

SUPPLEMENTAL REMEDIAL INVESTIGATION WORK PLAN

TRACT I SITE
3123 HIGHLAND AVENUE
NIAGARA FALLS, NIAGARA COUNTY, NEW YORK
SITE NO. 932157

SUBMITTED TO:

THE NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS WASTE REMEDIATION

Prepared for:



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Buffalo, New York 14203

Prepared by



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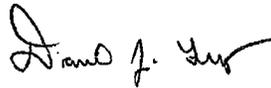
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TABLE OF CONTENTS

1.0	INTRODUCTION	1
1.1	Background	1
1.2	Geology	2
1.3	Previous Site Investigations	2
1.4	Supplemental Remedial Investigation Objectives	4
1.5	Project Organization	4
1.6	Organization of Work Plan	5
1.7	Limitations	5
2.0	FIELD INVESTIGATION	7
2.1	Scope of Work	7
2.1.1	Groundwater Investigation	7
2.1.2	Surface Soil Sample Collection	8
2.1.3	Building Debris Characterization	8
2.1.4	Brick Floor Bedding Material Characterization	8
2.1.5	Subslab Investigation	8
2.2	Characterization Methodologies	9
2.2.1	Monitoring Well Installation and Groundwater Sampling	9
2.2.2	Surface Soil Sampling	13
2.2.3	Debris/Sediment/Sludge Sampling	14
2.2.4	Brick Bedding Material Sampling	15
2.2.5	Subslab Soil Sampling	15
2.3	Sample Management	15
2.4	Quality Assurance/Quality Control Samples	16
2.5	Investigation-Derived Waste	17
2.6	Decontamination	17
2.7	Survey	17
3.0	DATA EVALUATION	19
4.0	REPORTING	20
5.0	HEALTH AND SAFETY	21
6.0	SCHEDULE	16
7.0	REFERENCES	16

TABLE OF CONTENTS

TABLES

- Table 1: Amec Surface Soil Samples Summary of Analytical Results Detected
Table 2: Summary of Sample Bottle and Preservative Requirements

FIGURES

- Figure 1: Site Location Map
Figure 2: Site Plan Map
Figure 3: Surface Soil Samples Collected by E&E and EA
Figure 4: Surface Soil Samples Collected by Amec
Figure 5: Proposed Monitoring Well Locations
Figure 6: Proposed Soil Sample Locations

TABLE OF CONTENTS

ACRONYMS

ACM	Asbestos Containing Material
Amec	Amec Environment & Infrastructure, Inc.
BCP	Brownfields Cleanup Program
Brightfields	Brightfields, Inc.
CAMP	Community Air Monitoring Plan
City	City of Niagara Falls
DUSR	Data Usability Summary Report
EA	EA Engineering, P.C.
E&E	Ecology and Environment, Inc.
ELAP	Environmental Laboratory Accreditation Program
ft-bgs	Feet Below Ground Surface
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations under 29 CFR 1910.120
IDW	Investigation-Derived Waste
JHA	Job Hazard Analysis
ml	Milliliter
ml/min	Milliliters per Minute
mm	Micron
ms/msd	Matrix Spike/Matrix Spike Duplicate
NTUs	Nephelometric Turbidity Units
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
ORP	Oxidation Reduction Potential
OSHA	Occupational Safety and Health Administration
PAHs	Polynuclear Aromatic Hydrocarbon
PCBs	Polychlorinated biphenyls
PID	Photoionization Detector
PPE	Personal Protection Equipment
PVC	Polyvinyl Chloride
QA/QC	Quality Assurance/Quality Control
SCOs	NYCRR Part 375 Soil Cleanup Objectives
Site	All 5.9 acres of land known as Tract I
SOW	Scope of Work
SRI	Supplemental Remedial Investigation
SRIR	Supplemental Remedial Investigation Report
SRIWP	Supplemental Remedial Investigation Work Plan

TABLE OF CONTENTS

SSO	Site Safety Officer
SVOCs	Semivolatile Organic Compounds
TAL	Target Analyte List (metals)
TCL	Target Compound List (organics)
TCLP	Toxicity Characteristic Leaching Procedure
TestAmerica	TestAmerica Laboratories, Inc.
USCS	Unified Soil Classification System
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VOCs	Volatile Organic Compounds

1.0 INTRODUCTION

Amec Environment & Infrastructure, Inc. (Amec) has prepared this Supplemental Remedial Investigation Work Plan (SRIWP) on behalf of Brightfields, Inc. (Brightfields) for the Tract I Site (Site) located at 3123 Highland Avenue, in the City of Niagara Falls (City), Niagara County, New York. Figure 1 shows the location of the Site on a United States Geological Survey (USGS) topographic map and Figure 2 shows the existing layout of the Site in plan view. Adjacent to the Site to the south and east is the Tract II property, which is being remediated under the State of New York Inactive Hazardous Waste Site program.

The City has endeavored to redevelop both the Site and the adjacent Tract II property since closure of the industrial facilities in the early 1970's. In order to support a viable redevelopment on the Tract II property, Brightfields has elected to also remediate and redevelop the Site. The Site will be remediated under the New York State Brownfield Cleanup Program (BCP), and has been assigned a new registry number (C932157).

1.1 BACKGROUND

The Site, currently owned by Brightfields, is located at 3123 Highland Avenue, east of Highland Avenue and north of Beech Avenue, in the City of Niagara Falls, New York and consists of approximately 5.9 acres of land located east of Highland Avenue and south of the active Tulip Corporation property (Figures 1 and 2). The Site is a former lead/acid battery manufacturing plant and warehouse and has been the subject of site characterization by the New York State Department of Environmental Conservation (NYSDEC) and a Removal Action by the United States Environmental Protection Agency (USEPA) between 1999 and 2010. The NYSDEC registry number for the Site which was being addressed under the Environmental Restoration (ERP) Program prior to its acceptance into the BCP was 932131.

The Site was first developed in approximately 1910 as a battery manufacturing facility for U.S. Light and Heat Co., and later Autolite Co. The facility was acquired by Prestolite Co. in the 1960s for the manufacture of hard rubber battery cases, battery filling, and charging. These activities ceased in the early 1970s and the Site was used as a warehouse (Power City Warehouse) and automotive body shop until

INTRODUCTION

the 1980s. By the late 1980s, the Site had been abandoned and various portions were in disrepair. At that time, the City acquired the property via tax foreclosure.

1.2 GEOLOGY

The Geologic Map of New York, Niagara Sheet published by the University of the State of New York indicates that the Site lies within the Silurian-aged Lockport Group. The Lockport Group consists of Geulph, Oak Orchard, Eramosa, and Goat Island Dolostones and the Gasport Limestone. The Tract II Site investigation revealed that bedrock is between 12.5 and 24.5 feet below ground surface (ft-bgs) in the vicinity of the Site. The unconsolidated material at the Site consists of various fill materials at the surface, underlain by silty clay. Dolostone bedrock is present below the silty clay.

Although no direct groundwater investigations have been performed on the Tract I Site, previous investigations conducted for the NYSDEC on the adjacent Tract II site indicate that there is no significant groundwater aquifer within the overburden soils or fill materials (EA, 2009). The groundwater flow at the Site appears to be generally toward the southwest, toward the Niagara River, on top of the Dolostone bedrock formation.

1.3 PREVIOUS SITE INVESTIGATIONS

In May 1999, a remedial investigation was conducted on the Site by Ecology and Environment, Inc. (E&E) for the City, pursuant to NYSDEC's ERP Program. The results of the investigation were presented in a Site investigation report prepared by E&E (E&E, May 2000). The E&E site investigation consisted of a building inspection, surface soil sampling, sludge sampling, collection of a paint chip sample, and suspected asbestos containing materials (ACM) sampling.

In late 2007, the NYSDEC contracted EA Engineering, P.C. (EA), to perform additional Site characterization. The results of that investigation were presented in a report prepared by EA (EA, 2009). The EA remedial investigation consisted of subsurface soil samples from beneath the building foundation and surrounding the structure exterior, debris samples from inside the warehouse, a warehouse floor inspection, and dewatering and inspecting the warehouse basement.

INTRODUCTION

In late 2009 and 2010, the USEPA conducted a removal action at the Site. These activities included fencing the Site, decontamination of portions of the interior of the building, and removal ACM and lead containing debris.

In July 2011, Amec collected eleven surface soil samples from around the perimeter of the Power City Warehouse. These samples were collected from a depth interval of 0 to 0.5 ft-bgs, and submitted for metals (antimony, lead and tin), Toxicity Characteristic Leaching Procedure (TCLP) lead, and pH.

