Site Management Plan

3807 Highland Avenue Site
BCP Site No. C932145
Niagara Falls, New York

May 2010 0170-001-300

Prepared For:

Globe, Inc. & Solsil, Inc

Prepared By:

BENCHMARK
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ENGINEERING &
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BROWNFIELD CLEANUP PROGRAM

SITE MANAGEMENT PLAN

3807 HIGHLAND AVENUE SITE
NYSDEC SITE No. C932145
NIAGARA FALLS, NEW YORK

May 2010 0170-001-300

Prepared for:

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Revisions to Final Approved Site Management Plan:

Revision #	Submitted Date	Summary of Revision	DEC Approval Date

SITE MANAGEMENT PLAN

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1.0 INTRODUCTION AND DESCRIPTION OF REMEDIAL PROGRAM

1.1 Introduction

This document is required as an element of the remedial program at the 3807 Highland Avenue Site (hereinafter referred to as the "Site") under the New York State (NYS) Brownfield Cleanup Program (BCP) administered by New York State Department of Environmental Conservation (NYSDEC). The site was remediated in accordance with Brownfield Cleanup Agreement (BCA) Index# B9-0793-08-11 for Site #C932145, which was executed on September 4, 2009.

1.1.1 General

Globe Metallurgical, Inc. (Globe) and Solsil, Inc. (Solsil) entered into a BCA, with the NYSDEC to remediate a 22.25- acre property located in the City of Niagara Falls, Niagara County, New York. Under the terms of the BCA Globe and Solsil agreed to investigate and remediate contaminated media, if any, at the Site.

The Site location and boundaries of the approximate 22.25-acre Site are provided in Figures 1 and 2. The boundaries of the Site are more fully described in the Environmental Easement (see Appendix B).

After completion of the remedial work described in the Remedial Investigation, Alternative Analysis Report / Interim Remedial Measures Work Plan, some soil/fill and groundwater contamination remains on Site, which is hereafter referred to as 'remaining contamination." This Site Management Plan (SMP) was prepared to manage remaining contamination at the Site until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. All reports associated with the Site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

This SMP was prepared by Benchmark Environmental Engineering and Science, PLLC (Benchmark)], on behalf of Globe and Solsil, in accordance with the requirements in NYSDEC draft DER-10 Technical Guidance for Site Investigation and Remediation, dated November 2009, and the guidelines provided by NYSDEC. This SMP addresses the means

for implementing the Institutional Controls (ICs) that are required by the Environmental Easement for the Site.

1.1.2 Purpose

Certain contamination remains on-Site after completion of the remedial action. Institutional Controls have been incorporated into the Site remedy to control exposure to remaining contamination, if encountered, during the use of the Site to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC, and recorded with the Niagara County Clerk, will require compliance with this SMP and all ICs placed on the Site. The ICs place restrictions on Site use, and mandate reporting measures for all ICs. This SMP specifies the methods necessary to ensure compliance with all ICs required by the Environmental Easement for contamination that remains at the Site. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

This SMP provides a detailed description of all procedures required to manage remaining contamination at the Site after completion of the Remedial Action, including: (1) implementation and management of all Institutional Controls; (2) excavation plan; and (3) performance of periodic inspections, certification of results, and submittal of Periodic Review Reports.

To address these needs, this SMP includes three plans: (1) an Institutional Control Plan for implementation and management of ICs; (2) an Excavation Plan; and, (3) a Monitoring Plan.

This plan also includes a description of Periodic Review Reports for the periodic submittal of data, information, recommendations, and certifications to NYSDEC.

It is important to note that:

- This SMP details the Site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the environmental easement, which is grounds for revocation of the Certificate of Completion (COC);
- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and the BCA (Index #B9-0793-08-11; Site #C932145 for the Site, and thereby subject to applicable penalties.

1.1.3 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. In accordance with the Environmental Easement for the Site, the NYSDEC will provide a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

1.2 Site Background

1.2.1 Site Location and Description

The 3807 Highland Avenue Site is located in the City of Niagara Falls, County of Niagara, New York. The 22.25-acre BCP parcel is comprised of 10 contiguous parcels as identified below.

- 3801 Highland Avenue - SBL No. 130.14.2.41
- 4002 Hyde Park – SBL No. 130.15-1-8
- 4024 Hyde Park – SBL No. 130.15-1-17
- 1725 Maple Avenue – SBL No. 130.15-1-13
- 1911 Maple Avenue – SBL No. 130.15-1-6
- 1925 Maple Avenue – SBL No. 130.15-1-16
- 1702 Massachusetts Avenue – SBL No. 130.15-1-12
- 1724 Massachusetts Avenue – SBL No. 130.15-1-11.1
- 1914 Massachusetts Avenue – SBL No. 130.15-1-15
- 1930 Massachusetts Avenue – SBL No. 130.15-1-7

The Site is bordered by College Avenue to the south, Highland Avenue to the west, Maple Avenue to the north, and Hyde Park to the east (see Figure 2). The boundaries of the Site are more fully described in the Environmental Easement (see Appendix B).

1.2.2 Site History

The Site is currently being re-furbished/redeveloped by Globe for the production of metallurgical and chemical-grade silicon metal and silicon-based specialty alloys. Solsil plans

to build a new facility on the western portion of the Site that will produce and develop high-purity silicon for use in photovoltaic solar cells. Prior to the current refurbishment and redevelopment efforts, the facility had not been in operation since 2003. Historically the Site was used for industrial manufacturing since at least 1913, with the most recent use of the Site for the manufacture silicon metal and ferrosilicon metal.

In September 2008, Benchmark conducted a Phase I Environmental Site Assessment (ESA) at the Site. Benchmark identified several recognized environmental conditions (RECs) based on the historic industrial use of the Site and recommended additional investigation.

In September 2008, Benchmark conducted a limited Preliminary Site Investigation at the Site. The limited investigation included soil borings to evaluate potential impacts associated with past heavy industrial operations, and to provide general characterization of the property. Surface, sub-surface soil/fill and historical stack deposit samples were collected for analysis. Based on the results of the investigation, Benchmark recommended that a BCP application be submitted to the NYSDEC.

In January 2009, Benchmark completed a Supplemental Investigation at the Site. The supplemental investigation included collection of samples from various areas of the Site. Certain contaminants were detected in several locations, which provided additional evidence that the Site qualified for inclusion in the BCP.

Co-applicants Globe and Solsil elected to pursue cleanup and redevelopment of the Site under the New York State Brownfield Cleanup Program (BCP), and executed a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC) on September 4, 2009 (BCP Site No. C932145). The RI/AAR/IRM Work Plan was approved by the NYSDEC on September 30, 2009. Benchmark performed RI activities at the Site from October 6, 2009 through January 4, 2010, and IRM activities were conducted at the Site from November 11, 2009 through March 10, 2010.

A RI was completed to characterize the nature and extent of contamination at the Site. Remedial investigation field activities included: advancement of soil borings and monitoring well installation; excavation of test pits; and surface soil, sediment, stack deposits, subsurface soil and groundwater sampling. The IRM fieldwork generally included: excavation and off-Site disposal of impacted soil/fill; backfill/Site restoration; removal and

disposal of historic stack deposits; loading and off-Site disposal of a soil/fill/debris pile; removal of multiple drums and product containers; cleaning and removal of seven former ASTs; off-Site disposal of three spent electrodes; collection and disposal/recycling of waste grease, laboratory wastes and electronic wastes.

Based on the Alternatives Analysis evaluation, it was concluded that the IRM, together with implementation of a Site Management Plan, satisfies the remedial action objectives and is protective of human health and the environment, and the IRM was selected as the final remedial approach for the 3807 Highland Avenue Site. The RI fieldwork activities are further discussed in Section 1.3 and the IRM activities are further described in Section 1.4.

1.2.3 Geologic Conditions

Overburden

The U.S. Department of Agriculture Soil Conservation Service soil survey map of Niagara County, the surrounding area surficial soil type, which may extend beneath the Site, includes the Odessa silty clay loam (OdA), with slopes ranging from 0 to 2%. Surficial Geologic Map of New York, Niagara Sheet, presented by NYS Geologic Survey (1988), indicates that the surficial soil type in the vicinity of the Site is a Till, with variable texture (e.g. clay, silt-clay, boulder clay), and a loamy matrix.

The geology at the Site was investigated during the RI and is generally described as fill materials overlying brown/reddish-brown clay. The fill materials consist of silt, sand, and gravel with varying amounts of slag, metal, and cinder-like materials at depths ranging from surface to 9.5 feet below ground surface (fbgs). The presence of overburden fill material is widespread and common throughout the City of Niagara Falls. Native materials consist of dense clay with varying amounts of sand and gravel to depths up to 24 fbgs. Figure 3 presents a geologic cross section of the Site based on the findings of the RI.

Bedrock

Based on the bedrock geologic map of Niagara County, The Niagara Falls region is underlain by Silurian and Devonian age stratified limestone, dolomite, and shale of marine origin. The bedrock is virtually flat lying, with a gentle dip to the south of only about 30 to

40 feet per mile and exhibits only very gentle folding. The bedrock surface was deeply eroded by weathering and stream action prior to glaciation and by glacial scour during glaciation. The carbonate rocks and the shale are nearly impermeable as homogeneous rock; however, due to regional tectonic stresses the bedrock is vertically and horizontally fractured, providing openings for the storage and transmission of groundwater.

The primary bedrock type that forms the bedrock surface in the northern part of the Lake Erie-Niagara River Basin is the fine- to coarse-grained Lockport Dolomite; a white or grey, magnesium-rich sedimentary rock resembling limestone, but harder and more resistant. The Lockport extends into New York for 200 miles from Niagara County to Herkimer County. The Lockport is the lowermost carbonate-rock unit in the region, which overlies the Rochester Shale, a black to gray carbonaceous shale with minor calcareous beds and limestone layers. Gypsum is also present as nodules along some bedding-plane surfaces in the Lockport. The maximum thickness of the Lockport is approximately 150 feet.

Bedrock was encountered on-Site during the RI at depths ranging from approximately nine fbgs on the northeast portion of the Site to approximately 24 fbgs on the southern portion of the Site. Based on field observations, bedrock generally slopes from northeast to southwest across the Site. Figure 3 presents a geologic cross section of the Site based on the findings of the RI.

Hydrogeology

Based on the groundwater gauging completed during the RI, localized groundwater flow was determined to be west/northwest based on the depth to water measurements. The groundwater gauging data collected during this RI was collected from properly installed permanent wells that were developed prior to sampling and gauging. To confirm groundwater flow direction, an additional groundwater gauging events was completed in January 2010. These gauging events indicate a general west/northwest groundwater flow direction. Figure 4 depicts the groundwater isopotential map from the October 2009 data. Groundwater elevation data from the gauging events is shown on Table 1.

1.3 Summary of Remedial Investigation Findings

A Remedial Investigation (RI) was performed to characterize the nature and extent of contamination at the Site. The results of the RI are described in detail in the following reports:

- Benchmark Environmental Engineering and Science, PLLC. *Remedial Investigation / Alternatives Analysis Report / Interim Remedial Measures Report, 3807 Highland Avenue Site, Niagara Falls, New York*. May 2010.

The purpose of the RI was to define the nature and extent of contamination on the BCP Site, and to collect data of sufficient quantity and quality to perform the remedial alternatives evaluation. The field investigation was completed across the BCP Site to supplement previous environmental data and to delineate areas requiring remediation. On-Site field activities included: advancement of soil borings, excavation of test pits, surface and subsurface soil sampling; sediment sampling, furnace stack deposit sampling, monitoring well installation; groundwater sampling of newly installed monitoring wells; and, collection of hydrogeologic data. Below is a summary of Site conditions when the RI was performed. Figures 4, 5 and 6 present the RI sample locations. Tables 2 through 5 summarize the surface soil/fill, sediment, stack deposit, subsurface soil/fill and groundwater analytical results collected during the RI.

Below is a summary of site conditions when the RI was performed in 2009:

- Based on surface soil data, concentrations of VOCs and PCBs were below Part 375 Industrial SCOs. Benzo(a)pyrene was detected at four sample locations slightly above its Industrial SCO; however, that compound tends to be ubiquitous in soils at historic industrial properties and does not appear to be attributable to a specific release on-Site. Several SVOCs were detected at concentrations above Part 375 Industrial SCOs in historic sample locations SS-7 and SS-9; those areas were remediated as part of the IRM (see Section 1.4). Arsenic was detected above its Industrial SCO at historic sample location SS-7 and RI sample locations SS-1 and SS-5; those areas were also remediated as part of the IRM (see Section 1.4).

- Based on sediment data, concentrations of VOCs, inorganic compounds and PCBs were below Part 375 Industrial SCOs. SVOCs were detected at concentrations above Part 375 Industrial SCOs in historic sample location Sump-2 (maintenance building sump/drain) and RI sample locations Sed-2 and Sed-3 (catch basins). The sump and catch basins where those samples were collected were remediated as part of the IRM (see Section 1.4).

- Based on stack deposit data, one stack deposits sample (Stack-1), which is from the western stack, contained arsenic above its Industrial SCO. All other analytes were reported as non-detectable, at trace (estimated) concentrations below the sample quantitation limit or below Part 375 Industrial SCOs. The western stack was remediated as part of the IRM (see Section 1.4).

- Based on the sub-surface soil data, concentrations of VOCs, pesticides, herbicides, and PCBs were below Part 375 Industrial SCOs. Two SVOCs, benzo(a)pyrene and dibenzo(a,h)anthracene, were detected at concentrations slightly above Part 375 Industrial SCOs; however, those compound tends to be ubiquitous in soils at historic industrial properties and do not appear to be attributable to a specific release on-Site. Inorganic compounds present above Part 375 Industrial SCOs included arsenic, chromium, manganese, and nickel. Chromium was present at concentrations that required remediation in the areas of TP-13 and TP-16 and arsenic was present at concentrations that required remediation in the areas of TP-1 and TP-5. The areas of TP-1, TP-5, TP-13 and TP-16 were remediated as part of the IRM (see Section 1.4).

- Based on the groundwater data collected during the RI, low-level concentrations of two VOCs, isopropylbenzene and n-propylbenzene, and one SVOC, 2-methylnapthalene were detected in monitoring well MW-5 slightly above GWQS. Soluble inorganic compounds detected at concentrations above GWQS are limited to naturally occurring minerals.

1.4 Summary of Remedial Actions

The Site was remediated in accordance with the NYSDEC-approved RI/AAR/IRM Work Plan dated September 2009. In accordance with the NYSDEC-approved RI/AAR/IRM Work Plan, immediately following the RI fieldwork, the RI surface soil/fill, sediment, stack deposits, subsurface soil/fill and groundwater data was reviewed with the NYSDEC and NYSDOH to evaluate which areas of the Site required remediation. Based on

the nature and extent of the impacts identified during the RI, as well as previously known conditions (e.g., drums requiring removal), IRMs summarized below were discussed with and approved by NYSDEC and NYSDOH. The following is a summary of the Remedial Actions performed at the Site:

- Removal and cleaning of historic aboveground storage tanks (ASTs) including: Three (3) steel 250-gallon ASTs with steel secondary containment from the factory building; two (2) 500-gallon hydraulic oil ASTs, one (1) 275-gallon oil AST, and one (1) 500-gallon waste oil AST with steel secondary containment from the Oil House. All removed ASTs were vacuumed out to remove residual product and cleaned by Green Environmental Specialists, Inc. (GES). All tank cleaning residuals (oil/water sludge mixture) were collected and disposed of by GES at Environmental & Industrial Contracting Services, Inc (EICS) in Niagara Falls, New York. Five of the ASTs including the two secondary containment units were recycled as scrap by GES at Niagara Metal Recycling. The two 500-gallon hydraulic oil ASTs were transported off-site by Globe for reuse at Globe's facility in Ohio. A 1,000-gallon gasoline AST located on-Site was inspected and cleaned by GES, and Globe/Solsil plan to reuse on-Site in the future. An empty 150-gallon polyethylene tank was cleaned and disposed of by GES at EICS;
- Approximately 54 drums containing waste materials and 8 additional empty drums were removed from the Site by GES. The waste material drums removed from the Site included: 10 drums of RI well drilling spoils; 13 drums of oil/water sludge mixture related to the ASTs cleaning, 16 drums of gear lube and 15 drums of lubricating oils. Drums were characterized, collected and disposed of by GES at EICS in Niagara Falls, New York. In addition, two pallets of grease pails (approximately 1,500-lbs) were also disposed of with the drums;
- Loading and transportation of approximately 2,731-tons of non-hazardous soil/fill/debris from the eastern portion of the Site and off-site disposal at Modern Landfill in Model City, New York;
- Approximately 1.35-tons of non-hazardous sediment and debris were removed from on-site catch basins and sumps. The material was collected by GES and disposed at EICS in Niagara Falls, New York;
- Collection, removal, and recycling of approximately 1,150-lbs of electronic wastes (eWaste) including old computers and equipment using Waste Management eScrap Tracker™ program. An additional 34-lbs. of spent light bulbs were collected and recycled utilizing Waste Management's Lamp Tracker™ and Mercury Tracker™ programs;
- Collection, removal and disposal of three drums from the factory building containing light ballasts with PCBs, Potassium Hydroxide and Sodium Hydroxide.

The material was collected by GES, and transported off-site by Frank's Vacuum Truck Service, Inc. for disposal at CWM Chemical Service, in Model City, NY;

- Collection and removal of five (5) lab-pack drums, identified as LP-01 through LP-05, containing spent laboratory chemicals including Sulfuric Acid, Hydrochloric Acid, Ammonium Hydroxide, Sodium Hydroxide, Caustic detergent and cleaner, ethanolamine, waste paint, adhesive, glycol, and spent laboratory titrate and indicator solutions. These materials were over-packed and transported off-site by Tonawanda Tank Transport Services, Inc. for disposal at Chemtron Corp. located in Avon, Ohio;
- Excavation and off-site disposal of approximately 358-tons of chromium-impacted soil/fill in the vicinity of TP-13 and TP-16. A delineation investigation was conducted as part of the RI to determine the lateral extents of the chromium contamination. The soil was characterized as non-hazardous based on TCLP analysis. Approximately 187-tons of soil/fill was excavated from the TP-13 area, which was excavated from the ground surface to approximately 3.5 fbgs, and approximately 171-tons was excavated from the TP-16, which was excavated from the ground surface to approximately 2.5 fbgs. Confirmatory samples were collected and analytical results were below Part 375 Industrial SCOs. Excavated soil/fill was transported off-site by RE Lorenz for disposal at Modern Landfill in Model City, New York.
- Excavation of approximately 26-tons of impacted surface soil/fill in the former spent electrode storage area (SS-9). The soil was characterized as non-hazardous based on TCLP analysis. Excavated soil/fill was transported off-site for disposal at Modern Landfill in Model City, New York. Additionally, three spent electrodes were direct-loaded and transported off-site for disposal at Chemical Waste Management in Chafee, New York.
- Approximately 250-tons of stack deposits were removed from the western stack. Waste characterization samples confirmed the deposits to be non-hazardous, and the removed stack deposits were loaded and transported off-site by RE Lorenz for disposal at Modern Landfill in Model City, New York.
- Excavation and off-site disposal of approximately 728-tons of arsenic-impacted soil/fill in the vicinity of TP-1 and TP-5. A supplemental delineation investigation was conducted as part of the RI to determine the lateral extents of the arsenic contamination in those areas. The soil was characterized as non-hazardous based on TCLP analysis. Approximately 385-tons of material was excavated from the TP-1 area and approximately 343-tons of material was excavated from the TP-5 area. Both excavations were completed from the ground surface to approximately four fbgs. Confirmatory samples were collected from both areas, with analytical results below Part 375 Industrial SCOs, with one

minor exception. Excavated soil/fill was transported off-site by RE Lorenz for disposal at Modern Landfill in Model City, New York.

- Placement and compaction of approximately 1,115-tons of native silty clay backfill material in the TP-13, TP-16, SS-9, TP-1 and TP-5 excavation areas. Backfill materials consisted of on-Site silty clay soils excavated during factory refurbishment (i.e., new sub-surface material feed hopper), which were tested to confirm they met NYSDEC on-Site re-use criteria and were pre-approved by NYSDEC to reuse. Additional backfill material included virgin gravel/stone from LaFarge gravel pit, which was used for approximately 3-4-inches of cover over the silty clay backfill in certain areas.
- Execution and recording of a NYSDEC-approved Environmental Easement to restrict land use and prevent future exposure to any contamination remaining at the Site.
- Development and implementation of a Site Management Plan for long term management of remaining contamination as required by the Environmental Easement, which includes plans for: (1) Institutional Controls, (2) excavation, and (3) monitoring and reporting

Remedial activities were completed at the Site from November 2009 through March 2010. Figure 7 represents the IRM excavation areas. Table 6 presents a summary of all material removed from the BCP Site.

1.4.1 Site-Related Treatment Systems

No long-term treatment systems were installed as part of the Site remedy.

1.4.2 Remaining Contamination

The contamination remaining at the Site includes low concentrations of certain constituents in soil/fill and groundwater. Table 5 shows the groundwater analytical data. Tables 7a through 7d present the results of all soil samples remaining at the Site after completion of Remedial Action that exceed the Track 1 (unrestricted) SCOs.

2.0 INSTITUTIONAL CONTROL PLAN

2.1 Introduction

2.1.1 General

Since contaminated soil/fill and groundwater will remain beneath the Site, Institutional Controls (ICs) are required to protect human health and the environment. This Institutional Control Plan describes the procedures for the implementation and management of all ICs at the Site. The IC Plan is one component of the SMP and is subject to revision by NYSDEC.

2.1.2 Purpose

This plan provides:

- A description of all ICs on the Site;
- The basic implementation and intended role of each IC;
- A description of the key components of the ICs set forth in the Environmental Easement;
- A description of the features to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of ICs, such as the implementation of the Excavation Work Plan for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the Site; and,
- Any other provisions necessary to identify or establish methods for implementing the ICs required by the Site remedy, as determined by the NYSDEC.

2.2 Institutional Controls

A series of Institutional Controls are required to: (1) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and, (2) limit the use and development of the Site to industrial uses only. Adherence to these

Institutional Controls on the Site is required by the Environmental Easement and will be implemented under this Site Management Plan. These Institutional Controls are:

- Compliance with the Environmental Easement and this SMP by the Grantor and the Grantor's successors and assigns;
- Environmental or public health monitoring must be performed as defined in this SMP;
- Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in this SMP.

Institutional Controls identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement.

The Site has a series of Institutional Controls in the form of site restrictions. Adherence to these Institutional Controls is required by the Environmental Easement. Site restrictions that apply to the Controlled Property are:

- The property may only be used for [industrial use provided that the long-term Institutional Controls included in this SMP are employed.
- The property may not be used for a higher level of use, such as unrestricted restricted residential, or commercial use without additional remediation and amendment of the Environmental Easement, as approved by the NYSDEC;
- All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with this SMP;
- The use of the groundwater underlying the property is prohibited without treatment rendering it safe for intended use;
- Vegetable gardens and farming on the property are prohibited;

The Site owner or remedial party will submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be

submitted annually, or an alternate period of time that NYSDEC may allow and will be made by an expert that the NYSDEC finds acceptable.

2.2.1 Excavation Work Plan

The Site has been remediated for industrial use. Any future intrusive work that will disturb the remaining contamination will be performed in compliance with the Excavation Work Plan (EWP) (see Appendix A). Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) prepared for the Site. A sample HASP is attached in Appendix C to this SMP that is in current compliance with DER-10, and 29 CFR 1910, 29 CFR 1926, and all other applicable Federal, State and local regulations. Based on future changes to State and federal health and safety requirements, and specific methods employed by future contractors, the HASP and CAMP will be updated and re-submitted with the notification provided in the EWP. Any intrusive construction work will be performed in compliance with the EWP, HASP and CAMP, and will be included in the periodic inspection and certification reports submitted under the Site Management Reporting Plan.

The Site owner and associated parties preparing the remedial documents submitted to the State, and parties performing this work, are completely responsible for the safe performance of all intrusive work, the structural integrity of excavations, proper disposal of excavation de-water, control of runoff from open excavations into remaining contamination, and for structures that may be affected by excavations (such as building foundations. The Site owner will ensure that Site development activities will not interfere with, or otherwise impair or compromise, the institutional controls described in this SMP.

2.3 Inspections and Notifications

2.3.1 Inspections

Inspections of all ICs at the Site will be conducted at the frequency specified in the SMP Monitoring Plan schedule. A comprehensive Site-wide inspection will be conducted

annually, regardless of the frequency of the Periodic Review Report, as specified in the SMP Monitoring Plan. The inspections will determine and document the following:

- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP and the Environmental Easement;
- If Site records are complete and up to date; and,
- Changes, or needed changes, to the remedial or monitoring system;

Inspections will be conducted in accordance with the procedures set forth in this SMP.

2.3.2 Notifications

Notifications will be submitted by the property owner to the NYSDEC as needed for the following reasons:

- 60-day advance notice of any proposed changes in Site use that are required under the terms of the Brownfield Cleanup Agreement (BCA), 6NYCRR Part 375, and/or Environmental Conservation Law.
- 15-day advance notice of any proposed ground-intrusive activities pursuant to the Excavation Work Plan.
- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action shall be submitted to the NYSDEC within 45 days and shall describe and document actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the Site or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser has been provided with a copy of the Brownfield Cleanup Agreement (BCA), and all approved work plans and reports, including this SMP; and,
- Within 15 days after the transfer of all or part of the Site, the new owner's name, contact representative, and contact information will be confirmed in writing.

2.4 Contingency Plan

Emergencies may include injury to personnel, fire or explosion, environmental release, or serious weather conditions.

This Contingency Plan, a summary of the Emergency Response Plan (appended to the HASP), describes potential emergencies that may occur at the Site; procedures for responding to those emergencies; roles and responsibilities during emergency response; and training all workers must receive in order to follow emergency procedures. This Contingency Plan also describes the provisions this Site has made to coordinate its emergency response planning with other contractors on-Site and with off-site emergency response organizations.

2.4.1 Emergency Telephone Numbers

In the event of any environmentally related situation or unplanned occurrence requiring assistance the Owner or Owner's representative(s) should contact the appropriate party from the contact list below. For emergencies, appropriate emergency response personnel should be contacted. Prompt contact should also be made to a qualified environmental professional. These emergency contact lists must be maintained in an easily accessible location at the Site.

Table 8: Emergency Contact Numbers

Medical, Fire, and Police:	911
One Call Center:	(800) 272-4480 (3 day notice required for utility markout)
Poison Control Center:	(800) 222-1222
Pollution Toxic Chemical Oil Spills:	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362

Table 9: Site Contact Numbers

Matthew Greene Corporate Environmental, Health, and Safety Manager	Work: (740) 984-8608 Mobile: (740) 336-4164
Michael Lesakowski Qualified Environmental Professional	Work: (716) 856-0599 Mobile: (716) 818-3954
Bryan C. Hann Site Safety and Health Officer (SSHO)	Work: (716) 856-0635 Mobile: (716) 870-1165
Nathan T. Munley Alternate SSHO	Work: (716) 856-0635 Mobile: (716) 289-1072

* Note: Contact numbers subject to change and should be updated as necessary

2.4.2 Map and Directions to Nearest Health Facility

Site Location: 3807 Highland Avenue Site
Nearest Hospital Name: Niagara Falls Memorial Medical Center
Hospital Location: 621 10th Street, Niagara Falls, New York
Hospital Telephone: 716-278-4000

Directions to the Hospital:

1. Turn Left on Highland Avenue
2. Turn Left on Portage Road
3. Turn Right on Pine Avenue
4. Turn Left on 10th Street

Total Distance: 2.1 miles
Total Estimated Time: 5 minutes

Figure 8 presents a Hospital Route Map.

2.4.3 Response Procedures

As appropriate, the fire department and other emergency response group will be notified immediately by telephone of the emergency. The emergency telephone number list is found at the beginning of this Contingency Plan above (Table 8). An emergency telephone number list will also be posted prominently at the Site and made readily available to all personnel at all times.

3.0 SITE MONITORING PLAN

3.1 Introduction

3.1.1 General

The Monitoring Plan describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the Site, and all affected Site media identified below. This Monitoring Plan may only be revised with the approval of NYSDEC.

3.1.2 Purpose and Schedule

This Monitoring Plan describes the methods to be used for:

- Assessing compliance with applicable NYSDEC standards, criteria and guidance
- Assessing achievement of the remedial performance criteria.
- Evaluating Site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment; and
- Preparing the necessary reports for the various monitoring activities.

To adequately address these issues, this Monitoring Plan provides information on:

- Reporting requirements;
- Annual inspection and periodic certification.

3.2 Site-Wide Inspection

Site-wide inspections will be performed on a regular schedule at a minimum of once a year. Site-wide inspections will also be performed after all severe weather conditions that may affect Institutional Controls. The site-wide inspection will include a general visual evaluation of all areas of the site not covered by buildings. Non-paved areas (e.g. vegetated areas in the northeast section of Site), and pavement/gravel areas across the Site will be inspected to verify that these areas are being maintained, as appropriate to prevent potential

off-site migration of remaining contaminants by surface water run-off or dust.. Any surface or subsurface disturbances related to redevelopment activities will be performed in compliance with the Excavation Plan (Appendix A).

During these inspections, an inspection form will be completed (Appendix D). The form will compile sufficient information to assess the following:

- Compliance with all ICs, including Site usage;
- General Site conditions at the time of the inspection;
- The Site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection;
- Confirm that Site records are up to date.

3.3 Monitoring Quality Assurance/Quality Control

If media sampling is determined to be necessary (i.e. intrusive excavation), all sampling and analyses will be performed in accordance with the requirements of the Quality Assurance Project Plan (QAPP) prepared for the Site (Appendix E). Main Components of the QAPP include:

- QA/QC Objectives for Data Measurement;
- Sampling Program:
  - Sample containers will be properly washed, decontaminated, and appropriate preservative will be added (if applicable) prior to their use by the analytical laboratory. Containers with preservative will be tagged as such.
  - Sample holding times will be in accordance with the NYSDEC ASP requirements.
  - Field QC samples (e.g., trip blanks, coded field duplicates, and matrix spike/matrix spike duplicates) will be collected as necessary.
- Sample Tracking and Custody;
- Calibration Procedures:
  - All field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions.

  - The laboratory will follow all calibration procedures and schedules as specified in USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods.

- Analytical Procedures;
- Preparation of a Data Usability Summary Report (DUSR), which will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain of custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method.
- Internal QC and Checks;
- QA Performance and System Audits;
- Preventative Maintenance Procedures and Schedules;
- Corrective Action Measures.

3.4 Monitoring Reporting Requirements

Forms and any other information generated during regular inspections will be kept on file on-Site. All forms, and other relevant reporting formats used during the inspection events, will be (1) subject to approval by NYSDEC and (2) submitted at the time of the Periodic Review Report, as specified in the Reporting Plan of this SMP.

All inspection results will be reported to NYSDEC on a periodic basis in the Periodic Review Report. A letter report will also be prepared, if required by NYSDEC, subsequent to each sampling event. The letter-report will include, at a minimum:

- Date of event;
- Personnel conducting sampling;
- Description of the activities performed;
- Type of samples collected (e.g., soil/fill, groundwater);
- Copies of all field forms completed (e.g., sampling logs, chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;

- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (o be submitted electronically in the NYSDEC-identified format); and,
- Any observations, conclusions, or recommendations.

Data will be reported in hard copy or digital format as determined by NYSDEC. A summary of the monitoring program deliverables are summarized in Table 10 below.

Table 10: Schedule of Inspection Reports

Task	Reporting Frequency*
Site Inspection (PRR)	Annual

* The frequency of events will be conducted as specified until otherwise approved by NYSDEC

4.0 OPERATION & MAINTENANCE PLAN

4.1 Introduction

The Site remedy does not rely on any mechanical systems, such as sub-slab depressurization systems or air sparge/ soil vapor extraction systems to protect public health and the environment. Therefore, the operation and maintenance of such components are not included in this SMP.

5.0 INSPECTIONS, REPORTING & CERTIFICATIONS

5.1 Site Inspections

5.1.1 Inspection Frequency

All inspections will be conducted at the frequency specified in the schedules provided in Section 3 (Site Monitoring Plan) of this SMP. At a minimum, a Site-wide inspection will be conducted annually.

5.1.2 Inspection Forms, Sampling Data, & Maintenance Reports

A NYSDEC Site Management Periodic Review Report Notice – Institutional and Engineering Control Certification Form will be completed during the Site-wide inspection (see Appendix D). These forms are auto-generated by the NYSDEC.

All applicable inspection forms and other records, including all media sampling data and system maintenance reports, generated for the Site during the reporting period will be provided in electronic format in the Periodic Review Report.

5.1.3 Evaluation of Records & Reporting

The results of the inspection and Site monitoring data will be evaluated as part of the IC certification to confirm that the:

- ICs are in place, are performing properly, and remain effective;
- The Monitoring Plan is being implemented;
- The Site remedy continues to be protective of public health and the environment and is performing as designed in the RI/AAR/IRM Work Plan and FER.

5.2 Certification of Institutional Controls

After the last inspection of the reporting period, a qualified environmental professional will prepare the following certification:

For each institutional control identified for the Site, I certify that all of the following statements are true:

- The institutional control employed at this Site is unchanged from the date the control was put in place, or last approved by the Department;
- Nothing has occurred that would impair the ability of the control to protect the public health and environment;
- Nothing has occurred that would constitute a violation or failure to comply with any Site management plan for this control;
- Access to the Site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;
- Use of the Site is compliant with the environmental easement.
- The information presented in this report is accurate and complete.
- I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner or Owner's Designated Site Representative] for the Site.
- No new information has come to my attention, including groundwater monitoring data from wells located at the Site boundary, if any, to indicate that the assumptions made in the qualitative exposure assessment of off-Site contamination are no longer valid; and

Every five years the following certification will be added:

- The assumptions made in the qualitative exposure assessment remain valid.

The signed certification will be included in the Periodic Review Report described below.

5.3 Periodic Review Report

A Periodic Review Report will be submitted to the Department every year, beginning eighteen months after the Certificate of Completion (COC) is issued. In the event that the Site is subdivided into separate parcels with different ownership, a single Periodic Review

Report will be prepared that addresses the Site described in the Environmental Easement. The report will be prepared in accordance with NYSDEC DER-10 and submitted within 45 days of the end of each certification period. Media sampling results, if any, will also be incorporated into the Periodic Review Report. The report will include:

- Identification, assessment and certification of all ICs required by the remedy for the Site;
- Results of the required annual Site inspections and severe condition inspections, if applicable;
- All applicable inspection forms and other records generated for the Site during the reporting period in electronic format;
- A summary of any monitoring data and/or information generated during the reporting period with comments and conclusions;
- Data summary tables and graphical representations of contaminants of concern by media, which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted.
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format;
- A Site evaluation, which includes the following:
  - The compliance of the remedy with the requirements of the Site-specific remedial action;
  - Any new conclusions or observations regarding Site contamination based on inspections;
  - Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan; and
  - The overall performance and effectiveness of the remedy.

The Periodic Review Report will be submitted, in hard-copy format, to the NYSDEC Central Office and Regional Office in which the Site is located, and in electronic format to NYSDEC Central Office, Regional Office and the NYSDOH Bureau of Environmental Exposure Investigation.

5.4 Corrective Measures Plan

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional control, a corrective measures plan will be submitted to the NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the corrective measures plan until it is approved by the NYSDEC.

TABLES

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TABLE 1

Summary of Groundwater Elevations

3807 Highland Avenue Site

Niagara Falls, New York

Location	TOR Elevation [1] (fmsl)	DTW (fbTOR)	Groundwater Elevation [1] (fmsl)	DTW (fbTOR)	Groundwater Elevation [1] (fmsl)
		Oct 26, 2009		Jan 12, 2010	
MW-1	503.10	12.83	490.27	12.47	490.63
MW-2	501.10	13.41	487.69	15.06	486.04
MW-3D	498.46	7.70	490.76	7.70	490.76
MW-3S	498.44	8.41	490.03	7.27	491.17
MW-4	499.54	12.16	487.38	NA [6]	--
MW-5	503.48	10.61	492.87	10.70	492.78

Notes:

1. Top of riser elevation based upon an assumed datum of 500.00 fmsl; North bolt on fire hydrant along Highland Ave. by Benchmark on 10/26/09.
2. DTW = depth to water
3. TOR = top of riser.
4. fmsl = feet above mean sea level.
5. fbgs = feet below ground surface.
6. MW-4 was not accessible for the Jan 12, 2010 elevation monitoring due to snow cover.

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TABLE 2

Summary of Surface Soil Analytical Data

3807 Highland Avenue Site

Niagara Falls, New York

PARAMETER[1]	Industrial SCOs[2]	*Historical Data (August 2008-January 2009)*									*Remedial Investigation Data (October 2009)*								
		SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	SS-7	SS-8	SS-9	SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	SS-7	SS-8	SS-9
		Aug 08	Aug 08	Aug 08	Aug 08	Jan 09	Jan 09	Jan 09	Jan 09	Jan 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09
Volatile Organic Compounds (VOCs) - mg/kg																			
1,2,4-Trimethylbenzene	380	NA	NA	NA	NA	0.019 I	NA	0.0084 J	NA	0.035	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	380	NA	NA	NA	NA	0.0047 I,J	NA	ND	NA	0.023 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone (MEK)	1000	NA	NA	NA	NA	0.022	NA	0.17	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	1000	NA	NA	NA	NA	0.076	NA	0.11	NA	0.054	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	89	NA	NA	NA	NA	ND	NA	ND	NA	0.78	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	780	NA	NA	NA	NA	ND	NA	ND	NA	0.33	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene (Cumene)	--	NA	NA	NA	NA	ND	NA	ND	NA	0.0069	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	1000	NA	NA	NA	NA	0.018	NA	0.043 B	NA	0.051 B	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	1000	NA	NA	NA	NA	0.0022 I,J	NA	ND	NA	0.0074 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Cymene (p-isopropyltoluene)	--	NA	NA	NA	NA	0.0016 I,J	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	1000	NA	NA	NA	NA	0.0018 I,J	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1000	NA	NA	NA	NA	0.0013 I	NA	ND	NA	6.3 D	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylene	1000	NA	NA	NA	NA	0.0063 I,J	NA	ND	NA	0.68	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds (SVOCs) (mg/kg)																			
2-Methylnaphthalene	--	1.5 J	NA	ND	0.32 J	2.1 D,J	ND	1.9 D,J	0.07 D,J	44 D,J	0.33 D,J	ND	0.13 D,J	ND	0.51 D,J	0.31 D,J	0.13 D,J	0.15 D,J	ND
Acenaphthene	1000	ND	NA	ND	ND	ND	ND	2.2 D,J	ND	580 D	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	1000	ND	NA	ND	ND	ND	ND	1.8 D,J	ND	4.3 D,J	0.46 D,J	ND	ND	ND	ND	0.6 D,J	ND	ND	ND
Anthracene	1000	ND	NA	ND	0.14 J	0.4 D,J	ND	8.3 D,J	0.06 D,J	1200 D	0.35 D,J,B	ND	ND	ND	ND	0.26 D,J	0.079 D,J	0.096 D,J	ND
Benzo(a)anthracene	11	0.7 J	NA	1 J	0.4 J	ND	ND	16 D	0.17 D,J	1800 D	2.3 D,J,B	0.21 D,J,B	0.3 D,J,B	0.61 D,J,B	0.52 D,J	1.7 D,J	0.39 D,J	0.37 D,J	0.62 D,J
Benzo(a)pyrene	1.1	1.3 J	NA	ND	0.5 J	ND	5.3 D,J	14 D	0.37 D,J	1300 D	2.4 D,J,B	0.22 D,J,B	0.28 D,J,B	0.46 D,J,B	0.56 D,J	3.5 D,J	0.29 D,J	0.38 D,J	0.52 D,J
Benzo(b)fluoranthene	11	1.8 J	NA	ND	0.7 J	ND	ND	24 D	0.24 D,J	2300 D	3.8 D,J,B	0.41 D,J,B	0.52 D,J,B	0.77 D,J,B	0.81 D,J	5.7 D	0.51 D,J	0.62 D,J	0.84 D,J
Benzo(ghi)perylene	1000	0.65 J	NA	ND	0.24 J	ND	ND	9 D,J	0.17 D,J	910 D	1.9 D,J	0.22 D,J	0.33 D,J	0.45 D,J	0.56 D,J	3.7 D,J	0.31 D,J	0.42 D,J	0.53 D,J
Benzo(k)fluoranthene	110	1.2 J	NA	ND	0.29 J	ND	ND	ND	0.08 D,J	2300 D	1.6 D,J,B	0.092 D,J,B	0.14 D,J,B	0.34 D,J,B	0.44 D,J	2 D,J	0.21 D,J	0.21 D,J	ND
Butyl benzyl phthalate	--	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.98 D,J	ND
Chrysene	110	2.2 BJ	NA	1.3 J	0.5 J	2 D,J	ND	15 D	0.22 D,J	1500 D	2.6 D,J,B	0.33 D,J,B	0.35 D,J,B	0.66 D,J,B	0.69 D,J	3 D,J	0.41 D,J	0.48 D,J	0.55 D,J
Dibenzo(a,h)anthracene	1.1	ND	NA	ND	0.066 J	ND	ND	5.8 D,J	0.31 D,J	100 D	0.5 D,J	ND	ND	ND	ND	1.1 D,J	ND	0.11 D,J	ND
Dibenzofuran	1000	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	1000	1.3 J	NA	2 J	1.2	1.6 D,J	ND	37 D	0.44 D,J	4800 D	3.7 D,J,B	0.33 D,J,B	0.48 D,J,B	0.59 D,J,B	0.98 D,J	0.81 D,J	0.65 D,J	0.65 D,J	1.1 D,J
Fluorene	--	NA	NA	ND	ND	0.5 D,J	ND	3.3 D,J	ND	470 D	ND	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	11	0.6 J	NA	ND	0.22 J	ND	ND	8.6 D,J	0.12 D,J	850 D	1.7 D,J,B	0.18 D,J,B	0.25 D,J,B	0.37 D,J,B	0.42 D,J	3.1 D,J	0.26 D,J	0.33 D,J	0.4 D,J
Naphthalene	1000	0.78 J	NA	ND	0.18 J	1 D,J	ND	2.5 D,J	0.09 D,J	130 D	ND	ND	ND	ND	0.39 D,J	0.2 D,J	ND	ND	ND
Phenanthrene	1000	2 BJ	NA	ND	0.82 J	4.2 D,J	ND	30 D	0.27 D,J	4100 D	0.98 D,J,B	0.2 D,J,B	0.25 D,J,B	0.37 D,J,B	0.61 D,J	0.31 D,J	0.51 D,J	0.58 D,J	0.59 D,J
Pyrene	1000	1.6 J	NA	1.2 J	0.56 J	1.7 D,J	ND	25 D	0.32 D,J	3200 D	3.3 D,J,B	0.28 D,J,B	0.38 D,J,B	0.53 D,J,B	0.85 D,J	0.77 D,J	0.53 D,J	0.54 D,J	0.86 D,J
Total PCBs (mg/kg)																			
Aroclor 1242	25	ND	NA	NA	NA	ND	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	25	ND	NA	NA	NA	ND	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1254	25	0.63	NA	NA	NA	ND	NA	NA	NA	NA	0.051	0.0075 J	0.014 J	0.028	0.035 C	0.012 C, J	0.0086 C, J	0.026 C	0.0061 C, J
Aroclor 1260	25	ND	NA	NA	NA	ND	NA	NA	NA	NA	0.051	ND	ND	ND	ND	ND	ND	ND	ND
Total Metals (mg/kg)																			
Aluminum - Total	--	ND	ND	ND	ND	NA	NA	3770	3590	NA	14800	1230	2280	4350	2000	2760	973	871	4350
Antimony - Total	--	ND	ND	ND	ND	NA	NA	2.65 J	0.662 J	NA	ND J	ND J	ND J	ND J	ND J	ND J	ND J	ND J	ND J
Arsenic - Total	16	15.3	ND	5.4	ND	NA	NA	21.8	3.02	NA	22.4 J	7.1 J	4.2 J	8.9 J	48.4 J	14.5 J	3.5 J	ND	2.2 J
Barium - Total	10000	447	88.7	99.5	22.7	NA	NA	4510 D	47.5	NA	213 J	22.2 J	55 J	62 J	139 J	86.7 J	45.4 J	31.7 J	29.2 J
Beryllium - Total	2700	ND	ND	ND	ND	NA	NA	0.402	1.28	NA	1.05	0.234	0.259	0.394	0.459	0.503	0.261	0.648	ND
Cadmium - Total	60	9.3	0.8	3.5	0.28	NA	NA	5.98	1.57	NA	1.12	0.62	0.553	0.837	0.573	0.588	0.381	ND	ND
Calcium - Total	--	ND	ND	ND	ND	NA	NA	99400 D	19100	NA	25300	37500	89400 D	48200	34400	53600	85400 D	13100	41300 J
Chromium - Total	6800	245	17.1	216	11.8	NA	NA	127	65.5	NA	466	88.1	62.5	590	400	61.1	20.4	23.2	109
Cobalt - Total	--	ND	ND	ND	ND	NA	NA	8.23	4.35	NA	18.6 J	3.73 J	4.3 J	15.4 J	29.1 J	5.49 J	1.96 J	2.19 J	3.78 J
Copper - Total	10000	ND	ND	ND	ND	NA	NA	220	112	NA	132	29.7	35.5	171	211	99.6	27.4	26.2	14.5
Iron - Total	--	ND	ND	ND	ND	NA	NA	3760	30000	NA	40700	10700	8520	51800	54100	13700	10700	6220	4080
Lead - Total	3900	629	47.7	255	17.1	NA	NA	614	78.1	NA	106	39	49.7	56.6	80.7	41.2	26.8	25.4	19.9
Magnesium - Total	--	ND	ND	ND	ND	NA	NA	10800	3340	NA	11200	18300	36900	16700	15600	22900	45200	5160	29500
Manganese - Total	10000	ND	ND	ND	ND	NA	NA	810	321	NA	8180 D	532 B	1910 B	1780 B	23600 D	2420 D	500	177	558 J
Mercury - Total	5.7	0.4	1.2	0.083	ND	NA	NA	0.38	0.0147 J	NA	0.0515	ND	ND	0.056	ND	ND	ND	ND	ND
Nickel - Total	10000	ND	ND	ND	ND	NA	NA	119	60.8	NA	262	85.4	33.1	424	228	64.5	19.9	26	ND
Potassium - Total	--	ND	ND	ND	ND	NA	NA	1680	636	NA	1790	467	585	536	383	387	338	198	273 J
Selenium - Total	6800	ND	ND	ND	ND	NA	NA	0.938 J	0.64 J	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver - Total	6800	ND	ND	ND	ND	NA	NA	21.9	0.194 J	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium - Total	--	ND	ND	ND	ND	NA	NA	2970	419	NA	847	ND	ND	175	ND	240	878	289	ND
Vanadium - Total	--	ND	ND	ND	ND	NA	NA	22.1	6.12	NA	29.9 J	4.57 J	6.8 J	18.4 J	24.2 J	9.6 J	3.7 J	3.52 J	5.08 J
Zinc - Total	10000	ND	ND	ND	ND	NA	NA	5290 D	3560 D	NA	318	1670 D	182	571	417	339	3150 D	4470 D	75.2

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TABLE 2

Summary of Surface Soil Analytical Data

3807 Highland Avenue Site

Niagara Falls, New York

PARAMETER[1]	Industrial SCOs[2]	*Remedial Investigation Data (October 2009)*																		
		SS-10	SS-11	SS-12	SS-13	SS-14	SS-15	SS-16	SS-17	SS-18	SS-19	SS-20	SS-21	SS-22	SS-23	SS-24	SS-25	SS-26	SS-27	SS-28
		Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09
Volatile Organic Compounds (VOCs) - mg/kg																				
1,2,4-Trimethylbenzene	380	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	380	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone (MEK)	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	780	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene (Cumene)	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Cymene (p-isopropyltoluene)	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylene	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds (SVOCs) (mg/kg)																				
2-Methylnaphthalene	--	1.5 D,J	0.98 D,J	2.6 D,J	5.6 D,J	ND	ND	ND	ND	ND	0.073 J	ND	ND	0.18 D,J	0.21 D,J	ND	ND	ND	ND	0.77 D,J
Acenaphthene	1000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	1000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	1000	ND	ND	ND	ND	0.2 D,J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.26 D,J
Benzo(a)anthracene	11	0.96 D,J	0.77 D,J	0.66 D,J	0.78 D,J	1.1 D,J	ND	0.42 D,J	ND	0.16 D,J	ND	0.28 D,J	ND	0.31 D,J	0.32 D,J	0.32 D,J	0.73 D,J	0.4 D,J	0.38 D,J	0.67 D,J
Benzo(a)pyrene	1.1	0.96 D,J	ND	0.57 D,J	0.51 D,J	1.4 D,J	ND	ND	ND	0.19 D,J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	11	1.3 D,J	0.66 D,J	0.86 D,J	0.64 D,J	1.5 D,J	ND	0.66 D,J	ND	0.27 D,J	ND	ND	ND	0.4 D,J	0.4 D,J	0.42 D,J	0.73 D,J	0.29 D,J	0.53 D,J	ND
Benzo(ghi)perylene	1000	0.86 D,J	ND	0.47 D,J	ND	1.1 D,J	ND	ND	ND	0.15 D,J	ND	ND	ND	0.28 D,J	ND	ND	ND	ND	ND	0.53 D,J
Benzo(k)fluoranthene	110	0.73 D,J	ND	0.45 D,J	ND	0.57 D,J	ND	ND	ND	0.096 D,J	ND	ND	ND	ND	ND	ND	0.51 D,J	ND	ND	ND
Butyl benzyl phthalate	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND
Chrysene	110	1.2 D,J	0.44 D,J	0.94 D,J	0.78 D,J	1.2 D,J	ND	0.44 D,J	ND	0.17 D,J	ND	0.24 D,J	ND	0.28 D,J	0.3 D,J	0.26 D,J	0.6 D,J	0.26 D,J	0.38 D,J	0.75 D,J
Dibenzo(a,h)anthracene	1.1	ND	ND	ND	ND	0.28 D,J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	1000	ND	ND	0.53 D,J	1.1 D,J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	1000	1.7 D,J	0.77 D,J	1.4 D,J	1.2 D,J	1.8 D,J	ND	0.59 D,J	ND	0.21 D,J	ND	0.5 D,J	ND	0.37 D,J	0.5 D,J	0.42 D,J	0.91 D,J	0.44 D,J	0.54 D,J	1.2 D,J
Fluorene	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.22 D,J
Indeno(1,2,3-cd)pyrene	11	0.65 D,J	ND	0.38 D,J	ND	0.9 D,J	ND	0.22 D,J	ND	0.12 D,J	ND	ND	ND	ND	ND	ND	0.37 D,J	ND	ND	0.33 D,J
Naphthalene	1000	0.94 D,J	ND	1.7 D,J	3.5 D,J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.58 D,J
Phenanthrene	1000	1.1 D,J	0.66 D,J	1.5 D,J	2.6 D,J	1 D,J	ND	ND	ND	0.11 D,J	0.04 J	ND	ND	ND	0.45 D,J	0.23 D,J	0.68 D,J	0.23 D,J	0.38 D,J	1.3 D,J
Pyrene	1000	1.5 D,J	0.81 D,J	1.3 D,J	0.98 D,J	1.6 D,J	2.6 D,J,	0.5 D,J	ND	0.18 D,J	ND	0.39 D,J	ND	0.31 D,J	0.38 D,J	0.46 D,J	0.83 D,J	ND	ND	1.1 D,J
Total PCBs (mg/kg)																				
Aroclor 1242	25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0044 C, J	ND	ND	ND	0.0069 C, J	ND
Aroclor 1248	25	ND	ND	ND	ND	ND	0.12 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1254	25	0.011 C, J	0.026 C	0.011 C, J	0.006 C, J	ND	ND	ND	ND	ND	ND	0.013 J	0.025 J	0.083 J	0.014 C, J	0.017 C, J	0.026 C	0.013 C, J	0.024 C, J	0.014 C, J
Aroclor 1260	25	ND J	ND J	ND J	ND J	ND J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Metals (mg/kg)																				
Aluminum - Total	--	2340	1720	822	1040	13300	2290	1460	1600	2150	243	869	1630	1830	7760	13300	8360	11300	6230	3020
Antimony - Total	--	ND J	ND J	ND J	ND J	ND J	ND	ND	ND	ND	ND	30.8	ND	ND	ND J	ND J	ND J	ND J	ND J	ND J
Arsenic - Total	16	5.2 J	6.6 J	3.1 J	12.2 J	8.6 J	7.1	3.2	3.9	ND	ND	ND	8.2	8.5	4.7	5.3	12.3	4.5	4	6.7
Barium - Total	10000	58.6 J	35.2 J	33.5 J	306 J	133 J	65.9	24.2	123	34.2	17.2	42.4	83.2	120	109	121	108	150	224	61.6
Beryllium - Total	2700	0.342	0.42	0.344	0.647	0.726	ND	ND	ND	0.54	ND	ND	0.322	1.18	0.471	0.633	0.56	0.705	0.505	0.433
Cadmium - Total	60	0.765	0.482	0.374	ND	0.87	4.95	0.474	1.22	0.347	ND	0.975	1.06	1.24	0.28	0.735	1.38	0.442	3.21	1.98
Calcium - Total	--	59600	45300	64500	16000	19000	58300	12400	71100 D	4320	3570	12700	87000 D	87300 D	4710	12400	15500	32400	109000 D	55300
Chromium - Total	6800	50.8	66.6	22.6	12.4	58	237	52.2	107	13.9	17.6	1390	190	234	85.8 J	34 J	234 J	55 J	83.1 J	149 J
Cobalt - Total	--	4.6 J	5.66 J	2.8 J	2.66 J	11.3 J	5.95	3.39	4.96	1.09	ND	226	7.29	12.4	9.4 J	11.5 J	16.8 J	11.2 J	6.28 J	7.22 J
Copper - Total	10000	42.9	62.6	30.3	15.4	58.1	140 J	91.5 J	33 J	9.9 J	9.7 J	110 J	130 J	129 J	30.8 J	37.7 J	155 J	27.4 J	27.2 J	92.5 J
Iron - Total	--	14000	22000	7940	6350	21700	41100	21700	13800	1780 J	1740	24700	27400	41900	20900	21400	7220	20300	13600	23800
Lead - Total	3900	42.5	28.7	23.4	13.6	149	75.7	49.9	126	6.2	6	32.5	197	172	18.9	46.2	364	78.4	116	94.4
Magnesium - Total	--	32600	23300	34000	7390	9350	36300 J	20200 J	24900 J	785 J	342 J	6140 J	14600 J	46000 J	12700	7660	9700	18600	61600 D	21200
Manganese - Total	10000	1820	2870 D	765	213	1190	966	498	965 J	44.7	52.6	626	1040	886	1260	779	1190	636	525	730
Mercury - Total	5.7	ND	ND	ND	ND	0.264	0.0399 J	ND	ND	ND	ND	ND	0.117 J	ND	ND	0.0763	0.071	0.0441	0.0952	0.0595
Nickel - Total	10000	35.2	52.5	22.9	13.4	51.3	171	54.3	57.3	15.8	11.1	2440	133	143	39.5 J	32.6 J	175 J	49.9 J	46.2 J	73.3 J
Potassium - Total	--	298	239	204	210	1730	670	175	477	64.1	123	629	294	635	1360	2070	2120	2010	1300	650
Selenium - Total	6800	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver - Total	6800	ND	ND	ND	ND	ND	ND	ND	ND	0.99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium - Total	--	ND	ND	ND	ND	ND	265	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	186	196
Vanadium - Total	--	6.85 J	6.03 J	4.64 J	4.85 J	28.5 J	7.54 J	3.55 J	11.5 J	1.69 J	1.13 J	28.4 J	7.86 J	9.94 J	17.6 J	27.1 J	26.3 J	26.9 J	20 J	15.1 J
Zinc - Total	10000	225	278	189	168	353	3500 D	108	538	175	29.4	118	594	542	102	275	410	132	1720 D	763

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per NYSDEC Part 375 Soil Cleanup Objectives (December 2006)

Definitions:

ND = Parameter not detected above laboratory detection limit.
NA = Sample not analyzed for parameter.
"--" = No SCO available.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
B = Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
C = Calibration verification recovery was below the method control limit.
D = Compounds were identified in an analyisis at the secondary dilution factor.
I = Internal standard recovery was outside of method limits.

