DRAFT REMEDIAL INVESTIGATION - ALTERNATIVE ANALYSIS REPORT

BROWNFIELD CLEANUP PROGRAM
For
MOD-PAC CORP.
1801 Elmwood, Buffalo 14207
BCP # C915314

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HAZARD
EVALUATIONS

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1.0 INTRODUCTION

This Remedial Investigation (RI) and Alternative Analysis (AA) Report for the MOD-PAC CORP. facility at 1801 Elmwood Avenue located in the City of Buffalo, Erie County, New York (Site) has been prepared on behalf of MOD-PAC CORP. Site location is included on Figures 1 and 2.

A Brownfield Cleanup Agreement (BCA) was executed on June 21, 2017 for the Site, identified as Site No. C915314 with New York State Department of Environmental Conservation (NYSDEC), under the Brownfield Cleanup Program (BCP). Wittman GeoSciences, PLLC and Hazard Evaluations Inc. (HEI) completed RI activities, in accordance with an approve RI Work Plan.

For over 130 years, MOD-PAC has been a pioneer in the printing and manufacturing of premium quality folding cartons. Founded in 1881 as Cooper Paper Box, the company was acquired by Astronics Corporation (Nasdaq ATRO) in 1972, at which time the MOD-PAC CORP. name was established. The printing & packaging segment of Astronics that was operated through MOD-PAC became a separate corporation in March 2003 (Nasdaq MPAC). Then in 2013, the company was taken private by Kevin Keane, Chairman, and Daniel Keane, President and CEO, and their associates and affiliates.

MOD-PAC has grown to be the largest printing firm in Western New York, currently employing over 370 employees. At the current 500,000 square foot manufacturing facility in Buffalo, New York, MOD-PAC produces high quality folding cartons for large companies and small businesses alike.

MOD-PAC has been making great strides in renovating current manufacturing facilities, however, faces many challenges. Operating a modern packaging plant in a 100+ year old industrial facility is difficult. Areas of the building are underutilized due to the amounts of historical industrial fill that require special handling and remediation. Asbestos is found throughout which limits the ability to upgrade areas of the buildings. All need to be addressed for our facility to remain competitive for the future. The environmental issues need to be remediated to ensure our packaging is consistently produced in conformity with applicable Consumer health and safety rules and ISO quality standards. This re-development will support continued growth of investment and employment wages at MOD-PAC in Buffalo, New York.

MOD-PAC has invested over $24 million in the last 10 years ($53 million in last 15 years). Going forward we expect an additional $20 to $40 million in plant and equipment investments to remain a competitive and flourishing company located within the City of Buffalo.

The southern portion of the Site is currently underutilized, underdeveloped property located in the City of Buffalo. The land has been vacant and over grown for over 25 years. Development has not occurred due to the presence of significant volumes of historical industrial fill throughout the area. The historical fill is present up to ground surface, throughout the southern portion of the Site.

1.1 Purpose and Scope

The purpose of the RI work was to:

- Define the nature and extent of on-Site contamination in both soil and groundwater.
- Identify on-Site source areas of contamination.
- Collect data of sufficient quantity and quality to evaluate potential threats to the public health and environment.
- Collect data of sufficient quantity and quality to evaluate remedial alternatives.

1.2 Site Background

The Site is addressed as 1801 Elmwood Avenue in the City of Buffalo, Erie County, New York. The Site most recently consisted of six contiguous parcels which have recently been combined into one parcel totaling approximately 20.03 acres of land, as summarized below.

Parcel	Section	Block	Lot	Acreage
1801 Elmwood	78.69	2	4.21	12.2139 acres
1805 Elmwood	78.69	2	4.1	4.3728 acres
1809 Elmwood	78.69	2	3	2.9759 acres
86 Ledger	78.70	2	12	0.248 acres
94 Ledger	78.70	2	11	0.0848 acres
33 Mandan	78.70	2	13	0.1416 acres
			Total:	20.037 acres

The Site is bound to the south by railroad tracks and to the west by Elmwood Avenue. Commercial and residential properties are located immediately to the north. Industrial occupants and the recently constructed Nardin Academy Athletic Center are located to the east. The Site is located within an urban area, utilized for industrial, commercial, and residential purposes.

The MOD-PAC Site includes an approximately 500,000 square foot manufacturing facility, which produces high quality folding cartons for large companies and small businesses, as well as limited personal use products. The southern 1/3 of the property is vacant land that is overgrown and underutilized. Various debris, fill, and soil piles are present throughout the vacant area.

The entire Site was originally developed in the early 1900s by American Radiator and utilized as such until the 1970s. Since that time, the existing buildings have been utilized for various manufacturing purposes including warehousing, and box and product packaging. MOD-PAC has occupied a portion of the building since the 1950s and has been expanded since that time and currently occupies the entire facility. A railroad spur has historically traversed the Site, extending into the facility's courtyard. The southern portion of the Site was originally occupied by American Radiator until the 1950s, at which time the buildings were demolished. The southern area has remained vacant and unused since that time, currently identified as gravel parking and overgrown vegetation.

1.3 Summary of Environmental Conditions

Hazard Evaluations Inc. completed a limited Phase II investigation in October 2015 to determine if environmental factors may impact the ability to develop the southern portion of the property. The work included completion of 17 soil boring, 18 test pits and collection of soil and groundwater samples. An additional investigation was completed in December 2016 to assess if historical industrial fill and impacts were present throughout the Site limits. Twenty-six (26) additional soil borings, two hand augers, as well as additional analysis of soil and groundwater samples was completed. A final report was not created for the Phase II work.

Based on the investigation completed in October 2015 and December 2016, the primary contaminants of concern in the soil consist of semi-volatile organic compounds (SVOCs) including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene; and metals including arsenic copper, and lead. Groundwater impacts include limited chlorinated solvents including trichloroethene (TCE), cis-1,2-dichloroethent (DCE) and vinyl chloride (VC).

The contamination at the Site is primarily due to fill which varies from 2 to 16 feet below ground surface. SVOCs (PAHs) and metals were encountered in the soil samples collected from the southern, underutilized portion of the Site at concentrations exceeding Restricted Residential as well as Commercial soil cleanup objectives. The soils located in the western, eastern and northern portion of the Site currently occupied by the MOD-PAC facility also contained SVOCs (PAHs) and metals in the soil samples at concentrations exceeding commercial soil cleanup objectives (CSCO).

TCE and its associated degradation products were found in the groundwater samples collected from to location in the central areas of the Site, slightly exceeding groundwater standards (GS) of typically 5 ppb, with a maximum concentration of TCE of16 ppb; DEC of 32 ppb and VC of 42 ppb. Chlorinated solvents were not detected in estimated downgradient groundwater sample locations.

1.4 Site Conditions

Based on the soil borings and test pits completed, various fill materials were encountered at each location, generally extending to depth ranging from two feet below grade to up to 16 feet below grade, or the full depth drilled. The fill material appeared to be typical industrial fill, including foundry sand and/or sand intermixed with concrete, broken brick pieces, gravel, slag, flyash, and asphalt intermixed throughout. Miscellaneous debris was also found within the fill included metal strips, metal pieces, buried concrete slab, railroad siding, and apparent concrete utilities tunnels.

Naturally deposited cohesive silt and clay with lesser amounts of sand and gravel was generally encountered below the fill material. Groundwater was identified at a few locations and did not appear consistent throughout the Site. Depth to groundwater, where encountered, generally ranged from 2 to 9 feet below grade. Groundwater was not encountered within the silty clay.

Based on a review of the Site topographic conditions as depicted on the USGS 7.5 minute Topographic Quadrangle Map of Buffalo NE and Buffalo NW, New York, shallow regional groundwater flows is expected to flow in a southwesterly direction toward Scajaquada Creek located approximately 0.60 miles southwest and toward the Niagara River located approximately 1.50 miles west of the Site.

The Site is currently serviced by municipal utilities, including potable water, sanitary and storm sewers from the City of Buffalo, natural gas and electric. There are no known groundwater supply wells on-site and the surrounding area is serviced with potable water.

1.5 Constituents of Primary Concern (COPCs)

Based on initial investigation information, the COPCs throughout the Site, and specifically within the vacant southern field area, were identified as SVOCs, specifically PAHs and metals (arsenic) within the historical industrial fill materials present on-Site. The RI work focused on these COPCs, as well as evaluation for volatile organic compounds (VOCs), SVOCs and metals based on the historical use at the Site.

2.0 INVESTIGATION APPROACH

2.1 Introduction

The RI scope of work included investigation for potential contaminants in the soil/fill and groundwater at the Site. The RI was completed throughout the Site to identify and delineate areas that require remediation. RI work included soil borings, installation of monitoring wells, groundwater sample collection, completion of test pits, surface soil samples, sub-slab vapor and indoor air sampling, and concrete sampling. Field work was done in general accordance with the protocols in the approved RI Work Plan.

2.2 Soil/Fill Investigation

Soil/fill investigation was completed throughout the subject Site. Field activities included completion of soil borings and test pits throughout the Site, with the main focus within the southern portion of the site with known historical industrial fill material. Sampling locations are included on Figure 3.

2.2.1 Surface Soil Investigation

Surface soil samples were initially not planned to be collected at the Site due to areas being either covered by buildings or planned for construction activities to include new surface cover systems. Therefore, no areas of exposed surface soil area were initially anticipated to remain in place after remedial work and Site development.

2.2.2 Soil/Fill Investigation

Soil borings and test pits were utilized in an effort to characterize the large amounts of fill material present on-Site.

<u>2.2.2.1 Soil Boring Program</u>

A soil boring program was implemented to characterize the subsurface soil, fill and groundwater at the Site. The soil boring program included completion of fifty-seven (57) soil borings, of which ten (10) were converted to 2-inch monitoring wells. The soil boring and monitoring well locations are included in Figure 3. The soil boring locations were adjusted in the field as needed, based on Site conditions and accessibility.

Soil borings within the building interior was completed with a drill rig equipped with a concrete core barrel. A Geoprobe drill rig capable of advancing a borehole using the direct push method was used to advance the seventeen (17) interior borings at the locations as shown on Figure 3. The drill rig advanced the 1.5-inch diameter, 4-foot long core sample liner to the desired depth to retrieve soil core samples at four-foot depth intervals. The maximum depths of interior borings were completed to approximately 12 to 20 feet below grade. No visual or olfactory evidence of impact was noted in the soil boring conditions, with the exception of SB136 where an odor was detected at about 6 feet below grade; and at SB150 where an odor was encountered at about 8 feet below grade with a sheen noted at about 10 feet below grade. Wet or saturated soil conditions were encountered at most of the interior soil boring locations at approximately 3 to 9 feet below grade.

Thirty (30) exterior soil borings were completed throughout the subject Site to depths ranging between 8 to 24 feet below grade. Ten (10) of the soil borings were converted to two-inch monitoring wells. Several soil borings were extended to depths of 20 to 25 feet below grade to assess if the native clay extends to greater depths.

Upon retrieval of each core, the soil/fill was initially screened for total organic vapors with a calibrated organic vapor meter equipped with a photoionization detector (PID). Organic vapor meter results and soil descriptions are recorded on the field soil boring logs presented in Appendix A.

Soil samples were selected for analysis based on field screening results, as well as visual and olfactory observations. Samples were selected from the depth that displayed evidence of contamination (i.e., highest PID reading, visual/olfactory evidence of odors, staining, or product), if any. If there was no evidence of impact throughout the soil boring, the native soils directly below the fill/native interface were selected for analysis.

<u>2.2.2.2 Test Pit Excavations</u>

Twelve (12) test pits were completed in the southern portion of the Site with a track mounted excavator. Test pits were completed to depths of up to 20 feet below grade. HEI environmental scientist completed a test pit log for each test pit location. Field screening was done on the excavated soil from the test pits with a PID. Select soil samples were collected for analysis based on field screening results, as well as visual and olfactory observations. Samples were selected from the depth that displayed evidence of contamination (i.e., highest PID reading, visual/olfactory evidence of odors, staining, or product), if any. If there was no evidence of impact across the soil boring, the native soils directly below the fill/native interface were selected for analysis

2.2.3 Soil/Fill Sample Analysis

Subsurface soil samples were collected from the Geoprobe soil borings using a 1.5-inch diameter, 4-foot core sampler with a dedicated acetate liner, or directly from the test pit locations. All non-dedicated, downhole sampling equipment, such as the geoprobe sampler, was decontaminated between soil boring locations. New acetate liners were used at each separate sampling location and depth. Selected samples were placed in pre-cleaned laboratory provided sample bottles, cooled to 4^0C in the field and collected for transportation under chain-of-custody to Alpha Laboratories, a NYSDOH ELAP certified analytical laboratory. A summary of samples selected for laboratory analysis as part of the RI/IRM work are included on Table 1.

For the RI work, the following number of soil samples were selected for analysis for the following:

- 28 soil samples for Target Compound List (TCL) VOCs;
- 45 soil samples for TCL semi-volatile organic compounds (SVOCs);
- 44 soil samples for Target Analyte List (TAL) metals;
- 15 soil samples for polychlorinated biphenyls; and
- 7 soil samples for pesticides and herbicides.

2.3 Groundwater Investigation

The RI work included installation of ten (10) monitoring wells at boring locations SB103/MW-1, SB113/MW-2, SB116/MW-3, SB149/MW-4, SB121/MW-5, SB125/MW-6, SB127/MW-7, SB129/MW-8, SB130/MW-9, and SB147/MW-10, as shown on Figure 3.

2.3.1 Monitoring Well Installation

The monitoring wells were installed to depths ranging from 12 to 23 feet below grade. At each of the ten monitoring well locations, the soil borings were advanced using a direct-push drill rig capable of advancing hollow-stem augers for installing 2-inch monitoring wells. All non-dedicated drilling tools and equipment were decontaminated between boring locations using potable tap water and/or alconox wash.

After completion of the soil borings, a 2-inch diameter, schedule 40 PVC monitoring well was installed at each location. An approximate 10-foot length of 0.010-inch machine slotted well screen was installed at each location attached to the riser. The well screen depth was backfilled with silica sand filter pack (size #0) from the base to approximately 2 feet above the well screen. A bentonite seal was placed above the sand and hydrated to limit potential for down-hole contamination. The top of the well riser was flush with the ground surface and completed with a locking J-plug. Each of the monitoring wells was completed with a road box or with a locking steel casing, depending on the location. Monitoring well completion logs are included in Appendix B.

2.3.2 Groundwater Sample Collection

After a minimum of 24-hours from installation, the monitoring wells were developed to remove residual sediments using dedicated disposable polyethylene bailers via purge methodology. Field parameters, including pH, temperature, turbidity, and specific conductance were measured periodically until they become relatively stable (approximately 10% fluctuation or less). A minimum of three well volumes was removed from each monitoring well. Well development field records are included in Appendix B.

Prior to sample collection, static groundwater levels were measured at each of the monitoring wells. Groundwater depths and relative elevations are included on Table 2. The wells were purged and field measurements of pH, specific conductivity, temperature and turbidity were recorded and monitored for stabilization prior to sampling. Purging was considered complete when pH, specific conductivity, and temperature stabilized. Groundwater samples were collected using low flow sampling techniques.

One existing on-site monitoring well, identified as MW-1, was also developed and sampled, using same methodology as newly installed wells.

2.3.3 Groundwater Sample Analysis

Groundwater samples collected from on-site monitoring wells were analyzed for the following parameters:

- Target Compound List (TCL) VOCs;
- TCL semi-volatile organic compounds (SVOCs); and

- Target Analyte List (TAL) metals (total and dissolved).

Additionally, four groundwater samples were also analyzed for PCBs, pesticides and herbicides. Groundwater samples were placed in pre-cleaned laboratory-provided sample bottles, labeled and preserved in accordance with USEPA SW-846 methodology, and transported under chain-of-custody to Alpha Analytical, a NYSDOH ELAP certified analytical laboratory.

2.4 Field Specific Quality Assurance/Quality Control Sampling

Field-specific quality assurance/quality control samples were collected and analyzed, to support third-party data usability assessment effort. Site-specific QA/QC samples included duplicate, matrix spike/matrix spike duplicate, rinsate blank, and trip blank (VOCs only).

2.5 Investigation- Derived Waste Management

During the completion of soil borings and monitoring wells, the excess soil cuttings were containerized in 55-gallon drums. Based on analytical testing results, the excess soil will be disposed with soil from the southern portion of the Site, as part of remedial action activities. Development/purge water generated during well development and/or sampling activities were containerized in 55-gallon drums. The development water will be disposed off-site on a future date, as part of remedial action activities.

2.6 Soil Vapor Intrusion Investigation

Due to the presence of TCE at limited soil and groundwater sampling locations, a soil vapor intrusion (SVI) investigation was completed to assess potential for soil vapor intrusion concerns at the current Site building conditions. The SVI work was done in general accordance with NYSDOH final document entitled "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" dated October 2006.

2.6.1 Building Survey

The Site was historically used for various industrial/manufacturing purposes, as well as storage and warehousing. An inspection of the existing on-site building and product inventory was conducted to assess the current conditions and determine the likelihood of existing chemicals of concern that may be present that would influence the vapor test results. Chemicals are utilized on a daily basis during routine operations within the facility. A PID was used to monitor indoor air and scan vapors of individual containers that may be present. No PID readings were identified inside the building.

2.6.2 Site Preparation

In accordance with NYSDOH recommendations, the HVAC system was activated during the December 2017 sampling event.

2.6.3 Vapor Sampling

Three types of air samples were collected, including sub-slab, ambient indoor air and ambient outdoor air samples, as follows:

Sub-Slab: HEI installed four (4) temporary sub-slab sampling points at locations as shown on Figure 3. Samples were obtained through core-drilled holes into a competent portion of the concrete floor, away from cracks. Clean, dedicated ¼-inch inside diameter polyethylene tubing was placed into the hole and extended approximately 2-inches into the sub-slab material. The core-hole annulus was sealed at the floor surface with modeling clay.

Leak testing was completed prior to collection of the sub-slab sample locations using a tracer gas. The tracer gas (i.e., helium) was released at the ground surface immediately around the sub-slab sampling location prior to sample collection. The following procedure was generally used:

- A helium meter was used to monitor the presence of helium during purging and soil gas sample collection;
- A containment unit was constructed to cover the sub-slab sampling system, including a shroud set into bentonite to create a seal. With a hole to allow for introduction of helium and a second to allow trapped air to escape;
- Prior to soil gas purging, helium was introduced into the shroud and helium confirmed to be present; and
- The helium meter was connected in-line with the sub-slab sampling assembly to assess for presence of helium.

Once it was determined that the sampling system was sealed, the sample probe and tube were purged of one to three volumes. The sub-slab soil gas sample was collected using a 1-liter capacity Summa canister fitted with a laboratory calibrated flow regulation devise to allow the collection of the soil gas sample over an 8-hour sample collection time. Please note that one sample location, SS-5, was destroyed by construction equipment; therefore, sample analysis was not possible. Soil vapor intrusion field data are included in Appendix C.

Ambient Indoor Air: An ambient indoor air sample was collected concurrent with every sub-slab sample location from approximately 3 to 4 feet above the slab floor. A total of 6 samples were obtained. Samples were collected over an 8-hour collection period.

Ambient Outdoor Air: One ambient outdoor sample was collected at an upwind location from approximately 4 to 5 feet above the ground surface. A sample was collected over an 8-hour collection period.

2.6.4 Soil Vapor Analysis

The five sub-slab samples, six ambient indoor samples and one ambient outdoor sample were analyzed for VOCs using USEPA Method TO-15.

2.7 Site Mapping

Figure 2 shows the relative features of the Site, including property boundaries, Site buildings, vacant southern area, and parking lots. A Site survey was completed by McIntosh & McIntosh, PC, (M&M) which included mapping of the exterior soil borings, test pits, monitoring wells, and surface soil samples. Figures 3 through 9 were generated using the survey generated by M&M. Interior sample locations were field located based on measurements from known features included within architectural drawings and Site features (e.g., building columns, corners, etc.). Monitoring well relative elevations were measured by M&M. An isopotential map showing the general direction of groundwater flow was prepared based on water levels measures and included as Figures 4.

3.0 SITE PHYSICAL CHARACTERISTICS

The RI work included completion of soil and groundwater data, identifying the following physical characteristics for the Site.

3.1 Site Topography and Surface Features

The BCP limit was formerly 6 tax ID parcels, which have been combined into one parcel, totaling approximately 20.03 acres of land. The Site includes an approximate 500,000-square foot manufacturing facility. A central courtyard area is located near the central portion of the building, with parking lots present to the west, north and south. The southern portion of the Site was a vacant, wooded area, with areas of fill material present on the surface. The trees were removed from the southern portion to allow for Site investigations to occur. Areas of fill piles and general debris were present throughout the vacant southern area.

3.2 Geology and Hydrogeology

Based on observations from the soil borings completed during the RI work, subsurface conditions generally included approximately 4 to 19 feet of granular and cohesive fill material overlying native silt and clay which extended the maximum depth drilled to 24 feet. The fill material typically included industrial fill, including foundry sand intermixed with concrete, broken brick pieces, cinders, gravel, slag, fly ash, and asphalt. Additionally, miscellaneous debris was found throughout the fill material, including metal pieces and strips, buried concrete slabs and chunks, railroad siding, large brick pieces, and other debris.

Monitoring well locations MW-1 to MW-10 were installed and initially measured in November 2017. Table 2 presents the relative groundwater elevation data. Groundwater depth was generally encountered 0.5 to 10 feet below grade. Three additional one-inch monitoring wells were installed and all on-site wells were remeasured in February 2018. Figure 4 presents the estimated groundwater flow direction, which appeared to be a generally westerly direction. However, a northerly groundwater flow influence was apparent in the southern portion of the Site. Groundwater appears to be perched within the random fill material, and not consistent throughout the 20 acres.

4.0 REMEDIAL INVESTIGATION RESULTS BY MEDIA

The following sections discuss the analytical results generated from the RI. Tables 3 to 6 summarize the RI soil sampling results compared to Unrestricted Use Soil Cleanup Objectives (UUSCO), Restricted Residential Use Soil Cleanup Objectives (RRSCO), Commercial Use Soil Cleanup Objectives (CUSCO), and Industrial Use Soil Cleanup Objectives (IUSCO). Table 7 presents the groundwater sample results compared to Class GA Groundwater Criteria per NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (June 1988). The analytical laboratory reports are included in Appendix D.

4.1 Soil/Fill

Tables 3 to 6 present the results of soil/fill sample analysis collected as part of the RI compared to the UUSCO, RRUSCO, CUSCO and IUSCO. The Site future usage is intended to be used for commercial purposes.

4.1.1 Volatile Organic Compounds

Twenty-eight (28) soil/fill samples were analyzed for VOCs from representative soil borings and test pits. The majority of VOCs were reported as non-detect or at concentrations below the unrestricted use soil cleanup objectives (UUSCO). All detected VOCs were at concentrations below their respective CUSCO. One sample identified TCE at a concentration of 21,000 parts per billion (ppb), which is at the RRSCO of 21,000 ppb. Soil results are presented on Table 3 and Figure 5.

4.1.2 Semi-Volatile Organic Compounds

Forty-five (45) soil/fill samples were analyzed for SVOCs from representative soil boring and test pit locations. As shown on Table 4, many SVOCs detected in the soil/fill samples were detected at concentrations either non-detect or below UUSCO. However, thirteen (13) samples exhibited SVOCs at concentrations above RRUSCO, with twelve (12) samples having at least one compound exceeding CUSSO.

- Benzo(a)anthracene was detected in three locations at concentrations ranging from 5,900 to 7,600 ppb exceeding CUSSO of 5,600 ppb.
- Benzo(a)pyrene was detected in 12 locations at concentrations ranging from 1,200 to 6,600 ppb, which exceeds both CUSCO of 1,000 ppb and industrial use soil cleanup objective (IUSCO) of 1,100 ppb.
- Benzo(b)fluoranthene was detected in four locations at concentrations ranging from 5,600 to 8,100, exceeding CUSCO of 5,600 ppb.
- Dibenzo(a,h)anthracene was detected in four locations at concentrations ranging from 670 to 960 exceeding CUSCO of 560 ppb.

As shown on Figure 6, SVOCs exceeding CUSCO were identified throughout the southern portion of the Site, as well within the existing parking areas.

4.1.3 Metals
A total of forty-four (44) soil/fill samples were selected for TAL Metals analysis. As shown on Table 5, the majority of metals were at concentrations below their respective UUSCO. However, twelve (12) of the soil samples had metals detected in the soil/fill samples at concentrations above RRUSCO with eight soil samples having at least one metal exceeding CUSCO.

- Arsenic was detected at seven (7) locations at concentrations ranging from 17.7 to 109 ppm, which exceeds both CUSCO and IUSCO of 16 ppm.
- Lead was detected at two (2) locations at concentrations ranging from 1,570 to 3,310, exceeding the CUSCO of 1,000 ppm.

As shown on Figure 7, metals exceeding CUSCO were identified throughout the fill material present within southern portion of the Site, as well under the building and driveway areas.

4.1.4 PCBs
A total of fifteen (15) soil/fill samples were analyzed for polychlorinated biphenyls (PCBs). As shown on Table 6, PCBs were detected at five (5) locations, but below the RUSCO at the sampling locations.

4.1.5 Pesticides/Herbicides
Five (5) soil/fill samples were selected for pesticide and herbicide analysis. As shown on Table 6, no pesticides or herbicides were detected at concentrations exceeding their respective RUSCO.

4.1.6 Summary
Concentrations of VOCs within the soil samples were below their respective CUSCO. SVOCs, including typical PAHs benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene and dibenzo(a,h)anthracene were detected at several locations exceeding CUSCO. Additionally, metals including lead and arsenic, were also detected at several locations exceeding CUSCO. The presence of the PAHs and metals is likely due to the large amounts of historical industrial fill present at the Site, and is associated with the foundry sands, cinders, and other miscellaneous materials.