Analytical results of the samples collected at the Site indicated metals, polynuclear aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs) were detected in concentrations exceeding their respective State of New York Commercial Soil Cleanup Objectives (SCOs) and/or TCLP standards. Surface soil sample locations are presented on Figures 3 and 4, which provide a summary of compounds detected that exceed the Commercial SCOs and TCLP standards. The results of the Tract I samples were provided in the Consolidated Remedial Investigation Report, Tract I Site, 3123 Highland Avenue, Niagara Falls, Niagara County, New York, Site No. 932131 (Amec, April 2012).

Reviewing all the data provided in the previous remedial investigations, the Consolidated Remedial Investigation Report identified several focused data gaps to be addressed as part of the Site characterization. These data gaps include:

- Groundwater has not been characterized on the Site;
- The horizontal extent of PAHs and PCBs has not been determined in surface soil in the eastern end of the property;
- The bedding material beneath the brick floors of the Power City Warehouse has not been fully characterized;
- The extent of the lead beneath the building slab in the vicinity of soil borings SB-08 and SB-12 has not been completely defined; and
- Uncharacterized debris, sediment, and/or sludge remains in the eastern portion of the Power City Warehouse Building.

This Work Plan provides the scope of work and methodologies that will be used to address the data gaps.

INTRODUCTION

1.4 SUPPLEMENTAL REMEDIAL INVESTIGATION OBJECTIVES

The objective of the Supplemental Remedial Investigation (SRI) is to close specific data gaps in the Site characterization as identified in the Consolidated Remedial Investigation Report (Amec, 2012). Specifically, a groundwater investigation will be performed to determine if groundwater exists in the unconsolidated zone above bedrock, and if so, to determine groundwater quality and identify the direction of groundwater flow on the Site. Soil samples will be collected from the eastern portion of the Site and from beneath the building slab to delineate the occurrence of metals, PAHs and PCBs. Sediment and debris samples will be collected from the eastern portion of the building to characterize the materials that the USEPA could not clean up due to safety concerns. Finally, the bedding material beneath the brick floor in the building will be sampled to determine if Site-related compounds are present above the applicable standards. As discussed in this SRWIP, some of the characterization will take place during or after the demolition in the interest of safety. In order to meet the objectives, the following tasks will be completed:

- Installation and sampling of groundwater monitoring wells;
- Collection of surface soil samples in the eastern end of the Site, outside of the building footprint;
- Collection of samples of the brick floor bedding material within the building;
- Collection of samples from beneath the slab in the area of EA borings SB-08 and SB-12 after the slab has been removed; and
- Collection of waste characterization samples of the remaining debris/sediment in the eastern portion of the building during demolition.

Details of the field investigation are provided in Section 2.

1.5 PROJECT ORGANIZATION

Amec will oversee all field aspects of this project during execution. The Amec representative will provide technical oversight and will direct the subcontractor to complete work that has been deemed appropriate to achieve the project objectives.

Listed below are the key project personnel and their office/primary telephone numbers.

INTRODUCTION

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1.6 ORGANIZATION OF WORK PLAN

The following sections of this SRIWP describe work to be performed. Those sections include: Field Investigation (Section 2.0), Data Evaluation (Section 3.0), Reporting (Section 4.0), Health and Safety (Section 5.0), Schedule (Section 6.0), and a Reference (Section 7.0).

1.7 LIMITATIONS

This SRIWP presents a summary of information known to Amec concerning the Site that Amec considered pertinent to the scope of work and stated project objectives. Amec has performed this work with the care and skill ordinarily used by members of

INTRODUCTION

the profession practicing under similar conditions. The conclusions presented herein are those that are deemed pertinent by Amec based upon the assumed accuracy of the available information. No other warranty, expressed or implied, is made as to the professional advice included in this report. The information present in this report is not intended for any use other than the stated objectives of the project. This document was prepared for the sole use of Brightfields, Inc., Honeywell, Inc., and the NYSDEC, who are the only intended beneficiaries of the work.

2.0 FIELD INVESTIGATION

The following sections describe the SRIWP activities and objectives as well as identify the specific sampling and analysis methods and procedures. Prior to mobilizing to the Site, Amec will contact New York 811 Dig Safe to mark out any buried underground utilities in the vicinity of the Site. Based on a review of the Site utility marking and other field conditions, the proposed monitoring well and soil boring locations may need to be modified prior to the investigation. All applicable state or local permits required to install monitoring wells will be secured prior the commencement of field activities.

2.1 SCOPE OF WORK

In order to meet the objectives of this SRIWP, a scope of work (SOW) has been developed to fill the data gaps identified in the Consolidated Remedial Investigation Report. The SOW consists of performing a groundwater investigation and collecting surface soil samples prior to the planned demolition activities. During demolition of the building, the remaining debris and sediment/sludge within the building footprint, as well as the bedding beneath the brick floors, will be characterized in preparation for disposal. Once the demolition is complete, the soil beneath the concrete floor in the vicinity of EA borings SB-08 and SB-12 will be characterized to delineate the occurrence of lead in the area. The following subsections provide the SOW for each of these tasks.

2.1.1 Groundwater Investigation

In order to characterize the groundwater beneath the Site, three monitoring wells will be installed. One of the monitoring wells will be located on the north side of the building, and the remaining two will be located on the south side of the building, as shown in Figure 5. The monitoring wells will be installed such that they monitor the first saturated zone encountered below the ground surface. Upon completion and development of the wells, static groundwater levels will be measured to establish the groundwater flow direction, and one round of groundwater samples will be collected as specified in Section 2.2.1.4. Additionally, slug tests will be performed on each of the wells in order to estimate the hydraulic conductivity of the saturated zone.

FIELD INVESTIGATION

2.1.2 Surface Soil Sample Collection

In the eastern portion of the Site, outside of the building footprint, metals, PAHs and PCBs were detected above the applicable SCOs. These detections were not fully delineated during the Site characterization. In order to fill this data gap, five surface soil (0 to 0.5 ft-bgs) samples will be collected in the open area of the eastern portion of the Site as shown in Figure 6. These samples will be analyzed for metals, PAHs, and PCBs.

2.1.3 Building Debris Characterization

In the eastern end of the warehouse the USEPA could not conduct removal actions due to structural safety concerns. This portion of the building contains various debris, sediment, and sludge left in place subsequent to abandonment of the property. As the building is stabilized, these materials will be gathered and placed into containers for off-Site disposal. In order to complete the characterization of this material, waste characterization samples will be collected as the material is prepared for disposal. This activity will be performed in conjunction with the demolition of the building.

2.1.4 Brick Floor Bedding Material Characterization

The bedding beneath the brick floors in portions of the building is composed of a sand/soil-like material. This material was not sampled as part of the previous investigations on the Site. Because portions of the floor will be removed during the demolition, the bedding material will be sampled in up to 10 locations to determine if it contains hazardous constituents. The sampling of the bedding material will be performed during the demolition, or post-demolition in areas of the building that will remain intact.

2.1.5 Subslab Investigation

Two samples collected by EA from the soil immediately beneath the building slab (SB-08 and SB-12) contained lead in excess of the Commercial SCO (Figure 3). These borings were located in close proximity to each other, in the north-central portion of the building. The lead concentrations in the remaining subslab samples were all less than the Commercial SCO. Once the demolition has been completed,

FIELD INVESTIGATION

up to six samples will be collected from the remaining surface soil to delineate the extent of the lead in the soil, as shown in Figure 6.

2.2 CHARACTERIZATION METHODOLOGIES

This section provides the methodologies that will be used to complete the characterization at the Site. As discussed above, some of these activities will occur prior to the demolition, while others will necessarily be performed during or after the demolition.

2.2.1 Monitoring Well Installation and Groundwater Sampling

The only groundwater data available from near the Site is that collected on the Tract II site during an investigation by E&E (E&E, August 2000). The Tract II groundwater investigation found that a small quantity of groundwater exists; apparently perched on the bedrock. The bedrock was noted to exist between 12.5 and 24.5 ft-bgs on the Tract II site.

In order to evaluate the groundwater beneath the Site, monitoring wells will be installed and sampled. The following subsections describe the number, locations, and construction details of the wells as well as the proposed sampling.

2.2.1.1 Monitoring Well Installation

Amec will install three monitoring wells on the Site in the approximate locations indicated on Figure 5. These locations are as follows:

- One monitoring well north of the building (proposed well T1-MW-01);
- One monitoring well east of the building, in the vicinity of the previously advanced soil boring B-15 (proposed well T1-MW-02); and
- One monitoring well southwest of the building, near the former transformer concrete pad and the previously advanced soil boring B-18 (proposed well T1-MW-03).

