REMEDIAL INVESTIGATION/ALTERNATIVES ANALYSIS REPORT

MAIN AND HERTEL SITE
2929 & 2939 MAIN STREET
BUFFALO, NEW YORK 14214
NYSDEC SITE #C915318

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May 2018

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CERTIFICATION

I John B. Berry certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this Remedial Investigation/Alternative Analysis Report was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.

John B. Berry, PE

I Jason Brydges certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this Remedial Investigation/Alternative Analysis Report was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.

Jason M. Brydges, PE

1.0 INTRODUCTION

Main and Hertel, LLC owner of the Main and Hertel Site (NYSDEC Site #C915318 hereinafter "Site") located at 2929 & 2939 Main Street, Buffalo, New York (collectively the "parcels" refer to **Figure 1**) has entered into a Brownfield Cleanup Agreement (BCA) with the NYSDEC under the Voluntary section of the "Brownfield Cleanup Program (BCP) Act". Main and Hertel, LLC has contracted BE3/Panamerican (BE3/PEI) to conduct a Remedial Investigation (RI) and prepare an Alternatives Analysis Report (AAR) as required by the BCA and complete remedial measures, as necessary. This document presents both the RI results and the AAR for the Site.

This RI/AAR is being completed in accordance with BCP requirements as defined in section 375-3.8 of the 6 NYCRR Part 375 Environmental Remediation Program Regulations. It is anticipated that the remedial measure selected will lead to a site remedy as defined in Part 375-1.8(g)(2)(ii); achieve Soil Cleanup Objectives as defined in Part 375-6.8(b); and mitigate any environmental impacted media issues at the Site. The contemplated future use of the Site includes the construction of student housing with ancillary commercial and retail uses.

1.1 SITE BACKGROUND

The two parcels that form the Site are in the City of Buffalo at the east side of the corner of Main Street and Hertel Avenue. The 2929 Main Street parcel is approximately 0.5-acres and the 2939 Main Street parcel is approximately 4.4-acres. There are 4 buildings on the parcels and an old unused former oil pump house that is deteriorating and overgrown with trees. A summary of the primary structures is as follows:

- Building 1 (Office Building): This is a 2-story approximately 4,300 square foot structure. This building was used as Keystone Offices.
- Building 2 (Warehouse) This is a 2-story approximately 15,900 square foot structure. This building was used for storage, office space and a warehouse.
- Building 3 (Plating Building): This is a 2/3-story approximately 50,700 square foot structure. The building is occupied by Keystone Corporation and includes the electroplating operation. Much of the third floor is currently vacant. The wastewater treatment system, plating tanks, storage and other operations are mostly contained on the first and second floors.
- Building 4 (Rear): This is a 1-story approximately 9,300 square foot structure. This building was used for storage of raw and finished products.

The locations of the buildings on the Site are provided in **Figure 2** and a site boundary/topographic survey map is provided in **Appendix G**.

Currently, the parcels are occupied by the Keystone Corporation, which is an electroplating company and occupies the four buildings. The Keystone Corporation performs industrial metal finishing and metal plating operations with various elemental metals and compounds such as cadmium, copper, nickel, gold, silver, tin, tin/lead, zinc, phosphate, manganese phosphate, zinc phosphate and tin. Solvents are also used in these operations.

The Keystone Corporation has been associated with the parcels since at least the 1990s. A previous plating company was associated with the parcels since at least the 1970s. Prior to its use for metal plating operations, past uses of the parcels include auto/truck manufacturing, gasoline pump manufacturing, cereal manufacturing, dairy equipment manufacturing, paint manufacturing, auto repair and painting. A lead-based-paint manufacturer was also located on a portion of the parcels.

Contaminates from these operations may include polycyclic aromatic hydrocarbons (PAHs), metals and volatile organic compounds (VOCs) including petroleum and chlorinated solvents as well as acids and bases. In addition, it appears that non-native backfill has been placed across the Site at varied depths with very little, if any, native soils above bedrock. Various media including the soil, groundwater, and air (e.g., soil vapor intrusion) were investigated under the RI program for potential environmental impacts from historic operations and those impacts posed by imported backfill.

1.2 PREVIOUS INVESTIGATIONS

Historical information indicates the following environmental investigation activities have been completed on the Site:

1.2.1 Phase II Preliminary Environmental Assessment Report (February 1990)

A Phase II environmental investigation was conducted that included a physical inspection of the interior and exterior of on-site buildings and a records search of historical documentation. Following the physical inspection, nine test trenches were performed at locations where impacted soils potentially existed. The analytical data generated from the limited investigation included Toxicity Characteristic Leaching Procedure (TCLP) and Total Petroleum Hydrocarbon (TPH) results. The test pit logs indicated bedrock is very shallow across the site (i.e., 3' to 5' bgs). Some of the Total Petroleum Hydrocarbon (TPH) results from samples collected in areas that had aboveground storage tanks were very high indicating petroleum impacts were present. There was also an area that had a high lead TCLP result. These areas were reportedly remediated.

1.2.2 Phase I Environmental Site Assessment Report – (December 2014)

A Phase I ESA was conducted on the 2929 and 2939 Main Street parcels that identified the following environmental issues:

- The subject property has been the location for various manufacturing or electroplating operations since 1910. These operations have used various hazardous materials and petroleum products and produced organic and inorganic chemical, petroleum, and metal wastes. Past practices concerning operations and waste handling were generally not known.
- The 1990 Phase II confirmed petroleum and chemical impacts to soil. Although some hot spot remediation was completed, the potential for soil and groundwater impacts potentially still exist.
- Releases from past operations from tin shop, paint manufacturing, and auto repair may have added to potential impacts.
- Several underground storage tanks (USTs) and aboveground storage tanks (ASTs) were associated with the parcels and these may have impacted soils and groundwater.
- A pit/sump was in the southeast corner of Building 3. This pit was associated with degreasers including trichloroethene (TCE). This may have impacted soil and groundwater and may represent a vapor intrusion issue.
- The former oil pump house has several pipes protruding from the building/ground. These may represent USTs or feed/distribution lines for oil. Surface soil samples in this area indicated petroleum impacts.
- Railroad spurs are located on the parcels (south and eastern portion). Spills of petroleum or hazardous materials along these spurs may have occurred or may be present from rail ballasts.
- Debris and mounding was observed in the eastern and southeastern areas of the Site. Fill of unknown origin with brick, concrete, rusted/empty 55-gallon drums, 5-gallon containers, roofing

- shingles, tires, and wood are present.
- Transformers were in the building 3 courtyard and on the roof of Building 4 but with no information concerning the PCB content.
- Various pits and trenches are located with the electroplating operations and are used to transport various plating liquid waste to the wastewater treatment plant. These pits/trenches were excavated to bedrock.
- The precious metal room located on the second floor of Building 3 has a wood floor and extensive buildup of residue from general dripping during operations.
- Adjacent Monroe Muffler was historically a gasoline service station that contained multiple USTs.

1.2.3 Phase II Environmental Site Assessment Report (January 2017)

A Phase II ESA was conducted that performed subsurface soil borings and collected surface and subsurface soil samples to assess potential environmental impacts to the Site related to the historic uses. The investigation included the advancement of sixteen borings to a depth of eight feet bgs or until refusal. Soils were field screened using a photoionization detector (PID) and visual and olfactory observations were noted. To assess potential impacts across the Site, ten soil samples were collected for laboratory analysis from the 16 borings. Sample analysis included NYSDEC Part 375 BCP list for metals, volatile and semi-volatile organic compounds (VOCs & SVOCs), pesticides and PCBs. Based on the soil sample analytical results (refer to **Table 1** and **Figure 3**), near-surface and subsurface soils are impacted by heavy metals, PAHs and PCBs. Multiple metals and PAHs were detected above Residential/Restricted Residential Soil Cleanup Objectives (SCOs). PCBs were also detected in one sample above Residential/Restricted Residential SCOs.

1.3 CONSTITUENTS OF CONCERN (COCS)

Based on the prior investigations, the primary constituents of concern (COCs) at the Site are SVOCs and metals in the non-native backfill, VOCs in the groundwater, and VOCs in the soil vapor.

1.4 IDENTIFICATION OF STANDARDS, CRITERIA AND GUIDANCE (SCGS)

SCGs are promulgated requirements (i.e., standards and criteria) and non-promulgated guidance that govern activities that may affect the environment and are used by the NYSDEC at various stages in the investigation and remediation of a site. The following are the primary SCGs for this project:

- NYSDEC 6 NYCRR Part 375 – Environmental Remediation Programs December 2006;
- NYSDEC DER-10 – Technical Guidance for Site Investigations and Remediation May 2010;
- NYSDEC - Technical and Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations June 1998;
- NYSDEC Policy – CP-51- Soil Cleanup Guidance; Date Issued: October 21, 2010; and,
- New York State Department of Health October 2006 Guidance for Evaluating Soil Vapor Intrusion in the State of New York and its May 2017 amendment.

2.0 REMEDIAL INVESTIGATION

Investigation activities were performed in accordance with the requirements of the RI work plan *(Work Plan for Remedial Investigation, Main and Hertel Site (*Site #C915318*), December 2017)* that was approved by NYSDEC Region 9 as part of the BCP process. Daily field reports describing investigation field activities are provided in **Appendix E**. The RI activities were completed between November 2017 and February 2018 at the Site.

2.1 BACKFILL/SOIL INVESTIGATION

The primary purpose of the soil assessment was to supplement existing data for the Site by visually inspecting and describing surface and subsurface conditions through the collection and analyses of soil samples. Nine soil borings and 14 test pits were performed on December 18 and December 28, 2017 respectively, in an approximate grid pattern to assess the entire Site with a focus on areas where impacted soils were previously identified (refer to **Figure 2** for boring/test pit locations). The precise location of borings/trenches and sampling were based on field observations and specifically targeted potential contaminant features to obtain samples representative of the Site while ensuring that areas of concern were examined.

Soil borings were installed primarily in the northwest end of the site near the buildings. Borings were determined to be less intrusive in this area due to the various utilities and paving. Test pits were installed across the more open southeast end of Site. The borings and trenches were also used to establish the depth of fill material, natural soil, groundwater, and bedrock, as applicable. Soil borings were advanced to a depth of eight feet bgs or refusal at bedrock using Geoprobe® direct push technology. Continuous soil sampling was conducted using the Geoprobe® with a two-inch diameter sampler.

Test Trenches were approximately 4 feet wide by 8 feet long except for TP-14, which was 4 feet wide by 40 feet in length. Test trenches ranged in depth from 2 feet to 7 feet with one test trench (TP-6) at a depth of 12 feet in a mounded area. Each test trench was backfilled prior to moving to the next test trench location. The following was completed during each boring and trench excavation:

- A description of the soil stratigraphy was made (refer to boring test trench logs in **Appendix A**);
- Visual observations (staining, odors, etc.), as encountered;
- Total organic vapor monitoring was completed using a PID as each boring was installed; and
- Cleaning of equipment between each boring/trench location.

A MiniRae 3000 PID with a 11.7 eV Lamp was used for VOC screening. Radiological screening was conducted during test pitting operations; however, some days the equipment would not operate because of extreme cold on the day of test pitting (3+/- degrees F.). No PID readings were recorded above background and no odors were observed. A field GPS unit was used to established coordinates for all boring/trench locations. GPS coordinates for all investigation locations are provided in Table 6.

A total of four surface soil samples, four subsurface soil samples and one native soil sample were collected from the soil borings. A total of five surface soil samples, five subsurface soil samples and two native soil sample were collected from the test trenches. During the drilling of the monitoring wells discussed in Section 2.2, three surface soil samples and three subsurface soil samples were collected from three monitoring well locations. Refer to **Figure 2** for all sampling locations.

All soil samples were collected for analysis for NYSDEC Part 375 brownfield constituents. Soil samples were collected based on PID readings, visual observations and to obtain representative soils across the Site. Surface soil samples were collected from the upper two inches prior to advancing a test trench or from the top of the borehole core and were not analyzed for volatile compounds. Subsurface soil samples were collected generally from fill materials, however, samples of what was believed to be native soil were also collected to ascertain if the native soil has been impacted.

The samples were submitted to a NYSDOH ELAP certified laboratory and a full Contract Laboratory Program (CLP). All samples were analyzed for TCL volatile (VOCs) and semi-volatile organic compounds (SVOCs), VOC/SVOC tentatively identified compounds (TICs), TAL metals + Cyanide, pesticides, and PCBs. Samples were analyzed in accordance with NYSDEC Category B, with full CLP-type analytical data package deliverables. Analytical results for all soil samples are discussed in Section 4.0.

2.2 GROUNDWATER INVESTIGATION

A total of six bedrock groundwater monitoring wells were installed using a conventional truck mounted drill rig with hollow stem auger drilling techniques and standard rock coring equipment. Once auger refusal was encountered (between 2 and 7 feet), a 4-inch diameter PVC casing was installed and cemented into the bedrock. The cement could set for a minimum of one day and the bedrock was then cored. Groundwater was at greater depth in the bedrock than anticipated and wells ranged in depth from 6 feet to 25 feet into the bedrock. Well construction diagrams are provided in **Appendix A**. Monitoring wells were installed between January 8 and January 12, 2018. Well development was completed on January 22, 2018 and sampling completed on January 25, 2018. The following are the measured well depths and water levels from the top of casing at the time of sampling (see **Table 8** Groundwater Elevations):

- MW-1 – 28.00 feet to bottom of well – 20.95 feet to standing water
- MW-2 – 28.20 feet to bottom of well – 20.45 feet to standing water
- MW-3 – 26.7 feet to bottom of well – 8.16 feet to standing water
- MW-4 – 16.2 feet to bottom of well – 13.93 feet to standing water
- MW-5 – 12.96 feet to bottom of well – 11.99 feet to standing water
- MW-6 – 22.4 feet to bottom of well – 11.65 feet to standing water

One groundwater sample was collected from each of the 6 wells. Well development and sampling were conducted in accordance with the work plan. All samples were analyzed for TCL volatile (VOCs) and semi-volatile organic compounds (SVOCs), VOC/SVOC tentatively identified compounds (TICs), TAL metals + Cyanide, pesticides, and PCBs. Since the completion of the groundwater sampling program, the NYSDEC issued a new analytical requirement for groundwater samples: PFAS (Per-and Polyfluoroalkyl substances). These analyses will be performed in subsequent sampling efforts, and the results added to the RI as an addendum. Analytical results are discussed in Section 4.0.

2.3 RADIOLOGICAL SOIL SURVEY

During the soil boring program soil cores were scanned/monitored using a gamma scintillation system (GSS) for the presence of radioactivity due to the types of material and previous industrial history on the property. No slag related material was observed and there were no GSS readings above background.

2.4 BUILDING ENVIRONMENTAL CONDITION ASSESSMENT

Environmental condition assessments were conducted for the four primary buildings located on-site. A summary description of these building structures is provided in Section 1.1. For each of these buildings an asbestos containing materials (ACM) survey, lead-based paint (LBP) survey and a PCB inventory assessment was conducted. The surveys/assessments were completed for all buildings between November 28. 2017 and December 1, 2017. The results of the ACM survey indicated the presence of

ACM in all the buildings. An inventory of light fixture ballast and bulbs (FLBs) indicated that many of the FLBs most likely contain PCBs primarily due to the age of the buildings and FLBs. A review of the X-Ray florescence (XRF) instrument results indicates that LBP is present and shows deterioration on multiple interior and exterior building components in all buildings. Detail reports for the above surveys/assessments are provided in **Appendix F.**

2.5 Soil Vapor Intrusion Investigation

Building 2 is to remain and used in the new planned development. This building has a partial basement. Based on site history and previous sampling analytical results, a vapor study was completed that consisted of sampling vapors from beneath the floor slab and within the building (i.e., indoor air). An air/vapor sample was collected from each of four locations across the concrete sub-slab floor. Two ambient indoor air samples were also collected along with one outdoor ambient air sample (see **Figure 4** for sampling locations). To collect sub-slab air/vapor samples, the concrete floor was drilled removing a concrete core and collecting an air (vapor) sample using a one-inch probe and a Summa canister. Summa canisters were also used to collect indoor/outdoor air samples. Sample collection was in accordance with the October 2006, New York State Department of Health *Guidance for Evaluating Soil Vapor Intrusion in the State of New York, as amended in* May 2017. Section 4.5 discusses the results of the sampling program. Photographs of all investigation work are provided in **Appendix C**.

3.0 PHYSICAL CHARACTERISTICS OF THE STUDY AREA

3.1 Surface Features

There are 4 buildings on the Site in addition to an unused former oil pump located at the rear of the Site. The buildings are described in detail in Section 1.1. The property slopes from the southeast to the northwest toward Main Street. Buildings and paved areas cover most of the northwest half of the Site, and the southeast half of the Site is vacant with significant tree and vegetation coverage.

3.2 Geology/Hydrogeology

The geology/stratigraphy observed during soil borings, test pits, and monitoring well construction suggests non-native backfill soils overlie Limestone and Dolostone bedrock at approximately 2 feet and 8 feet bgs. Minimal native soil deposits were encountered between bedrock and fill material. Depths to bedrock are provided on **Figure 5**. The non-native backfill consists of miscellaneous dark brown and gray-brown gravel, sand and silty clay type soils, including trace amounts of organics, concrete, brick, rock, wood and other materials. The backfill was found to extend in most areas to the top of bedrock surface. Based on measured groundwater depths from the six monitoring wells, groundwater flows from the southeast end of the Site towards Main Street to the northwest. Groundwater contours are provided on **Figure 6** and groundwater elevations are provided on **Table 8**.