= Result exceeds 6NYCRR Part 375 Industrial SCO.

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TABLE 3

Summary of Sediment and Stack Deposits Analytical Data

3807 Highland Avenue Site

Niagara Falls, New York

PARAMETER[1]	Industrial SCOs[2]	*Stack Deposits*			*Sediment*				
		Stack-1	Stack-2	W-Stack	Sump-1	Sump-2	Sed-1	Sed-2	Sed-3
		Aug-08	Aug-08	Oct-09	Jan-09	Jan-09	Oct-09	Oct-09	Oct-09
Volatile Organic Compounds (VOCs) - mg/Kg									
Acetone	1000	NA	NA	NA	1.3	0.23	ND	0.015 J	0.16
1,2,4-Trimethylbenzene	380	NA	NA	NA	0.014 J	0.08	ND	ND	ND
1,3,5-Trimethylbenzene	380	NA	NA	NA	ND	0.046	ND	ND	ND
2-Butanone (MEK)	--	NA	NA	NA	0.036	ND	ND	ND	0.026 J
Benzene	89	NA	NA	NA	0.0068	ND	ND	ND	ND
Cyclohexane	--	NA	NA	NA	ND	ND	ND	0.0022 J	ND
Methylcyclohexane	--	NA	NA	NA	ND	0.025	ND	ND	ND
Methylene chloride	1000	NA	NA	NA	0.046 B	0.017 B	ND J	ND J	ND J
p-Cymene (p-isopropyltoluene)	--	NA	NA	NA	ND	0.025 J	ND	ND	ND
sec-Butylbenzene	1000	NA	NA	NA	ND	0.0094 J	ND	ND	ND
Toluene	1000	NA	NA	NA	0.019	0.025	ND	ND	0.32
Total Xylene	1000	NA	NA	NA	0.044	0.012 J	ND	ND	ND
Vinyl chloride	27	NA	NA	NA	ND	0.043	ND	ND	ND
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg									
2-Methylnaphthalene	--	NA	0.084 D,J	NA	ND	5.8 D,J	ND	0.86 D,J	ND
Acenaphthene	1000	NA	ND	NA	ND	0.86 D,J	ND	3.1 D,J	ND
Acenaphthylene	1000	NA	ND	NA	ND	0.97 D,J	ND	ND	ND
Anthracene	1000	NA	0.049 D,J	NA	ND	2.7 D,J	ND	6.1 D,J	ND
Benzo(a)anthracene	11	NA	0.2 D,J	NA	ND	3.8 D,J	0.35 D,J	17 D	2.4 D,J
Benzo(a)pyrene	1.1	NA	0.3 D,J	NA	ND	6.1 D,J	ND	16 D	2.6 D,J
Benzo(b)fluoranthene	11	NA	ND	NA	ND	ND	ND	18 D	3.3 D,J
Benzo(ghi)perylene	1000	NA	0.16 D,J	NA	ND	2.9 D,J	ND	13 D	ND
Benzo(k)fluoranthene	110	NA	ND	NA	ND	ND	ND	9.5 D,J	ND
Carbazole	--	NA	ND	NA	ND	ND	ND	4.4 D,J	ND
Chrysene	110	NA	0.45 D,J	NA	ND	4.5 D,J	ND	20 D	2.8 D,J
Dibenzo(a,h)anthracene	1.1	NA	0.33 D,J	NA	ND	ND	ND	2.2 D,J	ND
Fluoranthene	1000	NA	0.84 D,J	NA	ND	9.6 D,J	0.39 D,J	56 D	4.9 D,J
Fluorene	1000	NA	ND	NA	ND	1.9 D,J	ND	2.5 D,J	ND
Indeno(1,2,3-cd)pyrene	11	NA	0.092 D,J	NA	ND	2.4 D,J	ND	11 D,J	ND
Naphthalene	1000	NA	0.074 D,J	NA	ND	2.6 D,J	ND	ND	ND
Phenanthrene	1000	NA	0.38 D,J	NA	ND	8.1 D,J	0.41 D,J	44 D	2.6 D,J
Pyrene	1000	NA	0.4 D,J	NA	ND	8.6 D,J	0.35 D,J	43 D	4.6 D,J
Total PCBs - mg/Kg									
Aroclor 1260	25	NA	NA	0.01 J	NA	NA	NA	NA	NA
Aroclor 1254	25	NA	NA	0.011 J	NA	0.139 J	0.0057 J	ND	0.097 J
Total Metals - mg/Kg									
Aluminum	--	NA	3700	NA	NA	9850	1190	1900	5370
Antimony	--	NA	ND	NA	NA	3.41	ND J	ND J	ND
Arsenic	16	666	11.1	NA	NA	2.67	6.5	9.3	7.4
Barium	10000	1250	42.6	NA	NA	176	26.7	40.8	177
Beryllium	2700	NA	0.307	NA	NA	1.27	0.392	0.376	0.681
Cadmium	60	30.3	7.7	NA	NA	3.36	2.81	0.769	2.22
Calcium	--	NA	17700	NA	NA	20500	100000 D	27400	108000
Chromium	6800	101	654	NA	NA	62	51 J	1270 J	84.8
Cobalt	--	NA	66.6	NA	NA	6.21	4.43	3.99	8.4
Copper	10000	NA	150	NA	NA	680	49.5	40.7	131
Iron	--	NA	55900	NA	NA	19800	65200 D	6390	16700
Lead	3900	1900	266	NA	NA	42.6	52.9	32.6	125
Magnesium	--	NA	4340	NA	NA	10900	53100 D	13900	53300
Manganese	10000	NA	1040	NA	NA	338	569	956	825
Mercury	5.7	0.043	0.0648	NA	NA	0.123	ND	ND	0.438
Nickel	10000	NA	1460	NA	NA	45.4	32 J	14.9 J	64.4
Potassium	--	NA	767	NA	NA	1610	408	287	906
Selenium	6800	55.3	4.37	NA	NA	1.14	ND	ND	ND
Silver	6800	NA	0.557	NA	NA	1.06	ND	ND	ND
Sodium	--	NA	476	NA	NA	1960	192	869	ND
Vanadium	--	NA	24.6	NA	NA	22.9	4.83 J	9.01 J	18.4
Zinc	10000	NA	2560 D	NA	NA	1890 D	1460 D,J	315 J	1520

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per NYSDEC Part 375 Soil Cleanup Objectives (December 2006)

Definitions:

ND = Parameter not detected above laboratory detection limit.
NA = Sample not analyzed for parameter.
"--" = No SCO available.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
B = Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
D = Compounds were identified in an analyisis at the secondary dilution factor.

= Result exceeds 6NYCRR Part 375 Industrial SCO.

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TABLE 4a

Summary of Subsurface Soil Analytical Data

Historic Soil Boring Samples

3807 Highland Avenue Site

Niagara Falls, New York

PARAMETER[1]	Industrial SCOs[2]	SB-1 (5.5-7.5)	SB-2 (4-8)	SB-3 (0-3)	SB-4 (4-6)	SB-5 (4-8)	SB-6 (10-14)	SB-7 (4-8)	SB-8 (0-4)	SB-9 (0-4)	SB-10 (4-7)	SB-11 (8-10)
		Aug 08	Aug 08	Aug 08	Aug 08	Aug 08	Aug 08	Aug 08	Aug 08	Aug 08	Aug 08	Aug 08
Volatile Organic Compounds (VOCs) - mg/Kg												
1,2,4-Trimethylbenzene	380	ND	0.004 J	ND	NA	NA	ND	NA	NA	NA	ND	ND
1,3,5-Trimethylbenzene	380	ND	0.003 J	ND	NA	NA	ND	NA	NA	NA	ND	ND
2-Butanone (MEK)	1000	ND	ND	0.016 J	NA	NA	ND	NA	NA	NA	ND	ND
Acetone	1000	0.029	0.02	0.16	NA	NA	0.02	NA	NA	NA	ND	ND
Carbon disulfide	--	0.003 J	0.003 J	0.004 J	NA	NA	0.003 J	NA	NA	NA	0.002	0.002 J
Isopropylbenzene (Cumene)	--	ND	ND	ND	NA	NA	0.001 J	NA	NA	NA	ND	ND
Methylcyclohexane	--	ND	ND	ND	NA	NA	0.003 J	NA	NA	NA	ND	ND
Methylene chloride	1000	0.011 B	0.015 B	0.008 B	NA	NA	0.014 B	NA	NA	NA	0.014 B	0.012 B
n-Butylbenzene	1000	ND	ND	ND	NA	NA	0.008	NA	NA	NA	ND	ND
n-Propylbenzene	1000	ND	ND	ND	NA	NA	0.003 J	NA	NA	NA	ND	ND
p-Cymene (p-isopropyltoluene)	--	ND	ND	ND	NA	NA	0.001 J	NA	NA	NA	ND	ND
sec-Butylbenzene	1000	ND	ND	ND	NA	NA	0.004 J	NA	NA	NA	ND	ND
Toluene	1000	ND	ND	ND	NA	NA	0 B,J	NA	NA	NA	ND	ND
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg												
2-Methylnaphthalene	--	ND	ND	0.22 J	NA	ND	0.27 J	0.052 J	ND	ND	ND	ND
Acenaphthene	1000	ND	ND	0.55 J	NA	ND	0.14 J	0.068 J	ND	ND	ND	0.11 J
Acenaphthylene	1000	ND	ND	0.18 J	NA	ND	0.082 J	0.082 J	ND	ND	ND	ND
Anthracene	1000	0.015 J	ND	0.55 J	NA	ND	0.13 J	0.2 J	ND	ND	0.11 J	0.16 J
Benzo(a)anthracene	11	ND	0.009 J	1.4	NA	ND	ND	0.7 J	ND	ND	0.35 J	0.56 J
Benzo(a)pyrene	1.1	ND	ND	2.1	NA	ND	ND	0.66 J	ND	ND	0.38 J	0.6 J
Benzo(b)fluoranthene	11	ND	0.008 J	2.3	NA	ND	ND	0.87 J	ND	ND	0.5 J	0.82 J
Benzo(ghi)perylene	1000	ND	ND	1.6	NA	ND	ND	0.47 J	ND	ND	0.21	0.31 J
Benzo(k)fluoranthene	110	ND	0.021 J	0.72 J	NA	ND	ND	0.29 J	ND	0.019 J	0.21 J	0.29 J
Chrysene	110	0.02 B,J	0.02 B,J	1.5 B	NA	0.02 B,J	0.13 B,J	0.68 B,J	0.03 B,J	0.02 B,J	0.44 B,J	0.71 B,J
Dibenzo(a,h)anthracene	1.1	ND	ND	0.35 J	NA	ND	ND	0.15 J	ND	ND	0.073 J	0.011 J
Fluoranthene	1000	0.015 J	0.013 J	2.8	NA	ND	0.048 J	1.3	0.009 J	0.01 J	0.5 J	1.1
Fluorene	--	ND	ND	0.39 J	NA	ND	0.3 J	ND	ND	ND	0.043 J	0.064 J
Indeno(1,2,3-cd)pyrene	11	ND	ND	1.4	NA	ND	ND	0.41 J	ND	ND	0.22 J	0.27 J
Naphthalene	1000	ND	ND	0.33 J	NA	ND	ND	0.069 J	ND	ND	0.04 J	0.072 J
Phenanthrene	1000	0.02 B,J	0.02 B,J	2.1 B	NA	0.01 B,J	0.68 B,J	0.7 B,J	0.02 B,J	0.02 B,J	0.33 B,J	0.74 B,J
Pyrene	1000	0.016 J	0.011 J	2.6	NA	ND	0.085 J	1 J	ND	ND	0.4 J	0.84 J
PCBs - mg/Kg												
Aroclor 1254	25	0.63	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	25	ND	ND	0.84	ND	ND	ND	ND	ND	ND	ND	ND
Total Metals - mg/Kg												
Arsenic	16	3.7	6.8	11.9	3	2.9	2.4	14.1	4.5	ND	10.5	11.2
Barium	10000	75.8	290	77.6	36.6	63.6	22	375	174	20.8	94	111
Cadmium	60	ND	0.86	1.2	ND	ND	1.8	1.2	0.29	1.6	1.3	1.5
Chromium	6800	12.8	692	105	11.3	15.7	15.6	830	30.2	15.2	310	483
Lead	3900	5.9	212	74.6	3	5.2	177	168	10.9	52.4	409	508
Mercury	5.7	0.043	0.095	ND	ND	ND	0.048	ND	ND	0.23	0.036	0.071

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per NYSDEC Part 375 Soil Cleanup Objectives (December 2006)

Definitions:

ND = Parameter not detected above laboratory detection limit.

NA = Sample not analyzed for parameter.

"--" = No SCO available.

J = Estimated value; result is less than the sample quantitation limit but greater than zero.

B = Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.

= Result exceed 6NYCRR Part 375 Industrial SCOs.

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TABLE 4b

Subsurface Soil Sample Data

Remedial Investigation Soil Boring Samples

3807 Highland Avenue Site

Niagara Falls, New York

PARAMETER[1]	Industrial SCOs[2]	Remedial Investigation - Sample Locations (October 2009)																					
		SB-1 (2-4)	SB-2 (4-6)	SB-3 (2-4)	SB-4 (2-4)	SB-5 (4-6)	SB-6 (2-4)	SB-7 (3-5)	SB-8 (0-2)	SB-9 (4-8)	SB-10 (4-6)	SB-11 (0-2)	SB-12 (0-2)	SB-13 (0-2)	SB-14 (8-12)	SB-15 (0-2)	SB-16 (0-2)	SB-17 (0-2)	SB-18 (2-4)	SB-19 (11-14.7)	SB-20 (0-2)	SB-21 (12-14)	SB-22 (4-6)
		Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09
Volatile Organic Compounds (VOCs) - mg/Kg																							
1,2,4-Trimethylbenzene	380	NA	NA	NA	NA	NA	ND	NA	0.11	NA	NA	0.0066	ND	ND	NA	NA	NA	NA	ND	0.0023 J	NA	0.0041 J	NA
1,3,5-Trimethylbenzene	380	NA	NA	NA	NA	NA	ND	NA	0.031	NA	NA	ND	ND	ND	NA	NA	NA	NA	ND	ND	NA	ND	NA
1,4-Dichlorobenzene	1000	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	ND	ND	ND	NA	NA	NA	NA	ND	ND	NA	ND	NA
2-Butanone (MEK)	1000	NA	NA	NA	NA	NA	0.0094 J	NA	ND	NA	NA	ND	ND	ND	NA	NA	NA	NA	0.044	ND	NA	ND	NA
Acetone	1000	NA	NA	NA	NA	NA	0.073	NA	0.035	NA	NA	0.033	0.04	0.0068 J	NA	NA	NA	NA	0.21	0.021 J	NA	0.016 J	NA
Benzene	89	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	ND	ND	ND	NA	NA	NA	NA	ND	ND	NA	ND	NA
Carbon disulfide	--	NA	NA	NA	NA	NA	0.0019 J	NA	0.0049 J	NA	NA	ND	ND	ND	NA	NA	NA	NA	ND J	ND J	NA	ND J	NA
cis-1,2-dichloroethene	1000	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	ND	ND	ND	NA	NA	NA	NA	0.0013 J	ND	NA	ND	NA
Cyclohexane	--	NA	NA	NA	NA	NA	ND	NA	0.015	NA	NA	0.0026 J	ND	ND	NA	NA	NA	NA	ND	0.0011 J	NA	ND	NA
Ethylbenzene	780	NA	NA	NA	NA	NA	ND	NA	0.0036 J	NA	NA	ND	ND	ND	NA	NA	NA	NA	ND	ND	NA	ND	NA
Isopropylbenzene (Cumene)	--	NA	NA	NA	NA	NA	ND	NA	0.0046 J	NA	NA	ND	ND	ND	NA	NA	NA	NA	ND	ND	NA	0.0013 J	NA
Methylcyclohexane	--	NA	NA	NA	NA	NA	ND	NA	0.045	NA	NA	0.011 J	ND	ND	NA	NA	NA	NA	ND	ND	NA	0.0037 J	NA
Methylene chloride	1000	NA	NA	NA	NA	NA	0.0066 J	NA	0.0044 J	NA	NA	0.0028 J	0.0038 J	ND	NA	NA	NA	NA	0.0048 J	0.0052 J	NA	ND	NA
n-Butylbenzene	1000	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	ND	ND	ND	NA	NA	NA	NA	ND	ND	NA	0.0062	NA
n-Propylbenzene	1000	NA	NA	NA	NA	NA	ND	NA	0.0045 J	NA	NA	ND	ND	ND	NA	NA	NA	NA	ND	ND	NA	0.0039 J	NA
p-Cymene (p-isopropyltoluene)	--	NA	NA	NA	NA	NA	ND	NA	0.012	NA	NA	0.0027 J	ND	ND	NA	NA	NA	NA	ND	ND	NA	ND	NA
sec-Butylbenzene	1000	NA	NA	NA	NA	NA	ND	NA	0.0072	NA	NA	0.0014	ND	ND	NA	NA	NA	NA	ND	ND	NA	0.0032 J	NA
Toluene	1000	NA	NA	NA	NA	NA	ND	NA	0.0029 J	NA	NA	ND	ND	0.0018 J	NA	NA	NA	NA	ND	ND	NA	0.0013 J	NA
Total Xylene	1000	NA	NA	NA	NA	NA	ND	NA	0.03	NA	NA	ND	ND	ND	NA	NA	NA	NA	ND	ND	NA	0.0018 J	NA
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg																							
2-Methylnaphthalene	--	ND	ND	ND	ND	0.031 J	ND	ND	1.2	ND	ND	1.6 D,N,J	ND	ND	ND	0.27 D,J	ND	ND	0.036 J	14 D	ND	ND	ND
Acenaphthene	1000	ND	ND	ND	ND	ND	ND	ND	0.096 J	ND	ND	0.74 D,J	ND	ND	ND	ND	ND	0.16 D,J	0.037 J	1.4 D,J	ND	ND	0.15 D,J
Acenaphthylene	1000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	1000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.32 D,J	ND	0.26 D,J	0.042 J	1.1 D,J	ND	ND	ND
Benzo(a)anthracene	11	0.05 J	ND	ND	ND	0.052 J	0.19 D,J	0.016 J	0.068 J	ND	ND	0.44 D,J	ND	0.74 D,J	ND	1.6 D,J	ND	0.53 D,J	0.064 J	ND	ND	ND	0.64 D,J
Benzo(a)pyrene	1.1	0.062 J	ND	ND	ND	0.049 J	0.18 D,J	0.012 J	0.061 J	ND	ND	0.67 D,J	ND	0.69 D,J	ND	1.7 D,J	ND	0.49 D,J	0.065 J	ND	ND	ND	0.81 D,J
Benzo(b)fluoranthene	11	0.073 J	ND	ND	ND	0.06 J	0.22 D,J	0.017 J	0.11 J	ND	ND	1.2 D,J	ND	1.5 D,J	ND	2.2 D,J	ND	0.57 D,J	0.067 J	ND	ND	ND	1.3 D,J
Benzo(ghi)perylene	1000	0.051 J	ND	ND	ND	0.043 J	0.17 D,J	ND	0.059 J	ND	ND	0.54 D,J	ND	ND	ND	1.3 D,J	ND	0.27 D,J	0.049 J	ND	ND	ND	0.65 D,J
Benzo(k)fluoranthene	110	0.026 J	ND	ND	ND	0.036 J	0.11 D,J	ND	ND	ND	ND	ND	ND	ND	ND	0.86 D,J	ND	0.22 D,J	0.038 J	ND	ND	ND	ND
Biphenyl	--	ND	ND	ND	ND	ND	ND	ND	0.0041 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl) phthalate	--	ND	ND	ND	ND	0.15 J	1.1 D,J	ND	0.081 J	0.071 J	ND	ND	ND	ND	0.42	ND	0.077 J	ND	0.33	ND	ND	ND	ND
Carbazole	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.084 D,J	ND	ND	ND	ND	ND
Chrysene	110	0.055 J	ND	ND	ND	0.059 N,J	0.18 D,J	0.012 J	0.12 J	ND	ND	0.61 D,J	ND	0.68 D,J	ND	1.5 D,J,B	ND	0.53 D,J,B	0.061 B,J	ND	ND	ND	0.67 D,J
Dibenzo(a,h)anthracene	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.33 D,J	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	1000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.2 D,J	ND	0.068 D,J	0.012 J	ND	ND	ND	ND
Diethyl phthalate	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.057 J	0.41 D,J	ND	ND	ND
Di-n-butyl phthalate	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.083 J	ND	0.16 J	ND	ND	ND	ND
Fluoranthene	1000	0.081 J	ND	ND	ND	0.074 J	0.33 D,J	0.022 J	0.14 J	ND	ND	0.93 D,J	ND	0.93 D,J	ND	2.4 D,J	ND	1.2 D	0.11 J	0.23 D,J	ND	ND	1.2 D,J
Fluorene	--	ND	ND	ND	ND	ND	ND	ND	0.21	ND	ND	ND	ND	ND	ND	ND	ND	0.15 D,J	0.036 J	2.3 D	ND	ND	ND
Indeno(1,2,3-cd)pyrene	11	0.04 J	ND	ND	ND	0.032 J	0.13 D,J	ND	ND	ND	ND	0.4 D,J	ND	ND	ND	1 D,J	ND	0.24 D,J	0.037 J	ND	ND	ND	0.5 D,J
Naphthalene	1000	ND	ND	ND	ND	ND	ND	ND	0.27	ND	ND	0.65 D,N,J	ND	ND	ND	0.23 D,J	ND	ND	0.021 J	0.61 D,J	ND	ND	ND
Phenanthrene	1000	0.056 J	ND	ND	ND	0.043 J	ND	0.015 J	0.5	ND	ND	2 D	ND	ND	ND	1.8 D,J	ND	1 D,J	0.081 J	6.9 D	ND	ND	0.86 D,J
Pyrene	1000	0.071 J	ND	ND	ND	0.076 J	0.32 D,J	0.02 J	0.13 J	ND	ND	1.1 D,J	ND	0.88 D,J	ND	2.2 D,J	ND	1.1 D,J	0.097 J	0.51 D,J	ND	ND	1 D,J
PCBs - mg/Kg																							
Aroclor 1248	25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.16 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1254	25	ND	ND	ND	ND	ND	ND	ND	0.072 J	ND	ND	0.23 J	ND	ND	ND	ND	ND	ND	0.015 J	ND	ND	ND	ND
Aroclor 1260	25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.046 J	ND	ND
Total Metals - mg/Kg																							
Aluminum	--	14900	14700	7390	14600	12600	6910	14400	7850	10500	10300	8290	4010	5090	8510	5480	14300	23000	14900	8270	18900	3570	17200
Arsenic	16	8.1	4.2	2.5	4.2	6.2	10.1	4.9	10	2.6	4.5	7.8	3.7	6.3	3.7	12.2	2.4	7.1	7.1	2.2	2.8	ND	5.1
Barium	10000	183	167	62.1	96.3	89.3	98.5	342	53.3	108	81.2	739	32.4	39.8	60.4	2230 D	81.3	163	108	46.8	84.3	22.7	264
Beryllium	2700	0.729	0.726	0.342	0.654	0.685	0.49	0.729	0.505	0.581	0.734	0.504	0.334	0.309	0.424	0.648	0.596	1.07	0.638	0.318	0.655	0.23	2.71
Cadmium	60	0.744	ND	0.57	ND	ND	ND	ND	ND	ND	0.302	ND	0.625	0.551	ND	1.05	ND	0.288	0.466	ND	0.351	0.641	0.28
Calcium	--	15700	80500	56000	4830	17900	18200	45400	10600	110000 D	48200	31700	143000 D	7680 D	71000	11600	37000	19700	13700	37600	16700	111000 D	32600
Chromium	6800	29.3 J	19.9 J	10.7 J	18.4 J	27.3 J	278 J	154 J	141 J	13.8 J	15.1 J	346 J	19.4 J	3630	13.1	107	18.9	29.8	31.4	11.9	271	7.28	118
Cobalt	--	8.73	10.6	7.95	11.4	11.1	8.54	11.4	12.3	8.77	10.8	4.39	2.23	32.8 J	8.36 J	7.76 J	8.58 J	14.4 J	11.2 J	8.22 J	7.93 J	3.47 J	5.18 J
Copper	10000	31.3	19.7	12.3	18.3	32.9	287	21.7	93.1	19.8	22.6	197	11.9	94.8 J	18 J	60.1 J	16.4 J	24.2 J	29.3 J	11.6 J	28.3 J	9 J	1460 J
Iron	--	19200	21300	12800	22500	27900	31000	21700	95700	16500	20200	27500	7480	18100	15300	71500 D	19100	31400	22600	14400	5960	7590	11400
Lead	3900	73.8	7.7	4.2	6.1	15.4	77.4	7.5	58.8	5.7	5.9	74	47.7	21.9	6.4	205	4.6	9.8	147	3.6	64.7	47.5	101
Magnesium	--	5610	9900	7770	5800	10900	8640	14400	4740	8200	8540	8870	53400 D	6200 D	26500	5270	10600	9970	5920	8180	59200 D	52700 D	7310
Manganese	10000	1250	560	619	684	475	601	1970	1610	727	1370	1790	0.69	375 D	583	6000 D	504	610	569	556	645	552	401
Nickel	10000	27.1 J	22.3 J	16.4 J	22.3 J	29.3 J	80.3 J	31.6 J	127 J	19.5 J	20.7 J	67.6 J	12.8 J	1860	16.1	22.4	21.9	36.8	35.9	17.6	144	8.47	44.4
Potassium	--	1720	3170	1200	1220	1490	1160	2450	810	2160	1730	592	1020	419	2000	836	2130	2410	1050	1610	810	1040	888
Selenium	6800	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	6800	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	--	355	501	179	267	ND	206	399	ND	287	229	257	175	ND	ND	394	440	218	223	167	ND	ND	ND
Thallium	--	ND	ND	ND	ND	ND	ND	ND	9.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	--	25.9 J	26.9 J	15.9 J	24.8 J	27.8 J	14.9 J	27.4 J	16.4 J	20.5 J	24.6 J	13.9 J	8.27 J	18.7	18.4	11	20.3	32.6	26.2	15.2	8.71	9.32	11
Zinc	10000	437 J	48.7 J	73.3 J	218 J	71.5 J	110 J	50.8 J	68.1 J	37.5 J	41.4 J	86.6 J	188 J	17.5 J	46.7 J	181 J	58.6 J	66 J	83.4 J	38.6 J	142 J	174 J	102 J
Mercury	5.7	0.0834	ND	ND	ND	ND	0.037	0.05	0.178	ND	ND	0.0575	0.0413	0.0235	ND	0.0698	ND	0.0645	0.0368	ND	ND	ND	0.0399

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TABLE 4c

Summary of Subsurface Soil Analytical Data

Remedial Investigation Test Pit Samples

3807 Highland Avenue Site

Niagara Falls, New York

PARAMETER[1]	Industrial SCOs[2]	*Remedial Investigation - Sample Locatons*																		
		TP-1 (0-3)	TP-2 (0-3)	TP-3 (0-1.5)	TP-4 (2.5-6)	TP-5 (0-3)	TP-7 (1-2)	TP-8 (1-2)	TP-10 (6-8)	TP-11 (0-2)	TP-12 (0-2)	TP-13 (0-2)	TP-13 (3)	TP-13N (0-2)	TP-13N2 (0-2)	TP-13E (0-2)	TP-13S (0-2)	TP-13W (0-2)	TP-14 (2.5-3.5)	TP-15 (0-2)
		Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Jan 10	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09
Volatile Organic Compounds (VOCs) - mg/Kg																				
1,2,4-Trimethylbenzene	380	NA	NA	ND	ND	NA	0.0016 J	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone (MEK)	1000	NA	NA	ND	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	1000	NA	NA	ND	0.033	NA	0.027 J	NA	0.013 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	89	NA	NA	ND	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	--	NA	NA	ND	ND	NA	0.0017 J	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane		NA	NA	ND	ND	NA	0.0016 J	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	780	NA	NA	ND	ND	NA	ND	NA	0.0019 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene (Cumene)	--	NA	NA	ND	ND	NA	ND	NA	0.0018 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	1000	NA	NA	ND	ND	NA	0.0022 J	NA	0.0028 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	1000	NA	NA	ND	ND	NA	ND	NA	0.0014 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Cymene (p-isopropyltoluene)	--	NA	NA	ND	ND	NA	ND	NA	0.0015 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	1000	NA	NA	ND	ND	NA	ND	NA	0.0017 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1000	NA	NA	ND	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg																				
2-Methylnaphthalene	--	0.086 D,J	ND	ND	0.038 D,J	ND	0.19	ND	ND	0.28 D,J	ND	0.078 D,J	NA	NA	NA	NA	NA	NA	ND	ND
Acenaphthene	1000	ND	1.6 D,J	ND	ND	ND	0.13 J	ND	ND	0.37 D,J	ND	ND	NA	NA	NA	NA	NA	NA	ND	ND
Acenaphthylene	1000	0.17 D,J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	ND	ND
Anthracene	1000	0.12 D,J,B	1.2 D,J,B	ND	ND	ND	0.16 J	ND	ND	0.83 D,J	0.055 D,J	ND	NA	NA	NA	NA	NA	NA	ND	0.084 J
Benzo(a)anthracene	11	0.47 D,J,B	6.3 D, B	0.36 D,J,B	0.29 D,J,B	0.36 D,J	0.59	0.75 D,J	ND	2.4 D	0.28 D,J	0.28 D,J	NA	NA	NA	NA	NA	NA	0.64 D,J	0.46 J
Benzo(a)pyrene	1.1	0.53 D,J,B	7.6 D, B	0.39 D,J,B	0.32 D,J,B	0.32 D,J	0.43	ND	ND	2.4 D	0.44 D,J	0.28 D,J	NA	NA	NA	NA	NA	NA	ND	0.54 J
Benzo(b)fluoranthene	11	0.7 D,J,B	8.5 D, B	0.46 D,J,B	0.36 D,J,B	0.38 D,J	0.65	ND	ND	3 D	0.55 D,J	0.34 D,J	NA	NA	NA	NA	NA	NA	ND	0.61 J
Benzo(ghi)perylene	1000	0.56 D,J	5.3 D	0.4 D,J	0.36 D,J	0.39 D,J	0.44	1.2 D,J	ND	1.3 D,J	0.37 D,J	0.23 D,J	NA	NA	NA	NA	NA	NA	ND	0.39 J
Benzo(k)fluoranthene	110	0.38 D,J,B	3.9 D,J,B	0.21 D,J,B	0.2 D,J,B	0.2 D,J	0.22	ND	ND	1.2 D,J	0.17 D,J	0.12 D,J	NA	NA	NA	NA	NA	NA	ND	0.22 J
Biphenyl	--	ND	ND	ND	ND	ND	0.036 J	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	ND	ND
Carbazole	--	ND	0.62 D,J,B	ND	ND	ND	0.11 J	ND	ND	0.44 D,J	ND	ND	NA	NA	NA	NA	NA	NA	ND	ND
Chrysene	110	0.51 D,J,B	6 D, B	0.31 D,J,B	0.26 D,J,B	0.33 D,J	0.73	0.8 D,J	ND	2.5 D	0.36 D,J	0.27 D,J	NA	NA	NA	NA	NA	NA	ND	0.44 J
Dibenzo(a,h)anthracene	1.1	0.17 D,J	1.2 D,J	0.11 D,J	0.086 D,J	ND	0.095 J	ND	ND	0.4 D,J	0.097 D,J	ND	NA	NA	NA	NA	NA	NA	ND	ND
Dibenzofuran	1000	0.043 D,J	0.3 D,J	ND	ND	ND	0.07 J	ND	ND	0.25 D,J	ND	0.054 D,J	NA	NA	NA	NA	NA	NA	ND	ND
Fluoranthene	1000	0.67 D,J,B	9.3 D, B	0.5 D,J,B	0.38 D,J,B	0.47 D,J	1.2	ND	ND	3.9 D	0.47 D,J	0.41 D,J	NA	NA	NA	NA	NA	NA	0.53 D,J	0.67 J
Fluorene	--	ND	0.51 D,J	ND	ND	ND	0.084 J	ND	ND	0.42 D,J	ND	ND	NA	NA	NA	NA	NA	NA	ND	ND
Indeno(1,2,3-cd)pyrene	11	0.46 D,J,B	5 D, B	0.3 D,J,B	0.28 D,J,B	0.28 D,J	ND	0.73 D,J	ND	1.3 D,J	0.3 D,J	0.18 D,J	NA	NA	NA	NA	NA	NA	ND	0.35 J
Naphthalene	1000	ND	0.48 D,J	ND	ND	ND	0.078 J	ND	ND	0.39 D,J	ND	ND	NA	NA	NA	NA	NA	NA	ND	0.14 J
Phenanthrene	1000	0.33 D,J,B	4.8 D, B	0.36 D,J,B	0.24 D,J,B	0.3 D,J	0.95	0.48 D,J	ND	2.9 D	0.28 D,J	0.38 D,J	NA	NA	NA	NA	NA	NA	ND	0.35 J
Pyrene	1000	0.61 D,J,B	8.4 D, B	0.53 D,J,B	0.37 D,J,B	0.43 D,J	1	ND	ND	3.4 D	0.43 D,J	0.42 D,J	NA	NA	NA	NA	NA	NA	ND	0.59 J
PCBs - mg/Kg																				
Aroclor 1242	25	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254	25	0.088 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260	25	0.043 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides/Herbicides - mg/Kg																				
Alpha BHC	6.8	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Delta BHC	1000	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	410	0.0036 D,N,J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gamma BHC	23	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	--	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals - mg/Kg																				
Aluminum	--	2720	9050	9570	2910	3120	8480	1080	9910 J	5420 J	16000 J	3510 J	NA	NA	NA	NA	NA	NA	7620	19800 J
Arsenic	16	105 J	8.2 J	6.9 J	5.5 J	7.3	9.4	7.8	3	9.1	8.5	5.4	NA	NA	NA	NA	NA	NA	9.1	7.2
Barium	10000	197 J	277 J	710 J	32.4 J	191	242	65	69.4 J	125 J	87.6 J	59 J	NA	NA	NA	NA	NA	NA	85.7	178
Beryllium	2700	0.383	0.556	0.62	ND	0.315	1.23	0.224	0.466	0.329	0.653	ND	NA	NA	NA	NA	NA	NA	0.509	0.614
Cadmium	60	0.606	0.509	1	1.37	0.518	0.285	0.242	ND	5.61	3.26	0.518	NA	NA	NA	NA	NA	NA	ND	0.489
Calcium	--	10800	21400	24200	16500	8260	47500	36800	46100	16400	27100	18300	NA	NA	NA	NA	NA	NA	8030	14600
Chromium	6800	502 J	409 J	173 J	1060 J	443 J	240 J	140 J	15.1	3790	325	29600 D	20.6 J	14100 J	3450 J	174 J	241 J	3670 J	126 J	1070 J
Chromium (Hexavalent)	800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.5	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	32.6	51.6	9.99	57	5.57	28.4	7.46	10.9	226	22	118	NA	NA	NA	NA	NA	NA	13.3	28.3
Copper	10000	150	53	131	462	81.1	124	46.4	13.8 J	309 J	82.7 J	170 J	NA	NA	NA	NA	NA	NA	143	160 J
Iron	--	35400	30700	25400	21800	12400	25300	7800	18400	75000 D	16100	228000 D	NA	NA	NA	NA	NA	NA	98900 D	21100
Lead	3900	88.1	34.9	166	69	74.6	52.6	23	4.5	119	167	51.7	NA	NA	NA	NA	NA	NA	67.1	48.5
Magnesium	--	4310	13600	7130	8620	9370	17400	18800	8410 J	7130 J	28000 J	5740 J	NA	NA	NA	NA	NA	NA	4320	42800 J
Manganese	10000	29600 D	8790 D	9390 D	989 B	3880 D	1370	2470 D	680	2010	1000	1060	NA	NA	NA	NA	NA	NA	1930	3510 D
Nickel	10000	323 J	1440 J	77 J	2310 J	54.2 J	497 J	111 J	23.1	1890	231	9680 D	NA	NA	NA	NA	NA	NA	312 J	1330 J
Potassium	--	606	1340	1240	337	428	1660	241	1530 J	590 J	1770 J	436 J	NA	NA	NA	NA	NA	NA	901	934 J
Silver	6800	0.798	ND	1.13	ND	ND	ND	ND	ND	0.754	ND	ND	NA	NA	NA	NA	NA	NA	ND	ND
Sodium	--	ND	371	ND	ND	ND	343	ND	ND	ND	230	ND	NA	NA	NA	NA	NA	NA	415	ND
Thallium	--	ND	ND	ND	ND	ND	ND	ND	ND	7.3	ND	ND	NA	NA	NA	NA	NA	NA	9.9	ND
Vanadium	--	50.3 J	28.6 J	19.9 J	56.5 J	9.36 J	24.2 J	5.78 J	19.1 J	223 J	20.7 J	107 J	NA	NA	NA	NA	NA	NA	17.7 J	27.3 J
Zinc	10000	132	600	296	149	545 J	316 J	406 J	46.1 J	360 J	351 J	164 J	NA	NA	NA	NA	NA	NA	189 J	130 J
Mercury	5.7	0.105	0.0435	1.59 D	0.0426	0.0641	0.0261	0.0488	ND	0.169	0.0463	ND	NA	NA	NA	NA	NA	NA	0.0828	0.04 J

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TABLE 4c

Summary of Subsurface Soil Analytical Data

Remedial Investigation Test Pit Samples

3807 Highland Avenue Site

Niagara Falls, New York

PARAMETER[1]	Industrial SCOs[2]	Remedial Investigation - Sample Locatons																		
		TP-16 (0-2)	TP-16 (1.5)	TP-16N (0-1)	TP-16N2 (0-1)	TP-16S (0-1)	TP-16W (0-1)	TP-16E (0-1)	TP-17 (0-2)	TP-18 (0-2)	TP-20 (0-2)	TP-21 (0-2)	TP-22 (0-2)	TP-23 (0-2)	TP-24 (0-3)	TP-25 (3-5)	TP-26 (5-7)	TP-27 (4-6)	TP-28 (4-6)	TP-29 (0-2)
		Oct 09	Oct 09	Oct 09	Jan 10	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09
Volatile Organic Compounds (VOCs) - mg/Kg																				
1,2,4-Trimethylbenzene	380	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0013 J	NA	NA	NA	NA	NA	NA	NA
2-Butanone (MEK)	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0053 J	NA	NA	NA	NA	NA	NA	NA
Acetone	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.082	NA	NA	NA	NA	NA	NA	NA
Benzene	89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0013 J	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0016 J	NA	NA	NA	NA	NA	NA	NA
Cyclohexane		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	780	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0011 J	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene (Cumene)	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA
p-Cymene (p-isopropyltoluene)	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA
Toluene	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0022 J	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg																				
2-Methylnaphthalene	--	ND	NA	NA	NA	NA	NA	NA	ND	ND	ND	0.077 D,J	ND	0.16 D,J	ND	ND	0.16 D,J	ND	0.25 D,J	0.14 D,J
Acenaphthene	1000	ND	NA	NA	NA	NA	NA	NA	0.17 D,J	ND	ND	0.063 D,J	ND	0.43 D	ND	ND	0.35 D,J	ND	0.18 D,J	ND
Acenaphthylene	1000	ND	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	1000	ND	NA	NA	NA	NA	NA	NA	0.31 D,J	0.057 D,J	ND	0.13 D,J	ND	0.79 D,J	ND	ND	ND	ND	0.51 D,J	ND
Benzo(a)anthracene	11	0.55 D,J	NA	NA	NA	NA	NA	NA	1.2 D,J	0.27 D,J	0.77 D,J	0.45 D,J	0.18 D,J	3.1 D	0.54 D,J	0.68 D,J	1.9 D,J	0.19 D,J	1.4 D,J	0.49 D,J
Benzo(a)pyrene	1.1	ND	NA	NA	NA	NA	NA	NA	1.5 D,J	0.3 D,J	0.84 D,J	0.47 D,J	ND	4.3 D	0.61 D,J	0.9 D,J	2.8 D	0.21 D,J	1.7 D,J	0.55 D,J
Benzo(b)fluoranthene	11	ND	NA	NA	NA	NA	NA	NA	1.5 D,J	0.32 D,J	1 D,J	0.58 D,J	ND	4.7 D	0.55 D,J	1 D,J	3 D	0.32 D,J	2 D	0.78 D,J
Benzo(ghi)perylene	1000	ND	NA	NA	NA	NA	NA	NA	1.5 D,J	0.29 D,J	0.62 D,J	0.31 D,J	ND	3.6 D	ND	0.76 D,J	2.1 D,J	0.17 D,J	1.4 D,J	0.51 D,J
Benzo(k)fluoranthene	110	ND	NA	NA	NA	NA	NA	NA	0.82 D,J	0.19 D,J	0.41 D,J	0.2 D,J	ND	1.8 D,J	0.47 D,J	0.37 D,J	1.2 D,J	0.11 D,J	0.74 D,J	0.27 D,J
Biphenyl	--	ND	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	--	ND	NA	NA	NA	NA	NA	NA	0.21 D,J	ND	ND	ND	ND	0.49 D,J	ND	ND	0.25 D,J	ND	0.23 D,J	ND
Chrysene	110	ND	NA	NA	NA	NA	NA	NA	1.3 D,J	0.31 D,J	0.98 D,J	0.52 D,J	0.12 D,J	3.3 D	0.57 D,J	0.7 D,J	2.1 D,J	0.24 D,J	1.5 D,J	0.55 D,J
Dibenzo(a,h)anthracene	1.1	ND	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	0.84 D,J	ND	ND	0.52 D,J	ND	0.38 D,J	ND
Dibenzofuran	1000	ND	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	0.28 D,J	ND	ND	ND	ND	0.21 D,J	ND
Fluoranthene	1000	0.7 D,J	NA	NA	NA	NA	NA	NA	2.1 D,J	0.38 D,J	1.2 D,J	1.2 D	0.094 D,J	5.9 D	0.83 D,J	1.1 D,J	3.3 D	0.28 D,J	2.6 D	0.81 D,J
Fluorene	--	ND	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	0.41 D,J	ND	ND	0.23 D,J	ND	0.27 D,J	ND
Indeno(1,2,3-cd)pyrene	11	ND	NA	NA	NA	NA	NA	NA	1.1 D,J	0.18 D,J	ND	0.26 D,J	ND	3.1 D	0.28 D,J	0.6 D,J	1.8 D,J	0.14 D,J	1.2 D,J	0.41 D,J
Naphthalene	1000	ND	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.31 D,J	ND
Phenanthrene	1000	0.53 D,J	NA	NA	NA	NA	NA	NA	1.5 D,J	0.21 D,J	0.51 D,J	0.74 D,J	0.15 D,J	4.1 D	0.51 D,J	0.72 D,J	1.7 D,J	0.21 D,J	2.1 D	0.6 D,J
Pyrene	1000	ND	NA	NA	NA	NA	NA	NA	1.7 D,J	0.4 D,J	1.4 D,J	0.94 D	0.15 D,J	4.7 D	0.76 D,J	0.93 D,J	2.8 D	0.22 D,J	2 D	0.68 D,J
PCBs - mg/Kg																				
Aroclor 1242	25	0.11 C, J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Aroclor 1254	25	0.048 C	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.027 C	NA	NA	NA	NA	NA
Aroclor 1260	25	0.071 C, J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.027 C	NA	NA	NA	NA	NA
Pesticides/Herbicides - mg/Kg																				
Alpha BHC	6.8	0.011 D,J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Delta BHC	1000	0.0098 D,J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	410	0.0082 D,J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gamma BHC	23	0.012 D,J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	--	0.013 D,J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals - mg/Kg																				
Aluminum	--	3810 D	NA	NA	NA	NA	NA	NA	7830	1790	1010	1270	1130	9940	5270	11500	6240	7250	9910	6290
Arsenic	16	24.3 D	4.4 J	14.1 D,J	NA	9.2 J	9.8 J	9.4 J	5.3	9.9	3.3	4.2	20.9 J	7.5	8.8	14.5	17	7.5	13.3	16.1
Barium	10000	91.3 D	NA	NA	NA	NA	NA	NA	42.7	216	22.2	28.9 J	18.2 J	109	94.7	95.2	51.9	52.8	128	88.9
Beryllium	2700	ND	NA	NA	NA	NA	NA	NA	0.473	0.267	ND	ND	ND	0.579	0.349	0.573	0.392	0.349	1.27	0.425
Cadmium	60	ND	NA	NA	NA	NA	NA	NA	0.636 J	0.838	0.439	ND	0.851	0.756	1.26	1.47	1.24	0.731	0.84	0.559
Calcium	--	35700 D	NA	NA	NA	NA	NA	NA	101000 D,J	7650	37600	13100	4590	36600	60600 D	8450	15300	26200	21100	19000
Chromium	6800	23300 D	23.1 J	23900 D,J	609	1190 J	462 J	527 J	51.3 J	714	57.8	432	446 J	103	3800	182	1050	565	407	336
Chromium (Hexavalent)	800	1.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	429 D	NA	NA	NA	NA	NA	NA	7.15	28.7	3.31	20.6	18.4 J	11.9	90.7	17.2	9.77	5.35	8.46	15.6
Copper	10000	614 D	NA	NA	NA	NA	NA	NA	26.7	293	44.4	80.2 J	561 J	76.5	183	57.5	103	84.2	105	207
Iron	--	164000 D	NA	NA	NA	NA	NA	NA	15800	108000 D	23500	41100	243000 D,J	20400	39200	20000	27700	23200	23700	81500
Lead	3900	177 D	NA	NA	NA	NA	NA	NA	79.1	117	35.1	54.6	160	129	95.2	156	892	454	415	481
Magnesium	--	14400 D	NA	NA	NA	NA	NA	NA	59300 D,J	4090	20300	5830 J	1550	14600	28400	9530	21900	25800	14600	11900
Manganese	10000	3980 D	NA	NA	NA	NA	NA	NA	640	3200 D	503	669	1820 J	1130	1860	758	1030	1120	1280	1620
Nickel	10000	16900 D	28.1 J	17300 D,J	NA	1100 J	2460 J	800 J	41.8 J	542	44	394	176	114	2730 D	218	492	101	116	193
Potassium	--	772 D	NA	NA	NA	NA	NA	NA	1060	184	256	207 J	228	1400	799	1640	2720	770	1690	1030
Silver	6800	ND	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	--	ND	NA	NA	NA	NA	NA	NA	542	ND	ND	ND	ND	522	211	ND	358	ND	199	ND
Thallium	--	ND	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.4
Vanadium	--	250 D	NA	NA	NA	NA	NA	NA	21.5 J	27.7	5.11	14.1 J	19.6 J	30.7	54.9	33.7	615	9.48	13.2	21.7
Zinc	10000	450 D	NA	NA	NA	NA	NA	NA	326 J	226	99.3	132 J	46.2 J	251	288	284	615	362	338	330
Mercury	5.7	0.0442	NA	NA	NA	NA	NA	NA	0.0504	0.0368	ND	ND	0.0281	0.14	0.0499	0.0834	0.0474	ND	0.0551	0.0636

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per NYSDEC Part 375 Soil Cleanup Objectives (December 2006)

Definitions:

ND = Parameter not detected above laboratory detection limit.
NA = Sample not analyzed for parameter.
"--" = No SCO available.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
B = Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
C = Calibration verification recovery was below the method control limit.
D = Compounds were identified in an analyisis at the secondary dilution factor.
N = Tentatively identified and estimated value.

= Result exceeds 6NYCRR Part 375 Industrial SCO.

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TABLE 4b

Subsurface Soil Sample Data

Remedial Investigation Soil Boring Samples

3807 Highland Avenue Site

Niagara Falls, New York

PARAMETER[1]	Industrial SCOs[2]	Remedial Investigation - Sample Locations (October 2009)																						
		SB-23 (8-12)	SB-24 (4-6)	SB-25 (1-3)	SB-26 (1-3)	SB-27 (1-3)	SB-28 (6-8)	SB-29 (4-6)	SB-30 (0-4)	TP/SS-1 (1)	TP/SS-1 (2)	TP/SS-1 (3)	TP/SS-1 (4)	TP/SS-1 (5)	TP/SS-1 (6)	TP/SS-1 (7)	TP/SS-1 (8)	TP/SS-1 (9)	TP/SS-1 (10)	TP/SS-5 (1)	TP/SS-5 (2)	TP/SS-5 (3)	TP/SS-5 (4)	TP/SS-5 (5)
		Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Jan 10	Jan 10	Jan 10	Jan 10	Jan 10	Jan 10	Jan 10	Jan 10	Jan 10	Jan 10	Jan 10	Jan 10	Jan 10	Jan 10	Jan 10
Volatile Organic Compounds (VOCs) - mg/Kg																								
1,2,4-Trimethylbenzene	380	0.002 J	ND	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	380	ND	ND	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	1000	ND	ND	NA	NA	NA	0.0014 B,J	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone (MEK)	1000	0.011 J	0.012 J	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	1000	0.054	0.081	NA	NA	NA	ND	0.016 J	0.007 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	89	ND	ND	NA	NA	NA	ND	ND	0.0016 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	--	0.0022 J	0.0026 J	NA	NA	NA	ND J	0.0015 J	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-dichloroethene	1000	ND	ND	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	ND	ND	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	780	ND	ND	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene (Cumene)	--	0.0049 J	ND	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	--	0.0042 J	ND	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	1000	ND	ND	NA	NA	NA	0.0049 J	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	1000	0.0055 J	ND	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	1000	0.01	ND	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Cymene (p-isopropyltoluene)	--	ND	ND	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	1000	0.0043 J	ND	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	1000	0.0014 J	ND	NA	NA	NA	ND	ND	0.0016 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylene	1000	0.0031 J	ND	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg																								
2-Methylnaphthalene	--	0.25 D,J	0.17 D,J	ND	ND	ND	ND	ND J	ND J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	1000	0.39 D,J	ND	ND	ND	0.075 D,J	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	1000	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	1000	ND	ND	ND	ND	0.16 D,J	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	11	ND	0.31 D,J	ND	0.12 D,J	0.41 D,J	ND	ND	0.2 D,J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	1.1	ND	ND	ND	0.12 D,J	0.36 D,J	ND	ND	0.19 D,J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	11	ND	ND	ND	0.12 D,J	0.49 D,J	ND	ND	0.31 D,J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(ghi)perylene	1000	ND	ND	ND	ND	0.24 D,J	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	110	ND	ND	ND	0.064 D,J	0.16 D,J	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Biphenyl	--	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl) phthalate	--	ND	ND	ND	ND	ND	0.067 J	0.088 J	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	--	ND	ND	ND	ND	0.085 D,J	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	110	ND	0.28 D,J	ND	0.1 D,J	0.42 D,J	ND	ND	0.22 D,J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	1.1	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	1000	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	--	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate	--	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	1000	0.35 D,J	0.54 D,J	ND	0.15 D,J	0.86 D,J	ND	ND	0.24 D,J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	--	0.43 D,J	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	11	ND	ND	ND	ND	0.18 D,J	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	1000	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	1000	0.54 D,J	0.47 D,J	ND	0.13 D,J	0.76 D,J	ND	ND	0.16 D,J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	1000	0.32 D,J	0.46 D,J	ND	0.15 D,J	0.74 D,J	ND	ND	0.23 D,J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs - mg/Kg																								
Aroclor 1248	25	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254	25	0.0062 J	ND	0.17 D	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260	25	ND	ND J	0.14 D	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals - mg/Kg																								
Aluminum	--	10200	7830	5840	17500	10000	2790	2110	8200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	16	7.5	8.5	58.2	5	4.4	2.4	16.9	77.3	35.4	85.1	7.7	24.8	2.1	15	12.6	8.4	25.8	11.6	58.8	35.9	10.6	10.8	15
Barium	10000	89.7	126	304	107	64	12	96.5	249	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	2700	0.544	0.471	0.58	0.746	0.445	0.226	0.387	0.414	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	60	1.01	1.52	5.67	0.382	0.39	0.747	ND	2.71	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	--	60600	33000	40600	5850	44000	199000	2250	19900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	6800	240	59.8	301	21.3	84.9	3.93	4.09	793	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	13.1 J	7.44 J	25.2 J	9.65 J	7.92 J	2.24 J	0.619 J	38.6 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	10000	36.1 J	42.5 J	379 J	22.2 J	22 J	6.2 J	232 J	142 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	--	18000	16400	60400 D	21500	15600	6720	7640	27900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	3900	17.9	34	113	9.9	38.4	144	2.6	234	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	--	27700	17300	21300	12300	16600	120000	280	27500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	10000	2010	2100	20400 D	569	719	461	63.8	52800 D	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	10000	277	28.1	151	25.3	19.8	4.95	64	180	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	--	1720	1280	707	1580	1140	842	107	2020	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	6800	238	ND	ND	ND	ND	ND	ND	8.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	6800	ND	ND	0.843	ND	ND	ND	ND	1.68	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	--	ND	222	351	ND	ND	213	ND	599	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	--	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	--	19.7	16.2	25.8	23.4	20.4	7.67	1.34	36.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	10000	526 J	670 J	2180 D,J	130 J	126 J	262 J	23.5 J	396 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	5.7	ND	0.0316	0.0986	ND	0.0638	ND	ND	0.113	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per 6NYCRR Part 375 Soil Cleanup Objectives

Definitions:

ND = Parameter not detected above laboratory detection limit.
NA = Sample not analyzed for parameter.
"--" = No SCO available.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
B = Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
D = Compounds were identified in an analyisis at the secondary dilution factor.
N = Tentative identification and estimated value.