Proposed monitoring wells T1-MW-1, T1-MW-2, and T1-MW-3 will be installed using a hollow stem arguer drill rig with continuous split spoons to the first saturated

FIELD INVESTIGATION

zone (estimated depth of approximately 15 to 25 ft-bgs), or to the bedrock surface. Remedial investigations on the Tract II site indicate that the groundwater table is present at the surface of the bedrock interface. The wells will be continually logged according to the Unified Soil Classification System (USCS). Soil collected in the split spoons will be scanned with a photoionization detector (PID) to determine if Volatile Organics Compound (VOCs) may be present in the soil. If a sufficient saturated zone is encountered above the bedrock, the bottom of the well will be placed on the bedrock surface. If little or no water is encountered above the bedrock surface, an HQ coring bit will be used to advance the borehole up to 5 feet into the bedrock. Once the target depth has been reached, a 2-inch diameter, schedule 40 polyvinyl chloride (PVC) monitoring well will be installed. Actual total depth will be based on the depth to water such that a 10-foot screen section (0.010-inch slot size) will straddle the water table (the screen will extend approximately 5 feet below the groundwater surface). Flush thread riser pipe will be attached from the top of the screen to approximately 2-feet above ground surface. A press-on cap will be placed on the riser pipe during backfilling activities to prevent materials from entering the PVC well. Well depth and the length and depth of screen intervals may be adjusted based on field conditions.

A sand pack consisting of silica sand graded to match the screen slot size of 0.010-inch will be slowly poured from the surface in the well riser/borehole annulus. During sand pack installation, the driller will frequently measure its depth. The driller will slowly withdraw the augers as needed, while keeping the level of backfill close to the bottom of the augers. The sand pack will be placed to a depth of 2 feet above the screen. Once the sand pack is in place, a 1-foot thick bentonite seal will be placed on top of the sand pack. A cement or high solids bentonite/grout mixture will be placed above the bentonite seal and extended to the ground surface.

Surface completion will consist of a stick-up steel protective casing with a locking cap, which will be cemented into the ground. The wells will be completed with a 2x2 foot square concrete pad. Each well will be locked and marked with the appropriate well identification number.

Upon completion of the field effort, boring logs will be prepared for each location. The boring logs will include USCS descriptions, well construction details, and other pertinent information (PID screening results, field observations, etc.). The boring

FIELD INVESTIGATION

logs will be presented in an appendix to the Supplemental Site Characterization Report.

2.2.1.2 Monitoring Well Soil Sampling

During boring advancement, two soil samples will be collected and submitted for laboratory analysis from each of the monitoring well borings drilled at the Site. One sample will be collected from the surface soil interval (0 to 0.5 ft-bgs). Prior to analytical sample collection, the entire sample interval will be homogenized in a decontaminated stainless steel bowl. As the soil is logged, if impacts are noted (e.g. staining, odor) or if elevated PID readings are detected, additional samples will be collected for laboratory analysis. Any soil interval exhibiting elevated PID readings will not be homogenized, but will be immediately placed in laboratory-provided sample containers to minimize possible volatilization.

Following homogenization discussed above, soil samples will be placed into laboratory-supplied jars and uniquely numbered. Additionally, the time, date, analysis requested, site name, and the sampler's initials will be written on the identification label. The soil samples will be placed into a cooler on ice for shipment or hand delivery under standard chain of custody procedures to Test America, located in Amherst, NY. The soil samples collected from monitoring well borings will be analyzed for the following:

- Target analyte list (TAL) metals by USEPA SW-846 Method 6010;
- Target compound list (TCL) Semivolatile Organic Compounds (SVOCs) by USEPA SW-846 Method 8270; and
- PCBs by USEPA SW-846 Method 8082.

A summary of the proposed samples and analyses are provided in Table 1. Table 2 provides a summary of the sample jar, preservation, and holding time requirements for the samples.

If impacts are observed based on PID results, additional sample volume will be collected at the impacted interval(s), and will be analyzed for TCL VOCs. The VOC samples will be collected and preserved in accordance with USEPA SW-846 Method 5035 and analyzed by USEPA SW-846 Method 8260.

FIELD INVESTIGATION

2.2.1.3 Well Development

Prior to sample collection, but no sooner than 24 hours after grouting is completed, each well will be developed to prepare for sampling. Development will consist of using a submersible pump to remove water and soil fines from the well. During development, the pH, conductivity, temperature, and turbidity of the water will be monitored. Development will be considered complete when the pH, conductivity and temperature have stabilized (within $\pm 10\%$ of previous measurements) and the turbidity levels are less than 50 Nephelometric Turbidity Units (NTUs), or until five standing well volumes of water have been removed. If a well is purged dry, it will be allowed to recharge once and a second attempt will be made to develop the well. If the well is purged dry a second time, development will be considered complete. No water or other liquid will be introduced into the well. Following development, a measurement of the well's total depth will be obtained and recorded on the well completion logs.

2.2.1.4 Groundwater Sampling

The wells will be allowed to stand for at least 24 hours prior to initiating groundwater sampling. Groundwater sampling activities will be initiated by measuring the water level using an oil/water interface probe. The measurements will be taken from the top of riser pipe and will be recorded in the field logbook. The field measurements will be converted into elevations to develop a groundwater flow gradient map upon completion of well surveying.

After measuring the water levels in the wells, the standing well volumes will be calculated. A peristaltic pump will be used to purge groundwater via low-flow sampling techniques. Clean, dedicated tubing will be used in each well during sampling. The pump will be operated at a flow rate of no greater than 500 milliliters per minute (ml/min) until the monitoring parameters have stabilized (as defined below), or five standing well volumes have been removed. During purging, the water levels will be monitored to minimize draw down and turbidity.

Water chemistry parameters will be monitored during purging using a multi-parameter water quality meter and a flow through cell. The following water quality parameters will be observed during low-flow groundwater purging activities:

FIELD INVESTIGATION

- pH;
- Temperature;
- Conductivity;
- Dissolved oxygen;
- Turbidity; and
- Oxidation reduction potential (ORP).

Water quality parameters will be recorded every five minutes. Well purging will be considered complete when water quality parameters have stabilized over three consecutive readings (within $\pm 10\%$ of previous measurements) or if the well purges dry. If water quality parameters have not stabilized, purging will continue up to a maximum of five well volumes.

Upon completion of well purging, groundwater samples will be collected through the pump and dedicated tubing. The samples will be placed directly into laboratory-supplied, pre-preserved sample jars. The sample jars will be sealed, labeled, and placed on ice. A chain of custody form will be completed and placed inside the cooler with the samples. The cooler will be sealed for shipment or hand-delivery under standard chain of custody procedures to TestAmerica Laboratories, Inc. (TestAmerica), located in Amherst, NY. The groundwater samples will be analyzed for the following parameters:

- Total (non filtered) and dissolved (field-filtered through a 0.45 micron (μm) filter prior to preservation) TAL metals by USEPA SW-846 Method 6010 and mercury by Method 7471;
- TCL VOCs by USEPA SW-846 Method 8260;
- TCL SVOCs by USEPA SW-846 Method 8270; and
- PCBs by USEPA SW-846 Method 8082.

Table 2 provides a summary of the sample container, volume, preservation, and holding time requirements for each of the analytical methods to be used.

2.2.2 Surface Soil Sampling

Five surface soil samples will be collected east of the building to address data gaps identified in the Consolidated RI Report (Amec, 2012). The proposed surface soil locations (B-22 to B-26) are shown on Figure 6. The objective of the surface soil

FIELD INVESTIGATION

sampling is to further define the horizontal extent of metals, PCBs and PAHs detected above the Commercial SCOs in the outdoor area at the eastern end of the Site.

One surface soil sample will be collected per location from the 0 to 0.5-ft-bgs depth interval using a hand auger. In the event that the location is covered with asphalt or concrete, the sample interval will begin beneath the hard surface. Amec will visually inspect the samples for evidence of impacts such as odor, discoloration, staining, trash, debris, or liquid-phase contaminants. A PID will be used to screen the soil for organic vapors. Amec will classify the soils using the USCS. Following homogenization, the samples will be transferred into laboratory-supplied jars, labeled, and placed in coolers on ice for shipment or hand-delivery to the laboratory. The soil samples will be analyzed by TestAmerica in Amherst, New York for:

- TAL metals by USEPA SW-846 Method 6010;
- TCL SVOCs by USEPA SW-846 Method 8270; and
- PCBs by USEPA SW-846 Method 8082.

If impacts are observed based through PID readings, the soil samples will also be analyzed for TCL VOCs by USEPA SW-846 Method 8260.

2.2.3 Debris/Sediment/Sludge Sampling

The remaining debris in the building is located at the eastern end of the building in an area where the USEPA could not complete the removal action due to structural safety concerns. These materials have been partially characterized through previous sampling (E&E, August 2000). The characterization of the remaining materials will be completed in conjunction with the demolition of the building. The debris/sediment/ sludge will be collected and placed into containers for disposal. Samples will be collected of the material as part of the waste characterization process. The number of samples will be dependent on the requirements of the disposal facility and the quantity of the waste generated. Representative samples of the materials will be collected and analyzed for TCLP metals, TCLP VOCs, TCLP SVOCs, PCBs, reactivity, and corrosivity. The results of the samples will be the basis for characterizing the waste for disposal.