4.2 Groundwater
Table 7 presents the results of detected groundwater parameters to the Class GA Groundwater Criteria per NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (June 1998).

4.2.1 Volatile Organic Compounds
Nine (9) groundwater samples were collected in November 2017 and analyzed for VOCs. The majority of VOCs were reported as non-detect or at concentrations below their respective Class GA Criteria. However, several VOCs, including cis-DCE, trans-DCE, TCE and VC were detected at two locations including SB113/MW2 and SB116/MW3. TCE ranged in concentration from 0.39 ppb at SB113/MW2 to 280 ppb at SB116/MW3.

Figure 8 shows VOC concentrations at the monitoring well locations. The presence of the TCE appears to be limited to the eastern and central portion of the Site.

4.2.2 Semi-Volatile Organic Compounds

Eighteen (18) SVOCs were detected in the nine (9) groundwater samples analyzed. Several SVOCs including benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, indeno(1,2,3-cd)pyrene, were detected at concentrations exceeding Class GA Criteria. No SVOC were detected at concentrations above Class GA criteria in the samples from SB121/MW5 and MW7.

4.2.3 Metals

Nine groundwater samples were collected for total metals analysis. In general, four metal compounds including iron, magnesium, manganese and sodium were detected in the nine groundwater samples, at concentrations exceeding respective Class GA Criteria. Nickel was encountered in the total metal analysis at two locations, including SB121/MW-5 and MW-6 at concentrations of 444 ppb and 136.2 ppb, respectively, which exceeds the Class GA Criteria of 100 ppb. Additionally, chromium, lead, mercury, selenium and thallium were also detected at concentrations exceeding their respective Class GA Criteria in the groundwater sample collected from MW-6. It should be noted that the groundwater sample from MW-6 was highly turbid at the time of sample collection.

Each of the nine monitoring wells were also sampled and analyzed for dissolved metal analysis. Naturally occurring metals magnesium, manganese and sodium were present in several of the groundwater samples. Previously detected compounds including chromium, lead, mercury, selenium and thallium were not detected at concentrations exceeding Class GA Criteria in the dissolved groundwater sample analysis. However, nickel was detected at a concentration of 410.9 ppb, which exceeds the Class GA Criteria of 100 ppb, in the groundwater sample from SB121/MW-5, located in the southeastern portion of the Site.

4.2.4 PCBs

PCBs were non-detect above method detection limits in the four (4) groundwater samples collected for analysis.

4.2.5 Pesticide/Herbicide

No pesticides were detected at concentration exceeding Class GA Criteria in the four (4) groundwater samples collected for analysis.

4.3 Soil Vapor Intrusion

Vapor intrusion air samples were analyzed from four sub-slab locations, four ambient air locations and one outdoor location. Vapor intrusion sample results are summarized in Tables 8 and 9.

4.3.1 Vapor Intrusion Sample Results

The air samples were analyzed for VOCs via TO-15. NYSDOH has specific air guideline values for limited compounds as presented in Table 3.1 in the Guidance for

Evaluating Soil Vapor Intrusion in the State of New York, dated October 2006, with various updates. NYSDOH does not have air guidance for sub-slab sample results specifically. NYSDOH guidance does provide "background levels" of compounds for outdoor air and indoor air. Within Appendix C of the guidance, NYSDOH provides USEPA the 2001 Building Assessment and Survey Evaluation (BASE) Database, which is a study of measured concentrations of VOCs from 100 randomly selected public and commercial buildings (Table C2 of NYSDOH guidance document). The NYSDOH guidance indicated that the 90th percentile values from the USEPA BASE data for indoor air for office and commercial buildings can be considered for initial benchmark values.

Additionally, in December 2017, NYSDOH updated the decision matrices to three matrices, including Matrix A (trichloroethene (TCE), cis-1,2-dichloroethene (cis-DCE), 1,1-dichloroethene (11-DCE), and carbon tetrachloride); Matrix B (tetrachloroethene (PCE), 1,1,1-trichloroethane (111-TCA), and methylene chloride); and Matrix C (vinyl chloride).

A summary of the detected concentrations are included in Table 8. New York State currently does not have standards, criteria or guidance values for concentrations of VOCs in sub-slab vapor samples. The purpose of collecting sub-slab samples is to identify potential exposure scenarios associated with vapor intrusion. A summary of these results for sample location pairs is as follows.

- **SS-1 (sub-slab)** – Twenty (20) compounds were detected above method detection limits. Four compounds were detected at levels which exceeded the 90th percentile for indoor air. TCE was detected at a concentration of 14.4 ug/m^3, which exceeded the NYSDOH Air Guideline Value (AGV) of 2 ug/m^3.

- **IA-1 (indoor)** – Twenty (20) compounds were detected above method detection limits. Six compounds were detected at levels which exceeded the 90th percentile for indoor air.

- **SS-2 (sub-slab)** – Twenty (20) compounds were detected above method detection limits. Six compounds were detected at levels which exceeded the 90th percentile for indoor air. TCE was detected at a concentration of 2.2 ug/m^3, which exceeded the NYSDOH Air Guideline Value (AGV) of 2 ug/m^3.

- **IA-2 (indoor)** – Seventeen (17) compounds were detected above method detection limits. Five compounds detected at levels which exceeded the 90th percentile for indoor air. TCE was detected at a concentration of 2.20 ug/m^3 which exceeded the NYSDOH AGV of 2 ug/m3.

- **SS-3 (sub-slab)** – Twenty-four (24) compounds were detected above method detection limits. Five (5) compounds were detected at levels which exceeded the 90th percentile for indoor air.

- **IA-3 (indoor)** – Eleven (11) compounds were detected above method detection limits. All compounds were below the 90th percentile for indoor air.

- **SS-4 (sub-slab)** – Sixteen (16) compounds were detected above method detection limits. Three (3) compounds were detected at levels which exceeded the 90th percentile for indoor air. Additionally, TCE was detected at a concentration of 32.2 ug/m^3, which exceeds the NYSDOH AGV of 2 ug/m^3.

- **IA-4 (indoor)** – Fourteen (14) compounds were detected above method detection limits. All compounds were below the 90th percentile for indoor air. Additionally, TCE was detected at a concentration of 0.301 ug/m^3, which is below the NYSDOH AGV of 2 ug/m^3.

- **OA-1 (outdoor)** – five (5) compounds were detected above method detection limits. No compounds were detected at concentrations above the 90th percentile for outdoor air.

4.3.2 Vapor Intrusion Sample Decision Matrix

NYSDOH developed decision matrices to provide guidance on a case-by-case basis about actions that should be taken to address current or potential exposures related to soil vapor intrusion. Actions recommended in the matrix are based on relationship between sub-slab vapor concentrations and corresponding indoor air concentrations, with considerations for outdoor air results. The chemicals are currently assigned to three matrices, including:

Matrix A	TCE, cis-DCE, 11-DCE, and carbon tetrachloride;
Matrix B	PCE, 11,1-TCA, methylene chloride; and
Matrix C	Vinyl Chloride.

Analytical testing results for these compounds are presented in Table 9. The decision matrices for each compound were reviewed against the decision matrices. 1,1-DCE and VC were not detected and therefore no further action is needed with regard to these chemicals.

TCE – TCE was detected in two of the sub-slab samples at concentrations ranging from 14.4 ug/m^3 at SS-1 to 32.2 ug/m^3 at SS-4. TCE was also detected at the indoor samples at concentrations ranging from 0.301 ug/m^3 at IA-4 to 2.2 ug/m^3 at IA-2.

- Based on the TCE concentration in the sample from SS-1/IA-1, the decision matrix indicates this location/area would require mitigation.
- The indoor air sample from IA-2 detected at 2.2 ug/m^3, exceeded the NYSDOH AGV of 2 ug/m^3; however, the corresponding sub-slab sample (SS-2) was non-detect. The decision matrix from the NYSDOH guidance was to identify source(s) for IA-2.
- Based on the TCE concentration in the sample from SS-4/IA-4, the decision matrix indicates this location/area would require monitoring.

cis-DCE – cis-DCE was not detected in the sub-slab samples; however, cis-DCE was detected in one indoor air sample at IA-1 at a concentration of 0.087 ug/m^3. The decision matrix from the NYSDOH guidance indicates that no further action is needed in this scenario.

Carbon Tetrachloride - Carbon tetrachloride was detected in one sub-slab at SS-3 at a concentration of 2.82 ug/m^3 and the four indoor samples ranging from 0.403 to 0.415 ug/m^3. Decision matrix for of coupled samples was no further action.

1,1,1-TCA – 1,1,1-TCA was detected in one of the sub-slab samples at concentration of 1.34 ug/m^3 at SS-2; however, 1,1,1-TCA was not detected in the indoor air sample. The decision matrix from the NYSDOH guidance indicates that no further action is needed in this scenario.

Methylene Chloride – Methylene Chloride (MC) was detected in the sub-slab from SS-1 at a concentration of 5.49 ug/m^3. The decision matrix from the NYSDOH guidance indicates that no further action is needed in this scenario. The remaining samples did not have MC at concentrations above method detection limits.

PCE – PCE was detected in one sub-slab samples at concentration of 1.69 ug/m^3 at SS-2. PCE was also detected in indoor air samples at concentrations ranging from 0.292 ug/m^3 at IA-1 to 0.42 ug/m^3 at IA-2, which is below the NYSDOH AGV of 30 ug/m^3. The decision matrix from the NYSDOH guidance indicates that no further action is needed in these scenarios.

5.0 SUPPLEMENTAL REMEDIAL INVESTIGATION

Due to the findings of the initial RI work, supplemental RI activities were completed in an attempt to further characterize the impacts identified. The following additional work was completed.

- Surface soil samples were completed in five locations, as shown on Figure 3. The samples were collected in areas of the Site which were anticipated to leave in place with no remedial work required.

- Soil borings were completed in the eastern portion of the Site, in the area where TCE was detected in both a soil and groundwater sample. Three of the soil boring locations were converted to one-inch monitoring wells for further groundwater sampling.

- Due to detections of arsenic in the soil samples from SB101, TP104 and TP108, additional soil probes were completed in the surrounding areas in an attempt to delineate arsenic areas.

- Due to presence of TCE in groundwater, a limited off-site investigation was completed to the east of the Site limits. Seven (7) soil borings were completed, as well as the collection of four (4) grab groundwater samples.

- Additional soil vapor intrusion samples were collected from within the building interior to assess potential limits of interior vapor intrusion and further define areas requiring vapor mitigation.

- At the request of NYSDEC, three monitoring wells were selected for sample and analysis of emergent contaminant sampling, specifically 1,4-dioxane and per/polyfluoroalkyl substances (PFAS).

5.1 Surface Soil Investigation

Five surface soil samples were collected on-Site as part of the RI and compared to the UUSCO, RRUSCO, CUSCO and IUSCO. Table 10 presents analytical data and Figure 9 provides surface soil sample locations.

5.1.1 Surface Soil Investigation

The additional RI work included collection of five (5) surface soil samples from 0 to 2 inches below ground surface, and areas that were anticipated to remain undeveloped in future plans. The surface soil sample locations are included on Figure 9.

A stainless steel trowel was used to collect each surface soil sample. At each location, the top loose gravel and/or overlying topsoil was removed prior to sample collection. Samples were collected and placed into a stainless steel bowl and initially screened for total organic vapors with a calibrated organic vapor meter equipped with a photoionization detector (PID). No visual or olfactory evidence of impacts was identified. A VOCs sample was immediately collected and placed into laboratory supplied jars. The surface soil was coned and quartered to collect representative samples. The soil/fill material was placed in laboratory supplied jars for laboratory analysis, as shown on Table 1.

5.1.2 Analytical Testing Results

The analytical testing results did not identify VOCs, PCBs or pesticides/herbicides at concentrations above RRSCO in the samples collected for analysis. Analytical testing results are summarized on Table 10.

Four surface soil samples exhibited SVOCs with detections of at least one compound exceeding CUSCO, including benzo(a)anthracene, benzo(a)pyrene and benzo(b)fluoranthene. The locations of the SVOC exceeding CUSCO are presented in Figure 6.

Three surface soil sample locations identified the presence of arsenic at concentrations above the CUSCO, including SS102 (0-2" – duplicate), SS104 (0-2') and SS105 (0-2"). Arsenic concentrations exceeding CUSCO ranged from 19.1 to 141 ppm.

5.2 Supplemental Soil/Fill Investigation

As mentioned above, additional soil investigation was completed on-site, further investigation in the eastern portion of the Site and metals impacts in the southern portion of the Site. Four direct push soil borings were completed in the eastern portion of the Site, identified as SB172 to SB175, as well as twelve (12) soil borings in the southern portion of the Site, identified as SB158 to SB169. Tables 3 and 5 present the results of soil/fill sample analysis collected as part of the RI compared to the UUSCO, RRUSCO, CUSCO and IUSCO, and Figures 5 and 7 present the sample locations.

5.2.1 Volatile Organic Compounds

Four soil samples were selected from soil/fill samples based on PID readings and depth of groundwater and analyzed for VOCs. The majority of VOCs were reported as non-detect or at concentrations below the unrestricted use soil cleanup objectives (UUSCO). All detected VOCs were at concentrations below their respective CUSCO. TCE was detected in three soil samples at concentrations ranging between 2,800 ppb and 12,000 ppm, which are above the UUSCO but below the RRSCO of 21,000 ppb. Soil results are presented on Table 3 and Figure 5.

5.2.2 Metals

Fourteen (14) additional soil/fill samples were selected for TAL Metals analysis. As shown on Table 5, the majority of metals were at concentrations below their respective UUSCO. However, Arsenic was detected at seven (7) locations at concentrations ranging from 16.5 to 43.7 ppm, which exceeds both CUSCO and IUSCO of 16 ppm.

As shown on Figure 7, metals exceeding CUSCO were identified throughout the fill material present within southern portion of the Site, as well under the building and driveway areas. Arsenic appears to be persistent within the southern field area, and throughout the Site fill material.

5.2.3 Summary

As summarized above, concentration of arsenic was identified above CUSCO and IUSCO in locations throughout the historical industrial fill in the southern portion of the Site, but also within remaining area of the Site, under the building and within surface soil samples. The presence of the metals is likely due to the large amounts of historical industrial fill present at the Site, and is associated with the foundry sands, cinders, and other miscellaneous materials.

5.3 Groundwater

Table 7 presents the results of detected groundwater parameters to the Class GA Groundwater Criteria. Three newly installed one-inch wells were sampled, as well as two-inch existing wells identified as SB116/MW3 and SB113/MW2.

5.3.1 Volatile Organic Compounds

Sampling results from the five (5) locations identified chlorinated solvents detected at concentrations above Class GA Criteria including cis-DCE, trans-DCE, TCE and VC. The TCE was detected at concentrations ranging from 0.44 ppb at SB173/MW12 to 280 ppb at SB116/MW3. Figure 8 shows VOCs concentrations at the monitoring well locations. The presence of the TCE appears to be limited to the eastern and central portion of the Site.

Four off-site groundwater samples were selected for laboratory analysis. The off-site sample locations are shown on Figure 10. Several VOCs were detected above method detection limit. Acetone was detected at locations SB201 and SB203 at concentrations of 53 ppb and 51 ppb, respectively. TCE was detected in only one location, SB201, at a concentration of 8.4 ppb. Based on low level VOCs present in the off-site wells, the chlorinated solvent impacts identified in the eastern portion of the Site do not appear to be migrating off-site, in an easterly direction.

5.3.2 Emergent Contaminant Sampling

At the request of NYSDEC, three groundwater wells were selected for analysis of emergent contaminant sampling including 1,4 dioxane and per/polyfluoroalkyl substances (PFAS). Sample locations selected for sample analysis were SB103/MW1, SB127/MW7 and SB116/MW3. Analytical testing results did not identify 1,4-dioxane above method detection limits. Several PFAS were detected above method detection limits, including two compounds from SB103/MW1; seven compounds from SB127/MW7, and 11 compounds from SB116/MW3. Analytical results are present on Table 12.

5.3.3 Summary

TCE and degradation compounds were detected in the groundwater samples from SB113/MW2 and SB116/MW3, located in the eastern and center areas of the Site, as shown in Figure 8. Based on off-Site sampling results, the TCE impacts are not present east of the Site and appear limited to the eastern portion of the Site.

5.4 Soil Vapor Intrusion

Vapor intrusion air samples were analyzed from four sub-slab locations, four ambient air locations and one outdoor location. Vapor intrusion sample results are summarized in Tables 8 and 9. Due to detection of TCE and decision matrix recommending mitigation, additional vapor intrusion sampling was completed in April 2018 and May 2018, in an attempt to delineate the area requiring mitigation.

5.4.1 Vapor Intrusion Sample Results

The air samples were analyzed for VOCs via USEPA Method TO-15. A summary of the detected concentrations are included in Table 8. New York State currently does not have standards, criteria or guidance values for concentrations of VOCs in sub-slab vapor samples. The purpose of collecting sub-slab samples is to identify potential exposure scenarios associated with vapor intrusion. TCE was identified as the contaminant of concern, based on previous test results a summary of the TCE results for sample location pairs is as follows.

- **SS-5 (sub-slab)** – TCE was detected at a concentration of 27,300 ug/m^3, which exceeded the AGV of 2 ug/m^3.
  IA-5 (indoor) – TCE was detected at a concentration of 1.67 ug/m^3, below the AGV of 2 ug/m^3.

- **SS-6 (sub-slab)** – TCE was detected at a concentration of 13,600 ug/m^3, which exceeded the AGV of 2 ug/m^3.
  IA-6 (indoor) – TCE was detected at a concentration of 2.25 ug/m^3, above the AGV of 2 ug/m^3.

- **SS-7 (sub-slab)** – TCE was non-detect.
  IA-7 (indoor) – TCE was detected at a concentration of 0.274 ug/m^3, below the AGV of 2 ug/m^3.

- **SS-8 (sub-slab)** – TCE was detected at a concentration of 99.4 ug/m^3, which exceeded the AGV of 2 ug/m^3.
  IA-8 (indoor) – TCE was detected at a concentration of 0.215 ug/m^3, below the AGV of 2 ug/m^3.

- **SS-9 (sub-slab)** – No sample recovery
  IA-9 (indoor) – TCE was detected at a concentration of 0.63 ug/m^3, below the AGV of 2 ug/m^3.

- **SS-10 (sub-slab)** – TCE was non-detect.
  IA-10 (indoor) – TCE was detected at a concentration of 0.726 ug/m^3, below the AGV of 2 ug/m^3.

- **SS-11 (sub-slab)** – TCE was detected at a concentration of 2,260 ug/m^3, which exceeded the AGV of 2 ug/m^3.
  IA-11 (indoor) – TCE was detected at a concentration of 1.18 ug/m^3, below the

AGV of 2 ug/m^3.

- o **SS-12 (sub-slab)** – TCE was non-detect.
  IA-12 (indoor) – TCE was detected at a concentration of 0.306 ug/m^3, below the AGV of 2 ug/m^3.

5.4.2 Vapor Intrusion Sample Decision Matrix

NYSDOH developed decision matrices to provide guidance on a case-by-case basis about actions that should be taken to address current or potential exposures related to soil vapor intrusion. Actions recommended in the matrix are based on relationship between sub-slab vapor concentrations and corresponding indoor air concentrations, with considerations for outdoor air results. The chemicals are currently assigned to three matrices, including:

Matrix A TCE, cis-DCE, 11-DCE, and carbon tetrachloride;
Matrix B PCE, 11,1-TCA, methylene chloride; and
Matrix C Vinyl Chloride.

Analytical testing results for these compounds are presented in Table 9. The decision matrices for each compound were reviewed against the decision matrices. Since TCE was the only contaminant of concern, only TCE was further evaluated. No further action was needed for the remaining compounds identified in the three matrices.

TCE – TCE was detected in four of the seven additional sub-slab samples at concentrations ranging from 99.44 ug/m^3 at SS-8 to 27,300 ug/m^3 at SS-5. TCE was also detected in all eight of the additional indoor samples at concentrations ranging from 0.274 ug/m^3 at IA-7 to 2.25 ug/m^3 at IA-6.

- Based on the TCE concentration in the sample from SS-5/IA-5, SS-6/IA-6, SS-8/IA-8 and SS-11/IA-11, the decision matrix indicates these areas would require mitigation.
- The indoor air sample from IA-6 detected at 2.25 ug/m^3, exceeded the NYSDOH AGV of 2 ug/m^3; the corresponding sub-slab vapor sample identified a TCE concentration of 13,600 ug/m3. Based on these concentrations, this area would require mitigation.
- No further action was identified for SS-7/IA-7, SS-9/IA-9, SS-10/IA-10, and SS-12/IA-12.

5.5 Data Usability Summary

The analytical data from the investigation soil, groundwater and vapor intrusion samples were submitted for independent review. Data Validation Services, Inc., located in North Creek, New York, completed the data usability summary report (DUSR).

The DUSR is included in Appendix E and prepared using guidance from the USEPA Region 2 Validation Standard Operating Procedures, USEPA National Functional Guidelines for Data Review, and professional judgement. Several rounds of samples were collected as part of RI as discussed in following sections.

Alpha Lab Sample L1738450

Three samples and field duplicate processed for TCL VOCs, TCL SVOCs, PCBs, pesticides, herbicides and TAL metals. Fifteen additional samples were processed for various combinations of those analytical groups. In general, the samples were noted to be either usable or with minor qualifications. However, the following items were noted:

- 1,4-dioxane results were rejected in the samples due to limits of the methodology;
- Two phenolic SVOC analytes were rejected in one sample due to an apparent matrix effects;
- Data completeness, representativeness, reproducibility, sensitivity, comparability, accuracy and precision are acceptable, with an exception of an apparent matrix effect on volatile recoveries; and
- Field duplicate evaluation was performed. Correlations are within the validation guidelines.

Alpha Lab Sample L1739051

One sample and field duplicate processed for TCL VOCs, TCL SVOCs, PCBs, pesticides, herbicides and TAL metals. Nine additional samples were process for various combinations of those analytical groups. In general, the samples were noted to be either usable or with minor qualifications. However, the following items were noted:

- 1,4-dioxane results were rejected in the samples due to limits of the methodology;
- Data completeness, representativeness, reproducibility, sensitivity, comparability, accuracy and precision are acceptable; and
- Field duplicate evaluation was performed. Correlations are within the validation guidelines.

Alpha Lab Sample L1740559

One sample and field duplicate processed for TCL VOCs, TCL SVOCs, PCBs, pesticides, herbicides and TAL metals. Five additional samples were process for various combinations of those analytical groups. In general, the samples were noted to be either usable or with minor qualifications. However, the following items were noted:

- 1,4-dioxane results were rejected in the samples due to limits of the methodology;
- One phenolic SVOC analytes was rejected in one sample due to an apparent matrix effects; and
- Data completeness, representativeness, reproducibility, sensitivity, comparability, accuracy and precision are acceptable, with an exception of an apparent matrix effect on volatile recoveries.

Alpha Lab Sample L1742080

Three samples and field duplicate processed for TCL VOCs, TCL SVOCs, PCBs, pesticides, herbicides and TAL metals. Twelve additional samples were process for various combinations of those analytical groups. In general, the samples were noted to be either usable or with minor qualifications. However, the following items were noted:

- 1,4-dioxane results were rejected in the samples due to limits of the methodology;
- Two phenolic SVOC analytes were rejected in one sample due to an apparent matrix effects;

- Data completeness, representativeness, reproducibility, sensitivity, comparability, accuracy and precision are acceptable; and
- Field duplicate evaluation was performed at TP101 (2.5-5') which showed the acenaphthene, phenanthrene, dibenzofuran, and manganese outside validation guidelines, and results are therefore qualified as estimate in the parent sample.

Alpha Lab Sample L1743342

Four samples and field duplicate processed for TCL VOCs, TCL SVOCs, PCBs, pesticides, herbicides and TAL metals. Five additional samples were process for various combinations of those analytical groups. In general, the samples were noted to be either usable or with minor qualifications. However, the following items were noted:

- 1,4-dioxane results were rejected in the samples due to limits of the methodology;
- Results of the filtered metals are qualified as estimated due to lab filtration;
- Data completeness, representativeness, reproducibility, sensitivity, comparability, accuracy and precision are acceptable; and
- The field duplicate evaluation performed at location SB111/MW3 shows chromium, nickel, fluoranthene, benzo(b)fluoranthene, pyrene and phenanthrene outside the validation guidelines and are therefore qualified as estimated in the parent sample.

Alpha Lab Samples L1747629, L1800592, L1803664, L1804088, L1811886 and L1819916

Eight soil samples and two field duplicates processed for TCL VOCs, TCL SVOCs, PCBs, and TAL metals. Five of those samples and one field duplicate were processed for pesticides and herbicides. Sixteen soil samples and a field duplicate were processed for RCRA metals. Five aqueous sample, one soil sample and a field duplicate were processed for TCL VOCs. Two soil samples were processed for TCL SVOC and TAL metals, one of those samples was also processed for PCBs. Twenty-six 6-L summa canisters and four field duplicates were processed for VOCs.

In general, the samples were noted to be either usable as reported or with minor qualifications. However, the following items were noted:

- 1,4-dioxane results were rejected in the samples due to limits of the methodology;
- All phenolic analyte results in SB171(0-3') were rejected due to a matrix effect;
- Results for four volatile analytes and one SVOC analyte in PT-03 were rejected due to matrix effects;
- The result for one analyte were rejected in five air samples due to interferences;
- Data completeness, representativeness, reproducibility, sensitivity, comparability, accuracy and precision are acceptable. There are significant matrix effects on the recoveries of VOCs analytes and certain of the SVOCs analytes from the soils. Additionally, field duplicate precision indicates a non-homogenous matrix regarding SVOCs analytes and certain metals; and
- The field duplicate evaluation performed at location SB111/MW3 shows chromium, nickel, fluoranthene, benzo(b)fluoranthene, pyrene and phenanthrene outside the validation guidelines and therefore are qualified as estimated in the parent sample.