= Result exceeds 6NYCRR Part 375 Industrial SCO.

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TABLE 5

Summary of Groundwater Analytical Data

3807 Highland Avenue Site

Niagara Falls, New York

PARAMETER[1]	GWQS/ GV[2]	MW-1 [3]		MW-2		MW-3S		MW-3D		MW-4		MW-5	
Volatile Organic Compounds (ug/L)													
1,2,4-Trimethylbenzene	**5**	ND		ND		ND		ND		ND		0.81	J
2-Hexanone	**50**	ND		ND		ND		ND		ND		5.7	
Acetone	**50**	ND		ND		15		ND		ND		23	
Benzene	**1**	ND		ND		ND		ND		ND		0.81	NJ
Chlorobenzene	**5**	ND		ND		ND		ND		1		ND	
cis-1,2-Dichloroethene	**5**	ND		ND		ND		ND		2.2		ND	
Cyclohexane	**--**	ND		ND		ND		ND		ND		5	
Isopropylbenzene	**5**	ND		ND		ND		ND		ND		6.2	
Methylcyclohexane	**--**	ND		ND		ND		ND		ND		6	
Methyl Ethyl Ketone (MEK)	**50**	ND		ND		2.6	J	ND		ND		7.1	
Methylene Chloride	**5**	ND		2.2	DJ	ND		ND		ND		ND	
n-Butylbenzene	**5**	ND		ND		ND		ND		ND		3.5	
n-Propylbenzene	**5**	ND		ND		ND		ND		ND		11	
sec-Butylbenzene	**5**	ND		ND		ND		ND		ND		3.1	
Toluene	**5**	ND		ND		ND		ND		ND		1.1	
Vinyl chloride	**2**	ND		ND		ND		ND		1.4		ND	
Xylenes, Total	**5**	ND		ND		ND		ND		ND		1.9	J
Semi-volatile organic compounds (ug/L)													
2-Methylnaphthalene	**5**	ND		ND		ND		ND		ND		58	
4-Methylphenol	**--**	ND		ND		1	J	ND		ND		ND	
Acenaphthene	**20**	ND		ND		ND		ND		0.8	J	8.5	J
Acetophenone	**--**	ND		ND		ND		ND		ND		2	J
Anthracene	**50**	ND		ND		ND		ND		0.22	J	0.96	J
Carbazole	**--**	ND		ND		ND		ND		ND		2	J
Di-n-butyl phthalate	**5**	0.49	J	ND		0.29	J	ND		ND		0.72	J
Dibenzofuran	**--**	ND		ND		ND		ND		ND		3.5	J
Diethyl phthalate	**50**	ND		ND		0.49	J	ND		ND		2.6	J
Fluoranthene	**50**	ND		ND		ND		ND		ND		0.82	J
Fluorene	**50**	ND		ND		0.29	J	ND		0.24	J	7.9	J
Naphthalene	**10**	ND		ND		ND		ND		ND		8	J
Phenanthrene	**50**	ND		ND		1.7	J	0.8	J	ND		5.5	J
Pyrene	**50**	ND		ND		ND		ND		ND		0.64	J
Total Metals (ug/L)													
Aluminum	**--**	1,860		37,400		ND		1,270		469		4,820	
Barium	**1000**	127		405		53.5		28.2		70		143	
Calcium	**--**	165000		261,000		102,000		242,000		332,000		122,000	
Chromium	**50**	ND		51.8		ND		ND		ND		20.2	
Cobalt	**--**	ND		24.8		ND		ND		ND		ND	
Copper	**200**	ND		54.7		ND		ND		ND		10.7	
Iron	**300**	1,550		61,100		140		3,280		527		5,500	
Lead	**25**	8.2		23.4		ND		ND		ND		19.1	
Magnesium	**35000**	63,000		37,300		58,400		97,600		85,200		50,400	
Manganese	**300**	216		2,260		145		123		336		672	
Nickel	**100**	ND		58		ND		ND		ND		37	
Potassium	**--**	4350		12,600		4,550		4,390		16,300		9,480	
Sodium	**20000**	59,700		169,000		32,700		49,300		126,000		113,000	
Vanadium	**--**	ND		78.4		ND		ND		ND		6.3	
Zinc	**2000**	19		151		ND		ND		18.2		175	
Soluble Metals (ug/L)													
Barium	**1000**	109		177		57.3		21.2		71		109	
Calcium	**--**	142,000		88,000		110,000		240,000		323,000		111,000	
Magnesium	**35000**	52,600		41,600		65,100		98,100		83,700		46,200	
Manganese	**300**	217		321		129		92.4		337		416	
Potassium	**--**	3,400	J	1,920	J	4,470	J	3,930	J	16,500	J	8,620	J
Sodium	**20000**	52,800		184,000		33,000		51,500		132,000		116,000	
Zinc	**2000**	ND	J	11.5	J	ND	J	ND	J	ND	J	11	J
Mercury	**0.7**	ND		ND		ND		0.1	J	ND		0.1	J

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per NYSDEC Division of Water Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations - GA Class (TOGS 1.1.1)
3. MW-1 was resampled on Nov 24, 2009 for VOCs due to a laboratory foaming-related dilution issue with the initial sample.

Definitions:

"--" = No GWQS/GV available.
D = Analyte detected at a secondary dilution factor.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
N = Tentative identification and estimated value.
ND = Parameter not detected above laboratory detection limit.

= Analyte detected above GWQS/GV.

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TABLE 6

SUMMARY OF MATERIALS RECYCLED/DISPOSED OFF-SITE

3807 Highland Avenue Site

Niagara Falls, New York

Material / Item	Quantity	Units	Responsible Company	Disposal Location
Soil (Well drilling spoils)	10	drum	Green Environmental Specialists, Inc.	Environmental & Industrial Contracting Services, Inc. (EICS)
Steel ASTs (recyceld for scrap)	5	tank	Green Environmental Specialists, Inc.	EICS / Niagara Metal Recycling
Steel ASTs (hydraulic tanks)	2	tank	Green Environmental Specialists, Inc.	Transported to Globe Ohio facility for re-use
Poly AST (150-gal)	1	tank	Green Environmental Specialists, Inc.	Environmental & Industrial Contracting Services, Inc. (EICS)
Waste Grease (pallets)	1500	lbs	Green Environmental Specialists, Inc.	Environmental & Industrial Contracting Services, Inc. (EICS)
Waste Lubiricants (gear lube, various lubricating oils, grease, oily debris)	54	drum	Green Environmental Specialists, Inc.	Environmental & Industrial Contracting Services, Inc. (EICS)
Former Production Chemicals and Light Ballast (PCBs, Potassium Hydroxide, Sodium Hydroxide)	3	drum	Frank's Vacuum Truck Service, Inc.	CWM Chemical Services
Former Laboratory Wastes - Lab Packs 1-6 (Waste Acids, Bases, Paints)	452	lbs	Tonawanda Tank Transport Service, Inc	Chemtron Corp
eWaste (computers, light bulbs) - (recycled) (Lamp Tracker)	1184	lbs	Green Environmental Specialists, Inc.	Waste Management
Chromium Impacted Soil/Fill (TP-13 & TP-16 Areas)	358	ton	RE Lorenz	Modern Landfill
Arsenic Impacted Soil/Fill (TP-1 & TP-5 Areas)	728	ton	RE Lorenz	Modern Landfill
Stack Deposits (W-Stack)	250	ton	RE Lorenz	Modern Landfill
Spent Electrode Area (SS-9)	26	ton	RE Lorenz	Modern Landfill
Spent Electrodes	15	ton	Green Environmental Specialists, Inc.	Chaffee Landfill
Intermingled Soil/Fill and Debris Pile	2,731	ton	TREC Environmental / Modern Transportation	Modern Landfill
On-Site sumps/catchbasins	1.35	ton	Green Environmental Specialists, Inc.	Environmental & Industrial Contracting Services, Inc. (EICS)

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TABLE 7a

Comparison of Remaining Surface Soil Analytical Data to Unrestricted SCOs

3807 Highland Avenue Site

Niagara Falls, New York

PARAMETER[1]	Unrestricted SCOs[2]	Historic Data			*Remedial Investigation Data (October 2009)*											
		SS-2	SS-3	SS-8	SS-2	SS-3	SS-4	SS-6	SS-7	SS-8	SS-9	SS-10	SS-11	SS-12	SS-13	SS-14
		Aug 08	Aug 08	Jan 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09
Volatile Organic Compounds (VOCs) - mg/kg																
1,2,4-Trimethylbenzene	3.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	8.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone (MEK)	0.12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	0.06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene (Cumene)	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	3.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Cymene (p-isopropyltoluene)	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	0.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylene	0.26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds (SVOCs) (mg/kg)																
2-Methylnaphthalene	--	NA	ND	0.07 D,J	ND	0.13 D,J	ND	0.31 D,J	0.13 D,J	0.15 D,J	ND	1.5 D,J	0.98 D,J	2.6 D,J	5.6 D,J	ND
Acenaphthene	20	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	100	NA	ND	ND	ND	ND	ND	0.6 D,J	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	100	NA	ND	0.06 D,J	ND	ND	ND	0.26 D,J	0.079 D,J	0.096 D,J	ND	ND	ND	ND	ND	0.2 D,J
Benzo(a)anthracene	1	NA	1 J	0.17 D,J	0.21 D,J,B	0.3 D,J,B	0.61 D,J,B	1.7 D,J	0.39 D,J	0.37 D,J	0.62 D,J	0.96 D,J	0.77 D,J	0.66 D,J	0.78 D,J	1.1 D,J
Benzo(a)pyrene	1	NA	ND	0.37 D,J	0.22 D,J,B	0.28 D,J,B	0.46 D,J,B	3.5 D,J	0.29 D,J	0.38 D,J	0.52 D,J	0.96 D,J	ND	0.57 D,J	0.51 D,J	1.4 D,J
Benzo(b)fluoranthene	1	NA	ND	0.24 D,J	0.41 D,J,B	0.52 D,J,B	0.77 D,J,B	5.7 D	0.51 D,J	0.62 D,J	0.84 D,J	1.3 D,J	0.66 D,J	0.86 D,J	0.64 D,J	1.5 D,J
Benzo(ghi)perylene	100	NA	ND	0.17 D,J	0.22 D,J	0.33 D,J	0.45 D,J	3.7 D,J	0.31 D,J	0.42 D,J	0.53 D,J	0.86 D,J	ND	0.47 D,J	ND	1.1 D,J
Benzo(k)fluoranthene	0.8	NA	ND	0.08 D,J	0.092 D,J,B	0.14 D,J,B	0.34 D,J,B	2 D,J	0.21 D,J	0.21 D,J	ND	0.73 D,J	ND	0.45 D,J	ND	0.57 D,J
Butyl benzyl phthalate	--	NA	ND	ND	ND	ND	ND	ND	ND	0.98 D,J	ND	ND	ND	ND	ND	ND
Chrysene	1	NA	1.3 J	0.22 D,J	0.33 D,J,B	0.35 D,J,B	0.66 D,J,B	3 D,J	0.41 D,J	0.48 D,J	0.55 D,J	1.2 D,J	0.44 D,J	0.94 D,J	0.78 D,J	1.2 D,J
Dibenzo(a,h)anthracene	0.33	NA	ND	0.31 D,J	ND	ND	ND	1.1 D,J	ND	0.11 D,J	ND	ND	ND	ND	ND	0.28 D,J
Dibenzofuran	--	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.53 D,J	1.1 D,J	ND
Fluoranthene	100	NA	2 J	0.44 D,J	0.33 D,J,B	0.48 D,J,B	0.59 D,J,B	0.81 D,J	0.65 D,J	0.65 D,J	1.1 D,J	1.7 D,J	0.77 D,J	1.4 D,J	1.2 D,J	1.8 D,J
Fluorene	30	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.5	NA	ND	0.12 D,J	0.18 D,J,B	0.25 D,J,B	0.37 D,J,B	3.1 D,J	0.26 D,J	0.33 D,J	0.4 D,J	0.65 D,J	ND	0.38 D,J	ND	0.9 D,J
Naphthalene	12	NA	ND	0.09 D,J	ND	ND		0.2 D,J	ND	ND	ND	0.94 D,J	ND	1.7 D,J	3.5 D,J	ND
Phenanthrene	100	NA	ND	0.27 D,J	0.2 D,J,B	0.25 D,J,B	0.37 D,J,B	0.31 D,J	0.51 D,J	0.58 D,J	0.59 D,J	1.1 D,J	0.66 D,J	1.5 D,J	2.6 D,J	1 D,J
Pyrene	100	NA	1.2 J	0.32 D,J	0.28 D,J,B	0.38 D,J,B	0.53 D,J,B	0.77 D,J	0.53 D,J	0.54 D,J	0.86 D,J	1.5 D,J	0.81 D,J	1.3 D,J	0.98 D,J	1.6 D,J
Total PCBs (mg/kg)																
Aroclor 1242	0.1	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	0.1	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1254	0.1	NA	NA	NA	0.0075 J	0.014 J	0.028	0.012 C, J	0.0086 C, J	0.026 C	0.0061 C, J	0.011 C, J	0.026 C	0.011 C, J	0.006 C, J	ND
Aroclor 1260	0.1	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND J	ND J	ND J	ND J	ND J
Total Metals (mg/kg)																
Aluminum - Total	--	ND	ND	3590	1230	2280	4350	2760	973	871	4350 J	2340	1720	822	1040	13300
Antimony - Total	--	ND	ND	0.662 J	ND J	ND J	ND J	ND J	ND J	ND J	ND J	ND	ND	ND	ND	ND
Arsenic - Total	13	ND	5.4	3.02	7.1 J	4.2 J	8.9 J	14.5 J	3.5 J	ND	2.2 J	5.2	6.6	3.1	12.2	8.6
Barium - Total	350	88.7	99.5	47.5	22.2 J	55 J	62 J	86.7 J	45.4 J	31.7 J	29.2 J	58.6	35.2	33.5	306	133
Beryllium - Total	7.2	ND	ND	1.28	0.234	0.259	0.394	0.503	0.261	0.648	ND	0.342	0.42	0.344	0.647	0.726
Cadmium - Total	2.5	0.8	3.5	1.57	0.62	0.553	0.837	0.588	0.381	ND	ND	0.765	0.482	0.374	ND	0.87
Calcium - Total	--	ND	ND	19100	37500	89400 D	48200	53600	85400 D	13100	41300 J	59600	45300	64500	16000	19000
Chromium - Total	30	17.1	216	65.5	88.1	62.5	590	61.1	20.4	23.2	109	50.8	66.6	22.6	12.4	58
Cobalt - Total	--	ND	ND	4.35	3.73 J	4.3 J	15.4 J	5.49 J	1.96 J	2.19 J	3.78 J	4.6 J	5.66 J	2.8 J	2.66 J	11.3 J
Copper - Total	50	ND	ND	112	29.7	35.5	171	99.6	27.4	26.2	14.5	42.9	62.6	30.3	15.4	58.1
Iron - Total	--	ND	ND	30000	10700	8520	51800	13700	10700	6220	4080	14000	22000	7940	6350	21700
Lead - Total	63	47.7	255	78.1	39	49.7	56.6	41.2	26.8	25.4	19.9	42.5	28.7	23.4	13.6	149
Magnesium - Total	--	ND	ND	3340	18300	36900	16700	22900	45200	5160	29500	32600	23300	34000	7390	9350
Manganese - Total	1600	ND	ND	321	532 B	1910 B	1780 B	2420 D	500	177	558 J	1820	2870 D	765	213	1190
Mercury - Total	0.18	1.2	0.083	0.0147 J	ND	ND	0.056	ND	ND	ND	ND	ND	ND	ND	ND	0.264
Nickel - Total	30	ND	ND	60.8	85.4	33.1	424	64.5	19.9	26	ND	35.2	52.5	22.9	13.4	51.3
Potassium - Total	--	ND	ND	636	467	585	536	387	338	198	273 J	298	239	204	210	1730
Selenium - Total	3.9	ND	ND	0.64 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver - Total	2	ND	ND	0.194 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium - Total	--	ND	ND	419	ND	ND	175	240	878	289	ND	ND	ND	ND	ND	ND
Vanadium - Total	--	ND	ND	6.12	4.57 J	6.8 J	18.4 J	9.6 J	3.7 J	3.52 J	5.08 J	6.85 J	6.03 J	4.64 J	4.85 J	28.5 J
Zinc - Total	109	ND	ND	3560 D	1670 D	182	571	339	3150 D	4470 D	75.2	225	278	189	168	353

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TABLE 7a

Comparison of Remaining Surface Soil Analytical Data to Unrestricted SCOs

3807 Highland Avenue Site

Niagara Falls, New York

PARAMETER[1]	Unrestricted SCOs[2]	*Remedial Investigation Data (October 2009)*													
		SS-15	SS-16	SS-17	SS-18	SS-19	SS-20	SS-21	SS-22	SS-23	SS-24	SS-25	SS-26	SS-27	SS-28
		Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09
Volatile Organic Compounds (VOCs) - mg/kg															
1,2,4-Trimethylbenzene	3.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	8.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone (MEK)	0.12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	0.06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene (Cumene)	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	3.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Cymene (p-isopropyltoluene)	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	0.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylene	0.26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds (SVOCs) (mg/kg)															
2-Methylnaphthalene	--	ND	ND	ND	ND	0.073 J	ND	ND	0.18 D,J	0.21 D,J	ND	ND	ND	ND	0.77 D,J
Acenaphthene	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.26 D,J
Benzo(a)anthracene	1	ND	0.42 D,J	ND	0.16 D,J	ND	0.28 D,J	ND	0.31 D,J	0.32 D,J	0.32 D,J	0.73 D,J	0.4 D,J	0.38 D,J	0.67 D,J
Benzo(a)pyrene	1	ND	ND	ND	0.19 D,J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	1	ND	0.66 D,J	ND	0.27 D,J	ND	ND	ND	0.4 D,J	0.4 D,J	0.42 D,J	0.73 D,J	0.29 D,J	0.53 D,J	ND
Benzo(ghi)perylene	100	ND	ND	ND	0.15 D,J	ND	ND	ND	0.28 D,J	ND	ND	ND	ND	ND	0.53 D,J
Benzo(k)fluoranthene	0.8	ND	ND	ND	0.096 D,J	ND	ND	ND	ND	ND	ND	0.51 D,J	ND	ND	ND
Butyl benzyl phthalate	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND
Chrysene	1	ND	0.44 D,J	ND	0.17 D,J	ND	0.24 D,J	ND	0.28 D,J	0.3 D,J	0.26 D,J	0.6 D,J	0.26 D,J	0.38 D,J	0.75 D,J
Dibenzo(a,h)anthracene	0.33	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	100	ND	0.59 D,J	ND	0.21 D,J	ND	0.5 D,J	ND	0.37 D,J	0.5 D,J	0.42 D,J	0.91 D,J	0.44 D,J	0.54 D,J	1.2 D,J
Fluorene	30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.22 D,J
Indeno(1,2,3-cd)pyrene	0.5	ND	0.22 D,J	ND	0.12 D,J	ND	ND	ND	ND	ND	ND	0.37 D,J	ND	ND	0.33 D,J
Naphthalene	12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.58 D,J
Phenanthrene	100	ND	ND	ND	0.11 D,J	0.04 J	ND	ND	ND	0.45 D,J	0.23 D,J	0.68 D,J	0.23 D,J	0.38 D,J	1.3 D,J
Pyrene	100	2.6 D,J,	0.5 D,J	ND	0.18 D,J	ND	0.39 D,J	ND	0.31 D,J	0.38 D,J	0.46 D,J	0.83 D,J	ND	ND	1.1 D,J
Total PCBs (mg/kg)															
Aroclor 1242	0.1	ND	ND	ND	ND	ND	ND	ND	ND	0.0044 C, J	ND	ND	ND	0.0069 C, J	ND
Aroclor 1248	0.1	0.12 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1254	0.1	ND	ND	ND	ND	ND	0.013 J	0.025 J	0.083 J	0.014 C, J	0.017 C, J	0.026 C	0.013 C, J	0.024 C, J	0.014 C, J
Aroclor 1260	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Metals (mg/kg)															
Aluminum - Total	--	2290	1460	1600	2150	243	869	1630	1830	7760	13300	8360	11300	6230	3020
Antimony - Total	--	ND	ND	ND	ND	ND	30.8	ND	ND	ND J	ND J	ND J	ND J	ND J	ND J
Arsenic - Total	13	7.1	3.2	3.9	ND	ND	ND	8.2	8.5	4.7	5.3	12.3	4.5	4	6.7
Barium - Total	350	65.9	24.2	123	34.2	17.2	42.4	83.2	120	109	121	108	150	224	61.6
Beryllium - Total	7.2	ND	ND	ND	0.54	ND	ND	0.322	1.18	0.471	0.633	0.56	0.705	0.505	0.433
Cadmium - Total	2.5	4.95	0.474	1.22	0.347	ND	0.975	1.06	1.24	0.28	0.735	1.38	0.442	3.21	1.98
Calcium - Total	--	58300	12400	71100 D	4320	3570	12700	87000 D	87300 D	4710	12400	15500	32400	109000 D	55300
Chromium - Total	30	237	52.2	107	13.9	17.6	1390	190	234	85.8 J	34 J	234 J	55 J	83.1 J	149 J
Cobalt - Total	--	5.95	3.39	4.96	1.09	ND	226	7.29	12.4	9.4 J	11.5 J	16.8 J	11.2 J	6.28 J	7.22 J
Copper - Total	50	140 J	91.5 J	33 J	9.9 J	9.7 J	110 J	130 J	129 J	30.8 J	37.7 J	155 J	27.4 J	27.2 J	92.5 J
Iron - Total	--	41100	21700	13800	1780	1740	24700	27400	41900	20900	21400	7220	20300	13600	23800
Lead - Total	63	75.7	49.9	126	6.2	6	32.5	197	172	18.9	46.2	364	78.4	116	94.4
Magnesium - Total	--	36300 J	20200 J	24900 J	785 J	342 J	6140 J	14600 J	46000 J	12700	7660	9700	18600	61600 D	21200
Manganese - Total	1600	966	498	965 J	44.7	52.6	626	1040	886	1260	779	1190	636	525	730
Mercury - Total	0.18	0.0399	ND	ND	ND	ND	ND	0.117 J	ND	ND	0.0763	0.071	0.0441	0.0952	0.0595
Nickel - Total	30	171	54.3	57.3	15.8	11.1	2440	133	143		32.6 J	175 J	49.9 J	46.2 J	73.3 J
Potassium - Total	--	670	175	477	64.1	123	629	294	635	1360	2070	2120	2010	1300	650
Selenium - Total	3.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver - Total	2	ND	ND	ND	0.99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium - Total	--	265	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	186	196
Vanadium - Total	--	7.54 J	3.55 J	11.5 J	1.69 J	1.13 J	28.4 J	7.86 J	9.94 J	17.6 J	27.1 J	26.3 J	26.9 J	20 J	15.1 J
Zinc - Total	109	3500 D	108	538	175	29.4	118	594	542	102	275	410	132	1720 D	763

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per NYSDEC Part 375 Soil Cleanup Objectives (December 2006)

Definitions:

ND = Parameter not detected above laboratory detection limit.
NA = Sample not analyzed for parameter.
"--" = No SCO available.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
B = Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
C = Calibration verification recovery was below the method control limit.
D = Compounds were identified in an analyisis at the secondary dilution factor.
I = Internal standard recovery was outside of method limits.

= Result exceeds 6NYCRR Part 375 Unrestricted SCOs.

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TABLE 7b

Comparison of Remaining Subsurface Soil Analytical Data to Unrestricted SCOs

Historic Soil Boring Samples

3807 Highland Avenue Site

Niagara Falls, New York

PARAMETER[1]	Unrestricted SCOs[2]	SB-2 (4-8)	SB-3 (0-3)	SB-4 (4-6)	SB-5 (4-8)	SB-6 (10-14)	SB-8 (0-4)	SB-10 (4-7)	SB-11 (8-10)
		Aug 08	Aug 08	Aug 08	Aug 08	Aug 08	Aug 08	Aug 08	Aug 08
Volatile Organic Compounds (VOCs) - mg/Kg									
1,2,4-Trimethylbenzene	3.6	0.004 J	ND	NA	NA	ND	NA	ND	ND
1,3,5-Trimethylbenzene	8.4	0.003 J	ND	NA	NA	ND	NA	ND	ND
2-Butanone (MEK)	0.12	ND	0.016 J	NA	NA	ND	NA	ND	ND
Acetone	0.05	0.02	0.16	NA	NA	0.02	NA	ND	ND
Carbon disulfide	--	0.003 J	0.004 J	NA	NA	0.003 J	NA	0.002	0.002 J
Isopropylbenzene (Cumene)	--	ND	ND	NA	NA	0.001 J	NA	ND	ND
Methylcyclohexane	--	ND	ND	NA	NA	0.003 J	NA	ND	ND
Methylene chloride	0.05	0.015 B	0.008 B	NA	NA	0.014 B	NA	0.014 B	0.012 B
n-Butylbenzene	12	ND	ND	NA	NA	0.008	NA	ND	ND
n-Propylbenzene	3.9	ND	ND	NA	NA	0.003 J	NA	ND	ND
p-Cymene (p-isopropyltoluene)	--	ND	ND	NA	NA	0.001 J	NA	ND	ND
sec-Butylbenzene	11	ND	ND	NA	NA	0.004 J	NA	ND	ND
Toluene	0.7	ND	ND	NA	NA	ND	NA	ND	ND
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg									
2-Methylnaphthalene	--	ND	0.22 J	NA	ND	0.27 J	ND	ND	ND
Acenaphthene	20	ND	0.55 J	NA	ND	0.14 J	ND	ND	0.11 J
Acenaphthylene	100	ND	0.18 J	NA	ND	0.082 J	ND	ND	ND
Anthracene	100	ND	0.55 J	NA	ND	0.13 J	ND	0.11 J	0.16 J
Benzo(a)anthracene	1	0.009 J	1.4	NA	ND	ND	ND	0.35 J	0.56 J
Benzo(a)pyrene	1	ND	2.1	NA	ND	ND	ND	0.38 J	0.6 J
Benzo(b)fluoranthene	1	0.008 J	2.3	NA	ND	ND	ND	0.5 J	0.82 J
Benzo(ghi)perylene	100	ND	1.6	NA	ND	ND	ND	0.21	0.31 J
Benzo(k)fluoranthene	0.8	0.021 J	0.72 J	NA	ND	ND	ND	0.21 J	0.29 J
Chrysene	1	0.02 B,J	1.5 B	NA	0.02 B,J	0.13 B,J	0.03 B,J	0.44 B,J	0.71 B,J
Dibenzo(a,h)anthracene	0.33	ND	0.35 J	NA	ND	ND	ND	0.073 J	0.011 J
Fluoranthene	100	0.013 J	2.8	NA	ND	0.048 J	0.009 J	0.5 J	1.1
Fluorene	30	ND	0.39 J	NA	ND	0.3 J	ND	0.043 J	0.064 J
Indeno(1,2,3-cd)pyrene	0.5	ND	1.4	NA	ND	ND	ND	0.22 J	0.27 J
Naphthalene	12	ND	0.33 J	NA	ND	ND	ND	0.04 J	0.072 J
Phenanthrene	100	0.02 B,J	2.1 B	NA	0.01 B,J	0.68 B,J	0.02 B,J	0.33 B,J	0.74 B,J
Pyrene	100	0.011 J	2.6	NA	ND	0.085 J	ND	0.4 J	0.84 J
PCBs - mg/Kg									
Aroclor 1254	0.1	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	0.1	ND	0.84	ND	ND	ND	ND	ND	ND
Total Metals - mg/Kg									
Arsenic	13	6.8	11.9	3	2.9	2.4	4.5	10.5	11.2
Barium	350	290	77.6	36.6	63.6	22	174	94	111
Cadmium	2.5	0.86	1.2	ND	ND	1.8	0.29	1.3	1.5
Chromium	30	692	105	11.3	15.7	15.6	30.2	310	483
Lead	63	212	74.6	3	5.2	177	10.9	409	508
Mercury	0.18	0.095	ND	ND	ND	0.048	ND	0.036	0.071

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per NYSDEC Part 375 Soil Cleanup Objectives (December 2006)

Definitions:

ND = Parameter not detected above laboratory detection limit.
NA = Sample not analyzed for parameter.
"--" = No SCO available.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
B = Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
= Result exceed 6NYCRR Part 375 Unrestricted SCOs.

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TABLE 7c

Comparison of Remaining Subsurface Soil Analytical Data to Unrestricted SCOs

Remedial Investigation Soil Boring Samples

3807 Highland Avenue Site

Niagara Falls, New York

PARAMETER[1]	Unrestricted SCOs[2]	Remedial Investigation - Sample Locations (October 2009)																					
		SB-1 (2-4)	SB-2 (4-6)	SB-3 (2-4)	SB-4 (2-4)	SB-5 (4-6)	SB-6 (2-4)	SB-7 (3-5)	SB-8 (0-2)	SB-9 (4-8)	SB-10 (4-6)	SB-11 (0-2)	SB-12 (0-2)	SB-13 (0-2)	SB-14 (8-12)	SB-15 (0-2)	SB-16 (0-2)	SB-17 (0-2)	SB-18 (2-4)	SB-19 (11-14.7)	SB-20 (0-2)	SB-21 (12-14)	SB-22 (4-6)
		Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09
Volatile Organic Compounds (VOCs) - mg/Kg																							
1,2,4-Trimethylbenzene	3.6	NA	NA	NA	NA	NA	ND	NA	0.11	NA	NA	0.0066	ND	ND	NA	NA	NA	NA	ND	0.0023 J	NA	0.0041 J	NA
1,3,5-Trimethylbenzene	8.4	NA	NA	NA	NA	NA	ND	NA	0.031	NA	NA	ND	ND	ND	NA	NA	NA	NA	ND	ND	NA	ND	NA
1,4-Dichlorobenzene	1.8	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	ND	ND	ND	NA	NA	NA	NA	ND	ND	NA	ND	NA
2-Butanone (MEK)	0.12	NA	NA	NA	NA	NA	0.0094 J	NA	ND	NA	NA	ND	ND	ND	NA	NA	NA	NA	0.044	ND	NA	ND	NA
Acetone	0.05	NA	NA	NA	NA	NA	0.073	NA	0.035	NA	NA	0.033	0.04	0.0068 J	NA	NA	NA	NA	0.21	0.021 J	NA	0.016 J	NA
Benzene	0.06	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	ND	ND	ND	NA	NA	NA	NA	ND	ND	NA	ND	NA
Carbon disulfide	--	NA	NA	NA	NA	NA	0.0019 J	NA	0.0049 J	NA	NA	ND	ND	ND	NA	NA	NA	NA	ND J	ND J	NA	ND J	NA
cis-1,2-dichloroethene	0.25	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	ND	ND	ND	NA	NA	NA	NA	0.0013 J	ND	NA	ND	NA
Cyclohexane	--	NA	NA	NA	NA	NA	ND	NA	0.015	NA	NA	0.0026 J	ND	ND	NA	NA	NA	NA	ND	0.0011 J	NA	0.0023 B,J	NA
Ethylbenzene	1	NA	NA	NA	NA	NA	ND	NA	0.0036 J	NA	NA	ND	ND	ND	NA	NA	NA	NA	ND	ND	NA	ND	NA
Isopropylbenzene (Cumene)	--	NA	NA	NA	NA	NA	ND	NA	0.0046 J	NA	NA	ND	ND	ND	NA	NA	NA	NA	ND	ND	NA	0.0013 J	NA
Methylcyclohexane	--	NA	NA	NA	NA	NA	ND	NA	0.045	NA	NA	0.011 J	ND	ND	NA	NA	NA	NA	ND	ND	NA	0.0037 J	NA
Methylene chloride	0.05	NA	NA	NA	NA	NA	0.0066 J	NA	0.0044 J	NA	NA	0.0028 J	0.0038 J	ND	NA	NA	NA	NA	0.0048 J	0.0052 J	NA	ND	NA
n-Butylbenzene	12	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	ND	ND	ND	NA	NA	NA	NA	ND	ND	NA	0.0062	NA
n-Propylbenzene	3.9	NA	NA	NA	NA	NA	ND	NA	0.0045 J	NA	NA	ND	ND	ND	NA	NA	NA	NA	ND	ND	NA	0.0039 J	NA
p-Cymene (p-isopropyltoluene)	--	NA	NA	NA	NA	NA	ND	NA	0.012	NA	NA	0.0027 J	ND	ND	NA	NA	NA	NA	ND	ND	NA	ND	NA
sec-Butylbenzene	11	NA	NA	NA	NA	NA	ND	NA	0.0072	NA	NA	0.0014	ND	ND	NA	NA	NA	NA	ND	ND	NA	0.0032 J	NA
Toluene	0.7	NA	NA	NA	NA	NA	ND	NA	0.0029 J	NA	NA	ND	ND	0.0018 J	NA	NA	NA	NA	ND	ND	NA	0.0013 J	NA
Total Xylene	0.26	NA	NA	NA	NA	NA	ND	NA	0.03	NA	NA	ND	ND	ND	NA	NA	NA	NA	ND	ND	NA	0.0018 J	NA
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg																							
2-Methylnaphthalene	--	ND	ND	ND	ND	0.031 J	ND	ND	1.2	ND	ND	1.6 D,N,J	ND	ND	ND	0.27 D,J	ND	ND	0.036 J	14 D	ND	ND	ND
Acenaphthene	20	ND	ND	ND	ND	ND	ND	ND	0.096 J	ND	ND	0.74 D,J	ND	ND	ND	ND	ND	0.16 D,J	0.037 J	1.4 D,J	ND	ND	0.15 D,J
Acenaphthylene	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.32 D,J	ND	0.26 D,J	0.042 J	1.1 D,J	ND	ND	ND
Benzo(a)anthracene	1	0.05 J	ND	ND	ND	0.052 J	0.19 D,J	0.016 J	0.068 J	ND	ND	0.44 D,J	ND	0.74 D,J	ND	1.6 D,J	ND	0.53 D,J	0.064 J	ND	ND	ND	0.64 D,J
Benzo(a)pyrene	1	0.062 J	ND	ND	ND	0.049 J	0.18 D,J	0.012 J	0.061 J	ND	ND	0.67 D,J	ND	0.69 D,J	ND	1.7 D,J	ND	0.49 D,J	0.065 J	ND	ND	ND	0.81 D,J
Benzo(b)fluoranthene	1	0.073 J	ND	ND	ND	0.06 J	0.22 D,J	0.017 J	0.11 J	ND	ND	1.2 D,J	ND	1.5 D,J	ND	2.2 D,J	ND	0.57 D,J	0.067 J	ND	ND	ND	1.3 D,J
Benzo(ghi)perylene	100	0.051 J	ND	ND	ND	0.043 J	0.17 D,J	ND	0.059 J	ND	ND	0.54 D,J	ND	ND	ND	1.3 D,J	ND	0.27 D,J	0.049 J	ND	ND	ND	0.65 D,J
Benzo(k)fluoranthene	0.8	0.026 J	ND	ND	ND	0.036 J	0.11 D,J	ND	ND	ND	ND	ND	ND	ND	ND	0.86 D,J	ND	0.22 D,J	0.038 J	ND	ND	ND	ND
Biphenyl	--	ND	ND	ND	ND	ND	ND	ND	0.0041 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl) phthalate	--	ND	ND	ND	ND	0.15 J	1.1 D,J	ND	0.081 J	0.071 J	ND	ND	ND	ND	0.42	ND	0.077 J	ND	0.33	ND	ND	ND	ND
Carbazole	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.084 D,J	ND	ND	ND	ND	ND
Chrysene	1	0.055 J	ND	ND	ND	0.059 N,J	0.18 D,J	0.012 J	0.12 J	ND	ND	0.61 D,J	ND	0.68 D,J	ND	1.5 D,J,B	ND	0.53 D,J,B	0.061 B,J	ND	ND	ND	0.67 D,J
Dibenzo(a,h)anthracene	0.33	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.33 D,J	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.2 D,J	ND	0.068 D,J	0.012 J	ND	ND	ND	ND
Diethyl phthalate	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.057 J	0.41 D,J	ND	ND	ND
Di-n-butyl phthalate	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.083 J	ND	0.16 J	ND	ND	ND	ND
Fluoranthene	100	0.081 J	ND	ND	ND	0.074 J	0.33 D,J	0.022 J	0.14 J	ND	ND	0.93 D,J	ND	0.93 D,J	ND	2.4 D,J	ND	1.2 D	0.11 J	0.23 D,J	ND	ND	1.2 D,J
Fluorene	30	ND	ND	ND	ND	ND	ND	ND	0.21	ND	ND	ND	ND	ND	ND	ND	ND	0.15 D,J	0.036 J	2.3 D	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.5	0.04 J	ND	ND	ND	0.032 J	0.13 D,J	ND	ND	ND	ND	0.4 D,J	ND	ND	ND	1 D,J	ND	0.24 D,J	0.037 J	ND	ND	ND	0.5 D,J
Naphthalene	12	ND	ND	ND	ND	ND	ND	ND	0.27	ND	ND	0.65 D,N,J	ND	ND	ND	0.23 D,J	ND	ND	0.021 J	0.61 D,J	ND	ND	ND
Phenanthrene	100	0.056 J	ND	ND	ND	0.043 J	ND	0.015 J	0.5	ND	ND	2 D	ND	ND	ND	1.8 D,J	ND	1 D,J	0.081 J	6.9 D	ND	ND	0.86 D,J
Pyrene	100	0.071 J	ND	ND	ND	0.076 J	0.32 D,J	0.02 J	0.13 J	ND	ND	1.1 D,J	ND	0.88 D,J	ND	2.2 D,J	ND	1.1 D,J	0.097 J	0.51 D,J	ND	ND	1 D,J
PCBs - mg/Kg																							
Aroclor 1248	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.16 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1254	0.1	ND	ND	ND	ND	ND	ND	ND	0.072 J	ND	ND	0.23 J	ND	ND	ND	ND	ND	ND	0.015 J	ND	ND	ND	ND
Aroclor 1260	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.046 J	ND	ND
Total Metals - mg/Kg																							
Aluminum	--	14900	14700	7390	14600	12600	6910	14400	7850	10500	10300	8290	4010	5090	8510	5480	14300	23000	14900	8270	18900	3570	17200
Arsenic	13	8.1	4.2	2.5	4.2	6.2	10.1	4.9	10	2.6	4.5	7.8	3.7	6.3	3.7	12.2	2.4	7.1	7.1	2.2	2.8	ND	5.1
Barium	350	183	167	62.1	96.3	89.3	98.5	342	53.3	108	81.2	739	32.4	39.8	60.4	2230 D	81.3	163	109	46.8	84.3	22.7	264
Beryllium	7.2	0.729	0.726	0.342	0.654	0.685	0.49	0.729	0.505	0.581	0.734	0.504	0.334	0.309	0.424	0.648	0.596	1.07	0.638	0.318	0.655	0.23	2.71
Cadmium	2.5	0.744	ND	0.57	ND	ND	ND	ND	ND	ND	0.302	ND	0.625	0.551	ND	1.05	ND	0.288	0.466	ND	0.351	0.641	0.28
Calcium	--	15700	80500	56000	4830	17900	18200	45400	10600	110000 D	48200	31700	143000 D	7680 D	71000	11600	37000	19700	13700	37600	16700	111000 D	32600
Chromium	30	29.3 J	19.9 J	10.7 J	18.4 J	27.3 J	278 J	154 J	141 J	13.8 J	15.1 J	346 J	19.4 J	3630	13.1	107	18.9	29.8	31.4	11.9	271	7.28	118
Cobalt	--	8.73	10.6	7.95	11.4	11.1	8.54	11.4	12.3	8.77	10.8	4.39	2.23	32.8 J	8.36 J	7.76 J	8.58 J	14.4 J	11.2 J	8.22 J	7.93 J	3.47 J	5.18 J
Copper	50	31.3	19.7	12.3	18.3	32.9	287	21.7	93.1	19.8	22.6	197	11.9	94.8 J	18 J	60.1 J	16.4 J	24.2 J	29.3 J	11.6 J	28.3 J	9 J	1460 J
Iron	--	19200	21300	12800	22500	27900	31000	21700	95700	16500	20200	27500	7480	18100	15300	71500 D	19100	31400	22600	14400	5960	7590	11400
Lead	63	73.8	7.7	4.2	6.1	15.4	77.4	7.5	58.8	5.7	5.9	74	47.7	21.9	6.4	205	4.6	9.8	147	3.6	64.7	47.5	101
Magnesium	--	5610	9900	7770	5800	10900	8640	14400	4740	8200	8540	8870	53400 D	6200 D	26500	5270	10600	9970	5920	8180	59200 D	52700 D	7310
Manganese	1600	1250	560	619	684	475	601	1970	1610	727	1370	1790	0.69	375 D	583	6000 D	504	610	569	556	645	552	401
Nickel	30	27.1 J	22.3 J	16.4 J	22.3 J	29.3 J	80.3 J	31.6 J	127 J	19.5 J	20.7 J	67.6 J	12.8 J	1860	16.1	22.4	21.9	36.8	35.9	17.6	144	8.47	44.4
Potassium	--	1720	3170	1200	1220	1490	1160	2450	810	2160	1730	592	1020	419	2000	836	2130	2410	1050	1610	810	1040	888
Selenium	3.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	--	355	501	179	267	ND	206	399	ND	287	229	257	175	ND	ND	394	440	218	223	167	ND	ND	ND
Thallium	--	ND	ND	ND	ND	ND	ND	ND	9.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	--	25.9 J	26.9 J	15.9 J	24.8 J	27.8 J	14.9 J	27.4 J	16.4 J	20.5 J	24.6 J	13.9 J	8.27 J	18.7	18.4	11	20.3	32.6	26.2	15.2	8.71	9.32	11
Zinc	109	437 J	48.7 J	73.3 J	218 J	71.5 J	110 J	50.8 J	68.1 J	37.5 J	41.4 J	86.6 J	188 J	17.5 J	46.7 J	181 J	58.6 J	66 J	83.4 J	38.6 J	142 J	174 J	102 J
Mercury	0.18	0.0834	ND	ND	ND	ND	0.037	0.05	0.178	ND	ND	0.0575	0.0413	0.0235	ND	0.0698	ND	0.0645	0.0368	ND	ND	ND	0.0399

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TABLE 7c

Comparison of Remaining Subsurface Soil Analytical Data to Unrestricted SCOs

Remedial Investigation Soil Boring Samples

3807 Highland Avenue Site

Niagara Falls, New York

PARAMETER[1]	Unrestricted SCOs[2]	Remedial Investigation - Sample Locations																
		SB-23 (8-12)	SB-24 (4-6)	SB-25 (1-3)	SB-26 (1-3)	SB-27 (1-3)	SB-28 (6-8)	SB-29 (4-6)	SB-30 (0-4)	TP/SS-1 (3)	TP/SS-1 (5)	TP/SS-1 (6)	TP/SS-1 (7)	TP/SS-1 (8)	TP/SS-1 (10)	TP/SS-5 (3)	TP/SS-5 (4)	TP/SS-5 (5)
		Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Jan 10	Jan 10	Jan 10	Jan 10	Jan 10	Jan 10	Jan 10	Jan 10	Jan 10
Volatile Organic Compounds (VOCs) - mg/Kg																		
1,2,4-Trimethylbenzene	3.6	0.002 J	ND	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	8.4	ND	ND	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	1.8	ND	ND	NA	NA	NA	0.0014 B,J	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone (MEK)	0.12	0.011 J	0.012 J	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	0.05	0.054	0.081	NA	NA	NA	ND	0.016 J	0.007 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	0.06	ND	ND	NA	NA	NA	ND	ND	0.0016 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	--	0.0022 J	0.0026 J	NA	NA	NA	ND J	0.0015 J	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-dichloroethene	0.25	ND	ND	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	ND	ND	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	1	ND	ND	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene (Cumene)	--	0.0049 J	ND	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	--	0.0042 J	ND	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	0.05	ND	ND	NA	NA	NA	0.0049 J	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	12	0.0055 J	ND	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	3.9	0.01	ND	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Cymene (p-isopropyltoluene)	--	ND	ND	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	11	0.0043 J	ND	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	0.7	0.0014 J	ND	NA	NA	NA	ND	ND	0.0016 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylene	0.26	0.0031 J	ND	NA	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg																		
2-Methylnaphthalene	--	0.25 D,J	0.17 D,J	ND	ND	ND	ND	ND J	ND J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	20	0.39 D,J	ND	ND	ND	0.075 D,J	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	100	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	100	ND	ND	ND	ND	0.16 D,J	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	1	ND	0.31 D,J	ND	0.12 D,J	0.41 D,J	ND	ND	0.2 D,J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	1	ND	ND	ND	0.12 D,J	0.36 D,J	ND	ND	0.19 D,J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	1	ND	ND	ND	0.12 D,J	0.49 D,J	ND	ND	0.31 D,J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(ghi)perylene	100	ND	ND	ND	ND	0.24 D,J	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	0.8	ND	ND	ND	0.064 D,J	0.16 D,J	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Biphenyl	--	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl) phthalate	--	ND	ND	ND	ND	ND	0.067 J	0.088 J	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	--	ND	ND	ND	ND	0.085 D,J	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	1	ND	0.28 D,J	ND	0.1 D,J	0.42 D,J	ND	ND	0.22 D,J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	0.33	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	--	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	--	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate	--	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	100	0.35 D,J	0.54 D,J	ND	0.15 D,J	0.86 D,J	ND	ND	0.24 D,J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	30	0.43 D,J	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	0.5	ND	ND	ND	ND	0.18 D,J	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	12	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	100	0.54 D,J	0.47 D,J	ND	0.13 D,J	0.76 D,J	ND	ND	0.16 D,J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	100	0.32 D,J	0.46 D,J	ND	0.15 D,J	0.74 D,J	ND	ND	0.23 D,J	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs - mg/Kg																		
Aroclor 1248	0.1	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254	0.1	0.0062 J	ND	0.17 D	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260	0.1	ND	ND	0.14 D	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals - mg/Kg																		
Aluminum	--	10200	7830	5840	17500	10000	2790	2110	8200	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	13	7.5	8.5	58.2	5	4.4	2.4	16.9	77.3	7.7	2.1	15	12.6	8.4	11.6	10.6	10.8	15
Barium	350	89.7	126	304	107	64	12	96.5	249	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	7.2	0.544	0.471	0.58	0.746	0.445	0.226	0.387	0.414	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	2.5	1.01	1.52	5.67	0.382	0.39	0.747	ND	2.71	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	--	60600	33000	40600	5850	44000	199000	2250	19900	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	30	240	59.8	301	21.3	84.9	3.93	4.09	793	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	13.1 J	7.44 J	25.2 J	9.65 J	7.92 J	2.24 J	0.619 J	38.6 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	50	36.1 J	42.5 J	379 J	22.2 J	22 J	6.2 J	232 J	142 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	--	18000	16400	60400 D	21500	15600	6720	7640	27900	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	63	17.9	34	113	9.9	38.4	144	2.6	234	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	--	27700	17300	21300	12300	16600	120000	280	27500	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	1600	2010	2100	20400 D	569	719	461	63.8	52800 D	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	30	277	28.1	151	25.3	19.8	4.95	64	180	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	--	1720	1280	707	1580	1140	842	107	2020	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	3.9	238	ND	ND	ND	ND	ND	ND	8.1	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	2	ND	ND	0.843	ND	ND	ND	ND	1.68	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	--	ND	222	351	ND	ND	213	ND	599	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	--	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	--	19.7	16.2	25.8	23.4	20.4	7.67	1.34	36.6	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	109	526 J	670 J	2180 D,J	130 J	126 J	262 J	23.5 J	396 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	0.18	ND	0.0316	0.0986	ND	0.0638	ND	ND	0.113	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per 6NYCRR Part 375 Soil Cleanup Objectives

Definitions:

ND = Parameter not detected above laboratory detection limit.
NA = Sample not analyzed for parameter.
"--" = No SCO available.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
B = Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
D = Compounds were identified in an analyisis at the secondary dilution factor.
I = Internal standard recovery was outside of method limits.
I = Internal standard recovery was outside of method limits.
I = Internal standard recovery was outside of method limits.
I = Internal standard recovery was outside of method limits.
ID4 = benzo(b)flouranthene coelutes with benzo(k)fluoranthene; the reported result is a summation of the isomers and the concentration is based on the response factor of benzo(b)fluoranthene.

= Result exceeds 6NYCRR Part 375 Industrial SCO.