FIELD INVESTIGATION

2.2.4 Brick Bedding Material Sampling

Upon stabilizing the building during demolition, the areas containing brick flooring will be evaluated. Up to 10 locations will be selected throughout the brick-covered areas and the brick will be removed to collect samples of the bedding material. The bedding material will be collected into laboratory-supplied sample jars and submitted to TestAmerica for TCL VOCs by USEPA SW-846 Method 8260, TCL SVOCs by USEPA SW-846 Method 8270, TAL metals by USEPA SW-846 Methods 6010 and 7471, and PCBs by USEPA SW-846 Method 8082. The results of the samples will be used as the basis for determining if the bedding material needs to be managed as a hazardous material, or if it can be used as construction debris fill on-Site.

2.2.5 Subslab Soil Sampling

Upon completion of the demolition, the area surrounding EA soil borings SB-08 and SB-12 will be evaluated relative to the extent of metals in the soil beneath the building slab. Up to six samples will be collected from the surface interval (0-0.5 ft-bgs) of the soil immediately beneath the slab and any bedding material (rock or gravel) beneath the slab. Figure 6 provides the proposed locations of the subslab soil samples. The bedding will be cleared away to expose the soil, and the samples will be collected using a hand auger. The soil from the desired interval will be placed into a clean stainless steel bowl and homogenized. The soil will then be transferred into laboratory-supplied sample jars and placed on ice for shipment or hand-delivery to TestAmerica. The samples will be analyzed for lead by USEPA SW-846 Method 6010.

2.3 SAMPLE MANAGEMENT

Once collected, the samples will be labeled and logged onto a chain of custody form. Table 2 provides a summary of the sample jars to be used, the sample volume requirements, and necessary preservation for the anticipated analyses. The time, date, analysis requested, the site name and the sampler's initials will be written on the sample identification label. Once collected and preserved (if necessary), the samples will be placed into a cooler, on ice for shipment or hand-delivery under standard chain of custody procedures to TestAmerica Laboratories, located in Amherst, NY.

FIELD INVESTIGATION

2.4 QUALITY ASSURANCE/QUALITY CONTROL SAMPLES

Samples collected for soil characterization or impact delineation will also include the collection of samples for quality assurance/quality control (QA/QC) purposes.

Samples collected only for waste characterization prior to disposal will not be subjected to QA/QC sample analysis. The following describes the QA/QC samples to be collected as part of the Tract I supplemental characterization.

Samples collected for VOC analysis will be accompanied by trip blanks. Trip blanks will be submitted and analyzed at a frequency of one per cooler containing VOC samples. The trip blanks will be prepared by the laboratory by placing analyte-free water into 40-milliliter (ml) VOC vials and sealing them. The trip blanks will accompany the empty sample jars from the laboratory to the Site. The trip blanks will be labeled on-site and submitted, unopened, to the laboratory, along with the samples to be analyzed for VOCs. The trip blanks will be analyzed for the same suite of VOCs as the samples they accompany.

Replicate samples will be collected at a frequency of one replicate per matrix (e.g. soil or water) per 10 characterization samples collected. Soil replicate samples will be collected by obtaining enough sample volume for at least two samples and homogenizing the soil. The sample will then be split into two sample jars and each will be labeled uniquely. In the case of soil samples collected for VOCs, the sample will not be homogenized, but will be split directly into two sample containers for analysis. Water replicate samples will be collected by alternately filling sample jars for each analytical suite from the same water source. The replicate samples will be submitted as separate, uniquely numbered samples for analysis.

Matrix spike/matrix spike duplicate (MS/MSD) samples will be analyzed at a frequency of one MS/MSD sample per 20 samples submitted per matrix (e.g. soil or groundwater). MS/MSD samples will only be analyzed for samples submitted for VOCs, SVOCs, PCBs, and/or metals. Depending on the sample volume needs, the MS/MSD samples may be collected as an additional volume for each analytical suite, or may be analyzed directly from the sample volume submitted from the original sample.

FIELD INVESTIGATION

2.5 INVESTIGATION-DERIVED WASTE

Investigation derived waste (IDW) including auger cuttings, decontamination water, well development water, and purged water will be containerized in 55-gallon steel drums. These materials will be sampled for waste characterization parameters including:

- TCLP VOCs by USEPA SW-846 Method 1311/8260;
- TCLP SVOCs by USEPA SW-846 Method 1311/8270;
- TCLP metals by USEPA SW-846 Method 1311/6010A/7471;
- Corrosivity by USEPA SW-846 Method 9045B;
- Reactivity by USEPA SW-846 Method 9030;
- Ignitability (liquids only) by USEPA SW-846 Method 1010A; and
- PCBs by USEPA SW-846 Method 8082.

IDW containers will be labeled and stored on-site pending analytical results. Once the analytical results are received, the IDW will be disposed of in accordance with all federal, state, and local requirements.

2.6 DECONTAMINATION

Equipment that may come into contact with the samples during the field investigation will be decontaminated prior to use. Field decontamination of non-disposable sampling and monitoring equipment and tools (e.g., split spoon samplers, hand augers, water level meters, etc.) will consist of a non-phosphorous detergent cleansing using a brush followed by a distilled water rinse. The equipment will be allowed to air dry prior to use for collecting samples. Wash and rinse water will be collected and containerized with the IDW for characterization and disposal.

Drilling equipment, that will not directly contact samples, will be decontaminated before and after drilling using a pressure washer and potable water rise. This includes equipment such as drill bits, augers, and drill rods.

2.7 SURVEY

Once soil sample collection and monitoring well installations are complete, the locations will be surveyed by a licensed, New York State Surveyor. The locations

FIELD INVESTIGATION

will be surveyed to the nearest 0.1 feet horizontally and incorporated into the existing ALTA survey. Additionally, each monitoring well will be surveyed vertically to the nearest 0.01 feet relative to mean sea level at a measurement reference point on the top of the riser pipe. The casing elevations will be used to define groundwater flow direction and depth at the Site.

3.0 DATA EVALUATION

The data collected during the SRI will be compiled and summarized in tables. The Site characterization analytical data will be validated by an Amec chemist in accordance with NYSDEC Data Usability Summary Report (DUSR) guidelines, and any necessary qualifiers will be applied to the data set. Samples used to characterize waste materials will not be validated. Samples will be analyzed by TestAmerica Laboratories, located in Amherst, NY. TestAmerica is a subcontracted laboratory with New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP) Certification.

All analytical data will be tabulated and plotted on Site maps in order to evaluate the spatial relationship of the detected compounds. Final remediation areas will be identified using both the new and existing investigation data from previous RIs. Recommendations will also be made regarding the concentrations of lead that may require remedial action.

4.0 REPORTING

A supplemental remedial investigation report (SRIR) will be prepared upon completion of the SRI field activities. Hard copies and electronic copies of the report will be issued to the NYSDEC for review and comment. The SRIR will document the following:

- Site groundwater elevation, groundwater flow direction, and groundwater sample analytical results;
- Site soil boring results for metals, SVOCs, and PCBs; and
- Remedial actions that may be necessary to meet the selected Site SCOs.

The SRIR will include tables, figures, laboratory data, and attachments as necessary.

5.0 HEALTH AND SAFETY

Amec has prepared a site-specific Health and Safety Plan (HASP) for similar work on the Site. The existing HASP will be reviewed and any tasks that are not currently addressed will be incorporated into it. The HASP addresses current Site conditions and incorporates Job Hazard Analyses (JHAs) for specific Site investigation tasks. The HASP will address the potential hazards associated with the work. The HASP meets Occupational Safety and Health Administration (OSHA) requirements for Hazardous Waste Operations (HAZWOPER) under 29 CFR 1910.120. The HASP includes an identification of the anticipated Site hazards, requirements for personal protective equipment (PPE) and air monitoring, action levels for upgrading PPE levels, and emergency procedures. Amec will require that visitors to the Site, including client and regulatory agency personnel, comply with Amec's HASP or provide their own HASP that is at least as stringent.

Amec personnel will meet the OSHA training and medical monitoring requirements for HAZWOPER. Prior to the start of fieldwork or any new field activity, Amec's Site Safety Officer (SSO) will conduct a tailgate health and safety meeting for all field personnel. These meetings will be documented in Amec's master copy of the HASP kept on-Site and in the field notebook.

Amec reviewed the soil concentrations that are expected during the supplemental remedial investigation. Based on the review completed to date, Amec anticipates initiating the work activities in Level D personal protective equipment. Action levels have been developed in the HASP for all compounds that are known to be present. In the event monitoring indicates an exceedance of concentrations of constituents in air, consideration will first be given to engineering controls that can be instituted to reduce exposure.