Field duplicates were processed at locations PT-01, SB160 (l.5-3.5'), SS-102(0-2"), SB116/MW-3(020518), IA-2, IA-6, and IA-10. The following outlying correlations were observed, and those results have been qualified as estimated in the field sample and its duplicate:

- Fluoranthene, benzo(b)fluoranthene, chrysene, benzo(a)anthracene, benzo(a)pyrene, pyrene, phenanthrene, iron, lead, and manganese in PT-01;
- Most detected semivolatile analytes in the field duplicate of SS-102(0-2") are three to six times the concentrations of those reported in the parent sample. Therefore, results for all semivolatile analyte detections except naphthalene, 2-methylnaphthalene, bis(2-ethylhexyl)phthalate, acenaphthylene, biphenyl, and phenol in that parent sample and its duplicate have been qualified as estimated; and
- Iron, arsenic, chromium, manganese, and nickel results in SS-102(0-2") and its duplicate are also qualified as estimated due to outlying correlations. In particular, the arsenic results show great variance, with detected concentrations of 141 mg/kg and 10. 7 mg/kg. Those arsenic results should be used with caution.

<u>Alpha Lab Samples L1820011 and L1820300</u>

The aqueous samples and one field duplicate were processed for per- and polyfluoralkyl substances (PFAS). Additionally, four aqueous samples and a field duplicate were processed for VOCs.

In summary, results for the samples are either usable as reported or with minor qualifications. However, the following items were noted:

- 1,4-dioxane results processed by 8260C were rejected in the samples due to limitations of the methodology;
- The result for 1,4-dioxane processed by 8270 SIM in SB116/MW3 was rejected and not usable due to an apparent matrix effect.
- Accuracy, precision, data completeness, representativeness, reproducibility, sensitivity, comparability are acceptable.
- The laboratory modifications to the USEPA method 537 are significant, including acceptance ranges, consistent in may respects to the advances in the available monitoring compounds. Validation actions are based on the laboratory procedures, in consideration that the laboratory undergoes NYSDOH and ELAP certifications.

Field duplicates were processed at locations SB103/MW-1 and SB204. Correlations are within validation guidelines.

6.0 REQUIRED SITE MAINTENANCE

MOD-PAC is an operating facility, which requires routine maintenance and upkeep as would be expected in an approximate 500,000-square foot manufacturing facility. As specific maintenance or upkeep requirements have been identified which required sub-surface work since the Site has been in the BCP, each is addressed below on a case-by-case basis.

6.1 Asbestos Abatement

Due to roof repair requirements, asbestos removal/abatement within two areas of the facility was necessary to complete the repairs.

6.2 Sewer Line Repair

A storm sewer line in the northern portion of the Site was in need of repair. HEI was on-site during excavation activities on October 19 and 20, 2017. The approximate 130-foot sewer line required complete excavation with removal of underlying soil/fill. Soil/fill within the excavation area generally consisted of foundry sand mixture, containing various amounts of sand, gravel, brick, and cinders. Approximately 200 tons of soil/fill was excavated as part of the sewer line repair and disposed off-site at Waste Management landfill located in Chaffee, New York. The excavation was backfilled with pre-approved virgin crushed gravel from New Enterprise.

6.3 Press-Trench Excavation

MOD-PAC completed an equipment upgrade which included a new press in the main press area of the building. As part of the press installation, a new foundation was required to provide adequate support necessary for the new equipment. The foundation trench was approximately 46 feet long by 5 to 10 feet wide. The concrete was removed, and analytical testing was completed to allow for the concrete to be recycled at Swift River.

The soil/fill underlying the concrete was generally a dark brown to black foundry sand with varying amounts of cinders and trace amounts of slag. Three grab samples were retrieved from the bottom of the trench and screened in the field with an OVM. Reading from the OVM ranged from non-detect to 15,000 ppm at PT-02. A strong solvent-type odor was observed in the sample from PT-02. Two additional samples were collected approximately 9 to 10 feet from PT-02 in an attempt to delineate the solvent odors. Additionally, OVM readings ranged from 6,000 ppm to 15,000 ppm within the soil from the trench, as well as from sidewall confirmation samples. The soil required for excavation associated with the press-trench foundation was removed and transported to the southern portion of the Site for future disposal, associated with southern Site remedial efforts. The soil from the press-trench foundation was staged on plastic and covered.

Analytical confirmatory samples were collected from the sidewalls and bottom of the trench, identified as PT01, PT02, PT03 and PT06, and analyzed for VOCs, SVOCs, metals and PCBs. The sidewall samples exhibited and odor as well as OVM readings up to 15,000 ppm. Analytical results did not indicate the presence of compounds exceeding RRUSCO; however, analytical results identified matrix interference during analysis. The excavation was limited due to required soil removal associated with press installation. The excavation was backfilled with concrete appropriate to meet foundation requirements.

6.4 Parking Lot IRM Repairs

Due to the presence of miscellaneous historical industrial fill below the entire MOD-PAC Site, a cover system would be required to prevent potential contact. The central and northern portion of the Site is covered with the current building and paved asphalt surfaces. Many of the pavement surfaces are worn and require upgrade or replacement to be an acceptable cover system. The objective of the pavement upgrades and/or replacement will be to provide an appropriate cap that can withstand its intended use as vehicle parking lot areas.

Many of the parking lot areas exhibit indications of wear, cracking, and were in need of improvements, and did not meet NYSDEC impermeable cover requirements. Four areas, identified as Area A to Area D were identified that needed some improvement or replacement, as shown on the attached Figure 13.

Due to current conditions of the various areas requiring upgrades in the cap system, geotechnical/civil design were completed to determine appropriate requirements to complete the pavement upgrades to allow the cap to meet its intended use. The geotechnical/civil evaluations included pavement cores to determine the ability for milling and resurfacing versus total full-depth replacement; as well as topographic survey to evaluate Site drainage as standing water is often present in many of the pavement areas.

The final pavement design for the cap remedy for each area was dependent on the geotechnical/civil investigation findings and topographic survey. Each area that was either milled, resurfaced and/or total full depth replacement, as required. Additionally, stormwater drainage was altered or upgraded as needed, based on the topography results.

Within Area A, a section of the parking lot had consistent settling, requiring filling and patching, with continued settling. In an effort to prevent the settling, and to improve stormwater drainage within this area, an exploratory test pit was completed to determine the source of the settlement. During test pit work, significant fill material was identified, which generally included foundry sand intermixed with brick, cinders, sand, gravel, and slag. Additionally, miscellaneous debris was also present including wire, electronic pieces, and an entire radiator. Old building walls as well as a former doorway, hallways and a concrete floor were found within the excavation. Due to the findings, the material was removed to provide proper drainage and prevent future settling.

The test pit was expanded to complete the required removal. In total, the excavation was extended to former building walls, approximately 20 feet by 20 feet by 8 feet deep resulting in approximately 120 cubic yards or 175 tons of soil. Excavated material was transported to the southern field areas of the Site, staged on polyethylene sheeting and covered, for future disposal. The former building walls were cut down one to two feet below ground surface. The excavation was backfilled with pre-approved virgin #2 crushed gravel.

7.0 CONTAMINANT OF CONCERN FATE AND TRANSPORT

Various contaminants of concern (COC) were identified during the RI Work. Soil sample analysis confirmed that fill materials have several SVOCs and metal compounds identified at concentrations exceeding CUSCO. The section provides an evaluation of the fate and transport of COCs on the Site, including potential routes for migration, contaminant persistence and contaminant migration patterns.

7.1 Potential Pathways of Migration

Potential pathways of migration for the COC identified for the Site include:

- Fugitive dust generation;
- Volatilization;
- Surface water runoff;
- Leaching from the soil into the groundwater; and
- Groundwater migration.

The Site consists of six parcels that were recently merged into one parcel. The MOD-PAC facility is located in the central and northern portion of the Site, as well as paved parking lots or loading docks to the west, north, and east. The southern portion of the Site currently includes gravel surface parking lot as well as a gravel surface truck traffic driveway. A courtyard is present within the central portion of the Site, associated with a former railroad line, as well as facility utilities. The courtyard currently has a mix of concrete, gravel, and topsoil surface materials. The remaining portions of the southern area is vacant land, which is generally not vegetated. Additionally, the Site is not fenced in and access, although limited due to the location of the Site, is generally accessible to the public via roadways, driveways and parking lots.

VOCs, PCBs, pesticides and herbicides were not identified in the soil samples selected for laboratory analysis. However, several SVOCs and metals were detected at concentrations above RRSCO, as well as CUSCO. The discussion on fate and transport will be concentrated on the SVOCs and metals within the historical industrial fill persistent throughout the Site.

<u>Fugitive Dust Generation</u>

SVOCs and metals are present within the historical industrial fill that was encountered throughout the entire Site. The compounds can be present within the fugitive dust resulting in a release to ambient air. The central and northern portions of the Site are covered with buildings, concrete or asphalt surfaces. The southern area and courtyard have surface areas exposed, with none to limited vegetation present; therefore, the suspension of soil particles by strong wind or physical disturbance, such as driving, excavation, or disturbance, is very likely. During intrusive activities associated with Site remediation and development, continuous particulate monitoring will be required.

The proposed cleanup goals for the Site are currently planned to be commercial levels. The northern and central portions of the Site will continue to be covered with building, concrete and asphalt surfaces. The courtyard area will be finished with one-foot of pre-approved granular material. The southern portion of the Site will be re-developed to include a new truck traffic driveway for access to the various loading docks, limited paved parking, and gravel parking area. Additionally, due to the large amounts of historical fill present in the southern portion of the Site, in some areas extending over 19 feet below ground surface, the excess fill associated with the parking lot and truck traffic driveway, as well as fill throughout the southern portion, will be graded to allow the fill material to be placed in the central and western portion of the southern area. The fill pile will be graded and covered with clean pre-approved fill, including new topsoil as seeding. The fill pile will naturally drain to the north, to the newly installed stormwater system along the new roadway. Once remedial work and Site development is complete, all surfaces on the Site will be covered with building, concrete, paved area, one-foot of clean granular fill, or one-foot of clean preapproved fill covered with grass area. This migration pathway, although an immediate concern, is not considered a long-term or relevant concern, other than controlling short-term dust management during Site remedial, grading, and redevelopment work. Dust migration measures will be employed during future redevelopment activities. Additionally, upon completion of proposed Site construction activities, the Site would be covered by building, paved parking areas, finished courtyard features, and graded and covered field area, which prevent human exposure or contact to materials remaining in place.

Volatilization

Volatile chemicals were not identified in the soil samples at the Site at concentrations above CUSCO. However, VOCs were identified in the groundwater samples within the eastern/central portion of the Site, as well as vapor intrusion samples, specifically the locations in the central and eastern portion of the building. VOCs were present in vapor intrusion samples within the eastern portion of the building, at a concentration that required mitigation including completion of a sub-slab depressurization system (SSDS). Therefore, the volatilization pathway is considered relevant.

Surface Water Runoff

Surface soils within the southern portion of the Site would be subject to erosion and transport of surface soils due to surface water runoff; therefore, this represents a potential migration pathway. Due to the presence of SVOCs and metals within the surface soils and deeper fill materials, specifically in the southern portion of the Site, the potential for impacted soil particle transport with surface water runoff is relevant.

Under the anticipated future development plans, the exposed surface areas will be covered with asphalt, pre-approved fill or topsoil and grass. The Site development will also include a new stormwater collection/retention system. Therefore, surface water runoff would be mitigated, and can be considered a short-term concern. Additionally, surface water runoff would remain relevant through Site development work until the storm sewer and cover systems are in place.

Leaching from the Soil into the Groundwater

Groundwater appeared to be a limited perched condition within the fill material, although present throughout much of the Site. Low levels of COCs were present in the groundwater samples and may be transported across the Site via this pathway. SVOCs were present in the groundwater samples. Additionally, metals were present in the groundwater sample, but generally not encountered within the filtered samples. The source of the SVOCs and metals within the fill material is anticipated to be the vast amounts of historic industrial fill present throughout the

Site. It is likely that groundwater impacts present at the Site would be consistent with groundwater throughout the neighboring area. Chlorinated solvents, specifically TCE, were detected in monitoring well locations in the eastern portion of the Site. The presence of the chlorinated solvents in groundwater generally correlates with the locations of vapor intrusion within the building. The chlorinated solvent impacts appear to be limited to the eastern portion of the Site, and not widespread. The Site and surrounding area are serviced by municipal water systems and potable supply wells are not present in proximity of the Site. As such, groundwater does not present a pathway for receptors.

7.2 Exposure Pathways

The most likely exposure pathways through which COCs at the Site could result in exposure include fugitive dust emissions associated with Site remedial and development activities, as well as surface water migration and leaching. To a lesser extent, leaching of COCs and migration is possible via perched groundwater transport. Additionally, the potential for soil vapor intrusion was identified in the eastern portion of the Site buildings. VOCs were present in vapor intrusion samples within the eastern buildings, as well as limited groundwater samples in the eastern area of the Site. Vapor intrusion to indoor air presents potential exposure pathway that can be addressed by installation a sub-slab depressurization system (SSDS). These potential exposure pathways would be significantly mitigated over the long term upon completion of planned remedial and development plans, which includes re-grading as well as repair and new driveway and parking area, installation of stormwater management system, and installation of vapor mitigation under select areas of the building.

An Environmental Easement will likely be implemented to restrict groundwater use as a potable source, and the development and implementation of a SMP that will outline procedures for handling material that is impacted with COCs at concentrations above CUSCO, or unanticipated contaminants that may be encountered during future construction activities. A SSDS will be incorporated within the eastern building areas.

8.0 QUALITATIVE RISK ASSESSMENT

Various contaminants of concern (COC) were identified during the RI Work. The section provides an evaluation of the fate and transport of COCs on the Site, including potential routes for migration, contaminant persistence and contaminant migration patterns.

8.1 Qualitative Human Health Exposure Assessment

A human health exposure assessment was completed for current and reasonably anticipated future use of the Site in accordance with Appendix 3B in NYSDEC DER-10. The assessment includes five elements associated with exposure pathways including contaminant source, contaminant release and transport mechanism, potential exposure points, routes of exposure, and receptor populations.

8.1.1 Contaminant Source

Contaminant source is defined as any waste disposal area or point of discharge, or contaminated environmental medium, such as soil, indoor or outdoor air, or water. COCs are present throughout the fill materials that are present at the Site, in some locations to over 19 feet below grade. Concentrations of SVOCs and metals have been found throughout the Site within the miscellaneous fill materials.

Groundwater samples identified elevated concentration of chlorinated solvents in the eastern portion of the Site, as well as low level SVOCs (specifically PAHs), present within the many well locations due to the historical fill.

Soil vapor under the building slab was identified to have VOC impacts in limited areas.

8.1.2 Contaminant Release and Transport Mechanism

Contaminant release and transport mechanisms associated with the SVOCs and metals within the fill material include fugitive dust migration, surface water runoff, and direct contact associated with Site development plans. Due to the planned development in the southern portion of the Site, as well as recent repair/upgrade of exterior parking lot areas to the north, the potential for significant exposures would be limited and short in duration. The proposed development plan includes the construction of underground storm water retention basins in the southern portion of the Site.

Groundwater samples contained chlorinated VOCs, as well as detected within sub-slab and indoor vapor samples. Volatilization of the chlorinated solvents is a potential transport mechanism. A SSDS system(s) will be completed within identified building areas to mitigate sub-slab vapor intrusion.

8.1.3 Potential Exposure Points

Potential exposure points represent location where actual or potential human contact with contaminated material may occur. Based on the significant presence of fill material in the southern portion of the Site, which is exposed at the surface, the unvegetated southern area would be considered a potential exposure point. However, due to the planned remedial/development activities this exposure point is expected to be a short duration and development plans will include a minimum of one-foot cover system, preventing contact with underlying fill materials.

Groundwater is not considered a relevant mechanism for exposure due to the municipal water servicing the Site, City of Buffalo ban on groundwater use, and requirement for an Environmental Easement that will restrict the use of groundwater.

8.1.4 Routes of Exposure

The route of exposure is potential entry into the body such as ingestion, inhalation, dermal absorption, etc. Currently fill material is exposed at the surface within the southern portion of the Site. The fill material is accessible to current workers, as well as potential trespassers. Further short-term exposure would also be relevant for construction or remediation personnel associated with Site development activities.

A potential route of exposure include soil vapor to human receptors via inhalation inside the building. Vapor intrusion for future use scenario presents a low but potential route of exposure, which will be addressed by installation of a sub-slab depressurization system.

8.1.5 Receptor Populations

Potential receptors for current Site conditions include current maintenance staff, construction workers, visitors, and trespassers. However, trespassers would be limited as the Site is located within an industrial area with limited public access. Construction workers and visitors for current use would likely be adults; trespassers might be adolescents or adults.

The anticipated future use of the Site is currently anticipated to include upgrading of the parking areas and completing a truck access driveway in the southern portion of the Site. Additionally, the existing fill material will be graded and contained under a grass cover system. Potential future receptors include Site workers/maintenance staff, Site visitors and possible trespassers.

8.1.6 Exposure Assessment Summary

The human health exposure assessment identified potential exposure scenarios for the Site.

- Currently exposed fill material in the southern portion of the Site presents a potential route of exposure via contact, fugitive dust and surface water. Additionally, construction or remediation workers could be exposed to COC present on-site during construction activities.

- A potential route of exposure include soil vapor to human receptors via inhalation inside the building. Vapor intrusion for future use scenario present a low but potential route of exposure, which will be addressed by installation of a sub-slab depressurization system.

- Upon completion of planned construction activities, the Site will be covered by buildings, paved parking lots, gravel parking lots, truck traffic driveway, finished surfaces within the courtyard, as well as a graded grass cover system to address the southern fill material. The proposed structures/features will prevent direct human exposure to any materials that may be left in-place.

- Groundwater is not considered a relevant mechanism for exposure due to the municipal water servicing the Site and the City of Buffalo ban on groundwater use, and requirement for an Environmental Easement that will restrict the use of groundwater.

8.2 Fish and Wildlife Resources Impact Analysis

The Site is located in a highly developed, industrial/commercial and residential area of the City of Buffalo and has a long history of use with the buildings constructed in the early 1900s. Various historical occupants included industrial usage, providing minimal wildlife value or food value. As such, no unacceptable ecological risks are anticipated under the current or reasonably anticipated future use scenario.

Appendix 3C of DER-10 includes a decision key to evaluate whether a performance of a Fish and Wildlife Resources Impact is needed. The findings of the Site investigation and IRM were used in completing the decision key. Based on the decision key, a Fish and Wildlife Resources Impact Analysis is not needed, based on our interpretation of NYSDEC guidance.

9.0 REMEDIAL ALTERNATIVES ANALYSIS

MOD-PAC is an operating 500,000-square foot manufacturing facility. Due to necessity to upgrade pavement surfaces, MOD-PAC has recently completed activities associated with upgrading/repair the current paving surfaces associated with parking lots, driveway areas, and loading docks. The recent activities provided an effective cover system in many areas across the Site.

This section will evaluate remedial alternatives and recommended remedial approach, to address Site impact, based on cleanup tracks as defined by NYSDEC.

- Track 1 – Unrestricted Use: Cleanup level would allow the Site to be used for any purposes without restrictions on the use of the Site. The soil cleanup must achieve the UUSCO at any depth above bedrock.

- Track 4 – Commercial Use: Under this scenario, the cleanup allows for the use of the generic soil criteria; as well as a Site Specific Action Levels (SSAL) for specific compounds. Cleanup would necessitate remediation of either soil/fill materials that are not beneath building, pavement or other improvements or soils beneath the cover system or cap over currently exposed surface soils.

9.1 Remedial Action Objectives

The final remedial measures for the Site must satisfy the Remedial Action Objectives (RAOs) for the Site. The Site specific RAOs assume the Site will be used for mixed use commercial and manufacturing purposes. The Remedial Action Objectives (RAOs) for the Site are as follows.

Groundwater

RAOs for Public Health Protection:

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards; and
- Prevent contact with, or inhalation of, volatiles from contaminated groundwater.

RAOs for Environmental Protection:

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable;
- Prevent the discharge of contaminants to surface water; and
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection:

- Prevent ingestion/direct contact with contaminated soil; and
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection:

- Prevent migration of contaminants that would result in groundwater or surface water contamination; and
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

Soil Vapor

RAOs for Public Health Protection:

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a Site.

In addition to achieving RAOs, the remedy will be evaluated against the following criteria in general accordance with DER-10.

- **Overall Protection of Human Health and the Environment** – An evaluation of the remedial action to protect public health and the environment, and assessing how risks posed through each existing or potential pathway of exposure are eliminated, reduced or controlled.

- **Compliance with Standards, Criteria and Guidance (SCGs)** – compliance with SCGs addresses whether a remedy will meet applicable environmental laws, regulations, standards and guidance.

- **Long-term Effectiveness and permanence** – evaluate the long-term effectiveness of the remedy after implementation. If residual COC impact remains on-Site after implementation, the Site was assessed for the following:
  - The magnitude of remaining risks (i.e., will there be significant threats, exposure pathways, or risks to the community and environment from the remaining wastes or treated residuals);
  - The adequacy of the engineering and institutional controls intended to limit the risk;
  - The reliability of these controls; and
  - The ability of the remedy to continue to meet RAOs in the future.

- **Reduction of toxicity, mobility or volume of continuation through treatment** – 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 wastes at the Site.

- **Short-term impacts and effectiveness** - evaluates potential short-term adverse impacts and risks of the proposed remedial action upon the community, Site workers, and environment during construction and/or implementation, including identification of adverse impacts and health risks to the community or workers at the Site, controls and effectiveness of controls.

- **Feasibility** – evaluates the technical and administrative feasibility of implanting the proposed remedy. Technical feasibility includes the differences associated with the construction and the ability to monitor the effectiveness of the remedy. Administrative feasibly includes the availability of the necessary personnel and material, as well as potential differences in obtaining specific approvals, access for construction, etc.

- **Cost-effectiveness** – the overall cost effectiveness of the proposed remedial actions to include capital, operation, maintenance, and monitoring costs.

- **Community acceptance** – evaluates if selected remedial actions are acceptable to the community.

9.2 Future Use Evaluation

When evaluating remedial alternatives, reasonableness of the anticipated future land use should be considered. The Site is currently occupied by MOD-PAC, a 500,000-square foot manufacturing facility. The southern portion of the Site is vacant, undeveloped land that contains large amount of fill material, in some cases up to 19 feet below grade. The remedial alternatives assume the future use of the Site will be commercial use.

9.3 Alternatives Evaluation

The various alternatives considered during the evaluation are discussed below.

- No Further Action
- Commercial Use Track 4 Cleanup and Implementation of a Site Management Plan
- Unrestricted Use

9.3.1 Alternative 1 - No Further Action

Under the "No further action" alternative, the Site would remain in its current state with no additional cleanup activities completed.

- **Overall Protection of Human Health and the Environment** – The Site is not currently protective of human health or environmental in its present state, due to the elevated levels of COC within the fill materials present at the surface in many locations. The lack of engineering or institutional controls allows direct contact with the fill material, as well as potential fugitive dust from wind and exposure via surface runoff. Further vapor intrusion has been identified in portions of the building, potentially impacting indoor air.

- **Compliance with Standards, Criteria and Guidance (SCGs)** – The concentrations of SVOCs and metals within the fill materials, as well as VOCs in the groundwater and sub-slab/indoor vapor intrusion, exceed current SCG, and therefore not protective of the public health and do not meet RAOs.

- **Long-term Effectiveness and permanence** – No further action provides no long-term effectiveness in achieving RAOs.

- **Reduction of toxicity, mobility or volume of continuation through treatment** – Several SVOCs and metals were identified during the RI within the fill material and chlorinated solvents within limited groundwater and vapor intrusion areas. No further action would not reduce the toxicity, mobility or volume of COCs and does not satisfy these criteria.

- **Short-term impacts and effectiveness** – No short-term adverse impacts and risks to the community, workers and environment would be realized as no further work would be completed.

- **Feasibility** – No technical or action-specific administrative feasibility issues were associated with no further action.

- **Cost-effectiveness** – There would be no capital cost or long term operation, maintenance or monitoring with no further action.

- **Community acceptance** – The RI Work Plan was made available for public comment, and no comments were received. The no further action would result in the Site continuing to be underutilized.

9.3.2 Alternative 2 - Unrestricted Use Alternative

The Unrestricted Use alternative would require remediation of all soil/fill where concentrations continue to exceed unrestricted use SCO. The UUSCO alternative assumes that fill material, which ranges in depth from 4 to 19 feet below grade, would be required to be excavated down to the native underlying silty clay soils. Excavated and removed fill materials would have to be disposed at an off-site approved landfill. Additionally, the 500,000-square foot facility would be required to be demolished and removed to access the underlying fill material, ranging in depth from 4 to 16 feet below grade. Based on 20-acre property, the estimated total volume of impacted fill that would require removal under this scenario is approximately 250,000 cubic yards or 365,000 tons.

- **Overall Protection of Human Health and the Environment** – Demolition of Site buildings and excavation of all on-site materials would achieve the UUSCO, which are designed to be protective of human health under unrestricted use scenario.

- **Compliance with Standards, Criteria and Guidance (SCGs)** – Unrestricted Use remedy would be fully compliant with applicable SCGs, including UUSCO.

- **Long-term Effectiveness and permanence** – The Unrestricted use remedy would result in all impacted soil/fill and concrete materials being permanently removed from the Site. Unrestrictive use alternative would provide long-term effectiveness and permanence.

- **Reduction of toxicity, mobility or volume of continuation through treatment** – Removing impacted soil and fill from the Site to UUSCO would result in complete and permanent reduction in the volume of contaminants in the Site soils and fill.