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TABLE 7d

Comparison of Remaining On-Site Subsurface Soil Analytical Data to Unrestricted SCOs

Remedial Investigation Test Pit Samples

3807 Highland Avenue Site

Niagara Falls, New York

PARAMETER[1]	Unrestricted SCOs[2]	TP-2 (0-3)	TP-3 (0-1.5)	TP-4 (2.5-6)	TP-7 (1-2)	TP-8 (1-2)	TP-10 (6-8)	TP-11 (0-2)	TP-12 (0-2)	TP-13 (3)	TP-13E (0-2)	TP-13S (0-2)	TP-13W (0-2)	TP-14 (2.5-3.5)	TP-15 (0-2)
		Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09
Volatile Organic Compounds (VOCs) - mg/Kg															
1,2,4-Trimethylbenzene	3.6	NA	ND	ND	0.0016 J	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone (MEK)	0.12	NA	ND	ND	ND	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	0.05	NA	ND	0.033	0.027 J	NA	0.013 J	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	0.06	NA	ND	ND	ND	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	--	NA	ND	ND	0.0017 J	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	NA	ND	ND	0.0016 J	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	1	NA	ND	ND	ND	NA	0.0019 J	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene (Cumene)	--	NA	ND	ND	ND	NA	0.0018 J	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	0.05	NA	ND	ND	0.0022 J	NA	0.0028 J	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	3.9	NA	ND	ND	ND	NA	0.0014 J	NA	NA	NA	NA	NA	NA	NA	NA
p-Cymene (p-isopropyltoluene)	--	NA	ND	ND	ND	NA	0.0015 J	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	11	NA	ND	ND	ND	NA	0.0017 J	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	0.7	NA	ND	ND	ND	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg															
2-Methylnaphthalene	--	ND	ND	0.038 D,J	0.19	ND	ND	0.28 D,J	ND	NA	NA	NA	NA	ND	ND
Acenaphthene	20	1.6 D,J	ND	ND	0.13 J	ND	ND	0.37 D,J	ND	NA	NA	NA	NA	ND	ND
Acenaphthylene	100	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	ND	ND
Anthracene	100	1.2 D,J,B	ND	ND	0.16 J	ND	ND	0.83 D,J	0.055 D,J	NA	NA	NA	NA	ND	0.084 J
Benzo(a)anthracene	1	6.3 D, B	0.36 D,J,B	0.29 D,J,B	0.59	0.75 D,J	ND	2.4 D	0.28 D,J	NA	NA	NA	NA	0.64 D,J	0.46 J
Benzo(a)pyrene	1	7.6 D, B	0.39 D,J,B	0.32 D,J,B	0.43	ND	ND	2.4 D	0.44 D,J	NA	NA	NA	NA	ND	0.54 J
Benzo(b)fluoranthene	1	8.5 D, B	0.46 D,J,B	0.36 D,J,B	0.65	ND	ND	3 D	0.55 D,J	NA	NA	NA	NA	ND	0.61 J
Benzo(ghi)perylene	100	5.3 D	0.4 D,J	0.36 D,J	0.44	1.2 D,J	ND	1.3 D,J	0.37 D,J	NA	NA	NA	NA	ND	0.39 J
Benzo(k)fluoranthene	0.8	3.9 D,J,B	0.21 D,J,B	0.2 D,J,B	0.22	ND	ND	1.2 D,J	0.17 D,J	NA	NA	NA	NA	ND	0.22 J
Biphenyl	--	ND	ND	ND	0.036 J	ND	ND	ND	ND	NA	NA	NA	NA	ND	ND
Carbazole	--	0.62 D,J,B	ND	ND	0.11 J	ND	ND	0.44 D,J	ND	NA	NA	NA	NA	ND	ND
Chrysene	1	6 D, B	0.31 D,J,B	0.26 D,J,B	0.73	0.8 D,J	ND	2.5 D	0.36 D,J	NA	NA	NA	NA	ND	0.44 J
Dibenzo(a,h)anthracene	0.33	1.2 D,J	0.11 D,J	0.086 D,J	0.095 J	ND	ND	0.4 D,J	0.097 D,J	NA	NA	NA	NA	ND	ND
Dibenzofuran	--	0.3 D,J	ND	ND	0.07 J	ND	ND	0.25 D,J	ND	NA	NA	NA	NA	ND	ND
Fluoranthene	100	9.3 D, B	0.5 D,J,B	0.38 D,J,B	1.2	ND	ND	3.9 D	0.47 D,J	NA	NA	NA	NA	0.53 D,J	0.67 J
Fluorene	30	0.51 D,J	ND	ND	0.084 J	ND	ND	0.42 D,J	ND	NA	NA	NA	NA	ND	ND
Indeno(1,2,3-cd)pyrene	0.5	5 D, B	0.3 D,J,B	0.28 D,J,B	ND	0.73 D,J	ND	1.3 D,J	0.3 D,J	NA	NA	NA	NA	ND	0.35 J
Naphthalene	12	0.48 D,J	ND	ND	0.078 J	ND	ND	0.39 D,J	ND	NA	NA	NA	NA	ND	0.14 J
Phenanthrene	100	4.8 D, B	0.36 D,J,B	0.24 D,J,B	0.95	0.48 D,J	ND	2.9 D	0.28 D,J	NA	NA	NA	NA	ND	0.35 J
Pyrene	100	8.4 D, B	0.53 D,J,B	0.37 D,J,B	1	ND	ND	3.4 D	0.43 D,J	NA	NA	NA	NA	ND	0.59 J
PCBs - mg/Kg															
Aroclor 1242	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides/Herbicides - mg/Kg															
Alpha BHC	0.02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Delta BHC	0.04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	0.014	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gamma BHC	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals - mg/Kg															
Aluminum	--	9050	9570	2910	8480	1080	9910 J	5420 J	16000 J	NA	NA	NA	NA	7620	19800 J
Arsenic	13	8.2 J	6.9 J	5.5 J	9.4	7.8	3	9.1	8.5	NA	NA	NA	NA	9.1	7.2
Barium	350	277 J	710 J	32.4 J	242	65	69.4 J	125 J	87.6 J	NA	NA	NA	NA	85.7	178 J
Beryllium	7.2	0.556	0.62	ND	1.23	0.224	0.466	0.329	0.653	NA	NA	NA	NA	0.509	0.614
Cadmium	2.5	0.509	1	1.37	0.285	0.242	ND	5.61	3.26	NA	NA	NA	NA	ND	0.489
Calcium	--	21400	24200	16500	47500	36800	46100	16400	27100	NA	NA	NA	NA	8030	14600
Chromium	30	409 J	173 J	1060 J	240 J	140 J	15.1	3790	325	20.6 J	174 J	241 J	3670 J	126 J	1070 J
Chromium (Hexavalent)	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	51.6	9.99	57	28.4	7.46	10.9	226	22	NA	NA	NA	NA	13.3	28.3
Copper	50	53	131	462	124	46.4	13.8 J	309 J	82.7 J	NA	NA	NA	NA	143	160 J
Iron	--	30700	25400	21800	25300	7800	18400	75000 D	16100	NA	NA	NA	NA	98900 D	21100
Lead	63	34.9	166	69	52.6	23	4.5	119	167	NA	NA	NA	NA	67.1	48.5
Magnesium	--	13600	7130	8620	17400	18800	8410 J	7130 J	28000 J	NA	NA	NA	NA	4320	42800 J
Manganese	1600	8790 D	9390 D	989 B	1370	2470 D	680	2010	1000	NA	NA	NA	NA	1930	3510 D
Nickel	30	1440 J	77 J	2310 J	497 J	111 J	23.1	1890	231	NA	NA	NA	NA	312 J	1330 J
Potassium	--	1340	1240	337	1660	241	1530 J	590 J	1770 J	NA	NA	NA	NA	901	934 J
Silver	2	ND	1.13	ND	ND	ND	ND	0.754	ND	NA	NA	NA	NA	ND	ND
Sodium	--	371	ND	ND	343	ND	ND	ND	230	NA	NA	NA	NA	415	ND
Thallium	--	ND	ND	ND	ND	ND	ND	7.3	ND	NA	NA	NA	NA	9.9	ND
Vanadium	--	28.6 J	19.9 J	56.5 J	24.2 J	5.78 J	19.1 J	223 J	20.7 J	NA	NA	NA	NA	17.7 J	27.3 J
Zinc	109	600	296	149	316 J	406 J	46.1 J	360 J	351 J	NA	NA	NA	NA	189 J	130 J
Mercury	0.18	0.0435	1.59 D	0.0426	0.0261	0.0488	ND	0.169	0.0463 J	NA	NA	NA	NA	0.0828	0.04 J

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TABLE 7d

Comparison of Remaining On-Site Subsurface Soil Analytical Data to Unrestricted SCOs

Remedial Investigation Test Pit Samples

3807 Highland Avenue Site

Niagara Falls, New York

PARAMETER[1]	Unrestricted SCOs[2]	TP-16 (1.5)	TP-16S (0-1)	TP-16W (0-1)	TP-16E (0-1)	TP-17 (0-2)	TP-18 (0-2)	TP-20 (0-2)	TP-21 (0-2)	TP-22 (0-2)	TP-23 (0-2)	TP-24 (0-3)	TP-25 (3-5)	TP-26 (5-7)	TP-27 (4-6)	TP-28 (4-6)	TP-29 (0-2)
		Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09	Oct 09
Volatile Organic Compounds (VOCs) - mg/Kg																	
1,2,4-Trimethylbenzene	3.6	NA	NA	NA	NA	NA	NA	NA	NA	0.0013 J	NA	NA	NA	NA	NA	NA	NA
2-Butanone (MEK)	0.12	NA	NA	NA	NA	NA	NA	NA	NA	0.0053 J	NA	NA	NA	NA	NA	NA	NA
Acetone	0.05	NA	NA	NA	NA	NA	NA	NA	NA	0.082	NA	NA	NA	NA	NA	NA	NA
Benzene	0.06	NA	NA	NA	NA	NA	NA	NA	NA	0.0013 J	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	--	NA	NA	NA	NA	NA	NA	NA	NA	0.0016 J	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	1	NA	NA	NA	NA	NA	NA	NA	NA	0.0011 J	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene (Cumene)	--	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	0.05	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	3.9	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA
p-Cymene (p-isopropyltoluene)	--	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	11	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA
Toluene	0.7	NA	NA	NA	NA	NA	NA	NA	NA	0.0022 J	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg																	
2-Methylnaphthalene	--	NA	NA	NA	NA	ND	ND	ND	0.077 D,J	ND	0.16 D,J	ND	ND	0.16 D,J	ND	0.25 D,J	0.14 D,J
Acenaphthene	20	NA	NA	NA	NA	0.17 D,J	ND	ND	0.063 D,J	ND	0.43 D	ND	ND	0.35 D,J	ND	0.18 D,J	ND
Acenaphthylene	100	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	100	NA	NA	NA	NA	0.31 D,J	0.057 D,J	ND	0.13 D,J	ND	0.79 D,J	ND	ND	ND	ND	0.51 D,J	ND
Benzo(a)anthracene	1	NA	NA	NA	NA	1.2 D,J	0.27 D,J	0.77 D,J	0.45 D,J	0.18 D,J	3.1 D	0.54 D,J	0.68 D,J	1.9 D,J	0.19 D,J	1.4 D,J	0.49 D,J
Benzo(a)pyrene	1	NA	NA	NA	NA	1.5 D,J	0.3 D,J	0.84 D,J	0.47 D,J	ND	4.3 D	0.61 D,J	0.9 D,J	2.8 D	0.21 D,J	1.7 D,J	0.55 D,J
Benzo(b)fluoranthene	1	NA	NA	NA	NA	1.5 D,J	0.32 D,J	1 D,J	0.58 D,J	ND	4.7 D	0.55 D,J	1 D,J	3 D	0.32 D,J	2 D	0.78 D,J
Benzo(ghi)perylene	100	NA	NA	NA	NA	1.5 D,J	0.29 D,J	0.62 D,J	0.31 D,J	ND	3.6 D	ND	0.76 D,J	2.1 D,J	0.17 D,J	1.4 D,J	0.51 D,J
Benzo(k)fluoranthene	0.8	NA	NA	NA	NA	0.82 D,J	0.19 D,J	0.41 D,J	0.2 D,J	ND	1.8 D,J	0.47 D,J	0.37 D,J	1.2 D,J	0.11 D,J	0.74 D,J	0.27 D,J
Biphenyl	--	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	--	NA	NA	NA	NA	0.21 D,J	ND	ND	ND	ND	0.49 D,J	ND	ND	0.25 D,J	ND	0.23 D,J	ND
Chrysene	1	NA	NA	NA	NA	1.3 D,J	0.31 D,J	0.98 D,J	0.52 D,J	0.12 D,J	3.3 D	0.57 D,J	0.7 D,J	2.1 D,J	0.24 D,J	1.5 D,J	0.55 D,J
Dibenzo(a,h)anthracene	0.33	NA	NA	NA	NA	ND	ND	ND	ND	ND	0.84 D,J	ND	ND	0.52 D,J	ND	0.38 D,J	ND
Dibenzofuran	--	NA	NA	NA	NA	ND	ND	ND	ND	ND	0.28 D,J	ND	ND	ND	ND	0.21 D,J	ND
Fluoranthene	100	NA	NA	NA	NA	2.1 D,J	0.38 D,J	1.2 D,J	1.2 D	0.094 D,J	5.9 D	0.83 D,J	1.1 D,J	3.3 D	0.28 D,J	2.6 D	0.81 D,J
Fluorene	30	NA	NA	NA	NA	ND	ND	ND	ND	ND	0.41 D,J	ND	ND	0.23 D,J	ND	0.27 D,J	ND
Indeno(1,2,3-cd)pyrene	0.5	NA	NA	NA	NA	1.1 D,J	0.18 D,J	ND	0.26 D,J	ND	3.1 D	0.28 D,J	0.6 D,J	1.8 D,J	0.14 D,J	1.2 D,J	0.41 D,J
Naphthalene	12	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.31 D,J	ND
Phenanthrene	100	NA	NA	NA	NA	1.5 D,J	0.21 D,J	0.51 D,J	0.74 D,J	0.15 D,J	4.1 D	0.51 D,J	0.72 D,J	1.7 D,J	0.21 D,J	2.1 D	0.6 D,J
Pyrene	100	NA	NA	NA	NA	1.7 D,J	0.4 D,J	1.4 D,J	0.94 D	0.15 D,J	4.7 D	0.76 D,J	0.93 D,J	2.8 D	0.22 D,J	2 D	0.68 D,J
PCBs - mg/Kg																	
Aroclor 1242	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Aroclor 1254	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.027 C	NA	NA	NA	NA	NA
Aroclor 1260	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.027 C	NA	NA	NA	NA	NA
Pesticides/Herbicides - mg/Kg																	
Alpha BHC	0.02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Delta BHC	0.04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	0.014	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gamma BHC	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals - mg/Kg																	
Aluminum	--	NA	NA	NA	NA	7830	1790	1010	1270 J	1130	9940	5270	11500	6240	7250	9910	6290
Arsenic	13	4.4	9.2	9.8	9.4	5.3	9.9	3.3	4.2	20.9 J	7.5	8.8	14.5	17	7.5	13.3	16.1
Barium	350	NA	NA	NA	NA	42.7	216	22.2	28.9 J	18.2 J	109	94.7	95.2	51.9	52.8	128	88.9
Beryllium	7.2	NA	NA	NA	NA	0.473	0.267	ND	ND	ND	0.579	0.349	0.573	0.392	0.349	1.27	0.425
Cadmium	2.5	NA	NA	NA	NA	0.636	0.838	0.439	ND	0.851	0.756	1.26	1.47	1.24	0.731	0.84	0.559
Calcium	--	NA	NA	NA	NA	101000 D	7650	37600	13100	4590	36600	60600 D	8450	15300	26200	21100	19000
Chromium	30	23.1	1190	462	527	51.3	714	57.8	432	446 J	103	3800	182	1050	565	407	336
Chromium (Hexavalent)	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	NA	NA	NA	NA	7.15	28.7	3.31	20.6	18.4 J	11.9	90.7	17.2	9.77	5.35	8.46	15.6
Copper	50	NA	NA	NA	NA	26.7	293	44.4	80.2 J	561 J	76.5	183	57.5	103	84.2	105	207
Iron	--	NA	NA	NA	NA	15800	108000 D	23500	41100	243000 D,J	20400	39200	20000	27700	23200	23700	81500
Lead	63	NA	NA	NA	NA	79.1	117	35.1	54.6	160	129	95.2	156	892	454	415	481
Magnesium	--	NA	NA	NA	NA	59300 D	4090	20300	5830 J	1550	14600	28400	9530	21900	25800	14600	11900
Manganese	1600	NA	NA	NA	NA	640	3200 D	503	669	1820 J	1130	1860	758	1030	1120	1280	1620
Nickel	30	28.1	1100	2460	800	41.8	542	44	394	176	114	2730 D	218	492	101	116	193
Potassium	--	NA	NA	NA	NA	1060	184	256	207 J	228	1400	799	1640	2720	770	1690	1030
Silver	2	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	--	NA	NA	NA	NA	542	ND	ND	ND	ND	522	211	ND	358	ND	199	ND
Thallium	--	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.4
Vanadium	--	NA	NA	NA	NA	21.5	27.7	5.11	14.1 J	19.6 J	30.7	54.9	33.7	615	9.48	13.2	21.7
Zinc	109	NA	NA	NA	NA	326	226	99.3	132 J	46.2 J	251	288	284	615	362	338	330
Mercury	0.18	NA	NA	NA	NA	0.0504	0.0368	ND	ND	0.0281	0.14	0.0499	0.0834	0.0474	ND	0.0551	0.0636

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per NYSDEC Part 375 Soil Cleanup Objectives (December 2006)

Definitions:

ND = Parameter not detected above laboratory detection limit.
NA = Sample not analyzed for parameter.
"--" = No SCO available.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
B = Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
C = Calibration verification recovery was below the method control limit.
D = Compounds were identified in an analyisis at the secondary dilution factor.
= Result exceeds 6NYCRR Part 375 Unrestricted SCOs.

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TABLE 11

CRITERIA FOR USE OF OFF-SITE SOIL

3807 Highland Avenue Site
Niagara Falls, New York

Parameter	Allowable Concentration of Imported Soil/Fill
Volatile Organic Compounds (mg/kg)	
1,1,1-Trichloroethane	0.68
1,1-Dichloroethane	0.27
1,1-Dichloroethene	0.33
1,2-Dichlorobenzene	1.1
1,2-Dichloroethane	0.02
1,2-Dichloroethene(cis)	0.25
1,2-Dichloroethene(trans)	0.19
1,3-Dichlorobenzene	2.4
1,4-Dichlorobenzene	1.8
1,4-Dioxane	0.1
Acetone	0.05
Benzene	0.06
Butylbenzene	12
Carbon tetrachloride	0.76
Chlorobenzene	1.1
Chloroform	0.37
Ethylbenzene	1
Hexachlorobenzene	3.2
Methyl ethyl ketone	0.12
Methyl tert-butyl ether	0.93
Methylene chloride	0.05
Propylbenzene-n	3.9
Sec-Butylbenzene	11
Tert-Butylbenzene	5.9
Tetrachloroethene	1.3
Toluene	0.7
Trichloroethene	0.47

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TABLE 11

CRITERIA FOR USE OF OFF-SITE SOIL

3807 Highland Avenue Site
Niagara Falls, New York

Parameter	Allowable Concentration of Imported Soil/Fill
Volatile Organic Compounds (mg/kg)	
Trimethylbenzene-1,2,4	3.6
Trimethylbenzene-1,3,5	8.4
Vinyl chloride	0.02
Xylene (mixed)	1.6
Semi-Volatile Organic Compounds (mg/kg)	
Acenaphthene	98
Acenaphthylene	107
Anthracene	500
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1.7
Benzo(g,h,i)perylene	500
Benzo(k)fluoranthene	1.7
Chrysene	1
Dibenz(a,h)anthracene	0.56
Fluoranthene	500
Fluorene	386
Indeno(1,2,3-cd)pyrene	5.6
m-Cresol(s)	0.33
Naphthalene	12
o-Cresol(s)	0.33
p-Cresol(s)	0.33
Pentachlorophenol	0.8
Phenanthrene	500
Phenol	0.33
Pyrene	500

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TABLE 11

CRITERIA FOR USE OF OFF-SITE SOIL

3807 Highland Avenue Site
Niagara Falls, New York

Parameter	Allowable Concentration of Imported Soil/Fill
Metals (mg/kg)	
Arsenic	16
Barium	400
Beryllium	47
Cadmium	7.5
Chromium, Hexavalent[1]	19
Chromium, Trivalent[1]	1500
Copper	270
Cyanide	27
Lead	450
Manganese	2000
Mercury (total)	0.73
Nickel	130
Selenium	4
Silver	8.3
Zinc	2480
PCBs/Pesticides (mg/kg)	
2,4,5-TP Acid (Silvex)	3.8
4,4'-DDE	17
4,4'-DDT	47
4,4'-DDD	14
Aldrin	0.19
Alpha-BHC	0.02
Beta-BHC	0.09
Chlordane (alpha)	2.9
Delta-BHC	0.25
Dibenzofuran	210
Dieldrin	0.1
Endosulfan I	102

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TABLE 11

CRITERIA FOR USE OF OFF-SITE SOIL

3807 Highland Avenue Site
Niagara Falls, New York

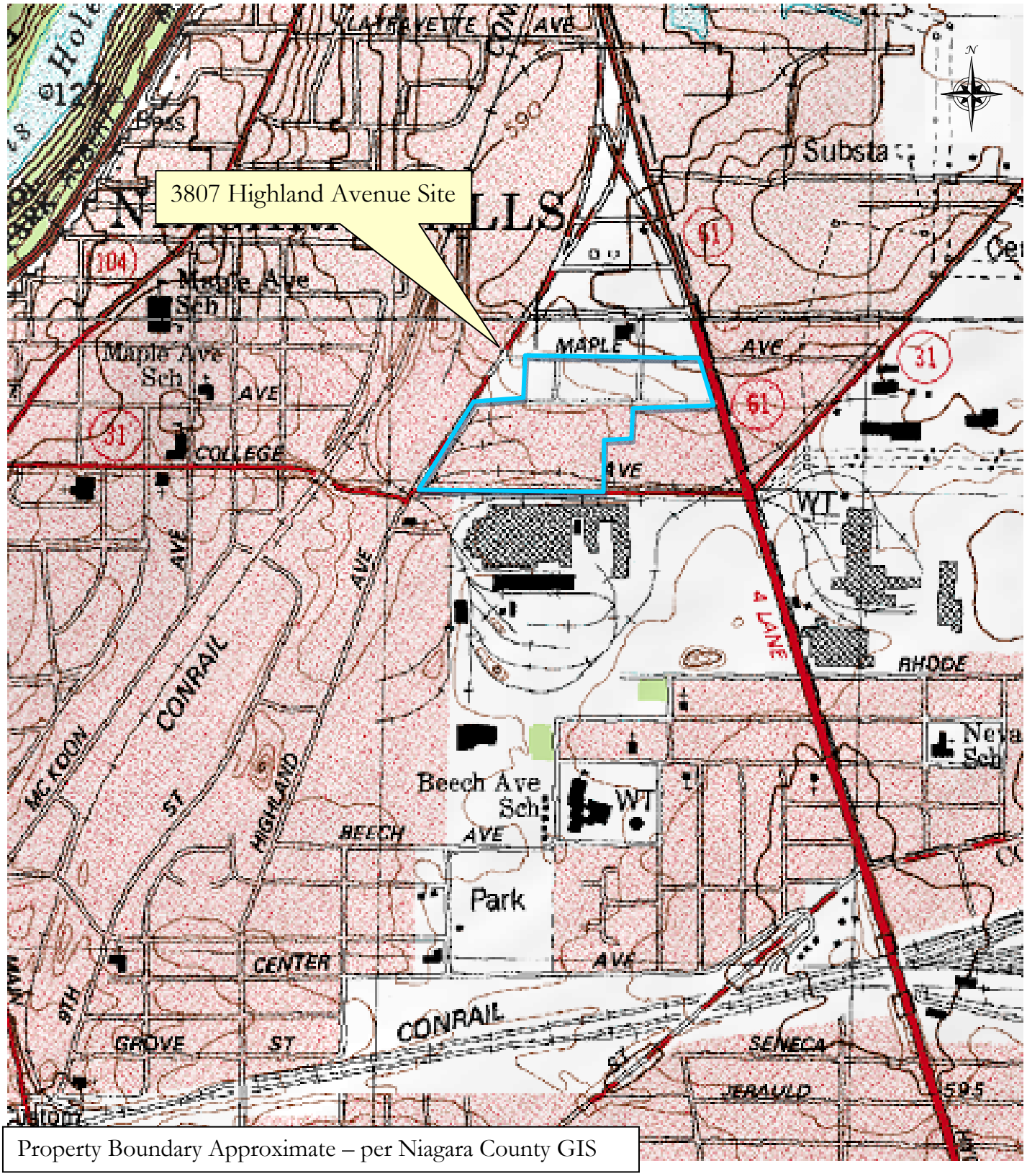
Parameter	Allowable Concentration of Imported Soil/Fill
PCBs/Pesticides (mg/kg)	
Endosulfan II	102
Endosulfan sulfate	200
Endrin	0.06
Heptachlor	0.38
Lindane	0.1
Polychlorinated biphenyls	1

Notes:

1. The SCO for Hexavalent or Trivalent Chromium is considered to be met if the analysis for the total species of this contaminant is below the specific SCO for Hexavalent Chromium.

FIGURES

FIGURE 1



Property Boundary Approximate – per Niagara County GIS

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SUITE 300
BUFFALO, NY 14218
(716) 856-0599

PROJECT NO.: 0170-001-300

DATE: MARCH 2010

DRAFTED BY: NTM

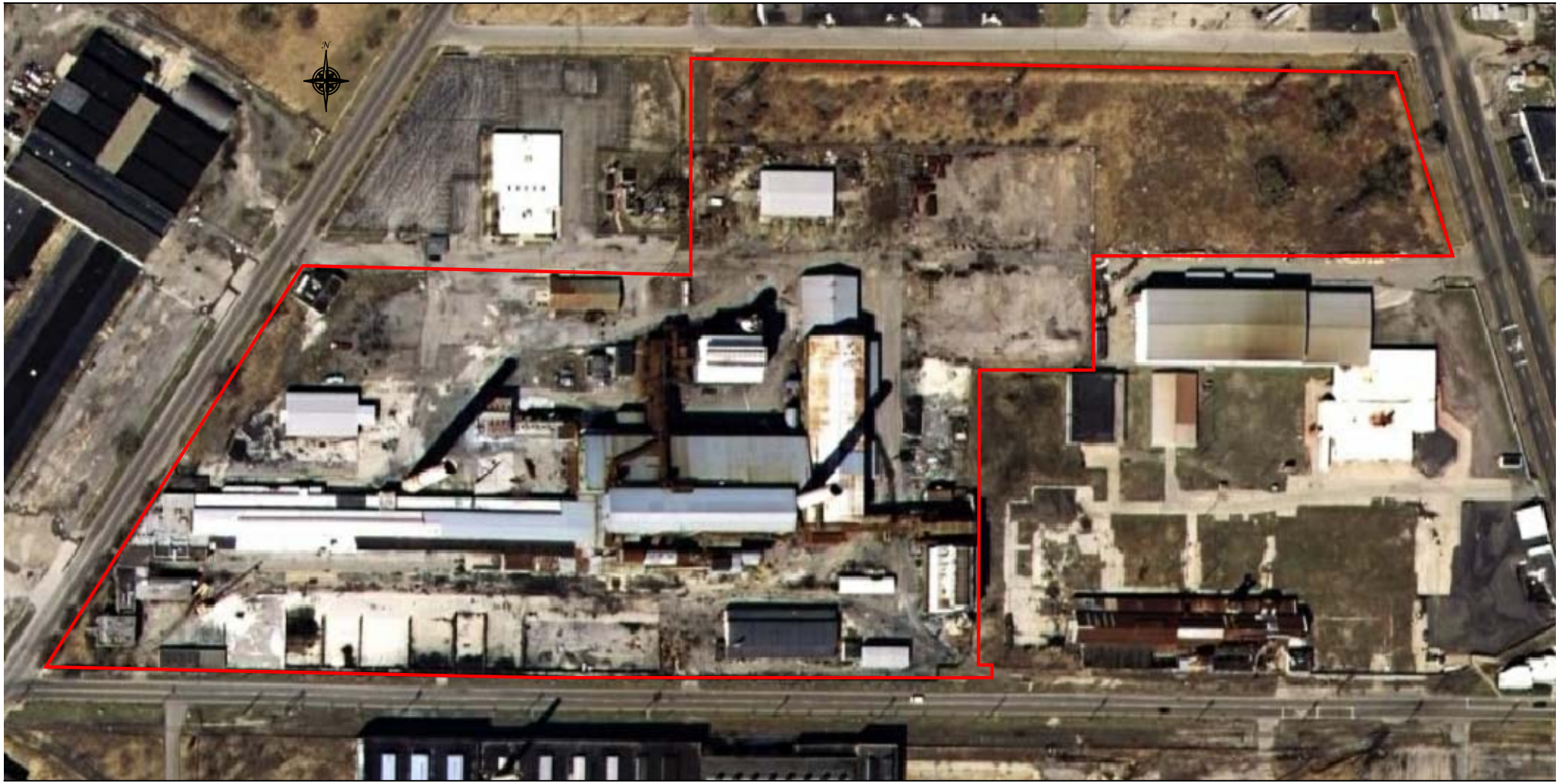
SITE LOCATION AND VICINITY MAP

3807 HIGHLAND AVENUE SITE

NIAGARA FALLS, NEW YORK

PREPARED FOR

GLOBE METALLURGICAL, INC & SOLSIL, INC.



BCP PROPERTY BOUNDARY

NOT TO SCALE

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SITE PLAN (AERIAL)

3807 HIGHLAND AVENUE SITE

NIAGARA FALLS, NEW YORK

PREPARED FOR

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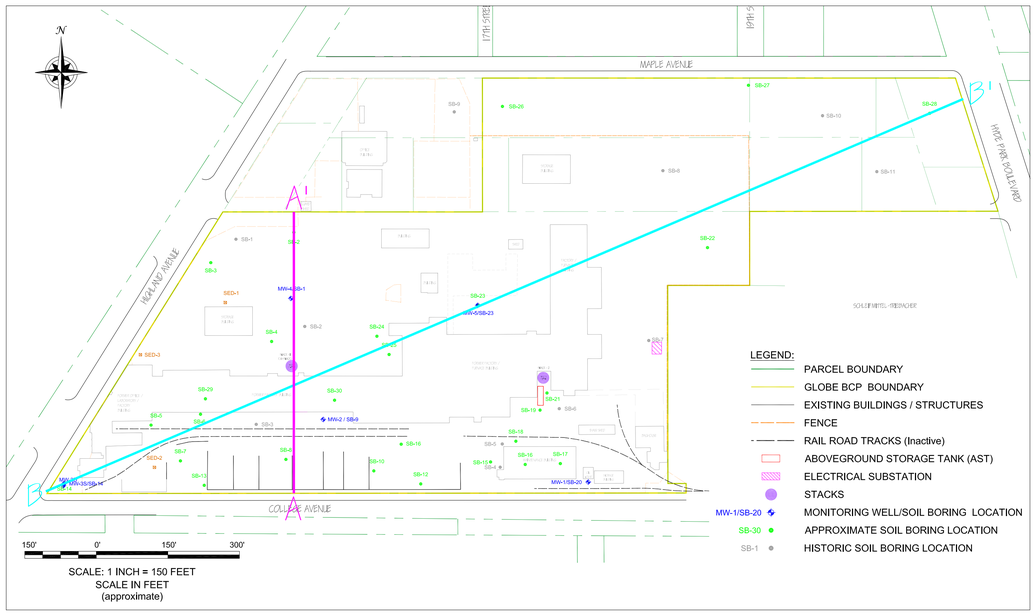
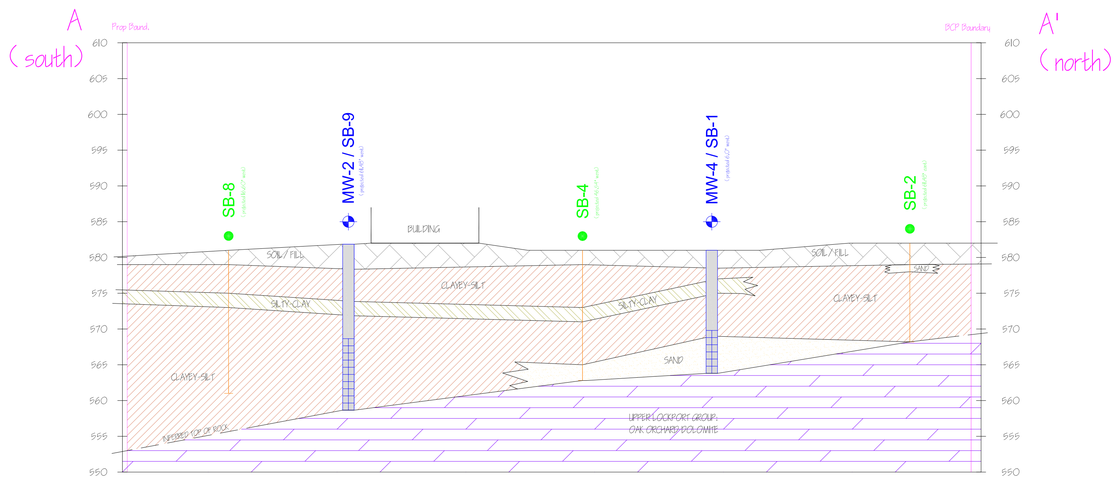
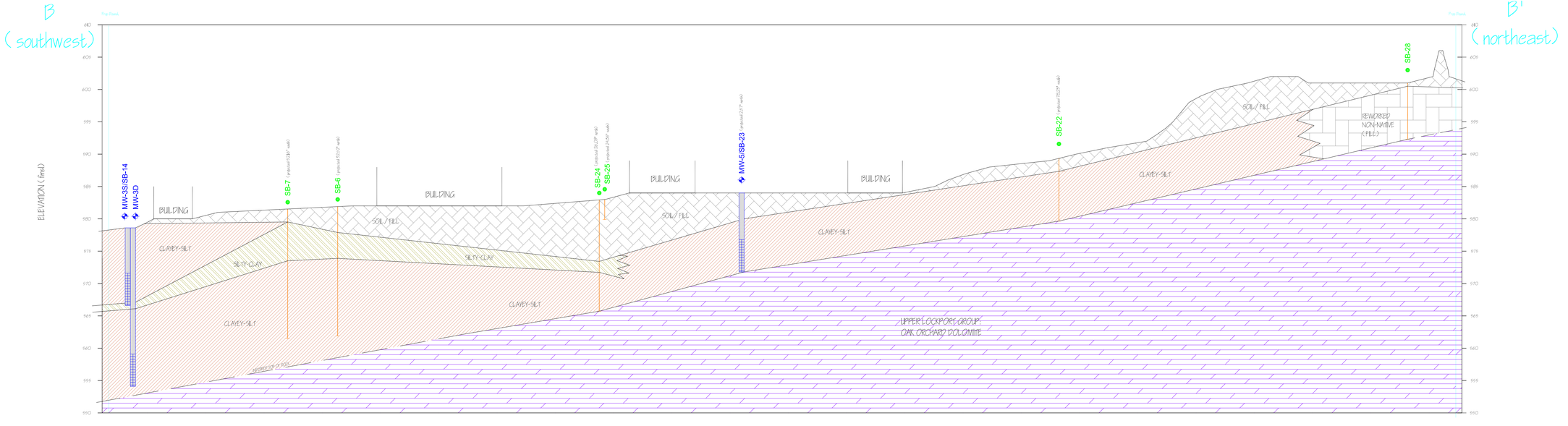
FIGURE 2





HORIZONTAL SCALE - 1"=50'



HORIZONTAL SCALE - 1"=80'

Notes:

1. Overburden geologic descriptions obtained during Remedial Investigation (RI).
2. Suspected top of bedrock is shown; no rock cores were obtained.
3. Reference to bedrock type obtained from the "Geologic Map of New York, Niagara Sheet, Compiled and edited by Lawrence V. Richard & Donald W. Fisher, University of the State of New York, The State Education Department, March 1970.

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REVISIONS

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APPROVED BY:

CROSS SECTIONS

3807 HIGHLAND AVENUE SITE

NIAGARA FALLS, NEW YORK

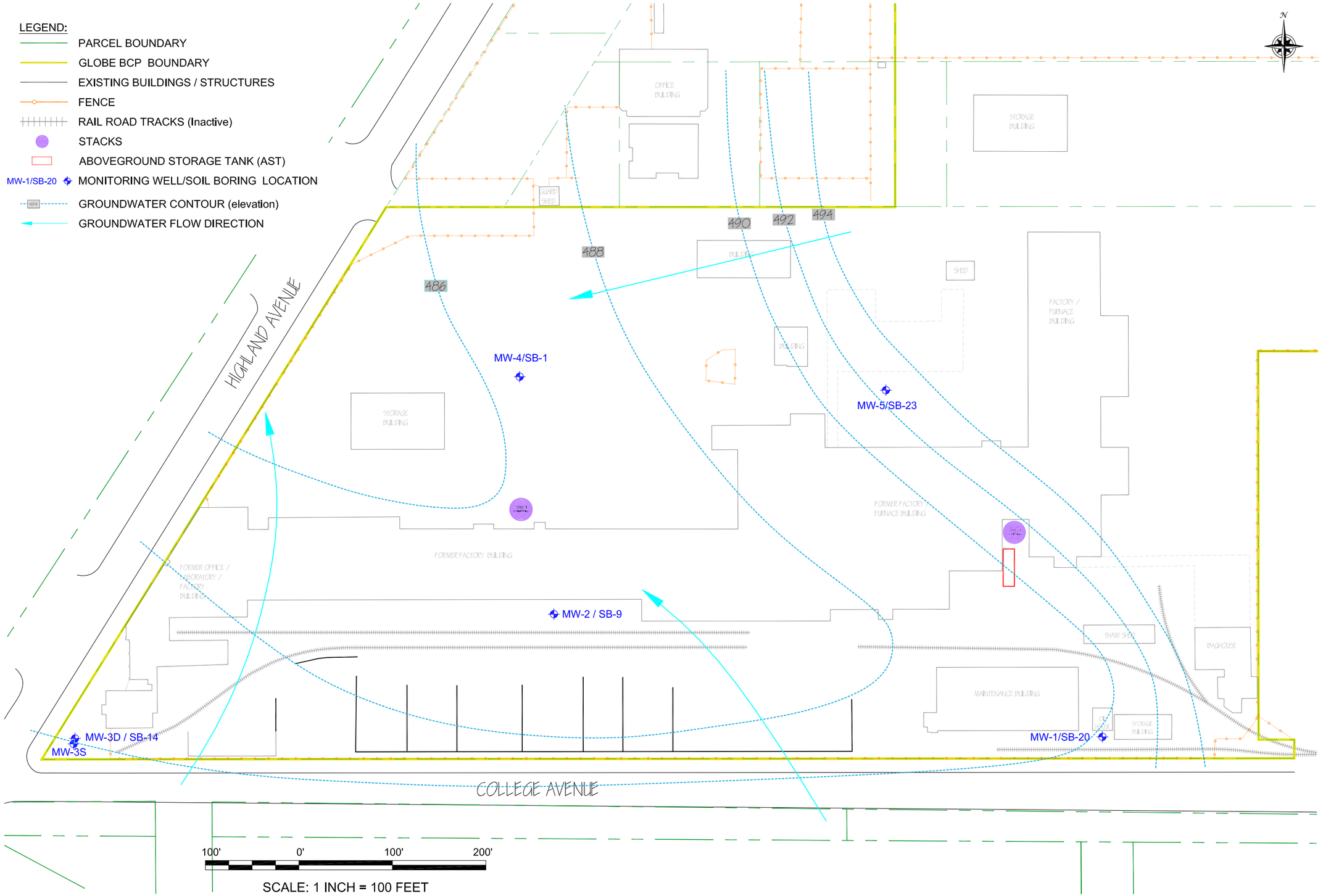
PREPARED FOR

GLOBE METALLURGICAL, INC & SOLSIL, INC

FIGURE 3

LEGEND:

- PARCEL BOUNDARY
- GLOBE BCP BOUNDARY
- EXISTING BUILDINGS / STRUCTURES
- FENCE
- RAIL ROAD TRACKS (Inactive)
- STACKS
- ABOVEGROUND STORAGE TANK (AST)
- MW-1/SB-20 MONITORING WELL/SOIL BORING LOCATION
- 494 GROUNDWATER CONTOUR (elevation)
- GROUNDWATER FLOW DIRECTION



SCALE: 1 INCH = 100 FEET
SCALE IN FEET
(approximate)

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GROUNDWATER MONITORING WELL LOCATIONS AND ISPOTENTIAL MAP

3807 HIGHLAND AVENUE SITE
NIAGARA FALLS, NEW YORK
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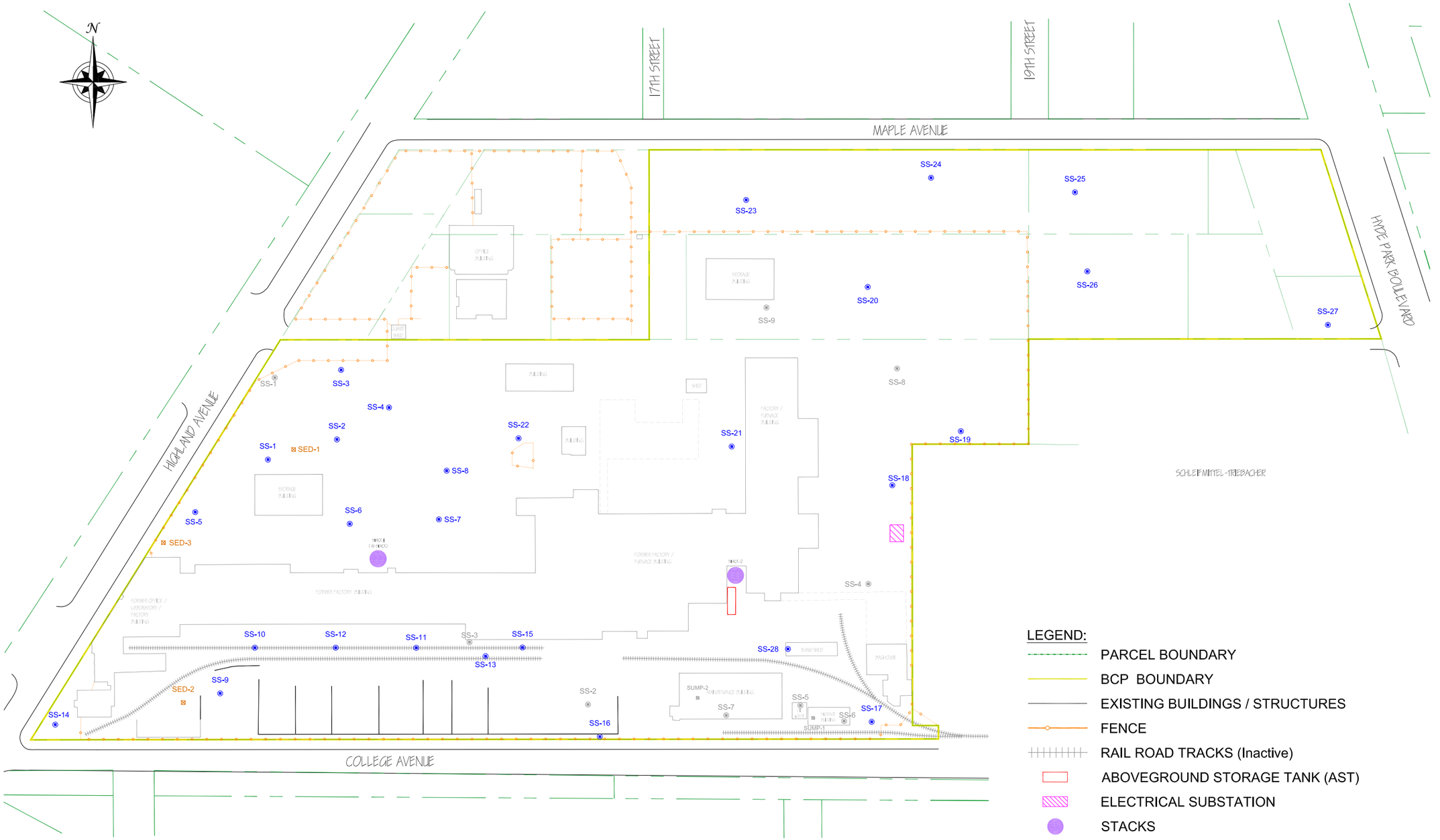
FIGURE 4



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SURFACE SOIL, STACK DEPOSITS AND SAMPLING LOCATIONS

3807 HIGHLAND AVENUE SITE
NIAGARA FALLS, NEW YORK
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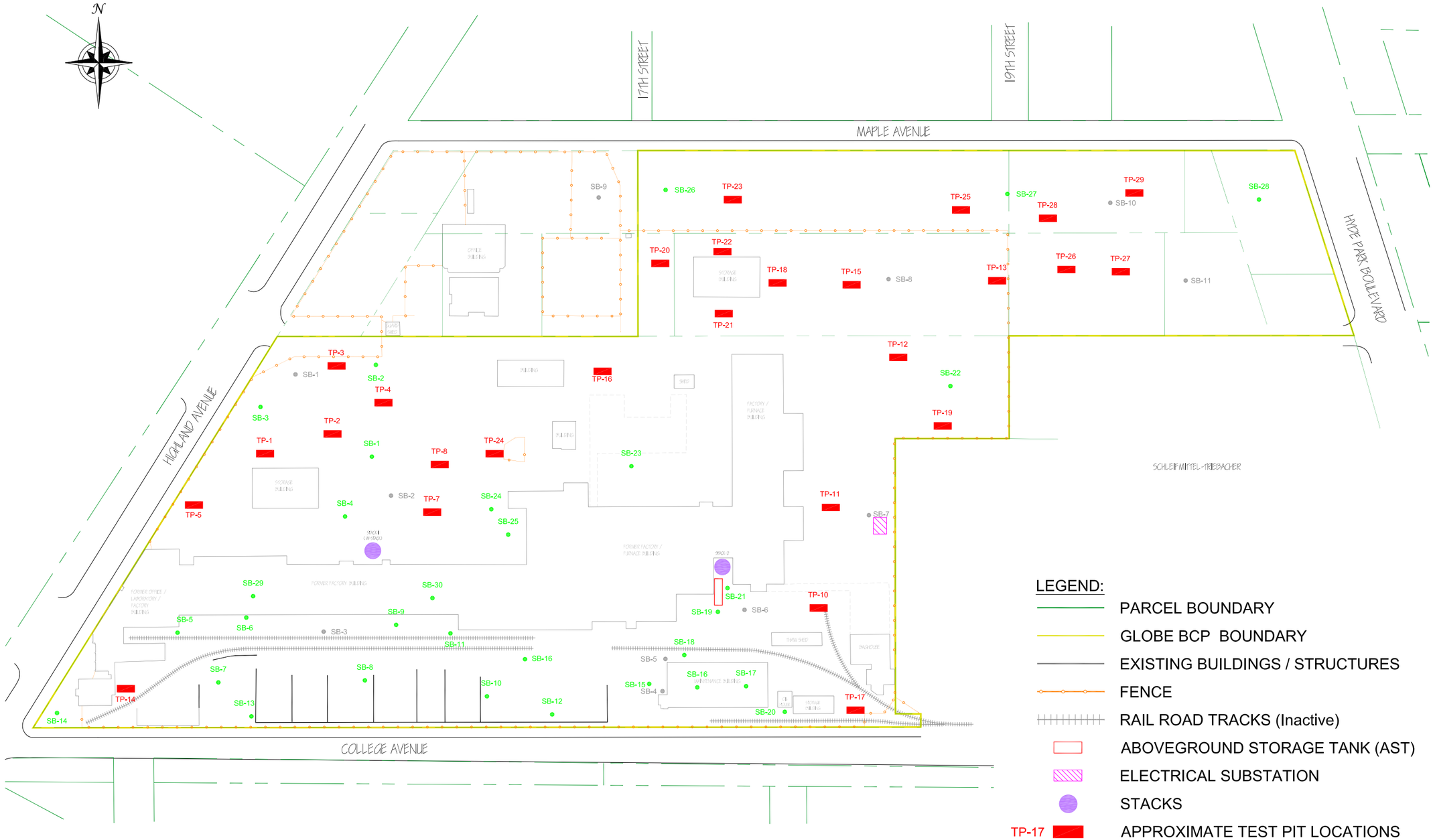
FIGURE 5



SCALE: 1 INCH = 150 FEET
SCALE IN FEET
(approximate)

LEGEND:

- PARCEL BOUNDARY
- GLOBE BCP BOUNDARY
- EXISTING BUILDINGS / STRUCTURES
- FENCE
- RAIL ROAD TRACKS (Inactive)
- ABOVEGROUND STORAGE TANK (AST)
- ELECTRICAL SUBSTATION
- STACKS
- TP-17 — APPROXIMATE TEST PIT LOCATIONS
- SB-30 — APPROXIMATE SOIL BORING LOCATION
- SB-1 — HISTORIC SOIL BORING LOCATION

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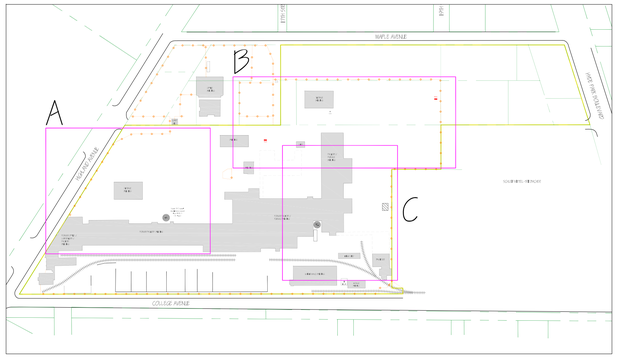
SUB-SURFACE SOIL SAMPLING LOCATIONS

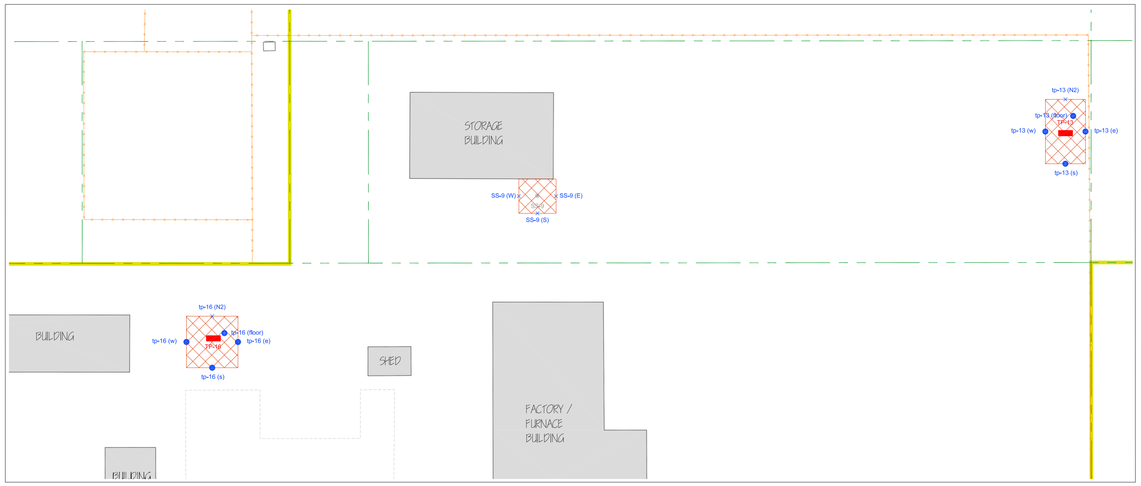
3807 HIGHLAND AVENUE SITE
NIAGARA FALLS, NEW YORK
PREPARED FOR
GLOBE METALLURGICAL, INC. & SOLSIL, INC.

FIGURE 6

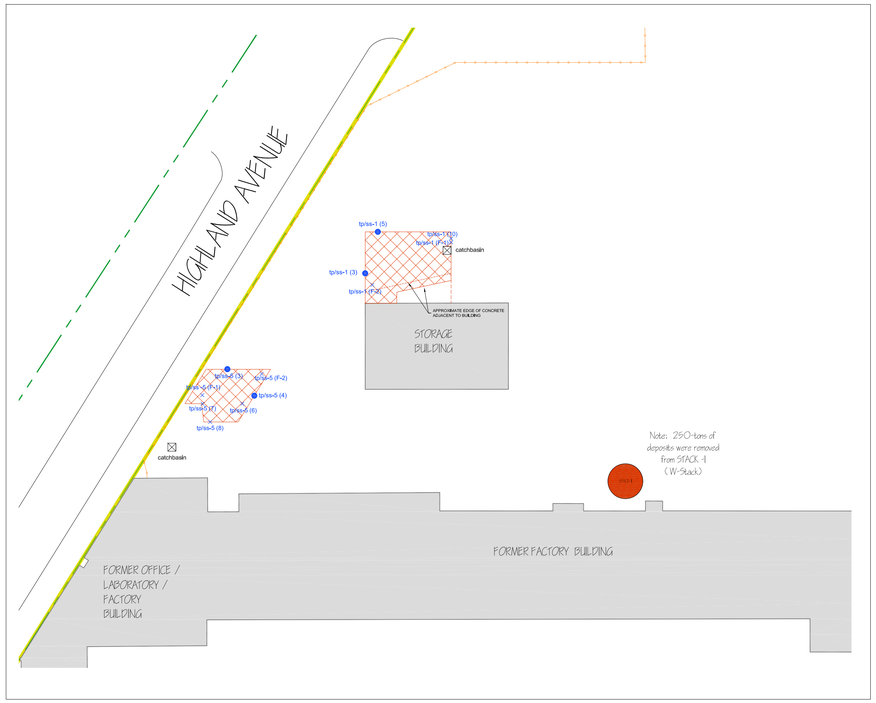
SITE PLAN (SCALE: 1" = 250')



B: CHROMIUM AREAS [TP-13 & TP-16] & FORMER ELECTRODE STORAGE AREA [SS-9] (SCALE: 1"=50')



A: ARSENIC AREAS [TP-1 & TP-5] & WEST STACK (SCALE: 1"=50')



LEGEND:

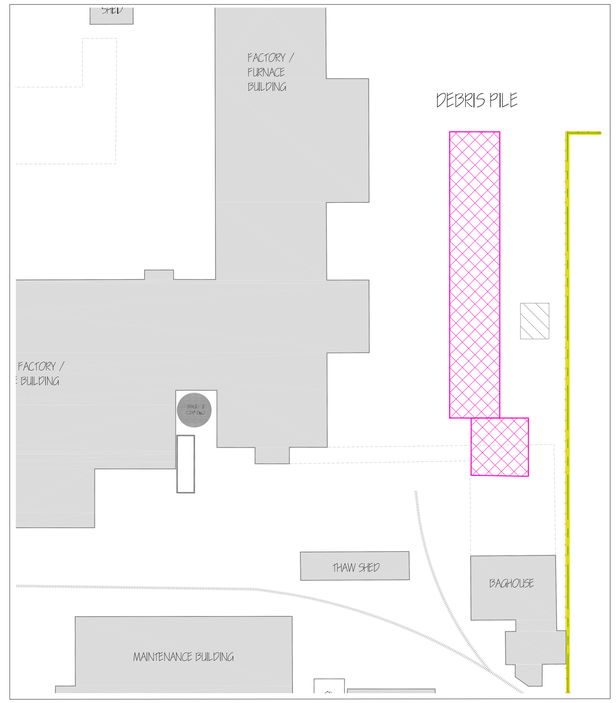
- PARCEL BOUNDARY
- GLOBE BCP BOUNDARY
- EXISTING BUILDINGS / STRUCTURES
- FENCE
- ABOVEGROUND STORAGE TANK (AST)
- ELECTRICAL SUBSTATION
- DEBRIS PILE
- STACKS
- IRM EXCAVATION AREA
- tp/ss-1 (4) — DELINEATION INVESTIGATION SAMPLE LOCATION
- tp/ss-5 (8) — CONFIRMATORY SAMPLE LOCATION
- tp/ss-1 (F-2) — CONFIRMATORY FLOOR SAMPLE LOCATION
- TP-17 — APPROXIMATE TEST PIT LOCATIONS
- SS-5 — HISTORIC SURFACE SOIL SAMPLE LOCATION

N

50' 0' 50' 100'

SCALE: 1 INCH = 50 FEET
SCALE IN FEET
(approximate)

C: DEBRIS PILE AREA (SCALE: 1" = 50')



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REVISIONS

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APPROVED BY: MAL

SEAL

IRM EXCAVATION AREAS

3807 HIGHLAND AVENUE SITE

NIAGARA FALLS, NEW YORK

PREPARED FOR

GLOBE METALLURGICAL, INC & SOLSIL, INC.

