc	2,000	µg/L	**36**	**15 J**	**29**	**15 J**	**33**	**16 J**	**19 J**	**35**	**40**	**22**	**17 J**	**13 J**
1,1'-Biphenyl	5	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
2,2'-Oxybis[1-Chloropropane]	-	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
2,4,5-Trichlorophenol	-	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
2,4,6-Trichlorophenol	-	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
2,4-Dichlorophenol	5	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
2,4-Dimethylphenol	50	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
2,4-Dinitrophenol	10	µg/L	4.8 U	4.8 U	4.8 U	4.8 U	5 U	4.8 U	5 U	4.8 U	4.8 U	4.6 U	4.8 U	4.8 U
2,4-Dinitrotoluene	5	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
2,6-Dinitrotoluene	5	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
2-Chloronaphthalene	10	µg/L	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.96 U	0.19 U	0.19 U	0.19 U	0.19 U
2-Chlorophenol	-	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
2-Methylnaphthalene	4.2	µg/L	**0.12 J**	**0.2**	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
2-Methylphenol	-	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
2-Nitroaniline	5	µg/L	4.8 U	4.8 U	4.8 U	4.8 U	5 U	4.8 U	5 U	4.8 U	4.8 U	4.6 U	4.8 U	4.8 U
2-Nitrophenol	-	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
3,3'-Dichlorobenzidine	5	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
3-Nitroaniline	5	µg/L	4.8 U	4.8 U	4.8 U	4.8 U	5 U	4.8 U	5 U	4.8 U	4.8 U	4.6 U	4.8 U	4.8 U
4,6-Dinitro-2-Methylphenol	-	µg/L	4.8 U	4.8 U	4.8 U	4.8 U	5 U	4.8 U	5 U	4.8 U	4.8 U	4.6 U	4.8 U	4.8 U
4-Bromophenyl Phenyl Ether	-	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
4-Chloro-3-Methylphenol	-	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
4-Chloroaniline	5	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
4-Chlorophenyl Phenyl Ether	-	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
4-Nitroaniline	5	µg/L	4.8 U	4.8 U	4.8 U	4.8 U	5 U	4.8 U	5 U	4.8 U	4.8 U	4.6 U	4.8 U	4.8 U
4-Nitrophenol	-	µg/L	4.8 U	4.8 U	4.8 U	4.8 U	5 U	4.8 U	5 U	4.8 U	4.8 U	4.6 U	4.8 U	4.8 U
Acenaphthene	20	µg/L	**0.27**	**0.61**	**0.54**	**0.67**	0.2 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Acenaphthylene	-	µg/L	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Acetophenone	-	µg/L	1.9 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Anthracene	50	µg/L	**0.058 J**	**0.13 J**	0.19 U	**0.07 J**	0.2 U	0.19 U	0.2 U	0.19 U	0.19 U	**0.026**	0.19 U	0.19 U
Atrazine	7.5	µg/L	1.9 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Benzaldehyde	-	µg/L	1.9 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Benzo[A]Anthracene	0.002	µg/L	0.19 U	**0.056 J**	0.19 U	**0.085 J**	0.2 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Benzo[A]Pyrene	-	µg/L	0.19 U	1.9 U	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Benzo[B]Fluoranthene	0.002	µg/L	0.19 U	1.9 U	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Benzo[G,H,I]Perylene	-	µg/L	0.19 U	1.9 U	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Benzo[K]Fluoranthene	0.002	µg/L	0.19 U	1.9 U	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Bis(2-Chloroethoxy)Methane	5	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
Bis(2-Chloroethyl)Ether	1	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
Bis(2-Ethylhexyl) Phthalate	5	µg/L	**0.6 J**	**1.5 J**	**1.5 J**	**0.6 J**	**0.45 J**	**8.6**	**1.4 J**	**0.47 J**	1.9 U	**1.4 J**	**1.1 J**	**0.45 J**
Butyl Benzyl Phthalate	50	µg/L	**0.91 J**	**1.3**	0.96 U	0.96 U	**0.92 J**	**0.22 J**	**0.28 J**	0.96 U	0.96 U	**0.43 J**	0.96 U	0.96 U
Caprolactam	-	µg/L	4.8 U	4.8 U	4.8 U	4.8 U	5 U	4.8 U	5 U	4.8 U	4.8 U	4.6 U	4.8 U	4.8 U
Carbazole	-	µg/L	**0.11 J**	**0.35 J**	**0.26 J**	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
Chrysene	0.002	µg/L	**0.19 J**	**0.069 J**	0.19 U	**0.11 J**	0.2 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Dibenz(A,H)Anthracene	-	µg/L	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Dibenzofuran	-	µg/L	0.1 U	**0.21 J**	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
Diethyl Phthalate	50	µg/L	**0.37 J**	**0.34 J**	0.96 U	**0.41 J**	1 U	0.96 U	1 U	**0.81 J**	0.96 U	0.93 U	0.96 U	**0.55 J**
Dimethyl Phthalate	50	µg/L	**25**	**38**	**20**	**18**	**26**	**19**	**30**	**34**	**15**	**30**	**27**	**24**
Di-N-Butyl Phthalate	50	µg/L	**1.1**	**0.44 J**	0.96 U	0.96 U	**0.27 J**	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
Di-N-Octyl Phthalate	50	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
Fluoranthene	50	µg/L	**0.077 J**	**0.25**	**0.36**	**0.56**	0.2 U	0.19 U	0.2 U	**0.028**	0.19 U	**0.084 J**	**0.12 J**	**0.17 J**
Fluorene	50	µg/L	**0.14 J**	**0.26**	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Hexachlorobenzene	0.04	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
Hexachlorobutadiene	0.5	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
Hexachlorocyclopentadiene	5	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
Hexachloroethane	5	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
Indeno[1,2,3-CD]Pyrene	0.002	µg/L	0.19 U	0.19 U	0.19 U	**0.19**	0.2 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Isophorone	50	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
Methylphenol, 3 & 4	-	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
Naphthalene	10	µg/L	**1.0**	**0.69**	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Nitrobenzene	0.4	µg/L	1.9 U	1.9 U	1.9 U	1.9 U	2 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
N-Nitrosodi-N-Propylamine	-	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
N-Nitrosodiphenylamine	-	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
Pentachlorophenol	2	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
Phenanthrene	50	µg/L	**0.21**	**0.12 J**	**0.087 J**	**0.15 J**	0.2 U	0.19 U	0.2 U	**0.091 J**	0.19 U	**0.068 J**	0.19 U	**0.14 J**
Phenol	1	µg/L	0.96 U	0.96 U	0.96 U	0.96 U	1 U	0.96 U	1 U	0.96 U	0.96 U	0.93 U	0.96 U	0.96 U
Pyrene	50	µg/L	**0.053 J**	**0.19**	**0.23**	**0.42**	0.2 U	0.19 U	0.2 U	0.19 U	0.19 U	**0.069 J**	**0.09 J**	**0.18 J**

NOTES: Bold values represent detected concentrations.
B = Detected in the laboratory method blank.
J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).
Q = Estimated maximum possible concentration.
U = Indicates the analyte was analyzed but not detected.
-- Result not available.
All detections are boldfaced.
Concentrations exceeding NYS AWQS Class GA Groundwater Standards are shaded and bolfaced
Total PAHs concentrations were calculated by summing the individual PAHs.