- **Short-term impacts and effectiveness** – Short term adverse impacts and risks to the community, workers and environment include disturbance of contaminated soil and fill, creating risks of potential exposure to workers and area residents during removal. Additionally, the duration of time that the community, workers and environment are exposed to fugitive dust emissions is increased. However, these risks are controllable.

- **Feasibility** – The Site buildings are currently an operation manufacturing facility employing hundreds of employees and a large economic factor in the City of Buffalo. Technical implementation issues could be resolved. However, significant administrative implementation issues would be encountered in completion of the unrestricted use alternative. The building demolition would result in closing the facility and loss of jobs. Due to the occupied building, demolition of the building is not possible; therefore, access to impacted soil underlying the building would not be reasonable.

- **Cost-effectiveness** – The capital cost of implementing the Unrestricted Use alternatives is estimated at over $36,500,000 for the soil removal and off-Site disposal. Additional costs include building demolition and rebuilding, as well as loss of income for employees and shutdown time, which could result in losses of $1,000,000,000.

- **Community acceptance** – Community acceptance will be evaluated based on comments received during planned Citizens Participation activities. However, based on shut down of facility and loss of jobs in the area, the community would not likely accept this alternative.

9.3.3 Alternative 3 – Remediate Identified Areas to Site SSAL and Cover System (Track 4)

The Commercial Use Track 4 cleanup would require remediation of Site fill material that exhibit concentration of COC exceeding CUSCO. Due to the historical use and operations, significant amounts of fill material is present throughout the Site, and present at the surface in the southern portion of the Site.

Due to the large volume of soil/fill materials ranging in depths from 4 feet to over 19-feet identified over a large area (the entire Site), general excavation and removal of impacted soil above the CUSCO would not be practical nor economically feasible. Additionally, the presence of COCs is ubiquitous throughout the property, with limited areas of significant contaminant concentrations or "hot spots" identified. Alternative 3 consists of the following components.

1. As indicated in 6 NYCRR Part 375-3.8(e)(4), Track 4 cleanups allow for Site-specific information to be utilized to identify Site Specific Action Limits (SSAL) that remain protective of public health and the environment under a commercial use restricted-use scenario. Environmental controls (EC) and/or Institutional Controls (IC) restrictions will be placed on the property.

   The Site restrictive use cleanup is Commercial Use, whereas the top one-foot of exposed soils that are not otherwise covered by impervious materials such as buildings, concrete, and/or asphalt, cannot exceed the commercial use SCO. Areas that exceed the commercial use SCO must be covered by material meeting NYSDEC requirements.

   To determine the SSAL to be commissioned for the Site and the proposed Track 4 cleanup approach, the following conditions were considered.

   - The requirement to remediate areas exceeding SSAL; and
   - Exposure scenario for Site workers which may perform required maintenance work or other subsurface intrusive work, such as utility repair or installation, involving work below the cover system.

   The following SSALs are proposed for soil below the cover system.

Analyte	**SSAL**
Metals	
Arsenic	30 mg/kg
Lead	1,500 mg/kg
Copper	270 mg/kg (CUSCO)
Cadmium	9.3 mg/kg (CUSCO)
Total PAHs	500 mg/kg

   ICs, including environmental easement (EE) and a Site management plan (SMP), will be utilized at the Site as part of the Track 4 cleanup to mitigate potential exposure pathways. The SSAL proposed for the Site are deemed protective of human health for Site workers which may contact soils during maintenance work (anticipated to be one time per year or less, and/or for utility repair, as needed). PAHs are ubiquitous throughout the property associated with historical industrial usage, and removal of PAHs based upon individual PAH concentrations would not be feasible. Therefore, the SSAL of 500 mg/kg total PAHs for subsurface soil is proposed in lieu of achieving individual PAH specific CUSCO. The cleanup levels for PAHs have been previously determined by NYSDEC to be feasible and protective in various remedial programs.

2. The proposed SSAL to the Site results in three areas of soil below the future cover system that will be excavated, as shown on Figure 14, and listed below:
   - SB101 (0.5-3.5') – Arsenic at 36.9 mg/kg; lead 1,570 mg/kg
   - TP103 (1-2.5') – Lead at 3,310 mg/kg

- TP104 (2-5') – Arsenic at 109 mg/kg
- TP108 (4-5.5') – Arsenic at 46.4 mg/kg; copper at 314 mg/kg; cadium at 10.2 mg/kg
- SS102 (0-2") Duplicate – Surface soil sample – Arsenic at 141 ug/kg

Each of the above locations will be excavated as listed below and shown on Figure 14.

- SB101 will be initially excavated to approximately 40 feet by 40 feet by 5 feet deep, resulting in an estimated volume of 300 cubic yards.
- TP103 will be initially excavation to approximately 40 feet by 40 feet by 3 feet deep, resulting in an estimated volume of 180 cubic yards.
- TP104 will be initially excavated to approximately 40 feet by 40 feet by 5 feet deep, resulting in an estimated volume of 300 cubic yards.
- TP-108 will initially be excavated approximately 60 feet by 60 feet by 7 feet deep, resulting in an estimated volume of 950 cubic yards.
- An approximate 40 foot by 25 foot by one-foot deep excavation will be completed in the area of SS102, resulting in an additional 35 cubic yards.

Confirmatory soil samples will be collected from each excavation area, including one bottom and four sidewall samples, which will be analyzed for Site specific metals. Should SSAL not be accomplished, further soil excavation will be completed, as needed.

3. Due to the large volume of fill material in the southern portion of the Site, thereby limiting the usage of the southern area, grading of Site soils will be completed within the southeastern area of the Site. Future Site usage of the southern portion of the Site may include the following options:

- Parking and vacant land - Once appropriately graded, to account for new parking areas (paved and gravel surface), new heavy-duty roadway and required stormwater retention system, the graded pile will be covered with geotextile fabric and approved fill and finished with grass. The graded area is anticipated to be about 6 feet above ground surface in the southern portion and sloping downward to the north to meet the heavy-duty roadway elevation. Proposed parking and vacant land are shown on Figure 15.

- Athletic Field and Parking Area – To complete athletic fields, Site grading will be necessary. A retention wall will be constructed along the northern and western sides of the proposed field area. Additional parking lot as roadways will also be completed. The filed area cover system will generally consist of geotextile fabric with approved fill, as well as appropriate field drainage requirements. Upon completion of the cover system, a turf field will be completed in addition to the one-foot cover area. Figure 16 shows and estimate of the possible future field area.

4. In the remaining portions of the Site, the parking and driveway areas were recently upgraded to meet cover system requirements.

5. Areas exceeding the use based SCO which are not covered by buildings, sidewalks or pavement will be covered with a one-foot cover system. Specifically, the courtyard area and limited area in the northern portion of the Site will be completed with appropriate cover system.

6. Limited areas of the building exhibited potential vapor intrusion, based on NYSDEC decision matrices. Therefore, a SSDS will be installed within each area to mitigation sub-floor vapors and limit potential indoor air intrusion. The SSDSs are currently being designed, with anticipated installation in February 2019.

In summary, the proposed remedial measures which include hot-spot removal, Site re-grading, upgrade current impervious surfaces, new cover systems to include parking lot and heavy-duty roadway, soil cover system in areas not covered by buildings, pavement or sidewalks, storm sewer retention system and installation of SSDSs is anticipated to be protective of on-site maintenance employees, construction workers, and Site visitors. A Site Management Plan will also be implemented to include institutional controls, engineering controls, soil/fill management plan, and Site monitoring plan to include monitoring of the SSDSs, as well as on-site groundwater.

- **Overall Protection of Human Health and the Environment** – The Track 4 Cleanup will provide an engineering cover system to prevent exposure, which will be protective of human health and the environment. Additionally, SSDSs will be installed within limited areas of the buildings to assure vapor migration does not affect indoor air quality.

- **Compliance with Standards, Criteria and Guidance (SCGs)** – This alternative will include hot spot removal and the grading and covering of on-site soils that exceed the CUSCO, but below SSAL throughout the Site, within the southern portion of the Site. The fill materials will be covered by cover system including heavy duty driveway, parking areas, or one-foot of clean cover.

- **Long-term Effectiveness and permanence** – The Track 4 Cleanup will include the grading and covering of southern fill material, as well as covering other areas of the Site to limit further contact. SSDS will be installed within the facility to address vapor intrusion concerns, and a Site Management Plan will be implemented. This alternative is expected to provide long term effectiveness and permanence.

- **Reduction of toxicity, mobility or volume of continuation through treatment** – Grading and covering of the impacted fill material present in the southern portion of the Site will significantly reduce the toxicity and mobility of Site contamination.

- **Short-term impacts and effectiveness** – Short term adverse impacts and risks to the community, workers and environment include disturbance of contaminated soil and fill, creating risks of potential exposure to workers and area residents during removal. During soil grading and excavation activities, continuous dust and VOCs monitoring would be completed. The Track 4 Cleanup would meet the RAOs within 6 months from start of work.

- **Feasibility** – The Site will undergo large development within the southern portion of the Site that will include construction of new heavy-duty roadway, parking area, and grading of existing fill materials. Various technical implementation issues as well as administrative implementation issues would be encountered but can be resolved and/or managed. An Environmental Easement would be issued that documents the required engineering and institutional controls.

- **Cost-effectiveness** – The capital cost of implementing the Track 4 alternatives is estimated at $1,650,000. Annual groundwater sampling, annual certification and cost to run the SSDS is estimated at $15,500 per year or $465,000 over 30 year. Table 13 provides a breakdown of these costs.

- **Community acceptance** – Community acceptance will be evaluated based on comments received during planned Citizens Participation activities.

9.4 Recommended Remedial Measure

Based on the Alternative Analysis review, Alternative 3 - Remediate Identified areas to Site SSAL and Cover System (Track 4), is the recommended final remedial approach for the MOD-PAC Site. This alternative is protective of human health and the environment, significantly less disruptive to Site operations and the community, and represents the most cost-effective approach, while satisfying the RAOs. The recommended remedial alternative includes the following actions:

- Removal and off-Site disposal of approximately 1,800 cy of metals-impacted soil to meet SSAL as listed below:

Analyte	SSAL
Metals	
Arsenic	30 mg/kg
Lead	1,500 mg/kg
Copper	270 mg/kg (CUSCO)
Cadmium	9.3 mg/kg (CUSCO)
Total PAHs	500 mg/kg

- Site grading will be completed in the southern portion of the Site to re-position industrial fill soils for either future athletic fields or vacant land. The existing site soils will be placed under a clean one-foot cover to accommodate the construction of the possible athletic fields. Additional parking areas will be constructed to support new athletic field and current site operation requirements. A new a heavy-duty roadway will also be constructed along the building area to support Site operations.

- Implementation of Community Air Monitoring Plan during Site activities.

- Engineering Controls:
  - Southern Athletic Field Option Engineering Controls will include:
    - New parking area cover system;
    - New roadway cover system;
    - Retaining wall along roadway and parking lot to accommodate site development for athletic field areas;
    - One-foot cover system over proposed field area; cover system will include geotextile fabric and clean gravel one-foot cover, which will accommodate appropriate athletic field drainage system.

  - Southern Vacant Land Option Engineering Controls will include:
    - New roadway cover system;
    - Repair parking area cover system;
    - One-foot cover system over parking area; cover system will include geotextile fabric and one-foot clean gravel cover.
    - One-foot cover system over vacant land area; cover system will include geotextile fabric and clean gravel with topsoil to allow grass growth.

  - Remaining areas of the site cover systems including existing building foundation, upgrading existing parking lot cover system, and/or minimum of one-foot cover system on areas of the Site not covered by buildings, pavement or sidewalks.

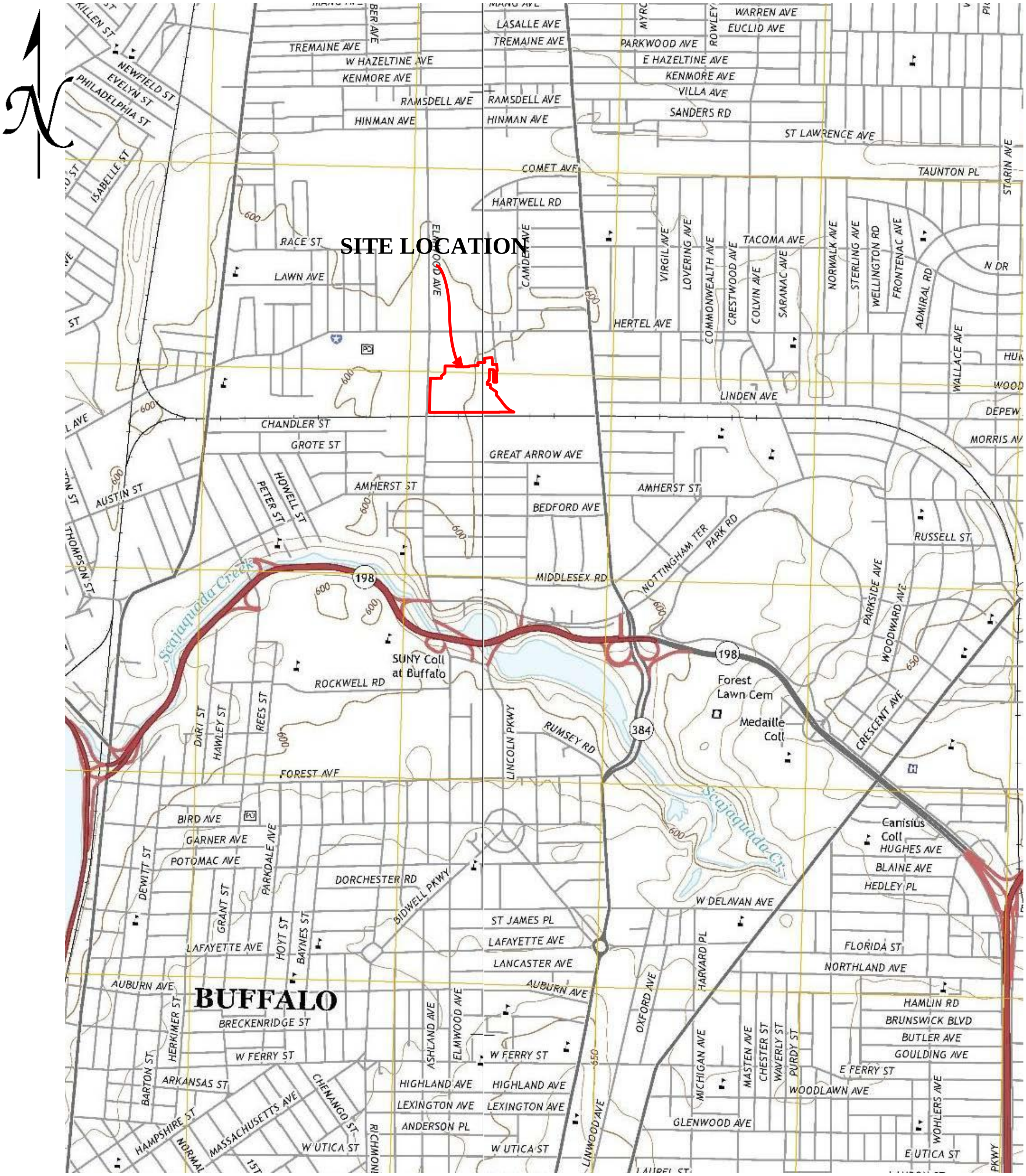
  - Installation of an active SSDS within limited area of the building to mitigate on-Site VOCs vapor intrusion concerns.

- Institutional Controls:
  - Implementation of a Site Management Plan including environmental easement, an EC/IC Plan, Site Monitoring Plan, Excavation Work Plan, Operation and Maintenance Plan, Site use limitations.

  - Application of City-wide groundwater use restriction.

The selected remedy is protective of human health and the environment, advantageous to other remedies as evaluated, and satisfies the RAOs. The components and details of the specific tasks and future development plan will be fully described in the RAWP.

FIGURES



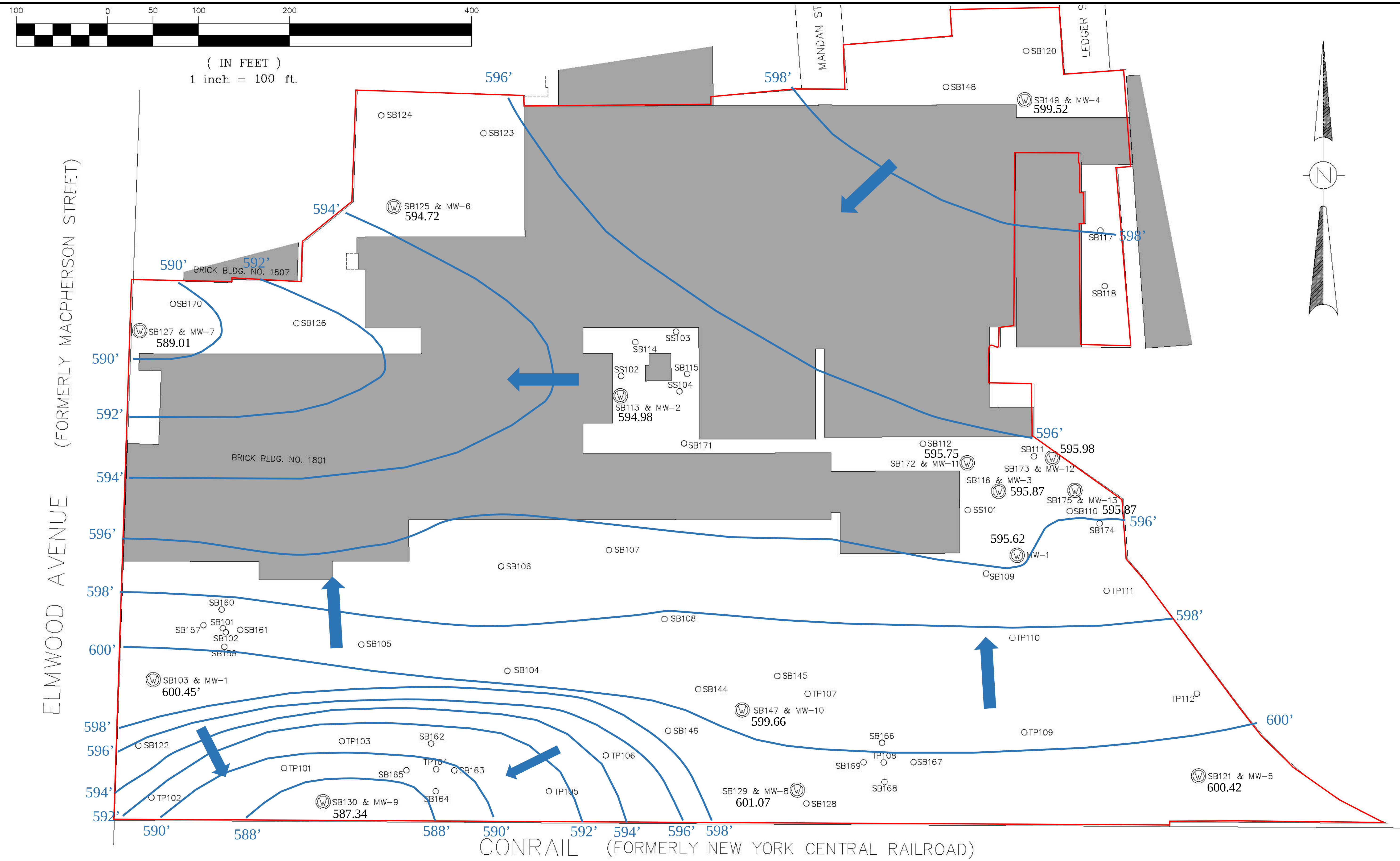
WITTMAN GEOSCIENCES		
SITE LOCUS PLAN 1801 ELMWOOD AVENUE BUFFALO, NEW YORK		
DRAWN BY: MMW	SCALE: NOT TO SCALE	PROJECT: 18-103
CHECKED BY: MMW	DATE: 08/2018	FIGURE NO: 1

Base map adapted from USGS topographic maps Buffalo NE and NW, New York quadrangle, dated 2016

WITTMAN GEOSCIENCES	**Site Plan**	DRAWN BY: MMW	SCALE: 1" = 100'	PROJECT: 18-103
	1801 Elmwood, Buffalo, NY	CHECKED BY: MMW	DATE: 08/2018	FIGURE NO: 2

WITTMAN GEOSCIENCES	Remedial Investigation Locations	DRAWN BY: MMW	SCALE: 1" = 100'	PROJECT: 18-103
	1801 Elmwood, Buffalo, NY	CHECKED BY: MMW	DATE: 08/2018	FIGURE NO: 3

Exterior Investigation locations located by McIntosh & McIntosh; Interior locations measured in the field.



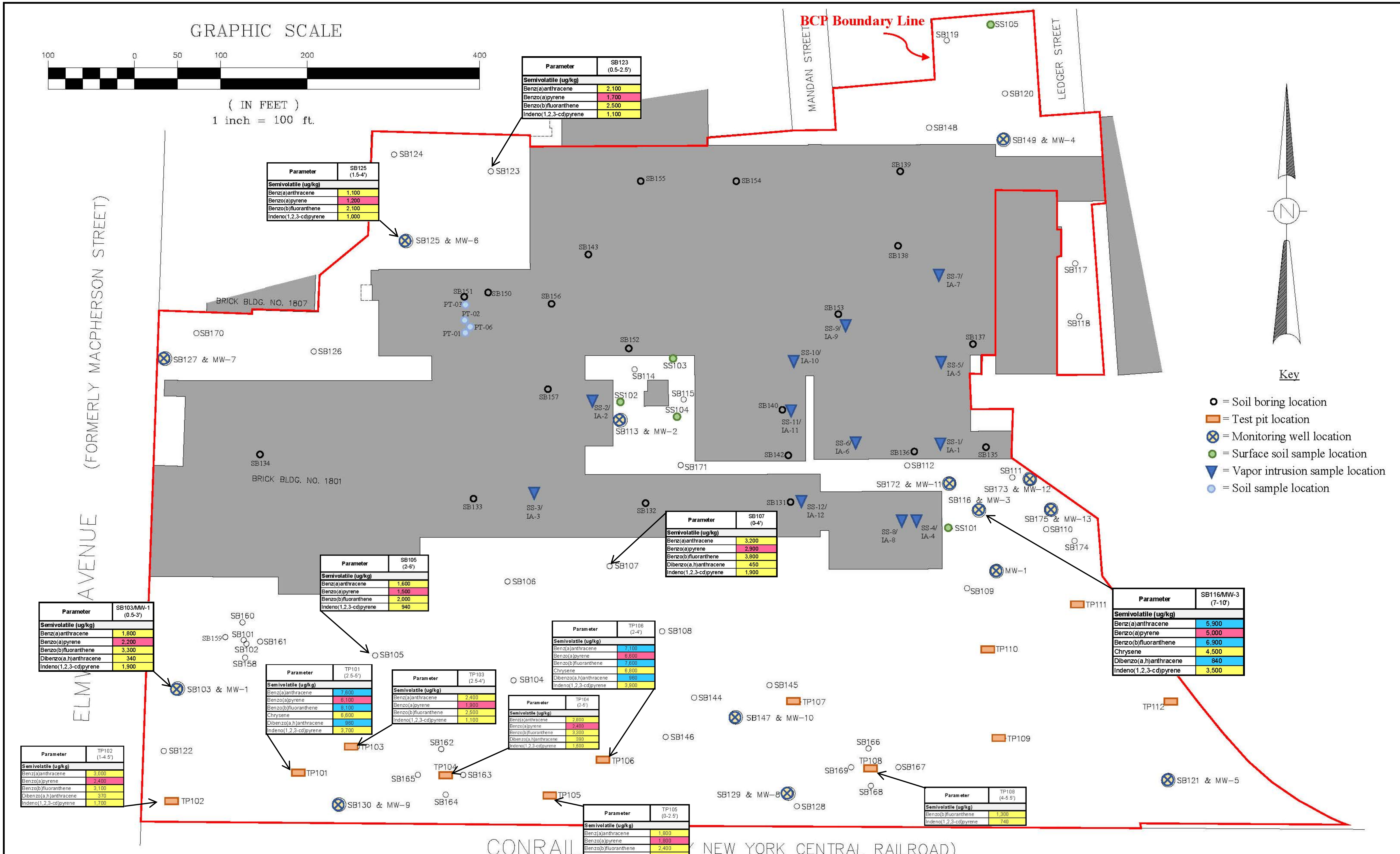
587.34 = Estimated Groundwater Elevation

= Estimated Groundwater Contour

WITTMAN GEOSCIENCES	**Groundwater Isopotential Map February 2, 2018**	DRAWN BY: MMW	SCALE: 1" = 100'	PROJECT: 18-103
	1801 Elmwood, Buffalo, NY	CHECKED BY: MMW	DATE: 08/2018	FIGURE NO: 4

Shading indicates:
- exceeds RRUSCO - Restricted Residential Use Soil Cleanup Objective
- exceeds CUSCO - Commercial Use Soil Cleanup Objective
- exceeds IUSCO - Industrial Use Soil Cleanup Objective

WITTMAN GEOSCIENCES	VOC Subsurface Soil Testing Results exceeded Restricted Residential	DRAWN BY: MMW	SCALE: 1" = 100'	PROJECT: 18-103
	1801 Elmwood, Buffalo, NY	CHECKED BY: MMW	DATE: 08/2018	FIGURE NO: 5



Parameter	SB123 (0.5-2.5')
Semivolatile (ug/kg)	
Benz(a)anthracene	2,100
Benzo(a)pyrene	1,700
Benzo(b)fluoranthene	2,500
Indeno(1,2,3-cd)pyrene	1,100

Parameter	SB125 (1.5-4')
Semivolatile (ug/kg)	
Benz(a)anthracene	1,100
Benzo(a)pyrene	1,200
Benzo(b)fluoranthene	2,100
Indeno(1,2,3-cd)pyrene	1,000