FIGURE 7

3807 Highland Avenue Site
3807 Highland Avenue
Niagara Falls, NY 14304

Emergency number:
(740) 336-4164

Niagara Falls Memorial Medical Center
621 10th Street
Niagara Falls, NY 14301

(716) 278-4000

From Site:

- Turn south on Highland Ave, which becomes 11th Street
- Make slight left on Portage Road
- Turn right on Pine Avenue
- Turn Left on 10th Street
- Niagara Falls Memorial Medical Center is on left 2.1 miles from Site (621 10th Street)

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HOSPITAL ROUTE MAP

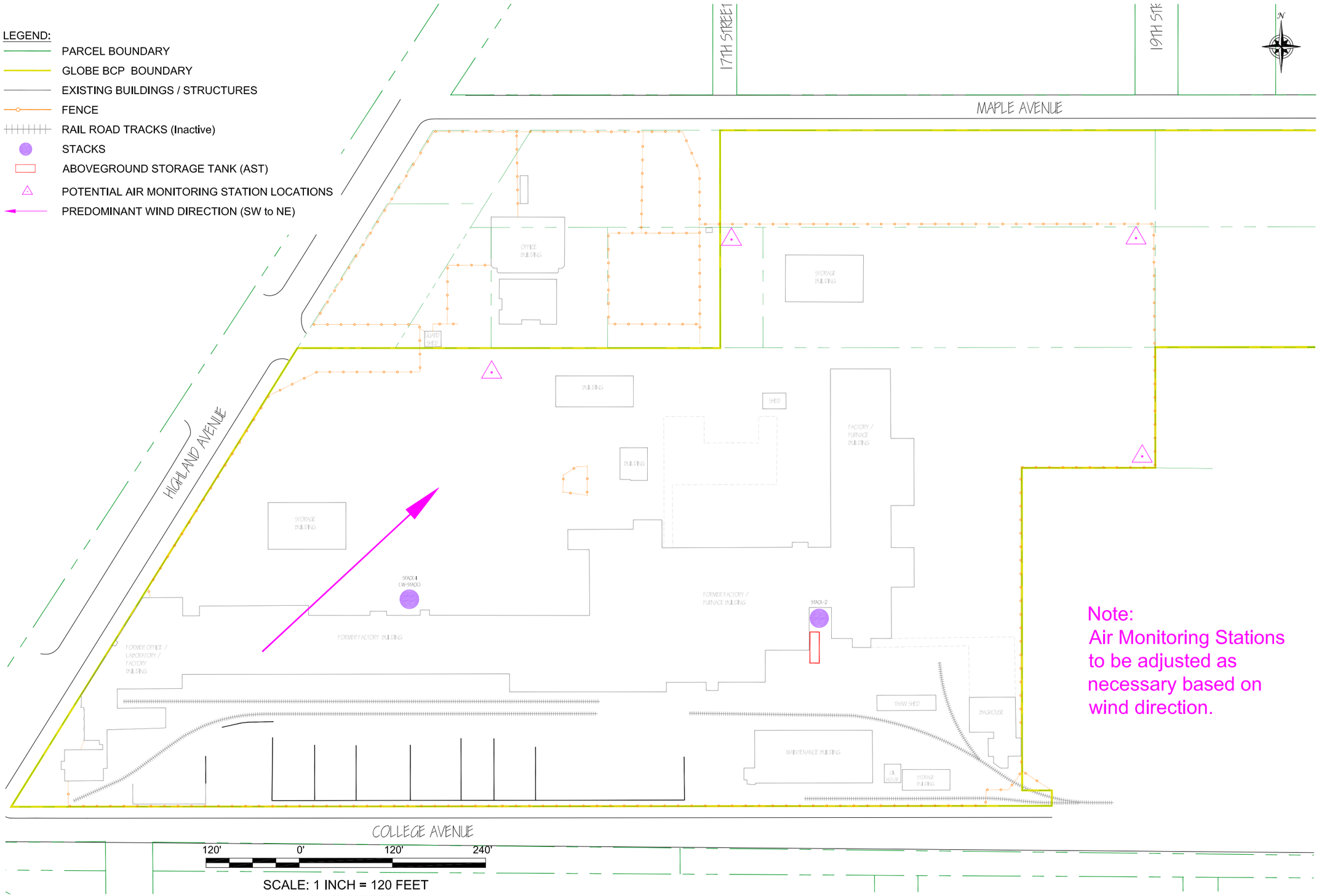
3807 HIGHLAND AVENUE SITE

NIAGARA FALLS, NEW YORK
PREPARED FOR
GLOBE METALLURGICAL, INC. & SOLSIL, INC.

FIGURE 8

LEGEND:

- PARCEL BOUNDARY
- GLOBE BCP BOUNDARY
- EXISTING BUILDINGS / STRUCTURES
- FENCE
- RAIL ROAD TRACKS (Inactive)
- STACKS
- ABOVEGROUND STORAGE TANK (AST)
- POTENTIAL AIR MONITORING STATION LOCATIONS
- PREDOMINANT WIND DIRECTION (SW to NE)



Note:
Air Monitoring Stations to be adjusted as necessary based on wind direction.

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POTENTIAL AIR MONITORING STATIONS

3807 HIGHLAND AVENUE SITE
NIAGARA FALLS, NEW YORK
PREPARED FOR
GLOBE METALLURGICAL, INC. & SOLSIL, INC.

FIGURE 9

APPENDIX A

EXCAVATION WORK PLAN

BROWNFIELD CLEANUP PROGRAM
SITE MANAGEMENT PLAN

APPENDIX A
EXCAVATION PLAN

3807 HIGHLAND AVENUE SITE
NYSDEC SITE No. C932145
NIAGARA FALLS, NEW YORK

February 2010 0170-001-300

Prepared for:

Globe Metallurgical, Inc. & Solsil, Inc.
1595 Sparling Road
PO Box 157
Beverly, Ohio 45715

Prepared By:

Benchmark Environmental Engineering & Science, PLLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716)856-0599

SITE MANAGEMENT PLAN
3807 Highland Avenue Site

Table of Contents

A-1: NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination, the Site owner or their representative will notify the Department. Currently, this notification will be made to:

Mr. Greg Sutton, P.E.
Regional Hazardous Waste Remediation Engineer
NYSDEC – Region 9
270 Michigan Ave.
Buffalo, NY 14203-2999

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent, plans for Site re-grading, intrusive elements or utilities to be installed, and estimated volumes of contaminated soil to be excavated;
- A summary of environmental conditions anticipated in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work,
- A summary of the applicable components of this EWP,
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120,
- A copy of the contractor's health and safety plan, in electronic format, if it differs from the HASP provided in Appendix C of this document,
- Identification of disposal facilities for potential waste streams,
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

A-2: SOIL SCREENING METHODS

Visual, olfactory and instrument-based soil screening will be performed by a qualified environmental professional during all remedial and development excavations into known or

potentially contaminated materials (remaining contamination). Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the COC.

Soils will be segregated based on previous environmental data and screening results into material that requires off-Site disposal, material that requires testing, and material that can be returned to the subsurface.

A-3: STOCKPILE METHODS

Material that requires testing and/or off-Site disposal will be placed on and covered with polyethylene sheeting to prevent infiltration of precipitation and wind erosion. If off-Site disposal of the material is planned, the stockpiled impacted material will be characterized per the requirements of a permitted disposal facility. Stockpiled impacted material will not remain on-Site for more than 90 days. Upon obtaining an approved waste profile, the impacted material will be transported and disposed of off-Site.

Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins and other discharge points.

Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC.

A-4: MATERIALS EXCAVATION AND LOAD OUT

A qualified environmental professional or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material.

The owner of the property and its contractors are solely responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the Site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the Site.

Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).

A truck wash will be operated on-Site, if deemed necessary. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the Site until the activities performed under this section are complete.

Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-Site soil tracking during intrusive excavation activities.

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the Site are clean of dirt and other materials derived from the Site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

A-5: MATERIALS TRANSPORT OFF-SITE

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the Site will be secured with tight-fitting covers, when appropriate based on waste characteristics. If loads contain wet material capable of producing free liquid, truck liners will be used.

If necessary, trucks will be washed prior to leaving the Site. Truck wash waters will be collected and disposed of off-Site in an appropriate manner.

Excavated soil/fill during IRM activities at the Site was transported and disposed of at Modern Corporation's permitted landfill in Model City, New York. Assuming future material will be taken to the same facility, the truck transport routes are as follows:

<u>To Model City Landfill, 4746 Model City Rd., Model City, NY</u>

- From the Site, take Highland Avenue north (right)
- Continue on Hyde Park Blvd. (north)
- Turn right on Lewiston Rd (RT-104)

- Enter onto the 190 north.
- Turn right onto Upper Mountain Rd.
- Turn left onto Indian Hill Rd.
- Continue on Model City Rd.
- End at 4746 Model City Rd.

All trucks loaded with Site materials will exit the vicinity of the Site using only approved truck routes. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive Sites; (b) use of city mapped truck routes; (c) prohibiting off-Site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport trucks will be prohibited from stopping and idling in the neighborhood outside the project Site.

Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during Site remediation and development.

Queuing of trucks will be performed on-Site in order to minimize off-Site disturbance. Off-Site queuing will be prohibited.

A-6: MATERIALS DISPOSAL OFF-SITE

All soil/fill/solid waste excavated and removed from the Site will be treated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of soil/fill from this Site is proposed for unregulated off-Site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. Unregulated off-Site management of materials from this Site will not occur without formal NYSDEC approval.

Off-Site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility, if appropriate (i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C/D recycling facility, etc.). Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-Site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet Track 1 unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

A-7: MATERIALS REUSE ON-SITE

"Reuse on-Site" means reuse on-Site of material that originates at the Site and which does not leave the Site during excavation. The criteria under which soil/fill originating on-Site may be used as on-Site are presented below.

- **Excavated, Non-Impacted On-Site Soil/Fill:** Non-impacted soil/fill (i.e., soil/fill that does not exhibit visible or olfactory evidence of contamination and does not exhibit PID readings that exceed 5 parts per million above background) that is excavated from the Site may be used on-site as backfill without special handling. The qualified environmental professional will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material does not remain on-site.
- **Excavated, Potentially Impacted On-Site Soil/Fill:** Potentially impacted soil/fill (i.e., soils that exhibit visible or olfactory evidence of contamination or with elevated PID readings) may not be used on-Site unless tested and determined to meet the chemical criteria for Industrial SCOs per 6NYCRR Part 375. Excavated on-site material meeting Industrial SCOs, is acceptable for re-use on-Site.
- **On-Site Demolition Material:** Any demolition material proposed for reuse on-Site will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-Site will not be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the site will not be reused on-site without prior NYSDEC permission.

A-8: FLUIDS MANAGEMENT

All liquids to be removed from the Site, including excavation dewatering, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Dewatering fluids will not be recharged back to the land surface or subsurface of the Site, without a written request to the Department seeking permission to discharge.

If water generated during large-scale construction activities is proposed to be discharged to a surface waters (i.e. a local pond, stream or river), the discharge will be performed under a SPDES permit.

A-9: BACKFILL FROM OFF-SITE SOURCES

The criteria under which off-Site material may be used as backfill are presented below.

- **Off-Site Soil/Fill:** Off-Site soil/fill may be used as backfill provided that it originates from known sources having no evidence of disposal or releases of hazardous substances; hazardous, toxic or radioactive wastes; or petroleum, and is tested and meet the criteria shown on Table 11 of the SMP. In addition, no off-Site materials meeting the definition of a solid waste as defined in 6 NYCRR, Part 360-1.2 (a) shall be used as backfill. The criteria presented in Table 11 of the SMP represent the lesser of the Commercial Soil Cleanup Objectives (SCOs) or levels protective of groundwater quality as published in 6NYCRR Part 375-6.7(d)(c) and 375-6.8.
- **Other Off-Site Material:** Certain material may be imported as backfill, without chemical testing, provided it contains less than 10% (by weight) material that would pass through a size 200 sieve: 1) Rock or stone, consisting of virgin material from a permitted mine or quarry; 2) Recycled concrete, brick, or asphalt from a NYSDEC-registered or permitted C&D debris processing facility (as specified in Section 360-16.1 of 6 NYCRR Part 360) that conforms to Section 304 of the New York State Department of Transportation Standard Specifications Construction and Materials Volume 1 (2002). As stated in Section 360-16.4(b)(2), the facility may only accept recognizable, uncontaminated, non-pulverized C&D debris or C&D debris from other authorized C&D processing facilities. According to Section 360-16.2(c), "uncontaminated" means C&D debris that is not mixed or commingled with other solid waste at the point of generation, processing, or disposal, and that is not contaminated with spills of a petroleum product, hazardous waste, or industrial waste.

Off-Site borrow soils shall be tested to assure conformance with the criteria identified on Table 11 of the SMP. If an off-Site soil/fill borrow source is of unknown origin or originates from a commercial, industrial or urban site, then a tiered approach based on the volume of impacted soil/fill being excavated will be used to determine the frequency of characterization sampling. In such instances, a minimum of one sample will be collected for each 250 cubic yards (CY) up to 1,000 CY of material excavated. If more than 1,000 CY of soil/fill are excavated from the same general vicinity and all samples of the first 1,000 CY meet the criteria listed in Table 11 of the SMP, the sample collection frequency may be reduced to one sample for each additional 1,000 CY of soil/fill from the same general vicinity, up to 5,000 CY. For borrow sources greater than 5,000 CY, sampling frequency

may be reduced to one sample per 5,000 CY, provided all earlier samples met Table 11 criteria.

For off-Site soil borrow sources originating from known, virgin sources, a similar sampling frequency as described above will be employed but initial sampling will be at a frequency of one per 1,000 CY in lieu of one per 250 CY.

Grab samples will be collected for VOC analysis. For all other required analyses, a minimum of four grab samples will be collected to form a single composite sample. Approximately equal aliquots of the grab samples will be composited in the field using a stainless steel trowel and bowl. The trowel and bowl shall be decontaminated with a non-phosphate detergent (e.g., Alconox®) and potable water wash solution followed by a distilled water rinse between sampling locations. The soil/fill samples will be analyzed for TCL VOCs, TCL SVOCs, pesticides, PCBs, RCRA metals, and cyanide in accordance with USEPA SW-846 Methodology by a NYSDOH ELAP-certified laboratory.

Analytical results must be maintained on file for review in support of the periodic institutional control certification required per the Environmental Easement.

All materials proposed for import onto the Site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP prior to receipt at the Site.

Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the Site.

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards are listed in Table 11 of the SMP. Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC. Solid waste will not be imported onto the Site.

Trucks entering the Site with imported soils will be securely covered with tight fitting covers, if deemed necessary. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

A-10: STORMWATER POLLUTION PREVENTION

If construction activities disturb more than 1 acre of land, barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters

Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

A-11: CONTINGENCY PLAN

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition.

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for full a full list of analytes (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs), unless the Site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive Site work will be promptly communicated by phone to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC

spills hotline. These findings will be also included in the periodic reports prepared pursuant to Section 5 of the SMP.

A-12: COMMUNITY AIR MONITORING PLAN

The New York State Department of Health's Generic Community Air Monitoring Plan requires monitoring for volatile organic compounds and particulates. As detailed in Appendix C-1 and C-2, the following criteria shall also be adhered to for the protection of the nearby community.

Organic Vapor Community Air Monitoring:

Community air monitoring for organic vapors will be performed at the downwind perimeter of the exclusion zone on a continuous basis during intrusive activities performed outdoors that may be reasonably expected to potentially release organic vapors, or when sustained readings are detected in the work zone (i.e., proximate to the source of the intrusive activity). Otherwise, the monitoring will be performed on an hourly basis. A photoionization detector or other equipment will be suitable to the types of contaminants known or suspected to be present will be used, and will be capable of calculating 15-minute running average concentrations. All air monitoring equipment will be calibrated at least daily and an upwind concentration will be taken at least daily to establish background conditions. The 15-minute average concentrations will be compared to the levels specified below.

- If the 15-minute ambient air concentration of organic vapors at the downwind perimeter of the exclusion zone exceeds *5* ppm above background, work activities will be halted and monitoring continued. If the organic vapor decreases (per instantaneous readings) below *5* ppm over background, work activities can resume with continued monitoring.
- If the ambient air concentration of organic vapors at the downwind perimeter of the exclusion zone persists at levels above 5 ppm over background but less than 25 ppm, activities must be halted, the source of vapors identified, corrective actions to abate the emissions taken, and monitoring continued. After these steps, work activities can resume provided that: the organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest off-Site potential receptor or residential or commercial structure, whichever is less - but in no case less than 20 feet - is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the exclusion zone, work activities must be shut down and the following activities will be performed:

  - All Emergency Response Contacts as listed in the HASP (Appendix C)
  - The local police authorities will immediately be contacted by the Site Health and Safety Officer and advised of the situation.
  - Air monitoring will be continued at 1/2 the distance from the exclusion zone to the nearest receptor.

All readings will be recorded and will be available for NYSDEC and NYSDOH personnel to review.

Explosive Vapor Community Air Monitoring

Explosive vapor community air monitoring will be performed at the downwind perimeter of the Site on a continuous basis whenever sustained atmospheric concentrations of greater than 10% of the LEL are recorded in the exclusion zone. If sustained atmospheric concentrations of greater than 10% LEL are recorded at the downwind Site perimeter, the local Fire Department will be contacted (see Section 2.5.1 of the SMP for phone number).

Airborne Particulate Community Air Monitoring

Respirable (PM-10) particulate monitoring will be performed on a continuous basis at the upwind and downwind perimeter of the exclusion zone. The monitoring will be performed using real-time monitoring equipment capable of measuring PM-10 and integrating over a period of 15-minutes for comparison to the airborne particulate action levels. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities. All readings will be recorded and will be available for NYSDEC and NYSDOH review. Readings will be interpreted as follows:

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (ug/m^3) greater than the background (upwind perimeter) reading for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression provided that the

downwind PM-10 particulate levels do not exceed 150 ug/m^3 above the upwind level and that visible dust is not migrating from the work area.

If, after implementation of dust suppression techniques downwind PM-10 levels are greater than 150 ug/m^3 above the upwind level, work activities must be stopped and dust suppression controls re-evaluated. Work can resume provided that supplemental dust suppression measures and/or other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 ug/m^3 of the upwind level and in preventing visible dust migration.

A figure showing the potential location of air sampling station(s) based on generally prevailing wind conditions is shown in Figure 9 of the SMP. These locations will be adjusted on a daily or more frequent basis based on actual wind directions to provide upwind and downwind monitoring stations.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

A-13: ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors off-Site. If nuisance odors are identified at the Site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the property owner's Remediation Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

All necessary means will be employed to prevent on- and off-Site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-Site disposal; (e) use of chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-Site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

A-14: DUST CONTROL PLAN

Particulate monitoring will be performed on Site during subgrade excavation, grading, and handling activities in accordance with the NYSDOH Generic Community Monitoring Plan, as described above, and NYSDEC Technical Assistance and Guidance Memorandum (TAGM) 4031: Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites (see Appendix C-2). Dust suppression techniques will be employed as necessary to mitigate fugitive dust from non-vegetated or disturbed soil/fill during post-remediation construction and redevelopment.

A dust suppression plan that addresses dust management during invasive on-Site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved though the use of dedicated on-Site water truck for road wetting. The truck will be equipped with water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-Site roads will be limited in total area to minimize the area required for water truck sprinkling.
- Covering or proof-rolling excavated areas and materials after excavation activity ceases.
- Reducing the excavation size and/or number of excavations.

A-15: OTHER NUISANCES

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

APPENDIX B

ENVIRONMENTAL EASEMENT

NIAGARA COUNTY CLERK
WAYNE F. JAGOW

RECEIPT

Create Time: 6/24/2010 3:28:40 PM
RECEIPT # 201048557

Recording Clerk: BH
Account: cash3
Rec'd Frm: PHILLIPS LYTLE LLP
By Mail/In Person (M/P): P

Instr#: 2010 10083
DOC: EASEMENT
DEED STAMP: 4917
OR Party: GLOBE METALLURGICAL INC
EE Party: NEW YORK STATE DEPT OF
CONSERVATION

DEEDTP		
Cover Page	1	$8.00
Recording Fee	12	$41.00
Cultural Ed	1	$14.25
Records Management - County	1	$1.00
Records Management - State	1	$4.75
TP584	1	$5.00
Transfer Tax		
Transfer Tax		$0.00
Receipt Summary		
TOTAL RECEIPT: --->		$74.00
TOTAL RECEIVED: --->		$74.00
Cash Back		$0.00
PAYMENTS		
Check # 9131 >		$74.00
PHILLIPS LYTLE		

P.O. Box 461, Lockport, New York 14095-0461 Phone (716) 439-7022 FAX (716) 439-7066

County: Niagara Site No: C932145 Brownfield Cleanup Agreement Index : B9-0793-08-11

ORIGINAL FILED

JUN 24 2010

WAYNE F. JAGOW
NIAGARA COUNTY CLERK

ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36 OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

THIS INDENTURE made this 23rd day of June, 2010, between Owner(s) Globe Metallurgical, Inc., a Delaware Corporation licensed to do business in the State of New York, having an office at 1595 Sparling Road, County of Washington, State of Ohio (the "Grantor"), and The People of the State of New York (the "Grantee."), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

WHEREAS, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

WHEREAS, Grantor, is the owner of real property located at the address of 3807 Highland Avenue in the City of Niagara Falls, County of Niagara and State of New York, known and designated on the tax map of the County Clerk of Niagara as tax map parcel numbers: Section 130.14 Block 2 Lot 41, Section 130.15 Block 1 Lots 6,7,8,11.1,12,13,15,16,and 17, being the same as that property conveyed to Grantor by deed dated December 29, 1994 and recorded in the Niagara County Clerk's Office in Instrument No. Page 114 in Liber 2558 of Deeds, comprising of approximately 22.25 ± acres, and hereinafter more fully described in the Land Title Survey dated December 14, 2009 prepared by Millard, MacKay & Delles, Land Surveyors, LLP and last revised on April 27, 2010, which will be attached to the Site Management Plan. The property description (the "Controlled Property") is set forth in and attached hereto as Schedule A; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of human health and the environment and to achieve the requirements for remediation established for the Controlled Property until such time as this Environmental Easement is

extinguished pursuant to ECL Article 71, Title 36; and

NOW THEREFORE, in consideration of the mutual covenants contained herein and the terms and conditions of Brownfield Cleanup Agreement Index Number: B9-0793-08-11, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement")

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements listed in the Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property, run with the land, are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property.

A. (1) The Controlled Property may be used for:

Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv)

(2) All Engineering Controls must be operated and maintained as specified in the Site Management Plan (SMP);

(3) All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP.

(4) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;

(5) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

(6) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

(7) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP.

(8) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP.

(9) Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this Environmental Easement.

B. The Controlled Property shall not be used for Residential, Restricted Residential or Commercial purposes, and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Regional Remediation Engineer
NYSDEC – Region 9
Division of Environmental Remediation
270 Michigan Avenue
Buffalo, New York 14203,
Phone: 716-851-7200

or

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, New York 12233
Phone: (518) 402-9553

D. Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

E. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

This property is subject to an Environmental Easement held by the New York State Department of Environmental

Conservation pursuant to Title 36 of Article 71 of the Environmental Conservation Law.

F. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

G. Grantor covenants and agrees that it shall annually, or such time as NYSDEC may allow, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

(1) the inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3).

(2) the institutional controls and/or engineering controls employed at such site:

(i) are in-place;

(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved b the NYSDEC and that all controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such control to protect the public health and environment;

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

(4) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;

(5 the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) to the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and

(7) the information presented is accurate and complete.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to:

Site Number: C932145
Office of General Counsel
NYSDEC
625 Broadway
Albany New York 12233-5500

With a copy to:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, NY 12233

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail

and return receipt requested. The Parties may provide for other means of receiving and communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

Globe Metallurgical, Inc.

By: _____

Title: President Date: 6-17-10

Grantor's Acknowledgment

STATE OF ~~NEW YORK~~ Ohio)
) ss:
COUNTY OF Morgan)

NOTARIAL SEAL · STATE OF OHIO ·

SABRINA ADKINS
NOTARY PUBLIC
STATE OF OHIO
Recorded in
Morgan County
My Comm. Exp. 9/21/13

On the 17th day of June, in the year 20 10, before me, the undersigned, personally appeared Arden Sims, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

Sabrina Adkins
Notary Public - State of ~~New York~~ Ohio

THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting By and Through the Department of Environmental Conservation as Designee of the Commissioner,

By: _____
Dale A. Desnoyers, Director
Division of Remediation

Grantee's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF)

On the 23rd day of June, in the year 2010, before me, the undersigned, personally appeared Dale Desnoyers personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public - State of New York

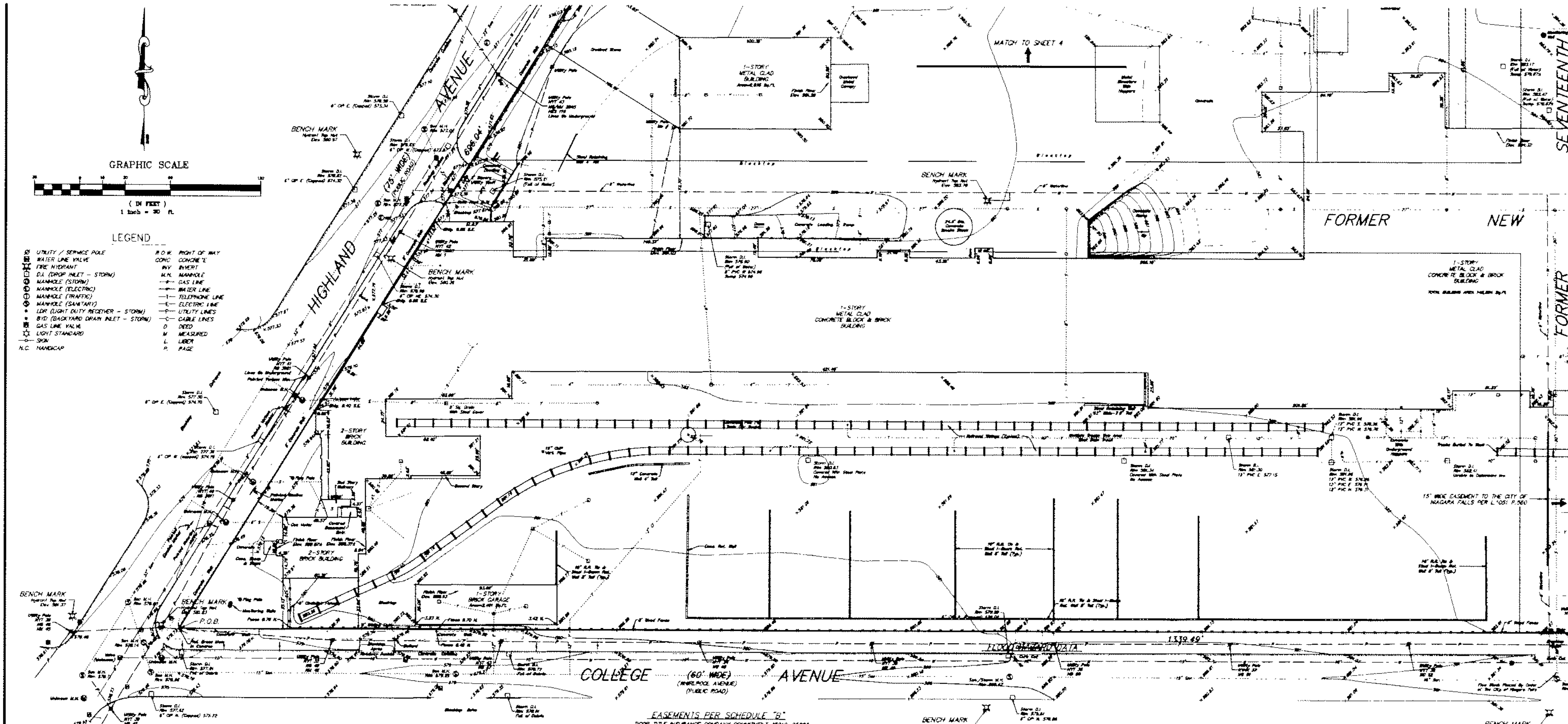
David J. Chiusano
Notary Public, State of New York
No. 01CH5032146
Qualified in Schenectady County
Commission Expires August 22, 2014

SCHEDULE "A" PROPERTY DESCRIPTION

The Real Property referred to in this Agreement is described as follows:

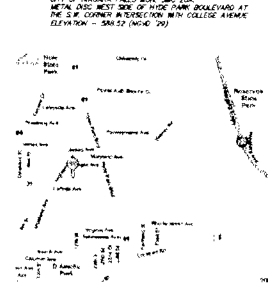
ALL THAT TRACT OR PARCEL OF LAND situate in the City of Niagara Falls, County of Niagara and State of New York, being part of Lot No. 32 of the Mile Reserve and according to a map made by W.C. Johnson filed October 17, 1895 under Cover No. 357, now in Book 5 of Microfilmed map at page 405, bounded and described as follows:

BEGINNING at a point in the north line of College Avenue, formerly Whirlpool Avenue, as shown on said subdivision map, at its intersection with the southeast line of Highland Avenue; thence easterly along the north line of College Avenue a distance of 1339.49 feet; thence northerly at right angles, a distance of 20 feet, thence westerly parallel with the north line of College Avenue a distance of 38.06 feet; thence northerly at right angles a distance of 415.14 feet; thence easterly at right angles a distance of 172 feet; thence northerly at right angles a distance of 155.04 feet; thence easterly at right angles a distance of 520.68 feet to the southwest line of Hyde Park Boulevard formerly Sugar Street; thence northwesterly along the southwest line of Hyde Park Boulevard a distance of 293.94 feet to the intersection of the southwest line of Hyde Park Boulevard and the south line of Maple Avenue; thence westerly along the south line of Maple Avenue a distance of 991.27 feet to a point; Thence southerly at right angles, a distance of 280.00 feet to a point; thence westerly at right angles a distance of 544.28 feet to the southeast line of Highland Avenue; thence southwesterly along the southeast line of Highland Avenue a distance of 696.04 feet to the point of beginning.



BENCH MARK

ELEVATIONS ON THIS MAP WERE DETERMINED USING THE CITY OF NIAGARA FALLS MON. SMC 20A. METAL DISC WEST SIDE OF HYDE PARK BOULEVARD AT THE S.W. CORNER INTERSECTION WITH COLLEGE AVENUE ELEVATION – 588.52 (NGVD '29)



VICINITY MAP

LEGAL DESCRIPTION

ALL THAT TRACT OR PARCEL OF LAND situate in the City of Niagara Falls, County of Niagara and State of New York, being part of Lot No. 32 of the Mile Reserve and according to a map made by W.C. Johnson filed October 17, 1895 under Cover No. 357, now in Book 5 of Microfilmed Maps at Page 405, bounded and described as follows:

BEGINNING at a point in the north line of College Avenue, formerly Whirlpool Avenue, as shown on said subdivision map, at its intersection with the southeast line of Highland Avenue; thence easterly along the north line of College Avenue a distance of 1339.49 feet; thence northerly at right angles, a distance of 20 feet; thence westerly parallel with the north line of College Avenue a distance of 38.06 feet; thence northerly at right angles a distance of 415.14 feet; thence easterly at right angles a distance of 172 feet; thence northerly at right angles of distance of 155.04 feet; thence easterly at right angles a distance of 520.68 feet to the southwest line of Hyde Park Boulevard formerly Sugar Street; thence northwesterly along the southwest line of Hyde Park Boulevard a distance of 293.94 feet to the intersection of the southwest line of Hyde Park Boulevard and the south line of Maple Avenue; thence westerly long the south line of Maple Avenue a distance of 991.27 feet to a point; thence southerly at right angles, a distance of 280.00 feet to a point; thence westerly at right angles, a distance of 544.28 feet to the southeast line of Highland Avenue; thence southwesterly along the southeast line of Highland Avenue a distance of 696.04 feet to the point of beginning.

TOGETHER with the right, privilege and easement to construct, maintain, operate, repair, renew, replace and remove railroad tracks and use for right of way purposes for ingress and egress, only, however, as long as the premises are used for railroad purposes exclusively, over and across:

ALL THAT TRACT OR PARCEL OF LAND situate in the City of Niagara Falls, County of Niagara and State of New York, being part of Lot No. 32 of the Mile Reserve, bounded and described as follows:

BEGINNING at a point in the south line of land owned by the General Abrasive Company, Inc. which is 30 feet distant north measured at right angles from a point in the north line of College Avenue, formerly Whirlpool Avenue and which said point in the north line of College Avenue is 881.14 feet distant west from the southwest line of Hyde Park Boulevard, formerly Sugar Street, measured along the north line of College Avenue, as shown on a Map made by W.C. Johnson filed October 17, 1895 under Cover No. 357 now in Book 5 of Microfilmed Maps at page 405; thence northerly at right angles a distance of 25 feet; thence southeasterly a distance of 44.65 feet to a point in the south line of General Abrasive Company, Inc.'s land distance 37 feet easterly from the point of beginning; thence westerly along the south line of said General Abrasive Company, Inc.'s land and parallel with College Avenue, a distance of 37 feet to the point of beginning.

Together with all right, title and interest of, in and to any streets and roads abutting the above described premises.

This parcel intending to describe parcels as called out in tax parcel books as: 130.14-2-41 and 130.15-1-6,7,8,11,12,13,15,16,17

EASEMENTS PER SCHEDULE "B"

TICOR TITLE INSURANCE COMPANY COMMITMENT #5210-25022

16. Covenants and agreements contained in deed to Airco, Inc. from Niagara Falls Urban Renewal Agency recorded in Liber 1582 of Deeds at page 865 on April 21, 1976, and to Air Reduction Company, Incorporated recorded in Liber 1505 of Deeds at page 750 on May 22, 1970. (Not plottable as described)
17. Easement to Niagara Mohawk Power Corporation recorded in Liber 1340 of Deeds, page 127 on March 21, 1960. (As plotted)
18. Reservation of rights and privileges with respect to its electric transmission and distribution facilities and other rights, with restriction as to the use of said land; and perpetual right, privilege and easement for trimming, etc. and entering as recited indeed to Airco, Inc. from Niagara Mohawk Power Corporation recorded in Liber 1583 of Deeds at page 645. (As plotted)
19. Easements, restrictions and reservations contained in the conveyances recorded in Liber 1367 of Deeds at page 441; Liber 1051 of Deeds at page 560; Liber 424 of Deeds at page 451; Liber 403 of Deeds at page 143, Liber 388 of Deeds at page 543, Liber 683 of Deeds at page 199 and Liber 434 of Deeds at page 347 (As plotted – some are blanket and not plottable)
20. Reservation of right of the City of Niagara Falls to enter upon abandoned streets for maintenance, operation, modification, repair, enlargement or replacement of any and all city owned or private owned utilities and provision that no building or permanent improvements of any nature shall be constructed on said abandoned streets as recited in Resolution abandoning streets and alleys recorded in Liber 1585 of Deeds at page 1044 on July 8, 1976. (The City of Niagara Falls maintains the righ to enter all abandoned roads/alleys on premises for utility maintenance)
21. Easements for sewer and water lines not shown of record and lying within New York Avenue from the east line of Highland Avenue to the west line of Seventeenth Street and lying within Seventeenth Street from the north line of New York Avenue to Massachusetts Avenue as recited in Liber 1051 of Deeds at page 560. (As plotted)

ENVIRONMENTAL EASEMENT AREA

Note: The "Brownfield Environmental Easement" area is intended to be over a parcel described as follows:

ALL THAT TRACT OR PARCEL OF LAND situate in the City of Niagara Falls, County of Niagara and State of New York, being part of Lot No. 32 of the Mile Reserve and according to a map made by W.C. Johnson filed October 17, 1895 under Cover No. 357, now in Book 5 of Microfilmed Maps at Page 405, bounded and described as follows:

BEGINNING at a point in the north line of College Avenue, formerly Whirlpool Avenue, as shown on said subdivision map, at its intersection with the southeast line of Highland Avenue; thence easterly along the north line of College Avenue a distance of 1339.49 feet; thence northerly at right angles, a distance of 20 feet; thence westerly parallel with the north line of College Avenue a distance of 38.06 feet; thence northerly at right angles a distance of 415.14 feet; thence easterly at right angles a distance of 172 feet; thence northerly at right angles of distance of 155.04 feet; thence easterly at right angles a distance of 520.68 feet to the southwest line of Hyde Park Boulevard formerly Sugar Street, thence northwesterly along the southwest line of Hyde Park Boulevard a distance of 293.94 feet to the intersection of the southwest line of Hyde Park Boulevard and the south line of Maple Avenue; thence westerly long the south line of Maple Avenue a distance of 991.27 feet to a point; thence southerly at right angles, a distance of 280.00 feet to a point; thence westerly at right angles, a distance of 544.28 feet to the southeast line of Highland Avenue; thence southwesterly along the southeast line of Highland Avenue a distance of 696.04 feet to the point of beginning.

This parcel intending to describe parcels as called out in tax parcel books as 130.14-2-41 and 130.15-1-6,7,8,11,12,13,15,16,17

The engineering and institutional controls for this easement are set forth in the Site management Plan (SMP). A copy of the SMP must be obtained by any party with an interest in the property. The SMP can be found on the New York State Department of Environmental Conservation's Website.

CITY OF NIAGARA FALLS –

PREMISES IS LOCATED IN FLOOD ZONE "C" DESIGNATED AS AREAS OF MINIMAL FLOODING.

INFORMATION PER FLOOD INSURANCE RATE MAP PUT OUT BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY – NATIONAL FLOOD INSURANCE PROGRAM.

COMMUNITY PANEL NUMBER 360506 0001 B
EFFECTIVE DATE MARCH 16, 1983

ZONING & SETBACK INFORMATION

CITY OF NIAGARA FALLS–

PREMISES IS ZONED I2 (INDUSTRIAL)
MINIMUM FRONT YARD 40 FEET.
PER THE BULK AND DENSITY STANDARDS TABLE IN SECTION 1315.3 OF THE CITY OF NIAGARA FALLS ZONING ORDINANCE DATED JULY 24, 2009, THERE ARE NO APPLICABLE SETBACKS OR HEIGHT REQUIREMENTS FOR THIS PARCEL.

UTILITIES

The underground utilities shown have been located from field survey information & existing drawings. The surveyor makes no guarantee that the underground utilities shown comprise all such utilities in the area, either in service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated although he does certify that they are located as accurately as possible from the information available. This surveyor has not physically located the underground utilities.

National Grid	Verizon	National Fuel	Time Warner Cable
Attn: Eric Wright	Attn. Anne Baglio	Attn: Gerald Scott	Attn. Thomas Tripillo
(716) 857-4031	(716) 840-8748	(716) 857-7000	(716) 558-8815

Interior utility lines were plotted from drawings prepared by J. Fruchtbaum Associates, Architects & Engineers, dated March 21, 1975. Locations are only approximate as scaled from drawings.

CERTIFICATION

To: The People of the State of New York acting through their Commissioner of the Department of Environmental Conservation

This is to certify that this map or plat and the survey on which it is based were made in accordance with the "Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys," jointly established and adopted by ALTA and NSPS in 2005, and includes items 1,2,3,4,5,6,7(a),7(b1),10,11(b) & 13 of Table A thereof. Pursuant to the Accuracy Standards as adopted by ALTA and NSPS and in effect on the date of this certification, undersigned further certifies that in my professional opinion, as a land surveyor registered in the State of New York the Relative Positional Accuracy of this survey does not exceed that which is specified therein.

Date 12-16-09

Francis C. Delles Registration No. 050477

5/25/10 ADD SM NOTE & NOTE TO DESC
4/27/10 ADD SCHEDULE "B" EASEMENTS
3/30/10 ADD BROWNFIELD ENVIRONMENTAL EASEMENT DESCRIPTION
3/3/10 AMEND TO REMOVE ENVIRONMENTAL CONTROL AREA AND REVISE LEGAL DESCRIPTION

THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A CURRENT ABSTRACT OF TITLE AND IS SUBJECT TO ANY STATE OF FACTS THAT MAY BE REVEALED IN SAID ABSTRACT.

SHEET 1 OF 4

Millard, MacKay & Delles
LAND SURVEYORS, LLP
150 AERO DRIVE
BUFFALO, NEW YORK 14225
PHONE (716) 631-5140 ~ FAX 631-3811

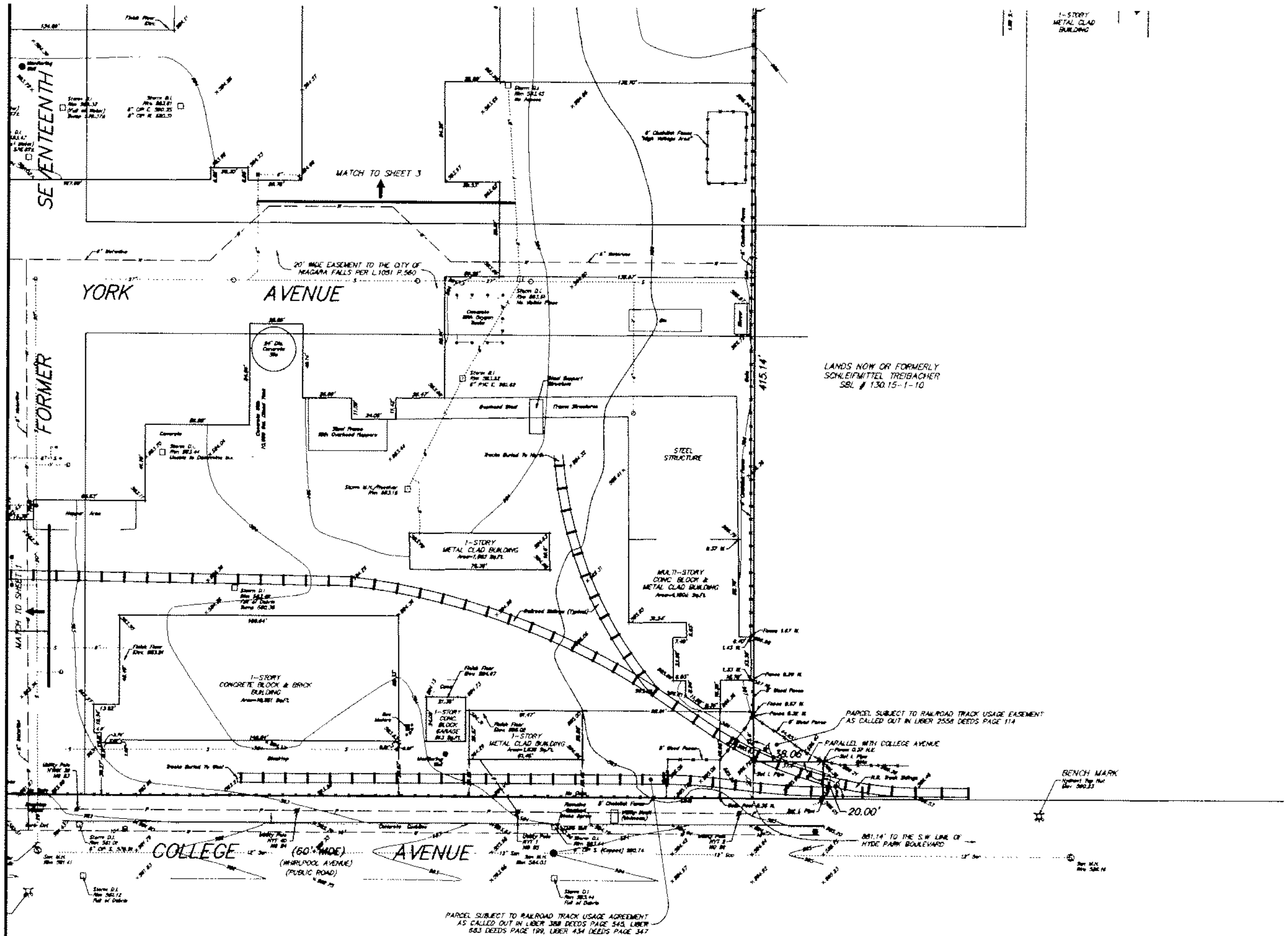
AMEND:
SURVEY DATE: 12-14-09
DRAWING DATE: 12-16-09
SCALE 1" = 30'

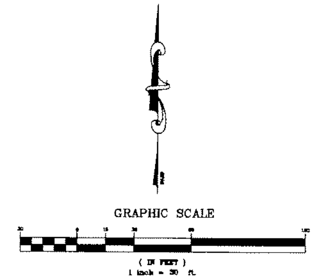
ALTA/ACSM LAND TITLE SURVEY

PART OF LOT 32 SECTION ____ TOWNSHIP ____ RANGE ____ OF THE Mile Reserve SURVEY – Niagara COUNTY, N.Y.

SURVEY OF: 3807 Highland Avenue, City of Niagara Falls

SBL No. 130.14-2-41 & More





LEGEND

Ø	UTILITY / SERVICE POLE	R.O.W.	RIGHT OF WAY
	WATER LINE VALVE	CONC.	CONCRETE
	FIRE HYDRANT	INV	INVERT
□	D.I. (DROP INLET - STORM)	M.H.	MANHOLE
	MANHOLE (STORM)	—G—	GAS LINE
	MANHOLE (ELECTRIC)	—W—	WATER LINE
	MANHOLE (TRAFFIC)	—T—	TELEPHONE LINE
	MANHOLE (SANITARY)	—E—	ELECTRIC LINE
•	LDR (LIGHT DUTY RECEIVER - STORM)	—U—	UTILITY LINES
•	BYD (BACKYARD DRAIN INLET - STORM)	—C—	CABLE LINES
	GAS LINE VALVE	D	DEED
	LIGHT STANDARD	M	MEASURED
	SIGN	L	LIBER
H.C.	HANDICAP	P	PAGE

Interior utility lines were plotted from drawings prepared by J. Fruchtbaum Associates, Architects & Engineers, dated March 21, 1975. Locations are only approximate as scaled from drawings

5/25/10: ADD SBL NOTE & NOTE TO DESC
4/27/10: ADD SCHEDULE "B" EASEMENTS
3/30/10: ADD BROWNFIELD ENVIRONMENTAL EASEMENT DESCRIPTION
3/5/10: AMEND TO REMOVE ENVIRONMENTAL CONTROL AREA AND REVISE LEGAL DESCRIPTION

SHEET 2 OF 4

Millard, MacKay & Delles
LAND SURVEYORS, LLP
150 AERO DRIVE
BUFFALO, NEW YORK 14225
PHONE (716) 631-5140 ~ FAX 631-3811

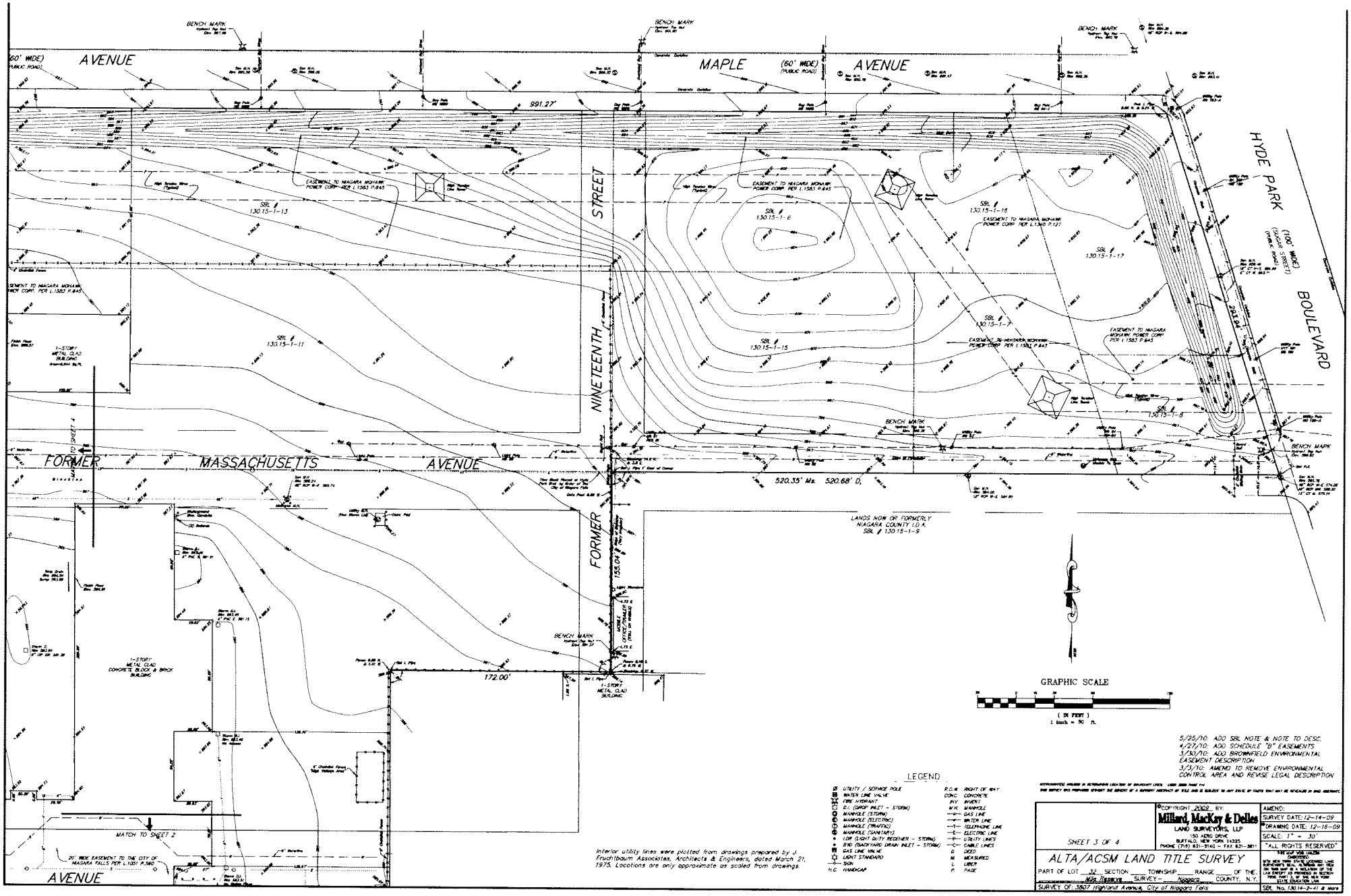
AMEND:
SURVEY DATE: 12-14-09
DRAWING DATE: 12-16-09
SCALE: 1" = 30'

ALTA/ACSM LAND TITLE SURVEY

PART OF LOT 32 SECTION ____ TOWNSHIP ____ RANGE ____ OF THE: Mile Reserve SURVEY– Niagara COUNTY, N.Y.

SURVEY OF: 3807 Highland Avenue, City of Niagara Falls

SBL No. 130.14-2-41 & More



LEGEND

UTILITY / SERVICE POLE		R.O.W.	RIGHT OF WAY
WATER LINE VALVE		CONC.	CONCRETE
FIRE HYDRANT		INV.	INVERT
D.I. (DROP INLET – STORM)		M.H.	MANHOLE
MANHOLE (STORM)			GAS LINE
MANHOLE (ELECTRIC)			WATER LINE
MANHOLE (TRAFFIC)			TELEPHONE LINE
MANHOLE (SANITARY)			ELECTRIC LINE
CDF (LIGHT DUTY RECEIVER – STORM)			UTILITY LINES
BYD (BACKYARD DRAIN INLET – STORM)			CABLE LINES
GAS LINE VALVE		D.	DEED
LIGHT STANDARD		M.	MEASURED
SIGN		L.	LIBER
H.C. HANDICAP		P.	PAGE

Interior utility lines were plotted from drawings prepared by J. Fruchtbaum Associates, Architects & Engineers, dated March 21, 1975. Locations are only approximate as scaled from drawings.

5/25/10: ADD SBL NOTE & NOTE TO DESC.
4/27/10: ADD SCHEDULE "B" EASEMENTS
3/30/10: ADD BROWNFIELD ENVIRONMENTAL EASEMENT DESCRIPTION
3/3/10: AMEND TO REMOVE ENVIRONMENTAL CONTROL AREA AND REVISE LEGAL DESCRIPTION

INSTRUMENTS FOUND & ESTABLISHED LOCATION OF BOUNDARY LINES. UNDER SOME THAT MAY BE ENCOUNTER IN SAID AGREEMENTS. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A CURRENT ABSTRACT OF TITLE AND IS SUBJECT TO ANY STATE OF FACTS THAT MAY BE REVEALED IN SAID AGREEMENTS.

Millard, MacKay & Delles
LAND SURVEYORS, LLP
150 ADRO DRIVE
BUFFALO, NEW YORK 14225
PHONE (716) 631-9140 – FAX 631-3811

AMEND:
SURVEY DATE: 12-14-09
DRAWING DATE: 12-16-09
SCALE: 1" = 30'

SHEET 3 OF 4

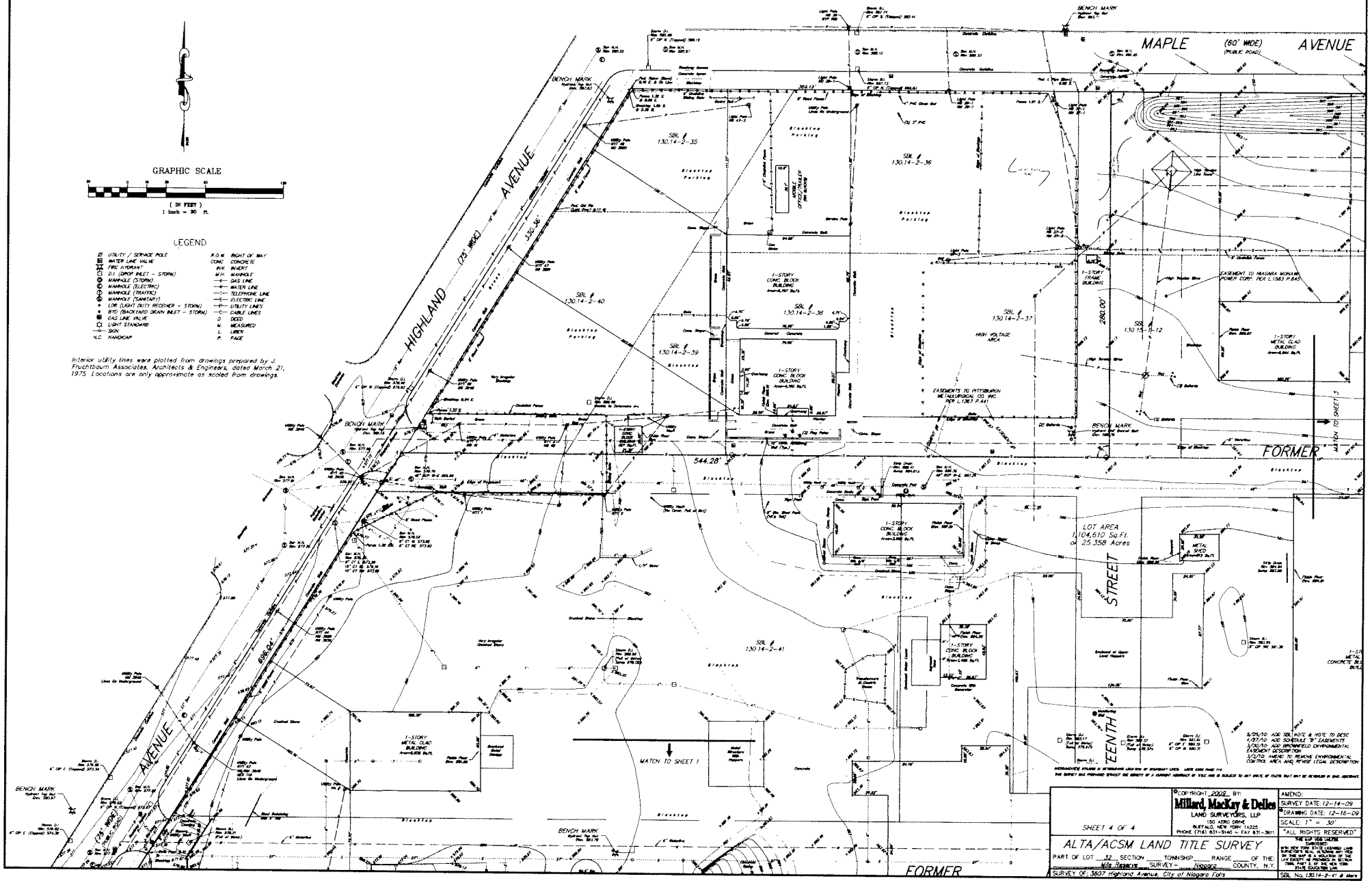
ALTA/ACSM LAND TITLE SURVEY

PART OF LOT 32 SECTION ___ TOWNSHIP ___ RANGE ___ OF THE MILL TRACT SURVEY NIAGARA COUNTY, N.Y.