The DER-10 guidance includes provisions for a Community Air Monitoring Plan (CAMP). The HASP prepared by Amec adequately addresses protection of the community for the activities to be performed. The work tasks (monitoring well installation and soil borings) will not result in generation of significant airborne particulates due to the nature and limited area of the activity. Furthermore, air monitoring for VOCs will be completed within the work area during the sampling activities. The HASP requires the cessation of activities if VOC levels exceed

HEALTH AND SAFETY

background for more than 1 minute in the breathing zone. This action level is more conservative than the CAMP guidance in DER-10. For these reasons, the existing HASP is protective of the community. A stand-alone CAMP will be prepared for future construction activities. Any portions of this Work Plan that are conducted during the construction will be covered by the CAMP prepared for those activities.

Within one week prior to mobilization to the Site to perform any excavation or drilling activities, a One-Call notification will be made to identify buried utilities that may exist on the Site.

6.0 SCHEDULE

Upon NYSDEC approval of this Work Plan, Amec will schedule work on the SRI. Once the work is scheduled, the NYSDEC will be notified of the start date. The NYSDEC notification will occur at least 10 days prior to mobilization to the field. During the 10 day notification period, the HASP will be finalized. In total, it is anticipated that the SRI activities will take approximately 5 days to complete.

Following is the anticipated schedule for the work outlined in this work plan:

TASK	START DATE	END DATE
Prepare Supplemental Remedial Investigation Work Plan & Submit to NYSDEC	March 2012	April 2012
Initiate Supplemental Remedial Investigation Work	May 2012	May 2012
Prepare Supplemental Remedial Investigation Report	June 2012	June 2012

7.0 REFERENCES

- Amec Environment & Infrastructure, March, 2012 “*Consolidated Remedial Investigation Report, Tract I Site, 3123 Highland Avenue, Niagara County, New York. Site No. 932131*”.
- EA Engineering, P.C. and its affiliate EA Science and Technology, May 2009, “*Final Site Characterization Report, Power City Warehouse Site (9-32-131), Niagara Falls, Niagara County, New York*”.
- Ecology and Environment Engineering, P.C., May 31, 2000, “*Site Investigation Report for the Power City Warehouse, Niagara Falls, New York*”.
- Ecology and Environment Engineering, P.C., August 2000, “Site Investigation and Remedial Alternatives Report Tract II Site, Niagara Falls, New York”.
- New York State Department of Environmental Conservation (NYSDEC), May 2010, “*DER-10 Technical Guidance for Site Investigation and Remediation*”, DEC Program Policy
- Mactec Engineering and Consulting, Inc., June 20, 2011, “*Predesign Study Work Plan, Tract I and Tract II Sites, Niagara Falls, NY, NYSDEC Site ID NO.: 932136*”.
- USGS (United States Geological Survey, Department of the Interior), 1991. “*Surficial Geologic Map of New York: Niagara Sheet*”.

TABLES

Table 1
 Sampling and Analysis Summary Table
 Tract 1 Site Supplemental Remedial Investigation Work Plan

Sample Name	Matrix	Sample Depth	Analytical Parameters	Rationale	Comments
T1-MW-01-1 Soil	Soil	0-6 Inches	Target Analyte List metals by USEPA SW-846 Method 6010 Polychlorinated biphenyls by USEPA SW-846 Method 8082 Pesticides by USEPA SW-846 Method 8081	To delineate the nature of contamination	If organic vapors are detected during filed screening, the sample will also be analyzed for VOCs, and SVOCs
T1-MW-01-2 Soil	Soil	0.5 inches above first encountered groundwater	Target Analyte List metals by USEPA SW-846 Method 6010 Polychlorinated biphenyls by USEPA SW-846 Method 8082 Pesticides by USEPA SW-846 Method 8081	To delineate the nature of contamination	Sample will be collected at the groundwater interface. If organic vapors are detected during filed screening, the sample will also be analyzed for VOCs, and SVOCs
T1-MW-01-3 Soil	Soil	UNK	Target Analyte List metals by USEPA SW-846 Method 6010 Polychlorinated biphenyls by USEPA SW-846 Method 8082 Pesticides by USEPA SW-846 Method 8081 Volatile Organic Compounds (VOCs) by USEPA SW-846 Method 8260 Semivolatile Organic Compounds (SVOCs) by USEPA SW-846 Method 8270	To delineate the nature of contamination	Sample will only be collected if impacts or organic vapors are detected during field screening of the soil boring
T1-MW-02-1 Soil	Soil	0-6 Inches	Target Analyte List metals by USEPA SW-846 Method 6010 Polychlorinated biphenyls by USEPA SW-846 Method 8082 Pesticides by USEPA SW-846 Method 8081	To delineate the nature of contamination	If organic vapors are detected during filed screening, the sample will also be analyzed for VOCs, and SVOCs
T1-MW-02-2 Soil	Soil	0.5 inches above first encountered groundwater	Target Analyte List metals by USEPA SW-846 Method 6010 Polychlorinated biphenyls by USEPA SW-846 Method 8082 Pesticides by USEPA SW-846 Method 8081	To delineate the nature of contamination	Sample will be collected at the groundwater interface. If organic vapors are detected during filed screening, the sample will also be analyzed for VOCs, and SVOCs
T1-MW-02-3 Soil	Soil	UNK	Target Analyte List metals by USEPA SW-846 Method 6010 Polychlorinated biphenyls by USEPA SW-846 Method 8082 Pesticides by USEPA SW-846 Method 8081 Volatile Organic Compounds (VOCs) by USEPA SW-846 Method 8260 Semivolatile Organic Compounds (SVOCs) by USEPA SW-846 Method 8270	To delineate the nature of contamination	Sample will only be collected if impacts or organic vapors are detected during field screening of the soil boring
T1-MW-03-1 Soil	Soil	0-6 Inches	Target Analyte List metals by USEPA SW-846 Method 6010 Polychlorinated biphenyls by USEPA SW-846 Method 8082 Pesticides by USEPA SW-846 Method 8081	To delineate the nature of contamination	If organic vapors are detected during filed screening, the sample will also be analyzed for VOCs, and SVOCs
T1-MW-03-2 Soil	Soil	0.5 inches above first encountered groundwater	Target Analyte List metals by USEPA SW-846 Method 6010 Polychlorinated biphenyls by USEPA SW-846 Method 8082 Pesticides by USEPA SW-846 Method 8081	To delineate the nature of contamination	Sample will be collected at the groundwater interface. If organic vapors are detected during filed screening, the sample will also be analyzed for VOCs, and SVOCs
T1-MW-03-3 Soil	Soil	UNK	Target Analyte List metals by USEPA SW-846 Method 6010 Polychlorinated biphenyls by USEPA SW-846 Method 8082 Pesticides by USEPA SW-846 Method 8081 Volatile Organic Compounds (VOCs) by USEPA SW-846 Method 8260 Semivolatile Organic Compounds (SVOCs) by USEPA SW-846 Method 8270	To delineate the nature of contamination	Sample will only be collected if impacts or organic vapors are detected during field screening of the soil boring
B-22	Soil	0-6 Inches	Target Analyte List metals by USEPA SW-846 Method 6010 Polychlorinated biphenyls by USEPA SW-846 Method 8082 Pesticides by USEPA SW-846 Method 8081	To delineate the nature of contamination	If organic vapors are detected during filed screening, the sample will also be analyzed for VOCs, and SVOCs
B-23	Soil	0-6 Inches	Target Analyte List metals by USEPA SW-846 Method 6010 Polychlorinated biphenyls by USEPA SW-846 Method 8082 Pesticides by USEPA SW-846 Method 8081	To delineate the nature of contamination	If organic vapors are detected during filed screening, the sample will also be analyzed for VOCs, and SVOCs
B-24	Soil	0-6 Inches	Target Analyte List metals by USEPA SW-846 Method 6010 Polychlorinated biphenyls by USEPA SW-846 Method 8082 Pesticides by USEPA SW-846 Method 8081	To delineate the nature of contamination	If organic vapors are detected during filed screening, the sample will also be analyzed for VOCs, and SVOCs
B-25	Soil	0-6 Inches	Target Analyte List metals by USEPA SW-846 Method 6010 Polychlorinated biphenyls by USEPA SW-846 Method 8082 Pesticides by USEPA SW-846 Method 8081	To delineate the nature of contamination	If organic vapors are detected during filed screening, the sample will also be analyzed for VOCs, and SVOCs
B-26	Soil	0-6 Inches	Target Analyte List metals by USEPA SW-846 Method 6010 Polychlorinated biphenyls by USEPA SW-846 Method 8082 Pesticides by USEPA SW-846 Method 8081	To delineate the nature of contamination	If organic vapors are detected during filed screening, the sample will also be analyzed for VOCs, and SVOCs
T1-MW-01	Groundwater	NA	Target Analyte List metals by USEPA SW-846 Method 6010 Polychlorinated biphenyls by USEPA SW-846 Method 8082 Pesticides by USEPA SW-846 Method 8081 Volatile Organic Compounds (VOCs) by USEPA SW-846 Method 8260 Semivolatile Organic Compounds (SVOCs) by USEPA SW-846 Method 8270	To delineate the nature of contamination	
T1-MW-02	Groundwater	NA	Target Analyte List metals by USEPA SW-846 Method 6010 Polychlorinated biphenyls by USEPA SW-846 Method 8082 Pesticides by USEPA SW-846 Method 8081 Volatile Organic Compounds (VOCs) by USEPA SW-846 Method 8260 Semivolatile Organic Compounds (SVOCs) by USEPA SW-846 Method 8270	To delineate the nature of contamination	
T1-MW-03	Groundwater	NA	Target Analyte List metals by USEPA SW-846 Method 6010 Polychlorinated biphenyls by USEPA SW-846 Method 8082 Pesticides by USEPA SW-846 Method 8081 Volatile Organic Compounds (VOCs) by USEPA SW-846 Method 8260 Semivolatile Organic Compounds (SVOCs) by USEPA SW-846 Method 8270	To delineate the nature of contamination	