3.3 Demography and Land use

Currently the property is utilized as an industrial/manufacturing facility owned by the Keystone Corporation, an electroplating company. Past uses of portions of the property include auto/truck manufacturing, gasoline pump manufacturing, cereal manufacturing, dairy equipment manufacturing, paint manufacturing, auto repair and plating.

The re-development project will result in student housing with ancillary commercial and retail uses.

Square footage in each use category is approximately 200,000 square feet of residential and approximately 12,000 square feet commercial/non-residential. The project area and scope fit well within the Buffalo Green Codes' Land Use Plan as it meets the expanding area need for student housing and utilizes the transportation, and physical development of the surrounding area. The Land Use Plan serves as a bridge between the city's comprehensive plan and zoning code by recommending the appropriate type, intensity, and character of development. It envisions a future for Buffalo built around the restoration of walkable, mixed-use, transit-served neighborhoods and economic centers which will fit the new site development. This Project will help the area capitalize on its strategic assets; an opportunity to start a process aimed at repairing neighborhood edges that have been disproportionately impacted by industrial uses over time and creating new opportunities for working and living within the area. The planned re-development of this area is based on its strategic location. This project strengthens the University of Buffalo anchor along the Codes Knowledge Corridor and will help to strengthen the neighborhood as it is located at the confluence of the University Heights, North Buffalo, University District and Kensington neighborhood.

4.0 NATURE AND EXTENT OF CONTAMINATION

4.1 INTRODUCTION

This section discusses the results of the RI activities, and the nature and extent of contaminants detected in the media investigated. The assessment is based on the RI program combined with the data obtained in previous investigations to provide an overview of the nature and extent of impacts at the Site. All soil and groundwater samples were submitted for analysis to a New York State certified laboratory. Air samples were also submitted for analysis to a New York State certified laboratory. Analytical data was validated by a certified data validator. Data Usability Summary Reports (Text Only) for all data is provided in **Appendix B**. Full reports will be submitted, if requested, separately.

4.2 POTENTIAL SOURCES

This section discusses potential sources of contamination that have resulted in the impacted soil and groundwater detected during the RI and previous investigations at the site. Historical operations at the Site and urban fill across the Site are the most likely sources of any impacts to the site soils and possibly groundwater.

The RI revealed that non-native or urban backfill materials were found across the entire site with very little native soils detected above bedrock. The elevated levels of PAHs and metals detected in the soils during the RI are commonly found in urban fill material. Metals are naturally present in soil and are consistent with long term site operations. Concentrations of metals in soil and fill exhibit considerable variability, both stratigraphically and spatially. This variability is related to the composition of the fill and variable use and storage of materials at the Site.

PAHs are a group of chemicals that are formed during incomplete burning of wood, coal, gas, garbage or other organic substances and are widely distributed in the environment and particularly in older urban environments where coal, gas, and petroleum were burned for heat and other energy uses such as at the industrial operations on the Site. In general, PAHs along with metal compounds are not very mobile in soils, in that they have low solubilities with water and tend to adsorb to the soil grains. These compounds do not readily breakdown in the environment and PAHs deposited from combustion of coal or other fuels years ago such as at the iron works operations on the Site would most likely still be present today.

The RI also revealed the presences of several elevated solvent compound concentrations and a few petroleum related compounds in the bedrock groundwater where the source may be from the historic on-site facility operations. The sub-slab vapor intrusion assessment conducted as part of the RI in on Building 2 on-site revealed elevated TCE in the indoor air, which may be attributable to the present of this compound detected in the groundwater samples. The findings of the sampling analytical program are further described below.

4.3 Soil Sample Analytical Results

The following provides a summary of the RI soil sample analytical program. Also discussed in this section are the results from the Phase II ESA program. Compounds detected during the Phase II program are summarized in **Table 1** and on **Figure 3**. Compound detected during the RI in soil samples are summarized in **Table 2** – Boring Soil Sample Analytical Results Summary, **Table 3** – Test Pit Soil Sample Analytical Results Summary, and **Table 4** – Monitoring Well Soil Sample Analytical Results Summary. These tables provide a comparison of the analytical results with 6 NYCRR Part 375-6.8 Restricted Residential, Residential, and Unrestricted SCOs. The Phase II results were also compared to the Residential, Restricted Residential and Unrestricted Use SCOs. Elevated concentrations of compounds detected in soil samples from the RI at each sample location are also presented on **Figure 2**.

4.3.1 Semi-Volatile Organic Compounds

Numerous SVOCs consisting primarily of PAHs were detected in most soil samples except for the RI boring samples RI-2 3-4.4 feet, RI-1 3-4 feet, RI-5 Surface, and test pit sample TP-9 4.5 feet. A summary of the concentration levels exceeding Residential or Restricted Residential SCOs includes the following:

- ... Phase II samples – 7 samples of 10 collected;
- ... RI boring samples – 1 sample of 9 collected;
- ... RI test pit samples – 7 samples of 12 collected; and
- ... RI MW soil samples – 4 samples of 6 collected.

4.3.2 Pesticides/PCBs

Pesticides were detected in most soil samples but at concentration levels below Restricted Residential and Residential SCOs except for the compound Dieldrin (0.757 ppm versus 0.2 ppm SCO) in the RI sample TP-12 Surface. PCBs were detected in several samples but at concentration levels below Residential and Restricted Residential SCOs except for the Aroclor 1254 (8.93 ppm versus 1 ppm SCO) in the Phase 2 sample BH-7.

4.3.3 Metals

Metals were detected in soil samples from both the Phase II and RI program. Several soil samples had metal compound concentration levels that exceeded Residential and Restricted Residential SCOs including the following:

- ... Phase 2 samples – 7 samples of 10 collected;
- ... RI boring samples – 3 sample of 9 collected;
- ... RI test pit samples – 7 samples of 12 collected; and

- ... RI MW soil samples – 2 samples of 6 collected.

4.3.4 Volatile Organic Compounds

Several solvent and petroleum related VOCs were detected in a few soil samples, primarily in the Phase II and RI borings. No VOCs were detected in the test pits, which were installed at the southeast half of the Site away from the facility operations buildings. All VOC concentration levels detected in the soil samples were below Residential and Restricted Residential SCOs as well as Unrestricted SCOs.

4.3.5 Soil Results Summary

The results of the RI and Phase II soils investigations indicate that SVOCs (primarily PAHs) and metal compounds were detected throughout soil/fill material at variable levels above residential and restricted residential SCOs. The results indicate that VOCs were detected in concentrations below SCOs across the Site. PCB/Pesticides were also detected in concentrations below SCOs across the Site apart from one RI test pit pesticide compound, Dieldrin, which slightly exceeded its SCO and one Phase II PCB compound, Aroclor 1254, which exceeded its SCO.

4.4 GROUNDWATER SAMPLE ANALYTICAL RESULTS

The following provides a summary of the RI groundwater (GW) sample analytical program. Compound concentration levels detected in GW samples collected during the RI are summarized in **Table 7** that presents a comparison of the detected groundwater compound concentrations to the Class GA Groundwater Quality Standards (GWQS) per NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (June 1998). Groundwater contours are provided on **Figure 6**.

4.4.1 Semi-Volatile Organic Compounds

SVOCs were not detected in any of the GW samples.

4.4.2 Pesticides/PCBs

Pesticides/PCBs were not detected in any of the GW samples.

4.4.3 Metals

Metal compounds were detected in each of the GW samples, however, at concentration levels well below TOGs guidance values.

4.4.4 Volatile Organic Compounds

VOCs were detected in all the GW samples. Several Solvent related VOCs were detected at concentration levels that exceeded TOGs guidance values in Monitoring wells MW-1, MW-2, MW-3 and MW-6, and several petroleum related VOCs were detected in the MW-4 sample. No VOC exceedances were detected in monitoring well MW-5. It should be noted that one elevated petroleum related compound (Benzene) was detected at a concentration exceeding its TOGs value in MW-2. The VOC exceedances of TOGs values were as follows.

- MW-1
  - Cis-1,2-Dichloroethene - 6.56 ppb versus 5 ppb TOGs value

- Trichloroethene – 19 ppb versus 5 ppb TOGs value

- MW-2
  - Benzene – 2.06 ppb versus 1 ppb TOGs value
  - 1,1-Dichloroethane – 5.52 ppb versus 0.6 ppb TOGs value
  - Cis-1,2-Dichloroethene – 92.7 ppb versus 5 ppb TOGs value
  - 1,1,1-Trichloroethane – 18.7 ppb versus 5 ppb TOGs value
  - Trichloroethene – 111 ppb versus 5 ppb TOGs value
  - Vinyl Chloride – 8.27 ppb versus 2 ppb TOGs value

- MW-3
  - 1,1-Dichloroethane – 12.7 ppb versus 0.6 ppb TOGs value
  - 1,1-Dichloroethene – 19.1 ppb versus 0.6 ppb TOGs value
  - Cis-1,2-Dichloroethene – 1500 ppb versus 5 ppb TOGs value
  - Trans-1,1-Dichloroethene – 214 ppb versus 0.6 ppb TOGs value
  - Trichloroethene – 59.6 ppb versus 5 ppb TOGs value
  - Vinyl Chloride – 151 ppb versus 2 ppb TOGs value

- MW-4
  - 1,2,4-Trimethylbenzene – 14 ppb versus 5 ppb TOGs value
  - m,p-Xylene – 101 ppb versus 5 ppb TOGs value
  - o-Xylene – 15.7 ppb versus 5 ppb TOGs value

- MW-6
  - Cis-1,2-Dichloroethene – 24.2 ppb versus 5 ppb TOGs value

4.4.5 Groundwater Results Summary

Solvent-related VOCs appear to be impacting GW at the northwest end of the Site (MW-1, MW-2 and MW-3) with an impact also indicated in MW-6 just east of Building 4. A few petroleum related VOCs were detected in MW-4 at the southeast end of the Site and possibly associated with the former oil pump house. Groundwater contours indicate GW flow from the southeast toward the northwest. The elevated number of solvent VOCs in MW-3 may be influenced from its location directly adjacent to the process/plating operation building (Bldg. 3) and the elevated concentrations of solvent VOCs in monitoring wells MW-1 and MW-2 are most likely influenced by the same operations since they are both downgradient of MW-3 and Building 3. The elevated petroleum related Benzene compound detected in MW-2 may be a result of this well located being directly adjacent to an off-site auto repair operation. Auto repair and former gasoline service station operations also use solvents for cleaning and the solvent levels detected in this well could be influenced by this facilities operation as well.

4.5 Soil Vapor Analytical Results

Four sub-slab vapor samples and three ambient air samples (two indoor and one outdoor ambient location) were sampled and analyzed in accordance with the approved work plan. Samples were submitted to a NYSDEC certified contract laboratory and analyzed for TCL VOCs by EPA method TO-15. Several VOC compounds were detected in both the indoor/outdoor ambient air samples and in the sub-slab vapor samples. The VOC compounds detected during the sampling program are summarized in **Table 5** and discussed in detail below.

Chemicals are found in the indoor air of buildings and the outdoor air that enters can enter a structure.

Typical concentrations of these chemicals are referred to as "background levels." Background levels of volatile chemicals are one of the factors considered when evaluating sampling results at a site. The VOCs detected in the indoor air samples collected within Building 2 were, in general, consistent with those detected in the outdoor ambient air control sample and detected at similar concentrations with a few exceptions.

The NYSDOH has developed guideline values for acceptable background levels for eight specific VOCs in ambient air. Three of which (carbon tetrachloride, methylene chloride and TCE) were detected in indoor or outdoor ambient air samples at the Site at values below guideline values. The highest concentration of methylene chloride detected in the ambient air was 0.5 ug/m3 in each of the ambient air samples versus the guideline value of 60 ug/m3. The highest concentration of TCE detected in the ambient air was 1.4 ug/m3 also in sample IA-02 versus the guideline value of 2.0 mcg/m3. There is no set guideline value for carbon tetrachloride.

The goals of collecting sub-slab vapor samples were to identify potential or impacts from soil vapor. New York State currently does not have any standards, criteria or guidance values for concentrations of compounds in sub-slab vapor. Additionally, there are no databases available of background levels of volatile chemicals in subsurface vapors. However, the NYSDOH has developed in their guidance document decision matrices as a risk management tool to provide guidance on a case-by-case basis about actions that should be taken to address current and potential exposures related to soil vapor intrusion. The matrices are intended to be used when evaluating the results from buildings with full slab foundations such as the Building 2. The matrices encapsulate the data evaluation processes and actions recommended to address potential exposures.

The NYSDOH has developed three matrices (refer to **Appendix H)** to use as tools in making decisions when soil vapor may be entering buildings.

Soil Vapor/Indoor Air Matrix	Volatile Chemical
Matrix A	carbon tetrachloride, 1,1-dichloroethene, *cis*-1,2-dichloroethene, and trichloroethene
Matrix B	methylene chloride, tetrachloroethene, and 1,1,1-trichloroethane
Matrix C	vinyl chloride

Using the Matrix, A, B and C models from the Guidance, the concentrations of these VOCs detected at the site were evaluated as follows:

- Matrix A - Concentrations of 1,1-Dichloroethene, carbon tetrachloride and cis-1,2-Dichloroethene are less than 1 ug/m3 in all indoor air samples and concentrations for these compounds in all four sub-slab samples are less than 60 ug/m3 resulting in “No Further Action” for these compounds. Concentrations of trichloroethene (TCE) ranged from 0.97 to 1.4 ug/m3 in the indoor air samples and concentrations for these compounds in all four sub-slab samples ranged from 8.1 to 63 ug/m3, which resulted in the following actions at each sub-slab location.
    - SS-01 – Monitor

- SS-02 – Mitigate
- SS-03 – Mitigate
- SS-04 – Mitigate

- Matrix B – Concentrations of both tetrachloroethene and 1,1,1-trichloroethane and methylene chloride are less than 3 ug/m3 for all indoor air samples and concentrations for these compounds in the all the sub-slab samples are less than 100 ug/m3 resulting in “No further action” related to these compounds”.

- Matrix C - The concentration of vinyl chloride was less than 0.02 ug/m3 in all indoor air samples and concentrations for this compound in the all the sub-slab samples were less than100 ug/m3 resulting in “No further action” related to this compound”.

4.5.1 Assessment of Matrix Results:

The sub-slab air analytical results reveal that trichloroethene (TCE) was detected in all four Sub-slab samples at elevated concentrations that when applied to the Air Guide requires monitoring/mitigation to reduce TCE concentrations. It should be noted that TCE was detected in the outdoor background sample but at a low concentration (0.32 ug/m3). Testing for the other seven NYSDOH assigned volatile chemicals for Indoor Air Decision Matrices indicated that “No Further Action” was required for these compounds.

4.5.2 OSHA Permissible Exposure Limits (PEl):

The concentrations of the various compounds detected in the indoor ambient air were compared to the OSHA (Occupational Safety and Health Administration) PEL for 8-hour time-weighted average worker inhalation exposure for each detected compound concentration. In all cases the maximum concentration detected in the ambient air for each compound was orders of magnitude lower than the OSHA (Occupational Safety and Health Administration) PEL for 8-hour time-weighted average worker inhalation exposure to each compound.

5.0 FATE AND TRANSPORT OF CONTAMINANTS OF CONCERN

The soil, groundwater and air sample analytical results were incorporated with the physical site conditions to evaluate the fate and transport of constituents of concern (COC) in Site media. COC for the Site include PAHs, metals and VOCs (solvent/petroleum related compounds). The mechanisms by which the COC can migrate to other areas or media are briefly outlined below.

The demolition and removal of the two primary processing buildings, small oil pump house, and associated fill materials will remove the primary source of many of the COCs and the metals/PAHs, solvent VOCs and petroleum VOCs currently detected in the site media. The new development will also cover approximately 80 percent of the Site with buildings and pavement, which will require the removal and off-site disposal of a significant amount of the impacted soils present at the site.

5.1 FUGITIVE DUST

Chemicals present in soil can be released to ambient air because of fugitive dust generation. Presently, the Site is approximately a little over half (northwest half) covered with buildings, asphalt pavement or grassed areas that limits any fugitive dust generation in those areas. The back, southeast half of the

Site is basically tree covered with grass vegetation over most of this area and not actively used and fenced from the public. The public has no direct access to the Site since it is private property with entrance restrictions to possibly disturb the site surface.

Impacted soil/fill will be excavated as part of the remedial work and new development. During new development a large portion of the Site (approximately 80+ percent) will be covered by structures, asphalt/concrete pavement/sidewalks and landscaped areas. However, during construction/remedial work fugitive dust maybe generated. A health and safety plan along with a community air monitoring plan will be prepared as required by the Remedial Action Work Plan (RAWP) and the Site Management Plan (SMP) called for under the BCP, which will minimize fugitive dust concerns during this time.

The fugitive dust migration pathway is not at present a relevant pathway. During remedial construction, however, fugitive dust migration will be more relevant and not be relevant thereafter due to the proposed new site development.

5.2 SURFACE WATER

There are no surface bodies of water directly on-site or in the immediate vicinity. The potential for impacted soil particle transport with surface water runoff is low at present due to the cover system previously described over most of the Site. Presently, site runoff is collected in a site storm water collection system.

The Site will be covered by new building structures, paved areas and vegetation and have a storm water collection system. Therefore, the movement of impacted soil by surface water runoff is not considered a relevant migration pathway post remediation

5.3 VOLATILIZATION

Several solvent and petroleum related VOCs were detected in fill/soil samples at concentrations significantly below both Restricted Residential and Unrestricted Use SCOs. Groundwater samples collected from on-site monitoring wells during the RI also indicated the presence of several solvent and petroleum related VOCs in the groundwater at concentration levels above TOGs guideline values. Some of the same solvent/petroleum VOCs were also detected in the Building 2 sub-slab vapor samples and to a lesser extent in the indoor ambient air samples.