SURVEY OF: 3607 Highland Avenue, City of Niagara Falls

SBL No. 130.14-2-41 & more

THIS MAP WAS TAKEN FROM A RECORDED MAP OR MAPS AND THE INFORMATION SHOWN HEREON DOES NOT REFLECT THE RESULTS OF A FIELD SURVEY MADE BY THE SURVEYOR, EXCEPT AS PROVIDED IN SECTION 7208, PART 1, OF THE N.Y.S. EDUCATION LAW.


GRAPHIC SCALE
(IN FEET)
1 inch = 90 ft.
LEGEND
UTILITY / SERVICE POLE
WATER LINE VALVE
FIRE HYDRANT
D.I. (DROP INLET - STORM)
MANHOLE (STORM)
MANHOLE (ELECTRIC)
MANHOLE (TRAFFIC)
MANHOLE (SANITARY)
LOR (LIGHT DUTY RECEIVER - STORM)
BYD (BACKYARD DRAIN INLET - STORM)
GAS LINE VALVE
LIGHT STANDARD
SIGN
H.C. HANDICAP
R.O.W. RIGHT OF WAY
CONC. CONCRETE
INVERT
M.H. MANHOLE
GAS LINE
WATER LINE
TELEPHONE LINE
ELECTRIC LINE
UTILITY LINES
CABLE LINES
D DEED
M. MEASURED
L. LIBER
P. PAGE
Interior utility lines were plotted from drawings prepared by J. Fruchtbaum Associates, Architects & Engineers, dated March 21, 1975. Locations are only approximate as scaled from drawings.
MAPLE AVENUE (60' WIDE) (PUBLIC ROAD)
HIGHLAND AVENUE (75' WIDE)
FORMER TENTH STREET
BENCH MARK
SBL # 130.14-2-35
SBL # 130.14-2-36
SBL # 130.14-2-37
SBL # 130.14-2-38
SBL # 130.14-2-39
SBL # 130.14-2-40
SBL # 130.14-2-41
SBL # 130.15-1-12
1-STORY CONC. BLOCK BUILDING
1-STORY FRAME BUILDING
1-STORY METAL CLAD BUILDING
EASEMENT TO NIAGARA MOHAWK POWER CORP. PER L.1583 P.645
EASEMENTS TO PITTSBURGH METALLURGICAL CO. INC. PER L.1387 P.441
HIGH VOLTAGE AREA
LOT AREA 1,104,610 Sq.Ft. or 25.358 Acres
MATCH TO SHEET 3
MATCH TO SHEET 1
544.28'
280.00'
330.96'
698.04'
SHEET 4 OF 4
COPYRIGHT 2009 BY:
Millard, MacKay & Delles
LAND SURVEYORS, LLP
150 KENSINGTON AVENUE
BUFFALO, NEW YORK 14203
PHONE (716) 831-3140 - FAX 831-3011
AMEND:
SURVEY DATE: 12-14-09
DRAWING DATE: 12-16-09
SCALE: 1" = 30'
"ALL RIGHTS RESERVED"
ALTA/ACSM LAND TITLE SURVEY
PART OF LOT 32 SECTION TOWNSHIP RANGE OF THE: Mills Reserve SURVEY - Niagara COUNTY, N.Y.
SURVEY OF: 3807 Highland Avenue, City of Niagara Falls
SBL No. 130.14-2-41 & Misc
5/25/10: ADD SBL NOTE & NOTE TO DESC
1/27/10: ADD SCHEDULE "B" EASEMENTS
1/20/10: ADD IMPROVED/LD ENVIRONMENTAL EASEMENT DESCRIPTION
1/12/10: AMEND TO REMOVE ENVIRONMENTAL CONTROL AREA AND REVISE LEGAL DESCRIPTION

APPENDIX C

EXAMPLE HEALTH & SAFETY PLAN (HASP)

EXAMPLE

SITE HEALTH AND SAFETY PLAN
for
BROWNFIELD CLEANUP PROGRAM ACTIVITIES

3807 HIGHLAND AVENUE SITE
NIAGARA FALLS, NEW YORK

March 2010 0170-001-300

3807 HIGHLAND AVENUE SITE
HEALTH AND SAFETY PLAN FOR BCP ACTIVITIES

ACKNOWLEDGEMENT

Plan Reviewed by (initial):

Corporate Health and Safety Director: Thomas H. Forbes, P.E.

Project Manager: Michael Lesakowski

Designated Site Safety and Health Officer: Bryan C. Hann

Acknowledgement:
I acknowledge that I have reviewed the information contained in this site-specific Health and Safety Plan, and understand the hazards associated with performance of the field activities described herein. I agree to comply with the requirements of this plan.

NAME (PRINT)	SIGNATURE	DATE

3807 HIGHLAND AVENUE SITE
HEALTH AND SAFETY PLAN FOR BCP ACTIVITIES

TABLE OF CONTENTS

3807 HIGHLAND AVENUE SITE
HEALTH AND SAFETY PLAN FOR BCP ACTIVITIES

TABLE OF CONTENTS

3807 HIGHLAND AVENUE SITE
HEALTH AND SAFETY PLAN FOR BCP ACTIVITIES

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APPENDICES

1.0 INTRODUCTION

1.1 General

In accordance with OSHA requirements contained in 29 CFR 1910.120, this Health and Safety Plan (HASP) describes the specific health and safety practices and procedures to be employed by TurnKey Environmental Restoration, LLC and Benchmark Environmental Engineering & Science, PLLC employees (referred to jointly hereafter as "TurnKey-Benchmark") during field activities at the 3807 Highland Avenue Site located in the City of Niagara Falls, New York.. This HASP presents procedures for TurnKey-Benchmark employees who will be involved with field activities; it does not cover the activities of other contractors, subcontractors or other individuals on the Site. These firms will be required to develop and enforce their own HASPs as discussed in Section 2.0. TurnKey-Benchmark accepts no responsibility for the health and safety of contractor, subcontractor or other personnel.

This HASP presents information on known Site health and safety hazards using available historical information, and identifies the equipment, materials and procedures that will be used to eliminate or control these hazards. Environmental monitoring will be performed during the course of field activities to provide real-time data for on-going assessment of potential hazards.

1.2 Background

The property located at 3807 Highland Avenue, in Niagara Falls, New York is an approximate 22.25-acre property owned by Globe Metallurgical, Inc. (Globe) (see Figures 1 and 2). The Site is currently being re-furbished/redeveloped for the production of metallurgical and chemical-grade silicon metal and silicon-based specialty alloys. Solsil, co-applicant, plans to build a new facility on the western portion of the Site that will produce and develop high-purity silicon for use in photovoltaic solar cells. Prior to the refurbishment and redevelopment efforts currently underway, the facility had not been in operation since 2003. Historically the Site was used for industrial manufacturing since at least 1913, with the most recent use of the Site for the manufacture of silicon metal and ferrosilicon metal.

1.3 Known and Suspected Environmental Conditions

A Phase I Environmental Site Assessment (ESA) was conducted by Benchmark in September 2008 for the Site. The ESA identified several recognized environmental conditions (RECs) related to historic industrial manufacturing, including multiple current and historical underground storage tanks (USTs) and aboveground storage tanks (ASTs), numerous drums, maintenance/repair buildings, former oil houses, former transformer rooms, current/former electrical substations, a former waste battery storage area, and a former smoke stack.

In September 2008, Benchmark conducted a limited Preliminary Site Investigation at the Site. The limited investigation included soil borings to evaluate potential impacts associated with past heavy industrial operations, and to provide general characterization of the property. Surface, sub-surface soil/fill and historical stack deposit samples were collected for analysis. Based on the results of the investigation, Benchmark recommended that a BCP application be submitted to the NYSDEC.

In January 2009, Benchmark completed a Supplemental Investigation at the Site. The supplemental investigation included collection of samples from industrial storage and maintenance buildings, sumps, and areas of the site related to spent electrode storage and handling. Analytical results detected elevated concentrations of volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), which are a subset of semi-volatile organic compounds (SVOCs), metals and polychlorinated biphenyls (PCBs) at several locations across the site. Of particular interest, PAHs and arsenic were detected above New York State Department of Environmental Conservation (NYSDEC) Part 375 Industrial soil cleanup objectives (SCOs).

Co-applicants Globe and Solsil elected to pursue cleanup and redevelopment of the Site under the New York State Brownfield Cleanup Program (BCP), and executed a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC) on September 4, 2009 (BCP Site No. C932145). The Remedial Investigation/Alternatives Analysis Report/Interim Remedial Measures (RI/AAR/IRM) Work Plan was approved by the NYSDEC on September 30, 2009.

Benchmark performed RI activities at the Site from October 2009 through January 2010, and IRM activities were conducted at the Site from November 2009 through March 2010.

An RI was completed to characterize the nature and extent of contamination at the Site. Remedial investigation field activities included: advancement of soil borings and monitoring well installation; excavation of test pits; and surface soil, sediment, stack deposits, subsurface soil and groundwater sampling. The IRM fieldwork generally included: excavation and off-Site disposal of impacted soil/fill; backfill/Site restoration; removal and disposal of historic stack deposits; loading and off-Site disposal of a soil/fill/debris pile; removal of multiple drums and product containers; cleaning and removal of seven former ASTs; off-Site disposal of three spent electrodes; collection and disposal/recycling of waste grease, laboratory wastes and electronic wastes.

Based on the Alternatives Analysis evaluation, it was concluded that the IRM, together with implementation of a Site Management Plan, satisfies the remedial action objectives and is protective of human health and the environment, and was selected as the final remedial approach for the 3807 Highland Avenue Site.

1.4 Parameters of Interest

Based on the environmental investigation findings, constituents of potential concern (COPCs) in soil/fill and groundwater at the Site include:

- ***Soil:*** Polycyclic aromatic hydrocarbons (PAHs), metals, and polychlorinated biphenyls (PCBs).
- ***Groundwater:*** Volatile organic compounds (VOCs)

2.0 ORGANIZATIONAL STRUCTURE

This chapter of the HASP describes the lines of authority, responsibility and communication as they pertain to health and safety functions at the Site. The purpose of this chapter is to identify the personnel who impact the development and implementation of the HASP and to describe their roles and responsibilities. This section also identifies other contractors and subcontractors involved in work operations and establishes the lines of communications among them for health and safety matters. The organizational structure described in this chapter is consistent with the requirements of 29 CFR 1910.120(b)(2). This section will be reviewed by the Project Manager and updated as necessary to reflect the current organizational structure at this Site.

2.1 Roles and Responsibilities

All Turnkey-Benchmark personnel on the Site must comply with the minimum requirements of this HASP. The specific responsibilities and authority of management, safety and health, and other personnel on this Site are detailed in the following paragraphs.

2.1.1 Corporate Health and Safety Director

The TurnKey-Benchmark Corporate Health and Safety Director is ***Mr. Thomas H. Forbes***. The Corporate Health and Safety Director responsible for developing and implementing the Health and Safety program and policies for Benchmark Environmental Engineering & Science, PLLC and TurnKey Environmental Restoration, LLC, and consulting with corporate management to ensure adequate resources are available to properly implement these programs and policies. The Corporate Health and Safety Director coordinates TurnKey-Benchmark's Health and Safety training and medical monitoring programs and assists project management and field staff in developing site-specific health and safety plans.

2.1.2 Project Manager

The Project Manager for this Site is ***Mr. Michael Lesakowski.*** The Project Manager has the responsibility and authority to direct all TurnKey-Benchmark work operations at the Site. The Project Manager coordinates safety and health functions with the Site Safety and Health Officer, and bears ultimate responsibility for proper implementation

of this HASP. He may delegate authority to expedite and facilitate any application of the program, including modifications to the overall project approach as necessary to circumvent unsafe work conditions. Specific duties of the Project Manager include:

- Preparing and coordinating the Site work plan.
- Providing TurnKey-Benchmark workers with work assignments and overseeing their performance.
- Coordinating health and safety efforts with the Site Safety and Health Officer (SSHO).
- Reviewing the emergency response coordination plan to assure its effectiveness.
- Serving as the primary liaison with Site contractors and the property owner.

2.1.3 Site Safety and Health Officer

The Site Safety and Health Officer (SSHO) for this Site is ***Mr. Bryan C. Hann***. The qualified alternate SSHO is ***Mr. Nathan T. Munley.*** The SSHO reports to the Project Manager. The SSHO is on-site or readily accessible to the Site during all work operations and has the authority to halt Site work if unsafe conditions are detected. The specific responsibilities of the SSHO are:

- Managing the safety and health functions for TurnKey-Benchmark personnel on the Site.
- Serving as the point of contact for safety and health matters.
- Ensuring that TurnKey-Benchmark field personnel working on the Site have received proper training (per 29 CFR Part 1910.120(e)), that they have obtained medical clearance to wear respiratory protection (per 29 CFR Part 1910.134), and that they are properly trained in the selection, use and maintenance of personal protective equipment, including qualitative respirator fit testing.
- Performing or overseeing Site monitoring as required by the HASP.
- Assisting in the preparation and review of the HASP.

- Maintaining site-specific safety and health records as described in this HASP.
- Coordinating with the Project Manager, Site Workers, and Contractor's SSHO as necessary for safety and health efforts.

2.1.4 Site Workers

Site workers are responsible for: complying with this HASP or a more stringent HASP, if appropriate (i.e., Contractor and Subcontractor's HASP); using proper PPE; reporting unsafe acts and conditions to the SSHO; and following the safety and health instructions of the Project Manager and SSHO.

2.1.5 Other Site Personnel

Other Site personnel who will have health and safety responsibilities will include the Drilling Contractor, who will be responsible for developing, implementing and enforcing a Health and Safety Plan equally stringent or more stringent than TurnKey-Benchmark's HASP. TurnKey-Benchmark assumes no responsibility for the health and safety of anyone outside its direct employ. Each Contractor's HASP shall cover all non-TurnKey/Benchmark Site personnel. Each Contractor shall assign a SSHO who will coordinate with TurnKey-Benchmark's SSHO as necessary to ensure effective lines of communication and consistency between contingency plans.

In addition to TurnKey-Benchmark and Contractor personnel, other individuals who may have responsibilities in the work zone include subcontractors and governmental agencies performing Site inspection work (i.e., the New York State Department of Environmental Conservation). The Contractor shall be responsible for ensuring that these individuals have received OSHA-required training (29 CFR 1910.120(e)), including initial, refresher and site-specific training, and shall be responsible for the safety and health of these individuals while they are on-site.

3.0 HAZARD EVALUATION

Due to the presence of certain contaminants at the Site, the possibility exists that workers will be exposed to hazardous substances during field activities. The principal points of exposure would be through direct contact with and incidental ingestion of soil, and through the inhalation of contaminated particles or vapors. Other points of exposure may include direct contact with groundwater. In addition, the use of drilling and/or medium to large-sized construction equipment (e.g., excavator) will also present conditions for potential physical injury to workers. Further, since work will be performed outdoors, the potential exists for heat/cold stress to impact workers, especially those wearing protective equipment and clothing. Adherence to the medical evaluations, worker training relative to chemical hazards, safe work practices, proper personal protection, environmental monitoring, establishment work zones and Site control, appropriate decontamination procedures and contingency planning outlined herein will reduce the potential for chemical exposures and physical injuries.

3.1 Chemical Hazards

As discussed in Section 1.3, historic activities have potentially resulted in impacts to Site soils and groundwater. Visual and olfactory observations, as well as elevated PID readings, indicate a potential VOC impact to Site soil and groundwater. Table 1 lists exposure limits for airborne concentrations of the COPCs identified in Section 1.4 of this HASP. Provided below are brief descriptions of the toxicology of the prevalent COPCs, and related health and safety guidance and criteria.

- **Arsenic (CAS #7440-38-2)** is a naturally occurring element and is usually found combined with one or more elements, such as oxygen or sulfur. Inhalation is a more important exposure route than ingestion. First phase exposure symptoms include nausea, vomiting, diarrhea and pain in the stomach. Prolonged contact is corrosive to the skin and mucus membranes. Arsenic is considered a Group A human carcinogen by the USEPA. Exposure via inhalation is associated with an increased risk of lung cancer. Exposure via the oral route is associated with an increased risk of skin cancer.

- **Cadmium** is a natural element and is usually combined with one or more elements, such as oxygen, chloride or sulfur. Breathing high levels of cadmium severely damages the lungs and can cause death. Ingestion of high levels of cadmium severely irritates the stomach, leading to vomiting and diarrhea. Long term exposure to lower

levels of cadmium leads to a buildup of this substance in the kidneys and possible kidney disease. Other potential long term effects are lung damage and fragile bones. Cadmium is suspected to be a human carcinogen.

- **Chromium (CAS #7440-47-3)** is used in the production of stainless steel, chrome plated metals, and batteries. Two forms of chromium, hexavalent (CR+6) and trivalent (CR+3) are toxic. Hexavalent chromium is an irritant and corrosive to the skin and mucus membranes. Chromium is a potential occupational carcinogen. Acute exposures to dust may cause coughing, wheezing, headaches, pain and fever.

- **Lead (CAS #7439-92-1)** can affect almost every organ and system in our bodies. The most sensitive is the central nervous system, particularly in children. Lead also damages kidneys and the immune system. The effects are the same whether it is breathed or swallowed. Lead may decrease reaction time, cause weakness in fingers, wrists or ankles and possibly affect memory. Lead may cause anemia.

- **Mercury (CAS #7439-97-6)** is used in industrial applications for the production of caustic and chlorine, and in electrical control equipment and apparatus. Over-exposure to mercury may cause coughing, chest pains, bronchitis, pneumonia, indecision, headaches, fatigue and salivation. Mercury is a skin and eye irritant.

- **Polynuclear Aromatic Hydrocarbons (PAHs)** are formed as a result of the pyrolysis and incomplete combustion of organic matter such as fossil fuel. PAH aerosols formed during the combustion process disperse throughout the atmosphere, resulting in the deposition of PAH condensate in soil, water and on vegetation. In addition, several products formed from petroleum processing operations (e.g., roofing materials and asphalt) also contain elevated levels of PAHs. Hence, these compounds are widely dispersed in the environment. PAHs are characterized by a molecular structure containing three or more fused, unsaturated carbon rings. Seven of the PAHs are classified by USEPA as probable human carcinogens (USEPA Class B2). These are: benzo(a)pyrene; benzo(a)anthracene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenzo(a,h)anthracene; and indeno(1,2,3-cd)pyrene. The primary route of exposure to PAHs is through incidental ingestion and inhalation of contaminated particulates. PAHs are characterized by an organic odor, and exist as oily liquids in pure form. Acute exposure symptoms may include acne-type blemishes in areas of the skin exposed to sunlight.

- **Polychlorinated Biphenyls (PCBs)** are a series of compounds that were commonly used in transformer oil and are suspected carcinogens. PCBs may vary in form from oily liquids to white solids. Exposure may cause nausea, vomiting, weight loss, jaundice, edema and abdominal pain.

With respect to potential future intrusive activities, possible routes of exposure to the above-mentioned contaminants are presented in Table 2. The use of proper respiratory equipment, as outlined in Section 7.0 of this HASP, will minimize the potential for exposure to airborne contamination. Exposure to contaminants through dermal and other routes will also be minimized through the use of protective clothing (Section 7.0), safe work practices (Section 6.0), and proper decontamination procedures (Section 12.0).

3.2 Physical Hazards

Field activities at the 3807 Highland Avenue Site may present the following physical hazards:

- The potential for physical injury during heavy construction equipment use, such as backhoes, excavators and drilling equipment.
- The potential for heat/cold stress to employees during the summer/winter months (see Section 10.0).
- The potential for slip and fall injuries due to rough, uneven terrain and/or open excavations.

These hazards represent only some of the possible means of injury that may be present during field operations and sampling activities at the Site. Since it is impossible to list all potential sources of injury, it shall be the responsibility of each individual to exercise proper care and caution during all phases of the work.

4.0 TRAINING

4.1 Site Workers

All personnel performing field activities at the Site (such as, but not limited to, equipment operators, general laborers, and drillers) and who may be exposed to hazardous substances, health hazards, or safety hazards and their supervisors/managers responsible for the Site shall receive training in accordance with 29 CFR 1910.120(e) before they are permitted to engage in operations in the exclusion zone or contaminant reduction zone. This training includes an initial 40-hour Hazardous Waste Site Worker Protection Course, an 8-hour Annual Refresher Course subsequent to the initial 40-hour training, and 3 days of actual field experience under the direct supervision of a trained, experienced supervisor. Additional site-specific training shall also be provided by the SSHO prior to the start of field activities. A description of topics to be covered by this training is provided below.

4.1.1 Initial and Refresher Training

Initial and refresher training is conducted by a qualified instructor as specified under OSHA 29 CFR 1910.120(e)(5), and is specifically designed to meet the requirements of OSHA 29 CFR 1910.120(e)(3) and 1910.120(e)(8). The training covers, as a minimum, the following topics:

- OSHA HAZWOPER regulations.
- Site safety and hazard recognition, including chemical and physical hazards.
- Medical monitoring requirements.
- Air monitoring, permissible exposure limits, and respiratory protection level classifications.
- Appropriate use of personal protective equipment (PPE), including chemical compatibility and respiratory equipment selection and use.
- Work practices to minimize risk.
- Work zones and Site control.

- Safe use of engineering controls and equipment.
- Decontamination procedures.
- Emergency response and escape.
- Confined space entry procedures.
- Heat and cold stress monitoring.
- Elements of a Health and Safety Plan.
- Spill containment.

Initial training also incorporates workshops for PPE and respiratory equipment use (Levels A, B and C), and respirator fit testing. Records and certification received from the course instructor documenting each employee's successful completion of the training identified above are maintained on file at TurnKey-Benchmark's Buffalo, NY office. Contractors and Subcontractors are required to provide similar documentation of training for all their personnel who will be involved in on-site work activities.

Any employee who has not been certified as having received health and safety training in conformance with 29 CFR 1910.120(e) is prohibited from working in the exclusion and contamination reduction zones, or to engage in any on-site work activities that may involve exposure to hazardous substances or wastes.

4.1.2 Site Training

Site workers are given a copy of the HASP and provided a site-specific briefing prior to the commencement of work to ensure that employees are familiar with the HASP and the information and requirements it contains. The Site briefing shall be provided by the SSHO prior to initiating field activities and shall include:

- Names of personnel and alternates responsible for Site safety and health.
- Safety, health and other hazards present on the Site.
- The site lay-out including work zones and places of refuge.

- The emergency communications system and emergency evacuation procedures.
- Use of PPE.
- Work practices by which the employee can minimize risks from hazards.
- Safe use of engineering controls and equipment on the site.
- Medical surveillance, including recognition of symptoms and signs of over-exposure as described in Chapter 5 of this HASP.
- Decontamination procedures as detailed in Chapter 12 of this HASP.
- The emergency response plan as detailed in Chapter 15 of this HASP.
- Confined space entry procedures, if required, as detailed in Chapter 13 of this HASP.
- The spill containment program as detailed in Chapter 9 of this HASP.
- Site control as detailed in Chapter 11 of this HASP.

Supplemental health and safety briefings will also be conducted by the SSHO on an as-needed basis during the course of the work. Supplemental briefings are provided as necessary to notify employees of any changes to this HASP as a result of information gathered during ongoing Site characterization and analysis. Conditions for which the SSHO may schedule additional briefings include, but are not limited to: a change in Site conditions (e.g., based on monitoring results); changes in the work schedule/plan; newly discovered hazards; and safety incidents occurring during Site work.

4.2 Supervisor Training

On-site safety and health personnel who are directly responsible for or who supervise the safety and health of workers engaged in hazardous waste operations (i.e., SSHO) shall receive, in addition to the appropriate level of worker training described in Section 4.1, above, 8 additional hours of specialized supervisory training, in compliance with 29 CFR 1910.120(e)(4).

4.3 Emergency Response Training

Emergency response training is addressed in Appendix A of this HASP, Emergency Response Plan.

4.4 Site Visitors

Each Contractor's SSHO will provide a site-specific briefing to all Site visitors and other non-TurnKey/Benchmark personnel who enter the Site beyond the Site entry point. The site-specific briefing will provide information about Site hazards, the Site layout including work zones and places of refuge, the emergency communications system and emergency evacuation procedures, and other pertinent safety and health requirements as appropriate.

Site visitors will not be permitted to enter the exclusion zone or contaminant reduction zones unless they have received the level of training required for Site workers as described in Section 4.1.

5.0 MEDICAL MONITORING

Medical monitoring examinations are provided to TurnKey-Benchmark employees as stipulated under 29 CFR Part 1910.120(f). These exams include initial employment, annual and employment termination physicals for all TurnKey-Benchmark employees involved in hazardous waste site field operations. Post-exposure examinations are also provided for employees who may have been injured, received a health impairment, or developed signs or symptoms of over-exposure to hazardous substances or were accidentally exposed to substances at concentrations above the permissible exposure limits without necessary personal protective equipment. Such exams are performed as soon as possible following development of symptoms or the known exposure event.

Medical evaluations are performed by ADP Screening & Selection Services, an occupational health care provider under contract with TurnKey-Benchmark. ADP's local facility is Health Works WNY, Seneca Square Plaza, 1900 Ridge Road, West Seneca, New York 14224. The facility can be reached at (716) 823-5050 to schedule routine appointments or post-exposure examinations.

Medical evaluations are conducted according to the TurnKey-Benchmark Medical Monitoring Program and include an evaluation of the workers' ability to use respiratory protective equipment. The examinations include:

- Occupational/medical history review.
- Physical exam, including vital sign measurement.
- Spirometry testing.
- Eyesight testing.
- Audio testing (minimum baseline and exit, annual for employees routinely exposed to greater than 85db).
- EKG (for employees >40 yrs age or as medical conditions dictate).
- Chest X-ray (baseline and exit, and every 5 years).
- Blood biochemistry (including blood count, white cell differential count, serum multiplastic screening).

- Medical certification of physical requirements (i.e., sight, musculoskeletal, cardiovascular) for safe job performance and to wear respiratory protection equipment.

The purpose of the medical evaluation is to determine an employee's fitness for duty on hazardous waste sites; and to establish baseline medical data.

In conformance with OSHA regulations, TurnKey-Benchmark will maintain and preserve medical records for a period of 30 years following termination of employment. Employees are provided a copy of the physician's post-exam report, and have access to their medical records and analyses.

6.0 SAFE WORK PRACTICES

All TurnKey-Benchmark employees shall conform to the following safe work practices during all on-site work activities conducted within the exclusion and contamination reduction zones:

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth contact is strictly prohibited.

- The hands and face must be thoroughly washed upon leaving the work area and prior to engaging in any activity indicated above.

- Respiratory protective equipment and clothing must be worn by all personnel entering the Site as required by the HASP or as modified by the Site safety officer. Excessive facial hair (i.e., beards, long mustaches or sideburns) that interferes with the satisfactory respirator-to-face seal is prohibited.

- Contact with surfaces/materials either suspected or known to be contaminated will be avoided to minimize the potential for transfer to personnel, cross contamination and need for decontamination.

- Medicine and alcohol can synergize the effects of exposure to toxic chemicals. Due to possible contraindications, use of prescribed drugs should be reviewed with the TurnKey-Benchmark occupational physician. Alcoholic beverage and illegal drug intake are strictly forbidden during the workday.

- All personnel shall be familiar with standard operating safety procedures and additional instructions contained in this Health and Safety Plan.

- On-site personnel shall use the "buddy" system. No one may work alone (i.e., out of earshot or visual contact with other workers) in the exclusion zone.

- Personnel and equipment in the contaminated area shall be minimized, consistent with effective Site operations.

- All employees have the obligation to immediately report and if possible, correct unsafe work conditions.

- Use of contact lenses on-site will not be permitted. Spectacle kits for insertion into full-face respirators will be provided for TurnKey-Benchmark employees, as requested and required.

The recommended specific safety practices for working around the contractor's equipment (e.g., backhoes, bulldozers, excavators, drill rigs etc.) are as follows:

- Although the Contractor and subcontractors are responsible for their equipment and safe operation of the Site, TurnKey-Benchmark personnel are also responsible for their own safety.

- Subsurface work will not be initiated without first clearing underground utility services.

- Heavy equipment should not be operated within 20 feet of overhead wires. This distance may be increased if windy conditions are anticipated or if lines carry high voltage. The Site should also be sufficiently clear to ensure the project staff can move around the heavy machinery safely.

- Care should be taken to avoid overhead wires when moving heavy-equipment from location to location.

- Hard hats, safety boots and safety glasses should be worn at all times in the vicinity of heavy equipment. Hearing protection is also recommended.

- The work Site should be kept neat. This will prevent personnel from tripping and will allow for fast emergency exit from the Site.

- Proper lighting must be provided when working at night.

- Construction activities should be discontinued during an electrical storm or severe weather conditions.

- The presence of combustible gases should be checked before igniting any open flame.

- Personnel shall stand upwind of any construction operation when not immediately involved in sampling/logging/observing activities.

- Personnel will not approach the edge of an unsecured trench/excavation closer than 2 feet.

7.0 PERSONAL PROTECTIVE EQUIPMENT

7.1 Equipment Selection

Personal protective equipment (PPE) will be donned when work activities may result in exposure to physical or chemical hazards beyond acceptable limits, and when such exposure can be mitigated through appropriate PPE. The selection of PPE will be based on an evaluation of the performance characteristics of the PPE relative to the requirements and limitations of the Site, the task-specific conditions and duration, and the hazards and potential hazards identified at the Site.

Equipment designed to protect the body against contact with known or suspect chemical hazards are grouped into four categories according to the degree of protection afforded. These categories designated A through D consistent with United States Environmental Protection Agency (USEPA) Level of Protection designation, are:

- **Level A:** Should be selected when the highest level of respiratory, skin and eye protection is needed.

- **Level B:** Should be selected when the highest level of respiratory protection is needed, but a lesser level of skin protection is required. Level B protection is the minimum level recommended on initial Site entries until the hazards have been further defined by on-site studies. Level B (or Level A) is also necessary for oxygen-deficient atmospheres.

- **Level C:** Should be selected when the types of airborne substances are known, the concentrations have been measured and the criteria for using air-purifying respirators are met. In atmospheres where no airborne contaminants are present, Level C provides dermal protection only.

- **Level D:** Should not be worn on any Site with elevated respiratory or skin hazards. This is generally a work uniform providing minimal protection.

OSHA requires the use of certain PPE under conditions where an immediate danger to life and health (IDLH) may be present. Specifically, OSHA 29 CFR 1910.120(g)(3)(iii) requires use of a positive pressure self-contained breathing apparatus, or positive pressure air-line respirator equipped with an escape air supply when chemical exposure levels present a substantial possibility of immediate serious injury, illness or death, or impair the ability to

escape. Similarly, OSHA 29 CFR 1910.120(g)(3)(iv) requires donning totally-encapsulating chemical protective suits (with a protection level equivalent to Level A protection) in conditions where skin absorption of a hazardous substance may result in a substantial possibility of immediate serious illness, injury or death, or impair the ability to escape.

In situations where the types of chemicals, concentrations, and possibilities of contact are unknown, the appropriate level of protection must be selected based on professional experience and judgment until the hazards can be further characterized. The individual components of clothing and equipment must be assembled into a full protective ensemble to protect the worker from site-specific hazards, while at the same time minimizing hazards and drawbacks of the personal protective gear itself. Ensemble components are detailed below for levels A/B, C, and D protection.

7.2 Protection Ensembles

7.2.1 Level A/B Protection Ensemble

Level A/B ensembles include similar respiratory protection, however Level A provides a higher degree of dermal protection than Level B. Use of Level A over Level B is determined by: comparing the concentrations of identified substances in the air with skin toxicity data, and assessing the effect of the substance (by its measured air concentrations or splash potential) on the small area of the head and neck unprotected by Level B clothing.

The recommended PPE for level A/B is:

- Pressure-demand, full-face piece self-contained breathing apparatus (MSHA/-NIOSH approved) or pressure-demand supplied-air respirator with escape self-contained breathing apparatus (SCBA).
- Chemical-resistant clothing. For Level A, clothing consists of totally-encapsulating chemical resistant suit. Level B incorporates hooded one-or two-piece chemical splash suit.
- Inner and outer chemical resistant gloves.
- Chemical-resistant safety boots/shoes.
- Hardhat.

7.2.2 Level C Protection Ensemble

Level C protection is distinguished from Level B by the equipment used to protect the respiratory system, assuming the same type of chemical-resistant clothing is used. The main selection criterion for Level C is that conditions permit wearing an air-purifying device. The device (when required) must be an air-purifying respirator (MSHA/NIOSH approved) equipped with filter cartridges. Cartridges must be able to remove the substances encountered. Respiratory protection will be used only with proper fitting, training and the approval of a qualified individual. In addition, an air-purifying respirator can be used only if: oxygen content of the atmosphere is at least 19.5% in volume; substances are identified and concentrations measured; substances have adequate warning properties; the individual passes a qualitative fit-test for the mask; and an appropriate cartridge/canister is used, and its service limit concentration is not exceeded.

Recommended PPE for Level C conditions includes:

- Full-face piece, air-purifying respirator equipped with MSHA and NIOSH approved organic vapor/acid gas/dust/mist combination cartridges or as designated by the SSHO.
- Chemical-resistant clothing (hooded, one or two-piece chemical splash suit or disposable chemical-resistant one-piece suit).
- Inner and outer chemical-resistant gloves.
- Chemical-resistant safety boots/shoes.
- Hardhat.

An air-monitoring program is part of all response operations when atmospheric contamination is known or suspected. It is particularly important that the air be monitored thoroughly when personnel are wearing air-purifying respirators. Continual surveillance using direct-reading instruments is needed to detect any changes in air quality necessitating a higher level of respiratory protection.

7.2.3 Level D Protection Ensemble

As indicated above, Level D protection is primarily a work uniform. It can be worn in areas where only boots can be contaminated, where there are no inhalable toxic substances

and where the atmospheric contains at least 19.5% oxygen.

Recommended PPE for Level D includes:

- Coveralls.
- Safety boots/shoes.
- Safety glasses or chemical splash goggles.
- Hardhat.
- Optional gloves; escape mask; face shield.

7.2.4 Recommended Level of Protection for Site Tasks

Based upon current information regarding both the contaminants suspected to be present at the Site and the various tasks that are included in the remedial activities, the minimum required levels of protection for these tasks shall be as identified in Table 3.

8.0 EXPOSURE MONITORING

8.1 General

Based on the results of historic sample analysis and the nature of the proposed work activities at the Site, the possibility exists that organic vapors and/or particulates may be released to the air during intrusive construction activities. Ambient breathing zone concentrations may at times, exceed the permissible exposure limits (PELs) established by OSHA for the individual compounds (see Table 1), in which case respiratory protection will be required. Respiratory and dermal protection may be modified (upgraded or downgraded) by the SSHO based upon real-time field monitoring data.

8.1.1 On-Site Work Zone Monitoring

TurnKey-Benchmark personnel will conduct routine, real-time air monitoring during all intrusive construction phases such as excavation, backfilling, drilling, etc. The work area will be monitored at regular intervals using a photo-ionization detector (PID), combustible gas meter and a particulate meter. Observed values will be recorded and maintained as part of the permanent field record.

Additional air monitoring measurements may be made by TurnKey-Benchmark personnel to verify field conditions during subcontractor oversight activities. Monitoring instruments will be protected from surface contamination during use. Additional monitoring instruments may be added if the situations or conditions change. Monitoring instruments will be calibrated in accordance with manufacturer's instructions before use.

8.1.2 Off-Site Community Air Monitoring

In addition to on-site monitoring within the work zone(s), monitoring at the down-wind portion of the Site perimeter will be conducted. This will provide a real-time method for determination of substantial vapor and/or particulate releases to the surrounding community as a result of ground intrusive investigation work.

Ground intrusive activities are defined by NYSDOH Generic Community Air Monitoring Plan (Ref. 4) and attached as Appendix C-2. Ground intrusive activities include soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells. Non-intrusive activities include the collection of soil and

sediment samples or the collection of groundwater samples from existing wells. Continuous monitoring is required for ground intrusive activities and periodic monitoring is required for non-intrusive activities. Periodic monitoring consists of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring while bailing a well, and taking a reading prior to leaving a sampling location. This may be upgraded to continuous if the sampling location is in close proximity to individuals not involved in the Site activity (i.e., on a curb of a busy street). The action levels below will be used during periodic monitoring.

8.2 Monitoring Action Levels

8.2.1 On-Site Work Zone Action Levels

The PID, or other appropriate instrument(s), will be used by TurnKey-Benchmark personnel to monitor organic vapor concentrations as specified in this HASP. Combustible gas will be monitored with the "combustible gas" option on the combustible gas meter or other appropriate instrument(s). In addition, fugitive dust/particulate concentrations will be monitored during major soil intrusion (e.g., well/boring installation) using a real-time particulate monitor as specified in this plan. In the absence of such monitoring, appropriate respiratory protection for particulates shall be donned. Sustained readings obtained in the breathing zone may be interpreted (with regard to other Site conditions) as follows for TurnKey-Benchmark personnel:

- Total atmospheric concentrations of unidentified vapors or gases ranging from 0 to 1 ppm above background on the PID) – Continue operations under Level D.
- Total atmospheric concentrations of unidentified vapors or gases yielding sustained readings from >1 ppm to 5 ppm above background on the PID (vapors not suspected of containing high levels of chemicals toxic to the skin) – Continue operations under Level C.
- Total atmospheric concentrations of unidentified vapors or gases yielding sustained readings of >5 ppm to 50 ppm above background on the PID - Continue operations under Level B, re-evaluate and alter (if possible) construction methods to achieve lower vapor concentrations.

- Total atmospheric concentrations of unidentified vapors or gases above 50 ppm on the PID - Discontinue operations and exit the work zone immediately.

The explosimeter will be used to monitor levels of both combustible gases and oxygen during BCP activities. Action levels based on the instrument readings shall be as follows:

- Less than 10% LEL - Continue engineering operations with caution.
- 10-25% LEL - Continuous monitoring with extreme caution, determine source/cause of elevated reading.
- Greater than 25% LEL - Explosion hazard, evaluate source and leave the Work Zone.
- 19.5% - 21% oxygen - proceed with extreme caution; attempt to determine potential source of oxygen displacement.
- Less than 19.5% oxygen - leave work zone immediately.
- 21-25% oxygen - Continue engineering operations with caution.
- Greater than 25% oxygen - Fire hazard potential, leave Work Zone immediately.

The particulate monitor will be used to monitor respirable dust concentrations during all intrusive activities and during handling of Site soil/fill. Action levels based on the instrument readings shall be as follows:

- Less than 50 $\mu g/m^3$ - Continue field operations.
- 50-150 $\mu g/m^3$ - Don dust/particulate mask or equivalent
- Greater than 150 $\mu g/m^3$ - Don dust/particulate mask or equivalent. Initiate engineering controls to reduce respirable dust concentration (e.g., wetting of excavated soils or tools at discretion of Site Health and Safety Officer).

Readings with the organic vapor analyzer, combustible gas meter, and particulate monitor will be recorded and documented on the appropriate Project Field Forms. All

instruments will be calibrated before use on a daily basis and the procedure will be documented on the appropriate Project Field Forms.

8.2.2 Community Air Monitoring Action Levels

In addition to the action levels prescribed in Section 8.2.1 for TurnKey-Benchmark personnel on-site, the following criteria shall also be adhered to for the protection of downwind receptors consistent with NYSDOH requirements (SMP Appendix C-2):

- **ORGANIC VAPOR PERIMETER MONITORING:**
  - If the sustained ambient air concentration of organic vapors at the downwind perimeter of the exclusion zone exceeds 5 ppm above background, work activities will be halted and monitoring continued. If the sustained organic vapor decreases below 5 ppm over background, work activities can resume but more frequent intervals of monitoring, as directed by the Site Health and Safety Officer, must be conducted.

  - If the sustained ambient air concentration of organic vapors at the downwind perimeter of the exclusion zone are greater than 5 ppm over background but less than 25 ppm, activities can resume provided that: the organic vapor level 200 feet downwind of the working site or half the distance to the nearest off-site residential or commercial structure, whichever is less, is below 5 ppm over background; and more frequent intervals of monitoring, as directed by the Site Health and Safety Officer, are conducted.

  - If the sustained organic vapor level is above 25 ppm at the perimeter of the exclusion zone, the Site Health and Safety Officer must be notified and work activities shut down. The Site Health and Safety Officer will determine when re-entry of the exclusion zone is possible and will implement downwind air monitoring to ensure vapor emissions do not impact the nearest off-site residential or commercial structure at levels exceeding those specified in the ***Organic Vapor Contingency Monitoring Plan*** below. All readings will be recorded and will be available for New York State Department of Environmental Conservation (DEC) and Department of Health (DOH) personnel to review.

- **ORGANIC VAPOR CONTINGENCY MONITORING PLAN:**
  - If the sustained organic vapor level is greater than 5 ppm over background 200 feet downwind from the work area or half the distance to the nearest off-

site residential or commercial property, whichever is less, all work activities must be halted.

- If, following the cessation of the work activities or as the result of an emergency, sustained organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest off-site residential or commercial property from the work area, then the air quality must be monitored within 20 feet of the perimeter of the nearest off-site residential or commercial structure (20-foot zone).

- If efforts to abate the emission source are unsuccessful and if sustained organic vapor levels approach or exceed 5 ppm above background within the 20-foot zone for more than 30 minutes, or are sustained at levels greater than 10 ppm above background for longer than one minute, then the ***Major Vapor Emission Response Plan*** (see below) will automatically be placed into effect.

o **MAJOR VAPOR EMISSION RESPONSE PLAN:**

Upon activation, the following activities will be undertaken:

1. All Emergency Response Contacts as listed in this Health and Safety Plan and the Emergency Response Plan (Appendix A) will be advised.

2. The local police authorities will immediately be contacted by the Site Health and Safety Officer and advised of the situation.

3. Frequent air monitoring will be conducted at 30-minute intervals within the 20-foot zone. If two sustained successive readings below action levels are measured, air monitoring may be halted or modified by the Site Health and Safety Officer.

The following personnel are to be notified in the listed sequence in the event that a Major Vapor Emission Plan is activated:

Responsible Person	Contact	Phone Number
SSHO	Police	911
SSHO	State Emergency Response Hotline	(800) 457-7362

Additional emergency numbers are listed in the Emergency Response Plan included as Appendix A.

- **EXPLOSIVE VAPORS:**
  - Sustained atmospheric concentrations of greater than 10% LEL in the work area - Initiate combustible gas monitoring at the downwind portion of the Site perimeter.
  - Sustained atmospheric concentrations of greater than 10% LEL at the downwind Site perimeter – Halt work and contact local Fire Department.

- **AIRBORNE PARTICULATE COMMUNITY AIR MONITORING**

Respirable (PM-10) particulate monitoring will be performed on a continuous basis at the upwind and downwind perimeter of the exclusion zone. The monitoring will be performed using real-time monitoring equipment capable of measuring PM-10 and integrating over a period of 15-minutes for comparison to the airborne particulate action levels. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities. All readings will be recorded and will be available for NYSDEC and NYSDOH review. Readings will be interpreted as follows:

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (ug/m^3) greater than the background (upwind perimeter) reading for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression provided that the downwind PM-10 particulate levels do not exceed 150 ug/m^3 above the upwind level and that visible dust is not migrating from the work area.
- If, after implementation of dust suppression techniques downwind PM-10 levels are greater than 150 ug/m^3 above the upwind level, work activities must be stopped and dust suppression controls re-evaluated. Work can resume provided that supplemental dust suppression measures and/or other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 ug/m^3 of the upwind level and in preventing visible dust migration.

Pertinent emergency response information including the telephone number of the Fire Department is included in the Emergency Response Plan (Appendix A of the HASP).

9.0 SPILL RELEASE/RESPONSE

This chapter of the HASP describes the potential for and procedures related to spills or releases of known or suspected petroleum and/or hazardous substances on the Site. The purpose of this Section of the HASP is to plan appropriate response, control, counter-measures and reporting, consistent with OSHA requirements in 29 CFR 1910.120(b)(4)(ii)(J) and (j)(1)(viii). The spill containment program addresses the following elements:

- Potential hazardous material spills and available controls.
- Initial notification and evaluation.
- Spill response.
- Post-spill evaluation.

9.1 Potential Spills and Available Controls

An evaluation was conducted to determine the potential for hazardous material and oil/petroleum spills at this Site. For the purpose of this evaluation, hazardous materials posing a significant spill potential are considered to be:

- CERCLA Hazardous Substances as identified in 40 CFR Part 302, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).

- Extremely Hazardous Substances as identified in 40 CFR Part 355, Appendix A, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).

- Hazardous Chemicals as defined under Section 311(e) of the Emergency Planning and Community Right-To-Know Act of 1986, where such chemicals are present or will be stored in excess of 10,000 lbs.

- Toxic Chemicals as defined in 40 CFR Part 372, where such chemicals are present or will be stored in excess of 10,000 lbs.

- Chemicals regulated under 6NYCRR Part 597, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).

Oil/petroleum products are considered to pose a significant spill potential whenever the following situations occur:

- The potential for a "harmful quantity" of oil (including petroleum and non-petroleum-based fuels and lubricants) to reach navigable waters of the U.S. exists (40 CFR Part 112.4). Harmful quantities are considered by USEPA to be volumes that could form a visible sheen on the water or violate applicable water quality standards.

- The potential for any amount of petroleum to reach any waters of NY State, including groundwater, exists. Petroleum, as defined by NY State in 6NYCRR Part 612, is a petroleum-based heat source, energy source, or engine lubricant/maintenance fluid.

- The potential for any release, to soil or water, of petroleum from a bulk storage facility regulated under 6NYCRR Part 612. A regulated petroleum storage facility is defined by NY State as a site having stationary tank(s) and intra-facility piping, fixtures and related equipment with an aggregate storage volume of 1,100 gallons or greater.

The evaluation indicates that, based on Site history and decommissioning records, a hazardous material spill and/or a petroleum product spill is not likely to occur during BCP activities.

9.2 Initial Spill Notification and Evaluation

Any worker who discovers a hazardous substance or oil/petroleum spill will immediately notify the Project Manager and SSHO. The worker will, to the best of his/her ability, report the material involved, the location of the spill, the estimated quantity of material spilled, the direction/flow of the spill material, related fire/explosion incidents, if any, and any associated injuries. The Emergency Response Plan presented in Attachment H2 of this HASP will immediately be implemented if an emergency release has occurred.

Following initial report of a spill, the Project Manager will make an evaluation as to whether the release exceeds RQ levels. If an RQ level is exceeded, the Project Manager will notify the Site owner and NYSDEC at 1-800-457-7362 within 2 hours of spill discovery. The Project Manager will also determine what additional agencies (e.g., USEPA) are to be contacted regarding the release, and will follow-up with written reports as required by the applicable regulations.

9.3 Spill Response

For all spill situations, the following general response guidelines will apply:

- Only those personnel involved in overseeing or performing containment operations will be allowed within the spill area. If necessary, the area will be roped, ribboned, or otherwise blocked off to prevent unauthorized access.
- Appropriate PPE, as specified by the SSHO, will be donned before entering the spill area.
- Ignition points will be extinguished/removed if fire or explosion hazards exist.
- Surrounding reactive materials will be removed.
- Drains or drainage in the spill area will be blocked to prevent inflow of spilled materials or applied materials.

For minor spills, the Contractor will maintain a Spill Control and Containment Kit in the Field Office or other readily accessible storage location. The kit will consist of, at a minimum, a 50 lb. bag of "speedy dry" granular absorbent material, absorbent pads, shovels, empty 5-gallon pails and an empty open-top 55-gallon drum. Spilled materials will be absorbed, and shoveled into a 55-gallon drum for proper disposal (NYSDEC approval will be secured for on-site treatment of the impacted soils/absorbent materials, if applicable). Impacted soils will be hand-excavated to the point that no visible signs of contamination remains, and will be drummed with the absorbent.

In the event of a major release or a release that threatens surface water, a spill response contractor will be called to the Site. The response contractor may use heavy equipment (e.g., excavator, backhoe, etc.) to berm the soils surrounding the spill Site or create diversion trenching to mitigate overland migration or release to navigable waters. Where feasible, pumps will be used to transfer free liquid to storage containers. Spill control/cleanup contractors in the Western New York area that may be contacted for assistance include:

- The Environmental Service Group of NY, Inc.: (716) 695-6720
- Environmental Products and Services of Vermont, Inc.: (716) 447-4700
- Op-Tech: (716) 873-7680

9.4 Post-Spill Evaluation

If a reportable quantity of hazardous material or oil/petroleum is spilled as determined by the Project Manager, a written report will be prepared as indicated in Section 9.2. The report will identify the root cause of the spill, type and amount of material released, date/time of release, response actions, agencies notified and/or involved in cleanup, and procedures to be implemented to avoid repeat incidents. In addition, all re-useable spill cleanup and containment materials will be decontaminated, and spill kit supplies/disposable items will be replenished.

10.0 HEAT/COLD STRESS MONITORING

Since some of the work activities at the Site will be scheduled for both the summer and winter months, measures will be taken to minimize heat/cold stress to TurnKey-Benchmark employees. The Site Safety and Health Officer and/or his or her designee will be responsible for monitoring TurnKey-Benchmark field personnel for symptoms of heat/cold stress.

10.1 Heat Stress Monitoring

Personal protective equipment may place an employee at risk of developing heat stress, a common and potentially serious illnesses often encountered at construction, landfill, waste disposal, industrial or other unsheltered sites. The potential for heat stress is dependent on a number of factors, including environmental conditions, clothing, workload, physical conditioning and age. Personal protective equipment may severely reduce the body's normal ability to maintain temperature equilibrium (via evaporation and convection), and require increased energy expenditure due to its bulk and weight.

Proper training and preventive measures will mitigate the potential for serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat related illness. To avoid heat stress, the following steps should be taken:

- Adjust work schedules.
- Modify work/rest schedules according to monitoring requirements.
- Mandate work slowdowns as needed.
- Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided.
- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.
- Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat (i.e., eight fluid ounces must be ingested for approximately every 1 lb of weight lost). The normal thirst

mechanism is not sensitive enough to ensure that enough water will be consumed to replace lost perspiration. When heavy sweating occurs, workers should be encouraged to drink more.

- Train workers to recognize the symptoms of heat related illness.

Heat-Related Illness - Symptoms:

- Heat rash may result from continuous exposure to heat or humid air.

- Heat cramps are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include: muscle spasms; pain in the hands, feet and abdomen.

- Heat exhaustion occurs from increased stress on various body organs including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Signs and symptoms include: pale, cool, moist skin; heavy sweating; dizziness; nausea; fainting.

- Heat stroke is the most serious form of heat stress. Temperature regulation fails and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury and death occur. Competent medical help must be obtained. Signs and symptoms are: red, hot, usually dry skin; lack of or reduced perspiration; nausea; dizziness and confusion; strong, rapid pulse; coma.

The monitoring of personnel wearing protective clothing should commence when the ambient temperature is 70 degrees Fahrenheit or above. For monitoring the body's recuperative ability to excess heat, one or more of the following techniques should be used as a screening mechanism.

- Heart rate may be measured by the radial pulse for 30 seconds as early as possible in the resting period. The rate at the beginning of the rest period should not exceed 100 beats per minute. If the rate is higher, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest periods stay the same, If the pulse rate is 100 beats per minute at the beginning of the nest rest period, the following work cycle should be further shortened by 33%.

- Body temperature may be measured orally with a clinical thermometer as early as possible in the resting period. Oral temperature at the beginning of the rest period

should not exceed 99.6 degrees Fahrenheit. If it does, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest period remains the same. However, if the oral temperature exceeds 99.6 degrees Fahrenheit at the beginning of the next period, the work cycle may be further shortened by 33%. Oral temperature should be measured at the end of the rest period to make sure that it has dropped below 99.6 degrees Fahrenheit. No TurnKey-Benchmark employee will be permitted to continue wearing semi-permeable or impermeable garments when his/her oral temperature exceeds 100.6 degrees Fahrenheit.

10.2 Cold Stress Monitoring

Exposure to cold conditions may result in frostbite or hypothermia, each of which progresses in stages as shown below.

- **Frostbite** occurs when body tissue (usually on the extremities) begins to freeze. The three states of frostbite are:

  1) **Frost nip** - This is the first stage of the freezing process. It is characterized by a whitened area of skin, along with a slight burning or painful sensation. Treatment consists of removing the victim from the cold conditions, removal of boots and gloves, soaking the injured part in warm water (102 to 108 degrees Fahrenheit) and drinking a warm beverage. Do not rub skin to generate friction/ heat.

  2) **Superficial Frostbite** - This is the second stage of the freezing process. It is characterized by a whitish gray area of tissue, which will be firm to the touch but will yield little pain. The treatment is identical for Frost nip.

  3) **Deep Frostbite** - In this final stage of the freezing process the affected tissue will be cold, numb and hard and will yield little to no pain. Treatment is identical to that for Frost nip.

- **Hypothermia** is a serious cold stress condition occurring when the body loses heat at a rate faster than it is produced. If untreated, hypothermia may be fatal. The stages of hypothermia may not be clearly defined or visible at first, but generally include:

  1) Shivering
  2) Apathy (i.e., a change to an indifferent or uncaring mood)

3) Unconsciousness
4) Bodily freezing

Employees exhibiting signs of hypothermia should be treated by medical professionals. Steps that can be taken while awaiting help include:

1) Remove the victim from the cold environment and remove wet or frozen clothing. (Do this carefully as frostbite may have started.)

2) Perform active re-warming with hot liquids for drinking (Note: do not give the victim any liquid containing alcohol or caffeine) and a warm water bath (102 to 108 degrees Fahrenheit).

3) Perform passive re-warming with a blanket or jacket wrapped around the victim.