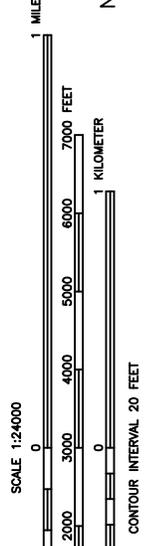
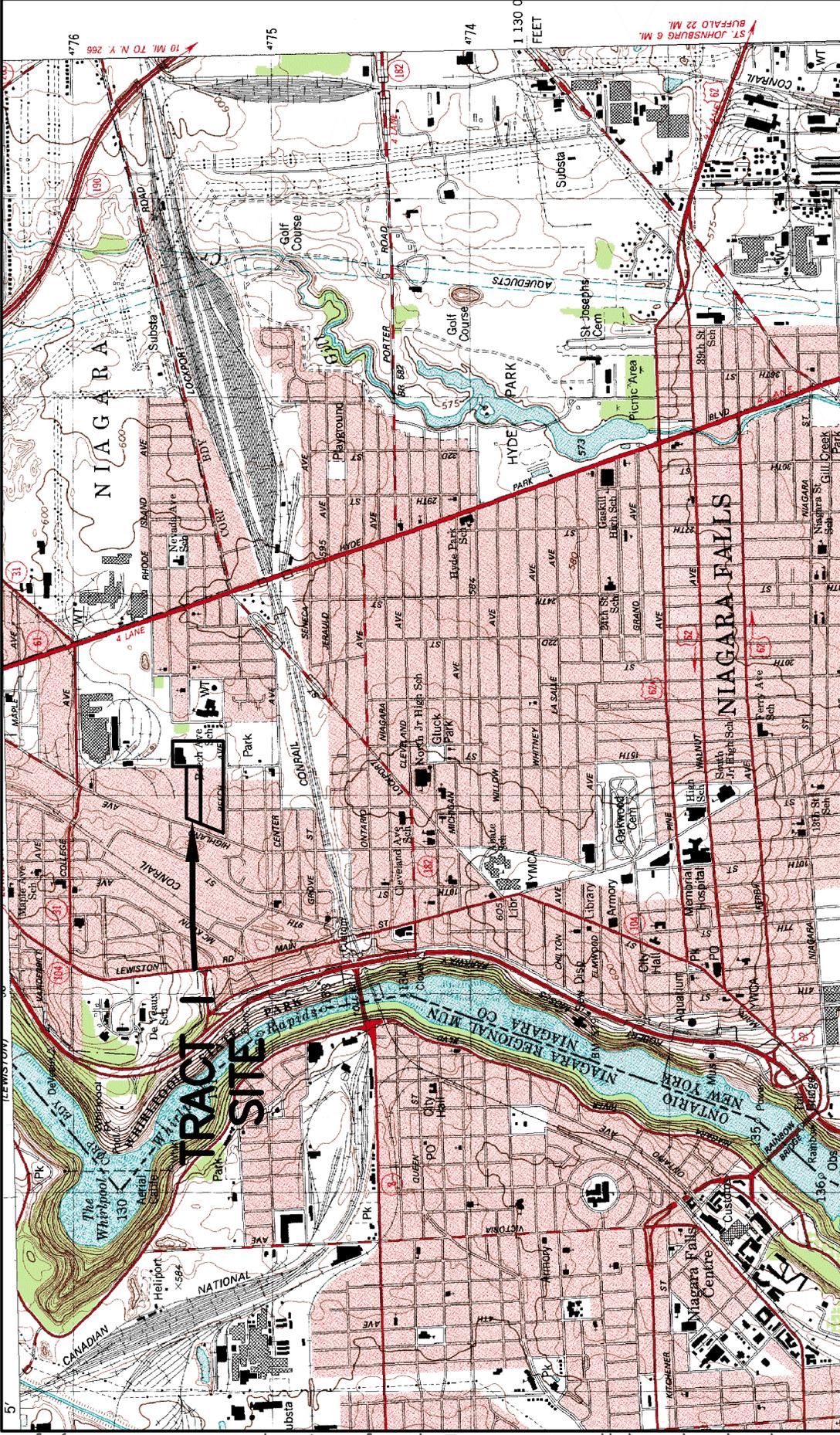
Notes:
 NA - Not Applicable
 UNK - Unknown

Table 2

Summary of Sample Jar and Preservation Requirements
 Tract I Supplemental Remedial Investigation Work Plan

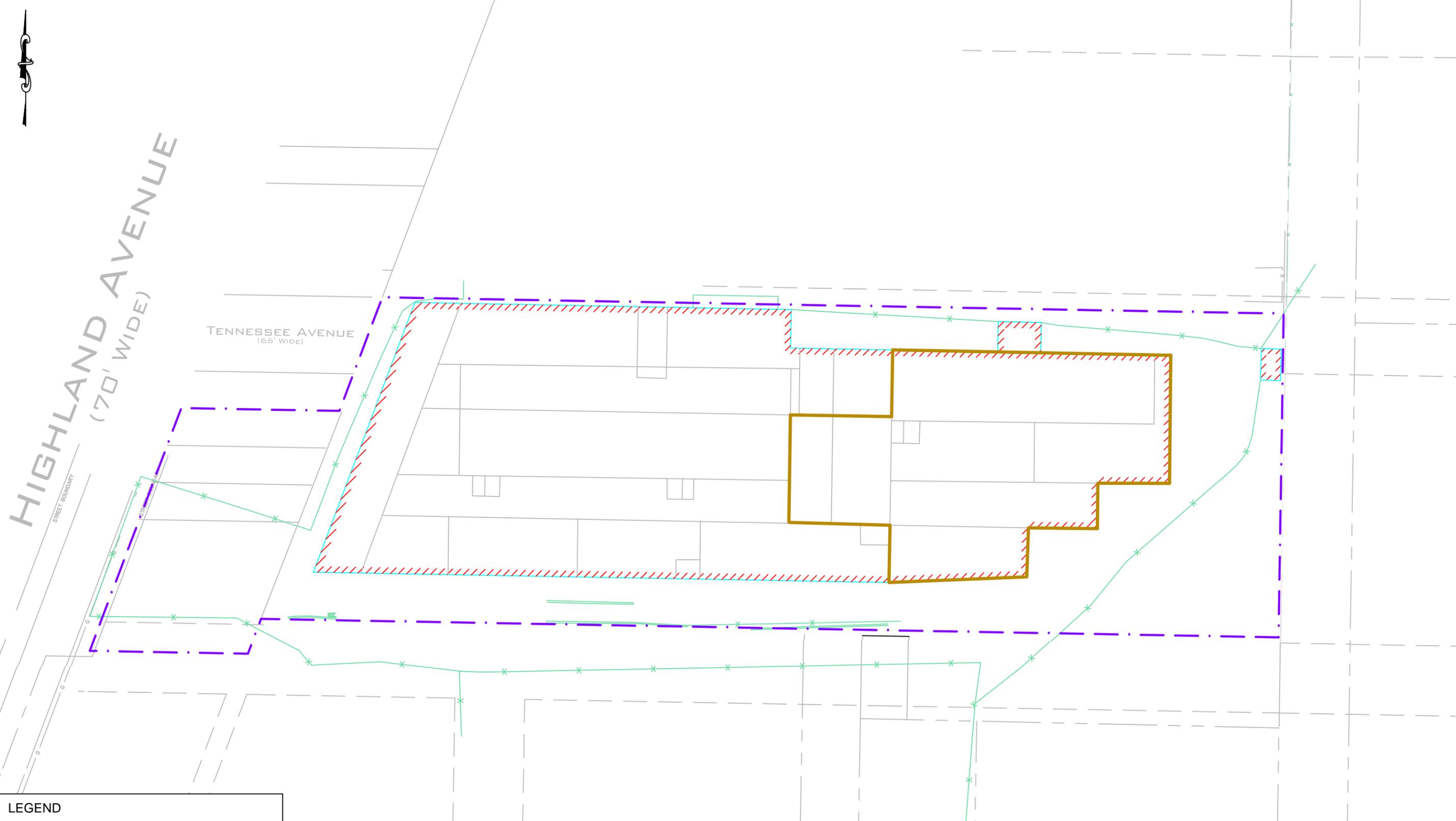
Parameter	Analytical Method	Collection/Extraction Method	Sample Bottle Requirements	Preservation	Holding Time Extraction/Analysis
Soil					
VOCs	8260	5035	40 ml VOA vial	2 – NaHSO ₄ 1 – Methanol Cool to < 4° Celsius	48 hours/14 days
SVOCs	8270		4-oz glass	Cool to < 4° Celsius	7/40 days
PCBs	8082		4-oz glass	Cool to < 4° Celsius	7/40 days
Metals (except Mercury)	6010		4-oz glass	Cool to < 4° Celsius	6 months
Mercury	7471		4-oz glass	Cool to < 4° Celsius	28 days
Groundwater					
VOCs	8260		40-ml VOA vial	HCl to pH < 2 Cool to < 4° Celsius	14 days
SVOCs	8270		1-L amber glass	Cool to < 4° Celsius	7/40 days
PCBs	8082		1-L amber glass	Cool to < 4° Celsius	7/40 days
Metals (except Mercury)	6010		500 ml plastic	HNO ₃ to pH < 2 Cool to < 4° Celsius	6 months
Mercury	7471		500 ml plastic	HNO ₃ to pH < 2 Cool to < 4° Celsius	28 days
Waste Characterization Parameters (Solids)					
TCLP VOCs	8260	1311	4-oz glass	Cool to < 4° Celsius	14/14 days
TCLP SVOCs	8270	1311	4-oz glass	Cool to < 4° Celsius	14/47 days
TCLP Metals (except Mercury)	6010	1311	4-oz glass	Cool to < 4° Celsius	180/180 days
TCLP Mercury	7471	1311	4-oz glass	Cool to < 4° Celsius	28/28 days
PCBs	8082		4-oz glass	Cool to < 4° Celsius	7/40 days
Ignitability	1030		4-oz glass	Cool to < 4° Celsius	7 days
Reactivity	9030		4-oz glass	Cool to < 4° Celsius	7 days
Corrosivity	9045C		4-oz glass	Cool to < 4° Celsius	7 days