There appears to be a volatilization pathway from the groundwater through the site soils to the sub-slab bedding material beneath Building 2 and from there into the building indoor air. To prevent possible vapor intrusion in the new buildings as well as the existing buildings to remain vapor mitigation systems will be installed around the building perimeters to collect soil vapors in the soil. The mitigations systems will exhaust any collected soil vapors above the building roof level.

5.4 LEACHING

Leaching refers to chemicals present in soil migrating downward to groundwater because of infiltration of precipitation. As noted above, solvent and petroleum VOCs were detected in the fill/soils at very low concentrations, however, solvent and petroleum VOCs were detected in the groundwater samples above TOGs values. Both SVOCs (PAHs) and metals were detected in the site soils; however, these compounds are not very mobile in soils, in that they have low solubility with water and tend to adsorb to the soil grains. These compounds do not readily breakdown in the environment and PAHs deposited from combustion of coal or other fuels years ago would most likely still be present today. No SVOCs were detected in the groundwater samples and only a few metals were detected well below TOGs values. Metal compounds in groundwater are common under natural conditions. Also, no pesticides/PCBs compounds were detected in groundwater samples.

Based on the results of the RI sampling, it appears that some leaching of VOCs in the soils to the groundwater is occurring. The elevated concentration levels of VOCs in the groundwater could also be attributable to direct movement of chemicals from building operations where pits and/or trenches within the buildings (primarily Building 3) maybe leaking and are in direct contact with the bedrock which is very shallow across the Site. As noted earlier Buildings 3 and 4 will be removed including all foundations which should remove the source if leaching is occurring in this manner.

5.5 GROUNDWATER TRANSPORT

Groundwater underlying the Site migrates from basically the southeast to the northwest across the Site toward Main Street. Chemicals present in groundwater may be transported beneath the Site via this pathway. The contaminant concentrations detected in the groundwater in MWs 1, 2, and 3 indicate that the chlorinated solvents are transforming or degrading during migration within groundwater towards the northwest.

Since the Site and surrounding area are serviced by municipal water and the City prohibits the use of groundwater so there are no local receptors. Therefore, significant potential exposure to any chemicals in the groundwater is minimal. Since the groundwater level is located at depth in the bedrock, municipal utility lines that run along and beneath Main Street should not be affected by the groundwater flow leaving the Site. The groundwater elevations measured in monitoring wells MW -1 and MW-2 locate along the northwest site perimeter are several feet below the bottom elevations of catch basins and manholes located off-site along Main street based on the initial site boundary and topographic survey.

5.6 EXPOSURE PATHWAY SUMMARY

Based on the above assessment, the pathway through which Site COCs could reach receptors at significant exposure concentrations is minimal except for soil vapors entering existing buildings, which will be mitigated by remediation and the planned new development.

6.0 QUALITATIVE EXPOSURE ASSESSMENT

6.1 HUMAN EXPOSURE RISKS

The Site in its present condition provides minimum human exposure risks as related to COCs in the Site soils and bedrock groundwater. Presently, soil vapors entering Building 2 present a moderate human exposure risk that will be mitigated with the new deveopment. All existing operations will be shut down and processing equipment in all of the buildings will be removed in April of 2018 along with the demolition and removal of Buildings 3 and 4 from the site. A health and safety plan will be in place for the demolition of any buildings to reduce exposure risks during demoltion. The elevated COCs in soils are PAHs and metals, which will not impact off-site receptors..

The proposed site remediation of removing impacted soils to the depth of the new development, which will cover most of the Site with buildings and pavement will remove risk of human exposure. Confirmation soil sampling will be conducted for any areas that subsurface soils will be required to be removed (buried utility runs, etc.) under the new development. This sampling will confirm that any impacted soils encountered have been removed to meet SCOs and proper cover system replaced. Exposed soil that will be outside the new development but within the Site boundary will be covered by two feet of clean fill.

The primary population at risk would be construction workers performing building demolition and remedial activities. However, contractor health and safety plans will be in effect as will be required by a Remedial Action Work Plan during all remediation activities to minimize any human exposure.

The RI program noted elevated VOC concentrations in groundwater that exceeded TOGs Guidance values. Municipal water supply will be used for all water requirements of the new development thereby eliminating any future human exposure. With the removal of the sources of VOCs it is anticipated that natural attenuation will reduce VOC levels in the groundwater.

6.2 Ecological Exposure Risks

The Site in its current condition is not a habitat to wildlife. With the removal of the sources of VOCs, it is anticipated that natural attenuation will reduce VOC levels in the groundwater. The new development will be covering approximately 80 percent of the Site with building and paved areas. The Site provides no wildlife habitat or pond/water features. The DER-10 Appendix 3C Fish and Wildlife Resources Impact Analysis (FWRIA) Decision Key is provided in Appendix D. No FWRIA is needed based on the completed decision key process because the Site will be remediated to Restricted Residential status. The Site does not have a habitat of an endangered, threatened or special concern species present. Therefore, no unacceptable ecological risks are anticipated under the current or any anticipated future site-use scenario.

7.0 REMEDIAL ALTERNATIVES ANALYSIS

7.1 Remedial Action Objectives

The final remedial measures for the Main and Hertel Site must satisfy Remedial Action Objectives (RAOs). Remedial Action Objectives are site-specific statements that convey the goals for minimizing or eliminating substantial risks to public health and the environment. The primary RAOs identified for the Site are the following:

- **RAOs for Public Health Protection**
  - Prevent ingestion/direct contact with contaminated soil; and
  - Prevent inhalation of or exposure from contaminants volatilizing/radiating from contaminants in soil and groundwater.

- **RAOs for Environmental Protection**
  - Prevent/minimize contaminated soils impact on the environment (groundwater, air and surface waters).

7.2 Alternatives Selection Factors

In addition to achieving RAOs, NYSDEC's Brownfield Cleanup Program calls for an evaluation of remedial alternatives in accordance with 6 NYCRR Part 375-3 and DER-10 Technical Guidance for Site Investigation and Remediation. This alternatives analysis section evaluates the remedial alternative developed for the site using the following selection factors:

- **Overall Protection of Public Health and the Environment**. This criterion is an evaluation of the remedy's ability to achieve each of the RAOs, and protect public health and the environment, assessing how each existing or potential pathway of exposure is eliminated, reduced, or controlled through removal, treatment, engineering controls, or institutional controls.
- **Compliance with Standards, Criteria, and Guidance (SCGs)**. Compliance with SCGs addresses whether a remedy will meet applicable environmental laws, regulations, standards, and guidance. The SCGs applicable to this site are listed in section 2.2.5.
- **Long-Term Effectiveness and Permanence**. This criterion is an evaluation of the long-term effectiveness and permanence of an alternative or remedy after implementation.
- **Reduction of Toxicity, Mobility or Volume with Treatment**. This criterion evaluates the remedy's ability to reduce the toxicity, mobility, or volume of Site contamination. Preference is given to remedies that permanently and significantly reduce the toxicity, mobility, or volume of the contamination at the Site.
- **Short-Term Effectiveness**. Short-term effectiveness is an evaluation of the potential short-term adverse impacts and human exposures, and nuisance conditions during construction and/or implementation. This includes a discussion of how the identified adverse conditions will be controlled, and the effectiveness of the controls. This criterion also includes a discussion of engineering controls that will be used to mitigate short term impacts (i.e., dust control measures), and an estimate of the length of time needed to achieve the remedial objectives. Sustainability is also evaluated.
- **Implementability**. The implementability criterion evaluates the technical and administrative feasibility of implementing the remedy. Technical feasibility includes the difficulties associated with the construction and the ability to monitor the effectiveness of the remedy. For administrative feasibility, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc.
- **Cost**. This criterion evaluates the overall cost effectiveness of an alternative or remedy.
- **Community Acceptance**. This criterion evaluates the public's comments, concerns, and overall perception of the remedy.

7.3 LAND USE EVALUATION

In developing and screening remedial alternatives, NYSDEC's Part 375 regulations require that the reasonableness of the anticipated future land use be factored into the evaluation. The future land use will meet Part 375 Restricted Residential site use category.

The re-development project will result in student housing with ancillary commercial and retail uses. Square footage in each use category is approximately 200,000 square feet of residential and approximately 12,000 square feet commercial/non-residential. Once Buildings 3 and 4 are removed a new building will be erected for student housing and Buildings 1 and 2 will be renovated for yet unnamed use under the new development. **Figures C-101 and C-103** show the proposed layout and grading plan of new facilities.

The project area and scope fit well within The Buffalo Green Codes' Land Use Plan as it meets the expanding area need for student housing and utilizes the transportation, and physical development of the surrounding area. The Land Use Plan serves as a bridge between the city's comprehensive plan and zoning code by recommending the appropriate type, intensity, and character of development. It envisions a future for Buffalo built around the restoration of walkable, mixed-use, transit-served neighborhoods and economic centers which will fit the new Site development.

This Project will help the area capitalize on its strategic assets; an opportunity to start a process aimed at repairing neighborhood edges that have been disproportionately impacted by industrial uses over time and creating new opportunities for working and living within the area.

The planned re-development of this area is based on its strategic location. This project strengthens the University of Buffalo anchor along the Code's Knowledge Corridor and will help to strengthen the neighborhood as it is located at the confluence of the University Heights, North Buffalo, University District and Kensington neighborhood.

7.4 Selection of Alternatives for Evaluation

The results of the RI and a previous Phase 2 environmental assessment indicate the following.

- ... Fill soils across the Site were found to have elevated PAHs and metal compounds both in the surface and subsurface soils above Part 375 Residential/Restricted Residential SCOs.
- ... Solvent and petroleum related VOCs were detected in the groundwater samples from the 6 wells installed as part of the RI at concentration levels that exceed TOGs Groundwater Guidance Values in 5 of the 6 wells.
- ... The results of the RI vapor intrusion study indicated that the solvent TCE exists in the soil vapors in the sub-slab soils beneath Building 2 at concentration levels that require mitigation/monitoring.
- ... The building environmental condition assessment indicated the presence of asbestos, LBP and PCB containing material in all four buildings.

Based on the completion of the RI program the following three remedial alternatives have been selected for evaluation:

- Alternative 1 – Building removal. Impacted soil removal & backfill, groundwater treatment, soil vapor mitigation all to meet Part 375-3.8 Track 4 and Part 375-6.8 Restricted Residential SCOs;
- Alternative 2 – Building removal. Impacted soil removal & backfill, groundwater treatment, soil vapor mitigation all to meet Part 375-3.8 Track 2 and Part 375-6.8 Residential SCOs; and,
- Alternative 3 – Unrestricted Use alternative

The following section discusses the evaluation of these alternatives.

7.4.1 Alternative 1

The details of this alternative include:

1. Demolition and removal of Buildings 3, 4 and the oil pump house including proper handling/disposal of asbestos (ACM), lead based paint (LBP) and PCB-containing materials to meet appropriate regulations;
2. Excavate all fill/soil from beneath the footprint of the new development (see Figures C101/C103) to a depth of one foot below the final grade of new pavement and building foundation areas or to top of bedrock whichever comes first. Based on previous investigations all this material exceeds Restricted Residential SCOs and will be disposed off-site at an approved landfill. Backfill with clean impervious soil across the entire excavated footprint area to a depth of two feet or placement of new development hardscape. Areas outside the new development footprint will be

surface stripped and covered with two feet of clean imported fill resulting in two feet of clean impervious fill covering all areas of the Site to meet restricted residential requirements;

3. Site specific soil cleanup objectives below the preferred remedial alternative (e.g., commercial, industrial, etc.) will be selected to address areas in the subsurface that exhibit significantly elevated contaminant concentrations. For example, it has been observed that certain PAHs, PCBs, and arsenic have been detected in subsurface soils within a few areas on-site where the soil can be considered a “hot spot”. These supplementary action levels will be used to remove the elevated contaminants in these areas, thus allowing the contaminants concentrations beneath the cover system to be more homogenous;
4. Install soil vapor mitigation systems in buildings 1 and 2 (radon mitigation system, sub-slab depressurization system or equivalent);
5. As necessary, the migration of volatile chemicals (e.g., VOCs, certain SVOCs, mercury, radon, etc.) from groundwater contamination or contaminated soil into a newly constructed overlying building will be mitigated. It is important to reduce vapors from indoor air that can cause health risks for occupants when inhaled (immediate and long-term). Passive or active mitigation methods can be employed to prevent entry of harmful vapors into the building.
6. Treat the groundwater by in-situ methods such as injection of amendments to enhance bioremediation of chlorinated VOCs in the groundwater through the installation of injection holes in impacted groundwater areas of the bedrock. A groundwater monitoring program will be established to assess attenuation of impacts to the groundwater over time (5 years);
7. As required, a perimeter soil vapor assessment will be performed on site along the neighboring properties to the northeast. Per DOH/DEC direction various sample points will be installed down or close to bedrock to evaluate the potential for off-site migration of subsurface volatile chemicals. The assessment can be performed using several techniques including off gas collection and sampling systems and temporary or permanent probes and tubes with hand-held analytical devices; and,
8. This alternative also includes provisions for managing the Site upon completion of remediation with implementation (through an Environmental Easement (EE)) of ICs and ECs as follows:

   Imposition of an IC in the form of an environmental easement for the controlled property that:
   - Requires the remedial party or site owner to complete and submit to the NYSDEC a periodic certification of IC/EC in accordance with NYSDEC Part 375-1.8(h)(3);
   - Allows the use and development of the controlled property for restricted residential, commercial, and industrial uses as defined by Part 375-1.8(g)., although land use is subject to local zoning laws;
   - Restricts the use of Groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and
   - Requires compliance with the approved Site Management Plan.

   A Site Management Plan (SMP) is required that includes the following:
   - An IC/EC plan that identifies all use restrictions and ECs for the Site and details the steps and media specific requirements necessary to ensure the IC and/or ECs remain in place and effective. The IC’s are as discussed above, and the EC’s include soil cover system and groundwater monitoring
   - An Excavation Plan which details provisions for management of future excavations in areas of remaining contamination;
   - A monitoring plan for groundwater;
   - Descriptions of the provisions of the environmental easement including any land use or groundwater use restrictions;
   - Provisions for the management and inspection of the identified ECs;

- Maintaining site access controls and NYSDEC notifications; and,
- The steps necessary for the periodic reviews and certifications of the IC/ECs.

Overall Protection of Public Health and the Environment – Alternative 1 is protective of human health and the environment. The removal of the process and warehouse buildings (Buildings 3 and 4) along with the oil pump house removes the primary sources of impacts to the Site. Protection of public health and the environment is also achieved by the removal of most of the impacted fill soils across the Site and covering these areas with two feet of clean soil cover over remaining open areas to meet restricted residential SCOs. The clean soil covered areas will be incorporated into the SMP as an engineering control. The installation of vapor mitigation systems in the remaining buildings will prevent any impacted soil vapors from entering the buildings. The treatment of groundwater will reduce groundwater impacts to meet TOGs guidelines. Institutional and engineering controls will be implemented to prevent more restrictive forms of future site use (e.g., unrestricted and residential) and restrict any use of the groundwater at the Site. Under ICs/ECs, the groundwater will be monitored, and the cover system will be inspected, monitored and maintained and the SMP Excavation Work Plan will apply to any future disturbance of soils beneath the cover system. The SMP also requires the implementation of an approved health and safety plan for all future work.

Compliance with SCGs – Alternative 1 is a Part 375 track 4 remedy with some soils slightly exceeding the Restricted Residential SCOs remaining below an approved cover system. Initial groundwater samples from the on-site wells indicated that several VOCs exceed NYSDEC TOGs groundwater guidelines. With the removal of the source of VOC impacts and groundwater treatment it is expected that natural attenuation will reduce these impacts over time. A groundwater monitoring program will be established through the SMP to assess groundwater quality over an anticipated 5-year timeframe.

Long-Term Effectiveness and Permanence – The demolition/removal of the process and warehouse buildings along with the oil pump house will remove primary contaminant sources. The removal of the impacted fill soil from across the entire new development footprint (80 +/- percent of the site surface area) to a foot below the new development grades and backfilling this area and area outside the footprint with two feet of clean soil eliminates exposure to any remaining impacted soils that may exist above bedrock level. Vapor mitigation systems will be installed at all the remaining Site buildings to eliminate possible impacted soil vapor from entering the buildings, and future building/building additions will also be evaluated for vapor intrusion; and recommended actions will be implemented to address exposures related to soil vapor intrusion. Treatment of the groundwater along with source removal should permanently reduce groundwater impacts. The use of the groundwater underlying the Site is prohibited.

The Site Management Plan (SMP) will include the site's cover system (two feet of clean soil) as an EC and an Excavation Work Plan to address any impacted fill/soil encountered during any future development and/or maintenance activities. Implementation of the SMP for long term management also includes groundwater monitoring, monitoring and maintenance of the building vapor mitigation system, site cover system and a Site-wide Inspection program to assure that the ICs/ECs placed on the Site have not been altered and remain effective. The groundwater monitoring results will be periodically sampled for a 5-year timeframe to determine if continued attenuation is occurring. As such, this alternative is expected to provide long-term effectiveness and permanence.

Reduction of Toxicity, Mobility, or Volume with Treatment – Through removal of all on-site contaminant sources and treatment of the groundwater, the toxicity, mobility, and volume of Site contamination will be permanently or significantly reduced. The Site Management Plan will include an excavation work plan to address any residual impacted soil/fill encountered during future development and/or maintenance activities. Any future building/building additions will also be evaluated for vapor intrusion; and recommended actions will be implemented to address exposures related to soil vapor intrusion. The SMP will also include monitoring requirements for groundwater and a Site-wide Inspection program to assure that the ICs/ECs placed on the Site have not been altered and remain effective. Therefore, this alternative satisfies this criterion.