Table 3-1e: OU-1 Results of Synthetic Precipitation Leaching Procedure

Analyte	Standard	Units	TP-05 SPLP	TP-06 SPLP	TP-07 SPLP
pH	--	--	8.07 H	9.04 H	9.21 H
Total Suspended Solids	--	mg/L	2 U	2	2 U
Aluminum	100	µg/L	**190 J**	**220**	**200**
Antimony	3	µg/L	10 U	10 U	**3.3 J**
Arsenic	25	µg/L	10 U	10 U	10 U
Barium	1,000	µg/L	**32 J B**	**13 J B**	**120 J B**
Beryllium	3	µg/L	4 U	4 U	4 U
Cadmium	5	µg/L	**0.24 J B**	**0.2 J B**	**0.51 J B**
Calcium	-	µg/L	**18,000 B**	**11,000 B**	**14,000 B**
Chromium	50	µg/L	**1.2 J**	**4.5 J**	**3.4 J**
Cobalt	5	µg/L	50 U	50 U	50 U
Copper	200	µg/L	**11 J**	**5.9 J**	**64**
Iron	300	µg/L	**270 B**	**140 B**	**210 B**
Lead	25	µg/L	**18**	**8 J**	**35**
Magnesium	35,000	µg/L	**1,200 J B**	**920 J B**	**840 J B**
Manganese	300	µg/L	**3.3 J B**	**5.4 J B**	**4.6 J B**
Mercury	0.7	µg/L	0.2 U	0.2 U	0.2 U
Nickel	100	µg/L	**1.4 J B**	**0.81 J B**	**4.6 J B**
Potassium	-	µg/L	**3,200 J**	**1,600 J**	**1,000 J**
Selenium	10	µg/L	**3.2 J**	**3.7 J**	10 U
Silver	50	µg/L	**0.45 J B**	**0.28 J B**	**0.97 J B**
Sodium	20,000	µg/L	**1,200 J B**	**6,400 B**	**5,800 B**
Thallium	0.5	µg/L	20 U	20 U	20 U
Vanadium	14	µg/L	50 U	**3.6 J B**	50 U
Zinc	2,000	µg/L	**13 J**	**14 J**	**69**
1,1'-Biphenyl	5	µg/L	0.96 U	1 U	0.96 U
2,2'-Oxybis[1-Chloropropane]	-	µg/L	0.96 U	1 U	0.96 U
2,4,5-Trichlorophenol	-	µg/L	0.96 U	1 U	0.96 U
2,4,6-Trichlorophenol	-	µg/L	0.96 U	1 U	0.96 U
2,4-Dichlorophenol	5	µg/L	0.96 U	1 U	0.96 U
2,4-Dimethylphenol	50	µg/L	0.96 U	1 U	0.96 U
2,4-Dinitrophenol	10	µg/L	4.8 U	5 U	4.8 U
2,4-Dinitrotoluene	5	µg/L	0.96 U	1 U	0.96 U
2,6-Dinitrotoluene	5	µg/L	0.96 U	1 U	0.96 U
2-Chloronaphthalene	10	µg/L	0.19 U	0.2 U	0.19 U
2-Chlorophenol	-	µg/L	0.96 U	1 U	0.96 U
2-Methylnaphthalene	4.2	µg/L	0.19 U	**0.064**	0.19 U
2-Methylphenol	-	µg/L	0.96 U	1 U	0.96 U
2-Nitroaniline	5	µg/L	4.8 U	5 U	4.8 U
2-Nitrophenol	-	µg/L	0.96 U	1 U	0.96 U
3,3'-Dichlorobenzidine	5	µg/L	0.96 U	1 U	0.96 U
3-Nitroaniline	5	µg/L	4.8 U	5 U	4.8 U
4,6-Dinitro-2-Methylphenol	-	µg/L	4.8 U	5 U	4.8 U
4-Bromophenyl Phenyl Ether	-	µg/L	0.96 U	1 U	0.96 U
4-Chloro-3-Methylphenol	-	µg/L	0.96 U	1 U	0.96 U
4-Chloroaniline	5	µg/L	0.96 U	1 U	0.96 U
4-Chlorophenyl Phenyl Ether	-	µg/L	0.96 U	1 U	0.96 U
4-Nitroaniline	5	µg/L	4.8 U	5 U	4.8 U
4-Nitrophenol	-	µg/L	4.8 U	5 U	4.8 U
Acenaphthene	20	µg/L	0.19 U	0.035 J	0.19 U
Acenaphthylene	-	µg/L	0.19 U	0.03 J	0.19 U
Acetophenone	-	µg/L	1.9 U	2 U	1.9 U
Anthracene	50	µg/L	0.19 U	0.2 U	0.19 U
Atrazine	7.5	µg/L	1.9 U	2 U	1.9 U
Benzaldehyde	-	µg/L	1.9 U	2 U	1.9 U
Benzo[A]Anthracene	0.002	µg/L	0.19 U	0.2 U	0.19 U
Benzo[A]Pyrene	-	µg/L	0.19 U	0.2 U	0.19 U
Benzo[B]Fluoranthene	0.002	µg/L	0.19 U	0.2 U	0.19 U
Benzo[G,H,I]Perylene	-	µg/L	0.19 U	0.2 U	0.19 U
Benzo[K]Fluoranthene	0.002	µg/L	0.19 U	0.2 U	0.19 U
Bis(2-Chloroethoxy)Methane	5	µg/L	0.96 U	1 U	0.96 U
Bis(2-Chloroethyl)Ether	1	µg/L	0.96 U	1 U	0.96 U
Bis(2-Ethylhexyl) Phthalate	5	µg/L	**9.9**	**2.7**	**1 J**
Butyl Benzyl Phthalate	50	µg/L	**6.0**	**0.3 J**	**0.91 J**
Caprolactam	-	µg/L	4.8 U	5 U	4.8 U
Carbazole	-	µg/L	0.96 U	0.079 J	0.96 U
Chrysene	0.002	µg/L	0.19 U	0.2 U	0.19 U
Dibenz(A,H)Anthracene	-	µg/L	0.19 U	0.2 U	0.19 U
Dibenzofuran	-	µg/L	0.96 U	1 U	0.96 U
Diethyl Phthalate	50	µg/L	0.96 U	1 U	0.96 U
Dimethyl Phthalate	50	µg/L	0.96 U	1 U	0.96 U
Di-N-Butyl Phthalate	50	µg/L	0.96 U	1 U	0.96 U
Di-N-Octyl Phthalate	50	µg/L	0.96 U	1 U	0.96 U
Fluoranthene	50	µg/L	**0.085 J**	**0.1 J**	0.19 U
Fluorene	50	µg/L	0.19 U	0.074 J	0.19 U
Hexachlorobenzene	0.04	µg/L	0.96 U	1 U	0.96 U
Hexachlorobutadiene	0.5	µg/L	0.96 U	1 U	0.96 U
Hexachlorocyclopentadiene	5	µg/L	0.96 U	1 U	0.96 U
Hexachloroethane	5	µg/L	0.96 U	1 U	0.96 U
Indeno[1,2,3-CD]Pyrene	0.002	µg/L	0.19 U	0.2 U	0.19 U
Isophorone	50	µg/L	0.96 U	1 U	0.96 U
Methylphenol, 3 & 4	-	µg/L	0.96 U	1 U	0.96 U
Naphthalene	10	µg/L	0.19 U	**0.13 J**	0.19 U
Nitrobenzene	0.4	µg/L	1.9 U	2 U	1.9 U
N-Nitrosodi-N-Propylamine	-	µg/L	0.96 U	1 U	0.96 U
N-Nitrosodiphenylamine	-	µg/L	0.96 U	1 U	0.96 U
Pentachlorophenol	2	µg/L	0.96 U	1 U	0.96 U
Phenanthrene	50	µg/L	**0.06 J**	**0.25**	0.19 U
Phenol	1	µg/L	0.96 U	1 U	0.96 U
Pyrene	50	µg/L	**0.069 J**	**0.062 J**	0.19 U

NOTES: Bold values represent detected concentrations.
B = Detected in the laboratory method blank.
J = Compound was detected, but result is below the reporting limit and greater than or equal to the me
Q = Estimated maximum possible concentration.
U = Indicates the analyte was analyzed but not detected.
-- Result not available.
All detections are boldfaced.
Concentrations exceeding NYS AWQS Standards are shaded and bolfaced
Total PAHs concentrations were calculated by summing the individual PAHs.

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Table 3-2a: OU-2 Chemical Results

	CLIENT ID:	Lowest Effects Level (LEL)[1]	Severe Effects Level (SEL)[1]	SD-00-1-0-1	SD-150-1-0-1	SD-150-2-0-1	SD-300-1-0-1	SD-300-2-0-1	SD-450-1-0-1	SD-450-2-0-1	SD-450-3-0-1	SD-600-1-0-0.5	SD-600-2-0-2	SD-600-2-2-3
	LAB ID:			AC81261-001	AC81261-002	AC81261-003	AC81261-004	AC81261-005	AC81261-006	AC81261-007	AC81261-008	AC81261-009	AC81261-010	AC81261-065
	COLLECTION DATE:			10/1/2014	10/1/2014	10/1/2014	10/1/2014	10/1/2014	10/1/2014	10/1/2014	10/1/2014	10/1/2014	10/1/2014	10/3/2014
	SAMPLE MATRIX:			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
	SAMPLE UNITS:	mg/kg	mg/kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Metals by EPA Methods 6010, 6020, and 7471A														
7429-90-5	Aluminum	---	---	24,000	23,000	19,000	17,000	12,000	18,000	9,200	42,000	14,000	6,900	13,000
7440-36-0	Antimony	2.0	25	(<1.2 UJ)	(<1.5 UJ)	**4.6 J**	**5.3 J**	**3.5 J**	(<2.1 UJ)	**2.4 J**	(<1.7 UJ)	(<1.4 UJ)	(<1.9 UJ)	(<1.4 U)
7440-38-2	Arsenic	6.0	33	12	31	84	45	24	(<10 U)	(<7.5 U)	**17**	**15**	**16**	**13 J**
7440-39-3	Barium	---	---	290	270	1,400	730	3,800	80	440	290	140	190	190 J
7440-41-7	Beryllium	---	---	1.2	0.56	1.4	0.3	0.66	(<0.51 U)	(<0.38 U)	(<0.43 U)	0.83	(<0.48 U)	1.1 J
7440-43-9	Cadmium	0.60	9.0	**2.4 J**	**3.5**	**22**	**15**	**21**	**4**	**9.6**	**3.9**	**2.3**	**16**	**4.8**
7440-70-2	Calcium	---	---	13,000	60000 J	130000 J	63000 J	84000 J	38000 J	31000 J	110000 J	100000 J	72000 J	28000 J
7440-47-3	Chromium	26	110	38	**90**	**130**	**360**	**4,400**	**52**	**560**	**100**	**110**	**68**	**56**
7440-48-4	Cobalt	---	---	21	14	20	56	18	(<6.4 U)	6.6	9.8	8.7	9.2	11 J
7440-50-8	Copper	16	110	**60**	**410**	**1,700**	**2,500**	**20,000**	**530**	**1,100**	**1,600**	**390**	**320**	**260**
7439-89-6	Iron	20,000	40,000	**50,000**	**150,000**	**150,000**	**1,200,000**	**98,000**	13,000	**37,000**	**37,000**	**33,000**	**52,000**	**30,000**
7439-92-1	Lead	31	110	**170**	**1,100**	**3,800**	**11,000**	**45,000**	**610**	**1,900**	**3,500**	**1,200**	**710**	**240 J**
7439-95-4	Magnesium	---	---	6,900	13,000	8,600	9,500	15,000	8,900	5,900	19,000	19,000	9,400	12,000
7439-96-5	Manganese	460	1,100	**3,800**	**900**	**700**	**4,800**	**1,100**	320	230	370	**530**	**610**	**1000 J**
7439-97-6	Mercury	0.15	1.3	**0.23**	**0.47**	**3.1**	**0.24**	**2.4**	**1.6**	**1.1**	**1.3**	**1.2**	**0.64**	**0.76**
7440-02-0	Nickel	16	50	**47 J**	**120 J**	**180 J**	**330 J**	**2,500 J**	**41 J**	**140 J**	**110 J**	**58 J**	**96 J**	**35 J**
7440-09-7	Potassium	---	---	3,100 J	3,200 J	1,800 J	990 J	1,700 J	(<1300 U)	(<940 U)	8500 J	2300 J	1300 J	2,900
7782-49-2	Selenium	---	---	(<3.1 U)	(<3.7 U)	8.3	(<2.9 U)	(<3.8 U)	(<5.1 U)	(<3.8 U)	(<4.3 U)	6.3	(<4.8 U)	4.8
7440-22-4	Silver	1.0	2.2	(<0.31 U)	**2.7**	**15**	**5.7**	**3.5**	**2.2**	**2.7**	**2.3**	**2.7**	**1.5**	**1.6**
7440-23-5	Sodium	---	---	(<380 U)	840	2,000	950	940	710	780	1,500	(<450 U)	(<600 U)	(<440 U)
7440-28-0	Thallium	---	---	(<2.3 U)	(<2.8 U)	(<4.8 U)	(<8.7 U)	(<2.9 U)	(<3.8 U)	(<2.8 U)	(<3.3 U)	(<2.7 U)	(<3.6 U)	(<2.6 U)
7440-62-2	Vanadium	---	---	52	32	86	92	27	(<26 U)	(<19 U)	37	29	(<24 U)	24 J
7440-66-6	Zinc	120	270	**690**	**2,000**	**5,800**	**4,800**	**35,000**	**1,200**	**17,000**	**3,500**	**1,900**	**2,800**	**2,900 J**
Wet Chemistry by Lloyd Kahn and EPA Method SM2540G														
TOC	Total Organic Carbon	NA	NA	NS	NS	150,000	NS	NS	NS	NS	63,000	NS	NS	NS
PERSOL	% Solids	NA	NA	65%	54%	31%	69%	52%	39%	53%	46%	56%	42%	57%

[1] NYSDEC Technical Guidance for Screening Contaminated Sediments. January 1999.