FIGURES



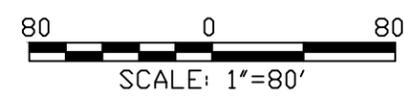
<p>HONEYWELL INTERNATIONAL INC. NIAGARA FALLS, NEW YORK</p>	<p>amec</p> <p>MACTEC Engineering & Consulting Inc.</p> <p>Environment & Infrastructure 800 North Bell Avenue, Suite 200 Pittsburgh, Pennsylvania 15106</p>	<p>1</p> <p>SITE LOCATION MAP</p> <p>Figure: 1</p>
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LEGEND

- - - PROPERTY BOUNDARY
- / / / EXISTING STRUCTURE
- * * * FENCE
- [] AREA NOT ADDRESSED IN USEPA REMOVAL ACTION IN 2010



HONEYWELL INTERNATIONAL INC.
 NIAGARA FALLS, NEW YORK
 Project No.: 3410110832

amec **MACTEC**
 Engineering & Consulting Inc.
 Environment & Infrastructure
 800 North Bell Avenue, Suite 200
 Pittsburgh, Pennsylvania 15106

SITE PLAN MAP
 Figure: 2

LEGEND

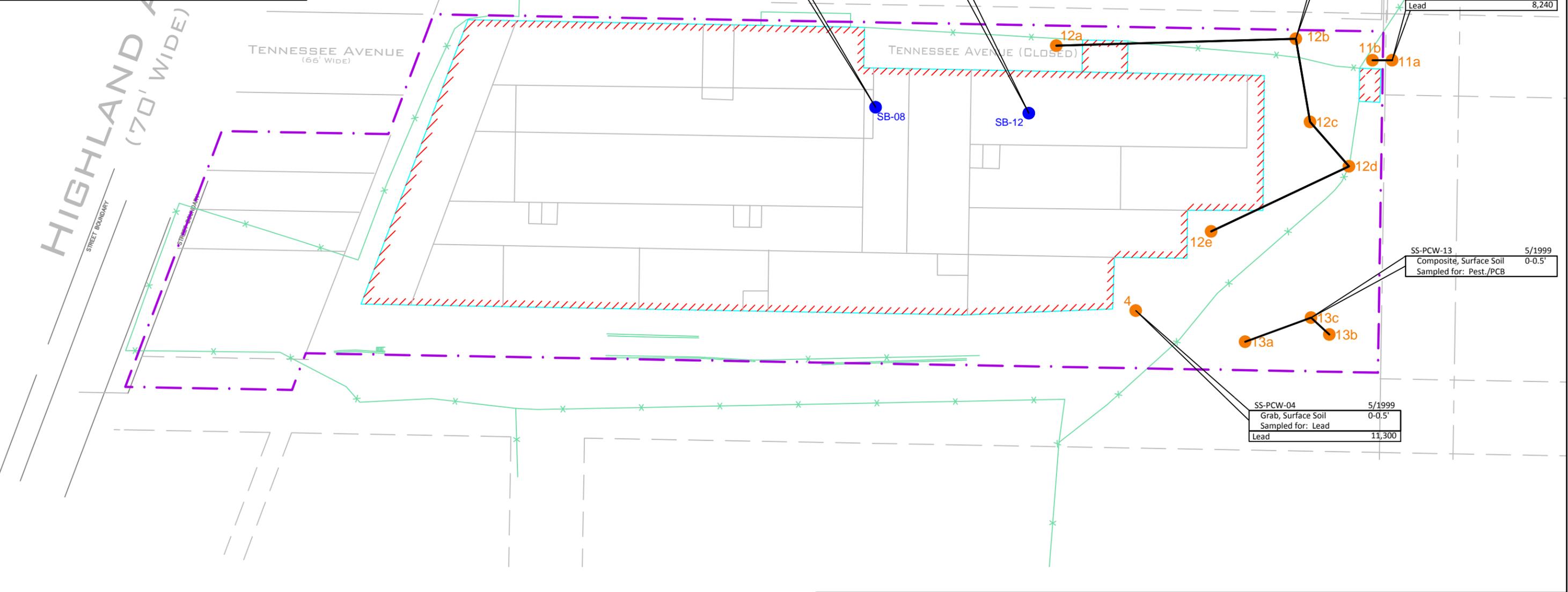
- PROPERTY BOUNDARY
- EXISTING STRUCTURE
- CHAIN LINK FENCE
- E&E SAMPLE LOCATION
- EA SOIL BORING LOCATION
- ESTIMATED VALUE
- DILUTED SAMPLE ANALYSIS RESULT

NOTES:

SAMPLE AND BORING LOCATIONS ARE APPROXIMATE.

RESULTS REPORTED IN mg/kg.

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<p>HONEYWELL INTERNATIONAL INC. NIAGARA FALLS, NEW YORK</p> <p>Project No.: 3410110832</p>	<p>amec MACTEC Engineering & Consulting Inc.</p> <p>Environment & Infrastructure 800 North Bell Avenue, Suite 200 Pittsburgh, Pennsylvania 15106</p>	<p>SURFACE SOIL SAMPLES COLLECTED BY E&E AND EA</p> <p>Figure: 3</p>	<p>3</p>
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- LEGEND**
- PROPERTY BOUNDARY
 - EXISTING STRUCTURE
 - CHAIN LINK FENCE
 - AREA NOT ADDRESSED BY USEPA REMOVAL ACTION IN 2010
 - B-18 AMEC SOIL BORING LOCATION