Short-Term Effectiveness – Potential short-term adverse impacts and human exposures may occur during construction (remediation and new development). However, any adverse impacts should be minimal. A Remedial Action Work Plan (RAWP) will be implemented prior to remediation which will require the contractor to prepare and implement a site-specific health and Safety plan to cover all workers. The soil vapor mitigation systems to be installed at each building (existing and new) adheres to the remedial objective for this media of protection of public health by eliminating the potential for soil vapor intrusion into the new and renovated buildings on-site. The SMP will detail future testing, if needed, and soil vapor intrusion protection for any building additions or new buildings. A groundwater treatment system will be designed to reduce impacts in the immediate short term along with a monitoring program established through the SMP to assess effectiveness. It is assumed, at this time, that cleanup levels will be achievable in less than five years. Periodic inspections of the cover system per the SMP requirements will prevent ingestion/direct contact with contaminated soil and prevent inhalation of contaminants in soil that may remain below the cover system. This alternative is sustainable through the environmental easement and the implementation of the SMP.

Implementability – There are no implementation issues related to the proposed remediation or related to the Institutional and Engineering Controls placed on the Site under this alternative.

Community Acceptance – Community acceptance will be evaluated based on comments to be received from the public in response to Fact Sheets, public comment periods on documents and other planned Citizen Participation activities. To-date there have been no public comments during any of the public comment periods.

Cost – The values used in estimating alternatives are order-of-magnitude estimates for comparing alternatives and are not meant to be a specific remedial criterion. The estimated cost for this Alternative is $2.0M. The cost summaries for this alternative is provided in **Appendix I**

7.4.2 Alternative 2

The details of this alternative include:

1. Demolition and removal of Buildings 3, 4 and the oil pump house including proper handling/disposal of asbestos (ACM), lead based paint (LBP) and PCB containing materials to meet appropriate regulations;
2. Excavate all fill/soil that exceeds Track 2 Part 375 Residential SCOs for the top 15 feet of soil or to bedrock if less than 15 feet. The top of bedrock was encountered during previous investigations at depths ranging between 2 feet and 8 feet across the Site. Most of the material above bedrock is fill/soil with very little native soil. Fill/soil or native soils that do not exceed Residential SCOs will remain in place unless required to be removed for the new development. It is estimated that approximately 85 percent of the soil above bedrock exceeds Residential SCOs and will be removed and disposed off-site at an approved landfill. The Site will be backfilled with clean impervious soil or placement of new development hardscape to meet the new development grades.
3. Site specific soil cleanup objectives below the preferred remedial alternative (e.g., commercial, industrial, etc.) will be selected to address areas in the subsurface that exhibit significantly elevated contaminant concentrations. For example, it has been observed that certain PAHs, PCBs, and arsenic have been detected in subsurface soils within a few areas on-site where the

soil can be considered a “hot spot”. These supplementary action levels will be used to remove the elevated contaminants in these areas, thus allowing the contaminants concentrations beneath the cover system to be more homogenous;

4. Install soil vapor mitigation systems in buildings 1 and 2 (radon mitigation system, sub-slab depressurization system or equivalent);
5. As necessary, the migration of volatile chemicals (e.g., VOCs, certain SVOCs, mercury, radon, etc.) from groundwater contamination or contaminated soil into a newly constructed overlying building will be mitigated. It is important to reduce vapors from indoor air that can cause health risks for occupants when inhaled (immediate and long-term). Passive or active mitigation methods can be employed to prevent entry of harmful vapors into the building,
6. As required, a perimeter soil vapor assessment will be performed on site along the neighboring properties to the northeast. Per DOH/DEC direction various sample points will be installed down or close to bedrock to evaluate the potential for off-site migration of subsurface volatile chemicals. The assessment can be performed using several techniques including off gas collection and sampling systems and temporary or permanent probes and tubes with hand-held analytical devices; and,
7. Treatment of groundwater by in-situ methods such as injection of amendments to enhance bioremediation of chlorinated VOCs in the groundwater through the installation of injection holes in impacted groundwater areas of the bedrock. A groundwater monitoring program will be established as an engineering control to assess attenuation of impacts to the groundwater over time (5 years).

No EE or SMP will be required for this alternative except for an EC of monitoring groundwater for 5-years.

Overall Protection of Public Health and the Environment – Alternative 2 is protective of human health and the environment. The removal of the process and warehouse buildings (Buildings 3 and 4) along with the oil pump house removes the primary source of impacts to the site. Protection of public health and the environment is also achieved by the removal most of the impacted soils across the Site and covering these areas with clean soil cover to meet new development grades. The installation of vapor mitigation systems in the remaining buildings will prevent any impacted soil vapors from entering the buildings. The treatment of groundwater will reduce groundwater impacts to meet TOGs guidelines. Use of the groundwater at the Site is prohibited. As an engineering control groundwater will be monitored for up to 5 years which is the time frame anticipated for treatment to effectively reduce groundwater impacts.

Compliance with SCGs – Alternative 2 is a Part 375 track 2 remedy with all soils exceeding Residential SCOs being removed to bedrock (2 to 8 feet in depth). Initial groundwater samples from the on-site wells indicated that several VOCs exceed NYSDEC TOGs groundwater guidelines. With the removal of the source of VOC impacts and groundwater treatment it is anticipated that impacts will be sufficiently attenuation within 5 years. A groundwater monitoring program will be established to assess groundwater quality over the 5-year timeframe.

Long-Term Effectiveness and Permanence – The demolition/removal of the process and warehouse buildings along with the oil pump house will remove primary contaminant sources. The removal of impacted soil that exceeds Residential SCOs from across the entire Site provides long-term effectiveness and permanence. Vapor mitigation systems will be installed at all the remaining buildings to eliminate possible impacted soil vapor from entering the buildings, and future building/building additions will also be evaluated for vapor intrusion; and recommended actions will be implemented to address exposures related to soil vapor intrusion. Treatment of the groundwater and source removal should significantly reduce groundwater impacts. The use of the groundwater underlying the Site is prohibited. Groundwater will be monitored for up to 5-years as an engineering control to assess impact reductions from treatment and natural attenuation. Therefore, this alternative satisfies this criterion.

Reduction of Toxicity, Mobility, or Volume with Treatment – Through removal of all on-site contaminant sources, the toxicity, mobility, and volume of Site contamination has been permanently or significantly reduced. Also, the removal of impacted fill/soil that exceed Residential SCOs from across the entire site greatly reduces the toxicity, mobility and volume of impacted soils on-site. Groundwater treatment will greatly reduce toxicity, mobility and volume of impacts to the groundwater. With the removal of impacted soil and treatment of the groundwater, soil vapor impacts will be greatly reduced. Therefore, this alternative satisfies this criterion.

Short-Term Effectiveness – Potential short-term adverse impacts and human exposures may occur during construction (remediation and new development). However, any adverse impacts should be minimal. A Remedial Action Work Plan (RAWP) will be implemented prior to remediation which will require the contractor to prepare and implement a site-specific health and Safety plan to cover all workers. The soil vapor mitigation systems to be installed at each building will adhere to the remedial objective for this media of protection of public health by eliminating the potential for soil vapor intrusion into the new and renovated buildings. A groundwater treatment system will be designed to reduce impacts in the immediate short-term along with a monitoring program established to assess effectiveness. It is assumed, at this time, that cleanup levels will be achievable in less than five years. Therefore, short-term effects due to this alternative are anticipated to be minimal.

Implementability – There are implementation issues related to the proposed remediation under this alternative. There will be slope stability difficulties in removal of impacted soils from the southwest slope along the property boundary, plus difficulties in removal or treatment of sub-slab soils that may exceed Residential SCOs

Community Acceptance – Community acceptance will be evaluated based on comments to be received from the public in response to Fact Sheets, public comment periods on documents and other planned Citizen Participation activities. To-date there have been no public comments during any of the public comment periods.

Cost – The values used in estimating alternatives are order-of-magnitude estimates for comparing alternatives and are not meant to be a specific remedial criterion. The estimated cost for this Alternative is $3.1M. The cost summaries for this alternative is provided in **Appendix I**.

7.4.3 Alternative 3 - Unrestricted Use

The details of this alternative include:

1. Demolition and removal of Buildings 3, 4 and the oil pump house including proper handling/disposal of asbestos (ACM), lead based paint (LBP) and PCB containing materials to meet appropriate regulations;
2. Excavate and off-site disposal of all fill/soil across the open areas of the Site down to bedrock and Backfill with a minimum of two (2) feet of clean impervious soil across the entire Site or placement of new development hardscape in preparation for the new development (see Figures C101/C103);
3. Install soil vapor mitigation systems in buildings 1 and 2 (radon mitigation system, sub-slab depressurization system or equivalent);
4. As necessary, the migration of volatile chemicals (e.g., VOCs, certain SVOCs, mercury, radon, etc.) from groundwater contamination or contaminated soil into a newly constructed overlying building will be mitigated. It is important to reduce vapors from indoor air that can cause health

risks for occupants when inhaled (immediate and long-term). Passive or active mitigation methods can be employed to prevent entry of harmful vapors into the building,

5. As required, a perimeter soil vapor assessment will be performed on site along the neighboring properties to the northeast. Per DOH/DEC direction various sample points will be installed down or close to bedrock to evaluate the potential for off-site migration of subsurface volatile chemicals. The assessment can be performed using several techniques including off gas collection and sampling systems and temporary or permanent probes and tubes with hand-held analytical devices; and,
6. Treatment of groundwater by in-situ methods such as injection of amendments to enhance bioremediation of chlorinated VOCs in the groundwater through the installation of injection holes in impacted groundwater areas of the bedrock. A groundwater monitoring program will be established (EC) to assess attenuation of impacts to the groundwater over a two (2) year time frame.

No EE or SMP will be required for this alternative except for an EC of monitoring groundwater for two years. Based on the RI data, fill down to bedrock exceed Unrestricted Use SCOs in most areas across the Site. Bedrock in most areas across the Site is shallow with an elevation that ranges from approximately two 2-feet bgs up to 8-feet bgs with pockets in mounded areas up to 12 feet bgs.

Overall Protection of Public Health and the Environment – The Unrestricted Use alternative would achieve the corresponding Part 375 SCOs, which are designed to be protective of human health under any reuse scenario.

Compliance with SCGs –Unrestricted Use alternative would comply with SCOs and groundwater cleanup guidelines as specified in the TOGs.

Long-Term Effectiveness and Permanence – The Unrestricted Use alternative would achieve removal of all contaminant sources and residual impacted fill/soil; therefore, no fill/soil exceeding the Unrestricted SCOs would remain on the Site. As such, the Unrestricted Use alternative would provide long-term effectiveness and permanence. Post-remedial monitoring and certifications would not be required other than groundwater monitoring for assessing natural attenuation of groundwater quality.

Reduction of Toxicity, Mobility, or Volume with Treatment – Through removal of all contaminant sources and impacted fill/soil, the Unrestricted Use alternative would permanently and/or significantly reduce the toxicity, mobility, and volume of Site contamination along with the cleanup of groundwater through treatment and natural attenuation.

Short-Term Effectiveness – The short-term adverse impacts and risks to the community, workers, and environment during implementation of the Unrestricted Use alternative would increase. The duration of time community, workers, and the environment is exposed to possible fugitive dust would increase.

Implementability – Technical implementability of the Unrestricted Use alternative would be more difficult compared to the Alternative 1. Sheet piling would need to be installed at the southeast end of the Site at the property boundary to remove impacted soils up to the property boundary. Slope stability will be of concern along this perimeter and several residences are located above the slope just off-site. Also, treatment or removal of sub-slab impacted soils may be difficult.

Community Acceptance – Community acceptance will be evaluated based on comments to be received from the public in response to Fact Sheets, public comment periods on documents and other planned Citizen Participation activities.

Cost - The capital cost of implementing an Unrestricted Use alternative is estimated at approximately $4.1M. (see **Appendix I**).

7.5 RECOMMENDED REMEDIAL ALTERNATIVE

Based on the alternatives analysis evaluation, Alternative 1 satisfies the remedial action objectives and is fully protective of human health and the environment. Therefore, Alternative 1 is the recommended final remedy for the Site.

8.0 FINDINGS AND CONCLUSIONS

8.1 REMEDIAL INVESTIGATION

The RI tasks were completed in accordance with a defined scope of work and approved work plan. The following provides a summary of the investigation activities:

- Assessment of fill soil materials across the Site by installing nine soil borings and 14 test pits across the Site and collecting a total of 27 soil samples that included 6 soil samples from monitoring well locations;
- Assessment of groundwater conditions by installing six on-site bedrock groundwater monitoring wells and collecting a total of six groundwater samples;
- Assessment of sub-slab vapor intrusion in Building 2 by collecting four sub-slab vapor samples, two indoor air samples and one outdoor air sample;
- Performing a buildings assessment (asbestos, lead based paint and PCBs) in all four site buildings;
- Performed laboratory analysis on all soil/water samples. Analysis included TAL metals, TCL VOCs plus TICs (no surface soil samples), TCL SVOCs plus TICs, PCBs and pesticides;
- Performed laboratory analysis on all air samples for TO-15 VOCs; and,
- Completed a radiological survey of all borehole fill soil.

The results of the RI and Phase II soils investigations indicate that SVOCs (primarily PAHs) and metal compounds were detected throughout the fill at variable levels above Residential and Restricted Residential SCOs. Additionally, the results indicate that VOCs were detected in concentrations below SCOs across the Site. PCB/Pesticides were also detected in concentrations below SCOs across the Site except for one RI test pit pesticide compound, Dieldrin, which slightly exceeded its Restricted Residential SCO and one Phase 2 PCB compound, Aroclor 1254, which exceeded its Restricted Residential SCO.

The groundwater analytical results indicate VOC-impacted groundwater. Solvent-related VOCs appear to be impacting GW at the northwest end of the Site (MW-1, MW-2 and MW-3) with an impact also indicated in MW-6 just east of Building 4. A few petroleum-related VOCs were detected in MW-4 at the southeast end of the Site and possibly associated with the former oil pump house. Groundwater contours indicate GW flow from the southeast toward the northwest. The elevated number of solvent VOCs in MW-3 may be influenced from its location directly adjacent the process/plating operation building (Bldg. 3) and the elevated concentrations of solvent VOCs in monitoring wells MW-1 and MW-2 are most likely influenced by the same operations since they are both downgradient of MW-3 and Building 3. It should also be noted that the elevated petroleum-related Benzene compound detected in MW-2 may be a result of an adjacent off-site auto repair operation. Auto repair operations also use solvents for cleaning and the solvent levels detected in this well could be influenced by this facilities operation as well.

The sub-slab air analytical results reveal that trichloroethene (TCE) was detected in all four Sub-slab samples at elevated concentrations that when applied to the Air Guide matrices some form of monitoring/mitigation may be required to reduce TCE concentrations. It should be noted that TCE was detected in the outdoor background sample, but at a low concentration (0.32 ug/m3). The other seven NYSDOH assigned volatile chemicals for Indoor Air Decision Matrices evaluation resulted in "No Further Action" related to these compounds.

The results of the ACM survey indicated the presence of ACM in all the buildings. An inventory of light fixture ballast and bulbs (FLBs) indicated that many of the FLBs most likely contain PCBs primarily due to the age of the buildings and FLBs. A review of the X-Ray florescence (XRF) instrument results indicates that LBP is present and shows deterioration on multiple interior and exterior building components in all buildings. Detail reports for the above surveys/assessments are provided in Appendix F.

8.2 Alternatives Assessment

An Alternatives Analysis was completed to evaluate potential remedial alternatives that satisfy site-specific remedial action objectives. Based on that analysis, the selected remedy Alternative 1 which includes:

1. Demolition and removal of Buildings 3, 4 and the oil pump house including proper handling/disposal of asbestos (ACM), lead based paint (LBP) and PCB containing materials to meet appropriate regulations;
2. Excavate all fill/soil from beneath the footprint of the new development (see **Figures C101/C103**) to a depth of one foot below the final grade of new pavement and building foundation areas or to top of bedrock whichever comes first. Based on previous investigations all this material exceeds Restricted Residential SCOs and will be disposed off-site at an approved landfill. Backfill with clean impervious soil across the entire excavated footprint area to a depth of two feet or placement of new development hardscape. Areas outside the new development footprint will be surface stripped and covered with two feet of clean imported fill resulting in two feet of clean fill covering all areas of the Site to meet restricted residential requirements;
3. Site specific soil cleanup objectives below the preferred remedial alternative (e.g., commercial, industrial, etc.) will be selected to address areas in the subsurface that exhibit significantly elevated contaminant concentrations. For example, it has been observed that certain PAHs, PCBs, and arsenic have been detected in subsurface soils within a few areas on-site where the soil can be considered a "hot spot". These supplementary action levels will be used to remove the elevated contaminants in these areas, thus allowing the contaminants concentrations beneath the cover system to be more homogenous;
4. Install soil vapor mitigation systems in buildings 1 and 2 (radon mitigation system, sub-slab depressurization system or equivalent);
5. As necessary, the migration of volatile chemicals (e.g., VOCs, certain SVOCs, mercury, radon, etc.) from groundwater contamination or contaminated soil into a newly constructed overlying building will be mitigated. It is important to reduce vapors from indoor air that can cause health risks for occupants when inhaled (immediate and long-term). Passive or active mitigation methods can be employed to prevent entry of harmful vapors into the building;
6. As required, a perimeter soil vapor assessment will be performed on site along the neighboring properties to the northeast. Per DOH/DEC direction various sample points will be installed down

or close to bedrock to evaluate the potential for off-site migration of subsurface volatile chemicals. The assessment can be performed using several techniques including off gas collection and sampling systems and temporary or permanent probes and tubes with hand-held analytical devices;

7. Treatment of groundwater by in-situ methods such as injection of amendments to enhance bioremediation of chlorinated VOCs in the groundwater through the installation of injection holes in impacted groundwater areas of the bedrock. A groundwater monitoring program will be established to assess attenuation of impacts to the groundwater over time (5 years); and,
8. Implementation of a SMP that includes an IC/EC Plan, Operation and Maintenance Plan, Excavation Work Plan, Site Monitoring Plan and an Environmental Easement.