Parameter	SB107 (0-4')
Semivolatile (ug/kg)	
Benz(a)anthracene	3,200
Benzo(a)pyrene	2,900
Benzo(b)fluoranthene	3,800
Dibenzo(a,h)anthracene	450
Indeno(1,2,3-cd)pyrene	1,900

Parameter	SB105 (2-6')
Semivolatile (ug/kg)	
Benz(a)anthracene	1,600
Benzo(a)pyrene	1,500
Benzo(b)fluoranthene	2,000
Indeno(1,2,3-cd)pyrene	940

Parameter	SB116/MW-3 (7-10')
Semivolatile (ug/kg)	
Benz(a)anthracene	5,900
Benzo(a)pyrene	5,000
Benzo(b)fluoranthene	6,900
Chrysene	4,500
Dibenzo(a,h)anthracene	840
Indeno(1,2,3-cd)pyrene	3,500

Parameter	SB103/MW-1 (0.5-3')
Semivolatile (ug/kg)	
Benz(a)anthracene	1,800
Benzo(a)pyrene	2,200
Benzo(b)fluoranthene	3,300
Dibenzo(a,h)anthracene	340
Indeno(1,2,3-cd)pyrene	1,900

Parameter	TP106 (2-4')
Semivolatile (ug/kg)	
Benz(a)anthracene	7,100
Benzo(a)pyrene	6,600
Benzo(b)fluoranthene	7,600
Chrysene	6,800
Dibenzo(a,h)anthracene	960
Indeno(1,2,3-cd)pyrene	3,900

Parameter	TP101 (2.5-5')
Semivolatile (ug/kg)	
Benz(a)anthracene	7,600
Benzo(a)pyrene	6,100
Benzo(b)fluoranthene	8,100
Chrysene	6,600
Dibenzo(a,h)anthracene	960
Indeno(1,2,3-cd)pyrene	3,700

Parameter	TP103 (2.5-4')
Semivolatile (ug/kg)	
Benz(a)anthracene	2,400
Benzo(a)pyrene	1,900
Benzo(b)fluoranthene	2,500
Indeno(1,2,3-cd)pyrene	1,100

Parameter	TP104 (2-5')
Semivolatile (ug/kg)	
Benz(a)anthracene	2,800
Benzo(a)pyrene	2,400
Benzo(b)fluoranthene	3,300
Dibenzo(a,h)anthracene	390
Indeno(1,2,3-cd)pyrene	1,500

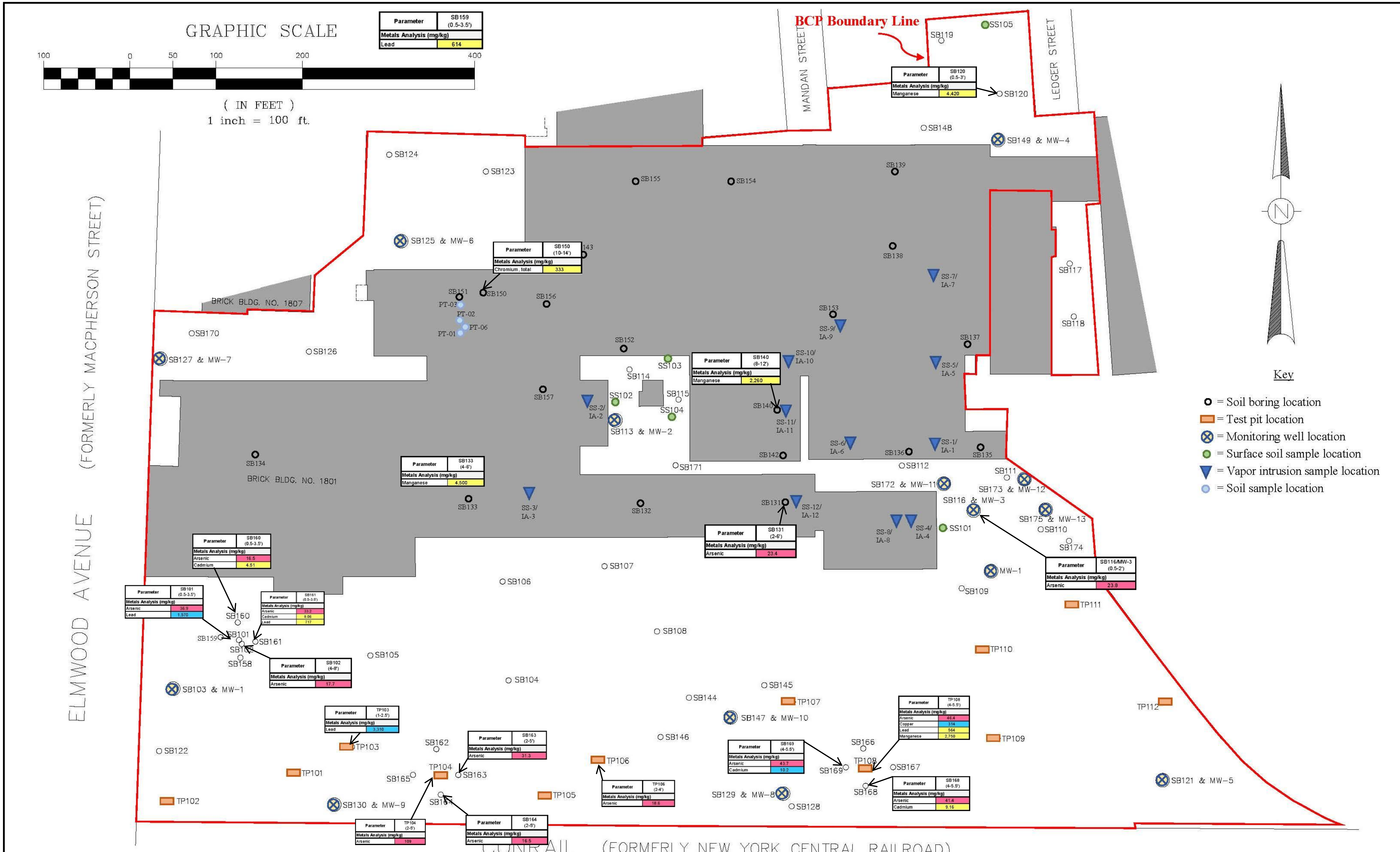
Parameter	TP102 (1-4.5')
Semivolatile (ug/kg)	
Benz(a)anthracene	3,000
Benzo(a)pyrene	2,400
Benzo(b)fluoranthene	3,100
Dibenzo(a,h)anthracene	370
Indeno(1,2,3-cd)pyrene	1,700

Parameter	TP105 (0-2.5')
Semivolatile (ug/kg)	
Benz(a)anthracene	1,800
Benzo(a)pyrene	1,800
Benzo(b)fluoranthene	2,400
Indeno(1,2,3-cd)pyrene	1,200

Parameter	TP108 (4-5.5')
Semivolatile (ug/kg)	
Benzo(b)fluoranthene	1,300
Indeno(1,2,3-cd)pyrene	740

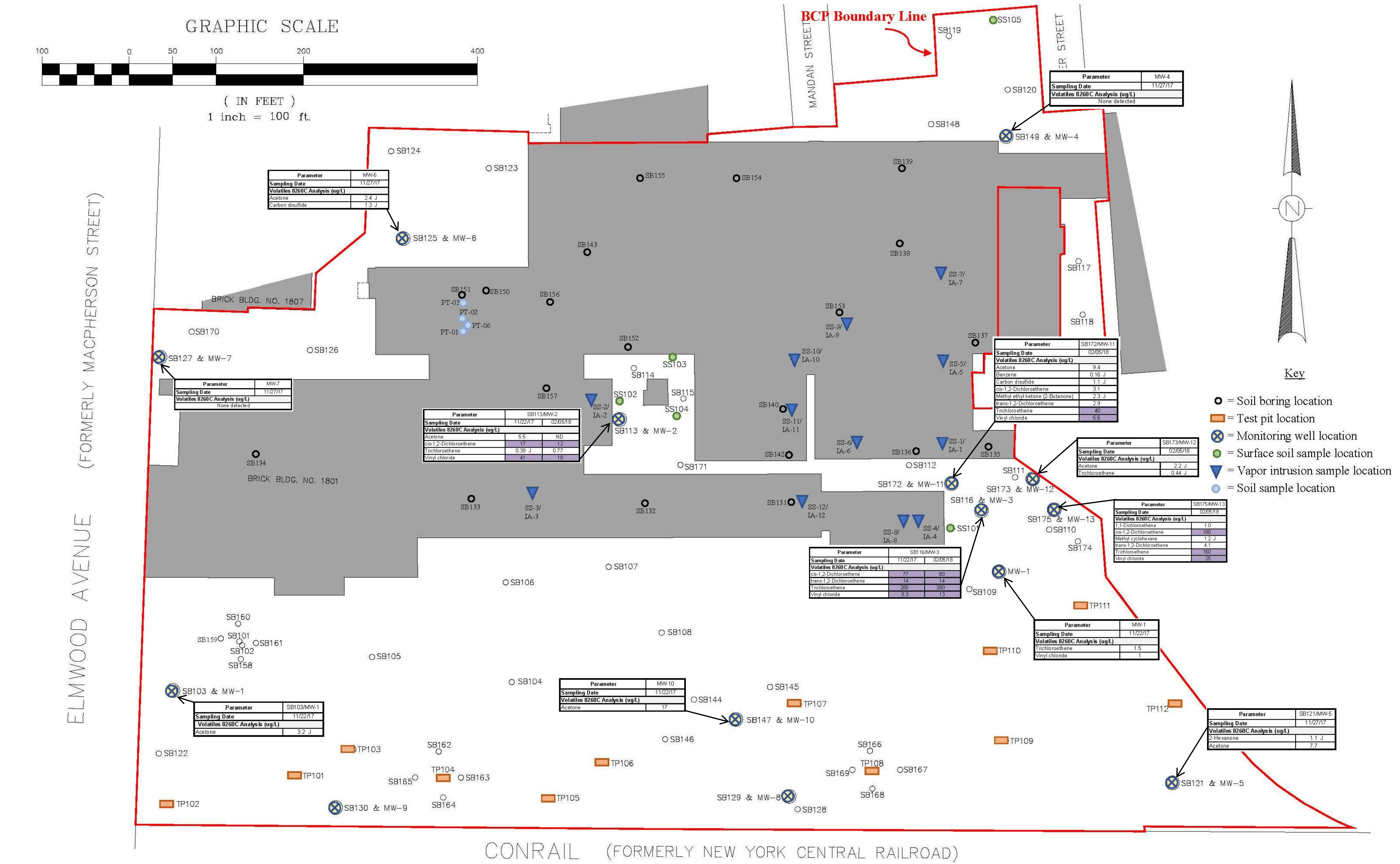
Shading indicates:
- (yellow) exceeds RRUSCO - Restricted Residential Use Soil Cleanup Objective
- (blue) exceeds CUSCO - Commercial Use Soil Cleanup Objective
- (pink) exceeds IUSCO - Industrial Use Soil Cleanup Objective

WITTMAN GEOSCIENCES, PLLC	SVOC Subsurface Soil Testing Results exceeded Restricted Residential	DRAWN BY: MMW	SCALE: 1" = 100'	PROJECT: 18-103
	1801 Elmwood, Buffalo, NY	CHECKED BY: MMW	DATE: 08/2018	FIGURE NO: 6



Shading indicates:
- exceeds RRUSCO - Restricted Residential Use Soil Cleanup Objective
- exceeds CUSCO - Commercial Use Soil Cleanup Objective
- exceeds IUSCO - Industrial Use Soil Cleanup Objective

WITTMAN GEOSCIENCES	Metals Subsurface Soil Testing Results exceeded Restricted Residential	DRAWN BY: MMW	SCALE: 1" = 100'	PROJECT: 18-103
	1801 Elmwood, Buffalo, NY	CHECKED BY: MMW	DATE: 08/2018	FIGURE NO: 7



Parameter	MW-4
Sampling Date	11/27/17
Volatiles 8260C Analysis (ug/L)	
None detected	

Parameter	MW-6
Sampling Date	11/27/17
Volatiles 8260C Analysis (ug/L)	
Acetone	2.4 J
Carbon disulfide	1.3 J

Parameter	MW-7
Sampling Date	11/27/17
Volatiles 8260C Analysis (ug/L)	
None detected	

Parameter	SB113/MW-2	
Sampling Date	11/22/17	02/05/18
Volatiles 8260C Analysis (ug/L)		
Acetone	5.5	ND
cis-1,2-Dichloroethene	17	12
Trichloroethene	0.39 J	0.77
Vinyl chloride	41	18

Parameter	SB172/MW-11
Sampling Date	02/05/18
Volatiles 8260C Analysis (ug/L)	
Acetone	9.4
Benzene	0.16 J
Carbon disulfide	1.1 J
cis-1,2-Dichloroethene	3.1
Methyl ethyl ketone (2-Butanone)	2.3 J
trans-1,2-Dichloroethene	2.9
Trichloroethene	40
Vinyl chloride	5.6

Parameter	SB173/MW-12
Sampling Date	02/05/18
Volatiles 8260C Analysis (ug/L)	
Acetone	2.2 J
Trichloroethene	0.44 J

Parameter	SB175/MW-13
Sampling Date	02/05/18
Volatiles 8260C Analysis (ug/L)	
1,1-Dichloroethene	1.0
cis-1,2-Dichloroethene	180
Methyl cyclohexane	1.2 J
trans-1,2-Dichloroethene	4.1
Trichloroethene	160
Vinyl chloride	25

Parameter	SB116/MW-3	
Sampling Date	11/22/17	02/05/18
Volatiles 8260C Analysis (ug/L)		
cis-1,2-Dichloroethene	77	80
trans-1,2-Dichloroethene	14	14
Trichloroethene	280	280
Vinyl chloride	8.3	13

Parameter	MW-1
Sampling Date	11/22/17
Volatiles 8260C Analysis (ug/L)	
Trichloroethene	1.5
Vinyl chloride	1

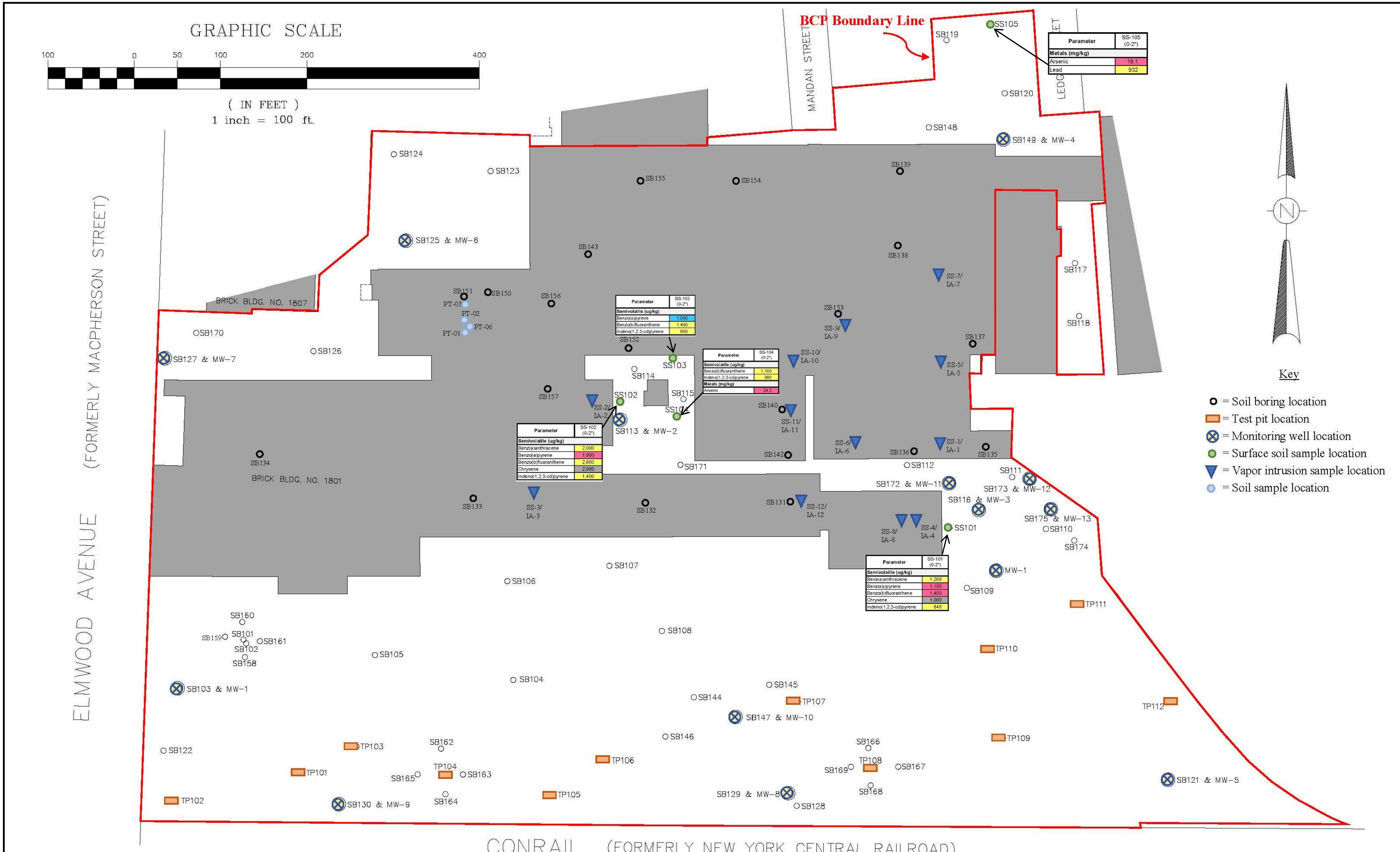
Parameter	MW-10
Sampling Date	11/22/17
Volatiles 8260C Analysis (ug/L)	
Acetone	17

Parameter	SB103/MW-1
Sampling Date	11/22/17
Volatiles 8260C Analysis (ug/L)	
Acetone	3.2 J

Parameter	SB121/MW-5
Sampling Date	11/27/17
Volatiles 8260C Analysis (ug/L)	
2-Hexanone	1.1 J
Acetone	7.7

= Concentration exceeds Class GA Criteria

WITTMAN GEOSCIENCES	VOC Groundwater Testing Results	DRAWN BY: MMW	SCALE: 1" = 100'	PROJECT: 18-103
	1801 Elmwood, Buffalo, NY	CHECKED BY: MMW	DATE: 08/2018	FIGURE NO: 8



Parameter	SS-105 (0-2")
Metals (mg/kg)	
Arsenic	19.1
Lead	932

Parameter	SS-103 (0-2")
Semivolatile (ug/kg)	
Benzo(a)pyrene	1,000
Benzo(b)fluoranthene	1,400
Indeno(1,2,3-cd)pyrene	800

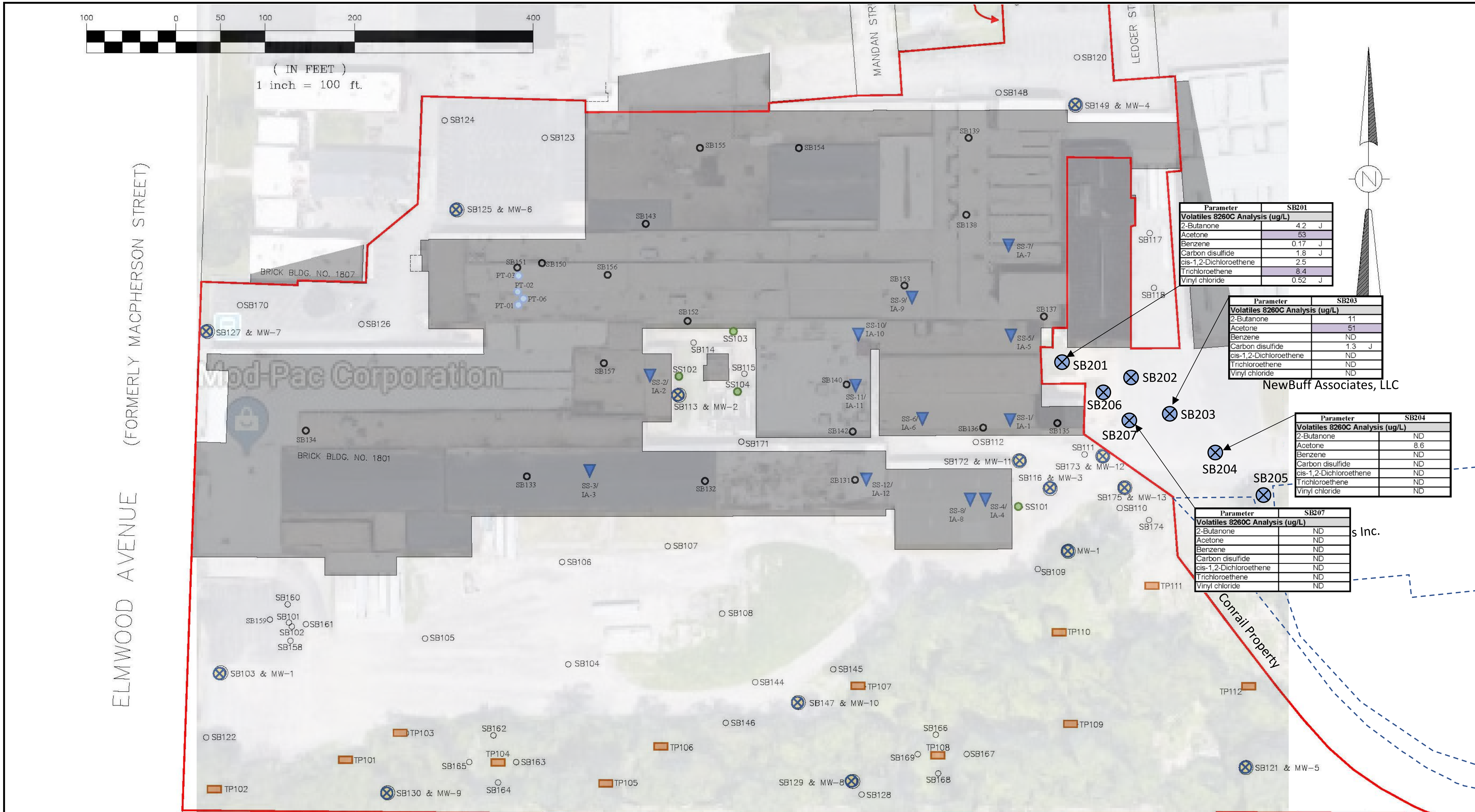
Parameter	SS-104 (0-2")
Semivolatile (ug/kg)	
Benzo(b)fluoranthene	1,100
Indeno(1,2,3-cd)pyrene	560
Metals (mg/kg)	
Arsenic	24.2

Parameter	SS-102 (0-2")
Semivolatile (ug/kg)	
Benz(a)anthracene	2,000
Benzo(a)pyrene	1,900
Benzo(b)fluoranthene	2,600
Chrysene	2,000
Indeno(1,2,3-cd)pyrene	1,400

Parameter	SS-101 (0-2")
Semivolatile (ug/kg)	
Benz(a)anthracene	1,200
Benzo(a)pyrene	1,100
Benzo(b)fluoranthene	1,400
Chrysene	1,000
Indeno(1,2,3-cd)pyrene	840

Shading indicates:
- exceeds RRUSCO - Restricted Residential Use Soil Cleanup Objective
- exceeds CUSCO - Commercial Use Soil Cleanup Objective
- exceeds IUSCO - Industrial Use Soil Cleanup Objective

WITTMAN GEOSCIENCES	Surface Soil Testing Results exceeded Restricted Residential	DRAWN BY: MMW	SCALE: 1" = 100'	PROJECT: 18-103
	1801 Elmwood, Buffalo, NY	CHECKED BY: MMW	DATE: 08/2018	FIGURE NO: 9



Parameter	SB201
Volatiles 8260C Analysis (ug/L)	
2-Butanone	4.2 J
Acetone	53
Benzene	0.17 J
Carbon disulfide	1.8 J
cis-1,2-Dichloroethene	2.5
Trichloroethene	8.4
Vinyl chloride	0.52 J

Parameter	SB203
Volatiles 8260C Analysis (ug/L)	
2-Butanone	11
Acetone	51
Benzene	ND
Carbon disulfide	1.3 J
cis-1,2-Dichloroethene	ND
Trichloroethene	ND
Vinyl chloride	ND

Parameter	SB204
Volatiles 8260C Analysis (ug/L)	
2-Butanone	ND
Acetone	8.6
Benzene	ND
Carbon disulfide	ND
cis-1,2-Dichloroethene	ND
Trichloroethene	ND
Vinyl chloride	ND

Parameter	SB207
Volatiles 8260C Analysis (ug/L)	
2-Butanone	ND
Acetone	ND
Benzene	ND
Carbon disulfide	ND
cis-1,2-Dichloroethene	ND
Trichloroethene	ND
Vinyl chloride	ND