"---" = no criteria available

NA = not applicable

NS = not sampled

Value = bold value exceeds LEL

Value (shaded) = bold and shaded value exceeds SEL

Table 3-2a: OU-2 Chemical Results

CLIENT ID:		Lowest Effects Level (LEL)[1]	Severe Effects Level (SEL)[1]	SD-600-3-0-2	SD-600-4-0-2	SD-600-4-2-3	SD-600-5-0-2	SD-600-5-2-4	SD-600-5-4-5	SD-750-1-0-1	SD-750-2-0-1	SD-750-2-1-2	SD-900-1-0-1	SD-900-1-0-1 MS
LAB ID:				AC81261-011	AC81261-012	AC81261-013	AC81261-014	AC81261-015	AC81261-016	AC81261-017	AC81261-018	AC81261-019	AC81261-020	AC81261-021
COLLECTION DATE:				10/1/2014	10/1/2014	10/1/2014	10/1/2014	10/1/2014	10/1/2014	10/2/2014	10/2/2014	10/2/2014	10/2/2014	10/2/2014
SAMPLE MATRIX:				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
SAMPLE UNITS:		mg/kg	mg/kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Metals by EPA Methods 6010, 6020, and 7471A														
7429-90-5	Aluminum	---	---	19,000	10,000	14,000	6,100	10,000	22,000	15,000	7,000	8,400	16,000	20,000
7440-36-0	Antimony	2.0	25	**5.8 J**	(<1.7 UJ)	**3.1 J**	(<1.2 UJ)	(<1.3 UJ)	(<1.1 UJ)	(<1.9 UJ)	(<1.7 UJ)	**2.2 J**	(<1.6 U)	(<1.5 U)
7440-38-2	Arsenic	6.0	33	**25**	**12**	**30**	**14**	**27**	**23**	(<9.5 U)	**21**	**24**	**19**	100
7440-39-3	Barium	---	---	1,800	150	1,400	110	130	270	370	330	490	130 J	240
7440-41-7	Beryllium	---	---	0.77	0.64	0.65	0.41	0.38	1.8	0.62	0.49	0.47	(<1.6 U)	91
7440-43-9	Cadmium	0.60	9.0	**20**	**12**	**22**	**1.6**	**4.3**	**2.7**	**7.4**	**8.9**	**12**	**1.2**	**97**
7440-70-2	Calcium	---	---	72000 J	160000 J	58000 J	240000 J	220000 J	10000 J	52000 J	110000 J	72000 J	12000 J	22,000
7440-47-3	Chromium	26	110	**930**	**48**	**210**	**47**	**100**	**33**	**1,400**	**63**	**120**	**45**	**140**
7440-48-4	Cobalt	---	---	20	6.4	18	8.2	14	18	6.7	(<5.4 U)	7	14 J	100
7440-50-8	Copper	16	110	**1,900**	**570**	**3,600**	**69**	**190**	**78**	**260**	**570**	**1,900**	**64**	**160**
7439-89-6	Iron	20,000	40,000	**78,000**	**22,000**	**60,000**	**22,000**	**30,000**	**48,000**	**21,000**	**22,000**	**24,000**	**41,000 J**	44,000
7439-92-1	Lead	31	110	**5,500**	**1,000**	**14,000**	**210**	**930**	**120**	**660**	**880**	**5,400**	**150**	**250**
7439-95-4	Magnesium	---	---	17,000	43,000	17,000	86,000	93,000	6,300	6,500	42,000	22,000	4,200	14,000
7439-96-5	Manganese	460	1,100	**940**	**860**	**780**	**1,200**	**930**	**930**	**620**	**480**	330	**2,200 J**	3000
7439-97-6	Mercury	0.15	1.3	**2.4**	**0.53**	**4.8**	**0.33**	**0.77**	**0.38**	**0.94**	**1.1**	**2.9**	**0.25**	3.7
7440-02-0	Nickel	16	50	**220 J**	**50 J**	**190 J**	**41 J**	**110 J**	**67 J**	**58 J**	**130 J**	**140 J**	**36**	130
7440-09-7	Potassium	---	---	2200 J	2000 J	1500 J	2200 J	2100 J	3100 J	2600 J	1500 J	1200 J	2200 J	11,000
7782-49-2	Selenium	---	---	4.9	5.6	(<3.4 U)	(<3.1 U)	(<3.2 U)	4.4	(<4.8 U)	4.8	5	(<4.1 U)	98
7440-22-4	Silver	1.0	2.2	**11**	**3.8**	**26**	(<0.31 U)	0.81	0.87	**2.1**	**4.6**	**16**	(<0.41 U)	19
7440-23-5	Sodium	---	---	1,800	1,000	1,300	460	610	810	770	1,300	1,300	570 J	9,600
7440-28-0	Thallium	---	---	(<2.6 U)	(<3.3 U)	(<2.5 U)	(<2.3 U)	(<2.4 U)	(<2.1 U)	(<3.6 U)	(<3.3 U)	(<3.5 U)	(<3.1 U)	78
7440-62-2	Vanadium	---	---	40	(<22 U)	37	23	38	35	(<24 U)	(<22 U)	(<23 U)	26	110
7440-66-6	Zinc	120	270	**12,000**	**2,000**	**5,500**	**590**	**1,400**	**980**	**2,800**	**2,800**	**2,800**	**670 J**	**960**
Wet Chemistry by Lloyd Kahn and EPA Method SM2540G														
TOC	Total Organic Carbon	NA	NA	NS	96,000	100,000	NS	NS	NS	77,000	NS	NS	30,000	100,000
PERSOL	% Solids	NA	NA	57%	46%	59%	64%	62%	70%	42%	46%	43%	49% J	52%

[1] NYSDEC Technical Guidance for Screening Contaminated Sedime

"---" = no criteria available

NA = not applicable

NS = not sampled

Value = bold value exceeds LEL

Value = bold and shaded value exceeds SEL

Table 3-2a: OU-2 Chemical Results

	CLIENT ID: LAB ID: COLLECTION DATE: SAMPLE MATRIX: SAMPLE UNITS:	Lowest Effects Level (LEL)[1] mg/kg	Severe Effects Level (SEL)[1] mg/kg	SD-900-1-0-1 MSD AC81261-022 10/2/2014 Soil mg/Kg	SD-900-2-0-1 AC81261-023 10/2/2014 Soil mg/Kg	DUP-100214-1 AC81261-024 10/2/2014 Soil mg/Kg	SD-900-3-0-2 AC81261-025 10/2/2014 Soil mg/Kg	SD-900-3-2-3 AC81261-026 10/2/2014 Soil mg/Kg	SD-1050-1-0-0.5 AC81261-027 10/2/2014 Soil mg/Kg	SD-1050-2-0-1 AC81261-028 10/2/2014 Soil mg/Kg	SD-1200-1-0-1 AC81261-029 10/2/2014 Soil mg/Kg	SD-1200-2-0-0.75 AC81261-030 10/2/2014 Soil mg/Kg	SD-1350-1-0-2 AC81261-031 10/2/2014 Soil mg/Kg
Metals by EPA Methods 6010, 6020, and 7471A													
7429-90-5	Aluminum	---	---	25,000	12,000	20,000	14,000	15,000	13,000	8,700	8,600	14,000	4,800
7440-36-0	Antimony	2.0	25	(<1.3 U)	(<1.1 U)	(<1.6 U)	(<1.7 U)	(<1.7 U)	(<1.4 U)	(<1.6 U)	(<1.8 U)	(<1.3 U)	(<1.8 U)
7440-38-2	Arsenic	6.0	33	94	**20**	**21**	**19 J**	**8.3**	**14**	**14**	**95**	**13**	(<9.1 U)
7440-39-3	Barium	---	---	220	130 J	170	270 J	320 J	120 J	190 J	120 J	110 J	71 J
7440-41-7	Beryllium	---	---	66	1.3	2	0.59	0.73	1.7	0.55	0.52	1.4	0.74
7440-43-9	Cadmium	0.60	9.0	**78**	**1.6**	**2.2**	**11**	**18**	**3**	**13**	**15**	**1.4**	**11**
7440-70-2	Calcium	---	---	15,000	12000 J	16,000	180000 J	69000 J	13000 J	150000 J	65000 J	120000 J	77000 J
7440-47-3	Chromium	26	110	**100**	**27**	**55**	**200**	**120**	22	**98**	**340**	**26**	**33**
7440-48-4	Cobalt	---	---	92	16 J	16	9 J	8.3 J	16 J	5.7 J	10 J	10 J	(<5.7 U)
7440-50-8	Copper	16	110	**130**	**71**	**89**	**890**	**1,000**	**220**	**520**	**440**	**58**	**100**
7439-89-6	Iron	20,000	40,000	59,000	**39,000 J**	**47,000**	**33,000 J**	**29,000 J**	**35,000 J**	**24,000 J**	**22,000 J**	**29,000 J**	10,000 J
7439-92-1	Lead	31	110	**210**	**270**	**200**	**1,800**	**1,800**	**110**	**990**	**900**	**200**	**190**
7439-95-4	Magnesium	---	---	12,000	4,500	5,100	61,000	31,000 J	2,700	38,000	6,700	10,000	6,500
7439-96-5	Manganese	460	1,100	2600	**2,200 J**	**3,000**	**930 J**	**460 J**	**4,700 J**	**600 J**	**650 J**	**1,600 J**	390 J
7439-97-6	Mercury	0.15	1.3	3.2	**0.47**	**0.6**	**3.3**	**1.9**	**1**	**1.3**	**1.4**	**0.18**	**0.63**
7440-02-0	Nickel	16	50	110	**33**	**46**	**92**	**76**	**36**	**68**	**99**	**35**	**23**
7440-09-7	Potassium	---	---	10,000	2000 J	2,700	2000 J	2400 J	2100 J	1600 J	1900 J	3200 J	1200 J
7782-49-2	Selenium	---	---	76	3.5	6.6	4.7	(<4.2 U)	7.2	6.8	24	5.2	15
7440-22-4	Silver	1.0	2.2	15	0.9	0.78	**5.1**	**7.5**	0.72	**3.9**	**1.5**	0.92	**1.7**
7440-23-5	Sodium	---	---	7,900	(<340 U)	630	1500 J	1,300	430 J	970 J	600 J	730 J	570 J
7440-28-0	Thallium	---	---	62	(<2 U)	(<2.9 U)	(<3.2 U)	(<3.1 U)	(<2.6 U)	(<3 U)	(<3.3 U)	(<2.4 U)	(<3.4 U)
7440-62-2	Vanadium	---	---	100	20	31	36	27	21	20	(<22 U)	18	(<23 U)
7440-66-6	Zinc	120	270	**420**	**450 J**	**990**	**2,800**	**4,300 J**	**530 J**	**2,200 J**	**6,500 J**	**270 J**	**980 J**
Wet Chemistry by Lloyd Kahn and EPA Method SM2540G													
TOC	Total Organic Carbon	NA	NA	65,000	NS	NS	NS	NS	43,000	98,000	92,000	42,000	42,000
PERSOL	% Solids	NA	NA	60%	74%	51%	47%	48%	58%	50%	45%	63%	44%

[1] NYSDEC Technical Guidance for Screening Contaminated Sedime   clay and silt

"---" = no criteria available
NA = not applicable
NS = not sampled
Value = bold value exceeds LEL
Value = bold and shaded value exceeds SEL