The selected remedial alternative fully satisfies the remedial action objectives and is protective of human health and the environment. Therefore, this alternative is the recommended final remedial approach for the Main and Hertel Site.

TABLE 1 - MAIN AND HERTEL - PHASE 2 BORING SOIL SAMPLE ANALTICAL RESULTS SUMMARY													
Sampling Program	**PHASE 2 SOIL BORING PROGRAM**												
Sample No.	**BH-1**	**BH-3**	**BH-6**	**BH-7**	**BH-9**	**BH-10**	**BH-11**	**BH-12**	**BH-13**	**BH-15**	**NYSDEC**	**NYSDEC**	**NYSDEC**
Sample Date	**12/20/2016**	**12/20/2016**	**12/20/2016**	**12/20/2016**	**12/20/2016**	**12/20/2016**	**12/20/2016**	**12/20/2016**	**12/20/2016**	**12/20/2016**	**PART 375**	**PART 375**	**PART 375**
Sample Depth Feet (bgs)	**0-2**	**0.5-2**	**0-2.5**	**2-4.5**	**0-2**	**2-4.5**	**2-4.0**	**0-7**	**0-5**	**2-4.0**	**Unrestricted**	**Residential**	**Res Residential**
Compounds	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**
Metals													
Arsenic	7.9	11.9	3.4	**46**	**22.9**	**15.5**	**35.9**	**17**	10.1	**17.1**	13	16	16
Barium	107	79.7	42.7	184	166	150	128	236	167	73.2	350	350	400
Beryllium	ND	0.65	0.26	0.95	0.7	0.58	0.59	0.87	0.7	0.81	7.2	14	72
Cadmium	0.63	0.75	ND	**31.1**	7.7	ND	2.9	0.59	**4.9**	1.7	2.5	2.5	4.3
Chromium	23.4	24.4	7	**321**	**88.4**	**353**	**33**	**31.5**	**50.5**	**90.5**	30	36	180
Copper	43.7	**88.8**	33.6	**693**	**238**	42	**61.5**	**67.1**	**387**	**137**	50	270	270
Lead	**72**	**80.1**	**86.7**	**487**	**480**	62.6	**138**	**165**	**588**	**84.4**	63	400	400
Manganese	830	548	221	1240	430	246	490	583	339	514	1600	2000	2000
Mercury	0.2	0.17	0.06	0.72	0.39	0.2	0.2	0.15	0.4	0.15	0.81	0.81	0.81
Nickel	26.9	**38.5**	9.4	**1050**	**82.5**	**56.4**	**33.1**	**42.7**	**210**	**870**	30	140	310
Silver	ND	ND	ND	**8.4**	ND	ND	ND	ND	**2.9**	ND	2	36	180
Zinc	134	119	96.9	666	1480	114	250	139	508	233	109	2200	10000
Volatiles													
Acetone	ND	ND	ND	ND	ND	0.012	ND	ND	ND	ND	0.05	100	100
Benzene	ND	ND	ND	0.0003	ND	ND	ND	ND	ND	ND	0.06	2.9	4.8
cis-1,2-Dichloroethene	ND	ND	0.001	0.0005	ND	ND	ND	ND	ND	ND	0.25	59	100
Methylene chloride	0.002	0.003	0.002	ND	0.003	ND	0.002	0.002	ND	ND	0.05	51	100
1,2,4-Trimethylbenzene	ND	ND	ND	ND	ND	0.002	ND	ND	ND	ND	3.6	47	52
1,1,1-Trichloroethane	ND	0.0004	ND	ND	0.0003	ND	ND	ND	ND	ND	0.68	100	100
Trichloroethene	0.003	0.007	0.004	0.06	0.002	ND	0.001	0.0003	0.002	0.002	0.47	10	21
Xylene (total)	ND	ND	ND	0.0008	ND	0.0003	ND	ND	0.0002	ND	0.26	100	100
TICS	ND	ND	ND	ND	ND	0.29	ND	ND	ND	ND	NA	NA	NA
PCBs													
Aroclor 1254	ND	ND	0.12	**8.93**	ND	0.079	ND	ND	0.25	0.11	1	1	1
Pesticides													
4,4'-DDT	0.002	0.002	ND	ND	ND	ND	**0.071**	0.003	**0.028**	ND	0.0033	1.7	7.9
4,4'-DDE	0.001	0.002	ND	ND	ND	ND	**0.075**	0.003	**0.004**	ND	0.0033	1.8	8.9
4,4'-DDD	ND	ND	ND	ND	ND	ND	0.003	ND	ND	0.003	0.0033	2.6	13
delta-BHC	ND	ND	ND	ND	ND	ND	0.012	0.0004	ND	0.001	0.04	100	100
alpha-Chlordane	ND	ND	ND	ND	ND	ND	0.071	0.009	ND	ND	0.094	0.91	4.2
Dieldrin	ND	ND	ND	ND	ND	ND	0.039	0.002	ND	ND	0.005	0.039	0.2
Lindane	ND	ND	ND	ND	0.006	ND	ND	ND	ND	0.01	0.1	0.28	1.3000
SVOCs (PAHS)													
Chrysene	0.16	0.36	12.1	0.99	**6.57**	0.42	1.01	0.49	1.18	**10.9**	1	1	3.9
Phenol	ND	ND	ND	ND	0.087	ND	ND	ND	ND	0.09	0.33	100	100
Acenaphthene	ND	0.038	3.78	0.089	0.52	0.031	0.197	0.045	0.18	2.8	20	100	100
Acenaphthylene	ND	0.027	0.095	0.13	0.17	0.024	0.05	0.1	0.074	0.43	100	100	100
Anthracene	0.036	0.107	7.53	0.34	1.23	0.093	0.511	0.16	0.37	4	100	100	100
Benzo (a) anthracene	0.14	0.35	**13.8**	0.9	**6.49**	0.45	**1.01**	0.42	**1.04**	**10.4**	1	1	1
Benzo(a)pyrene	0.14	0.31	**10.9**	0.9	**4.83**	0.66	0.88	0.45	0.85	**8.94**	1	1	1
Benzo (b) fluoranthene	0.21	0.42	**13.4**	**1.34**	**8.22**	0.74	**1.12**	0.59	**1.3**	**11.9**	1	1	1
Benzo (g,h,i) perylene	0.089	0.18	5.72	0.78	2.71	0.52	0.5	0.32	0.48	4.2	100	100	100
Benzo (k) fluoranthene	0.073	0.17	**5.08**	0.44	2.14	0.27	0.44	0.22	0.4	**5.01**	0.8	1	3.9
Dibenzo(a,h)anthracene	ND	0.054	**1.59**	0.2	**1**	0.14	0.14	0.086	0.16	**2.25**	0.33	0.33	0.33
Fluoranthene	0.29	0.62	32.5	1.22	11.2	0.4	1.99	0.69	2.09	27.2	100	100	100
Fluorene	ND	0.43	3.2	0.11	0.4	0.19	0.2	0.048	0.16	1.98	30	100	100
Indeno (1,2,3-cd) pyrene	0.098	0.21	**6.43**	**0.88**	**3.35**	**0.58**	**0.59**	0.33	**0.57**	**6.1**	0.5	0.5	0.5
Naphthalene	0.017	0.34	2.98	0.25	0.69	0.056	0.16	0.07	0.44	1.71	12	100	100
Phenanthrene	0.19	0.55	29.9	1.25	5.64	0.24	1.89	0.55	1.85	20.8	100	100	100
Pyrene	0.27	0.65	27.8	1.86	11.3	0.48	2.01	0.73	1.76	21.1	100	100	100

ND - Non-Detect   NA - Not Available

(red)	>/= to Residential/Restricted-Residential SCO and Unrestricted Use SCO
(green)	>Unrestricted Use SCO but <Residential/Restricted-Residential SCO
(light blue)	>Unrestricted Use & Residential SCO but <Restricted-Residential SCO

TABLE 2 - MAIN AND HERTEL SITE - RI BORING SOIL SAMPLE ANALTICAL RESULTS SUMMARY												
Sampling Program	**RI SOIL BORING SAMPLING PROGRAM**											
Sample No.	**RI-1 SURFACE**	**RI-1 3-4 FT**	**RI-2 SURFACE**	**RI-2 3-4.4 FT**	**RI-5 SURFACE**	**RI-5 2-3 FT**	**RI-5-Native**	**RI-6 SURFACE**	**RI-6 1.5-2 FT**	**NYSDEC**	**NYSDEC**	**NYSDEC**
Sample Date	**12/18/2017**	**12/18/2017**	**12/18/2017**	**12/18/2017**	**12/18/2017**	**12/18/2017**	**12/18/2017**	**12/18/2017**	**12/18/2017**	**PART 375**	**PART 375**	**PART 375**
Sample Depth Feet (bgs)	**SURFACE**	**3 - 4**	**SURFACE**	**3-4.4**	**SURFACE**	**2 - 3**	**3 - 4**	**SURFACE**	**1.5 - 2**	**Unrestricted**	**Residential**	**Res Residential**
Compounds	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**
Metals												
Chrome, Hexavalent	ND	ND	ND	ND	ND	ND	ND	0.56	ND	1	22	110
Arsenic	9.75	3.49	7.70	4.76	0.690	5.12	6.24	**51.5**	**21.6**	13	16	16
Barium	131	44.4	64.4	51.4	141	71.1	89.0	82.0	38.4	350	350	400
Beryllium	0.476	0.518	0.511	0.568	2.68	0.808	0.808	0.362	1.01	7.2	14	72
Cadmium	1.36	0.203 J	0.371	ND	ND	0.471	0.248	**3.76**	0.787	2.5	2.5	4.3
Chromium	23.8	13.0 J	13.6	16.4	6.05	16.8	19.4	132	102	30	36	180
Copper	**98.5**	13.3	29.8	11.3	ND	31.0	19.8	**270**	31.7	50	270	270
Lead	**239**	12.9 J	**107**	11.7	7.42	**66.0**	13.9	**251**	35.3	63	400	400
Manganese	416	265	345	384	**2190**	319	495	753	308	1600	2000	2000
Nickel	24.6	11.5 J	15.2	19.1	3.03	19.5	25.5	**224**	**52.9**	30	140	310
Selenium	ND	ND	ND	ND	ND	0.705	0.679	ND	ND	3.9	36	180
Silver	**2.00**	0.519	0.528	1.30	ND	0.773	1.59	**6.57**	**2.29**	2	36	180
Zinc	**249**	74.2	96.5	63.1	ND	83.4	61.6	**222**	62.9	109	2200	10000
Mercury	0.170	0.0485	**0.346**	0.0725	ND	**0.314**	0.0894	**1.06**	**0.272**	0.18	0.81	0.81
Cyanide, Total	0.334	ND	1.15	ND	2.10	0.548	ND	3.86	0.392	27	27	27
Volatiles												
1,2,4-Trimethylbenzene	NA	ND	NA	ND	NA	ND	0.00245	NA	ND	3.6	47	52
2-Butanone	NA	ND	NA	0.0136	NA	ND	ND	NA	ND	0.12	100	100
Acetone	NA	ND	NA	0.0498	NA	ND	ND	NA	ND	0.05	100	100
m,p-Xylene	NA	ND	NA	ND	NA	0.0034	0.00263	NA	0.00783	0.26	100	100
Toluene	NA	0.00326	NA	0.00264	NA	0.00764	0.00645	NA	0.0187	0.7	100	100
Trichloroethene	NA	ND	NA	ND	NA	ND	ND	NA	0.00296	0.47	10	21
TICS	NA	0.011	NA	0.012	NA	ND	0.083	NA	ND	NA	NA	NA
PCBs												
Aroclor 1254	ND	ND	ND	ND	ND	ND	ND	0.0709 J	0.0187 J	0.1	1	1
Pesticides												
4,4-DDE	ND	ND	ND	ND	ND	ND	ND	**0.00853 J**	ND	0.0033	1.8	8.9
4,4-DDT	**0.0458 J**	ND	0.00213	ND	ND	ND	ND	**0.019**	0.00306 J	0.0033	1.7	7.9
Aldrin	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.005	0.019	0.097
cis-Chlordane	ND	ND	ND	ND	ND	ND	ND	0.00312 J	ND	0.094	0.91	4.2
delta-BHC	ND	ND	ND	ND	ND	ND	ND	0.00262	ND	0.04	100	100
Dieldrin	**0.00803**	ND	0.00448 J	ND	ND	**0.00994**	ND	**0.00829 J**	ND	0.005	0.039	0.2
Endosulfan I	ND	ND	ND	ND	ND	ND	ND	0.00414 J	ND	2.4	4.8	24
Endosulfan II	0.0222 J	ND	ND	ND	ND	ND	ND	0.00981 J	0.00188 J	2.4	4.8	24
Endosulfan Sulfate	0.00951 J	ND	0.00898 J	ND	ND	0.00691 J	ND	ND	ND	2.4	4.8	24
Heptachlor	0.00471 J	ND	ND	ND	ND	ND	ND	ND	ND	0.042	0.42	2.1
2,4,5-TP (Silvex)	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.8	58	100
SVOCs												
Acenaphthene	ND	ND	ND	ND	ND	11.6	ND	ND	ND	20	100	100
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	0.156 J	ND	100	100	100
Anthracene	ND	ND	ND	ND	ND	30.5	0.351	0.255 J	ND	100	100	100
Benzo (a) anthracene	0.211 J	ND	0.573	ND	ND	**49.5**	0.494	0.761	ND	1	1	1
Benzo (a) pyrene	ND	ND	0.456	ND	ND	**38.7**	0.376	0.615	ND	1	1	1
Benzo (b) fluoranthene	0.176 J	ND	0.457	ND	ND	**40**	0.37	0.666	ND	1	1	1
Benzo (g,h,i) perylene	ND	ND	0.282 J	ND	ND	23.7	0.21 J	0.463	ND	100	100	100
Benzo (k) fluoranthene	ND	ND	0.361	ND	ND	**28**	0.276 J	0.494	ND	0.8	1	3.9
Chrysene	0.234 J	ND	0.625	ND	ND	**50.7**	0.465	0.802	ND	1	1	3.9
Dibenzofuran	ND	ND	ND	ND	ND	**14.9 J**	ND	ND	ND	7	14	59
Fluoranthene	0.477 J	ND	1.35	ND	ND	**139**	1.23	1.74	ND	100	100	100
Fluorene	ND	ND	ND	ND	ND	21.8	0.236	ND	ND	30	100	100
Indeno (1,2,3-cd) pyrene	ND	ND	0.31	ND	ND	**25.4**	0.247 J	0.498	ND	0.5	0.5	0.5
Naphthalene	ND	ND	ND	ND	ND	16	0.204 J	ND	ND	12	100	100
Phenanthrene	0.391 J	ND	0.905	ND	ND	**161**	1.57	1.12	ND	100	100	100
Pyrene	0.395 J	ND	1.1	ND	ND	**104**	0.908	1.32	ND	100	100	100
TICs	3.62 J	1.34 J	7.46 J	0.5 J	42.6 J	223 J	9.4 J	8.5 J	4.3 J	NA	NA	NA

ND - Non-Detect   NA - Not Applicable   All Data is Validated   J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

- (red) >/= to Residential/Restricted-Residential SCO and Unrestricted Use SCO
- (green) >Unrestricted Use SCO but <Residential/Restricted-Residential SCO
- (light blue) >Unrestricted Use & Residential SCO but <Restricted-Residential SCO