In any potential cold stress situation, it is the responsibility of the Site Health and Safety Officer to encourage the following:

- Education of workers to recognize the symptoms of frostbite and hypothermia.
- Workers should dress warmly, with more layers of thin clothing as opposed to one thick layer.
- Personnel should remain active and keep moving.
- Personnel should be allowed to take shelter in a heated areas, as necessary.
- Personnel should drink warm liquids (no caffeine or alcohol if hypothermia has set in).
- For monitoring the body's recuperation from excess cold, oral temperature recordings should occur:
  - At the Site Safety Technicians discretion when suspicion is based on changes in a worker's performance or mental status.
  - At a workers request.
  - As a screening measure, two times per shift, under unusually hazardous conditions (e.g., wind chill less than 20 degrees Fahrenheit or wind chill

less than 30 degrees Fahrenheit with precipitation).

- As a screening measure, whenever anyone worker on-site develops hypothermia.

Any person developing moderate hypothermia (a core body temperature of 92 degrees Fahrenheit) will not be allowed to return to work for 48 hours without the recommendation of a qualified medical doctor.

11.0 WORK ZONES AND SITE CONTROL

Work zones around the areas designated for construction activities will be established on a daily basis and communicated to all employees and other Site users by the SSHO. It shall be each Contractor's Site Safety and Health Officer's responsibility to ensure that all Site workers are aware of the work zone boundaries and to enforce proper procedures in each area. The zones will include:

- Exclusion Zone ("Hot Zone") - The area where contaminated materials may be exposed, excavated or handled and all areas where contaminated equipment or personnel may travel. The zone will be delineated by flagging tape. All personnel entering the Exclusion Zone must wear the prescribed level of personal protective equipment identified in Section 7.

- Contamination Reduction Zone - The zone where decontamination of personnel and equipment takes place. Any potentially contaminated clothing, equipment and samples must remain in the Contamination Reduction Zone until decontaminated.

- Support Zone - The part of the site that is considered non-contaminated or "clean." Support equipment will be located in this zone, and personnel may wear normal work clothes within this zone.

In the absence of other task-specific work zone boundaries established by the SSHO, the following boundaries will apply to all investigation and construction activities involving disruption or handling of Site soils or groundwater:

- Exclusion Zone: 50 foot radius from the outer limit of the sampling/construction activity.

- Contaminant Reduction Zone: 100 foot radius from the outer limit of the sampling/construction activity.

- Support Zone: Areas outside the Contaminant Reduction Zone.

Access of non-essential personnel to the Exclusion and Contamination Reduction Zones will be strictly controlled by the SSHO. Only personnel who are essential to the

completion of the task will be allowed access to these areas and only if they are wearing the prescribed level of protection. Entrance of all personnel must be approved by the SSHO.

The SSHO will maintain a Health and Safety Logbook containing the names of TurnKey-Benchmark workers and their level of protection. The zone boundaries may be changed by the SSHO as environmental conditions warrant, and to respond to the necessary changes in work locations on-site.

12.0 DECONTAMINATION

12.1 Decontamination for TurnKey-Benchmark Employees

The degree of decontamination required is a function of a particular task and the environment within which it occurs. The following decontamination procedure will remain flexible, thereby allowing the decontamination crew to respond appropriately to the changing environmental conditions that may arise at the Site. All TurnKey-Benchmark personnel on-site shall follow the procedure below, or the Contractor's procedure (if applicable), whichever is more stringent.

Station 1 - Equipment Drop: Deposit visibly contaminated (if any) re-useable equipment used in the contamination reduction and exclusion zones (tools, containers, monitoring instruments, radios, clipboards, etc.) on plastic sheeting.

Station 2 - Boots and Gloves Wash and Rinse: Scrub outer boots and outer gloves. Deposit tape and gloves in waste disposal container.

Station 3 - Tape, Outer Boot and Glove Removal: Remove tape, outer boots and gloves. Deposit tape and gloves in waste disposal container.

Station 4 - Canister or Mask Change: If worker leaves exclusive zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot cover donned, and worker returns to duty.

Station 5 - Outer Garment/Face Piece Removal: Protective suit removed and deposited in separate container provided by Contractor. Face piece or goggles are removed if used. Avoid touching face with fingers. Face piece and/or goggles deposited on plastic sheet. Hard hat removed and placed on plastic sheet.

Station 6 - Inner Glove Removal: Inner gloves are the last personal protective equipment to be removed. Avoid touching the outside of the gloves with bare fingers. Dispose of these gloves in waste disposal container.

Following PPE removal, personnel shall wash hands, face and forearms with absorbent wipes. If field activities proceed for a duration of 6 consecutive months or longer, shower facilities will be provided for worker use in accordance with OSHA 29 CFR 1910.120(n).

12.2 Decontamination for Medical Emergencies

In the event of a minor, non-life threatening injury, personnel should follow the decontamination procedures as defined, and then administer first-aid.

In the event of a major injury or other serious medical concern (e.g., heat stroke), immediate first-aid is to be administered and the victim transported to the hospital in lieu of further decontamination efforts unless exposure to a Site contaminant would be considered "Immediately Dangerous to Life or Health."

12.3 Decontamination of Field Equipment

Decontamination of heavy equipment will be conducted by the Contractor in accordance with his approved Health and Safety Plan in the Contamination Reduction Zone. As a minimum, this will include manually removing heavy soil contamination, followed by steam cleaning on an impermeable pad.

Decontamination of all tools used for sample collection purposes will be conducted by TurnKey-Benchmark personnel. It is expected that all tools will be constructed of nonporous, nonabsorbent materials (i.e., metal), which will aid in the decontamination effort. Any tool or part of a tool made of porous, absorbent material (i.e., wood) will be placed into suitable containers and prepared for disposal.

Decontamination of bailers, split-spoons, spatula knives, and other tools used for environmental sampling and examination shall be as follows:

- Disassemble the equipment
- Water wash to remove all visible foreign matter.
- Wash with detergent.
- Rinse all parts with distilled-deionized water.
- Allow to air dry.
- Wrap all parts in aluminum foil or polyethylene.

13.0 CONFINED SPACE ENTRY

OSHA 29 CFR 1910.146 identifies a confined space as a space that is large enough and so configured that an employee can physically enter and do assigned work, has limited or restricted means for entry and exit, and is not intended for continuous employee occupancy. Confined spaces include, but are not limited to, trenches, storage tanks, process vessels, pits, sewers, tunnels, underground utility vaults, pipelines, sumps, wells, and excavations.

Confined space entry by TurnKey-Benchmark employees is not anticipated to be necessary to complete the RI/IRM activities identified in Section 2.0. In the event that the scope of work changes or confined space entry appears necessary, the Project Manager will be consulted to determine if feasible engineering alternatives to confined space entry can be implemented. If confined space entry by TurnKey-Benchmark employees cannot be avoided through reasonable engineering measures, task-specific confined space entry procedures will be developed and a confined-space entry permit will be issued through TurnKey-Benchmark's corporate Health and Safety Director. TurnKey-Benchmark employees shall not enter a confined space without these procedures and permits in place.

14.0 FIRE PREVENTION AND PROTECTION

14.1 General Approach

Recommended practices and standards of the National Fire Protection Association (NFPA) and other applicable regulations will be followed in the development and application of Project Fire Protection Programs. When required by regulatory authorities, the project management will prepare and submit a Fire Protection Plan for the approval of the contracting officers, authorized representative or other designated official. Essential considerations for the Fire Protection Plan will include:

- Proper Site preparation and safe storage of combustible and flammable materials.
- Availability of coordination with private and public fire authorities.
- Adequate job-site fire protection and inspections for fire prevention.
- Adequate indoctrination and training of employees.

14.2 Equipment and Requirements

Fire extinguishers will be provided by each Contractor and are required on all heavy equipment and in each field trailer. Fire extinguishers will be inspected, serviced, and maintained in accordance with the manufacturer's instructions. As a minimum, all extinguishers shall be checked monthly and weighed semi-annually, and recharged if necessary. Recharge or replacement shall be mandatory immediately after each use.

14.3 Flammable and Combustible Substances

All storage, handling or use of flammable and combustible substances will be under the supervision of qualified persons. All tanks, containers and pumping equipment, whether portable or stationary, used for the storage and handling of flammable and combustible liquids, will meet the recommendations of the National Fire Protection Association.

14.4 Hot Work

If the scope of work necessitates welding or blowtorch operation, the hot work permit presented in Appendix B will be completed by the SSHO and reviewed/issued by the Project Manager.

15.0 EMERGENCY INFORMATION

In accordance with OSHA 29 CFR Part 1910, an Emergency Response Plan is attached to this HASP as Appendix A. The hospital route map is presented within Appendix A of the HASP as Figure A-1.

16.0 REFERENCES

1. Benchmark Environmental Engineering and Science, PLLC. 2008. *Phase I Environmental Site Assessment Report, 3807 Highland Avenue Site, Niagara Falls, New York.* September

2. Benchmark Environmental Engineering and Science, PLLC. 2008. *Preliminary Site Investigation, Globe Metallurgical and Solsil, Inc. Site, 3807 Highland Avenue, Niagara Falls, New York.* September

3. Benchmark Environmental Engineering and Science, PLLC. 2009. *Supplemental Site Investigation, Globe Metallurgical Site, 3807 Highland Avenue, Niagara Falls, New York.* March

4. Benchmark Environmental Engineering and Science, PLLC. 2009. *Remedial Investigation/Alternative Analysis Report/Interim Remedial Measures Work Plan, 3807 Highland Avenue Site, Niagara Falls, New York. BCP Site No. 932145.* December 2008, revised September 2009

5. New York State Department of Environmental Conservation. 2009. *Draft DER-10; Technical Guidance for Site Investigation and Remediation.* December.

TABLES

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TABLE 1

TOXICITY DATA FOR CONSTITUENTS OF POTENTIAL CONCERN

3807 Highland Avenue Site
Niagara Falls, New York

Parameter	Synonyms	CAS No.	Code	Concentration Limits [1]		
				PEL	TLV	IDLH
Semi-volatile Organic Compounds (SVOCs)[2]: ppm						
Anthracene	*none*	120-12-7	*none*	--	--	--
Benzo(a)anthracene	*none*	56-55-3	*none*	--	--	--
Benzo(b)fluoranthene	*none*	205-99-2	*none*	--	--	--
Benzo(k)fluoranthene	*none*	207-08-9	*none*	--	--	--
Benzo(a)pyrene	*none*	50-32-8	*none*	--	--	--
Chrysene	*none*	218-01-9	*none*	--	--	--
Dibenzo(a,h)anthracene	*none*	53-70-3	*none*	--	--	--
Fluoranthene	*none*	206-44-0	*none*	--	--	--
Fluorene	*none*	86-73-7	*none*	--	--	--
Indeno(1,2,3-cd)pyrene	*none*	193-39-5	*none*	--	--	--
Naphthalene	Naphthalin, Tar camphor, White tar	91-20-3	*none*	10	10	250
Phenanthrene	*none*	85-01-8	*none*	--	--	--
Pyrene	*none*	129-00-0	*none*	--	--	--
Polychorinated Biphenyls (PCBs) : ppm						
Aroclor 1254	chlorodiphenol (54% Chlorine)	11097-69-1	Ca	1	0.5	5
Aroclor 1260	chlorodiphenol (60% Chlorine)	11096-82-5	Ca	1	0.5	5
Inorganic Compounds: mg/m [3]						
Arsenic	*none*	7440-38-2	Ca	0.01	0.01	5
Barium	*none*	7440-39-3	*none*	0.5	0.5	50
Cadmium	*none*	7440-43-9	Ca	0.005	0.01	9
Chromium	*none*	7440-47-3	*none*	1	0.5	250
Lead	*none*	7439-92-1	*none*	0.05	0.15	100
Mercury	*none*	7439-97-6	C-0.1	0.1	0.05	10

Notes:

1. Concentration limits as reported by NIOSH Pocket Guide to Chemical Hazards, February 2004 (NIOSH Publication No. 97-140, fourth printing with changes and updates).
2. " -- " = concentration limit not available; exposure should be minimized to the extent feasible through appropriate engineering controls & PPE.

Explanation:
Ca = NIOSH considers constituent to be a potential occupational carcinogen.
C-## = Ceiling Level equals the maximum exposure concentration allowable during the work day.
IDLH = Immediately Dangerous to Life or Health.
ND indicates that an IDLH has not as yet been determined.
TLV = Threshold Limit Value, est. by American Conference of Industrial Hygienists (ACGIH), equals the max. exposure conc. allowable for 8 hrs/day @ 40 hrs/week.
TLVs are the amounts of chemicals in the air that almost all healthy adult workers are predicted to be able to tolerate without adverse effects. There are three types.
TLV-TWA (TLV-Time-Weighted Average) which is averaged over the normal eight-hour day/forty-hour work week. (Most TLVs.)
TLV-STEL or Short Term Exposure Limits are 15 minute exposures that should not be exceeded for even an instant. It is not a stand alone value but is accompanied by the TLV-TWA. It indicates a higher exposure that can be tolerated for a short time without adverse effect as long as the total time weighted average is not exceeded.
TLV-C or Ceiling limits are the concentration that should not be exceeded during any part of the working exposure.
Unless the initials "STEL" or "C" appear in the Code column, the TLV value should be considered to be the eight-hour TLV-TWA.
PEL = Permissible Exposure Limit, established by OSHA, equals the maximum exposure concentration allowable for 8 hours per day @ 40 hours per week

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TABLE 2

POTENTIAL ROUTES OF EXPOSURE TO THE CONSTITUENTS OF POTENTIAL CONCERN

3807 Highland Avenue Site
Niagara Falls, New York

Activity [1]	Direct Contact with Soil	Inhalation of Vapors or Dust	Direct Contact with Groundwater
Remedial Investigation Tasks			
1. Test pit excavation, soil borings & soil sampling.	x	x	
2. Surface soil sampling.	x	x	
3. Drum and container sampling.	x	x	
4. Monitoring Well Installation and Groundwater Sampling	x	x	x

Notes:

1. Activity as described in Section 1.5 of the Health and Safety Plan.

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TABLE 3

REQUIRED LEVELS OF PROTECTION
FOR BCP ACTIVITIES

3807 Highland Avenue Site
Niagara Falls, New York

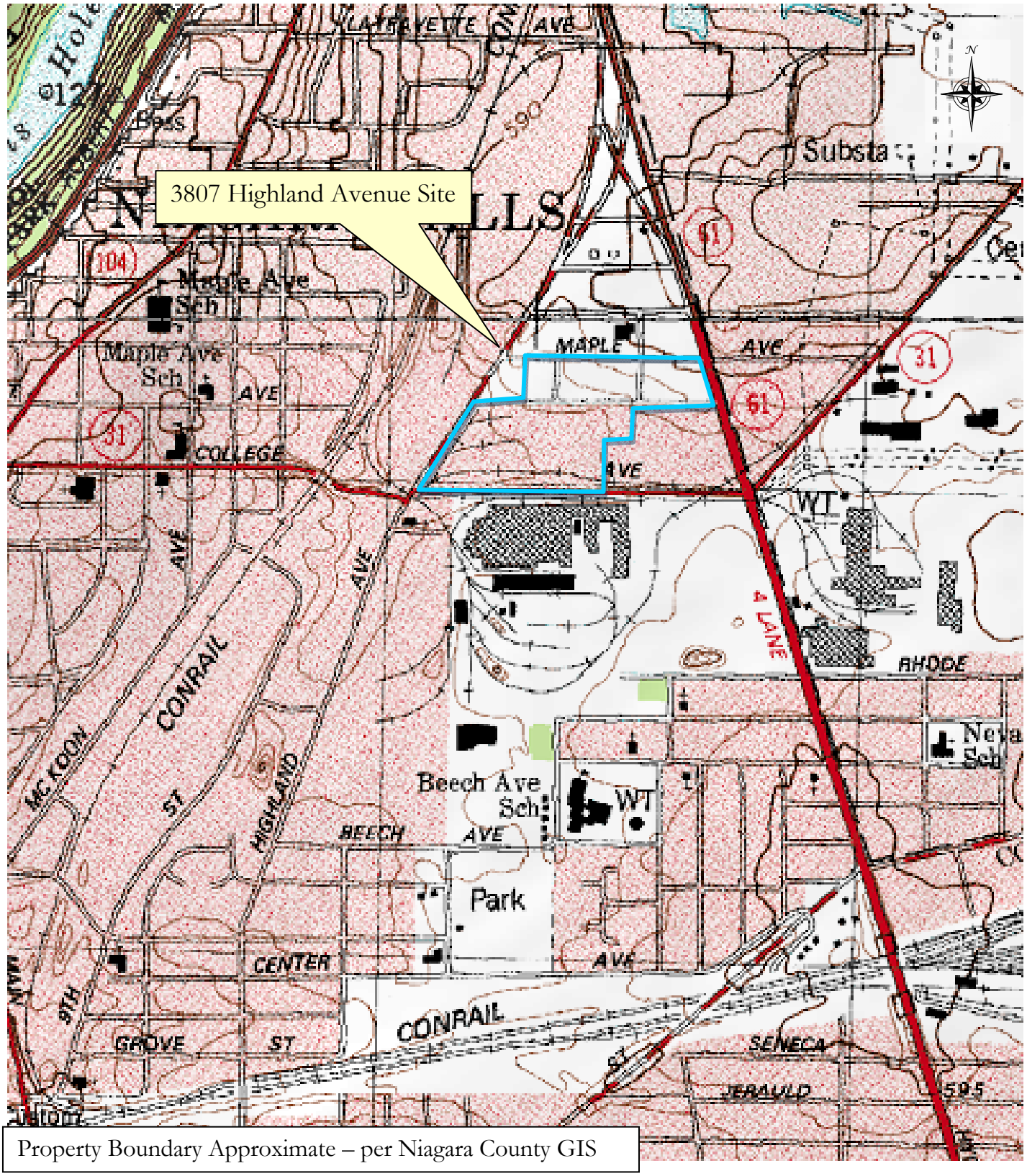
Activity	Respiratory Protection [1]	Clothing	Gloves [2]	Boots [2, 3]	Other Required PPE/Modifications [2, 4]
Post Remedial Tasks					
1. Test pit excavation, soil borings & soil sampling.	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS
2. Surface soil sampling.	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS
3. Drum and container sampling.	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS
4. Monitoring Well Installation and Groundwater Sampling	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS

Notes:

1. Respiratory equipment shall conform to guidelines presented in Section 7.0 of this HASP. The Level C requirement is an air-purifying respirator equiped with organic compound/acid gas/dust cartridge.
2. HH = hardhat; L= Latex; L/N = latex inner glove, nitrile outer glove; N = Nitrile; S = Saranex; SG = safety glasses; SGSS = safety glasses with sideshields; STSS = steel toe safety shoes.
3. Latex outer boot (or approved overboot) required whenever contact with contaminated materials may occur. SSHO may downgrade to STSS (steel-toed safety shoes) if contact will be limited to cover/replacement soils.
4. Dust masks shall be donned as directed by the SSHO (site safety and health officer) or site safety technician whenever potentially contaminated airborne particulates (i.e., dust) are present in significant amounts in the breathing zone. Goggles may be substituted with safety glasses w/side-shields whenever contact with contaminated liquids is not anticipated.

FIGURES

FIGURE 1



Property Boundary Approximate – per Niagara County GIS

BENCHMARK
ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0599

PROJECT NO.: 0170-001-300

DATE: MARCH 2010

DRAFTED BY: NTM

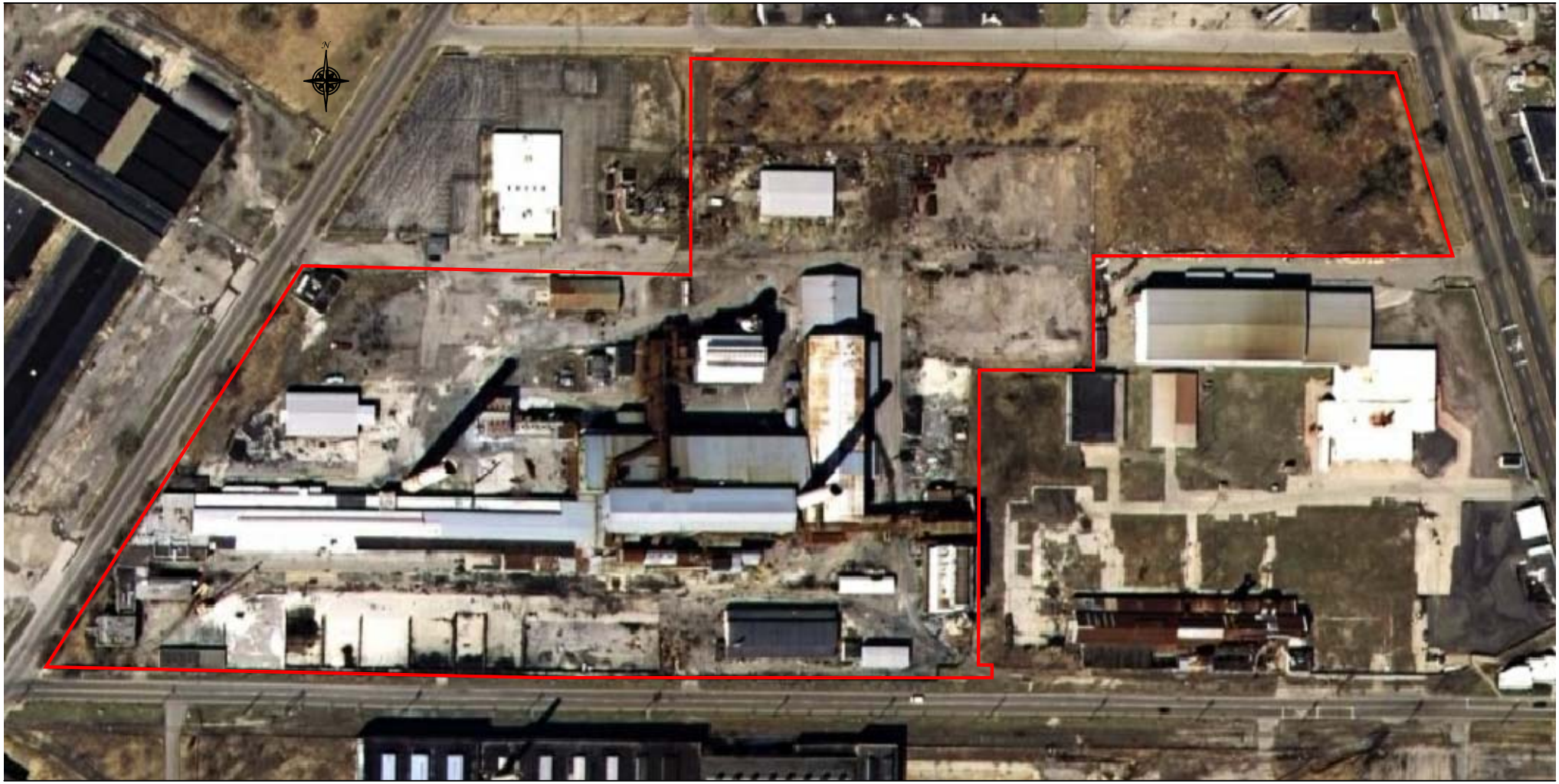
SITE LOCATION AND VICINITY MAP

3807 HIGHLAND AVENUE SITE

NIAGARA FALLS, NEW YORK

PREPARED FOR

GLOBE METALLURGICAL, INC & SOLSIL, INC.



BCP PROPERTY BOUNDARY

NOT TO SCALE

BENCHMARK
ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC
2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0599

PROJECT NO.: 0170-001-300

DATE: MARCH 2010

DRAFTED BY: NTM

SITE PLAN (AERIAL)

3807 HIGHLAND AVENUE SITE

NIAGARA FALLS, NEW YORK

PREPARED FOR

GLOBE METALLURGICAL, INC. & SOLSIL, INC.

FIGURE 2

APPENDIX A

EMERGENCY RESPONSE PLAN

EMERGENCY RESPONSE PLAN
for
BCP ACTIVITIES

at the
3807 HIGHLAND AVENUE SITE

NIAGARA FALLS, NEW YORK

March 2010 0170-001-300

Prepared for:

Globe Metallurgical, Inc. & Solsil, Inc.
Niagara Falls, New York

3807 HIGHLAND AVENUE SITE
EXAMPLE HEALTH AND SAFETY PLAN FOR BCP ACTIVITIES
HASP APPENDIX A: EMERGENCY RESPONSE PLAN

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LIST OF FIGURES

1.0 GENERAL

The site-specific Emergency Response Plan (ERP) referenced in the Site Health and Safety Plan (HASP) prepared for Brownfield Cleanup Program (BCP) activities at the 3807 Highland Avenue Site in Niagara Falls, New York. This appendix of the example HASP describes potential emergencies that may occur at the Site; procedures for responding to those emergencies; roles and responsibilities during emergency response; and training all workers must receive in order to follow emergency procedures. This ERP also describes the provisions this Site has made to coordinate its emergency response planning with other contractors on-site and with off-site emergency response organizations.

This ERP is consistent with the requirements of 29 CFR 1910.120(l) and provides the following site-specific information:

- Pre-emergency planning.
- Personnel roles, lines of authority, and communication.
- Emergency recognition and prevention.
- Safe distances and places of refuge.
- Evacuation routes and procedures.
- Decontamination procedures.
- Emergency medical treatment and first aid.
- Emergency alerting and response procedures.
- Critique of response and follow-up.
- Emergency personal protective equipment (PPE) and equipment.

2.0 PRE-EMERGENCY PLANNING

This Site has been evaluated for potential emergency occurrences, based on Site hazards, the required work tasks, the site topography, and prevailing weather conditions. The results of that evaluation indicate the potential for the following site emergencies to occur at the locations indicated.

Type of Emergency:

1. Medical, due to physical injury
2. Fire

Source of Emergency:

1. Slip/trip/fall
2. Fire

Location of Source:

1. Non-specific

3.0 ON-SITE EMERGENCY RESPONSE EQUIPMENT

Emergency procedures may require specialized equipment to facilitate worker rescue, contamination control and reduction, or post-emergency clean up. Emergency response equipment available on the Site is listed below. The equipment inventory and storage locations are based on the potential emergencies described above. This equipment inventory is designed to meet on-site emergency response needs and any specialized equipment needs that off-site responders might require because of the hazards at this Site but not ordinarily stocked.

Any additional personal protective equipment (PPE) required and stocked for emergency response is also listed in below. During an emergency, the Emergency Response Coordinator (ERC) is responsible for specifying the level of PPE required for emergency response. At a minimum, PPE used by emergency responders will comply with Section 7.0, Personal Protective Equipment, of this HASP. Emergency response equipment is inspected at regular intervals and maintained in good working order. The equipment inventory is replenished as necessary to maintain response capabilities.

Emergency Equipment	Quantity	Location
First Aid Kit	1	Site Vehicle
Chemical Fire Extinguisher	2 (minimum)	All heavy equipment and Site Vehicle

Emergency PPE	Quantity	Location
Full-face respirator	1 for each worker	Site Vehicle
Chemical-resistant suits	4 (minimum)	Site Vehicle

4.0 EMERGENCY PLANNING MAPS

An area-specific map of the Site will be developed on a daily basis during performance of field activities. The map will be marked to identify critical on-site emergency planning information, including: emergency evacuation routes, a place of refuge, an assembly point, and the locations of key site emergency equipment. Site zone boundaries will be shown to alert responders to known areas of contamination. There are no major topographical features, however the direction of prevailing winds/weather conditions that could affect emergency response planning are also marked on the map. The map will be posted at site-designated place of refuge and inside the Benchmark-TurnKey personnel field vehicle.

5.0 EMERGENCY CONTACTS

The following identifies the emergency contacts for this ERP.

Emergency Telephone Numbers:

Project Manager:	*Michael Lesakowski* Work: (716) 856-0599 Mobile: (716) 818-3954
Corporate Health and Safety Director:	*Thomas H. Forbes* Work: (716) 856-0599 Mobile: (716) 864-1730
Site Safety and Health Officer (SSHO):	*Bryan C. Hann* Work: (716) 856-0635 Mobile: (716) 870-1165
Alternate SSHO:	*Nathan Munley* Work: (716) 856-0635 Mobile: (716) 289-1072

NIAGARA FALLS MEMORIAL MEDICAL CENTER (ER):	(716) 278-4000
FIRE:	911
AMBULANCE:	911
NIAGARA FALLS POLICE:	911
STATE EMERGENCY RESPONSE HOTLINE:	(800) 457-7362
NATIONAL RESPONSE HOTLINE:	(800) 424-8802
NYSDOH:	(716) 847-4385
NYSDEC:	(716) 851-7220
NYSDEC 24-HOUR SPILL HOTLINE:	(800) 457-7252

The Site location is:

3807 Highland Avenue
Niagara Falls, New York 14305
Site Phone Number: (Insert Cell Phone or Field Trailer): _____

6.0 EMERGENCY ALERTING & EVACUATION

Internal emergency communication systems are used to alert workers to danger, convey safety information, and maintain site control. Any effective system can be employed. Two-way radio headsets or field telephones are often used when work teams are far from the command post. Hand signals and air-horn blasts are also commonly used. Every system must have a backup. It shall be the responsibility of each contractor's Site Health and Safety Officer to ensure an adequate method of internal communication is understood by all personnel entering the site. Unless all personnel are otherwise informed, the following signals shall be used.

1) Emergency signals by portable air horn, siren, or whistle: two short blasts, personal injury; continuous blast, emergency requiring site excavation.

2) Visual signals: hand gripping throat, out of air/cannot breathe; hands on top of head, need assistance; thumbs up, affirmative/ everything is OK; thumbs down, no/negative; grip partner's wrist or waist, leave area immediately.

If evacuation notice is given, site workers leave the worksite with their respective buddies, if possible, by way of the nearest exit. Emergency decontamination procedures detailed in Section 12.0 of the HASP are followed to the extent practical without compromising the safety and health of site personnel. The evacuation routes and assembly area will be determined by conditions at the time of the evacuation based on wind direction, the location of the hazard source, and other factors as determined by rehearsals and inputs from emergency response organizations. Wind direction indicators are located so that workers can determine a safe up wind or cross wind evacuation route and assembly area if not informed by the emergency response coordinator at the time the evacuation alarm sounds. Since work conditions and work zones within the site may be changing on daily basis, it shall be the responsibility of the construction Site Health and Safety Officer to review evacuation routes and procedures as necessary and to inform all TurnKey-Benchmark workers of any changes.

Personnel exiting the site will gather at a designated assembly point. To determine that everyone has successfully exited the site, personnel will be accounted for at the assembly

site. If any worker cannot be accounted for, notification is given to the SSHO (***Bryan Hann*** or ***Nathan Munley***) so that appropriate action can be initiated. Contractors and subcontractors on this site have coordinated their emergency response plans to ensure that these plans are compatible and that source(s) of potential emergencies are recognized, alarm systems are clearly understood, and evacuation routes are accessible to all personnel relying upon them.

7.0 EXTREME WEATHER CONDITIONS

In the event of adverse weather conditions, the Site Safety and Health Officer in conjunction with the Contractor's SSHO will determine if engineering operations can continue without sacrificing the health and safety of site personnel. Items to be considered prior to determining if work should continue include but are not limited to:

- Potential for heat/cold stress.
- Weather-related construction hazards (e.g., flooding or wet conditions producing undermining of structures or sheeting, high wind threats, etc).
- Limited visibility.
- Potential for electrical storms.
- Limited site access/egress (e.g., due to heavy snow)

8.0 EMERGENCY MEDICAL TREATMENT & FIRST AID

Personnel Exposure:

The following general guidelines will be employed in instances where health impacts threaten to occur acute exposure is realized:

- Skin Contact: Use copious amounts of soap and water. Wash/rinse affected area for at least 15 minutes. Decontaminate and provide medical attention. Eyewash stations will be provided on site. If necessary, transport to Mercy Hospital.
- Inhalation: Move to fresh air and, if necessary, transport to Mercy Hospital.
- Ingestion: Decontaminate and transport to Mercy Hospital.

Personal Injury:

Minor first-aid will be applied on-site as deemed necessary. In the event of a life threatening injury, the individual should be transported to the Niagara Falls Memorial Medical Center via ambulance. The Site Health and Safety Officer will supply available chemical specific information to appropriate medical personnel as requested.

First aid kits will conform to Red Cross and other applicable good health standards, and shall consist of a weatherproof container with individually sealed packages for each type of item. First aid kits will be fully equipped before being sent out on each job and will be checked weekly by the SSHO to ensure that the expended items are replaced.

Directions to Niagara Falls Memorial Medical Center (see Figure A-1):

- Travel south on Highland Avenue, which becomes 11th Street.
- Make a slight left onto Portage Rd.
- Turn right onto Pine Ave. (62-A)
- Turn left onto 10th St.

The Niagara Falls Memorial Medical Center is located at 621 10th St., and is approximately 2 miles south of the Site.

9.0 EMERGENCY RESPONSE CRITIQUE & RECORD KEEPING

Following an emergency, the SSHO and Project Manager shall review the effectiveness of this Emergency Response Plan (ERP) in addressing notification, control and evacuation requirements. Updates and modifications to this ERP shall be made accordingly. It shall be the responsibility of each contractor to establish and assure adequate records of the following:

- Occupational injuries and illnesses.
- Accident investigations.
- Reports to insurance carrier or State compensation agencies.
- Reports required by the client.
- Records and reports required by local, state, federal and/or international agencies.
- Property or equipment damage.
- Third party injury or damage claims.
- Environmental testing logs.
- Explosive and hazardous substances inventories and records.
- Records of inspections and citations.
- Safety training.

10.0 EMERGENCY RESPONSE TRAINING

All persons who enter the worksite, including visitors, shall receive a site-specific briefing about anticipated emergency situations and the emergency procedures by the SSHO. Where this site relies on off-site organizations for emergency response, the training of personnel in those off-site organizations has been evaluated and is deemed adequate for response to this site.

3807 Highland Avenue Site
3807 Highland Avenue
Niagara Falls, NY 14304

Emergency number:
(740) 336-4164

Niagara Falls Memorial Medical Center
621 10th Street
Niagara Falls, NY 14301

(716) 278-4000

From Site:

- Turn south on Highland Ave, which becomes 11th Street
- Make slight left on Portage Road
- Turn right on Pine Avenue
- Turn Left on 10th Street
- Niagara Falls Memorial Medical Center is on left 2.1 miles from Site (621 10th Street)

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC
2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0599

PROJECT NO.: 0170-001-102

DATE: SEPTEMBER 2009

DRAFTED BY: NTM

HOSPITAL ROUTE MAP

EMERGENCY RESPONSE PLAN

3807 HIGHLAND AVENUE SITE

NIAGARA FALLS, NEW YORK

PREPARED FOR

GLOBE METALLURGICAL, INC.

FIGURE A-1

APPENDIX B

HOT WORK PERMIT FORM

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

HOT WORK PERMIT

PART 1 - INFORMATION

Issue Date:

Date Work to be Performed: Start: | Finish (permit terminated):

Performed By:

Work Area:

Object to be Worked On:

PART 2 - APPROVAL

(for 1, 2 or 3: mark Yes, No or NA)*

Will working be on or in:	Finish (permit terminated):	
1. Metal partition, wall, ceiling covered by combustible material?	yes	no
2. Pipes, in contact with combustible material?	yes	no
3. Explosive area?	yes	no

* = If any of these conditions exist (marked "yes"), a permit will not be issued without being reviewed and approved by Thomas H. Forbes (Corporate Health and Safety Director). Required Signature below.

PART 3 - REQUIRED CONDITIONS**

(Check all conditions that must be met)

	PROTECTIVE ACTION		PROTECTIVE EQUIPMENT
	Specific Risk Assessment Required		Goggles/visor/welding screen
	Fire or spark barrier		Apron/fireproof clothing
	Cover hot surfaces		Welding gloves/gauntlets/other:
	Move movable fire hazards, specifically		Wellintons/Knee pads
	Erect screen on barrier		Ear protection: Ear muffs/Ear plugs
	Restrict Access		B.A.: SCBA/Long Breather
	Wet the ground		Respirator: Type:
	Ensure adequate ventilation		Cartridge:
	Provide adequate supports		Local Exhaust Ventilation
	Cover exposed drain/floor or wall cracks		Extinguisher/Fire blanket
	Fire watch (must remain on duty during duration of permit)		Personal flammable gas monitor
	Issue additional permit(s):		

Other precautions:

** Permit will not be issued until these conditions are met.

SIGNATURES

Orginating Employee:	Date:
Project Manager:	Date:
Part 2 Approval:	Date:

Prepared By: _____

APPENDIX C-1

NYSDOH GENERIC COMMUNITY AIR MONITORING PLAN

New York State Department of Health
Generic Community Air Monitoring Plan [1]

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for volatile organic compounds (VOCs) and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate NYSDEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

[1] Taken from Appendix 1A of the Draft DER-10 Technical Guidance for Site Investigation and Remediation, December 2002.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring

particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m3 above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m3 of the upwind level and in preventing visible dust migration.

All readings must be recorded and be available for State (DEC and DOH) personnel to review.

APPENDIX C-2

TAGM #4031- FUGITIVE DUST SUPPRESSION AND PARTICULATE MONITORING PROGRAM

TECHNICAL AND ADMINISTRATIVE GUIDANCE MEMORANDUM #4031

FUGITIVE DUST SUPPRESSION AND PARTICULATE MONITORING PROGRAM AT INACTIVE HAZARDOUS WASTE SITES

TO: Regional Hazardous Waste Remediation Engrs., Bur. Directors & Section Chiefs

FROM: Michael J. O'Toole, Jr., Director, Division of Hazardous Waste Remediation

SUBJECT: DIVISION TECHNICAL AND ADMINISTRATIVE GUIDANCE MEMORANDUM -- FUGITIVE DUST SUPRESSION AND PARTICULATE MONITORING PROGRAM AT INACTIVE HAZARDOUS WASTE SITES

DATE: Oct 27, 1989

Michael J. O'Toole, Jr. (signed)

1. Introduction

Fugitive dust suppression, particulate monitoring, and subsequent action levels for such must be used and applied consistently during remedial activities at hazardous waste sites. This guidance provides a basis for developing and implementing a fugitive dust suppression and particulate monitoring program as an element of a hazardous waste site's health and safety program.

2. Background

Fugitive dust is particulate matter--a generic term for a broad class of chemically and physically diverse substances that exist as discrete particles, liquid droplets or solids, over a wide range of sizes--which becomes airborne and contributes to air quality as a nuisance and threat to human health and the environment.

On July 1, 1987, the United States Environmental Protection Agency (USEPA) revised the ambient air quality standard for particulates so as to reflect direct impact on human health by setting the standard for particulate matter less than ten microns in diameter (PM_{10}); this involves fugitive dust whether contaminated or not. Based upon an examination of air quality composition, respiratory tract deposition, and health effects, PM_{10} is considered conservative for the primary standard--that requisite to protect public health with an adequate margin of safety. The primary standards are 150 ug/m^3 over a 24-hour averaging time and 50 ug/m^3 over an annual averaging time. Both of these standards are to be averaged arithmetically.

There exists real-time monitoring equipment available to measure PM_{10} and capable of integrating over a period of six seconds to ten hours. Combined with an adequate fugitive dust suppression program, such equipment will aid in preventing the off-site migration of contaminated soil. It will also protect both on-site personnel from exposure to high levels of dust and the public around the site from any exposure to any dust. While specifically intended for the protection of on-site personnel as well as the public, this program is not meant to replace long-term monitoring which may be required given the contaminants inherent to the site and its air quality.

3. Guidance

A program for suppressing fugitive dust and monitoring particulate matter at hazardous waste sites can be developed without placing an undue burden on remedial activities while still being protective of health and environment. Since the responsibility for implementing this program ultimately will fall on the party performing the work, these procedures must be incorporated into appropriate work plans. The following fugitive dust suppression and particulate monitoring program will be employed at hazardous waste sites during construction and other activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Such activities shall also include the excavation, grading, or placement of clean fill, and control measures therefore should be considered.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM_{10}) with the following minimum performance standards:

   Object to be measured: Dust, Mists, Aerosols
   Size range: <0.1 to 10 microns
   Sensitivity: 0.001 mg/m^3
   Range: 0.001 to 10 mg/m^3
   Overall Accuracy: ±10% as compared to gravimetric analysis of stearic acid or reference dust

   Operating Conditions:
   Temperature: 0 to 40°C
   Humidity: 10 to 99% Relative Humidity

   Power: Battery operated with a minimum capacity of eight hours continuous operation

   Automatic alarms are suggested.

   Particulate levels will be monitored immediately downwind at the working site and integrated over a period not to exceed 15 minutes. Consequently, instrumentation

shall require necessary averaging hardware to accomplish this task; the P-5 Digital Dust Indicator as manufactured by MDA Scientific, Inc. or similar is appropriate.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the entity operating the equipment to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m^3 over the integrated period not to exceed 15 minutes. While conservative, this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m^3, the upwind background level must be measured immediately using the same portable monitor. If the working site particulate measurement is greater than 100 ug/m^3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see Paragraph 7). Should the action level of 150 ug/m^3 be exceeded, the Division of Air Resources must be notified in writing within five working days; the notification shall include a description of the control measures implemented to prevent further exceedences.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM_{10} at or above the action level. Since this situation has the potential to migrate contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

    1. Applying water on haul roads.
    2. Wetting equipment and excavation faces.
    3. Spraying water on buckets during excavation and dumping.
    4. Hauling materials in properly tarped or watertight containers.
    5. Restricting vehicle speeds to 10 mph.
    6. Covering excavated areas and material after excavation activity ceases.
    7. Reducing the excavation size and/or number of excavations.

    Experience has shown that utilizing the above-mentioned dust suppression techniques, within reason as not to create excess water which would result in

unacceptable wet conditions, the chance of exceeding the 150 ug/m^3 action level at hazardous waste site remediations is remote. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. If the dust suppression techniques being utilized at the site do not lower particulates to an acceptable level (that is, below 150 ug/m^3 and no visible dust), work must be suspended until appropriate corrective measures are approved to remedy the situation. Also, the evaluation of weather conditions will be necessary for proper fugitive dust control--when extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended.

There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require appropriate toxics monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

APPENDIX D

SITE-WIDE INSPECTION FORMS

New York State Department of Environmental Conservation
Division of Environmental Remediation, 11th Floor
625 Broadway, Albany, New York 12233-7011
Phone: (518) 402-9553 **Fax:** (518) 402-9577
Website: www.dec.ny.gov

45-Day Reminder Notice: Site Management Periodic Review

,

September 29, 2009
Site Name:
Site No.:
Site Address:
, NY

Dear :

This is a reminder that as part of the last phase of a site's remedial program (i.e., "Site Management" (SM)), a progress report for your site is to be submitted by you, the site owner or Remedial Party, to the New York State Department of Environmental Conservation (Department) by . This report, now referred to as the Periodic Review Report (PRR) documents the implementation of and compliance with the Site Management requirements for this site. SM is a concept defined in regulation (6 NYCRR 375-1.2(at)). A suggested outline for the PRR is enclosed. If the site is comprised of multiple properties or parcels, then you as the owner or Remedial Party must arrange to submit one PRR for all parcels that comprise the site.

Depending on the age of the remedial program for your site, the document(s) governing SM for your site will be different. Previously, SM requirements were contained in separate documents with specific titles (e.g., Operation, Maintenance, and Monitoring Plan or Soil Management Plan) and are now being incorporated into one comprehensive "Site Management Plan" (SMP). A SMP may contain one or all of the following elements as applicable to the site; a plan to maintain institutional and/or engineering controls ("IC/EC Plan"), a plan for monitoring the performance and effectiveness of the selected remedy ("Monitoring Plan"), and/or a plan for the operation and maintenance of the selected remedy ("O&M Plan"). Additionally, the requirements for SM are normally stated in the decision document (e.g., Record of Decision) and/or the legal agreement directing the remediation of the site (e.g., order on consent, voluntary agreement, etc.).

When you submit the PRR (by the due date above), please sign and include the enclosed forms documenting that all SM requirements are being met. If there is some reason you cannot certify that all SM requirements are being met, you should indicate this and include a statement of explanation in the PRR with a schedule for addressing the problem(s). The Periodic Review process will not be considered complete until all necessary corrective measures are completed and any required controls are certified. Instructions for completing the certifications are enclosed.

Enclosures

ec: , Project Manager
, Bureau Director
Hazardous Waste Remediation Engineer, Region
Gary Litwin, DOH

cc:

Enclosure
Periodic Review Report (PRR) General Guidance

I. Introduction: (½-page or less)

A. Provide a brief summary of site, nature and extent of contamination, and remedial history.

B. Effectiveness of the Remedial Program - Provide overall conclusions regarding;
   1. progress made during the reporting period toward meeting the remedial objectives for the site
   2. the ultimate ability of the remedial program to achieve the remedial objectives for the site.

C. Compliance
   1. Identify any areas of non-compliance regarding the major elements of the Site Management Plan (SMP, i.e., the Institutional/Engineering Control (IC/EC) Plan, the Monitoring Plan, and the Operation & Maintenance (O&M) Plan).
   2. Propose steps to be taken and a schedule to correct any areas of non-compliance.

D. Recommendations
   1. recommend whether any changes to the SMP are needed
   2. recommend any changes to the frequency for submittal of PRRs (increase, decrease)
   3. recommend whether the requirements for discontinuing site management have been met.

II. Site Overview (one page or less)

A. Describe the site location, boundaries (figure), significant features, surrounding area, and the nature and extent of contamination prior to site remediation.

B. Describe the chronology of the main features of the remedial program for the site, the components of the selected remedy, cleanup goals, site closure criteria, and any significant changes to the selected remedy and site that have been made since remedy selection.

III. Evaluate Remedy Performance, Effectiveness, and Protectiveness

A. Using tables, graphs, charts and bulleted text to the extent practicable, describe the effectiveness of the remedy in achieving the remedial goals for the site. Base findings, recommendations, and conclusions on objective data. Evaluations should be presented simply and concisely.

IV. IC/EC Plan Compliance Report (if applicable)

A. IC/EC Requirements and Compliance
   1. Describe each control, its objective, and how performance of the control is evaluated.
   2. Summarize the status of each goal (whether it is fully in place and its effectiveness).
   3. Corrective Measures: describe steps proposed to address any deficiencies in ICECs.
   4. Conclusions and recommendations for changes.

B. IC/EC Certification
   1. The certification must be complete (even if there are IC/EC deficiencies), and certified by the appropriate party as set forth in a Department-approved certification form(s).

V. **Monitoring Plan Compliance Report (if applicable)**

A. Components of the Monitoring Plan (tabular presentations preferred) - Describe the requirements of the monitoring plan by media (i.e., soil, groundwater, sediment, etc.) and by any remedial technologies being used at the site.

B. Summary of Monitoring Completed During Reporting Period - Describe the monitoring tasks actually completed during this PRR reporting period. Tables and/or figures should be used to show all data.

C. Comparisons with Remedial Objectives - Compare the results of all monitoring with the remedial objectives for the site. Include trend analyses where possible.

D. Monitoring Deficiencies - Describe any ways in which monitoring did not fully comply with the monitoring plan.

E. Conclusions and Recommendations for Changes - Provide overall conclusions regarding the monitoring completed and the resulting evaluations regarding remedial effectiveness.

VI. **Operation & Maintenance (O&M) Plan Compliance Report (if applicable)**

A. Components of O&M Plan - Describe the requirements of the O&M plan including required activities, frequencies, recordkeeping, etc.

B. Summary of O&M Completed During Reporting Period - Describe the O&M tasks actually completed during this PRR reporting period.

C. Evaluation of Remedial Systems - Based upon the results of the O&M activities completed, evaluated the ability of each component of the remedy subject to O&M requirements to perform as designed/expected.

D. O&M Deficiencies - Identify any deficiencies in complying with the O&M plan during this PRR reporting period.

E. Conclusions and Recommendations for Improvements - Provide an overall conclusion regarding O&M for the site and identify problems, their severity, and any suggested improvements requiring changes in the O&M Plan.

VII. **Overall PRR Conclusions and Recommendations**

A. Compliance with SMP - For each component of the SMP (i.e., IC/EC, monitoring, O&M), summarize;

1. whether all requirements of each plan were met during the reporting period
2. any requirements not met such as new completed exposure pathways resulting in unacceptable risk
3. proposed plans and a schedule for coming into full compliance.

B. Performance and Effectiveness of the Remedy - Based upon your evaluation of the components of the SMP, form conclusions about the performance of each component and the ability of the remedy to achieve the remedial objectives for the site.

C. Future PRR Submittals

1. Recommend, with supporting justification, whether the frequency of the submittal of PRRs should be changed (either increased or decreased).
2. If the requirements for site closure have been achieved, contact the Department's Project Manager for the site to determine what, if any, additional documentation is needed to support a decision to discontinue site management.

VIII. **Additional Guidance**

A. Additional guidance regarding the preparation and submittal of an acceptable PRR can be obtained from the Department's Project Manager for the site.

WHERE to mail the signed Certification Form by :

New York State Department of Environmental Conservation

Attn: , Project Manager

Please note that extra postage may be required.

Enclosure 1

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Site Management Periodic Review Report Notice
Institutional and Engineering Controls Certification Form

Site Details **Box 1**

Site No.

Site Name

Site Address: Zip Code:
City/Town:
County:
Allowable Use(s) (if applicable, does not address local zoning):
Site Acreage:
Owner:
, , NY

Reporting Period: to

Verification of Site Details **Box 2**

	YES	NO
1. Is the information in Box 1 correct?	☐	☐
If NO, are changes handwritten above or included on a separate sheet?	☐	
2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?	☐	☐
If YES, is documentation or evidence that documentation has been previously submitted included with this certification?	☐	
3. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	☐	☐
If YES, is documentation (or evidence that documentation has been previously submitted) included with this certification?	☐	
4. If use of the site is restricted, is the current use of the site consistent with those restrictions?	☐	☐
If NO, is an explanation included with this certification?	☐	
5. For non-significant-threat Brownfield Cleanup Program Sites subject to ECL 27-1415.7(c), has any new information revealed that assumptions made in the Qualitative Exposure Assessment regarding offsite contamination are no longer valid?	☐	☐
If YES, is the new information or evidence that new information has been previously submitted included with this Certification?	☐	
6. For non-significant-threat Brownfield Cleanup Program Sites subject to ECL 27-1415.7(c), are the assumptions in the Qualitative Exposure Assessment still valid (must be certified every five years)?	☐	☐
If NO, are changes in the assessment included with this certification?	☐	

SITE NO. Box 3

Description of Institutional Controls

Box 4

Description of Engineering Controls

Box 5

Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

   a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

   b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and compete.

YES	NO
☐	☐

2. If this site has an IC/EC Plan (or equivalent as required in the Decision Document), for each Institutional or Engineering control listed in Boxes 3 and/or 4, I certify by checking "YES" below that all of the following statements are true:

   (a) the Institutional Control and/or Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

   (b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

   (c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control;

   (d) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and

   (e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

YES	NO
☐	☐

3. If this site has an Operation and Maintenance (O&M) Plan (or equivalent as required in the Decision Document);

   I certify by checking "YES" below that the O&M Plan Requirements (or equivalent as required in the Decision Document) are being met.

YES	NO
☐	☐

4. If this site has a Monitoring Plan (or equivalent as required in the remedy selection document);

   I certify by checking "YES" below that the requirements of the Monitoring Plan (or equivalent as required in the Decision Document) is being met.

YES	NO
☐	☐

IC CERTIFICATIONS
SITE NO.

Box 6

SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE

I certify that all information and statements in Boxes 2 and/or 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I _____ at _____,
print name print business address

am certifying as _____(Owner or Remedial Party)

for the Site named in the Site Details Section of this form.

_____ _____
Signature of Owner or Remedial Party Rendering Certification Date

IC/EC CERTIFICATIONS

Box 7

QUALIFIED ENVIRONMENTAL PROFESSIONAL (QEP) SIGNATURE

I certify that all information in Boxes 4 and 5 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I _____ at _____,
print name print business address

am certifying as a Qualified Environmental Professional for the _____

(Owner or Remedial Party) for the Site named in the Site Details Section of this form.

_____ _____ _____
Signature of Qualified Environmental Professional, for the Owner or Remedial Party, Rendering Certification Stamp (if Required) Date

Enclosure 2

Certification Instructions

I. Verification of Site Details (Box 1 and Box 2):

Answer the six questions in the Verification of Site Details Section. Questions 5 and 6 only refer to sites in the Brownfield Cleanup Program. The Owner and/or Qualified Environmental Professional (QEP) may include handwritten changes and/or other supporting documentation, as necessary.

II. Certification of Institutional / Engineering Controls (Boxes 3, 4, and 5)

1. Review the listed IC/ECs, confirming that all existing controls are listed, and that all existing controls are still applicable. If there is a control that is no longer applicable the Owner / Remedial Party is to petition the Department requesting approval to remove the control.

2. In Box 5, complete certifications for all Plan components, as applicable, by checking the corresponding checkbox.

3. If you cannot certify "YES" for each Control and/or certify the other SM Plan components that are applicable, continue to complete the remainder of this **Certification** form. Attach supporting documentation that explains why the **Certification** cannot be rendered, as well as a statement of proposed corrective measures, and an associated schedule for completing the corrective measures. Note that this **Certification** form must be submitted even if an IC or EC cannot be certified; however, the certification process will not be considered complete until corrective action is completed.

   If the Department concurs with the explanation, the proposed corrective measures, and the proposed schedule, a letter authorizing the implementation of those corrective measures will be issued by the Department's Project Manager. Once the corrective measures are complete, a new Periodic Review Report (with IC/EC Certification) is to be submitted within 45 days to the Department. If the Department has any questions or concerns regarding the PRR and/or completion of the IC/EC Certification, the Project Manager will contact you.

III. IC/EC Certification by Signature (Box 6 and Box 7):

If you certified "YES" for each Control, please complete and sign the IC/EC Certifications page. Where the only control is an Institutional Control on the use of the property the certification statement in Box 6 shall be completed and may be made by the property owner. Where the site has Institutional and Engineering Controls, the certification statement in Box 7 must be completed by a Professional Engineer or Qualified Environmental Professional (see table below).

Table 1. Signature Requirements for Control Certification Page

Type of Control	Example of IC/EC	Required Signatures
EC which does not include a treatment system or engineered caps.	Fence, Clean Soil Cover, Individual House Water Treatment System, Vapor Mitigation System	A site or property owner or remedial party, and a QEP. (P.E. license not required)
EC that includes treatment system or an engineered cap.	Pump & Treat System providing hydraulic control of a plume, Part 360 Cap.	A site or property owner or remedial party, and a QEP with a P.E. license.