Table 3-2a: OU-2 Chemical Results

	CLIENT ID:	Lowest Effects Level	Severe Effects Level	SD-1350-2-0-1.5	SD-1500-1-0-2	SD-1500-2-0-1.75	SD-1500-2-1.75-2	SD-1650-1-0-3.5	SD-1650-2-0-1.9	SD-1650-2-1.9-2	SD-1800-1-0-2.5	DUP-100214-2
	LAB ID:			AC81261-032	AC81261-034	AC81261-035	AC81261-036	AC81261-037	AC81261-038	AC81261-039	AC81261-040	AC81261-041
	COLLECTION DATE:			10/2/2014	10/2/2014	10/2/2014	10/2/2014	10/2/2014	10/2/2014	41,914	10/2/2014	10/2/2014
	SAMPLE MATRIX:	(LEL)[1]	(SEL)[1]	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
	SAMPLE UNITS:	mg/kg	mg/kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Metals by EPA Methods 6010, 6020, and 7471A												
7429-90-5	Aluminum	---	---	10,000	6,500	8,500	12,000	4,800	6,900	16,000	12000 J	20,000
7440-36-0	Antimony	2.0	25	(<1.7 U)	(<2.7 U)	(<1.9 U)	(<1.4 U)	(<1.8 U)	(<2.1 U)	(<1.5 U)	(<1.9 UJ)	(<1.8 U)
7440-38-2	Arsenic	6.0	33	**19**	(<13 U)	**21**	**13**	(<9.1 U)	**27**	**16**	**12**	**11**
7440-39-3	Barium	---	---	260 J	110 J	150 J	95 J	69 J	100 J	140 J	100 J	110 J
7440-41-7	Beryllium	---	---	0.52	(<0.67 U)	0.73	0.81	(<0.45 U)	0.69	1	0.49	0.45
7440-43-9	Cadmium	0.60	9.0	**16**	**7.4**	**12**	**1.8**	**6**	**14**	**1**	**8.1**	**6.1**
7440-70-2	Calcium	---	---	140000 J	180000 J	53000 J	8700 J	85000 J	62,000	15000 J	76,000	80,000
7440-47-3	Chromium	26	110	**120**	**63**	**66**	19	**48**	**120**	**35**	**61**	**58**
7440-48-4	Cobalt	---	---	8 J	(<8.3 U)	6.1 J	15 J	(<5.7 U)	35 J	33 J	6.1 J	6.2
7440-50-8	Copper	16	110	**640**	**220**	**440**	**35**	**150**	**400**	**55**	**290 J**	**280**
7439-89-6	Iron	20,000	40,000	**27,000 J**	17,000 J	**33,000 J**	**25,000 J**	11,000 J	**26,000**	**31,000 J**	**21,000**	**21,000**
7439-92-1	Lead	31	110	**1,200**	**390**	**1,100**	**110**	**230**	**970**	**180**	**490 J**	**450**
7439-95-4	Magnesium	---	---	26,000	14,000	12,000	2,900	9,300	9,300	4,200	11,000	11,000
7439-96-5	Manganese	460	1,100	**900 J**	**560 J**	**510 J**	**1,400 J**	360 J	420	310 J	450	450
7439-97-6	Mercury	0.15	1.3	**0.59**	**0.44**	**2**	**0.72**	**0.62**	**2.3**	0	**0.42**	**0.32**
7440-02-0	Nickel	16	50	**71**	**44**	**59**	**35**	**28**	**79**	**45**	**48 J**	**48**
7440-09-7	Potassium	---	---	2100 J	1800 J	1900 J	3000 J	(<1100 U)	1,700	4200 J	4,100	8,200
7782-49-2	Selenium	---	---	7.8	9.2	8.3	(<3.4 U)	7.3	14	(<3.7 U)	6.5	5.7
7440-22-4	Silver	1.0	2.2	**3.5**	**1.3**	**3.4**	0.51	**1.1**	**4.9**	0	**2.8**	**1.6**
7440-23-5	Sodium	---	---	1400 J	1300 J	840 J	570 J	780 J	920	1100 J	1100 J	1,100
7440-28-0	Thallium	---	---	(<3.2 U)	(<5 U)	(<3.6 U)	(<2.5 U)	(<3.4 U)	(<3.9 U)	(<2.8 U)	(<3.5 U)	(<3.3 U)
7440-62-2	Vanadium	---	---	(<21 U)	(<33 U)	(<24 U)	19	(<23 U)	(<26 U)	28	(<23 U)	24
7440-66-6	Zinc	120	270	**3,600 J**	**1,700 J**	**2,100 J**	**330 J**	**1,100 J**	**2,400 J**	**370 J**	**1,600 J**	**1,600**
Wet Chemistry by Lloyd Kahn and EPA Method SM2540G												
TOC	Total Organic Carbon	NA	NA	65,000	NS	NS	NS	68,000	NS	NS	99,000	NS
PERSOL	% Solids	NA	NA	47%	30%	42%	59%	44%	38%	54%	43%	45%

[1] NYSDEC Technical Guidance for Screening Contaminated Sedime

"---" = no criteria available

NA = not applicable

NS = not sampled

Value = bold value exceeds LEL

Value = bold and shaded value exceeds SEL

Table 3-2a: OU-2 Chemical Results

		Lowest Effects Level (LEL)[1]	Severe Effects Level (SEL)[1]									
	CLIENT ID:			SD-1800-1-2.5-4	SD-2250-1-0-0.5	SD-2400-1-0-0.5	SD-2700-1-0-1	SD-2700-1-0-1 MS	SD-2700-1-0-1 MSD	SD-3150-1-0-0.8	DUP-100214-3	SD-3150-2-0-0.5
	LAB ID:			AC81261-042	AC81261-043	AC81261-044	AC81261-045	AC81261-046	AC81261-047	AC81261-048	AC81261-049	AC81261-050
	COLLECTION DATE:			10/2/2014	10/2/2014	10/2/2014	10/2/2014	10/2/2014	10/2/2014	10/2/2014	10/2/2014	10/2/2014
	SAMPLE MATRIX:			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
	SAMPLE UNITS:	mg/kg	mg/kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Metals by EPA Methods 6010, 6020, and 7471A												
7429-90-5	Aluminum	---	---	13000 J	7200 J	5500 J	4400 J	3,100	7,000	12000 J	13,000	18000 J
7440-36-0	Antimony	2.0	25	**3.5 J**	(<1.1 UJ)	(<1.1 UJ)	(<1.6 UJ)	69	96	(<1.4 UJ)	(<1.4 U)	(<1.5 UJ)
7440-38-2	Arsenic	6.0	33	**19**	**8**	**9.9**	(<8 U)	110	170	**8.8**	**8.9**	**10**
7440-39-3	Barium	---	---	370 J	36 J	210 J	310 J	370	500	78 J	80	130 J
7440-41-7	Beryllium	---	---	0.54	0.46	0.3	(<0.4 U)	110	160	0.46	0.45	0.47
7440-43-9	Cadmium	0.60	9.0	**6**	(<0.56 U)	**0.73**	**1.1**	**110**	**160**	**1.4**	**1.6**	**1.6**
7440-70-2	Calcium	---	---	42,000	100,000	170,000	160,000	150,000	210,000	99,000	97,000	92,000
7440-47-3	Chromium	26	110	**370**	13	15	**28**	120	200	**86**	**89**	**57**
7440-48-4	Cobalt	---	---	13 J	6.1 J	5.8 J	9.2 J	110	170	6.6 J	7.4	6.6 J
7440-50-8	Copper	16	110	**2800 J**	**27 J**	**60 J**	**100 J**	**180**	**270**	**90 J**	**110**	**130 J**
7439-89-6	Iron	20,000	40,000	**33,000**	**24,000**	**35,000**	**24,000**	14,000	22,000	**20,000**	**20,000**	**26,000**
7439-92-1	Lead	31	110	**7,000 J**	**86 J**	**180 J**	**88 J**	**140**	**240**	**250 J**	**280**	**200 J**
7439-95-4	Magnesium	---	---	7,900	9,300	16,000	5,400	14,000	23,000	26,000	25,000	21,000
7439-96-5	Manganese	460	1,100	400	**570**	**960**	**2,800**	1900	3600	**1,600**	**1,600**	**1,100**
7439-97-6	Mercury	0.15	1.3	**0.88**	(<0.12 U)	0.12	(<0.17 U)	3.6	5.4	(<0.14 U)	(<0.15 U)	**0.16**
7440-02-0	Nickel	16	50	**76 J**	**18 J**	**18 J**	**20 J**	120	190	**30 J**	**36**	**34 J**
7440-09-7	Potassium	---	---	2,200	2,400	1,900	1,400	12,000	20,000	2,200	2,300	3,200
7782-49-2	Selenium	---	---	(<3.7 U)	(<2.8 U)	(<2.7 U)	(<4 U)	110	160	(<3.4 U)	(<3.5 U)	(<3.8 U)
7440-22-4	Silver	1.0	2.2	**21**	0.29	0.36	0.42	21	32	0.69	0.73	0.84
7440-23-5	Sodium	---	---	1000 J	(<350 U)	(<340 U)	600 J	12,000	19,000	(<420 U)	(<440 U)	550 J
7440-28-0	Thallium	---	---	(<2.8 U)	(<2.1 U)	(<2 U)	(<3 U)	100	160	(<2.5 U)	(<2.6 U)	(<2.8 U)
7440-62-2	Vanadium	---	---	24	(<14 U)	(<14 U)	(<20 U)	110	170	18	19	22
7440-66-6	Zinc	120	270	**5,500 J**	110 J	**250 J**	**4,800 J**	**530**	**880**	**690 J**	**730**	**690 J**
Wet Chemistry by Lloyd Kahn and EPA Method SM2540G												
TOC	Total Organic Carbon	NA	NA	160,000	30,000	41,000	NS	NS	NS	NS	NS	100,000
PERSOL	% Solids	NA	NA	54%	71%	74%	50%			59%	57%	53%