TABLE 3 - MAIN AND HERTEL SITE - TEST PIT SOIL SAMPLE ANALTICAL RESULTS SUMMARY															
Sampling Program	**RI SOIL TEST PIT SAMPLING PROGRAM**														
Sample No.	**TP-5 SURFACE**	**TP-5 2-3 FT**	**TP-5 NATIVE**	**TP-6 SURFACE**	**TP-6 1-10 FT**	**TP-9 NATIVE**	**TP-10 SURFACE**	**TP-10 4.5 FT**	**TP-11 SURFACE**	**TP-11 2-3 FT**	**TP-12 SURFACE**	**TP-12 1-4.5 FT**	**NYSDEC**	**NYSDEC**	**NYSDEC**
Sample Date	12/28/2017	12/28/2017	12/28/2017	12/28/2017	12/28/2017	12/28/2017	12/28/2017	12/28/2017	12/28/2017	12/28/2017	12/28/2017	12/28/2017	**PART 375**	**PART 375**	**PART 375**
Sample Depth Feet (bgs)	SURFACE	2 -3	4	SURFACE	1 - 10	4.5	SURFACE	4.5	SURFACE	2 - 3	SURFACE	1 - 4.5	Unrestricted	Residential	Res Residential
Compounds	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Metals															
Arsenic	**13.5**	12.3	**18.8**	4.85	**27.2**	5.26	8.70	**94.5**	1.63	7.77	9.69	**16.8**	13	16	16
Barium	151	79.9	257	75.0	733	55.6	70.8	188	61.1	109	135	285	350	350	400
Beryllium	0.656	0.574	0.573	0.527	0.570	0.552	0.566	0.687	1.53	0.566	0.602	0.606	7.2	14	72
Cadmium	**6.22**	0.620	1.89	1.35	**11.6**	0.623	0.582	2.43	1.23	**4.52**	1.66	2.05	2.5	2.5	4.3
Chromium	49.2	13.0	**34.5**	26.2 J	117	12.9	15.6	144	12.6	21.8	37.9	**33.0**	30	36	180
Copper	**203**	45.4	**161**	29.9	**1430**	17.5	**72.2**	**251**	17.9	**84.1**	**69.1**	**289**	50	270	270
Lead	**375**	**80.1**	**461**	122	**1010**	21.9	**82.4**	**314**	57.4	**190**	**271**	**1300**	63	400	400
Manganese	594	92.5	401	361	907	906	344	278	1250	432	600	457	1600	2000	2000
Nickel	**50.4**	16.0	29.4	19.2	**89.7**	13.9	16.4	**92.8**	17.5	**35.5**	22.2	23.8	30	140	310
Selenium	1.19	1.28	ND	ND	2.05	ND	ND	ND	ND	1.12	1.66	1.37	3.9	36	180
Silver	0.389	ND	ND	ND	ND	ND	ND	0.617	ND	ND	ND	ND	2	36	180
Zinc	**551**	65.6	3310	**167**	**1120**	106	**138**	**557**	**127**	**380**	**244**	**400**	109	2200	10000
Mercury	**8.25**	0.0902	**0.299**	**0.193**	**0.212**	0.0665	0.105	0.0657	0.0627	**1.06**	**0.246**	**0.347**	0.18	0.81	0.81
Cyanide, Total	1.61	0.315	2.26	0.496	5.29	ND	ND	0.402	4.52	1.95	0.431	0.350	27	27	27
Volatiles															
Volatiles	NA	ND	ND	NA	ND	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA
TICs	NA	ND	ND	NA	0.06 J	ND	NA	0.04 J	NA	ND	NA	0.05 J	NA	NA	NA
PCBs															
Aroclor 1254	0.0769 J	ND	0.0969 J	ND	ND	ND	ND	ND	0.03 J	0.0381 J	ND	ND	0.1	1	1
Aroclor 1260	0.0563 J	ND	ND	ND	ND	ND	**0.137 J**	ND	ND	0.02 J	ND	ND	0.1	1	1
Pesticides															
4,4-DDD	ND	ND	**0.00673 J**	**0.0259 J**	**0.00611 J**	ND	ND	ND	ND	ND	**0.0906 J**	**0.106**	0.0033	2.6	13
4,4-DDE	ND	ND	**0.015**	**0.0542 J**	**0.0165**	0.0027 J	**0.00681**	ND	**0.00343**	ND	**0.121 J**	**0.361**	0.0033	1.8	8.9
4,4-DDT	**0.0368**	0.00259	**0.0159**	**0.0269 J**	**0.00835**	ND	**0.0205 J**	0.00246 J	**0.0056**	**0.012 J**	ND	**0.043 J**	0.0033	1.7	7.9
cis-Chlordane	0.0498 J	ND	0.0174 J	0.0675 J	0.0305 J	ND	0.0369 J	0.00485	ND	ND	**0.145 J**	**0.468 J**	0.094	0.91	4.2
delta-BHC	ND	ND	0.00364 J	0.0155 J	ND	ND	ND	ND	ND	ND	ND	ND	0.04	0.97	100
Dieldrin	ND	ND	**0.0158 J**	**0.0198 J**	**0.00673 J**	ND	**0.00561 J**	**0.00565 J**	ND	ND	**0.757**	ND	0.005	0.039	0.2
Endosulfan II	ND	ND	0.00662 J	ND	ND	ND	0.00752	ND	ND	ND	ND	ND	2.4	4.8	24
Endosulfan Sulfate	0.0385 J	ND	ND	0.0269 J	0.00445	ND	0.0305 J	0.00579 J	0.00484	0.0132 J	ND	ND	2.4	4.8	24
Endrin	ND	ND	ND	ND	ND	ND	0.00236 J	ND	ND	ND	ND	ND	0.014	2.2	11
SVOCs															
Acenaphthene	0.496	ND	0.518	ND	ND	ND	0.232 J	ND	ND	**30.8**	ND	ND	20	100	100
Acenaphthylene	0.473	ND	ND	ND	0.185 J	ND	ND	ND	ND	ND	ND	ND	100	100	100
Anthracene	1.49	ND	1.07	0.208 J	0.367	ND	0.615	ND	ND	53 J	ND	0.198	100	100	100
Benzo (a) anthracene	**3.78**	0.299 J	**2.23**	0.736	**1.07**	ND	**2.25**	ND	ND	**81.3**	0.508	0.693	1	1	1
Benzo (a) pyrene	**3.1**	0.246 J	**1.85**	0.704	0.886	ND	**2.05**	0.18 J	**1.25 J**	**68.8**	0.509	0.648	1	1	1
Benzo (b) fluoranthene	**3.45**	0.351	**2.02**	0.778	0.924	ND	**2.23**	0.209 J	0.99 J	**70.2**	0.568	0.743	1	1	1
Benzo (g,h,i) perylene	1.89	0.269 J	1.13	0.481	0.601	ND	1.32	0.203 J	1.62	42.4	0.386	0.483	100	100	100
Benzo (k) fluoranthene	2.35	0.218 J	1.16	0.552	0.732	ND	1.52	ND	ND	**44.1**	0.409	0.426	0.8	1	3.9
Chrysene	3.68	0.427	2.23	0.877	1.16	ND	2.48	0.201 J	0.839 J	**79.1**	0.617	0.784	1	1	3.9
Dibenz (a,h) anthracene	**0.768**	ND	**0.448**	ND	0.212 J	ND	**0.481**	ND	ND	**16.9 J**	ND	ND	0.33	0.33	0.33
Dibenzofuran	0.452	ND	0.287 J	ND	ND	ND	ND	ND	ND	32.5	ND	ND	7	14	59
Fluoranthene	6.95	0.539	4.83	1.96	2.19	ND	5.39	ND	1.43 J	**211**	1.16	1.65	100	100	100
Fluorene	0.491	ND	0.446	ND	ND	ND	0.234 J	ND	ND	**37.4 J**	ND	ND	30	100	100
Indeno (1,2,3-cd) pyrene	**2.02**	0.28	**1.24**	**0.542**	**0.634**	ND	**1.43**	0.194 J	**1.67**	**46.4**	0.412	0.488	0.5	0.5	0.5
Naphthalene	1.02	ND	0.408	ND	ND	ND	ND	ND	ND	**66.1**	ND	ND	12	100	100
Phenanthrene	4.99	0.549	4.13	1.23	1.53	ND	3.16	0.216 J	0.855	**273 J**	0.578	1	100	100	100
Pyrene	5.81	0.554	4.14	1.51	1.75	ND	4.29	0.279 J	1.21	**160**	0.949	1.29	100	100	100
TICs	21.6 J	4.59 J	14.9 J	7.1 J	11.3 J	4.45 J	11.8 J	1.64 J	28.3 J	417 J	10.7 J	6.1 J	NA	NA	NA

ND - Non-Detect NA - Not Applicable All Data is Validated J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

>/= to Residential/Restricted-Residential SCO and Unrestricted Use SCO

>Unrestricted Use SCO but <Residential/Restricted-Residential SCO

>Unrestricted Use & Residential SCO but <Restricted-Residential SCO

TABLE 4 - MAIN AND HERTEL SITE - MW SOIL SAMPLE ANALTICAL RESULTS SUMMARY									
Sampling Program	**RI SOIL MW SAMPLING PROGRAM**								
Sample No.	**MW-1 SURFACE**	**MW-1 2-3 FT**	**MW-4 SURFACE**	**MW-4 3FT**	**MW-5 SURFACE**	**MW-5 3-5 FT**	**NYSDEC**	**NYSDEC**	**NYSDEC**
Sample Date	**1/3/2018**	**1/3/2018**	**1/3/2018**	**1/3/2018**	**1/3/2018**	**1/3/2018**	**PART 375**	**PART 375**	**PART 375**
Sample Depth Feet (bgs)	**SURFACE**	**2 -3**	**SURFACE**	**3**	**SURFACE**	**3-5**	**Unrestricted**	**Residential**	**Res Residential**
Compounds	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**
Metals									
Arsenic	9.94 J	7.41	**15.1**	5.05	7.96	12.0	13	16	16
Barium	76.9 J	41.7	60.3	82.0	133	327	350	350	400
Beryllium	0.605 J	0.370	0.423	0.486	0.560	0.362	7.2	14	72
Cadmium	0.868 J	0.562	0.997	0.892	1.35	**2.57**	2.5	2.5	4.3
Chromium	19.5 J	11.4	**38.1**	22.6	23.0	**74.3**	30	36	180
Copper	**94.8 J**	**54.2**	**71.5**	40.5	**109**	**433**	50	270	270
Lead	**217 J**	**64.4**	**229**	**67.1**	**217**	**208**	63	400	400
Manganese	403	341	353	457	540	444	1600	2000	2000
Nickel	20.4 J	11.7	20.5	15.0	21.4	**87.6**	30	140	310
Selenium	1.43 J	ND	ND	0.802	1.45	ND	3.9	36	180
Silver	1.20 J	0.489	ND	ND	ND	ND	2	36	180
Zinc	**159 J**	55.7	**150**	**112**	**316**	**1040**	109	2200	10000
Mercury	**0.593 J**	**0.197**	0.119	0.0979	0.150	0.157	0.18	0.81	0.81
Cyanide, Total	ND	0.312	ND	1.19	ND	0.352	27	27	27
Volatiles									
Volatiles	NA	ND	NA	ND	NA	ND	NA	NA	NA
TICs	NA	ND	NA	0.032 J	NA	ND	NA	NA	NA
PCBs									
Aroclor 1260	ND	ND	0.162 J	0.0393 J	**0.241 J**	**0.105 J**	0.1	1	1
Aroclor 1262	0.0643 J	ND	ND	ND	ND	ND	0.1	1	1
Pesticides									
4,4-DDD	**0.00524 J**	ND	**0.0155 J**	ND	ND	**0.0041 J**	0.0033	2.6	13
4,4-DDE	**0.0185**	**0.00358**	**0.0802**	ND	ND	**0.0147**	0.0033	1.8	8.9
4,4-DDT	**0.0168**	0.00286 J	**0.0613**	ND	**0.0531**	**0.0241**	0.0033	1.7	7.9
cis-Chlordane	0.01	0.00228 J	0.0852 J	ND	ND	0.029 J	0.094	0.91	4.2
Dieldrin	ND	ND	0.0379 J	0.0277 J	0.0261 J	0.00551 J	0.04	0.039	100
Endosulfan II	ND	ND	ND	ND	ND	ND	0.005	4.8	0.2
Endosulfan Sulfate	0.00701 J	ND	ND	0.03 J	ND	0.0208 J	2.4	4.8	24
Endrin	ND	ND	0.018 J	ND	ND	ND	2.4	2.2	24
SVOCs									
Acenaphthene	ND	ND	4.8	3	ND	0.71	20	100	100
Acenaphthylene	ND	ND	ND	ND	0.255 J	ND	100	100	100
Anthracene	0.184 J	ND	9.48	4.43	1.1	1.82 J	100	100	100
Benzo (a) anthracene	0.526	ND	**29.8**	**8.46**	**2.26**	**3.83**	1	1	1
Benzo (a) pyrene	0.467	ND	**25.2**	**6.41**	**2**	**3.32**	1	1	1
Benzo (b) fluoranthene	0.489	ND	**27.8**	**6.05**	**2.52**	**3.27**	1	1	1
Benzo (g,h,i) perylene	0.303 J	ND	14.7	3.4	1.32	2.19	100	100	100
Benzo (k) fluoranthene	0.399	ND	**19.4**	**5.84**	**1.4**	**2.75**	0.8	1	3.9
Chrysene	0.589	ND	**31.1**	**7.95**	**2.5**	**3.77**	1	1	3.9
Dibenz (a,h) anthracene	ND	ND	**5.34**	**1.48 J**	**0.502**	**0.708 J**	0.33	0.33	0.33
Dibenzofuran	ND	ND	ND	1.53 J	ND	0.429 J	7	14	59
Fluoranthene	1.27	0.19 J	73.8	19.7	5.17 J	9.52	100	100	100
Fluorene	ND	ND	4.68	2.67	0.282	0.746	30	100	100
Indeno (1,2,3-cd) pyrene	0.306	ND	**15.7**	**4.26**	**1.34**	**2.15**	0.5	0.5	0.5
Naphthalene	ND	ND	ND	1.2 J	ND	0.533	12	100	100
Phenanthrene	0.912	ND	52.9	17.4	2.88	7.18	100	100	100
Pyrene	0.996	ND	53.5	14.1	4.04	7.1	100	100	100
TICs	5.82 J	1.64 J	161 J	43.9 J	29 J	26.7 J	NA	NA	NA

ND - Non-Detect NA - Not Applicable All Data is Validated J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

(red)	>/= to Residential/Restricted-Residential SCO and Unrestricted Use SCO
(green)	>Unrestricted Use SCO but <Residential/Restricted-Residential SCO
(blue)	>Unrestricted Use & Residential SCO but <Restricted-Residential SCO

TABLE 5 - MAIN & HERTEL BUILDING 2 - SUB SLAB VAPOR & AMBIENT AIR ANALYTICAL RESULTS SUMMARY

Sample Number	**SS-01**	**IA-01**	**SS-02**	**IA-01**	**SS-03**	**IA-02**	**SS-04**	**IA-02**	**OA-01**	**NYSDOH (1)**	**NYSDOH (1)**
Sample Date	**1/3/2018**	**1/3/2018**	**1/3/2018**	**1/3/2018**	**1/3/2018**	**1/3/2018**	**1/3/2018**	**1/3/2018**	**1/3/2018**	**Sub Slab Vapor Concentration**	**Indoor Air Concentration**
Sample Location	**Sub Slab**	**Indoor**	**Sub Slab**	**Indoor**	**Sub Slab**	**Indoor**	**Sub Slab**	**Indoor**	**Outdoor**	**Decision Matrix - Min Action Level**	**Min Action Level**
Compounds	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**
VOCs EPA T0-15 (2)											
1,1,1-Trichloroethane	11	ND	7.0	ND	11	ND	9.5	ND	ND	**100**	**3**
1,1-Dichloroethene	0.44 J	ND	ND	ND	ND	ND	ND	ND	ND	**6**	**0.2**
1,2,4-Trimethylbenzene	0.59 J	ND	1.2	ND	0.64 J	ND	1.1	ND	ND	NA	NA
1,3,5-Trimethylbenzene	ND	ND	0.84	ND	ND	ND	ND	ND	ND	NA	NA
Acetone	7.8	8.6	16	8.6	18	8.4	20	8.4	8.5	NA	NA
Benzene	1.5	0.70	2.1	0.70	2.4	0.77	1.6	0.77	0.67	NA	NA
Bromodichloromethane	1.0	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA
Carbon disulfide	3.2	0.44 J	5.9	0.44 J	2.4	0.53	ND	0.53	ND	NA	NA
Carbon tetrachloride	ND	0.50	ND	0.50	2.7	0.50	ND	0.50	0.50	**6**	**0.2**
Chloroethane	0.40	ND	0.58	ND	0.50	ND	0.90	ND	ND	NA	NA
Chloroform	74	ND	20	ND	1.1	ND	ND	ND	ND	NA	NA
Chloromethane	0.23 J	0.87	0.52	0.87	0.56	0.78	0.87	0.78	0.81	NA	NA
cis-1,2-Dichloroethene	20	ND	9.9	ND	0.95	ND	ND	ND	ND	**6**	**0.2**
Cyclohexane	26	ND	4.1	ND	5.4	ND	5.4	ND	ND	NA	NA
Ethyl acetate	ND	ND	ND	ND	ND	ND	0.90	ND	ND	NA	NA
Freon 11	0.79 J	1.2	0.90	1.2	0.90	1.2	0.96	1.2	1.2	NA	NA
Freon 12	1.8	2.6	2.0	2.6	2.1	2.5	2.2	2.5	2.4	NA	NA
Heptane	16	ND	8.5	ND	5.7 J	ND	4.7	ND	ND	NA	NA
Hexane	19	0.49 J	7.1	0.49 J	7.0	0.63	6.4	0.63	ND	NA	NA
Isopropyl alcohol	2.7	6.2	4.0	6.2	3.9	2.3	ND	2.3	1.1	NA	NA
m&p-Xylene	ND	ND	1.7	ND	ND	ND	0.52 J	ND	ND	NA	NA
Methyl Ethyl Ketone	1.5	1.2	3.7	1.2	3.2	0.59 J	2.8	0.59 J	ND	NA	NA
Methylene chloride	7.0	1.0	8.7	1.0	17	1.1	9.4	1.1	0.73	**100**	**3**
o-Xylene	ND	ND	0.69	< 0.65	< 0.65	< 0.65	< 0.65	< 0.65	< 0.65	NA	NA
Tetrachloroethylene	ND	ND	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	**100**	**3**
Toluene	2.7	1.6	4.9	1.6	4.0	2.4	5.3 J	2.4	0.83	NA	NA
Trichloroethene	**23**	**0.97**	**63**	**0.97**	**8.1**	**1.4**	**8.6**	**1.4**	0.32	**6**	**0.2**
Vinyl chloride	0.31 J	< 0.10	< 0.38	< 0.10	< 0.38	< 0.10	< 0.38	< 0.10	< 0.10	**6**	**0.2**

N/A - Not Applicable ND - Non-detect

Red values are above Air Guideline Derived by NYSDOH in Table 3.1 of NYSDOH Guidance titled "Evaluating Soil Vapor Intrusion in the State of New York", October 2006 (and subsequent updates).

J indicates an estimated value

(1) New York State Department of Health (NYSDOH), Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006 and subsequent updates (select matrix coumpounds).