APPENDIX E

QUALITY ASSURANCE PROJECT PLAN (QAPP)

QUALITY ASSURANCE PROJECT PLAN
for BCP ACTIVITIES

3807 HIGHLAND AVENUE SITE
NIAGARA FALLS, NEW YORK
BCP SITE NO. C932145

March 2010 0170-001-300

Prepared for:

Globe Metallurgical, Inc. & Solsil, Inc.

QUALITY ASSURANCE PROJECT PLAN (QAPP)

3807 Highland Avenue Site

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1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) is an appendix to the Site Management Plan (SMP), which is a required element of the remedial program at the 3807 Highland Avenue Site (hereinafter referred to as the "Site") under the New York State (NYS) Brownfield Cleanup Program (BCP), administered by New York State Department of Environmental Conservation (NYSDEC). The site was remediated in accordance with Brownfield Cleanup Agreement (BCA) Index # B9-0793-08-11, Site #C932145, which was executed on September 4, 2009.

1.1 Site Location and Description

The Site is located in the City of Niagara Falls, County of Niagara, New York. The site is an approximately 22.25-acre area bordered by College Avenue to the south, Highland Avenue to the west, Maple Avenue to the north, and Hyde Park to the east. The Site is located in the City of Niagara Falls, County of Niagara, New York. The 22.25-acre BCP parcel is comprised of 10 contiguous parcels as identified below.

- 3801 Highland Avenue - SBL No. 130.14.2.41
- 4002 Hyde Park – SBL No. 130.15-1-8
- 4024 Hyde Park – SBL No. 130.15-1-17
- 1725 Maple Avenue – SBL No. 130.15-1-13
- 1911 Maple Avenue – SBL No. 130.15-1-6
- 1925 Maple Avenue – SBL No. 130.15-1-16
- 1702 Massachusetts Avenue – SBL No. 130.15-1-12
- 1724 Massachusetts Avenue – SBL No. 130.15-1-11.1
- 1914 Massachusetts Avenue – SBL No. 130.15-1-15
- 1930 Massachusetts Avenue – SBL No. 130.15-1-7

The boundaries of the site are more fully described in the Environmental Easement (See Appendix B of the SMP).

1.2 Site Environmental History

A Phase I Environmental Site Assessment (ESA) was conducted by Benchmark in September 2008 for the Site. The ESA identified several recognized environmental conditions (RECs) related to historic industrial manufacturing, including multiple current and historical underground storage tanks (USTs) and aboveground storage tanks (ASTs), numerous drums, maintenance/repair buildings, former oil houses, former transformer rooms, current/former electrical substations, a former waste battery storage area, and a former smoke stack.

In September 2008, Benchmark conducted a limited Preliminary Site Investigation at the Site. The limited investigation included soil borings to evaluate potential impacts associated with past heavy industrial operations, and to provide general characterization of the property. Surface, sub-surface soil/fill and historical stack deposit samples were collected for analysis. Based on the results of the investigation, Benchmark recommended that a BCP application be submitted to the NYSDEC.

In January 2009, Benchmark completed a Supplemental Investigation at the Site. The supplemental investigation included collection of samples from industrial storage and maintenance buildings, sumps, and areas of the site related to spent electrode storage and handling. Analytical results detected elevated concentrations of volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), which are a subset of semi-volatile organic compounds (SVOCs), metals and polychlorinated biphenyls (PCBs) at several locations across the site. Of particular interest, PAHs and arsenic were detected above New York State Department of Environmental Conservation (NYSDEC) Part 375 Industrial soil cleanup objectives (SCOs).

Co-applicants Globe and Solsil elected to pursue cleanup and redevelopment of the Site under the New York State Brownfield Cleanup Program (BCP), and executed a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC) on September 4, 2009 (BCP Site No. C932145). The Remedial Investigation/Alternatives Analysis Report/Interim Remedial Measures (RI/AAR/IRM) Work Plan was approved by the NYSDEC on September 30, 2009. Benchmark performed RI activities at the Site from October 2009 through January 2010, and IRM activities were conducted at the Site from November 2009 through March 2010.

An RI was completed to characterize the nature and extent of contamination at the Site. Remedial investigation field activities included: advancement of soil borings and monitoring well installation; excavation of test pits; and surface soil, sediment, stack deposits, subsurface soil and groundwater sampling. The IRM fieldwork generally included: excavation and off-Site disposal of impacted soil/fill; backfill/Site restoration; removal and disposal of historic stack deposits; loading and off-Site disposal of a soil/fill/debris pile; removal of multiple drums and product containers; cleaning and removal of seven former AST's; off-Site disposal of three spent electrodes; collection and disposal/recycling of waste grease, laboratory wastes and electronic wastes.

Based on the Alternatives Analysis evaluation, it was concluded that the IRM, together with implementation of a Site Management Plan, satisfies the remedial action objectives and is protective of human health and the environment, and was selected as the final remedial approach for the 3807 Highland Avenue Site.

2.0 PROJECT ORGANIZATION AND RESPONSIBILITY

The following section provides a generic organization for sampling activities, including roles, responsibilities, and required qualifications of these organizations.

2.1 NYSDEC and NYSDOH

It is the responsibility of the New York State Department of Environmental Conservation (NYSDEC), in conjunction with the New York State Department of Health, to review the project documents for completeness and conformance with the site-specific cleanup objectives and to make a decision to accept or reject these documents based on this review. The NYSDEC also has the responsibility and authority to review and approve all QA documentation collected during brownfield cleanup construction and to confirm that the QA Plan was followed.

2.2 Property Owner

The property owner (Owner), or holder of the certificate of completion (COC) will be responsible for complying with the QA requirements as specified herein and for monitoring and controlling the quality of the Brownfield cleanup acttivities either directly or through their designated environmental consultant and/or legal counsel. The Owner will also have the authority to select Contractor(s) to assist them in fulfilling these responsibilities. The Owner is responsible for implementing the project, and has the authority to commit the resources necessary to meet project objectives and requirements.

2.3 Project Manager

The Project Manager has the responsibility for ensuring that the project meets the overall project objectives, reports directly to the Owner, coordinates with the NYSDEC/NYSDOH Project Coordinators, and is responsible for technical and project oversight. The PM will:

- Define project objectives and develop a detailed work plan schedule.
- Establish project policy and procedures to address the specific needs of the project as a whole, as well as the objectives of each task.

- Acquire and apply technical and corporate resources as needed to assure performance within budget and schedule constraints.
- Develop and meet ongoing project and/or task staffing requirements, including mechanisms to review and evaluate each task product.
- Review the work performed on each task to assure its quality, responsiveness, and timeliness.
- Review and analyze overall task performance with respect to planned requirements and authorizations.
- Review and approve all deliverables before their submission to NYSDEC.
- Develop and meet ongoing project and/or task staffing requirements, including mechanisms to review and evaluate each task product.
- Ultimately be responsible for the preparation and quality of interim and final reports.
- Represent the project team at meetings.

2.4 Field Team Leader:

The Field Team Leader (FTL) has the responsibility for implementation of specific project tasks identified at the Site, and is responsible for the supervision of project field personnel, subconsultants, and subcontractors. The FTL reports directly to the Project Manager. The FTL will:

- Define daily develop work activities.
- Orient field staff concerning the project's special considerations.
- Monitor and direct subcontractor personnel.
- Review the work performed on each task to ensure its quality, responsiveness, and timeliness.
- Assure that field activities, including sample collection and handling, are carried out in accordance with this QAPP.

2.5 Quality Assurance (QA) Officer

The QA Officer will have direct access to corporate executive staff as necessary, to resolve any QA dispute, and is responsible for auditing the implementation of the QA

program in conformance with the demands of specific investigations and policies, and NYSDEC requirements. Specific function and duties include:

- Performing QA audits on various phases of the field operations.
- Reviewing and approving QA plans and procedures.
- Providing QA technical assistance to project staff.
- Reporting on the adequacy, status, and effectiveness of the QA program on a regular basis to the Project Manager for technical operations.
- Responsible for assuring third party data review of all sample results from the analytical laboratory.

2.6 Laboratory Responsibilities

Any environmental laboratory utilized for sample analysis for this Site must be an independent, NY State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP)-certified facility approved to perform the analyses prescribed herein.

- *Laboratory Director:*

  The Laboratory Director is a technical advisor and is responsible for summarizing and reporting overall unit performance. Responsibilities of the TestAmerica Laboratory Director include:

  - Provide technical, operational, and administrative leadership.
  - Allocation and management of personnel and equipment resources.
  - Quality performance of the facility.
  - Certification and accreditation activities.
  - Blind and reference sample analysis.

- *Quality Assurance Manager (QA Manager):*

  The QA Manager has the overall responsibility for data after it leaves the laboratory. The QA Manager will be independent of the laboratory but will

communicate data issues through the Laboratory Director. In addition, the QA Manager will:

- Oversee laboratory QA.
- Oversee QA/QC documentation.
- Conduct detailed data review.
- Determine whether to implement laboratory corrective actions, if required.
- Define appropriate laboratory QA procedures.
- Prepare laboratory SOPs.

3.0 QUALITY ASSURANCE OBJECTIVES FOR MEASUREMENT DATA

The overall objectives and criteria for assuring quality for this effort are discussed below. This QAPP addresses how the acquisition and handling of samples and the review and reporting of data will be documented. The objectives of this QAPP are to address the following:

- The procedures to be used to collect, preserve, package, and transport groundwater samples.
- Field data collection.
- Record keeping.
- Data management.
- Chain-of-custody procedures.
- Precision, accuracy, completeness, representativeness, for sample analysis and data management under EPA analytical methods.

Analytical methods and detection/reporting limits for chemical parameters that may be analyze are listed in Tables 1 and 2. In addition, water levels and select water quality parameters (i.e., pH, turbidity, specific conductance, and temperature) will be measured in the field as described in the FOPs located in the SMP

The goals for precision, accuracy, and completeness intended for use on this project are discussed in Sections 3.1 through 3.3 of this QAPP. All data will be reported completely. No data will be omitted unless an error occurred in the analyses or the run was invalidated because of QC sample recovery or poor precision.

3.1 Precision

Precision is a measurement of the degree to which two or more measurements are in agreement, which is quantitatively assessed based on the standard deviation. Precision in the laboratory is assessed through the calculation of relative percent difference (RPD) and relative calculation of relative standard deviations (RSD) for three or more replicate samples. General precision goals are provided in Table 3.

Laboratory precision will be assessed through the analysis of matrix spike/matrix spike duplicate (MS/MSD) and field duplicate samples for organic parameters. For inorganic parameters, precision will be assessed through the analysis of matrix spike/ duplicates field duplicate pairs. Precision for field parameters, including pH, turbidity, specific conductance, and temperature will be determined through duplicate analysis of 1 in every 20 samples. Precision control limits for field-measured parameters are provided in Table 4.

3.2 Accuracy

Accuracy is the degree of agreement between an observed value and an accepted reference of true value. Accuracy in the field is assessed through the use of field blanks and trip blanks and through the adherence to all sample handling, preservation and holding times. One trip blank will accompany each batch of water matrix sample containers shipped to the laboratory for volatile organic chemical analysis. Laboratory accuracy is assessed through the analysis of a matrix spike/matrix spike duplicate (MS/MSD) (1 per 20 samples), standard reference materials (SRM), laboratory control samples (LCS), and surrogate compounds, and the determination of percent recoveries. The equation to be used for accuracy for this investigation is found in Section 10.1 of this QAPP. Accuracy control limits for the laboratory are given in Table 3.

3.3 Completeness

Data completeness is a measure of the amount of valid data obtained from a prescribed measurement system as compared with that expected and required to meet the project goals. Laboratory and field completeness will be addressed by applying data quality checks and assessments described in Section 3.1 and 3.2 and Section 7.0 to ensure that the data collected are valid and significant.

As shown on Table 3, the laboratory completeness objectives will be 90 percent or greater. A third party data validator will follow procedures described in Section 7.2 to assess the completeness and validity of laboratory data deliverables. For this investigation, 100 percent of all laboratory analytical results will undergo third party data review. The completeness of an analysis will be documented by including in the report sufficient information to allow the data validator to assess the quality of the results.

Raw data such as chromatograms, spectra, calibration data, laboratory worksheets and notes, etc will not be produced with the analytical data reporting package but will be stored with the sample results in the laboratory and made available upon request, if necessary, to substantiate analytical results. The raw data will be archived for at least two years by the laboratory. The laboratory will retain all analytical information; regardless of whether Benchmark requests the substantiation of results.

3.4 Data Representativeness

Data representativeness expresses the degree to which data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition within a defined spatial and/or temporal boundary. All proposed field-testing and measurement procedures were selected to maximize the degree to which the field data will represent the conditions at the Site, and the matrix being sampled or analyzed.

As described in Section 8.0, Performance System Audits and the proper execution of field activities are the main mechanism for ensuring data representativeness. Representativeness in the laboratory is ensured through the use of the proper analytical procedures, appropriate methods, meeting sample holding times, and analyzing and assessing field duplicate samples.

3.5 Level of QC Effort for Sample Parameters

Field blank, method blank, trip blank, field duplicate, laboratory duplicate, laboratory control, standard reference materials (SRM) and matrix spike samples will be analyzed to assess the quality of the data resulting from the field sampling and analytical programs. QC samples are discussed below.

- Field and trip blanks consisting of distilled water will be submitted to the analytical laboratories to provide the means to assess the quality of the data resulting from the field-sampling program. Field (equipment) blank samples are analyzed to check for procedural chemical constituents at the facility that may cause sample contamination. Trip blanks are used to assess the potential for contamination of samples due to contaminant migration during sample shipment and storage.

- Method blank samples are generated within the laboratory and used to assess contamination resulting from laboratory procedures.

- Duplicate samples are analyzed to check for sampling and analytical reproducibility.

- MS/MSD and MS/Duplicate samples provide information about the effect of the sample matrix on the digestion and measurement methodology. Depending on site-specific circumstances, one MS/MSD or MS/Duplicate should be collected for every 20 or fewer investigative samples to be analyzed for organic and inorganic chemicals of a given matrix.

The general level of QC effort will be one field (blind) duplicate and one field blank (when non-dedicated equipment is used) for every 20 or fewer investigative samples of a given matrix. Additional sample volume will also be provided to the laboratory to allow one site-specific MS/MSD or MS/Duplicate for every 20 or fewer investigative samples of a given matrix. One trip blank consisting of distilled, deionized water will be included along with each sample delivery group of aqueous VOC samples.

4.0 CUSTODY PROCEDURES

Sample custody is controlled and maintained through the chain-of-custody procedures. Chain of custody is the means by which the possession and handling of samples will be tracked from the source (field) to their final disposition, the laboratory. A sample is considered to be in a person's custody if it is in the person's possession or it is in the person's view after being in his or her possession or it was in that person's possession and that person has locked it in a vehicle or room. Sample containers will be cleaned and preserved at the laboratory before shipment to the Site.

4.1 Field Custody Procedures

Field logbooks and appropriate field forms will provide the means of recording data collection activities performed during the investigation. As such, entries will be described in as much detail as possible so that persons going to the facility could reconstruct a particular situation without reliance on memory. Field logbooks will be bound field survey books or notebooks. Each logbook will be identified by the project-specific document number. The title page of each logbook will contain the following:

- Person to whom the logbook is assigned.
- Logbook number.
- Project name.
- Project start date.
- End date

Entries into the logbook or appropriate field form will contain a variety of information. At the beginning of each logbook entry, the date, start time, weather, names of all sampling team members present, level of personal protection equipment being used, and the signature of the person making the entry will be entered. The names of visitors to the Site, field sampling or investigation team personnel and the purpose of their visit will also be recorded in the field logbook. Measurements made and samples collected will be recorded in the logbook and appropriate field form. All entries will be made in permanent ink, signed, and dated and no erasures will be made. If an incorrect entry is made, the information will be crossed out with a single strike mark that is signed and dated by the sampler. Whenever a sample location is surveyed, which includes compass and distance measurements or, latitude and longitude information (e.g., obtained by using a global positioning system) the location

information shall be recorded. In the event that photographs are taken to document field activities, the number and brief description of the photographs taken will also be recorded. All equipment used to make measurements will be identified, along with the date of calibration.

Samples will be collected following the sampling procedures documented in this QAPP. The equipment used to collect samples will be noted, along with the time of sampling, sample description, depth at which the sample was collected, volume and number of containers. Sample identification numbers will be assigned prior to sample collection. Field duplicate samples, which will receive a separate sample identification number, will be noted under sample description.

The sample packaging and shipment procedures summarized below will ensure that the samples will arrive at the laboratory with the chain-of-custody intact.

- The field sampler is personally responsible for the care and custody of the samples until they are transferred or properly dispatched. Field procedures have been designed such that as few people as possible will handle the samples.

- All bottles will be identified by the use of sample tags with sample numbers, sampling locations, date/time of collection, and type of analysis. The sample numbering system is presented in the FOP.

- Sample labels will be completed for each sample using waterproof ink unless prohibited by weather conditions. For example, a logbook notation would explain that a pencil was used to fill out the sample label because the ballpoint pen would not function in freezing weather.

- Samples will be accompanied by a properly completed chain-of-custody form. The sample numbers and locations will be listed on the chain-of-custody form. When transferring the possession of samples, the individuals relinquishing and receiving will sign, date, and note the time on the record. This record documents transfer of custody of samples from the sampler to another person, to a mobile laboratory, to the permanent laboratory, or to/from a secure storage area.

Samples will be properly packaged and cooled to 4° C for shipment and dispatched to the appropriate laboratory for analysis, with a separate signed custody record enclosed in and secured to the inside top of each sample box or cooler. Shipping containers will be locked and secured with strapping tape and custody seals for shipment to the laboratory. The

custody seals will be attached to the front right and back left of the cooler and covered with clear plastic tape after being signed by the field team leader. The cooler will be strapped shut with strapping tape in at least two locations.

4.2 Laboratory Custody Procedures

4.2.1 Sample Receipt

A sample custodian is responsible for receiving samples, completing chain-of-custody records, determining and documenting the condition of samples received through the Cooler Receipt and Preservation Form, logging samples into the LIMS system based upon the order of log-in, and storing samples in appropriate limited-access storage areas. Chain-of-custody documentation is also maintained for the transfer of samples between the laboratory, and for shipment of samples to subcontracted laboratories.

Upon sample receipt, an inventory of shipment contents is compared with the chain-of-custody record, and any discrepancies, including broken containers, inappropriate container materials or preservatives, headspace in volatile organic samples, and incorrect or unclear sample identification, are documented and communicated to the appropriate project manager.

Each sample is given a unique laboratory code and an analytical request form is generated. The analytical request contains pertinent information for each sample, including:

- Client name
- Project number
- Task number
- Purchase order number
- Air bill number
- Chain-of-custody number
- Number of samples
- Sample descriptions
- Sample matrix type
- Date and time of sampling
- Analysis due dates
- Date and time of receipt by lab
- Client sample identification

- Any comments regarding special instructions or discrepancies

4.2.2 Sample Storage

Samples are stored in secure limited-access areas. Walk-in coolers or refrigerators are maintained at 4°C, ± 2°C, or as required by the applicable regulatory program. The temperatures of all refrigerated storage areas are monitored and recorded a minimum of once per day. Deviations of temperature from the applicable range require corrective action, including moving samples to another storage location if necessary.

4.2.3 Sample Custody

Sample custody is defined by this document as when any of the following occur:

- It is in someone's actual possession.
- It is in someone's view after being in his or her physical possession.
- It was in someone's possession and then locked, sealed, or secured in a manner that prevents unsuspected tampering.
- It is placed in a designated and secured area.

Samples are removed from storage areas by the sample custodian or analysts and transported to secure laboratory areas for analysis. Access to the laboratory and sample storage areas is restricted to laboratory personnel and escorted visitors only; all areas of the laboratory are therefore considered secure. If required by the applicable regulatory program, internal chain-of-custody is documented in a log by the person moving the samples between laboratory and storage areas.

Laboratory documentation used to establish Chain of Custody and sample identification may include the following:

- Field Chain of Custody forms or other paperwork that arrives with the sample.
- The laboratory Chain of Custody.
- Sample labels or tags are attached to each sample container.

- Sample custody seals.

- Sample preparation logs (i.e., extraction and digestion information) recorded in hardbound laboratory books that are filled out in legible handwriting, and signed and dated by the chemist.

- Sample analysis logs (e.g., metals, GC/MS, etc.) information recorded in hardbound laboratory books that are filled out in legible handwriting, and signed and dated by the chemist.

- Sample storage log (same as the laboratory Chain of Custody).

- Sample disposition log, which documents sample disposal by a contracted waste disposal company.

4.2.4 Sample Tracking

All samples are maintained in the appropriate coolers prior to and after analysis. The analysts remove and return their samples as needed. Samples that require internal Chain of Custody are relinquished to the analysts by the sample custodians. The analyst and sample custodian must sign the original Chain of Custody relinquishing custody of the samples from the sample custodian to the analyst. When the samples are returned, the analyst will sign the original Chain of Custody returning sample custody to the sample custodian. Sample extracts are relinquished to the instrumentation analysts by the preparatory analysts. Each preparation department tracks internal Chain of Custody through their logbooks/spreadsheets.

Any change in the sample during the time of custody will be noted on the Chain of Custody (e.g., sample breakage or depletion).

4.2.5 Sample Disposal

A minimum of 30 days following completion of the project, or after a period of time specified by any applicable project requirements, sample disposal is performed in compliance with federal, state, and local regulations. Alternatively, samples may be returned to the client by mutual agreement. All available data for each sample, including laboratory analysis results and any information provided by the client, are reviewed before sample disposal.

All samples are characterized according to hazardous/non-hazardous waste criteria and are segregated accordingly. All hazardous waste samples are disposed of according to formal procedures by the laboratory. It should be noted that all waste produced at the laboratory, including the laboratory's own various hazardous waste streams, is treated in accordance with all applicable local and Federal laws.

Complete Internal Chain of Custody documentation is maintained for some samples from initial receipt through final disposal. This ensures that an accurate history of the sample from "cradle to grave" is generated.

5.0 CALIBRATION PROCEDURES AND FREQUENCY

This section describes the calibration procedures and the frequency at which these procedures will be performed for both field and laboratory instruments.

5.1 Field Instrument Calibration

Quantitative field data to be obtained during groundwater sampling include pH, turbidity, specific conductance, temperature, and depth to groundwater. Quantitative water level measurements will be obtained with an electronic sounder or steel tape, which require no calibration. Quantitative field data to be obtained during soil sampling include screening for the presence of volatile organic constituents using a photoionization detector (PID). Field instruments used to monitor for these parameters will be calibrated in accordance with their manufacturer's recommendations.

5.2 Laboratory Instrument Calibration

All equipment and instruments used at the laboratory will be operated, maintained and calibrated according to the manufacturer's guidelines and recommendations, as well as to criteria set forth in the applicable analytical methodology. Operation and calibration will be performed by personnel who have been properly trained in these procedures.

6.0 ANALYTICAL PROCEDURES

The SMP describes the laboratory methods to be employed for post-remedial groundwater sampling. Samples will be analyzed by a NYSDOH ELAP-certified laboratory employing the appropriate analytical protocols and quality assurance procedures for the respective NYSDEC or USEPA methods. Tables 1 and 2 list the constituents of primary concern (COPCs) for soil and groundwater and Table 6 is a summary of the sample containers, volume, preservatives and holding time requirements.

7.0 DATA REDUCTION, VALIDATION, AND REPORTING

All data generated through field activities, or by the laboratory operation shall be reduced and validated (as required in the SMP) before reported.

7.1 Data Reduction

7.1.1 Field Data Reduction Procedures

Field measurements of pH, turbidity, temperature, specific conductance, water level and volatile organic vapor content (via the PID) are read directly in the units of final use, as discussed in this QAPP and listed in Table 5. Field personnel are responsible for monitoring the collection and reporting of field data. Field personnel will review field measurements at the time of measurement and will re-measure a parameter as necessary to assure quality and accuracy are maintained.

Field data will be recorded on appropriate field data record forms or the Project Field Book as they are collected and will be maintained in the project file. The Project QA Officer will review field procedures and compare field data to previous measurements to assess comparability and accuracy of the field data measurements.

7.1.2 Laboratory Data Reduction Procedures

Results of laboratory analyses will be reported in units of final use as listed in Table 5. Laboratory calculations will be performed as prescribed for a given analytical method or in conformance with acceptable laboratory standards at the time the calculation is performed.

The laboratory will retain quality assurance/quality control (QA/QC) records for at least five years. Original laboratory reports will be stored in the project files. Copies of raw data will be available for review at the laboratory. Copies of raw data also may be requested as part of the QA/QC review. A Data Usability Summary Report (DUSR), which follows NYSDEC's September 1997 DUSR guidelines and will be developed from complete USEPA SW-846 Equivalent Category B deliverable and completed an independent third party data validator.

7.2 Data Usability Evaluation

If requested by the NYSDEC, data evaluation will be performed by a third party data validator using the most current methods and quality control criteria from the USEPA's Contract Laboratory Program (CLP) *National Functional Guidelines for Organic Data Review*, and Contract Laboratory Program*, National Functional Guidelines for Inorganic Data Review*

7.3 Data Reporting

7.3.1 Field Data Reporting

All field documents will be accounted for when they are completed. Accountable documents include items such as field notebooks, sample logs, field data records, photographs, data packages, computer disks, and reports.

7.3.2 Laboratory Data Reporting

Analytical data will be summarized in tabular format with such information as sample identification, sample matrix description, parameters analyzed and their corresponding detected concentrations, and the detection limit. Analytical results will be incorporated into reports as data tables, maps showing sampling locations and analytical results, and supporting text.

8.0 PERFORMANCE SYSTEM AUDITS AND FREQUENCY

8.1 Field Performance and System Audits

8.1.1 Internal Field Audits

The QA Officer may conduct internal audits of field activities including sampling and field measurements. These audits will verify that all established procedures are being followed. Internal field audits will be conducted at least once at the beginning of the Site sample collection activities. Project duration may warrant subsequent audits on a monthly basis.

The audit program consists of the following:

- Observation of field activities to confirm that procedures are performed in accordance with project protocols and standard accepted methods.

- Review daily field records, monitoring well sampling records, and any other data collection sheets during and after field measurements.

8.1.2 External Field Audits

The NYSDEC Site Project Coordinator may conduct external field audits. External field audits may be conducted any time during the field operations. These audits may or may not be announced and are at the discretion of the NYSDEC.

8.2 Laboratory System Audits

The adequacy and implementation of a laboratory's quality assurance plan are assessed on a continual basis through systems and performance audits. Systems audits evaluate practice against established quality system objectives and requirements. Performance audits measure the comparability and accuracy of laboratory data through the analysis of reference materials for which the true value is unknown to the analyst. Audits may be performed by the laboratory (internal), or by clients, regulatory agencies, or accreditation bodies (external).

9.0 PREVENTATIVE MAINTENANCE

Each piece of field equipment is checked according to its routine maintenance schedule and before field activities begin. Field equipment that may be used at the Site includes:

- Photoionization detector (PID)
- Water quality meters (includes pH, turbidity, temperature, Eh, and specific conductance)
- Electric water level indicator

Field personnel will report all equipment maintenance and/or replacement needs to the Project QA Officer and will record the information on the daily field record.

10.0 DATA PRECISION, ACCURACY, AND COMPLETENESS EVALUATION

10.1 Accuracy Assessment

Data accuracy, which is assessed for laboratory data only, is based on recoveries, expressed as the percentage of the true (known) concentration, from laboratory spiked samples and QA/QC samples generated by the analytical laboratory.

Percent recovery (%R) for MS/MSD results is determined according to the following equation:

$$R\% = \frac{(A - B) \times 100}{T}$$

Where A = measured concentration after spiking
B = background concentration
T = known true value of spike

Percent recovery (%R) for LCS and surrogate compound results is determined according to the following equation:

$$R\% = \frac{\text{Experimental Concentration}}{\text{Known amount added}} \times 100$$

This information is reviewed periodically by the Project Manager or Project QA Officer. The goals for the recovery of any constituent in a spiked or QA/QC sample are presented in Table 3. For data generated in the field, the accuracy goals are summarized in Table 4.

10.2 Precision Assessment

For data generated by the laboratory, data precision is estimated by comparing analytical results from duplicate samples. The comparison is made by calculating the relative percent difference (RPD) given by:

$$RPD\% = \frac{2(S_1 - S_2)}{S1 + S2} \times 100$$

Where S_1 = sample result
S_2 = duplicate result

This information is calculated and reviewed periodically by the Project Manager and/or Project QA Officer. The goals for data precision for duplicate samples are presented in Table 3. For data generated in the field, the precision goals are summarized in Table 4.

10.3 Completeness Assessment

Data completeness will be evaluated by comparing the objectives of sampling efforts with the data obtained and determining whether there are any shortcomings in required information. Completeness is defined as the percentage of valid results according to the equation below:

$$\% \text{ completeness} = \frac{A}{B} \times 100$$

Where: A = number of valid results;
B = total number of possible results

The goals for data completeness for laboratory measurements were presented previously in Table 3. For data generated in the field, the completeness goals are summarized in Table 4.

10.4 Assessment of Data

To assess the integrity of the data generated during this investigation, the Project Manager and QA Officer will review the laboratory analytical data and field data in accordance with procedures and protocols outlined in this QAPP. An assessment will be made to determine if the project objectives have been achieved and meet objectives for data integrity.

11.0 CORRECTIVE ACTION

Corrective action is the process of identifying, recommending, approving, and implementing measures to counter unacceptable procedures or out of quality control performance that can affect data quality. Corrective action can occur during field activities, laboratory analyses, data validation, and data assessment. All corrective action proposed and implemented should be documented in the regular quality assurance reports to management. Corrective action should be implemented only after approval by the Project Manager, or his/her designee. If immediate corrective action is required, approvals secured by telephone from the Project Manager should be documented in an additional memorandum.

11.1 Field Corrective Action

If errors in field procedures are discovered during the observation or review of field activities by the Project QA Officer or his/her designee, corrective action will be initiated. Nonconformance to the QA/QC requirements of the field operating procedures will be identified by field audits or immediately by project staff who know or suspect that a procedure is not being performed in accordance with the requirements. The Project QA Officer or his designee will be informed immediately upon discovery of all deficiencies. Timely action will be taken if corrective action is necessary.

Corrective action in the field may be needed when the sample network is changed (i.e., more/less samples, sampling locations other than those specified in the Work Plan, etc.) or when sampling procedures and/or field analytical procedures require modification due to unexpected conditions. In general, the Project Manager and QA Officer may identify the need for corrective action. The Project Manager will approve the corrective measure that will be implemented by the field team. It will be the responsibility of the Project Manager to ensure that corrective action has been implemented.

If the corrective action will supplement the existing sampling using existing and approved procedures in the QAPP, corrective action approved by the Project Manager will be documented. If the corrective actions result in less samples (or analytical fractions), alternate locations, etc., which may result in non-achievement of project QA objectives, it will be necessary that all levels of project management, including the NYSDEC Project Coordinator, concur with the proposed action.

Corrective actions will be implemented and documented in the project field record book. No staff member will initiate corrective action without prior communication of findings through the proper channels. If corrective actions are insufficient, work may be stopped by the NYSDEC Project Coordinator.

If at any time a corrective action issue is identified which directly impacts project data quality objectives, the NYSDEC Project Coordinator will be notified immediately.

11.2 Laboratory Corrective Action

Corrective actions may be initiated if the quality assurance goals are not achieved. The initial step in a corrective action is to instruct the analytical laboratory to examine its procedures to assess whether analytical or computational errors caused the anomalous result. If no error in laboratory procedures or sample collection and handling procedures can be identified, then the Project Manager will assess whether reanalysis or resampling is required or whether any protocol should be modified for future sampling events.

11.3 Data Validation & Assessment Corrective Action

The need for corrective action may be identified during the data validation or assessment processes. Potential types of corrective action may include resampling by the field team, or reinjection/reanalysis of samples by the laboratory.

These actions are dependent upon the ability to mobilize the field team, whether the data to be collected is necessary to meet the QA objectives (e.g., the holding time for samples is not exceeded, etc.). If the data validator identifies a corrective action situation, the Project Manager will be responsible for approving the corrective action implementation. All required corrective actions will be documented by the laboratory Quality Assurance Coordinator.

12.0 QUALITY ASSURANCE REPORTS TO MANAGEMENT

Periodic reports summarizing certain field activities may be required at the Site. Those reports will be the responsibility of the Project Manager and will include the QA Officers input on the accuracy, precision, and completeness of the data, as well as the results of the performance and system audits, and any corrective action needed or taken during the project.

12.1 Contents of Project QA Reports

The progress reports will contain, on a routine basis, a QA section describing all results of field and laboratory audits, all information generated during the period of work activities reflecting on the achievement of specific DQOs, and a summary of corrective action that was implemented, and its immediate results on the project. The status of the project with respect to the Project Schedule included in this QAPP will be determined. Whenever necessary, updates on training provided, changes in key personnel, anticipated problems in the field or laboratory for the coming month that could bear on data quality along with proposed solutions, will be reported. All QA reports will be prepared in written, final format by the project manager or his designee. To the extent possible, assessment of the project should also be performed on the basis of available QC data and overall results in relation to originally targeted objectives.

In the event of an emergency, or in case it is essential to implement corrective action immediately, QA reports can be made by telephone to the appropriate individuals, as identified in the Project Organization and Corrective Action sections of this QAPP. However, these events, and their resolution will be addressed thoroughly in the next periodic progress report.

TABLES

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TABLE 1

CONSTITUENTS OF PRIMARY CONCERN (COPCs)
FOR SOIL

3807 Highland Avenue Site
Niagara Falls, New York

Analyte[1]	*CAS Number*	Analytical Method [2]	PQL	MDL
STARS Volatile Organic Compounds: (15 compounds) (ug/kg)				
Benzene	*71-43-2*	8021B	1	0.11
n-Butylbenzene	*104-51-8*	8021B	1	1.00
sec-Butylbenzene	*135-98-8*	8021B	1	0.08
tert-Butylbenzene	*98-06-6*	8021B	1	0.12
p-Cymene	*99-87-6*	8021B	1	0.41
Ethylbenzene	*100-41-4*	8021B	1	0.07
Isopropylbenzene	*98-82-8*	8021B	1	0.08
Methyl tert butyl ether	*1634-04-4*	8021B	1	0.06
n-Propylbenzene	*103-65-1*	8021B	1	0.11
Toluene	*108-88-3*	8021B	1	0.04
1,2,4-Trimethylbenzene	*95-63-6*	8021B	1	0.40
1,3,5-Trimethylbenzene	*108-67-8*	8021B	1	0.84
o-Xylene	*95-47-6*	8021B	1	0.01
p-Xylene	*106-42-3*	8021B	1	0.04
m-Xylene	*108-38-3*	8021B	1	0.04
TCL Semi-Volatile Organic Compounds (full list): (69 compounds) (ug/kg) *[includes Base-Neutrals (black) and Acid Extractables (blue)]*				
Acenaphthene	*83-32-9*	8270C	330	11.00
Acenaphthylene	*208-96-8*	8270C	330	10.00
Anthracene	*120-12-7*	8270C	330	9.00
Benzo(a)anthracene	*56-55-3*	8270C	330	13.00
Benzo(a)pyrene	*50-32-8*	8270C	330	11.00
Benzo(b)fluoranthene	*205-99-2*	8270C	330	15.00
Benzo(g,h,i)perylene	*191-24-2*	8270C	330	10.00
Benzo(k)fluoranthene	*207-08-9*	8270C	330	17.00
Benzyl alcohol	*100-51-6*	8270C	330	14.00
bis(2-Chloroethoxy)methane	*111-91-1*	8270C	330	14.00
bis(2-Chloroethyl)ether	*111-44-4*	8270C	330	14.00
2,2'-oxybis(1-chloropropane); bis(2-chloroisopropyl)ether	*108-60-1*	8270C	330	14.00
bis(2-Ethylhexyl)phthalate	*117-81-7*	8270C	330	19.00
Butyl benzyl phthalate	*85-68-7*	8270C	330	17.00
4-Bromophenyl phenyl ether	*101-55-3*	8270C	330	11.00
4-Chloroaniline	*106-47-8*	8270C	330	18.00
4-Chloro-3-methylphenol	*59-50-7*	8270C	330	12.00
2-Chloronaphthalene	*91-58-7*	8270C	330	13.00
2-Chlorophenol	*95-57-8*	8270C	330	12.00
4-Chlorophenyl-phenylether	*7005-72-3*	8270C	330	12.00
Chrysene	*218-01-9*	8270C	330	10.00
Dibenzo(a,h)anthracene	*53-70-3*	8270C	330	13.00
Dibenzofuran	*132-64-9*	8270C	330	10.00
3,3'-Dichlorobenzidine	*91-94-1*	8270C	330	148.00
2,4-Dichlorophenol	*120-83-2*	8270C	330	15.00
1,2-Dichlorobenzene	*95-50-1*	8270C	330	15.00

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TABLE 1

CONSTITUENTS OF PRIMARY CONCERN (COPCs)
FOR SOIL

3807 Highland Avenue Site
Niagara Falls, New York

Analyte[1]	*CAS Number*	Analytical Method [2]	PQL	MDL
TCL Semi-Volatile Organic Compounds (full list): (69 compounds) (ug/kg) ***[includes Base-Neutrals (black) and Acid Extractables (blue)]***				
1,3-Dichlorobenzene	*541-73-1*	8270C	330	14.00
1,4-Dichlorobenzene	*106-46-7*	8270C	330	13.00
Diethyl phthalate	*84-66-2*	8270C	330	9.00
2,4-Dimethylphenol	*105-67-9*	8270C	330	33.00
Dimethyl phthalate	*131-11-3*	8270C	330	10.00
Di-n-butyl phthalate	*84-74-2*	8270C	330	11.00
Di-n-octyl phthalate	*117-84-0*	8270C	330	31.00
4,6-Dinitro-2-methylphenol	*534-52-1*	8270C	1600	66.00
2,4-Dinitrophenol	*51-28-5*	8270C	1600	120.00
2,4-Dinitrotoluene	*121-14-2*	8270C	330	33.00
2,6-Dinitrotoluene	*606-20-2*	8270C	330	66.00
Fluoranthene	*206-44-0*	8270C	330	12.00
Fluorene	*86-73-7*	8270C	330	10.00
Hexachlorobenzene	*118-74-1*	8270C	330	11.00
Hexachlorobutadiene	*87-68-3*	8270C	330	13.00
Hexachlorocyclopentadiene	*77-47-4*	8270C	330	12.00
Hexachloroethane	*67-72-1*	8270C	330	14.00
Indeno(1,2,3-cd)pyrene	*193-39-5*	8270C	330	11.00
Isophorone	*78-59-1*	8270C	330	13.00
2-Methylnaphthalene	*91-57-6*	8270C	330	14.00
2-Methylphenol (o-Cresol)	*95-48-7*	8270C	330	33.00
4-Methylphenol (p-Cresol)	*106-44-5*	8270C	330	14.00
Naphthalene	*91-20-3*	8270C	330	14.00
2-Nitroaniline	*88-74-4*	8270C	1600	12.00
3-Nitroaniline	*99-09-2*	8270C	1600	17.00
4-Nitroaniline	*100-01-6*	8270C	1600	66.00
Nitrobenzene	*98-95-3*	8270C	330	12.00
2-Nitrophenol	*88-75-5*	8270C	330	66.00
4-Nitrophenol	*100-02-7*	8270C	1600	66.00
N-Nitrosodiphenylamine	*86-30-6*	8270C	330	29.00
N-Nitroso-di-n-propylamine	*621-64-7*	8270C	330	13.00
Pentachlorophenol	*87-86-5*	8270C	1600	50.00
Phenanthrene	*85-01-8*	8270C	330	11.00
Phenol	*108-95-2*	8270C	330	11.00
Pyrene	*129-00-0*	8270C	330	11.00
1,2,4-Trichlorobenzene	*120-82-1*	8270C	330	18.00
2,4,5-Trichlorophenol	*95-95-4*	8270C	800	14.00
2,4,6-Trichlorophenol	*88-06-2*	8270C	330	13.00
TAL Metals (modified): (12 compounds) (mg/L) ***[site specific metals in blue]***				
Antimony	*7440-38-2*	6010B	15	0.69
Arsenic	*7440-38-2*	6010B	2	0.37
Barium	*7440-39-3*	6010B	0.5	0.05
Cadmium	*7440-43-9*	6010B	0.2	0.06
Chromium	*7440-47-3*	6010B	0.5	0.14
Lead	*7439-92-1*	6010B	1	0.19
Mercury	*7439-97-6*	7471A	0.02	0.0071
Nickel	*7440-02-0*	6010B	0.5	0.12
Potassium	*7440-09-7*	6010B	30	8.4
Selenium	*7782-49-2*	6010B	4	0.48
Silver	*7440-22-4*	6010B	0.5	0.15
Thallium	*7440-28-0*	6010B	6	0.66

Notes:

1. Analytes as per NYSDEC and USEPA list of parameters.
2. Analytical methods per USEPA publication, SW-846, "Test Methods for Evaluating Solid Waste", Third Edition.

Acronyms/Abbreviations:

CAS = Chemical Abstracts Service registry number.
MDL = Method Detection Limit provided by STL
PQL = Practical Quantitation Limit
mg/kg = milligrams per kilogram
ug/kg = micrograms per kilogram

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TABLE 2

CONSTITUENTS OF PRIMARY CONCERN (COPCs)
FOR GROUNDWATER

3807 Highland Avenue Site
Niagara Falls, New York

Analyte[1]	*CAS Number*	Analytical Method [2]	PQL	MDL
STARS Volatile Organic Compounds: (15 compounds) (ug/L)				
Benzene	*71-43-2*	8021B	0.2	0.02
n-Butylbenzene	*104-51-8*	8021B	0.4	0.03
sec-Butylbenzene	*135-98-8*	8021B	0.4	0.02
tert-Butylbenzene	*98-06-6*	8021B	0.4	0.03
p-Cymene	*99-87-6*	8021B	0.4	0.28
Ethylbenzene	*100-41-4*	8021B	0.2	0.03
Isopropylbenzene	*98-82-8*	8021B	0.2	0.03
Methyl tert butyl ether	*1634-04-4*	8021B	0.4	0.23
n-Propylbenzene	*103-65-1*	8021B	0.2	0.03
Toluene	*108-88-3*	8021B	0.2	0.04
1,2,4-Trimethylbenzene	*95-63-6*	8021B	0.2	0.03
1,3,5-Trimethylbenzene	*108-67-8*	8021B	0.2	0.17
o-Xylene	*95-47-6*	8021B	0.2	0.09
p-Xylene	*106-42-3*	8021B	0.4	0.25
m-Xylene	*108-38-3*	8021B	0.4	0.25
TCL Semi-Volatile Organic Compounds (full list): (69 compounds) (ug/L) ***[includes Base-Neutrals (black) and Acid Extractables (blue)]***				
Acenaphthene	*83-32-9*	8270C	10	0.15
Acenaphthylene	*208-96-8*	8270C	10	0.09
Anthracene	*120-12-7*	8270C	10	0.10
Benzo(a)anthracene	*56-55-3*	8270C	10	0.16
Benzo(a)pyrene	*50-32-8*	8270C	10	0.09
Benzo(b)fluoranthene	*205-99-2*	8270C	10	0.17
Benzo(g,h,i)perylene	*191-24-2*	8270C	10	0.12
Benzo(k)fluoranthene	*207-08-9*	8270C	10	0.12
Benzyl alcohol	*100-51-6*	8270C	20	1.79
bis(2-Chloroethoxy)methane	*111-91-1*	8270C	10	2.10
bis(2-Chloroethyl)ether	*111-44-4*	8270C	10	2.44
2,2'-oxybis(1-chloropropane); bis(2-chloroisopropyl)ether	*108-60-1*	8270C	10	1.77
bis(2-Ethylhexyl)phthalate	*117-81-7*	8270C	10	2.80
Butyl benzyl phthalate	*85-68-7*	8270C	10	7.47
4-Bromophenyl phenyl ether	*101-55-3*	8270C	10	2.50
4-Chloroaniline	*106-47-8*	8270C	10	1.05
4-Chloro-3-methylphenol	*59-50-7*	8270C	10	2.73
2-Chloronaphthalene	*91-58-7*	8270C	10	1.94
2-Chlorophenol	*95-57-8*	8270C	10	1.00
4-Chlorophenyl-phenylether	*7005-72-3*	8270C	10	2.42
Chrysene	*218-01-9*	8270C	10	0.17
Dibenzo(a,h)anthracene	*53-70-3*	8270C	10	0.12
Dibenzofuran	*132-64-9*	8270C	10	0.12
3,3'-Dichlorobenzidine	*91-94-1*	8270C	20	7.43
2,4-Dichlorophenol	*120-83-2*	8270C	10	2.13
1,2-Dichlorobenzene	*95-50-1*	8270C	10	2.50
1,3-Dichlorobenzene	*541-73-1*	8270C	10	2.43
1,4-Dichlorobenzene	*106-46-7*	8270C	10	2.45
Diethyl phthalate	*84-66-2*	8270C	10	2.99
2,4-Dimethylphenol	*105-67-9*	8270C	10	1.60
Dimethyl phthalate	*131-11-3*	8270C	10	2.53
Di-n-butyl phthalate	*84-74-2*	8270C	10	6.64
Di-n-octyl phthalate	*117-84-0*	8270C	10	6.95
4,6-Dinitro-2-methylphenol	*534-52-1*	8270C	50	7.62
2,4-Dinitrophenol	*51-28-5*	8270C	50	10.51
2,4-Dinitrotoluene	*121-14-2*	8270C	10	3.52
2,6-Dinitrotoluene	*606-20-2*	8270C	10	2.67
Fluoranthene	*206-44-0*	8270C	10	0.14
Fluorene	*86-73-7*	8270C	10	0.10
Hexachlorobenzene	*118-74-1*	8270C	10	1.14
Hexachlorobutadiene	*87-68-3*	8270C	10	3.50
Hexachlorocyclopentadiene	*77-47-4*	8270C	45	23.67
Hexachloroethane	*67-72-1*	8270C	10	3.47
Indeno(1,2,3-cd)pyrene	*193-39-5*	8270C	10	0.13
Isophorone	*78-59-1*	8270C	10	2.51
2-Methylnaphthalene	*91-57-6*	8270C	10	0.09
2-Methylphenol (o-Cresol)	*95-48-7*	8270C	10	2.07
4-Methylphenol (p-Cresol)	*106-44-5*	8270C	10	1.09
Naphthalene	*91-20-3*	8270C	10	0.11
2-Nitroaniline	*88-74-4*	8270C	50	4.50
3-Nitroaniline	*99-09-2*	8270C	50	3.50
4-Nitroaniline	*100-01-6*	8270C	50	3.14
Nitrobenzene	*98-95-3*	8270C	10	2.27
2-Nitrophenol	*88-75-5*	8270C	10	2.00
4-Nitrophenol	*100-02-7*	8270C	50	15.00
N-Nitrosodiphenylamine	*86-30-6*	8270C	10	2.29
N-Nitroso-di-n-propylamine	*621-64-7*	8270C	10	1.66
Pentachlorophenol	*87-86-5*	8270C	50	9.54
Phenanthrene	*85-01-8*	8270C	10	0.14
Phenol	*108-95-2*	8270C	10	1.10
Pyrene	*129-00-0*	8270C	10	0.17
1,2,4-Trichlorobenzene	*120-82-1*	8270C	10	2.45
2,4,5-Trichlorophenol	*95-95-4*	8270C	10	3.21
2,4,6-Trichlorophenol	*88-06-2*	8270C	10	1.92

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TABLE 2

CONSTITUENTS OF PRIMARY CONCERN (COPCs)
FOR GROUNDWATER

3807 Highland Avenue Site
Niagara Falls, New York

Analyte[1]	*CAS Number*	Analytical Method [2]	PQL	MDL
TAL Metals (modified): (12 compounds) (mg/L) ***[site specific metals in blue]***				
Antimony	*7440-38-2*	6010B	0.02	0.0055
Arsenic	*7440-38-2*	6010B	0.01	0.00338
Barium	*7440-39-3*	6010B	0.002	0.00017
Cadmium	*7440-43-9*	6010B	0.001	0.00034
Chromium	*7440-47-3*	6010B	0.004	0.0009
Lead	*7439-92-1*	6010B	0.005	0.0016
Mercury	*7439-97-6*	7470A	0.0002	0.00015
Nickel	*7440-02-0*	6010B	0.01	0.0011
Potassium	*7440-09-7*	6010B	0.5	0.039
Selenium	*7782-49-2*	6010B	0.015	0.0061
Silver	*7440-22-4*	6010B	0.003	0.0009
Thallium	*7440-28-0*	6010B	0.02	0.0066
Field Parameters: (5 compounds) (units as identified below)				
pH (units)	*NA*	field	NA	NA
Temperature (°C)	*NA*	field	NA	NA
Specific Conductance (uS/mS)	*NA*	field	NA	NA
Turbidity (NTU)	*NA*	field	NA	NA
Dissolved Oxygen	*NA*	field	NA	NA

Notes:

1. Analytes as per NYSDEC and USEPA list of parameters.
2. Analytical methods per USEPA publication, SW-846, "Test Methods for Evaluating Solid Waste", Third Edition.

Acronyms/Abbreviations:

CAS = Chemical Abstracts Service registry number.
MDL = Method Detection Limit provided by STL
mg/L = milligrams per liter
mS = milli-Siemans
ug/L = micrograms per liter
uS = micro-Siemans
NA = not applicable
NTU = nephelometric turbidity unit
PQL = Practical Quantitation Limit

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TABLE 3

PROJECT GOALS FOR PRECISION, ACCURACY & COMPLETENESS FOR LABORATORY MEASUREMENTS

3807 Highland Avenue Site
Niagara Falls, New York

Analytical Method	Precision Goal [1] (RPD) [2]	Accuracy Goal (% R) [3]		Completeness Goal (%)
	Soil & Water	Soil	Water	
STARS 8021B or EPA 8260B	± 30	± 50	± 30	90
EPA 8270C	± 30	± 50	± 30	90
EPA 6010B and EPA 7470A/7471A	± 30	± 50	± 30	90
Water Quality Parameters	± 30	NA	± 30	90

Notes:

1. Precision goals vary depending on the compound being analyzed; the precision goals presented are general in nature.
2. RPD = Relative Percent Difference
3. %R = Percent Recovery

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TABLE 4

PROJECT GOALS FOR PRECISION, ACCURACY & COMPLETENESS FOR FIELD MEASUREMENTS

3807 Highland Avenue Site
Niagara Falls, New York

Measurement	Units	Precision Goal	Accuracy Goal	Completeness Goal
pH	pH units	± 0.2 unit	± 0.2 unit	90%
Eh	milli-volts (mV)	± 1.0 mV	± 1.0 mV	90%
Temperature	degrees Celsius (^{o}C)	± 0.2 deg. C	± 0.4 deg. C	90%
Turbidity	NTU	± 0.05 NTU	± 0.05 NTU	90%
Specific Conductance	μS/cm at 25^{o}C mS/cm at 25oC	± 100 uS/cm ± 0.1 mS/cm	± 100 uS/cm ± 0.1 mS/cm	90%
Dissolved Oxygen	ppm	± 0.3 ppm	± 0.3 ppm	90%
Water Level	fbTOR	± 0.01 unit	± 0.01 unit	90%

Acronyms/Abbreviations:

fbTOR = feet below top of riser
mS = milli-Siemans
NTU = nephelometric turbidity unit
ug/L = micrograms per liter

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TABLE 5

DATA MEASUREMENT UNITS FOR
FIELD & LABORATORY PARAMETERS

3807 Highland Avenue Site
Niagara Falls, New York

Parameter	Units
Water Level	feet below top of riser (fbTOR)
pH	pH units
Eh	milli-volts (mV)
Temperature	degrees Celsius (^{o}C)
Turbidity	Nephelometric Turbidity Unit (NTU)
Specific Conductance	microsiemens per centimeter at 25^{o}C (μS/cm) millisiemens per centimeter at 25^{o}C (mS/cm)
Dissolved Oxygen (DO)	parts per million (ppm)
Concentration of parameter in soil sample	micrograms per kilogram (μg/kg) organic milligrams per kilogram (mg/kg) inorganic
Concentration of parameter in groundwater sample	micrograms per liter (μg/L) organic milligrams per liter (mg/L) inorganic
Hydraulic Conductivity	centimeters per second (cm/sec)
Photoionization Detector (PID)	parts per million by volume (ppmv)

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TABLE 6

SAMPLE CONTAINER, VOLUME, PRESERVATION &
HOLDING TIME REQUIREMENTS

3807 Highland Avenue Site
Niagara Falls, New York

Matrix	Parameter [1]	Method [1]	Container Type	Minimum Volume	Preservation (Cool to 2-4 °C for all samples)	Holding Time from Sample Date
Soil	STARS VOCs	8260B	WMG	16 oz.	Cool to 2-4 °C, Zero Headspace	14 days
	TCL SVOCs	8270C	WMG	16 oz.	Cool to 2-4 °C	14 days extrac./40 days
	TAL Metals	6010B	WMG	4 oz.	Cool to 2-4 °C	6 months/Hg 28 days
	TCLP Benzene	8260	WMG	8oz	Cool to 2-4 °C, Zero Headspace	14 days extrac./14 days
	TCLP Lead	6010	WMG	8oz	Cool to 2-4 °C	6 months extrac./6 months
	Ignitability	1010	WMG	8oz	Cool to 2-4 °C	6 months
Groundwater	STARS VOCs	8260B	glass vial	3 - 4 oz.	Cool to 2-4 °C, HCl to pH<2,Zero Headspace	14 days

References:

1. Test Methods for Evaluating Solid Wastes, USEPA SW-846, Update III, 1991.

Notes:

1. EPA-approved methods published in Reference 1 above may be used. The list of analytes, laboratory method and the method detection limit for each parameter are included in Tables 1 and 2 of the QAPP.

Acronyms:

VOCs = Volatile Organic Compounds
SVOCs = Semi-Volatile Organic Compounds
TCLP = Toxicity Characteristic Leaching Procedure
TCL = Target Compound List
TAL = Target Analyte List
WMG = Wide Mouth Glass

APPENDIX F

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