[1] NYSDEC Technical Guidance for Screening Contaminated Sedime

"---" = no criteria available

NA = not applicable

NS = not sampled

Value = bold value exceeds LEL

Value = bold and shaded value exceeds SEL

Table 3-2a: OU-2 Chemical Results

CLIENT ID: / LAB ID: / COLLECTION DATE: / SAMPLE MATRIX: / SAMPLE UNITS:		Lowest Effects Level (LEL)[1] mg/kg	Severe Effects Level (SEL)[1] mg/kg	SD-3450-1-0-1 AC81280-001 10/6/2014 Soil mg/Kg	SD-3450-2-0-2 AC81280-002 10/6/2014 Soil mg/Kg	SD-3450-2-2-4 AC81280-003 10/6/2014 Soil mg/Kg	SD-3450-3-0-1 AC81280-004 10/6/2014 Soil mg/Kg	SD-3750-1-0-1 AC81280-005 10/6/2014 Soil mg/Kg	SD-3750-1-1-1.5 AC81280-006 10/6/2014 Soil mg/Kg	SD-3750-2-0-1 AC81280-007 10/6/2014 Soil mg/Kg	SD-3750-3-0-0.5 AC81280-008 10/6/2014 Soil mg/Kg	SD-3900-1-0-0.3 AC81280-009 10/6/2014 Soil mg/Kg
Metals by EPA Methods 6010, 6020, and 7471A												
7429-90-5	Aluminum	---	---	38,000	33,000	17,000	19,000	31,000	26,000	18,000	44,000	19,000
7440-36-0	Antimony	2.0	25	(<1.7 U)	(<1.6 U)	(<1.2 U)	(<1.7 U)	(<2.7 U)	(<1.2 U)	(<2.2 U)	(<2.5 U)	(<1.2 U)
7440-38-2	Arsenic	6.0	33	**8.9**	**15**	(<6.1 U)	**8.8**	(<13 U)	(<6.2 U)	(<11 U)	**20**	**18**
7440-39-3	Barium	---	---	140 J	250 J	90 J	120 J	360 J	100 J	100 J	350 J	270 J
7440-41-7	Beryllium	---	---	0.67	0.9	0.67	0.56	1.1	0.59	1.0	1.1	(<1.5 U)
7440-43-9	Cadmium	0.60	9.0	**4.9**	**4.3**	**1.0**	**1.6**	**6.0**	**1.4**	**3.6**	**3.0**	**1.5**
7440-70-2	Calcium	---	---	110000 J	180000 J	77000 J	180000 J	190000 J	310000 J	76000 J	52000 J	9000 J
7440-47-3	Chromium	26	110	**300 J**	**140 J**	24 J	**110 J**	**700 J**	**1200 J**	**150 J**	**270 J**	**29 J**
7440-48-4	Cobalt	---	---	13	15	10	9.4	15	14	12	21	16
7440-50-8	Copper	16	110	**380**	**560**	**56**	**150**	**320**	**270**	**140**	**460**	**84**
7439-89-6	Iron	20,000	40,000	**37,000**	**48,000**	**27,000**	**35,000**	**44,000**	**39,000**	**28,000**	**58,000**	**38,000**
7439-92-1	Lead	31	110	**970 J**	**1,200 J**	**95 J**	**340 J**	**700 J**	**860 J**	**340 J**	**580 J**	80 J
7439-95-4	Magnesium	---	---	33,000	49,000	26,000	31,000	46,000	46,000	29,000	21,000	5,300
7439-96-5	Manganese	460	1,100	**730 J**	**2,900 J**	**490 J**	**1,000 J**	**2,100 J**	**1,400 J**	**500 J**	**2,400 J**	**2,800 J**
7439-97-6	Mercury	0.15	1.3	**0.47**	**1.3**	**0.23**	**0.23**	**0.48**	**0.19**	**0.52**	**0.68**	**0.32**
7440-02-0	Nickel	16	50	**69**	**74**	**24**	**41**	**66**	**66**	**47**	**97**	**38**
7440-09-7	Potassium	---	---	2,900	5,200	2,400	3,400	4,600	5,100	2,700	5,100	3,300
7782-49-2	Selenium	---	---	(<4.3 U)	(<4.1 U)	(<3 U)	(<4.3 U)	(<6.7 U)	(<3.1 U)	(<5.6 U)	(<6.3 U)	(<3 U)
7440-22-4	Silver	1.0	2.2	**6.6 J**	**2.6 J**	0.32 J	0.72 J	**2.5 J**	0.78 J	**2 J**	**2.1 J**	0.84 J
7440-23-5	Sodium	---	---	1300 J	1100 J	560 J	1000 J	2000 J	980 J	(<690 U)	1700 J	490 J
7440-28-0	Thallium	---	---	3.5	(<3.1 U)	(<2.3 U)	(<3.2 U)	(<5 U)	2.7	(<4.2 U)	(<4.7 U)	(<2.3 U)
7440-62-2	Vanadium	---	---	52	47	27	29	45	33	36	64	28
7440-66-6	Zinc	120	270	**3,000**	**1,600**	**330**	**1,000**	**2,500**	**2,500**	**2,100**	**2,700**	**1,300**
Wet Chemistry by Lloyd Kahn and EPA Method SM2540G												
TOC	Total Organic Carbon	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NS
PERSOL	% Solids	NA	NA	46%	49%	66%	47%	30%	65%	36%	32%	66%

[1] NYSDEC Technical Guidance for Screening Contaminated Sedime

clay and sand

"---" = no criteria available

NA = not applicable

NS = not sampled

Value = bold value exceeds LEL

Value = bold and shaded value exceeds SEL

Table 3-2a: OU-2 Chemical Results

CLIENT ID: / LAB ID: / COLLECTION DATE: / SAMPLE MATRIX: / SAMPLE UNITS:		Lowest Effects Level (LEL)[1] mg/kg	Severe Effects Level (SEL)[1] mg/kg	SD-3900-1-0-0.3 MS AC81280-010 10/6/2014 Soil mg/Kg	SD-3900-1-0-0.3 MSD AC81280-011 10/6/2014 Soil mg/Kg	SD-3900-2-0-1.5 AC81280-012 10/6/2014 Soil mg/Kg	SD-3900-3-0-0.5 AC81280-013 10/6/2014 Soil mg/Kg	DUP-100314 AC81261-058 10/3/2014 Soil mg/Kg	SD-4050-1-0-0.1 AC81261-059 10/3/2014 Soil mg/Kg	SD-4050-1-0.1-0.5 AC81261-060 10/3/2014 Soil mg/Kg	SD-4050-2-0-1.5 AC81261-061 10/3/2014 Soil mg/Kg
Metals by EPA Methods 6010, 6020, and 7471A											
7429-90-5	Aluminum	---	---	22,000	28,000	17,000	15,000	19,000	16,000	22,000	17,000
7440-36-0	Antimony	2.0	25	(<1.3 U)	(<1.3 U)	(<1.3 U)	(<1.2 U)	(<1.1 U)	(<1.4 U)	(<1.2 U)	(<1.5 R)
7440-38-2	Arsenic	6.0	33	89	85	**7.5**	**13**	**26**	**11 J**	**16**	**8.9 J**
7440-39-3	Barium	---	---	320	420	88 J	95 J	370	120 J	170	120 J
7440-41-7	Beryllium	---	---	72	66	0.47	0.61	1.5	0.73	0.66	0.46 J
7440-43-9	Cadmium	0.60	9.0	**83**	**79**	**3.0**	**1.5**	**0.8**	**1.8**	**0.82 J**	**2.5**
7440-70-2	Calcium	---	---	20,000	27,000	53000 J	310000 J	9,600	60000 J	72,000	61000 J
7440-47-3	Chromium	26	110	140	110	**360 J**	**120 J**	**32**	**130 J**	**29 J**	**370**
7440-48-4	Cobalt	---	---	90	89	9.4	16	18	12 J	17 J	11 J
7440-50-8	Copper	16	110	190	150	**650**	**370**	**49**	**240 J**	**83**	**430**
7439-89-6	Iron	20,000	40,000	**35,000**	**43,000**	**24,000**	**34,000**	**58,000**	**33,000**	**43000 J**	**28,000**
7439-92-1	Lead	31	110	**260**	**160**	**1,900 J**	**780 J**	**130**	**600**	**150 J**	**1100 J**
7439-95-4	Magnesium	---	---	14,000	15,000	20,000	30000 J	7,300	19,000	25,000	20,000
7439-96-5	Manganese	460	1,100	2,300	6,800	**1,400 J**	**1,400**	**7,000**	**980 J**	**1,300 J**	**1,700 J**
7439-97-6	Mercury	0.15	1.3	3.2	3.2	**0.63**	**0.19**	(<0.11 U)	**0.23**	**0.46**	**0.62**
7440-02-0	Nickel	16	50	110	110	**50**	**37**	**63**	**38 J**	**39 J**	**52 J**
7440-09-7	Potassium	---	---	10,000	9,700	2,000	2,600	4,700	2,600	3,600	2,100
7782-49-2	Selenium	---	---	83	77	(<3.3 U)	(<3 U)	3.9	(<3.4 U)	(<3.1 U)	(<3.7 U)
7440-22-4	Silver	1.0	2.2	12	13	**3.6 J**	**1.8 J**	0.59	**1.4 J**	0.56	**1.8**
7440-23-5	Sodium	---	---	7,300	6,800	(<410 U)	920 J	540	820 J	840 J	(<460 U)
7440-28-0	Thallium	---	---	73	69	(<2.5 U)	2.7	(<2.1 U)	(<2.6 U)	(<2.3 UJ)	(<2.8 U)
7440-62-2	Vanadium	---	---	100	100	27	27	34	28 J	37 J	32 J
7440-66-6	Zinc	120	270	**1,500**	**1,100**	**2,600**	**1,200**	**280**	**1,800**	**1,400 J**	**2,800 J**
Wet Chemistry by Lloyd Kahn and EPA Method SM2540G											
TOC	Total Organic Carbon	NA	NA	NS	NS	NS	NS	NS	NS	NS	90,000
PERSOL	% Solids	NA	NA	61	63	61%	67%	73%	58%	64%	54%

[1] NYSDEC Technical Guidance for Screening Contaminated Sedime

"---" = no criteria available

NA = not applicable

NS = not sampled

Value = bold value exceeds LEL

Value (shaded) = bold and shaded value exceeds SEL

Table 3-2a: OU-2 Chemical Results

	CLIENT ID: / LAB ID: / COLLECTION DATE: / SAMPLE MATRIX: / SAMPLE UNITS:	Lowest Effects Level (LEL)[1] mg/kg	Severe Effects Level (SEL)[1] mg/kg	SD-4050-2-1.5-3.5 AC81261-062 10/3/2014 Soil mg/Kg	SD-4050-2-3.5-4 AC81261-063 10/3/2014 Soil mg/Kg	SD-4050-3-0-0.5 AC81261-064 10/3/2014 Soil mg/Kg	SD-4200-1-0-0.25 AC81261-055 10/3/2014 Soil mg/Kg	SD-4200-1-0-0.25 MS AC81261-056 10/3/2014 Soil mg/Kg	SD-4200-1-0-0.25 MSD AC81261-057 10/3/2014 Soil mg/Kg	SD-4350-1-0-0.1 AC81261-054 10/3/2014 Soil mg/Kg
Metals by EPA Methods 6010, 6020, and 7471A										
7429-90-5	Aluminum	---	---	19,000	19,000	31,000	13,000	19,000	19,000	18,000
7440-36-0	Antimony	2.0	25	(<1.2 R)	(<1.1 R)	(<1.3 U)	(<1.1 UJ)	(<1.1 U)	(<1.1 U)	(<1.1 UJ)
7440-38-2	Arsenic	6.0	33	**15 J**	(<5.7 UJ)	(<6.3 UJ)	**20 J**	59	63	**11 J**
7440-39-3	Barium	---	---	180 J	130 J	270 J	190 J	280	330	170 J
7440-41-7	Beryllium	---	---	0.71 J	0.67 J	1.4	1 J	55	49	0.71 J
7440-43-9	Cadmium	0.60	9.0	**2**	**2.6**	**1.6**	(<0.55 U)	63	63	**1.2**
7440-70-2	Calcium	---	---	120000 J	99000 J	110,000	11000 J	11,000	12,000	200000 J
7440-47-3	Chromium	26	110	**36**	24	**49**	21	81	80	**39**
7440-48-4	Cobalt	---	---	13 J	12 J	21 J	18 J	67	86	16 J
7440-50-8	Copper	16	110	**280**	**91**	**77**	**29**	86	83	**67**
7439-89-6	Iron	20,000	40,000	**45,000**	**30,000**	**50,000**	**33,000**	34,000	32,000	**39,000**
7439-92-1	Lead	31	110	**300 J**	**63 J**	**120 J**	**120 J**	100	**120**	**150**
7439-95-4	Magnesium	---	---	39,000	34,000	31,000	4,900	12,000	11,000	27,000 J
7439-96-5	Manganese	460	1,100	**1,600 J**	**830 J**	**860**	**990**	**1600**	3700	**1,600 J**
7439-97-6	Mercury	0.15	1.3	**0.33**	**0.25**	**0.21**	(<0.11 U)	2.4	2.3	**0.43**
7440-02-0	Nickel	16	50	34 J	29 J	55 J	39 J	90	110	38 J
7440-09-7	Potassium	---	---	3,100	3,000	4,300	3600 J	9,900	9,700	2,600
7782-49-2	Selenium	---	---	(<2.9 U)	(<2.9 U)	4.2	(<2.7 U)	64	62	(<2.9 U)
7440-22-4	Silver	1.0	2.2	**1.1**	0.82	0.84	0.63	13	13	0.77
7440-23-5	Sodium	---	---	590 J	550 J	860	430 J	6,100	6,000	720 J
7440-28-0	Thallium	---	---	(<2.2 U)	(<2.1 U)	(<2.4 U)	(<2.1 U)	53	51	(<2.1 U)
7440-62-2	Vanadium	---	---	34 J	33 J	46 J	21 J	72	72	43 J
7440-66-6	Zinc	120	270	**1,400 J**	**1,000 J**	**360 J**	**180 J**	240	220	**350 J**
Wet Chemistry by Lloyd Kahn and EPA Method SM2540G										
TOC	Total Organic Carbon	NA	NA	44,000	34,000	NS	12,000	32,000	31,000	NS
PERSOL	% Solids	NA	NA	68%	70%	63%	73%	72%	74%	70%