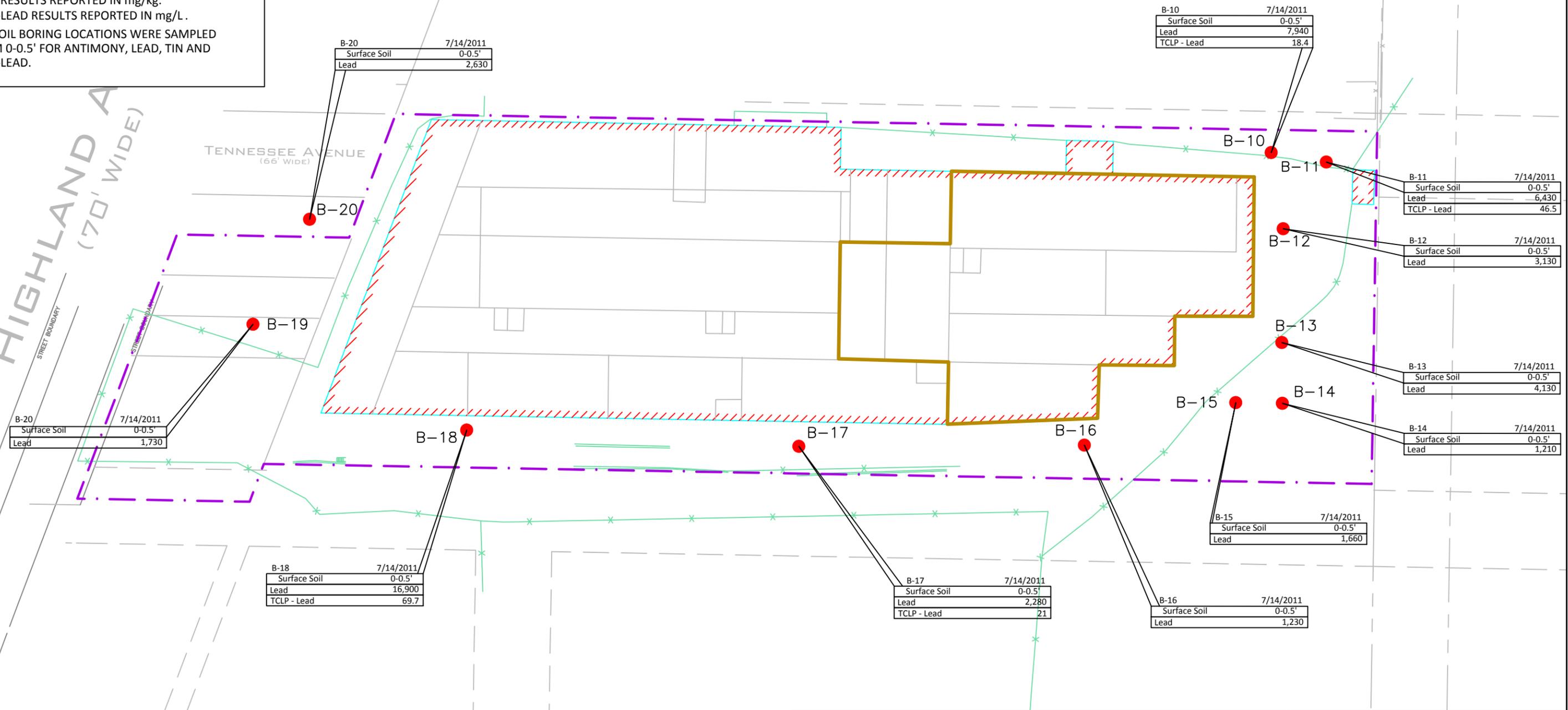
NOTES:

LEAD RESULTS REPORTED IN mg/kg.
 TCLP-LEAD RESULTS REPORTED IN mg/L.
 ALL SOIL BORING LOCATIONS WERE SAMPLED FROM 0-0.5' FOR ANTIMONY, LEAD, TIN AND TCLP-LEAD.

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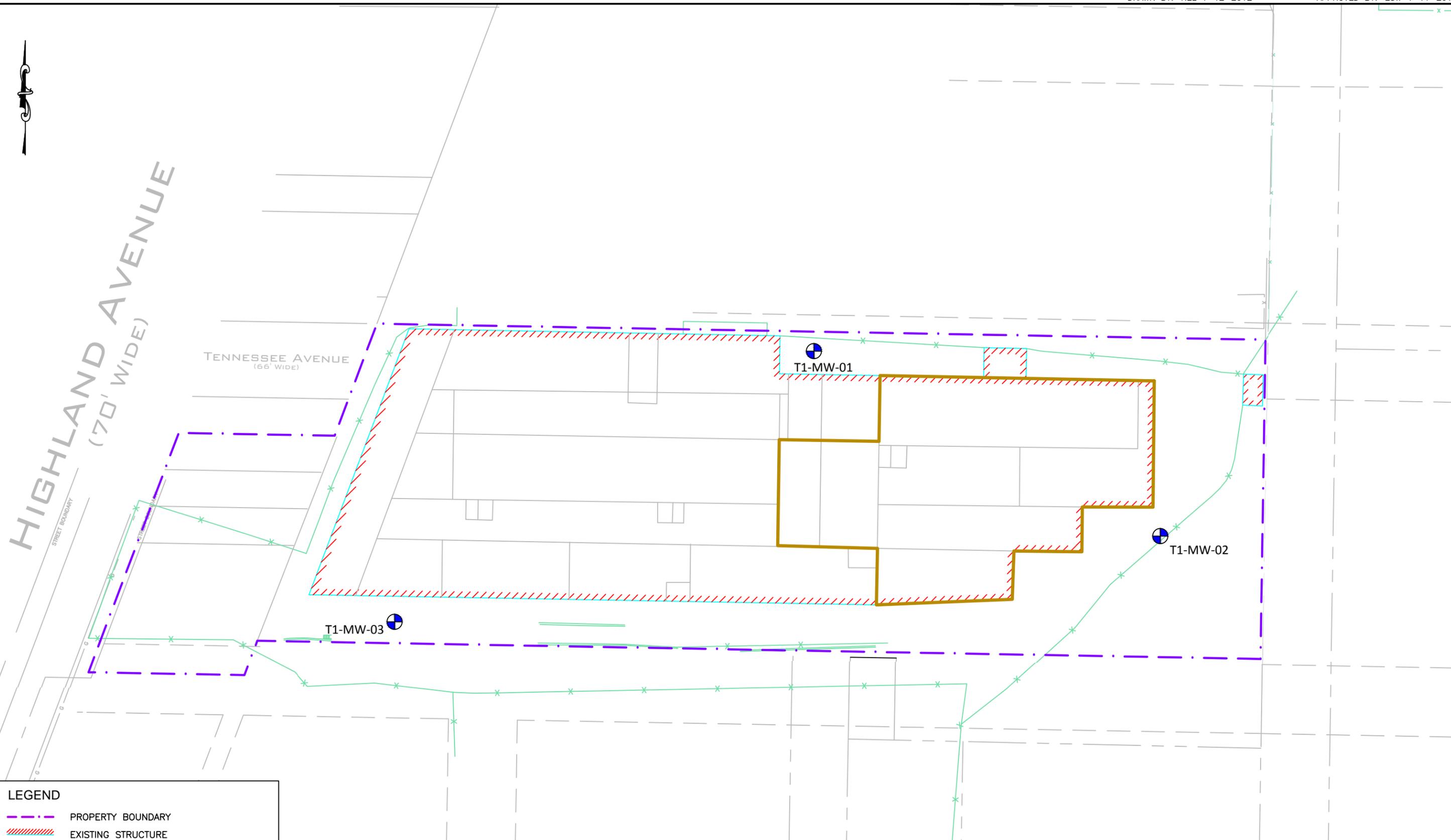
HIGHLAND A
(70' WIDE)

TENNESSEE AVENUE
(66' WIDE)



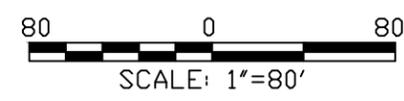
HONEYWELL INTERNATIONAL INC. NIAGARA FALLS, NEW YORK Project No.: 3410110832	 	SURFACE SOIL SAMPLES COLLECTED BY AMEC Figure: 4	4
Environment & Infrastructure 800 North Bell Avenue, Suite 200 Pittsburgh, Pennsylvania 15106			

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LEGEND

- PROPERTY BOUNDARY
- EXISTING STRUCTURE
- FENCE
- AREA NOT ADDRESSED IN USEPA REMOVAL ACTION IN 2010
- T1-MW-02 PROPOSED MONITORING WELL (APPROXIMATE LOCATION)



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Project No.: 3410110832

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PROPOSED MONITORING WELL
LOCATIONS
Figure: 5

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HIGHLAND AVENUE
(70' WIDE)

TENNESSEE AVENUE
(66' WIDE)

LEGEND

-  PROPERTY BOUNDARY
-  EXISTING STRUCTURE
-  FENCE
-  AREA NOT ADDRESSED IN USEPA REMOVAL ACTION IN 2010
-  PROPOSED SOIL BORING (APPROXIMATE LOCATION)

B-22



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NIAGARA FALLS, NEW YORK

Project No.: 3410110832




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Pittsburgh, Pennsylvania 15106

PROPOSED SOIL SAMPLE LOCATIONS

Figure: 6