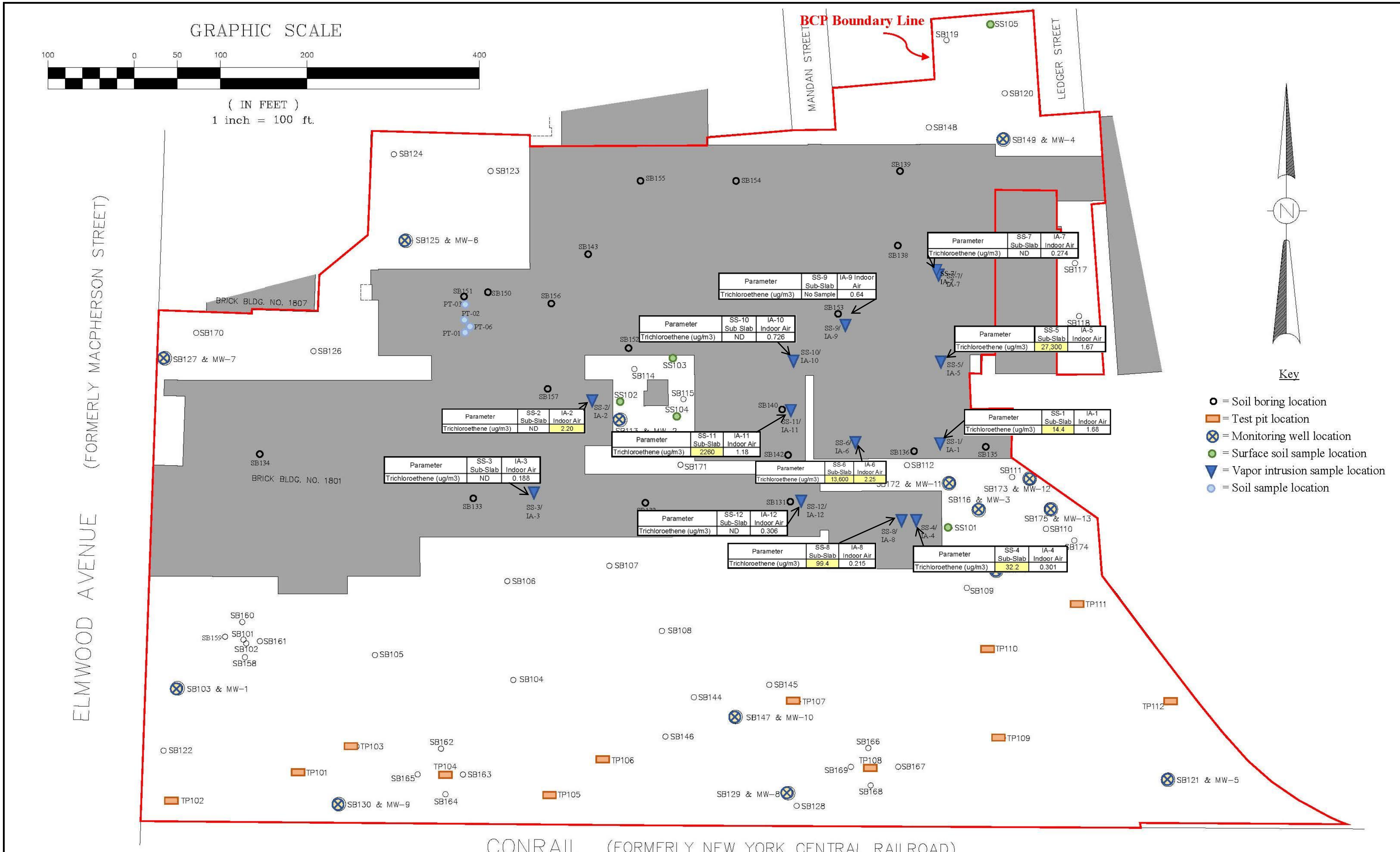
⊗ = Off-site groundwater sampling location

(purple shading) = Concentration exceeds Class GA Criteria

WITTMAN GEOSCIENCES, PLLC

Off-site Groundwater Sample Locations
1801 Elmwood, Buffalo, NY
BCP #C915314

DRAWN BY: MMW	SCALE: 1"=100'	PROJECT: 18-103
CHECKED BY: MMW	DATE: 01/2019	FIGURE NO: 10

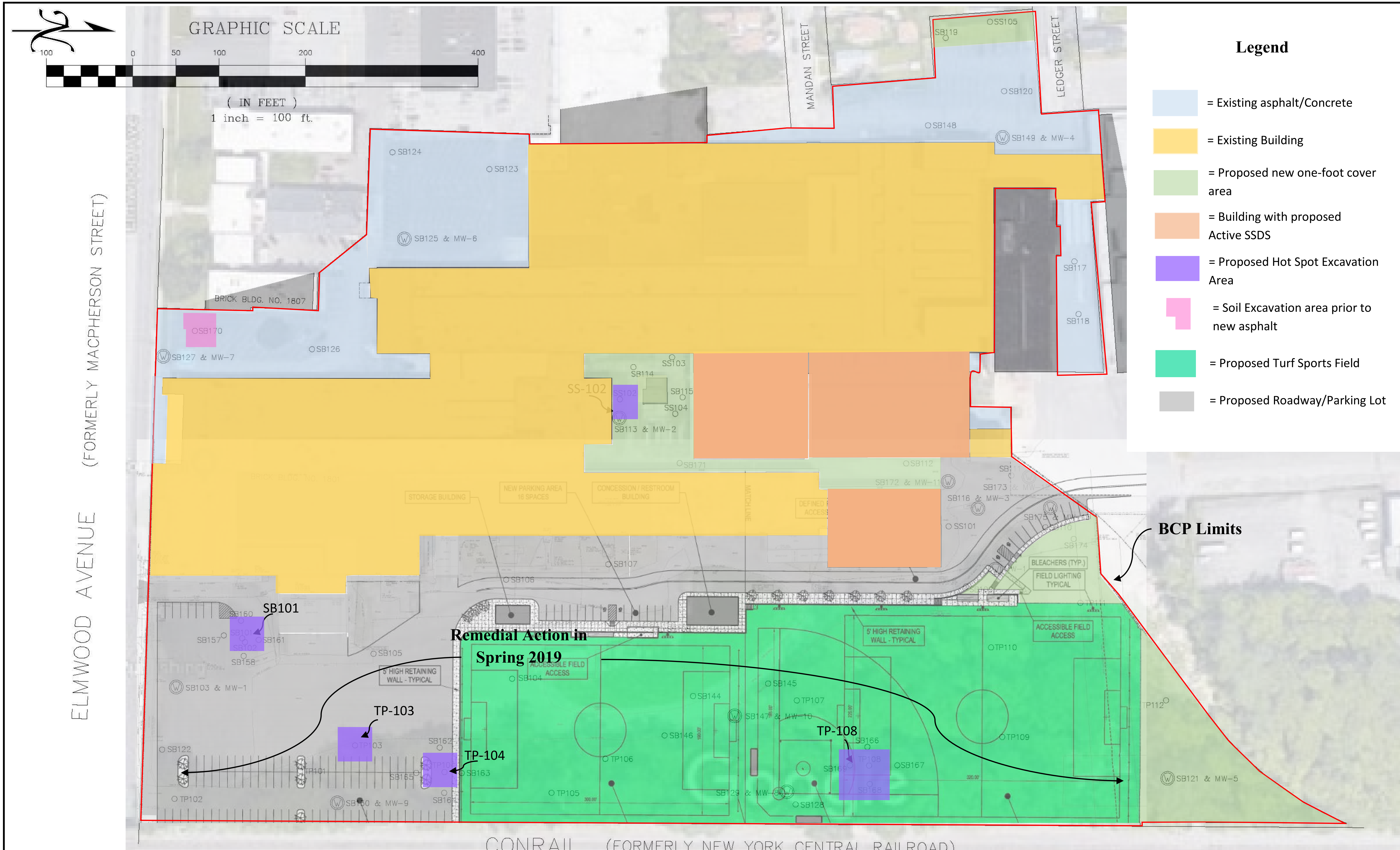


Exceeds NYSDOH Air Guideline Vaue of 2 ug/m^3

WITTMAN GEOSCIENCES	TCE Concentrations in Vapor Intrusion Samples	DRAWN BY: MMW	SCALE: 1" = 100'	PROJECT: 18-103
	1801 Elmwood, Buffalo, NY	CHECKED BY: MMW	DATE: 08/2018	FIGURE NO: 11

WITTMAN GEOSCIENCES	Vapor Intrusion Sample Locations	DRAWN BY: MMW	SCALE: 1" = 100'	PROJECT: 18-103
	1801 Elmwood, Buffalo, NY	CHECKED BY: MMW	DATE: 05/2018	FIGURE NO: 1

WITTMAN GEOSCIENCES	Pavement Improvement Areas	DRAWN BY: MMW	SCALE: 1" = 100'	PROJECT: 18-103
	1801 Elmwood, Buffalo, NY	CHECKED BY: MMW	DATE: 09/2018	FIGURE NO: 13



WITTMAN GEOSCIENCES, PLLC	Recommended Remedial Alternative 3	DRAWN BY: MMW	SCALE: 1" = 100'	PROJECT: 18-103
	1801 Elmwood, Buffalo, NY	CHECKED BY: MMW	DATE: 12/2018	FIGURE NO: 14

	12" SOIL COVER
	NEW HEAVY DUTY ASPHALT
	12" GRAVEL COVER

COVER VOLUMES

12" CRUSHER RUN (GRAVEL COVER)	1,200 CY
12" SOIL COVER	8,900 CY
15" SUBBASE FOR HEAVY DUTY PAV'T	3,310 CY
1.5" ASPHALT TOP	330 CY
3" ASPHALT BINDER	662 CY

C&S COMPANIES

C&S Engineers, Inc.
141 Elm Street, Suite 100
Buffalo, New York 14203
Phone: 716-847-1630
Fax: 716-847-1454
www.cscos.com

MOD-PAC CORPORATION
1801 ELMWOOD AVE
BUFFALO, NEW YORK
BROWNFIELD CLEANUP PROGRAM

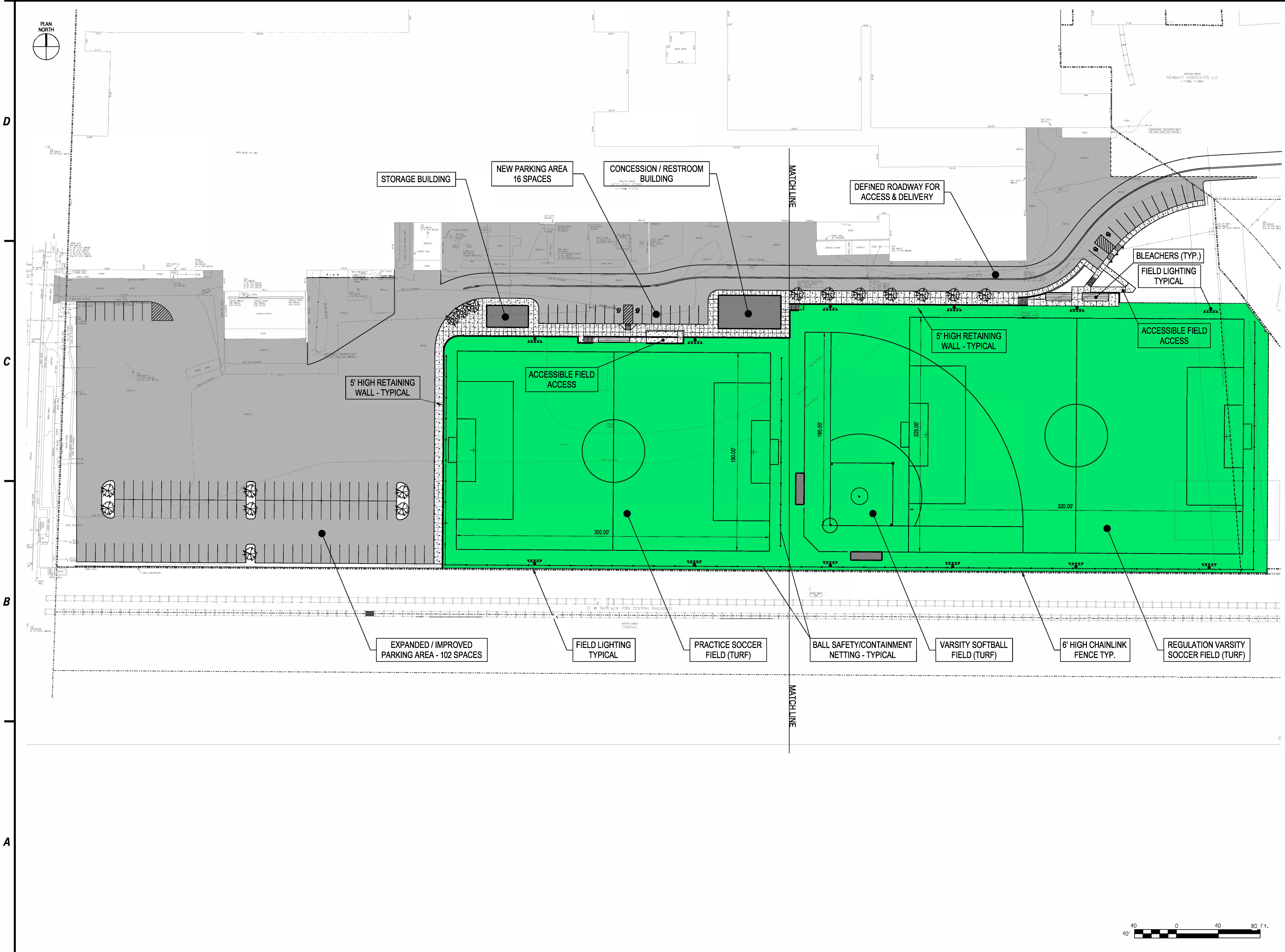
MARK	DATE	DESCRIPTION

REVISIONS

PROJECT NO:	
DATE:	2-14-2018
DRAWN BY:	BR
DESIGNED BY:	BR
CHECKED BY:	VO

COMMERCIAL TRACK 4 ROUGH GRADING PLAN

Figure 15



C&S COMPANIES

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Buffalo, New York 14203
Phone: 716-847-1630
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www.cscos.com

PRELIMINARY NOT FOR CONSTRUCTION

MOD PAC BCP
PROPOSED ATHLETIC FIELD IMPROVEMENTS
1801 ELMWOOD AVENUE BUFFALO, NY

MARK	DATE	DESCRIPTION

REVISIONS

PROJECT NO:
DATE:
SCALE:
DRAWN BY:
DESIGNED BY:
CHECKED BY:

NO ALTERATION PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK EDUCATION LAW

OVERALL SITE PLAN

Figure 16A

MOD-PAC CORP.
PROPOSED ATHLETIC FIELD OPTION

Figure 16B – Proposed Athletic Field Option

TABLES

Table 1
Summary of Analytical Samples
1801 Elmwood Avenue, Buffalo, New York

Lab Job #	Sample ID	Collection Date	Sample Matrix	VOC 8260 TCL	VOC 8260 TCL + STARS	SVOC 8270 TCL	SVOC 8270 TCL+ STARS	RCRA 8 Metals	TAL Metals	TAL Metals Dissolved	Total PCBs	Total Pesticides	Total Herbicides	VOCs TO-15	TCLP VOC	TCLP SVOC	TCLP Metals	Reactivity Cyanide/ Sulfide	1,4-Dioxane - 8270 SIM	PFOA/ PFOS 537M (21)
L1732128	WC-1	09/11/17	Soil								X				X	X	X	X		
L1738450	SB101 (0.5-3.5')	10/23/17	Soil	X		X			X											
L1738450	SB102 (4-8')	10/23/17	Soil	X		X			X											
L1738450	SB103/MW-1 (0.5-3')	10/23/17	Soil			X			X											
L1738450	SB105 (2-6')	10/23/17	Soil	X		X			X		X	X	X							
L1738450	SB105 (2-6') Duplicate	10/23/17	Soil	X		X			X		X	X	X							
L1738450	SB107 (0-4')	10/23/17	Soil	X		X			X		X									
L1738450	SB109 (4-8')	10/23/17	Soil			X			X											
L1738450	SB110 (1-4')	10/23/17	Soil	X		X			X		X	X	X							
L1738450	SB111 (0.5-4')	10/23/17	Soil			X			X											
L1738450	Equipment Rinsate-1	10/23/17	Water	X		X			X		X	X	X							
L1738450	Trip Blank-1	10/23/17	Water	X																
L1738450	SB112 (0-4')	10/24/17	Soil	X		X			X											
L1738450	SB113/MW-2 (5-9')	10/24/17	Soil	X		X			X											
L1738450	SB116/MW-3 (0.5-2')	10/24/17	Soil						X		X									
L1738450	SB116/MW-3 (7-10')	10/24/17	Soil	X		X														
L1738450	SB117 (0.5-2.5')	10/24/17	Soil			X			X											
L1738450	SB120 (0.5-3')	10/24/17	Soil	X		X			X		X									
L1738450	SB121/MW-5 (0-4')	10/25/17	Soil			X			X		X									
L1738450	SB123 (0.5-2.5')	10/25/17	Soil			X			X											
L1738450	SB125 (1.5-4')	10/25/17	Soil			X			X											
L1738450	SB126 (4-8')	10/25/17	Soil	X		X			X		X	X	X							
L1738450	SB126 (4-8') MS/MSD	10/25/17	Soil	X		X			X		X	X	X							
L1739051	SB129/MW-8 (9-12')	10/26/17	Soil	X		X			X											
L1739051	SB131 (2-6')	10/26/17	Soil	X		X			X											
L1739051	SB132 (8-12')	10/26/17	Soil	X		X			X											
L1739051	SB133 (4-6')	10/26/17	Soil			X			X											
L1739051	SB135 (0.5-2')	10/27/17	Soil						X		X									
L1739051	SB136 (5.5-7')	10/27/17	Soil		X		X													
L1739051	SB137 (4-8')	10/27/17	Soil	X		X			X		X	X	X							
L1739051	SB137 (4-8') Duplicate	10/27/17	Soil	X		X			X		X	X	X							
L1739051	Equipment Rinsate-2	10/27/17	Water	X		X			X		X	X	X							
L1739051	Trip Blank-2	10/27/17	Water	X																
L1739051	SB140 (8-12')	10/30/17	Soil	X		X			X											
L1739051	SB142 (4-8')	10/30/17	Soil	X		X			X											
L1740559	SB150 (10-14')	11/04/17	Soil	X		X			X		X	X	X							
L1740559	SB150 (10-14') MS/MSD	11/04/17	Soil	X		X			X		X	X	X							
L1740559	SB151 (10-14')	11/04/17	Soil	X		X														
L1740559	SB153 (0.5-4')	11/04/17	Soil			X			X											
L1740559	SB155 (1-3')	11/04/17	Soil			X			X											

Table 1
Summary of Analytical Samples
1801 Elmwood Avenue, Buffalo, New York

Lab Job #	Sample ID	Collection Date	Sample Matrix	VOC 8260 TCL	VOC 8260 TCL + STARS	SVOC 8270 TCL	SVOC 8270 TCL+ STARS	RCRA 8 Metals	TAL Metals	TAL Metals Dissolved	Total PCBs	Total Pesticides	Total Herbicides	VOCs TO-15	TCLP VOC	TCLP SVOC	TCLP Metals	Reactivity Cyanide/ Sulfide	1,4-Dioxane - 8270 SIM	PFOA/ PFOS 537M (21)
L1740559	SB156 (4.5-8')	11/04/17	Soil	X		X			X											
L1740559	SB157 (8-12')	11/04/17	Soil			X			X											
L1742080	TP101 (2.5-5')	11/15/17	Soil	X		X			X		X									
L1742080	TP101 (2-5') Duplicate	11/15/17	Soil	X		X			X		X									
L1742080	TP102 (1-4.5')	11/15/17	Soil			X			X											
L1742080	TP102 (4.5-6')	11/15/17	Soil			X			X											
L1742080	TP103 (1-2.5')	11/15/17	Soil	X		X			X											
L1742080	TP103 (2.5-4')	11/15/17	Soil			X			X											
L1742080	TP104 (2-5')	11/15/17	Soil			X			X		X									
L1742080	TP104 (5-6.5')	11/15/17	Soil	X		X			X											
L1742080	TP105 (0-2.5')	11/15/17	Soil			X			X											
L1742080	TP106 (2-4')	11/15/17	Soil	X		X			X											
L1742080	Trip Blank-3	11/15/17	Water	X																
L1742080	Equipment Rinsate-3	11/15/17	Water	X		X			X		X									
L1742080	TP107 (6-10')	11/16/17	Soil	X		X			X		X									
L1742080	TP107 (6-10') MS/MSD	11/16/17	Soil	X		X			X		X									
L1742080	TP108 (4-5.5')	11/16/17	Soil	X		X			X											
L1742080	TP109 (3-6')	11/16/17	Soil			X			X											
L1742080	TP110 (17-19')	11/16/17	Soil	X		X			X											
L1742080	TP111 (5-8')	11/16/17	Soil			X			X											
L1742080	TP112 (3-6')	11/16/17	Soil	X		X			X		X									
L1743342	Trip Blank-4	11/22/17	Water	X																
L1743342	SB103/MW-1	11/22/17	Ground water	X		X			X	X	X	X	X							
L1743342	MW-10	11/22/17	Ground water	X		X			X	X										
L1743342	MW-1	11/22/17	Ground water	X		X			X	X										
L1743342	SB116/MW-3	11/22/17	Ground water	X		X			X	X	X	X	X							
L1743342	SB116/MW-3 Duplicate	11/22/17	Ground water	X		X			X	X	X	X	X							
L1743342	SB113/MW-2	11/22/17	Ground water	X		X			X	X	X	X	X							
L1743342	SB113/MW-2 MS/MSD	11/22/17	Ground water	X		X			X	X	X	X	X							
L1743342	SB121/MW-5	11/27/17	Ground water	X		X			X	X										
L1743342	MW-4	11/27/17	Ground water	X		X			X	X	X	X	X							
L1743342	MW-6	11/27/17	Ground water	X		X			X	X										
L1743342	MW-7	11/27/17	Ground water	X		X			X	X										
L1743342	Equipment Rinsate-4	11/27/17	Water	X		X			X	X	X	X	X							
L1747629	IA-1	12/26/17	Vapor											X						
L1747629	IA-1 Duplicate	12/26/17	Vapor											X						
L1747629	OA-1	12/26/17	Vapor											X						
L1747629	IA-2	12/26/17	Vapor											X						
L1747629	SS-1	12/26/17	Vapor											X						
L1747629	SS-2	12/26/17	Vapor											X						
L1747629	IA-3	12/26/17	Vapor											X						

Summary of Analytical Samples

1801 Elmwood Avenue, Buffalo, New York

Lab Job #	Sample ID	Collection Date	Sample Matrix	VOC 8260 TCL	VOC 8260 TCL + STARS	SVOC 8270 TCL	SVOC 8270 TCL+ STARS	RCRA 8 Metals	TAL Metals	TAL Metals Dissolved	Total PCBs	Total Pesticides	Total Herbicides	VOCs TO-15	TCLP VOC	TCLP SVOC	TCLP Metals	Reactivity Cyanide/ Sulfide	1,4-Dioxane - 8270 SIM	PFOA/ PFOS 537M (21)
L1747629	SS-3	12/26/17	Vapor											X						
L1747629	IA-4	12/26/17	Vapor											X						
L1747629	SS-4	12/26/17	Vapor											X						
L1800385	CC-1	01/05/18	Solid								X				X	X	X			
L1800386	WC-2	01/05/18	Soil								X				X	X	X			
L1800592	PT-01	01/08/18	Soil	X		X			X		X									
L1800592	PT-01 Duplicate	01/08/18	Soil	X		X			X		X									
L1800592	PT-02	01/08/18	Soil	X		X			X		X									
L1800592	PT-03	01/08/18	Soil	X		X			X		X									
L1800592	PT-03 MS/MSD	01/08/18	Soil	X		X			X		X									
L1800592	PT-06	01/08/18	Soil	X																
L1800592	Equipment Rinsate-5	01/08/18	Water	X		X			X		X									
L1803664	SB158 (0.5-3.5')	02/01/18	Soil					X												
L1803664	SB159 (0.5-3.5')	02/01/18	Soil					X												
L1803664	SB160 (0.5-3.5')	02/01/18	Soil					X												
L1803664	SB160 (0.5-3.5') Duplicate	02/01/18	Soil					X												
L1803664	SB161 (0.5-3.5')	02/01/18	Soil					X												
L1803664	SB162 (2-5')	02/01/18	Soil					X												
L1803664	SB163 (2-5')	02/01/18	Soil					X												
L1803664	SB163 (2-5') MS/MSD	02/01/18	Soil					X												
L1803664	SB164 (2-5')	02/01/18	Soil					X												
L1803664	SB165 (2-5')	02/01/18	Soil					X												
L1803664	SB166 (4-5.5')	02/01/18	Soil					X												
L1803664	SB167 (3-4')	02/01/18	Soil					X												
L1803664	SB168 (4-5.5')	02/01/18	Soil					X												
L1803664	SB169 (4-5.5')	02/01/18	Soil					X												
L1803664	SB170 (0.5-4')	02/02/18	Soil			X			X											
L1803664	SB171 (0-3')	02/02/18	Soil			X			X		X									
L1803664	SB172/MW-11 (4-6')	02/02/18	Soil	X																
L1803664	SB172/MW-11 (6.5-8')	02/02/18	Soil	X																
L1803664	SS-101 (0-2")	02/02/18	Soil	X		X			X		X	X	X							
L1803664	SS-102 (0-2")	02/02/18	Soil	X		X			X		X	X	X							
L1803664	SS-102 (0-2") Duplicate	02/02/18	Soil	X		X			X		X	X	X							
L1803664	SB173/MW-12 (6-9')	02/02/18	Soil	X																
L1803664	SB175/MW-13 (7-10')	02/02/18	Soil	X																
L1803664	SS-103 (0-2")	02/02/18	Soil	X		X			X		X	X	X							
L1803664	SS-103 (0-2") MS/MSD	02/02/18	Soil	X		X			X		X	X	X							
L1803664	SS104 (0-2")	02/02/18	Soil	X		X			X		X	X	X							
L1803664	SS105 (0-2")	02/02/18	Soil	X		X			X		X	X	X							
L1803664	Equipment Rinsate-6	02/02/18	Water	X		X		X	X		X	X	X							