[1] NYSDEC Technical Guidance for Screening Contaminated Sedime

"---" = no criteria available

NA = not applicable

NS = not sampled

Value = bold value exceeds LEL

Value (shaded) = bold and shaded value exceeds SEL

Table 3-2b. OU-2 Physical Characteristics of Sediment

Transect No.		SD-150	SD-450	SD-600	SD-750	SD-900	SD-1050		SD-1200		SD-1350		SD-1650	SD-1800	SD-1950	SD-2250	SD-2400	SD-3150	SD-3450		SD-3750	SD-3900		SD-4050	SD-4200
Station No.		2	3	4	1	1	2	3	1	2	1	3	1	1	1	1	1	2	2	3	2	2	3	2	1
Depth Interval		0-1	0-1	0-1	0-1	0-1	0-1	0-0.1	0-1	0-1	0--1	0-1	0-3.5	0-1	0-0.5	0-0.5	0-0.5	0-0.5	2-4	0-1	0-1	0-1.5	0-0.5	1.5-3.5	0-0.25
Sieve Analysis	**UNITS**																								
Gravel	%	8.4	0	0	0	0	0	4.3	0	24.8	0	0	0	2.5	0.7	24.2	17.2	2.5	1.6	8	0	0	5.2	0	1.4
Sand	%	62.5	17.3	2.2	24.2	12.7	11.7	33.5	25.1	11.9	6.2	11.2	13.6	18.2	7.9	15.7	16.9	29.1	15.3	70.9	22.2	30.6	22	7.8	8.4
Coarse Sand	%	35.2	2.1	0.4	7.8	3.4	6.1	4.1	8.1	3.7	1.3	3.7	6.3	11.8	3.7	5	3.9	3.8	1.9	18.8	4.9	2.1	4.1	1.8	1.4
Medium Sand	%	6.2	2.3	0.3	8.7	3.4	1.4	18.3	6.3	4	0.5	2.2	1.8	1.6	2.7	6.7	5	8.6	2.5	20.6	11.6	14.1	8.8	1.4	1
Fine Sand	%	21.1	12.9	1.5	7.7	5.9	4.2	11.1	10.7	4.2	4.4	5.3	5.5	4.8	1.5	4	8	16.7	10.9	31.5	5.7	14.4	9.1	4.6	6
Silt	%	26.5	69.1	88.1	65.8	46.4	81.6	50.2	61.2	28.1	63.7	69.4	68.6	53.2	43.5	29.2	32	56.1	60.2	18.7	60.2	57.5	51	62.4	34.5
Clay	%	2.6	13.6	9.7	10	40.9	6.7	12	13.7	35.2	30.1	19.4	17.8	26.1	48	30.9	33.9	12.3	22.9	2.4	17.6	11.9	21.8	29.8	55.7
Atterberg Limits																									
Liquid Limit	%	0	94	78	93	71	116	117	110	47	85	104	95	99	38	46	56	68	60	0	125	86	57	57	52
Plastic Limit	%	0	78	53	63	41	77	76	82	25	49	65	60	69	25	26	33	49	36	0	97	67	40	35	28
Plasticity Index	%	NP	16	26	30	30	39	41	28	21	37	39	35	30	12	20	23	18	24	NP	29	19	17	22	24
Percent Moisture[1]	%	755.2	276.2	216.1	221.5	100.7	308.5	84.5	331.3	46.2	271.2	247.6	361.7	252.4	31.8	36.9	51.8	114.1	78.6	110.8	163.4	70.8	66.4	52.1	36.3
Density																									
Total Organic Carbon	%	52.4	19.6	12.5	15.2	8	19.8	21.5	19.6	4.1	10.9	16.8	15.8	18.6	1.2	1.7	3.4	11.9	13.5	8.8	17.5	15.9	9	7	2.3
Ash Content	%	47.6	80.4	87.5	84.8	92	80.2	78.5	80.4	95.9	89.1	83.2	84.2	81.4	98.8	98.3	96.6	88.1	86.5	91.2	82.5	84.1	91	93	97.7
Organic Matter	%	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dry Density (prepared) [2]	g/cc	0.124	0.308	0.396	0.381	0.761	0.285	0.549	0.274	1.16	0.337	0.338	0.256	0.33	1.48	1.4	1.13	0.68	0.803	0.671	0.476	0.68	0.918	1.06	1.43
Specific Gravity	Unitless	2.1	2.47	2.51	2.54	2.74	2.39	2.44	2.44	2.76	2.57	2.5	2.45	2.42	2.74	2.81	2.78	2.62	2.6	2.67	2.38	2.51	2.59	2.64	2.8

[1] Analyzed using method ASTM D2216

[2] Analyzed using method ASTM D2937; Lab calculated as dry density

-- = Sample not tested for constituent

Transect No.		AOC 1	AOC 2	AOC 3
Station No.		**Composite**	**Composite**	**Composite**
Depth Interval		**0-1**	**0-1**	**0-1**
Sieve Analysis	**UNITS**			
Gravel	%	5.3	6.36	4.25
Sand	%	28.11	22.62	8.06
Coarse Sand	%	--	--	--
Medium Sand	%	--	--	--
Fine Sand	%	--	--	--
Silt	%	57.51	49.78	56.75
Clay	%	9.08	21.25	30.94
Atterberg Limits				
Liquid Limit	%	105	113	76
Plastic Limit	%	72	78	34
Plasticity Index	%	33	35	42
Percent Moisture[1]	%	290.8	304	85.1
Density				
Total Organic Carbon	%	--	--	--
Ash Content	%	--	--	--
Organic Matter	%	21.4	21.5	10.5
Dry Density (prepared) [2]	g/cc	19	18.3	51.8
Specific Gravity	Unitless	2.31	2.28	2.54