(2) Compounds with detected concentrations

NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York, May 2017 Decision Matrices Notes:

NO FURTHER ACTION:

Given that the compound was not detected in the indoor air sample and that the concentration detected in the sub -slab vapor sample is not expected to significantly affect indoor air quality, no additional actions are needed to address human exposures

IDENTIFY SOURCE(S) AND RESAMPLE OR MITIGATE:

The concentration detected in the indoor air sample is likely due to indoor and/or outdoor sources rather than soil vapor int rusion given the concentration detected in the sub-slab vapor sample.
Therefore, steps should be taken to identify potential source(s) and to reduce exposures accordingly (e.g., by keeping containers capped or by storing VOC-containing products in places where people do not spend much time, such as a garage or shed).
Resampling may be recommended to demonstrate the effectiveness of actions taken to reduce exposures.

MONITOR:

Monitoring, including sub-slab vapor, basement air, lowest occupied living space air, and outdoor air sampling, is needed to determine whether concen trations in the indoor air or sub-slab vapor have changed.
Monitoring may also be needed to determine whether existing building conditions (e.g., positive pressure heating, ventilation and air-conditioning systems) are maintaining the desired mitigation endpoint and to determine whether changes are needed.
The type and frequency of monitoring is determined on a site-specific and building-specific basis, taking into account applicable environmental data and building operating conditions.
Monitoring is an interim measure required to evaluate exposures related to soil vapor intrusion until contaminated environmental media are remediated.

MITIGATE:

Mitigation is needed to minimize current or potential exposures associated with soil vapor intrusion. The most common mitigation methods are sealing preferential pathways in conjunction with installing a sub-slab depressurization system,
and changing the pressurization of the building in conjunction with monitoring. The type, or combination of types, of mitigation is determined on a building-specific basis, taking into account building construction and operating conditions.
Mitigation is considered a temporary measure implemented to address exposures related to soil vapor in trusion until contaminated environmental media are remediated.

TABLE 6 - MAIN & HERTEL RI LOCATION COORDINATES		
Sample Identification	Coordinates-North American Datum 1983	
	Latitude	Longitude
Boreholes		
RI-01	42.94581299	-78.83109916
RI-02	42.94557094	-78.83132759
RI-03	42.94522445	-78.83173512
RI-04	42.94498956	-78.83157115
RI-05	42.94476895	-78.8312339
RI-06	42.94494019	-78.8312264
RI-07	42.94502744	-78.83104505
RI-08	42.94515401	-78.83084264
RI-09	42.94507127	-78.83113081
Test Pits		
TP- 1	42.94413062	-78.82989107
TP- 2	42.94433419	-78.82994854
TP- 3	42.94434849	-78.83011513
TP- 4	42.94422419	-78.83022626
TP- 5	42.94426382	-78.82962807
TP- 6	42.94432126	-78.82986831
TP- 7	42.94451227	-78.82980189
TP- 8	42.94485758	-78.83014617
TP- 9	42.94503356	-78.83034457
TP- 10	42.94504888	-78.83008949
TP- 11	42.94456481	-78.83078284
TP- 12	42.94475828	-78.83042199
TP- 13	42.94487106	-78.83042832
TP- 14	42.94459834	-78.83020924
Monitoring Wells		
MW- 1	42.94527897	-78.83206184
MW- 2	42.94581151	-78.83154516
MW- 3	42.94507659	-78.83109739
MW- 4	42.94424236	-78.82960957
MW- 5	42.94412154	-78.82993412
MW- 6	42.94466699	-78.83018561

TABLE 7 - MAIN & HERTEL RI GROUNDWATER SAMPLE ANALYTICAL RESULTS SUMMARY							
Sample Number	**MW-01**	**MW-02**	**MW-03**	**MW-04**	**MW-05**	**MW-06**	**NYSDEC**
Sample Date	**1/25/2018**	**1/25/2018**	**1/25/2018**	**1/25/2018**	**1/25/2018**	**1/25/2018**	**TOGs 1.1.1. GA**
Compounds	**ppb**	**ppb**	**ppb**	**ppb**	**ppb**	**ppb**	**ppb**
Metals							
Barium	220	67.5	186	258	145	113	1000
Manganese	ND	81.6	18.1	12	29.4	ND	300
Nickel	ND	ND	20.1	ND	ND	ND	100
Cyanide, Total	7.9	ND	ND	ND	ND	ND	200
Zinc	ND	ND	ND	94	ND	ND	N/A
SVOCs							
TICs	ND	ND	ND	13.2	ND	ND	N/A
VOCs							
Acetone	9.21 J	11.5	ND	6.73 J	13.6	6.15 J	50
Benzene	ND	**2.06**	ND	ND	ND	ND	1
1,1-Dichloroethane	ND	**5.52**	**12.7**	ND	ND	ND	0.6
1,1-Dichloroethene	ND	1.01 J	**19.1**	ND	ND	ND	5
cis-1,2-Dichloroethene	**6.56**	**92.7**	**1500**	2.72	ND	**24.2**	5
trans-1,2-Dichloroethene	ND	ND	**214**	ND	ND	ND	5
1,1,1-Trichloroethane	ND	**18.7**	ND	ND	ND	ND	5
Trichloroethene	**19.0**	**111**	**59.6**	3.11	ND	ND	5
Vinyl chloride	ND	**8.27**	**151**	ND	ND	ND	2
trans-1,2-Dichloroethene	ND	2.51	ND	ND	ND	2.15	5
1,2,4-Trimethylbenzene	ND	ND	ND	**14.0**	ND	ND	5
1,3,5-Trimethylbenzene	ND	ND	ND	2.60	ND	ND	5
Ethylbenzene	ND	ND	ND	2.96	ND	ND	5
m,p-Xylene	ND	ND	ND	**101**	ND	ND	5
n-Propylbenzene	ND	ND	ND	1.43	ND	ND	5
o-Xylene	ND	ND	ND	**15.7**	ND	ND	5
Toluene	ND	ND	ND	1.76	ND	ND	5
TICs	7.05 J	14.7 J	ND	12.4	11.1 J	8.61	N/A
Pesticides							
Pesticides	ND	ND	ND	ND	ND	ND	N/A
PCBs							
PCBs	ND	ND	ND	ND	ND	ND	N/A
Field Parameters							
Turbidity (NTU)	16.3	8.5	45	5.4	5	9.3	N/A
pH	7.17	7.12	7.35	7.09	7.2	7.13	N/A
Dissolved Oxygen	0	0	0	0	1.2	0	N/A
Temp (degrees C)	11.62	12.12	7.15	8.47	7.86	9.2	N/A
Conductivity	9.39	1.83	2.13	1.9	1.4	1.54	N/A

N/A - Not Applicable ND - Non-detect

TOGs 1.1.1 GA - Technical and Operational Guidance Series (1.1.1) Source of Drinking Water (Groundwater)

Exceeds TOGs GA Guidance Value

All Data is Validated J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

TABLE 8 - MAIN & HERTEL - GROUNDWATER ELEVATIONS			
Well Number	**T of C Elevation (ft) (1)**	**Water Level**	**Groundwater**
		1/25/2018	**Elevation**
MW - 1	**643.47**	20.95	622.52
MW - 2	**641.55**	20.45	621.1
MW - 3	**644.42**	8.16	636.26
MW - 4	**657.28**	13.93	643.35
MW - 5	**655.66**	11.59	644.07
MW - 6	**652.69**	11.65	641.04

(1) - Elevations are referenced to a benchmark from the City of Buffalo sewer map of Main Street (No. 5210) dated 1890.

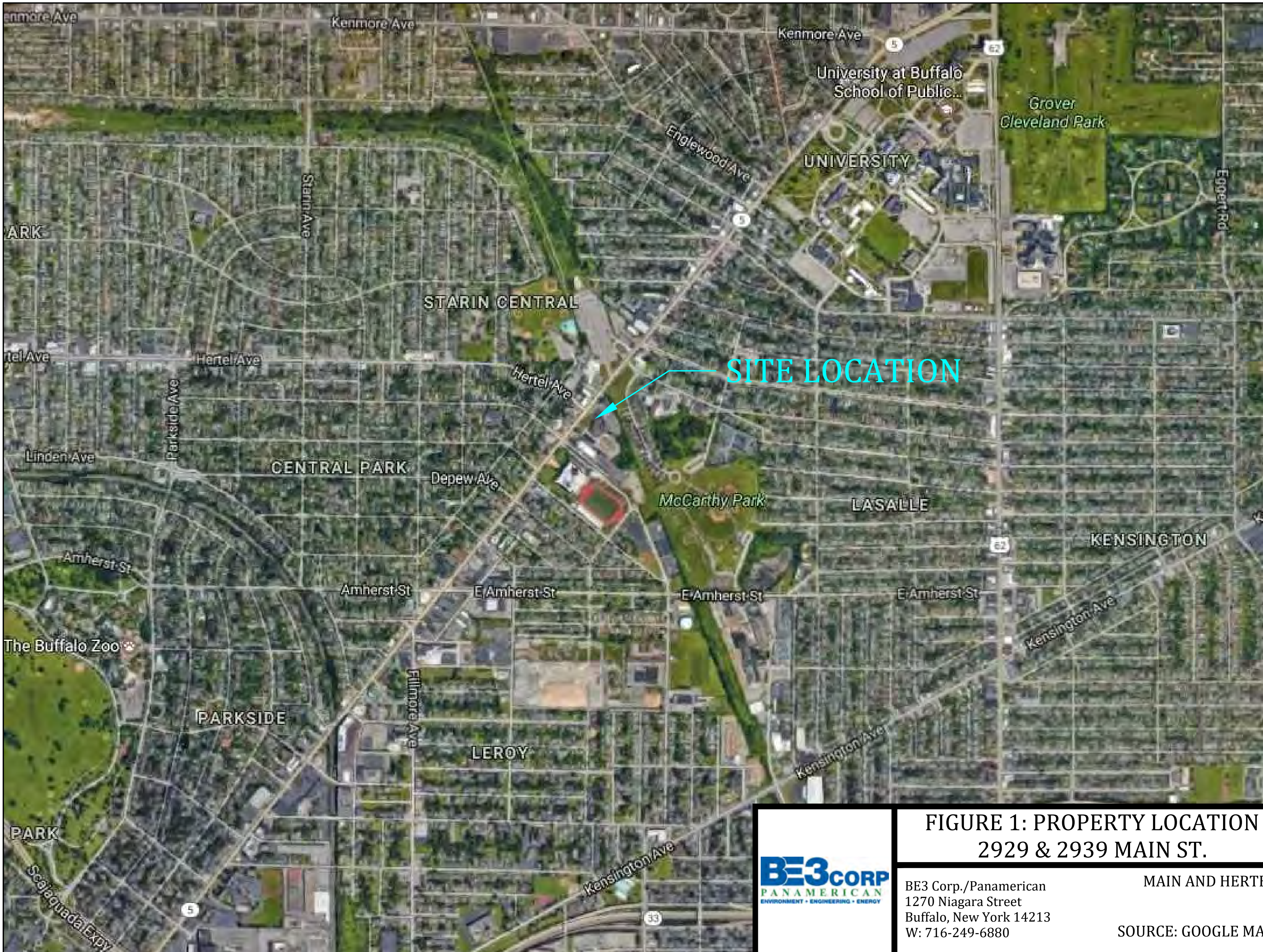


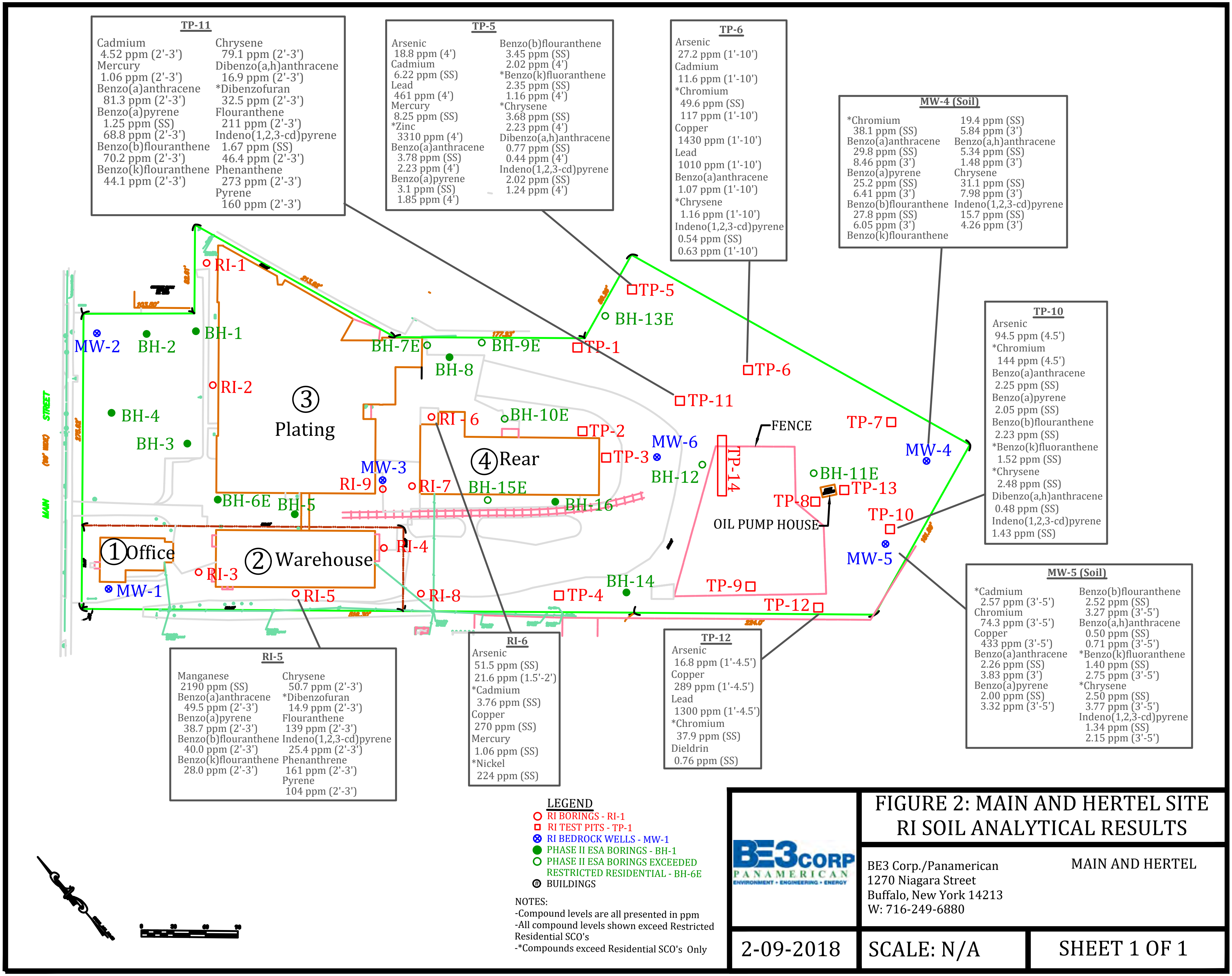
FIGURE 1: PROPERTY LOCATION
2929 & 2939 MAIN ST.