Table 1
Summary of Analytical Samples
1801 Elmwood Avenue, Buffalo, New York

Lab Job #	Sample ID	Collection Date	Sample Matrix	VOC 8260 TCL	VOC 8260 TCL + STARS	SVOC 8270 TCL	SVOC 8270 TCL+ STARS	RCRA 8 Metals	TAL Metals	TAL Metals Dissolved	Total PCBs	Total Pesticides	Total Herbicides	VOCs TO-15	TCLP VOC	TCLP SVOC	TCLP Metals	Reactivity Cyanide/ Sulfide	1,4-Dioxane - 8270 SIM	PFOA/ PFOS 537M (21)
L1803664	Trip Blank-5	02/02/18	Water	X																
L1804088	SB116/MW-3 (020518)	02/05/18	Groundwater	X																
L1804088	SB116/MW-3 (020518) Duplicate	02/05/18	Groundwater	X																
L1804088	Equipment Rinsate-7	02/05/18	Water	X																
L1804088	Trip Blank-6	02/05/18	Water	X																
L1804088	SB172/MW-11	02/05/18	Groundwater	X																
L1804088	SB172/MW-11 MS/MSD	02/05/18	Groundwater	X																
L1804088	SB173/MW-12	02/05/18	Groundwater	X																
L1804088	SB175/MW-13	02/05/18	Groundwater	X																
L1804088	SB113/MW-2 (020518)	02/05/18	Groundwater	X																
L1811886	OA-2	04/05/18	Vapor											X						
L1811886	SS-5	04/05/18	Vapor											X						
L1811886	IA-5	04/05/18	Vapor											X						
L1811886	SS-6	04/05/18	Vapor											X						
L1811886	IA-6	04/05/18	Vapor											X						
L1811886	IA-6 Duplicate	04/05/18	Vapor											X						
L1811886	SS-7	04/05/18	Vapor											X						
L1811886	IA-7	04/05/18	Vapor											X						
L1811886	SS-8	04/05/18	Vapor											X						
L1811886	IA-8	04/05/18	Vapor											X						
L1819916	IA-9	05/30/18	Vapor											X						
L1819916	SS-9	05/30/18	Vapor											X						
L1819916	IA-10	05/30/18	Vapor											X						
L1819916	IA-10 Duplicate	05/30/18	Vapor											X						
L1819916	SS-10	05/30/18	Vapor											X						
L1819916	IA-11	05/30/18	Vapor											X						
L1819916	SS-11	05/30/18	Vapor											X						
L1819916	IA-12	05/30/18	Vapor											X						
L1819916	SS-12	05/30/18	Vapor											X						
L1819916	OA-3	05/30/18	Vapor											X						
L1820011	SB103/MW-1	05/31/18	Groundwater																X	X
L1820011	SB103/MW-1 Duplicate	05/31/18	Groundwater																X	X
L1820011	SB127/MW-7	05/31/18	Groundwater																X	X
L1820011	SB127/MW-7 MS/MSD	05/31/18	Groundwater																X	X
L1820011	SB116/MW-3	05/31/18	Groundwater																X	X
L1820011	Equipment Blank	05/31/18	Groundwater																X	X
L1820011	Field Blank	05/31/18	Groundwater																X	X
L1820300	Trip Blank 060118	06/01/18	Water	X																
L1820300	Equipment Rinsate 060118	06/01/18	Water	X																

Table 1
Summary of Analytical Samples
1801 Elmwood Avenue, Buffalo, New York

Lab Job #	Sample ID	Collection Date	Sample Matrix	VOC 8260 TCL	VOC 8260 TCL + STARS	SVOC 8270 TCL	SVOC 8270 TCL+ STARS	RCRA 8 Metals	TAL Metals	TAL Metals Dissolved	Total PCBs	Total Pesticides	Total Herbicides	VOCs TO-15	TCLP VOC	TCLP SVOC	TCLP Metals	Reactivity Cyanide/ Sulfide	1,4-Dioxane - 8270 SIM	PFOA/ PFOS 537M (21)
L1820300	SB207	06/01/18	Groundwater	X																
L1820300	SB207 MS/MSD	06/01/18	Groundwater	X																
L1820300	SB203	06/01/18	Groundwater	X																
L1820300	SB204	06/01/18	Groundwater	X																
L1820300	SB204 Duplicate	06/01/18	Groundwater	X																

Table 2
Ground Water Elevations
1801 Elmwood Avenue, Buffalo, NY

Location	Well Depth* (feet)	Ground Elevation (feet)	Cover Elevation (feet)	Top of Riser Elevation	11/20/2017		11/22/2017		11/27/2017		2/2/2018	
					Depth to Water* (feet)	Groundwater Elevation	Depth to Water* (feet)	Groundwater Elevation	Depth to Water* (feet)	Groundwater Elevation	Depth to Water* (feet)	Groundwater Elevation
SB103/MW-1	20.12	603.46	603.47	602.85	2.18	600.67	3.58	599.27	NG	NA	2.4	600.45
MW-1	14.18	601.33	605.29	604.94	9.92	595.02	9.65	595.29	NG	NA	9.32	595.62
SB113/MW-2	15.00	599.73	599.84	599.35	4.42	594.93	4.50	594.85	NG	NA	4.37	594.98
SB116/MW-3	14.65	601.40	601.36	600.71	5.33	595.38	6.40	594.31	NG	NA	5.05	595.66
SB149/MW-4	11.95	602.56	602.56	601.97	2.62	599.35	NG	NA	4.13	597.84	2.45	599.52
SB121/MW-5	19.15	603.41	606.76	606.54	6.44	600.1	NG	NA	6.74	599.80	6.12	600.42
SB125/MW-6	14.00	598.88	598.88	598.52	0.30	598.22	NG	NA	9.80	588.72	3.80	594.72
SB127/MW-7	15.56	597.54	597.59	597.23	7.92	589.31	NG	NA	8.15	589.08	8.22	589.01
SB129/MW-8	18.35	605.84	609.67	609.42	NW	NA	NW	NA	NW	NA	8.35	601.07
SB130/MW-9	23.05	606.77	610.13	609.94	NW	NA	NW	NA	NW	NA	22.6	587.34
SB147/MW-10	15.31	603.05	606.45	606.21	5.54	600.67	7.40	598.81	NG	NA	6.55	599.66
SB172/MW-11	14.70	600.71	600.71	600.41	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	4.66	595.75
SB173/MW-12	14.90	600.78	600.78	600.50	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	4.52	595.98
SB175/MW-13	15.05	600.59	600.59	600.31	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	Not Installed	4.44	595.87

Notes:
* = measured to top of riser.
NW - No water encountered
NG - Not Guaged
NA- Not Applicable

Table 3
Volatile Organic Compound Subsurface Soil Testing Results
1801 Elmwood Avenue, Buffalo, NY

Parameter	UUSCO	RRUSCO	CUSCO	IUSCO	SB101 (0.5-3.5')	SB102 (4-8')	SB105 (2-6')	SB105 (2-6') Duplicate	SB107 (0-4')	SB110 (1-4')	SB112 (0-4')	SB113/MW-2 (5-9')	SB116/MW-3 (7-10')	SB120 (0.5-3')	SB126 (4-8')	SB129/MW-8 (9-12')	SB131 (2-6')	SB132 (8-12')	SB136 (5.5-7')	SB137 (4-8')	SB137 (4-8') Duplicate	SB140 (8-12')
Alpha Job Number					L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1739051	L1739051	L1739051	L1739051	L1739051	L1739051	L1739051
Sampling Date					10/23/17	10/23/17	10/23/17	10/23/17	10/23/17	10/23/17	10/24/17	10/24/17	10/24/17	10/24/17	10/24/17	10/26/17	10/26/17	10/26/17	10/27/17	10/27/17	10/27/17	10/30/17
Volatiles 8260C Analysis (ug/kg)																						
1,1,1-Trichloroethane	680	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	270	26,000	240,000	480,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	250	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND	ND	1.9	9,100	ND	0.9	ND	ND	ND	ND	ND	ND	28
trans-1,2-Dichloroethene	190	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND	ND	ND	3,000	ND	ND	ND	ND	ND	ND	ND	ND	0.9 J
1,2-Dichlorobenzene	1,100	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	2,400	49,000	280,000	560,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	1,800	13,000	130,000	250,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-trichloroethane	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	50	100,000	500,000	1,000,000	ND	28	13	16	ND	ND	ND	9.2	ND	51	ND	ND	ND	20	60	2.2 J	ND	30
Benzene	60	4,800	44,000	89,000	17 J	0.17 J	ND	ND	0.18 J	ND	ND	0.36 J	ND	ND	ND	ND	14 J	ND	ND	ND	ND	ND
Bromomethane	NV	NV	NV	NV	41 J	ND	ND	ND	ND	51 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	NV	NV	NV	NV	ND	2.1 J	ND	ND	ND	ND	1.4 J	1.5 J	ND	ND	1.4 J	ND	ND	ND	ND	ND	ND	1.7 J
Chlorobenzene	1,100	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	370	49,000	350,000	700,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyclohexane	NV	NV	NV	NV	ND	1.9 J	0.88 J	ND	0.74 J	60 J	0.92 J	0.62 J	ND	ND	0.45 J	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	1,000	41,000	390,000	780,000	18 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	14 J	ND	ND	ND	ND	ND
Isopropylbenzene	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyltoluene	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.27 J	ND	ND	ND
Methyl Acetate	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl ethyl ketone	120	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.1 J	ND	ND	ND	2.3 J	14	ND	ND	ND
Methyl tert-butyl ether	930	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	13 J	ND	ND	ND	ND	ND
Methyl cyclohexane	NV	NV	NV	NV	32 J	0.32 J	0.23 J	0.28 J	ND	ND	1.3 J	0.27 J	ND	0.27 J	0.93 J	ND	79 J	ND	0.79 J	ND	ND	0.2 J
Methylene chloride	50	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	120 J	ND	ND	ND	ND	ND
sec-Butylbenzene	11,000	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.9	ND	ND	ND
Styrene	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	1,300	19,000	15,000	300,000	ND	ND	ND	ND	ND	36 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	700	100,000	500,000	1,000,000	24 J	ND	ND	ND	ND	22 J	0.21 J	0.67 J	ND	ND	ND	ND	32 J	ND	ND	ND	ND	0.2 J
trans-1,2-Dichloroethene	190	100,000	100,000	100,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	470	21,000	200,000	400,000	ND	ND	ND	ND	ND	12,000	1.8	ND	21,000	ND	ND	ND	ND	ND	ND	ND	ND	7.3
1,2,4-Trimethylbenzene	3,600	52,000	190,000	380,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.7 J	ND	ND	ND
1,3,5-Trimethylbenzene	8,400	52,000	190,000	380,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	20	900	13,000	27,000	ND	ND	ND	ND	ND	ND	ND	2.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.6
o-Xylene	260	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	42 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p/m-Xylene	260	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	51 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

1. Analytical testing performed by Alpha Analytical. Compounds detected in one or more samples are presented in this table. Refer to Appendix for the full analytical report.
2. ug/kg = parts per billion; mg/kg = parts per million.
3. ND = not detected; NT = not tested; NV = no value.
4. Analytical results compared to NYSDEC Part 375-6; Remedial Program Soil Cleanup Objectives, Table 375-(a) Unrestricted Use Soil Cleanup Objective; and Table 375-6.8(b): Restricted Use Soil Cleanup Objectives.
5. * = Concentration of analyte exceeded range of the calibration curve, which required a re-analysis at a higher dilution factor.
6. E = Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
7. J = Estimated value. The target analyte is below the reporting limit (RL), but above the method dectection limit (MDL).
8. P = The RPD between the results for the two columns exceeds the method-specified criteria.
9. Shading indicates:
   - exceeds UUSCO - Unrestriced Use Soil Cleanup Objective
   - exceeds RRUSCO - Restricted Residential Use Soil Cleanup Objective
   - exceeds CUSCO - Commercial Use Soil Cleanup Objective
   - exceeds IUSCO - Industrial Use Soil Cleanup Objective

Table 3
Volatile Organic Compound Subsurface Soil Testing Results
1801 Elmwood Avenue, Buffalo, NY

Parameter	UUSCO	RRUSCO	CUSCO	IUSCO	SB142 (4-8')	SB150 (10-14')	SB151 (10-14')	SB156 (4.5-8')	TP101 (2.5-5')	TP101 (2.5-5') Duplicate	TP103 (1-2.5')	TP104 (5-6.5')	TP106 (2-4')	TP107 (6-10')	TP108 (4-5.5')	TP110 (17-19')	TP112 (3-6')	SB172/MW-11 (4-6')	SB172/MW-11 (6.5-8')	SB173/MW-12 (6-9')	SB175/MW-13 (7-10')
Alpha Job Number					L1739051	L1740559	L1740559	L1740559	L1742080	L1742080	L1742080	L1742080	L1742080	L1742080	L1742080	L1742080	L1742080	L1803664	L1803664	L1803664	L1803664
Sampling Date					10/30/17	11/04/17	11/04/17	11/04/17	11/15/17	11/15/17	11/15/17	11/15/17	11/15/17	11/16/17	11/16/17	11/16/17	11/16/17	02/02/18	02/02/18	02/02/18	02/02/18
Volatiles 8260C Analysis (ug/kg)																					
1,1,1-Trichloroethane	680	100,000	500,000	1,000,000	ND	0.78 J	ND	0.39 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	270	26,000	240,000	480,000	ND	ND	ND	2.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.27 J	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.43 J	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	250	100,000	500,000	1,000,000	ND	ND	10	28	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	130	ND	54 J
trans-1,2-Dichloroethene	190	100,000	500,000	1,000,000	ND	ND	ND	1.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	1,100	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.58 J	ND	0.46 J	ND	ND	ND	ND
1,3-Dichlorobenzene	2,400	49,000	280,000	560,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.58 J	ND	0.64 J	ND	ND	ND	ND
1,4-Dichlorobenzene	1,800	13,000	130,000	250,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.79 J	ND	0.73 J	ND	ND	ND	ND
1,1,2-trichloroethane	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.81 J	ND	ND	ND	ND	ND	ND
Acetone	50	100,000	500,000	1,000,000	ND	18	31	19	11	8.0 J	3.3 J	8.9 J	14	ND	71	55	ND	460 J	210 J	61	170 J
Benzene	60	4,800	44,000	89,000	ND	0.65 J	ND	ND	ND	ND	ND	ND	0.39 J	ND	1.0	ND	ND	ND	ND	ND	ND
Bromomethane	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.3 J	1.5 J	ND	ND	ND	ND	ND
Chlorobenzene	1,100	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.72 J	ND	0.56 J	ND	ND	ND	ND
Chloroform	370	49,000	350,000	700,000	ND	ND	ND	0.61 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyclohexane	NV	NV	NV	NV	ND	ND	ND	ND	ND	1.2 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.26 J	ND	ND	ND	ND	ND	ND
Ethylbenzene	1,000	41,000	390,000	780,000	ND	ND	ND	0.29 J	ND	0.20 J	ND	ND	ND	ND	1.4	0.4 J	0.73 J	23 J	ND	ND	ND
Isopropylbenzene	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.4	0.51 J	1.2 J	20 J	ND	ND	ND
p-Isopropyltoluene	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl Acetate	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl ethyl ketone	120	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND	ND	ND	2.7 J	ND	ND	6.0 J	ND	ND	ND	6.5 J	ND
Methyl tert-butyl ether	930	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl cyclohexane	NV	NV	NV	NV	ND	1.7 J	0.79 J	ND	ND	1.4 J	ND	ND	ND	ND	0.77 J	ND	ND	ND	ND	ND	40 J
Methylene chloride	50	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	11,000	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.6 J	0.71 J	1.3 J	ND	ND	ND	ND
Tetrachloroethene	1,300	19,000	15,000	300,000	ND	8.5	ND	5	ND	ND	ND	ND	ND	ND	0.58 J	ND	ND	ND	ND	ND	ND
Toluene	700	100,000	500,000	1,000,000	ND	0.36 J	ND	ND	ND	ND	ND	ND	0.35 J	ND	1.6	0.27 J	0.6 J	ND	ND	ND	ND
trans-1,2-Dichloroethene	190	100,000	100,000	100,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	260	ND	ND
Trichloroethene	470	21,000	200,000	400,000	ND	0.72 J	ND	15	ND	ND	ND	ND	ND	ND	0.38 J	ND	ND	2,800	12,000	ND	5,800
1,2,4-Trimethylbenzene	3,600	52,000	190,000	380,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.81 J	ND	0.32 J	ND	ND	ND	ND
1,3,5-Trimethylbenzene	8,400	52,000	190,000	380,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.67 J	ND	ND	ND	ND	ND	ND
Vinyl chloride	20	900	13,000	27,000	ND	ND	38	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	260	100,000	500,000	1,000,000	ND	ND	0.36 J	0.5 J	ND	ND	ND	ND	ND	ND	2.0	0.76 J	1.4 J	59 J	ND	ND	ND
p/m-Xylene	260	100,000	500,000	1,000,000	ND	1.3 J	0.94 J	1.4 J	ND	ND	ND	ND	ND	ND	2.2	0.73 J	1.5 J	98 J	ND	ND	ND

Notes:

1. Analytical testing performed by Alpha Analytical. Compounds detected in one or more samples are presented in this table. Refer to Appendix for the full analytical report.
2. ug/kg = parts per billion; mg/kg = parts per million.
3. ND = not detected; NT = not tested; NV = no value.
4. Analytical results compared to NYSDEC Part 375-6; Remedial Program Soil Cleanup Objectives, Table 375-(a) Unrestricted Use Soil Cleanup Objective; and Table 375-6.8(b): Restricted Use Soil Cleanup Objectives.
5. * = Concentration of analyte exceeded range of the calibration curve, which required a re-analysis at a higher dilution factor.
6. E = Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
7. J = Estimated value. The target analyte is below the reporting limit (RL), but above the method dectection limit (MDL).
8. P = The RPD between the results for the two columns exceeds the method-specified criteria.
9. Shading indicates:
   - exceeds UUSCO - Unrestriced Use Soil Cleanup Objective
   - exceeds RRUSCO - Restricted Residential Use Soil Cleanup Objective
   - exceeds CUSCO - Commercial Use Soil Cleanup Objective
   - exceeds IUSCO - Industrial Use Soil Cleanup Objective

Table 4 - Semi-Volatile Organic Compounds
Subsurface Soil Analytical Testing Results
1801 Elmwood Avenue, Buffalo, NY

Parameter	UUSCO	RRUSCO	CUSCO	IUSCO	SB101 (0.5-3.5')	SB103/MW-1 (0.5-3')	SB102 (4-8')	SB105 (2-6')	SB105 (2-6') Duplicate	SB107 (0-4')	SB109 (4-8')	SB110 (1-4')	SB111 (0.5-4')	SB112 (0-4')	SB113/MW-2 (5-9')	SB116/MW-3 (7-10')	SB117 (0.5-2.5')	SB120 (0.5-3')	SB121/MW-5 (0-4')	SB123 (0.5-2.5')
Alpha Job Number					L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450
Sampling Date					10/23/17	10/23/17	10/23/17	10/23/17	10/23/17	10/23/17	10/23/17	10/23/17	10/23/17	10/24/17	10/24/17	10/24/17	10/24/17	10/24/17	10/24/17	10/24/17
Semivolatile 8270D Analysis (ug/kg)																				
2-Methylnaphthalene	NV	NV	NV	NV	43 J	25 J	ND	100 J	120 J	240	ND	58 J	26 J	22 J	ND	150 J	31 J	74 J	33 J	ND
2-Methylphenol	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Methylphenol/4-Methylphenol	NV	NV	NV	NV	ND	ND	ND	ND	ND	29 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	20,000	100,000	500,000	1,000,000	56 J	48 J	ND	260	340	740	50 J	ND	ND	38 J	ND	700 J	48 J	23 J	ND	170 J
Acenaphthylene	100,000	100,000	500,000	1,000,000	45 J	53 J	ND	150	200	260	40 J	ND	ND	ND	ND	ND	50 J	ND	ND	170 J
Acetophenone	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	100,000	100,000	500,000	1,000,000	120	200	ND	630	810	1,600	160	ND	39 J	91 J	ND	2,200	160	100 J	ND	790
Benzaldehyde	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	62 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benz(a)anthracene	1,000	1,000	5,600	11,000	420	1,800	68 J	1,600	2,500	3,200	480	68 J	140	300	ND	5,900	760	450	30 J	2,100
Benzo(a)pyrene	1,000	1,000	1,000	1,100	450	2,200	60 J	1,500	2,300	2,900	410	68 J	120 J	280	ND	5,000	700	480	ND	1,700
Benzo(b)fluoranthene	1,000	1,000	5,600	11,000	560	3,300	80 J	2,000	3,000	3,800	520	91 J	180	410	ND	6,900	1,000	660	33 J	2,500
Benzo(g,h,i)perylene	100,000	100,000	500,000	1,000,000	300	1,700	42 J	870	1,300	1,800	230	44 J	82 J	180	ND	2,900	460	300	ND	1,000
Benzo(k)fluoranthene	800	3,900	56,000	110,000	220	1,200	ND	680	1,000	1,200	180	30 J	59 J	150	ND	1,800	330	210	ND	690
Biphenyl	NV	NV	NV	NV	ND	ND	ND	ND	ND	71 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Butyl benzyl phthalate	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	NV	NV	NV	NV	130 J	150 J	22 J	340	440	920	59 J	ND	27 J	66 J	ND	490 J	97 J	36 J	ND	440 J
Chrysene	1,000	3,900	56,000	110,000	500	2,400	72 J	1,600	2,400	3,200	460	73 J	160	310	ND	4,500	830	460	31 J	2,100
Dibenzo(a,h)anthracene	330	330	560	1,100	59 J	340	ND	230	340	450	66 J	ND	27 J	51 J	ND	840	110 J	89 J	ND	300 J
Dibenzofuran	NV	NV	NV	NV	42 J	27 J	ND	190	260	580	22 J	ND	ND	ND	ND	350 J	36 J	ND	ND	180 J
Fluoranthene	100,000	100,000	500,000	1,000,000	1,200	4,600	200	3,500	4,800	7,900 E	940	120	280	620	ND	9,000	1,500	760	46 J	4,400
Fluorene	30,000	100,000	500,000	1,000,000	51 J	41 J	ND	260	350	720	55 J	ND	17 J	39 J	ND	480 J	41 J	29 J	ND	280 J
Indeno(1,2,3-cd)pyrene	500	500	5,600	11,000	300	1,900	43 J	940	1,400	1,900	260	44 J	86 J	200	ND	3,500	460	340	ND	1,100
Naphthalene	12,000	100,000	500,000	1,000,000	95 J	30 J	ND	200	250	410	ND	44 J	ND	26 J	ND	270 J	30 J	80 J	29 J	ND
Phenanthrene	100,000	100,000	500,000	1,000,000	930	1,300	170	2,600	3,400	7,500 E	580 J	95 J	220	400	ND	3,200	630	390	54 J	3,200
Phenol	330	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	100,000	100,000	500,000	1,000,000	1,100	3,700	160	2,900	4,000	6,500	780	110	220	490	ND	7,000	1,300	650	40 J	3,400

Notes:

1. Analytical testing performed by Alpha Analytical. Compounds detected in one or more samples are presented in this table. Refer to Appendix for the full analytical report.
2. ug/kg = parts per billion; mg/kg = parts per million.
3. ND = not detected; NT = not tested; NV = no value.
4. Analytical results compared to NYSDEC Part 375-6; Remedial Program Soil Cleanup Objectives, Table 375-(a) Unrestricted Use Soil Cleanup Objective; and Table 375-6.8(b): Restricted Use Soil Cleanup Objectives.
5. * = Concentration of analyte exceeded range of the calibration curve, which required a re-analysis at a higher dilution factor.
6. E = Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
7. J = Estimated value. The target analyte is below the reporting limit (RL), but above the method dectection limit (MDL).
8. P = The RPD between the results for the two columns exceeds the method-specified criteria.
9. Shading indicates:
   - (grey) exceeds UUSCO - Unrestriced Use Soil Cleanup Objective
   - (yellow) exceeds RRUSCO - Restricted Residential Use Soil Cleanup Objective
   - (blue) exceeds CUSCO - Commercial Use Soil Cleanup Objective
   - (pink) exceeds IUSCO - Industrial Use Soil Cleanup Objective

Table 4 - Semi-Volatile Organic Compounds
Subsurface Soil Analytical Testing Results
1801 Elmwood Avenue, Buffalo, NY