[1] Analyzed using method ASTM D2216

[2] Analyzed using method ASTM D2937; La

-- = Sample not tested for constituent

Table 3-2c. OU-2 Results of Sequential Batch Leachate Testing

	Standard	Units	AOC 1				AOC 2				AOC 3			
			24 hour	48 hour	72 hour	96 hour	24 hour	48 hour	72 hour	96 hour	24 hour	48 hour	72 hour	96 hour
pH	--	--	7.05	6.75	6.75	7.02	7.18	7.16	6.87	6.59	7.5	7.29	7.12	7.1
Total Suspended Solids	--	mg/L	70	2	2	2.4	160	22	9.2	3.6	2.4	2 U	2.4	2 U
Aluminum	100	µg/L	7,400	12,000	10,000	9,200	3,900	4,600	4,900	1,700	56 J	63 J	84 J	100 J
Antimony	3	µg/L	10 U	5.7 J	3.1 J	3.1 J	10 U	3.3 J	6 J	10 U	10 U	10 U	10 U	10 U
Arsenic	25	µg/L	10 U	3.1 J	10 U	10 U	10 U	10 U	10 U	10 U	6.7 J	10 U	10 U	10 U
Barium	1,000	µg/L	110 J	54 J	51 J	51 J	320	130 J	130 J	64 J	80 J	18 J	12 J	25 J
Beryllium	3	µg/L	4 U	4 U	4 U	4 U	0.34 J	4 U	0.29 J	4 U	4 U	4 U	4 U	4 U
Cadmium	5	µg/L	5 U	0.21 J	0.58 J	1.1 J	5 U	5 U	0.17 J	5 U	5 U	5 U	0.22 J	5 U
Calcium	-	µg/L	97,000	28,000	20,000	16,000	120,000	50,000	46,000	23,000	120,000	22,000	13,000	31,000
Chromium	50	µg/L	5 U	5 U	5 U	5 U	1.9 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cobalt	5	µg/L	50 U	0.41 J	50 U	50 U	1.2 J	0.61 J	0.75 J	0.51 J	0.6 J	50 U	50 U	50 U
Copper	200	µg/L	7.4 J	4.4 J	5 J	5.6 J	11 J	5.6 J	3.4 J	1.6 J	6.3 J	2.4 J	1.2 J	2.7 J
Iron	300	µg/L	9,200	51 J	69 J	36 J	19,000	1,700	490	1,400	140	15 J	41 J	56 J
Lead	25	µg/L	5.3 J	7.9 J	10	6.1 J	17	3.1 J	3.6 J	2 J	10 U	10 U	10 U	10 U
Magnesium	35,000	µg/L	32,000	5,400	3,500 J	2,800 J	37,000	9,200	6,800	3,800 J	24,000	3,800 J	2,200 J	4,800 J
Manganese	300	µg/L	520	120	93	77	1,900	690	690	430	1,100	5.5 J	2.3 J	4.1 J
Mercury	0.7	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100	µg/L	2.3 J B	5.9 J B	5.6 J B	5.2 J B	2.8 J B	4.5 J B	6 J B	3.4 J B	2 J B	0.58 J B	0.62 J B	40 U
Potassium	-	µg/L	83,000 B	30,000 B	24,000 B	22,000 B	47,000 B	20,000 B	15,000 B	8,800 B	8,900 B	2,400 J B	1,400 J B	2,200 J B
Selenium	10	µg/L	10 U	2.3 J	2.6 J	10 U	2.3 J	10 U	10 U	10 U	10 U	1.7 J	10 U	10 U
Silver	50	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Sodium	20,000	µg/L	160,000 B	24,000 B	14,000 B	11,000 B	100,000 B	20,000 B	11,000 B	6,300 B	67,000 B	7,900 B	3,600 J B	4,900 J B
Thallium	0.5	µg/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Vanadium	14	µg/L	1.8 J	1.3 J	50 U	50 U	2.4 J	50 U	2 J	1.2 J	1.2 J	50 U	50 U	50 U
Zinc	2,000	µg/L	11 J	310	440	370	29	72	230	73	7 J	8.9 J	8.5 J	9.6 J
1,1'-Biphenyl	5	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
2,2'-Oxybis[1-Chloropropane	-	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
2,4,5-Trichlorophenol	-	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
2,4,6-Trichlorophenol	-	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
2,4-Dichlorophenol	5	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
2,4-Dimethylphenol	50	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
2,4-Dinitrophenol	10	µg/L	5.2 U	5.2 U	5.2 U	4.8 U	5.2 U	5.2 U	5.2 U	4.6 U	5.2 U	5.2 U	5.2 U	4.6 U
2,4-Dinitrotoluene	5	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
2,6-Dinitrotoluene	5	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
2-Chloronaphthalene	10	µg/L	0.21 U	0.21 U	0.21 U	0.19 U	0.21 U	0.21 U	0.21 U	0.19 U	0.21 U	0.21 U	0.21 U	0.19 U
2-Chlorophenol	-	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
2-Methylnaphthalene	4.2	µg/L	0.16 J	0.27	0.25	0.19 U	0.24	0.49	0.32	0.18 J	0.21 U	0.57	0.38	0.056 J
2-Methylphenol	-	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
2-Nitroaniline	5	µg/L	5.2 U	5.2 U	5.2 U	4.8 U	5.2 U	5.2 U	5.2 U	4.6 U	5.2 U	5.2 U	5.2 U	4.6 U
2-Nitrophenol	-	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
3,3'-Dichlorobenzidine	5	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
3-Nitroaniline	5	µg/L	5.2 U	5.2 U	5.2 U	4.8 U	5.2 U	5.2 U	5.2 U	4.6 U	5.2 U	5.2 U	5.2 U	4.6 U
4,6-Dinitro-2-Methylphenol	-	µg/L	5.2 U	5.2 U	5.2 U	4.8 U	5.2 U	5.2 U	5.2 U	4.6 U	5.2 U	5.2 U	5.2 U	4.6 U
4-Bromophenyl Phenyl Ether	-	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
4-Chloro-3-Methylphenol	-	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
4-Chloroaniline	5	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
4-Chlorophenyl Phenyl Ether	-	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
4-Nitroaniline	5	µg/L	5.2 U	5.2 U	5.2 U	4.8 U	5.2 U	5.2 U	5.2 U	4.6 U	5.2 U	5.2 U	5.2 U	4.6 U
4-Nitrophenol	-	µg/L	5.2 U	5.2 U	5.2 U	4.8 U	5.2 U	5.2 U	5.2 U	4.6 U	5.2 U	5.2 U	5.2 U	4.6 U
Acenaphthene	20	µg/L	0.067 J	0.2 J	0.27	0.19 U	0.084 J	0.26	0.27	0.13 J	0.081 J	0.35	0.47	0.18 J
Acenaphthylene	-	µg/L	0.21 U	0.21 U	0.21 U	0.19 U	0.21 U	0.21 U	0.21 U	0.19 U	0.21 U	0.046 J	0.21 U	0.19 U
Acetophenone	-	µg/L	2.1 U	2.1 U	2.1 U	1.9 U	0.76 J	2.1 U	2.1 U	1.9 U	2.1 U	2.1 U	2.1 U	1.9 U
Anthracene	50	µg/L	0.21 U	0.03 J	0.21 U	0.19 U	0.21 U	0.21 U	0.21 U	0.19 U	0.21 U	0.028 J	0.21 U	0.19 U
Atrazine	7.5	µg/L	2.1 U	2.1 U	2.1 U	1.9 U	2.1 U	2.1 U	2.1 U	1.9	2.1 U	2.1 U	2.1 U	1.9 U
Benzaldehyde	-	µg/L	2.1 U	2.1 U	2.1 U	1.9 U	0.25 J	2.1 U	2.1 U	1.9	2.1 U	2.1 U	2.1 U	1.9 U
Benzo[A]Anthracene	0.002	µg/L	0.21 U	0.21 U	0.21 U	0.19 U	0.21 U	0.21 U	0.21 U	0.072	0.21 U	0.21 U	0.21 U	0.19 U
Benzo[A]Pyrene	-	µg/L	0.21 U	0.21 U	0.21 U	0.19 U	0.21 U	0.21 U	0.21 U	0.043	0.21 U	0.21 U	0.21 U	0.19 U
Benzo[B]Fluoranthene	0.002	µg/L	0.21 U	0.21 U	0.21 U	0.19 U	0.21 U	0.21 U	0.21 U	0.12	0.21 U	0.21 U	0.21 U	0.19 U
Benzo[G,H,I]Perylene	-	µg/L	0.21 U	0.21 U	0.21 U	0.19 U	0.21 U	0.21 U	0.21 U	0.068	0.21 U	0.21 U	0.21 U	0.19 U
Benzo[K]Fluoranthene	0.002	µg/L	0.21 U	0.21 U	0.21 U	0.19 U	0.21 U	0.21 U	0.21 U	0.098	0.21 U	0.21 U	0.21 U	0.19 U
Bis(2-Chloroethoxy)Methane	5	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
Bis(2-Chloroethyl)Ether	1	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
Bis(2-Ethylhexyl) Phthalate	5	µg/L	2.1 U	2.1 U	2.1 U	1.9 U	2.1 U	2.1 U	2.1 U	0.43 J	2.1 U	2.1 U	2.1 U	1.9 U
Butyl Benzyl Phthalate	50	µg/L	0.57 J	1 U	0.44 J	0.5 J	1 U	0.36 J	1 U	0.57 J	1 U	0.37 J	0.37 J	0.46 J
Caprolactam	-	µg/L	28	5.2 U	5.2 U	4.8 U	6.2	5.2 U	5.2 U	4.6 U	5.2 U	5.2 U	5.2 U	4.6 U
Carbazole	-	µg/L	0.034 J	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
Chrysene	0.002	µg/L	0.21 U	0.21	0.21	0.19 U	0.21 U	0.21 U	0.21 U	0.1 J	0.21 U	0.21 U	0.21 U	0.19 U
Dibenz(A,H)Anthracene	-	µg/L	0.21 U	0.21	0.21	0.19 U	0.21 U	0.21 U	0.21 U	0.056 J	0.21 U	0.21 U	0.21 U	0.19 U
Dibenzofuran	-	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
Diethyl Phthalate	50	µg/L	1 U	1 U	1 U	0.96 U	1U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
Dimethyl Phthalate	50	µg/L	20	17	9.8	8.3	18	17	9.8	5.5	14	8.5	8.3	4.6
Di-N-Butyl Phthalate	50	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
Di-N-Octyl Phthalate	50	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.55 J	1 U	1 U	1 U	0.93 U
Fluoranthene	50	µg/L	0.073 J	0.059 J	0.032 J	0.19 U	0.045 J	0.21 U	0.21 U	0.19 U	0.21 U	0.043 J	0.21 U	0.19 U
Fluorene	50	µg/L	0.21 U	0.21 U	0.091 J	0.073 J	0.21 U	0.13 J	0.12 J	0.047 J	0.21 U	0.11 J	0.09 J	0.19 U
Hexachlorobenzene	0.04	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
Hexachlorobutadiene	0.5	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
Hexachlorocyclopentadiene	5	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
Hexachloroethane	5	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
Indeno[1,2,3-CD]Pyrene	0.002	µg/L	0.21 U	0.21 U	0.21 U	0.19 U	0.21 U	0.21 U	0.21 U	0.08 J	0.21 U	0.21 U	0.21 U	0.19 U
Isophorone	50	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
Methylphenol, 3 & 4	-	µg/L	2.6	2.1	1.6	1.2	23	3	1.9	0.75 J	1 U	1 U	1 U	0.93 U
Naphthalene	10	µg/L	0.8	0.27	0.29	0.25	0.87	0.52	0.36	0.55	0.32	1.4	0.72	0.23
Nitrobenzene	0.4	µg/L	2.1 U	2.1 U	2.1 U	1.9 U	2.1 U	2.1 U	2.1 U	1.9 U	2.1 U	2.1 U	2.1 U	1.9 U
N-Nitrosodi-N-Propylamine	-	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
N-Nitrosodiphenylamine	-	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
Pentachlorophenol	2	µg/L	1 U	1 U	1 U	0.96 U	1 U	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
Phenanthrene	50	µg/L	0.081	0.13 J	0.21 U	0.19 U	0.07 J	0.21 U	0.21 U	0.19 U	0.21 U	0.12 J	0.21 U	0.19 U
Phenol	1	µg/L	6.4	1 U	1 U	0.96 U	4.3	1 U	1 U	0.93 U	1 U	1 U	1 U	0.93 U
Pyrene	50	µg/L	0.062	0.21 U	0.034	0.19 U	0.039 J	0.21 U	0.21 U	0.19 U	0.21 U	0.03 J	0.21 U	0.19 U

NOTES: Bold values represent detected concentrations.
B = Detected in the laboratory method blank.
J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).
Q = Estimated maximum possible concentration.
U = Indicates the analyte was analyzed but not detected.
-- Result not available.
All detections are boldfaced.
Concentrations exceeding NYS AWQS Standards are shaded and bolfaced
Total PAHs concentrations were calculated by summing the individual PAHs.