BE3 Corp./Panamerican
1270 Niagara Street
Buffalo, New York 14213
W: 716-249-6880

MAIN AND HERTEL

SOURCE: GOOGLE MAPS

02-07-2018	SCALE: N/A	SHEET 1 OF 1



TP-11
Cadmium
4.52 ppm (2'-3')
Mercury
1.06 ppm (2'-3')
Benzo(a)anthracene
81.3 ppm (2'-3')
Benzo(a)pyrene
1.25 ppm (SS)
68.8 ppm (2'-3')
Benzo(b)flouranthene
70.2 ppm (2'-3')
Benzo(k)flouranthene
44.1 ppm (2'-3')
Chrysene
79.1 ppm (2'-3')
Dibenzo(a,h)anthracene
16.9 ppm (2'-3')
*Dibenzofuran
32.5 ppm (2'-3')
Flouranthene
211 ppm (2'-3')
Indeno(1,2,3-cd)pyrene
1.67 ppm (SS)
46.4 ppm (2'-3')
Phenanthene
273 ppm (2'-3')
Pyrene
160 ppm (2'-3')
TP-5
Arsenic
18.8 ppm (4')
Cadmium
6.22 ppm (SS)
Lead
461 ppm (4')
Mercury
8.25 ppm (SS)
*Zinc
3310 ppm (4')
Benzo(a)anthracene
3.78 ppm (SS)
2.23 ppm (4')
Benzo(a)pyrene
3.1 ppm (SS)
1.85 ppm (4')
Benzo(b)flouranthene
3.45 ppm (SS)
2.02 ppm (4')
*Benzo(k)fluoranthene
2.35 ppm (SS)
1.16 ppm (4')
*Chrysene
3.68 ppm (SS)
2.23 ppm (4')
Dibenzo(a,h)anthracene
0.77 ppm (SS)
0.44 ppm (4')
Indeno(1,2,3-cd)pyrene
2.02 ppm (SS)
1.24 ppm (4')
TP-6
Arsenic
27.2 ppm (1'-10')
Cadmium
11.6 ppm (1'-10')
*Chromium
49.6 ppm (SS)
117 ppm (1'-10')
Copper
1430 ppm (1'-10')
Lead
1010 ppm (1'-10')
Benzo(a)anthracene
1.07 ppm (1'-10')
*Chrysene
1.16 ppm (1'-10')
Indeno(1,2,3-cd)pyrene
0.54 ppm (SS)
0.63 ppm (1'-10')
MW-4 (Soil)
*Chromium
38.1 ppm (SS)
Benzo(a)anthracene
29.8 ppm (SS)
8.46 ppm (3')
Benzo(a)pyrene
25.2 ppm (SS)
6.41 ppm (3')
Benzo(b)flouranthene
27.8 ppm (SS)
6.05 ppm (3')
Benzo(k)flouranthene
19.4 ppm (SS)
5.84 ppm (3')
Benzo(a,h)anthracene
5.34 ppm (SS)
1.48 ppm (3')
Chrysene
31.1 ppm (SS)
7.98 ppm (3')
Indeno(1,2,3-cd)pyrene
15.7 ppm (SS)
4.26 ppm (3')
TP-10
Arsenic
94.5 ppm (4.5')
*Chromium
144 ppm (4.5')
Benzo(a)anthracene
2.25 ppm (SS)
Benzo(a)pyrene
2.05 ppm (SS)
Benzo(b)flouranthene
2.23 ppm (SS)
*Benzo(k)fluoranthene
1.52 ppm (SS)
*Chrysene
2.48 ppm (SS)
Dibenzo(a,h)anthracene
0.48 ppm (SS)
Indeno(1,2,3-cd)pyrene
1.43 ppm (SS)
MW-2
BH-2
BH-1
RI-1
RI-2
BH-4
BH-3
3 Plating
BH-7E
BH-9E
BH-8
TP-5
BH-13E
TP-1
TP-6
TP-11
RI-6
BH-10E
TP-2
TP-3
4 Rear
MW-3
RI-9
RI-7
BH-15E
MW-6
BH-12
TP-14
FENCE
TP-7
MW-4
BH-11E
TP-13
TP-8
OIL PUMP HOUSE
TP-10
MW-5
BH-6E
BH-5
BH-16
1 Office
2 Warehouse
RI-4
RI-3
RI-5
MW-1
RI-8
TP-4
BH-14
TP-9
TP-12
MAIN STREET
RI-5
Manganese
2190 ppm (SS)
Benzo(a)anthracene
49.5 ppm (2'-3')
Benzo(a)pyrene
38.7 ppm (2'-3')
Benzo(b)flouranthene
40.0 ppm (2'-3')
Benzo(k)flouranthene
28.0 ppm (2'-3')
Chrysene
50.7 ppm (2'-3')
*Dibenzofuran
14.9 ppm (2'-3')
Flouranthene
139 ppm (2'-3')
Indeno(1,2,3-cd)pyrene
25.4 ppm (2'-3')
Phenanthrene
161 ppm (2'-3')
Pyrene
104 ppm (2'-3')
RI-6
Arsenic
51.5 ppm (SS)
21.6 ppm (1.5'-2')
*Cadmium
3.76 ppm (SS)
Copper
270 ppm (SS)
Mercury
1.06 ppm (SS)
*Nickel
224 ppm (SS)
TP-12
Arsenic
16.8 ppm (1'-4.5')
Copper
289 ppm (1'-4.5')
Lead
1300 ppm (1'-4.5')
*Chromium
37.9 ppm (SS)
Dieldrin
0.76 ppm (SS)
MW-5 (Soil)
*Cadmium
2.57 ppm (3'-5')
Chromium
74.3 ppm (3'-5')
Copper
433 ppm (3'-5')
Benzo(a)anthracene
2.26 ppm (SS)
3.83 ppm (3')
Benzo(a)pyrene
2.00 ppm (SS)
3.32 ppm (3'-5')
Benzo(b)flouranthene
2.52 ppm (SS)
3.27 ppm (3'-5')
Benzo(a,h)anthracene
0.50 ppm (SS)
0.71 ppm (3'-5')
*Benzo(k)fluoranthene
1.40 ppm (SS)
2.75 ppm (3'-5')
*Chrysene
2.50 ppm (SS)
3.77 ppm (3'-5')
Indeno(1,2,3-cd)pyrene
1.34 ppm (SS)
2.15 ppm (3'-5')
LEGEND
RI BORINGS - RI-1
RI TEST PITS - TP-1
RI BEDROCK WELLS - MW-1
PHASE II ESA BORINGS - BH-1
PHASE II ESA BORINGS EXCEEDED RESTRICTED RESIDENTIAL - BH-6E
BUILDINGS
NOTES:
-Compound levels are all presented in ppm
-All compound levels shown exceed Restricted Residential SCO's
-*Compounds exceed Residential SCO's Only
BE3CORP PANAMERICAN ENVIRONMENT • ENGINEERING • ENERGY
FIGURE 2: MAIN AND HERTEL SITE RI SOIL ANALYTICAL RESULTS
BE3 Corp./Panamerican
1270 Niagara Street
Buffalo, New York 14213
W: 716-249-6880
MAIN AND HERTEL
2-09-2018
SCALE: N/A
SHEET 1 OF 1

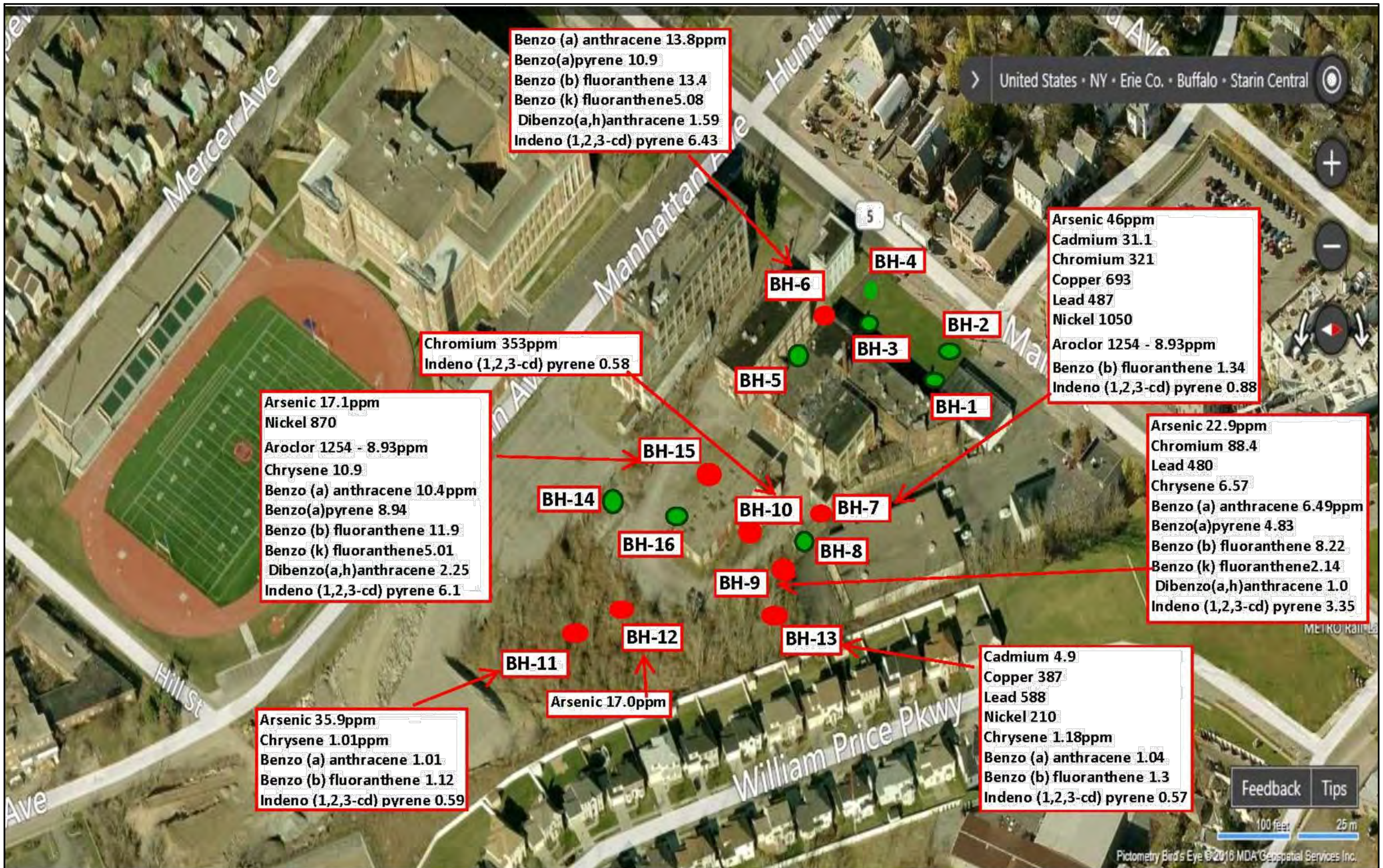


Figure: Phase II Boring Locations with results

Source: Bing Maps

Annotated Sample Results with concentrations above Residential/Restricted Residential. Samples Collected on 12-20-2016

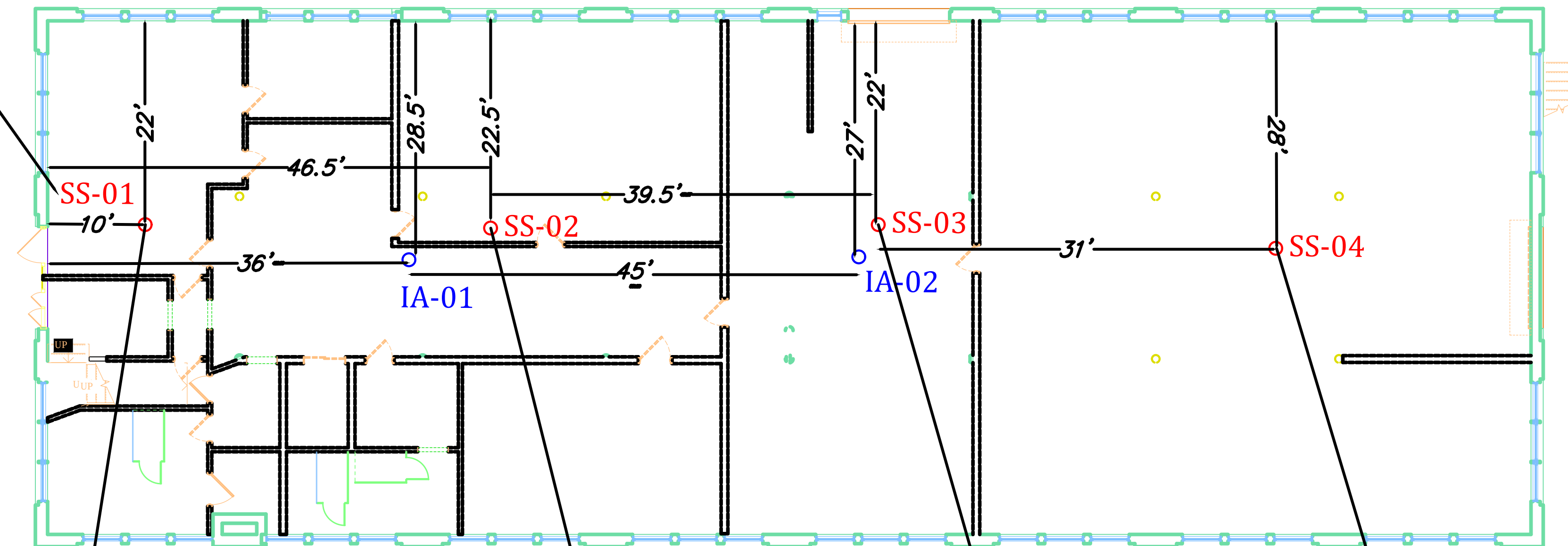
Boreholes that had results in excess of residential/restricted residential NYSDEC Brownfields 375 SCOs.

Boreholes not sampled or with results less than residential/restricted residential NYSDEC Brownfields 375 SCOs

	Figure 3: Phase II Boring Locations With Results	
BE3 CORP PANAMERICAN	BE3 Corp./Panamerican 1270 Niagara Street Buffalo, New York 14213 W: 716-249-6880	MAIN AND HERTEL Source: Bing Maps
06-07-2017	SCALE: N/A	SHEET 1 OF 1

Building 2: Warehouse

SAMPLE TAKEN IN BASEMENT



OA-01

SAMPLE ID: SS-01
Trichloroethene 23
SAMPLE ID: IA-01
Trichloroethene 0.97

NYSDOH Guide Decision
Matrix Results: MONITOR

SAMPLE ID: SS-02
Trichloroethene 63
SAMPLE ID: IA-01
Trichloroethene 0.97

NYSDOH Guide Decision
Matrix Results: MITIGATE

SAMPLE ID: SS-03
Trichloroethene 8.1
SAMPLE ID: IA-02
Trichloroethene 1.4

NYSDOH Guide Decision
Matrix Results: MITIGATE

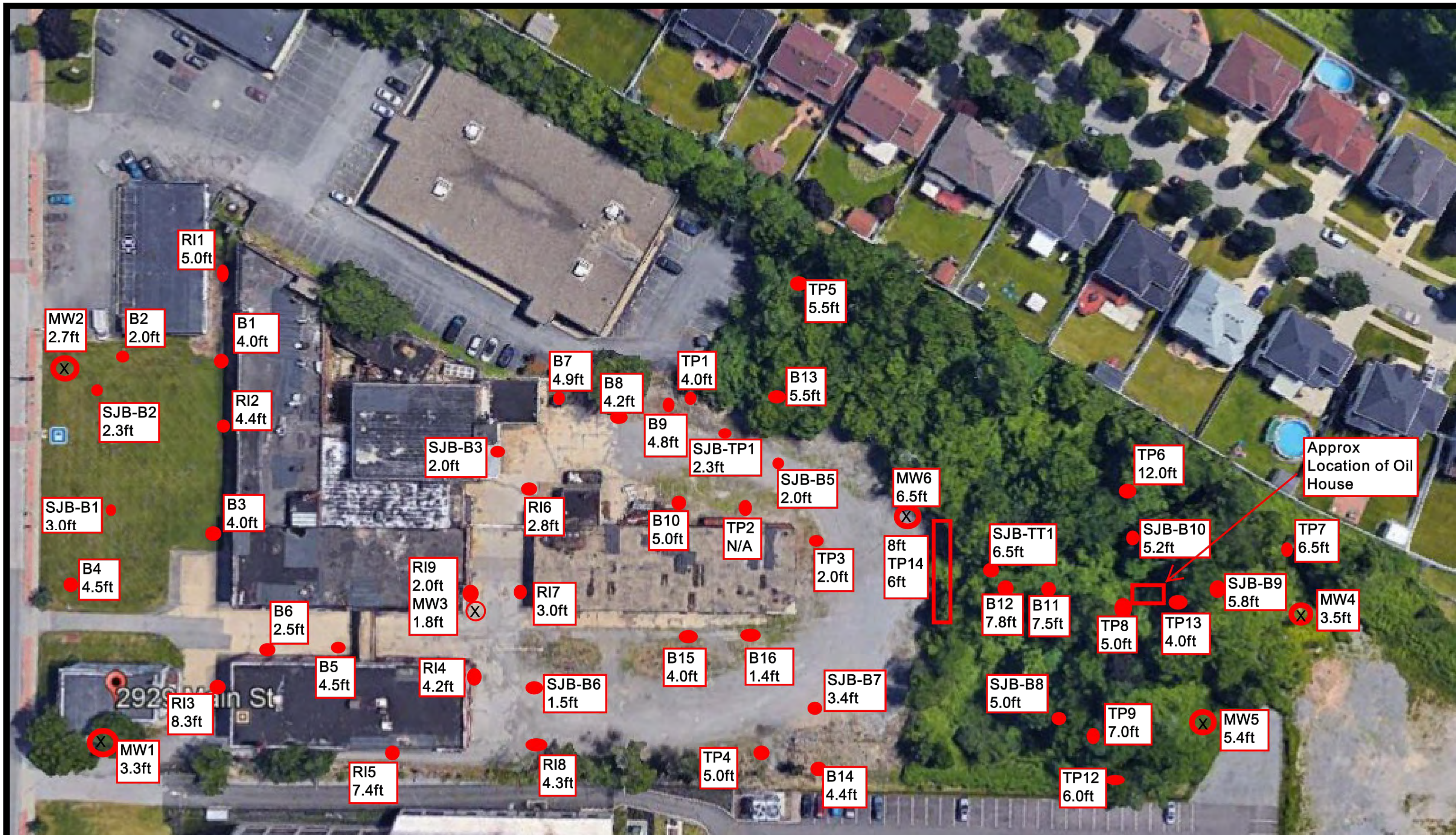
SAMPLE ID: SS-04
Trichloroethene 8.6
SAMPLE ID: IA-02
Trichloroethene 1.4

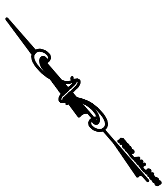
NYSDOH Guide Decision
Matrix Results: MITIGATE

LEGEND

- VAPOR INTRUSION SUB-SLAB SAMPLE: SS-01
- IINDOOR AIR SAMPLE: IA-01
- OUTDOOR AIR SAMPLE: OA-01

BE3 CORP PANAMERICAN ENVIRONMENT • ENGINEERING • ENERGY	FIGURE 4: MAIN AND HERTEL SITE RI BUILDING 2 SUB-SLAB VAPOR RESULTS	
	BE3 Corp./Panamerican 1270 Niagara Street Buffalo, New York 14213 W: 716-249-6880	MAIN AND HERTEL
1-17-2018	SCALE: N/A	SHEET 1 OF 1





LEGEND

- PHASE II/RI BORINGS - B 1/RI 1
- RI TEST PITS - TP-1
- MONITORING WELL BORING

BE3CORP PANAMERICAN ENVIRONMENT • ENGINEERING • ENERGY	FIGURE 5: MAIN AND HERTEL DEPTH TO BEDROCK	
	BE3 Corp/Panamerican 1270 Niagara Street Buffalo, New York 14213 W: 716-249-6880	MAIN AND HERTEL Source: Google Earth
2-08-2018	SCALE: N/A	SHEET 1 OF 1