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Table 3-2d. OU-2 Results of Synthetic Precipitation Leaching Procedure

			AOC 1		AOC 2		AOC 3	
	Standard	Units	Initial	SPLP	Initial	SPLP	Initial	SPLP
pH	--	--	6.99	6.86	7.02	7.43	7.78	7.43
Total Suspended Solids	--	mg/L		2		2 U		4.4
Aluminum	100	µg/L	**33,000**	**5,600**	**13,000**	**64 J**	**13,000**	**58 J**
Antimony	3	µg/L	**5.4**	**4.8 J**	**4 J**	10 U	1.5 U	10 U
Arsenic	25	µg/L	**12**	**3.6 J**	10	10 U	**8.1**	10 U
Barium	1,000	µg/L	**160**	**35 J B**	**200**	**65 J B**	**60**	**19 J B**
Beryllium	3	µg/L	**0.54 J**	4 U	0.55 J	4 U	**0.52 J**	4 U
Cadmium	5	µg/L	**6.4 B**	**0.26 J B**	**7.6 B**	**0.37 J B**	**1.1 B**	5 U
Calcium	-	µg/L	**71,000**	**34,000 B**	**63,000**	**40,000 B**	**89,000**	**27,000 B**
Chromium	50	µg/L	**72**	5 U	**75**	**1.3 J**	**78**	5 U
Cobalt	5	µg/L	**6.3 J**	50 U	7.3 J	50 U	**9.7**	50 U
Copper	200	µg/L	**600**	**1.4 J**	**250**	**4.6 J**	**110**	**1.6 J**
Iron	300	µg/L	**21,000**	**850**	**26,000**	**600**	**19,000**	**28 J**
Lead	25	µg/L	**1,000**	10 U	**560**	**3.6 J**	**320**	**2.3 J**
Magnesium	35,000	µg/L	**15,000**	**4,200 J B**	**9,400**	**5,000 B**	**15,000**	**4,100 J B**
Manganese	300	µg/L	**230**	**110**	**490**	**260**	**430**	**19**
Mercury	0.7	µg/L	**0.3**	0.4 U	0.21	0.2 U	**0.072**	0.4 U
Nickel	100	µg/L	**64**	**2.7 J B**	**59**	**1.7 J B**	**48**	**0.86 J B**
Potassium	-	µg/L	**12,000 B**	**23,000 B**	**3,500 N**	**9,200 B**	**2,300 B**	**2,200 J B**
Selenium	10	µg/L	**5.8**	10 U	**3.8 J**	10 U	**0.64 J**	10 U
Silver	50	µg/L	**2.7**	5 U	1.5 J	5 U	**0.24 J**	5 U
Sodium	20,000	µg/L	**1,500 J B**	**8,800 B**	**870 J B**	**25,000 B**	**420 J B**	**9,800 B**
Thallium	0.5	µg/L	8.2 U	20 U	11 U	20 U	3 U	20 U
Vanadium	14	µg/L	**29**	**1.8 J**	**20 J**	50 U	**19**	**1.7 J**
Zinc	2,000	µg/L	**1,600 B**	20 U	**1,500 B**	**12 J**	**970 B**	20 U
1,1'-Biphenyl	5	µg/L	1400 U	0.97 U	920 U	0.98 U	1200 U	0.96 U
2,2'-Oxybis[1-Chloropropane]	-	µg/L	290 U	0.19 U	190 U	0.2 U	240 U	0.19 U
2,4,5-Trichlorophenol	-	µg/L	1400 U	0.97 U	920 U	0.98 U	1200 U	0.96 U
2,4,6-Trichlorophenol	-	µg/L	1400 U	0.97 U	920 U	0.98 U	1200 U	0.96 U
2,4-Dichlorophenol	5	µg/L	290 U	0.19 U	190 U	0.2 U	240 U	0.19 U
2,4-Dimethylphenol	50	µg/L	1400 U	0.97 U	920 U	0.98 U	1200 U	0.96 U
2,4-Dinitrophenol	10	µg/L	7300 U	4.9 U	4700 U	4.9 U	6000 U	4.8 U
2,4-Dinitrotoluene	5	µg/L	1400 U	0.97 U	920 U	0.98 U	1200 U	0.96 U
2,6-Dinitrotoluene	5	µg/L	1400 U	0.97 U	920 U	0.98 U	1200 U	0.96U
2-Chloronaphthalene	10	µg/L	290 U	0.19 U	190 U	0.2 U	240 U	0.19 U
2-Chlorophenol	-	µg/L	1400 U	0.97 U	920 U	0.98 U	1200 U	0.96 U
2-Methylnaphthalene	4.2	µg/L	290 U	**0.068 J**	190 U	**0.12 J**	240 U	**0.21**
2-Methylphenol	-	µg/L	1400 U	0.97 U	920 U	0.98 U	1200 U	0.96 U
2-Nitroaniline	5	µg/L	7300 U	4.9 U	4700 U	4.9 U	6000 U	4.8 U
2-Nitrophenol	-	µg/L	1400 U	0.97 U	920 U	0.98 U	1200 U	0.96 U
3,3'-Dichlorobenzidine	5	µg/L	1400 U	0.97 U	920 U	0.98 U	1200 U	0.96 U
3-Nitroaniline	5	µg/L	7300 U	4.9 U	4700 U	4.9 U	6000 U	4.8 U
4,6-Dinitro-2-Methylphenol	-	µg/L	7300 U	4.9 U	4700 U	4.9 U	6000 U	4.8 U
4-Bromophenyl Phenyl Ether	-	µg/L	1400 U	0.97 U	920 U	0.98 U	1200 U	0.96 U
4-Chloro-3-Methylphenol	-	µg/L	1400 U	0.97 U	920 U	0.98 U	1200 U	0.96 U
4-Chloroaniline	5	µg/L	1400 U	0.97 U	920 U	0.98 U	1200 U	0.96 U
4-Chlorophenyl Phenyl Ether	-	µg/L	1400 U	0.97 U	920 U	0.98 U	1200 U	0.96 U
4-Nitroaniline	5	µg/L	7300 U	4.9 U	4700 U	4.9 U	6000 U	4.8 U
4-Nitrophenol	-	µg/L	7300 U	4.9 U	4700 U	4.9 U	6000 U	4.8 U
Acenaphthene	20	µg/L	**200 J**	0.19 U	**48 J**	0.2 U	240 U	0.19 U
Acenaphthylene	-	µg/L	290 U	0.19 U	**140 J**	0.2 U	240 U	0.19 U
Acetophenone	-	µg/L	1400 U	0.97 U	920 U	0.98 U	1200 U	0.21 J
Anthracene	50	µg/L	**380**	0.19 U	**170 J**	0.2 U	240 U	0.19 U
Atrazine	7.5	µg/L	1400 U	0.97 U	920 U	0.98 U	1200 U	0.96 U
Benzaldehyde	-	µg/L	1400 U	0.97 U	**150 J**	0.98 U	1200 U	0.96 U
Benzo[A]Anthracene	0.002	µg/L	**1,200**	0.19 U	**510**	0.2 U	**200 J**	0.19 U
Benzo[A]Pyrene	-	µg/L	**1,400**	0.19 U	**540**	0.2 U	240 U	0.19 U
Benzo[B]Fluoranthene	0.002	µg/L	**2,100**	0.19 U	**890**	0.2 U	240 U	0.19 U
Benzo[G,H,I]Perylene	-	µg/L	**1,300**	0.19 U	**560**	0.2 U	240 U	0.19 U
Benzo[K]Fluoranthene	0.002	µg/L	**600**	0.19 U	**330**	0.2 U	240 U	0.19 U
Bis(2-Chloroethoxy)Methane	5	µg/L	1400 U	0.97 U	920 U	0.98 U	1200 U	0.96 U
Bis(2-Chloroethyl)Ether	1	µg/L	290 U	0.19 U	190 U	0.2 U	240 U	0.19 U
Bis(2-Ethylhexyl) Phthalate	5	µg/L	**2,600 J**	1.9 U	**2,000**	2 U	**900 J**	1.9 U
Butyl Benzyl Phthalate	50	µg/L	1400 U	**0.81 J**	920 U	0.32 J	1200 U	0.96 U
Caprolactam	-	µg/L	7300 U	**1.9 J**	4700	4.9	6000 U	4.8 U
Carbazole	-	µg/L	**270 J**	0.19 U	**110 J**	**0.15 J**	240 U	**0.52**
Chrysene	0.002	µg/L	**1,500**	0.19 U	**640**	0.2 U	**260**	0.19 U
Dibenz(A,H)Anthracene	-	µg/L	**260 J**	0.19 U	**120 J**	0.2 U	240 U	0.19 U
Dibenzofuran	-	µg/L	1400 U	0.97 U	920 U	**0.077 J**	1200 U	0.96 U
Diethyl Phthalate	50	µg/L	1400 U	**0.15 J B**	920 U	**0.14 J B**	1200 U	**0.22 J B**
Dimethyl Phthalate	50	µg/L	1400 U	0.97 U	920 U	0.98 U	1200 U	0.96 U
Di-N-Butyl Phthalate	50	µg/L	1400 U	0.97 U	920 U	0.98 U	1200 U	0.96 U
Di-N-Octyl Phthalate	50	µg/L	1400 U	0.97 U	920 U	0.98 U	1200U	0.96 U
Fluoranthene	50	µg/L	**3,000**	**0.055 J**	**1,200**	0.2 U	**450**	0.19 U
Fluorene	50	µg/L	**160 J**	0.19 U	**52 J**	0.2 U	240 U	**0.11 J**
Hexachlorobenzene	0.04	µg/L	290 U	0.19 U	190 U	0.2 U	240 U	0.19 U
Hexachlorobutadiene	0.5	µg/L	290 U	0.19 U	190 U	0.2 U	240 U	0.19 U
Hexachlorocyclopentadiene	5	µg/L	1400 U	0.97 U	920 U	0.98 U	1200 U	0.96 U
Hexachloroethane	5	µg/L	1400 U	0.97 U	920 U	0.98 U	1200 U	0.96 U
Indeno[1,2,3-CD]Pyrene	0.002	µg/L	**980**	0.19 U	**450**	0.2 U	240 U	0.19 U
Isophorone	50	µg/L	1400 U	0.97 U	920 U	0.98 U	1200 U	0.96 U
Methylphenol, 3 & 4	-	µg/L	1400 U	**0.44 J**	920 U	0.98 U	1200 U	0.96 U
Naphthalene	10	µg/L	**93 J**	**0.12 J**	**70 J**	**0.67**	240 U	**0.79**
Nitrobenzene	0.4	µg/L	2900 U	1.9 U	1900 U	2 U	2300 U	1.9 U
N-Nitrosodi-N-Propylamine	-	µg/L	290 U	0.19 U	190 U	0.2 U	240 U	0.19 U
N-Nitrosodiphenylamine	-	µg/L	1400 U	0.97 U	920 U	0.98 U	1200 U	0.96 U
Pentachlorophenol	2	µg/L	1400 U	0.97 U	920 U	0.98 U	1200 U	0.96 U
Phenanthrene	50	µg/L	**1,600**	0.19 U	**600**	**0.16 J**	**260**	**0.21**
Phenol	1	µg/L	290 U	0.19 U	190 U	0.2 U	240 U	0.19 U
Pyrene	50	µg/L	**2,500**	**0.049 J**	**950**	0.2 U	**370**	0.19 U
Total Organic Carbon		mg/kg		200000		260000		50000
Percent Moisture		%		77		82		43
Percent Solids		%		23		18		57

NOTES: Bold values represent detected concentrations.
B = Detected in the laboratory method blank.
J = Compound was detected, but result is below the reporting limit and greater than or equal to the method detection limit (value is estimated).
Q = Estimated maximum possible concentration.
U = Indicates the analyte was analyzed but not detected.
-- Result not available.
All detections are boldfaced.
Concentrations exceeding NYS AWQS Standards are shaded and bolfaced
Total PAHs concentrations were calculated by summing the individual PAHs.

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Appendix A

OU-1 Boring Logs

(Provided under separate cover)

Appendix B

Photo Log

(Provided under separate cover)

Appendix C

OU-2 Boring Logs

(Provided under separate cover)

Appendix D

Daily Field Reports

(Provided under separate cover)

Appendix E

Data Usability Summary Reports

(Provided under separate cover)

Appendix F

Laboratory Reports

(Provided under separate cover)

Appendix G

Site Survey

(Provided under separate cover)

Appendix H

OU-1 Geotechnical Results Graphs

(Provided under separate cover)

Appendix I

OU-2 Geotechnical Results Graphs

(Provided under separate cover)