Parameter	UUSCO	RRUSCO	CUSCO	IUSCO	SB125 (1.5-4')	SB126 (4-8')	SB129/MW-8 (9-12')	SB131 (2-6')	SB132 (8-12')	SB133 (4-6')	SB136 (5.5-7')	SB137 (4-8')	SB137 (4-8') Duplicate	SB140 (8-12')	SB142 (4-8')	SB150 (10-14')	SB151 (10-14')	SB153 (0.5-4')	SB155 (1-3')	SB156 (4.5-8')
Alpha Job Number					L1738450	L1738450	L1739051	L1739051	L1739051	L1739051	L1739051	L1739051	L1739051	L1739051	L1739051	L1740559	L1740559	L1740559	L1740559	L1740559
Sampling Date					10/24/17	10/24/17	10/26/17	10/26/17	10/26/17	10/27/17	10/27/17	10/27/17	10/27/17	10/30/17	10/30/17	11/04/17	11/04/17	11/04/17	11/04/17	11/04/17
Semivolatile 8270D Analysis (ug/kg)																				
2-Methylnaphthalene	NV	NV	NV	NV	ND	ND	ND	36 J	ND	48 J	1,400	ND	ND	ND	ND	28 J	40 J	86 J	550	ND
2-Methylphenol	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Methylphenol/4-Methylphenol	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	20,000	100,000	500,000	1,000,000	130 J	27 J	ND	ND	ND	18 J	ND	ND	ND	ND	ND	ND	ND	32 J	64 J	ND
Acenaphthylene	100,000	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	67 J	ND	ND	ND	ND	ND	ND	ND	ND	56 J	ND
Acetophenone	NV	NV	NV	NV	ND	ND	ND	32 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	100,000	100,000	500,000	1,000,000	290 J	66 J	ND	ND	ND	72 J	700	ND	ND	ND	ND	ND	ND	83 J	240	ND
Benzaldehyde	NV	NV	NV	NV	ND	ND	ND	64 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benz(a)anthracene	1,000	1,000	5,600	11,000	1,100	100 J	ND	33 J	ND	320	200	ND	ND	ND	30 J	ND	ND	310	790	ND
Benzo(a)pyrene	1,000	1,000	1,000	1,100	1,200	82 J	ND	ND	ND	330	120 J	ND	ND	ND	ND	ND	ND	250	700	ND
Benzo(b)fluoranthene	1,000	1,000	5,600	11,000	2,100	110 J	ND	43 J	ND	470	79 J	ND	ND	ND	ND	ND	ND	370	970	ND
Benzo(g,h,i)perylene	100,000	100,000	500,000	1,000,000	1,000	63 J	ND	ND	ND	260	110 J	ND	ND	ND	ND	ND	ND	180	470	ND
Benzo(k)fluoranthene	800	3,900	56,000	110,000	690	41 J	ND	ND	ND	150	ND	ND	ND	ND	ND	ND	ND	120	310	ND
Biphenyl	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	62 J	ND
Bis(2-ethylhexyl)phthalate	NV	NV	NV	NV	ND	ND	320	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	75 J	ND	ND
Butyl benzyl phthalate	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	NV	NV	NV	NV	510 J	27 J	ND	ND	ND	68 J	ND	ND	ND	ND	ND	ND	ND	59 J	120 J	ND
Chrysene	1,000	3,900	56,000	110,000	1,700	110 J	ND	65 J	ND	360	500	ND	ND	ND	43 J	ND	ND	330	820	ND
Dibenzo(a,h)anthracene	330	330	560	1,100	210 J	ND	ND	ND	ND	45 J	ND	ND	ND	ND	ND	ND	ND	54 J	120	ND
Dibenzofuran	NV	NV	NV	NV	100 J	ND	ND	29 J	ND	37 J	ND	ND	ND	ND	ND	ND	ND	52 J	180 J	ND
Fluoranthene	100,000	100,000	500,000	1,000,000	4,200	310	ND	69 J	ND	710	280	ND	ND	ND	41 J	ND	ND	600	1,400	ND
Fluorene	30,000	100,000	500,000	1,000,000	150 J	22 J	ND	ND	ND	27 J	750	ND	ND	ND	ND	ND	ND	39 J	89 J	ND
Indeno(1,2,3-cd)pyrene	500	500	5,600	11,000	1,000	57 J	ND	ND	ND	270	ND	ND	ND	ND	ND	ND	ND	190	490	ND
Naphthalene	12,000	100,000	500,000	1,000,000	ND	ND	ND	60 J	ND	54 J	430	ND	ND	ND	ND	69 J	71 J	61 J	390	ND
Phenanthrene	100,000	100,000	500,000	1,000,000	2,300	340	ND	92 J	ND	490	2,300	ND	ND	ND	76 J	27 J	30 J	510	1,000	ND
Phenol	330	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	100,000	100,000	500,000	1,000,000	3,100	260	ND	56 J	ND	630	1,500	ND	ND	ND	36 J	ND	ND	480	1,200	ND

Notes:

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2. ug/kg = parts per billion; mg/kg = parts per million.
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7. J = Estimated value. The target analyte is below the reporting limit (RL), but above the method dectection limit (MDL).
8. P = The RPD between the results for the two columns exceeds the method-specified criteria.
9. Shading indicates:
   - exceeds UUSCO - Unrestriced Use Soil Cleanup Objective
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   - exceeds CUSCO - Commercial Use Soil Cleanup Objective
   - exceeds IUSCO - Industrial Use Soil Cleanup Objective

Table 4 - Semi-Volatile Organic Compounds
Subsurface Soil Analytical Testing Results
1801 Elmwood Avenue, Buffalo, NY

Parameter	UUSCO	RRUSCO	CUSCO	IUSCO	TP101 (2.5-5')	TP101 (2.5-5') Duplicate	TP102 (1-4.5')	TP102 (4.5-6')	TP103 (1-2.5')	TP103 (2.5-4')	TP104 (2-5')	TP104 (5-6.5')	TP105 (0-2.5')	TP106 (2-4')	TP107 (6-10')	TP108 (4-5.5')	TP109 (3-6')	TP110 (17-19')	TP111 (5-8')	TP112 (3-6')	SB170 (0.5-4')	SB171 (0-3')
Alpha Job Number					L1742080	L1742080	L1742080	L1742080	L1742080	L1742080	L1742080	L1742080	L1742080	L1742080	L1742080	L1742080	L1742080	L1742080	L1742080	L1742080	L1803664	L1803664
Sampling Date					11/15/17	11/15/17	11/15/17	11/15/17	11/15/17	11/15/17	11/15/17	11/15/17	11/15/17	11/15/17	11/16/17	11/16/17	11/16/17	11/16/17	11/16/17	11/16/17	02/01/18	02/01/18
Semivolatile 8270D Analysis (ug/kg)																						
2-Methylnaphthalene	NV	NV	NV	NV	810	570	230 J	ND	54 J	250	1600	ND	180 J	400	ND	220	63 J	130 J	ND	41 J	ND	50 J
2-Methylphenol	NV	NV	NV	NV	ND	37 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	43 J	ND	ND	ND	ND
3-Methylphenol/4-Methylphenol	NV	NV	NV	NV	92 J	120 J	37 J	ND	ND	35 J	41 J	ND	45 J	73 J	ND	ND	ND	810	ND	ND	ND	ND
4-Chloroaniline	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,300
Acenaphthene	20,000	100,000	500,000	1,000,000	1,800	1,000	490	43 J	150 J	710	240	23 J	300	1,100	ND	42 J	34 J	49 J	ND	ND	ND	87 J
Acenaphthylene	100,000	100,000	500,000	1,000,000	310	390	410	ND	ND	220	480	33 J	380	1,100	ND	190	48 J	ND	ND	ND	ND	97 J
Acetophenone	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
Anthracene	100,000	100,000	500,000	1,000,000	4,200	2,400	ND	96 J	240	1,000	960	70 J	680	3,900	ND	230	140	300	ND	44 J	ND	210
Benzaldehyde	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benz(a)anthracene	1,000	1,000	5,600	11,000	7,600	5,000	3,000	200	460	2,400	2,800	210	1,800	7,100	ND	930	490	200	35 J	180	41 J	400
Benzo(a)pyrene	1,000	1,000	1,000	1,100	6,100	4,200	2,400	150 J	380	1,900	2,400	170	1,800	6,600	ND	870	360	170	ND	150	ND	370
Benzo(b)fluoranthene	1,000	1,000	5,600	11,000	8,100	5,600	3,100	190	510	2,500	3,300	250	2,400	7,600	ND	1,300	520	160	38 J	310	59 J	540
Benzo(g,h,i)perylene	100,000	100,000	500,000	1,000,000	3,300	2,300	1,600	85 J	240	ND	1,400	110 J	1,200	3,800	ND	760	280	190	ND	150	40 J	240
Benzo(k)fluoranthene	800	3,900	56,000	110,000	2,600	1,600	1,000	86 J	170	840	1,100	72 J	730	2,500	ND	410	200	53 J	ND	110	ND	200
Biphenyl	NV	NV	NV	NV	210 J	140 J	65 J	ND	ND	70 J	150 J	ND	45 J	130 J	ND	ND	ND	ND	ND	ND	ND	49 J
Bis(2-ethylhexyl)phthalate	NV	NV	NV	NV	ND	ND	ND	ND	ND	670	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	77 J
Butyl benzyl phthalate	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	89 J	ND	ND	ND	ND	ND
Carbazole	NV	NV	NV	NV	1,900	1,300	790	68 J	120 J	ND	450	37 J	440	1,500	ND	87 J	51 J	ND	ND	ND	ND	130 J
Chrysene	1,000	3,900	56,000	110,000	6,600	4,600	2,700	190	460	2,200	2,800	200	2,000	6,800	ND	1,000	510	310	35 J	200	46 J	400
Dibenzo(a,h)anthracene	330	330	560	1,100	960	670	370	27 J	60 J	280	390	28 J	260	960	ND	210	70 J	86 J	ND	39 J	ND	64 J
Dibenzofuran	NV	NV	NV	NV	14,000	790	500	39 J	91 J	510	570	20 J	260	920	ND	78 J	42 J	ND	ND	22 J	ND	66 J
Fluoranthene	100,000	100,000	500,000	1,000,000	16,000	10,000	6,600	480 J	1,100	5,500	5,400	430	4,800	15,000	25 J	1,200	1,400	270	74 J	150	90 J	880
Fluorene	30,000	100,000	500,000	1,000,000	2,200	1,200	610	57 J	100 J	650	300	27 J	310	1,400	ND	66 J	44 J	50 J	ND	ND	ND	100 J
Indeno(1,2,3-cd)pyrene	500	500	5,600	11,000	3,700	2,600	1,700	98 J	260	1,100	1,500	120 J	1,200	3,900	ND	740	280	120 J	ND	150	39 J	260
Naphthalene	12,000	100,000	500,000	1,000,000	2,000	1,800	320	27 J	85 J	370	1,300	ND	290	900	ND	150 J	60 J	160 J	ND	44 J	ND	94 J
Phenanthrene	100,000	100,000	500,000	1,000,000	16,000	7,600	6,000	440	1,000	5,500	3,700	300	3,600	13,000	ND	860	560	230	60 J	99 J	47 J	710
Phenol	330	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	44 J	ND	ND	ND	110 J	ND	ND	ND	ND
Pyrene	100,000	100,000	500,000	1,000,000	13,000	7,800	5,300	360	950	4,500	4,600	370	4,100	12,000	21 J	1,100	1,200	510	62 J	140	79 J	710

Notes:

1. Analytical testing performed by Alpha Analytical. Compounds detected in one or more samples are presented in this table. Refer to Appendix for the full analytical report.
2. ug/kg = parts per billion; mg/kg = parts per million.
3. ND = not detected; NT = not tested; NV = no value.
4. Analytical results compared to NYSDEC Part 375-6; Remedial Program Soil Cleanup Objectives, Table 375-(a) Unrestricted Use Soil Cleanup Objective; and Table 375-6.8(b): Restricted Use Soil Cleanup Objectives.
5. * = Concentration of analyte exceeded range of the calibration curve, which required a re-analysis at a higher dilution factor.
6. E = Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
7. J = Estimated value. The target analyte is below the reporting limit (RL), but above the method dectection limit (MDL).
8. P = The RPD between the results for the two columns exceeds the method-specified criteria.
9. Shading indicates:
   - exceeds UUSCO - Unrestriced Use Soil Cleanup Objective
   - exceeds RRUSCO - Restricted Residential Use Soil Cleanup Objective
   - exceeds CUSCO - Commercial Use Soil Cleanup Objective
   - exceeds IUSCO - Industrial Use Soil Cleanup Objective

Table 5 - Metals
Subsurface Soil Analytical Testing Results
1801 Elmwood Avenue, Buffalo, NY

Parameter	UUSCO	RRUSCO	CUSCO	IUSCO	SB101 (0.5-3.5')	SB103/MW-1 (0.5-3')	SB102 (4-8')	SB105 (2-6')	SB105 (2-6') Duplicate	SB107 (0-4')	SB109 (4-8')	SB110 (1-4')	SB111 (0.5-4')	SB112 (0-4')	SB113/MW-2 (5-9')	SB116/MW-3 (0.5-2')	SB117 (0.5-2.5')	SB120 (0.5-3')	SB121/MW-5 (0-4')	SB123 (0.5-2.5')
Alpha Job Number					L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450
Sampling Date					10/23/17	10/23/17	10/23/17	10/23/17	10/23/17	10/23/17	10/23/17	10/23/17	10/23/17	10/24/17	10/24/17	10/24/17	10/24/17	10/24/17	10/24/17	10/24/17
Metals Analysis (mg/kg)																				
Aluminum	NV	NV	NV	NV	3,090	3,900	3,240	2,520	3,020	5,960	2,780	13,800	7,260	9,530	5,320	4,140	10,100	7,620	4,580	4,740
Antimony	NV	NV	NV	NV	5.73	0.607 J	2.97 J	1.21 J	1.31 J	1.67 J	ND	9.79	1.21 J	ND	ND	1.62 J	ND	1.14 J	1.29 J	0.518 J
Arsenic	13	16	16	16	36.9	9.8	17.7	4.84	5.15	10.2	1.97	6.02	6.96	14.4	5.52	23.8	4.18	5.67	7.12	8.19
Barium	350	400	400	10,000	38.1	27.7	25.6	92.3	97.7	58.9	19.8	110	183	75.1	25.5	142	98.6	70	37.6	45.2
Beryllium	7.2	72	590	2,700	0.146 J	0.16 J	0.192 J	0.192 J	0.201 J	0.363 J	0.117 J	2.43	0.728	0.886	ND	0.175 J	0.342 J	0.121 J	0.342 J	0.528
Cadmium	2.5	4.3	9.3	60	3.24	0.482 J	1.93	0.577 J	0.586 J	1.12	0.191 J	0.244 J	0.466 J	0.728 J	1.04	1.97	1.06	1.11	0.559 J	0.782 J
Calcium	NV	NV	NV	NV	15,400	45,500	17,600	12,100	13,900	27,800	53,100	105,000	40,400	70,200	41,100	24,100	58,000	94,100	1,110	54,600
Chromium, total	30	180	1,500	6,800	45.5	10.5	31.5	11.6	11.5	15.8	5.64	6.5	8.52	6.5	11.8	8.33	13.7	79.8	6.36	16.7
Cobalt	NV	NV	NV	NV	11.4	2.5	7.57	2.8	2.95	5.02	1.88 J	1.72 J	3.99	2.69	3.13	3.3	7.87	3.45	4.12	3.16
Copper	50	270	270	10,000	54.5	16.7	19.2	15,1	16.5	18.3	2.62	12.5	12.6	9.99	5.74	30.6	17	26.1	10.1	19.4
Iron	NV	NV	NV	NV	148,000	13,400	132,000	17,600	18,400	40,800	7,220	7,400	23,000	11,700	19,700	20,800	18,800	14,300	14,800	13,700
Lead	63	400	1,000	3,900	1,570	49.6	23.3	136	150	86.7	13.4	15.1	33.3	44.5	25.6	218	12.9	129	25.2	63.8
Magnesium	NV	NV	NV	NV	861	3,060	1,780	2,210	2,860	2,900	5,460	12,700	4,580	6,680	3,760	4,780	12,300	7,980	689	4,610
Manganese	1,600	2,000	10,000	10,000	1,660	183	964	326	301	998	166	1,610	854	1,130	673	252	472	4,420	218	596
Mercury (total)	0.18	0.81	2.8	5.7	0.11	0.02 J	ND	0.03 J	0.04 J	0.06 J	ND	ND	0.02 J	0.06 J	ND	0.17	ND	0.05 J	0.03 J	0.1
Nickel	30	310	310	10,000	22.4	8.42	11.2	6.31	7.07	10.9	2.9	2.73	8.1	5.08	5.06	9.47	18.2	9.21	10.7	9.59
Potassium	NV	NV	NV	NV	206 J	393	217 J	263	323	638	315	998	476	843	572	446	1,260	930	372	534
Selenium	3.9	180	1,500	6,800	0.499 J	0.348 J	0.265 J	0.257 J	0.284 J	0.692 J	ND	1.82	0.821 J	1.6 J	1.09 J	2.48	ND	2.82	ND	ND
Silver	2	180	1,500	6,800	0.611 J	ND	0.283 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.13	ND	ND
Sodium	NV	NV	NV	NV	229	78.2 J	170 J	111 J	139 J	179	113 J	537	163 J	436	193	174 J	185 J	557	44.6 J	361
Thallium	NV	NV	NV	NV	2.69	ND	1.46 J	ND	ND	0.952 J	ND	1.52 J	0.77 J	ND	ND	ND	ND	2.82	ND	ND
Vanadium	NV	NV	NV	NV	81.9	20.4	53.8	13.7	17.4	26.2	13.9	7.19	17	9.75	22.8	9.67	19.3	40.5	8.94	13.9
Zinc	109	10,000	10,000	10,000	76.2	90.1	10.5	650	840	391	35.6	27.7	38.9	40.8	22.3	239	50.3	71.4	53.5	124

Notes:

1. Analytical testing performed by Alpha Analytical. Compounds detected in one or more samples are presented in this table. Refer to Appendix for the full analytical report.
2. ug/kg = parts per billion; mg/kg = parts per million.
3. ND = not detected; NT = not tested; NV = no value.
4. Analytical results compared to NYSDEC Part 375-6; Remedial Program Soil Cleanup Objectives, Table 375-(a) Unrestricted Use Soil Cleanup Objective; and Table 375-6.8(b): Restricted Use Soil Cleanup Objectives.
5. * = Concentration of analyte exceeded range of the calibration curve, which required a re-analysis at a higher dilution factor.
6. E = Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
7. J = Estimated value. The target analyte is below the reporting limit (RL), but above the method dectection limit (MDL).
8. P = The RPD between the results for the two columns exceeds the method-specified criteria.
9. Shading indicates:
   - (grey) exceeds UUSCO - Unrestriced Use Soil Cleanup Objective
   - (yellow) exceeds RRUSCO - Restricted Residential Use Soil Cleanup Objective
   - (blue) exceeds CUSCO - Commercial Use Soil Cleanup Objective
   - (pink) exceeds IUSCO - Industrial Use Soil Cleanup Objective

Table 5 - Metals
Subsurface Soil Analytical Testing Results
1801 Elmwood Avenue, Buffalo, NY

Parameter	UUSCO	RRUSCO	CUSCO	IUSCO	SB125 (1.5-4')	SB126 (4-8')	SB129/MW-8 (9-12')	SB131 (2-6')	SB132 (8-12')	SB133 (4-6')	SB135 (0.5-2')	SB137 (4-8')	SB137 (4-8') Duplicate	SB140 (8-12')	SB142 (4-8')	SB150 (10-14')	SB153 (0.5-4')	SB155 (1-3')	SB156 (4.5-8')
Alpha Job Number					L1738450	L1738450	L1739051	L1739051	L1739051	L1739051	L1739051	L1739051	L1739051	L1739051	L1739051	L1740559	L1740559	L1740559	L1740559
Sampling Date					10/24/17	10/24/17	10/26/17	10/26/17	10/26/17	10/27/17	10/27/17	10/27/17	10/27/17	10/30/17	10/30/17	11/04/17	11/04/17	11/04/17	11/04/17
Metals Analysis (mg/kg)																			
Aluminum	NV	NV	NV	NV	4,120	3,920	10,800	2,760	9,160	22,000	4,840	12,600	11,900	17,400	4,920	3,930	10,800	5,440	15,700
Antimony	NV	NV	NV	NV	0.756 J	ND	ND	1.56 J	ND	1.21 J	1.26 J	ND	0.685 J	ND	ND	0.662 J	ND	ND	ND
Arsenic	13	16	16	16	10.3	3.92	1.8	23.4	3.23	4	12	6.02	2.67	6.27	4.2	3.11	7.13	5.98	5.1
Barium	350	400	400	10,000	35.2	29.9	49.8	18.6	82.5	159	50.9	108	65.9	79.2	21.7	14.2	64.4	53.3	142
Beryllium	7.2	72	590	2,700	0.325 J	0.48	0.545	0.158 J	0.491	1.15	0.413 J	0.582	0.621	0.638	0.232 J	0.115 J	0.492	0.341 J	0.755
Cadmium	2.5	4.3	9.3	60	1.34	0.6 J	0.572 J	1.89	0.621 J	0.467 J	0.636 J	0.508 J	0.502 J	2.19	0.667 J	0.125 J	0.634 J	0.884 J	0.537 J
Calcium	NV	NV	NV	NV	31,000	43,500	43,400	9,100	49,100	75,400	16,800	57,900	45,000	14,600	11,400	38,000	13,800	34,500	29,100
Chromium, total	30	180	1,500	6,800	16.4	6.22	19	23.3	15.3	22.9	11.8	21.1	19.3	23.4	5.81	333	15.8	6	21.5
Cobalt	NV	NV	NV	NV	5.15	2.19	8.5	11	8.09	5.32	4,25	11.1	9.85	9.6	3.27	2.02	6.56	2.45	10.2
Copper	50	270	270	10,000	17.8	11.1	13.6	32.1	16.4	15.9	25,2	23.4	18.8	14.5	6.6	2.88	85.5	12	21.1
Iron	NV	NV	NV	NV	42,600	7,590	18,600	66,100	18,400	25,400	26,900	25,600	23,600	36,900	11,900	6,750	28,200	15,700	28,000
Lead	63	400	1,000	3,900	16.6	19.8	9.63	28.2	9.04	35	61	11.3	9.65	15.2	30.2	15.8	30.8	68.8	10.4
Magnesium	NV	NV	NV	NV	1,900	4,590	14,300	1,190	12,800	1,820	2,080	16,300	13,500	2,460	1,820	4,890	3,820	3,800	12,300
Manganese	1,600	2,000	10,000	10,000	1,230	170	396	882	369	4,500	457	518	442	2,260	180	150	858	275	396
Mercury (total)	0.18	0.81	2.8	5.7	0.05 J	0.06 J	0.03 J	0.07	0.02 J	0.06 J	0.06 J	0.02 J	0.03 J	0.06 J	0.02 J	0.02 J	0.05 J	0.03 J	0.04 J
Nickel	30	310	310	10,000	10.4	5.74	22	18.8	19.8	5.74	9.29	25.4	23.7	19.2	5.75	3.95	14.2	5.66	26
Potassium	NV	NV	NV	NV	377	398	1,510	351	1,170	2,810	882	1,840	1,630	1,380	619	318	1,150	580	1,720
Selenium	3.9	180	1,500	6,800	ND	ND	ND	ND	ND	2.08	1.18 J	0.526 J	0.722 J	ND	ND	ND	ND	ND	ND
Silver	2	180	1,500	6,800	0.281 J	ND	ND	ND	ND	1.12	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	NV	NV	NV	NV	288	308	231	240	153 J	1,060	228	194	167 J	273	182 J	270	148 J	149 J	228
Thallium	NV	NV	NV	NV	0.484 J	ND	ND	0.667 J	ND	2.92	0.439 J	ND	ND	1.05 J	ND	ND	ND	ND	ND
Vanadium	NV	NV	NV	NV	43.3	10.8	20.1	62.2	20.8	44.1	15.9	27.9	24.5	41.8	14.1	6.63	22.8	11.8	28.6
Zinc	109	10,000	10,000	10,000	55	194	61.6	24.4	54.7	21.8	75.1	71.7	60	146	14.9	14.4	65.4	31.3	57.6

Notes:

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3. ND = not detected; NT = not tested; NV = no value.
4. Analytical results compared to NYSDEC Part 375-6; Remedial Program Soil Cleanup Objectives, Table 375-(a) Unrestricted Use Soil Cleanup Objective; and Table 375-6.8(b): Restricted Use Soil Cleanup Objectives.
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7. J = Estimated value. The target analyte is below the reporting limit (RL), but above the method dectection limit (MDL).
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   - exceeds CUSCO - Commercial Use Soil Cleanup Objective
   - exceeds IUSCO - Industrial Use Soil Cleanup Objective

Table 5 - Metals
Subsurface Soil Analytical Testing Results
1801 Elmwood Avenue, Buffalo, NY

Parameter	UUSCO	RRUSCO	CUSCO	IUSCO	TP101 (2.5-5')	TP101 (2.5-5') Duplicate	TP102 (1-4.5')	TP102 (4.5-6')	TP103 (1-2.5')	TP103 (2.5-4')	TP104 (2-5')	TP104 (5-6.5')	TP105 (0-2.5')	TP106 (2-4')	TP107 (6-10')	TP108 (4-5.5')	TP109 (3-6')	TP110 (17-19')	TP111 (5-8')	TP112 (3-6')
Alpha Job Number					L1742080	L1742080	L1742080	L1742080	L1742080	L1742080	L1742080	L1742080	L1742080	L1742080	L1742080	L1742080	L1742080	L1742080	L1742080	L1742080
Sampling Date					11/15/17	11/15/17	11/15/17	11/15/17	11/15/17	11/15/17	11/15/17	11/15/17	11/15/17	11/15/17	11/16/17	11/16/17	11/16/17	11/16/17	11/16/17	11/16/17
Metals Analysis (mg/kg)																				
Aluminum	NV	NV	NV	NV	12,600	9,830	8,170	17,500	11,700	3,080	2,230	21,400	7,170	8,870	12,100	5,370	21,800	5,430	5,480	4500
Antimony	NV	NV	NV	NV	ND	ND	ND	ND	3.82 J	ND	ND	ND	ND	ND	ND	6.26	ND	ND	ND	ND
Arsenic	13	16	16	16	9.96	8.52	14.7	7.09	9.58	7.96	109	8.38	6.8	18.6	5.12	46.4	5.04	8.59	7.13	5.78
Barium	350	400	400	10,000	74.7	93.1	71.5	139	147	30.8	154	116	46.6	102	110	187	210	28.6	35.8	32.1
Beryllium	7.2	72	590	2,700	0.63	0.590	0.788	0.872	0.595	0.146 J	0.327 J	1.09	0.295	0.436	0.562	0.35 J	3.3	0.185 J	1.81 J	0.204 J
Cadmium	2.5	4.3	9.3	60	0.562 J	0.686 J	0.942 J	0.386 J	0.623 J	0.501 J	0.757 J	0.408 J	0.599 J	1.74	0.356 J	4.28	1.8 J	0.339 J	0.552 J	0.204 J
Calcium	NV	NV	NV	NV	44,000	36,100	30,100	3,210	49,300	7,260	8,050	2,340	10,000	17,800	53,000	12,500	200,000	40,800	22,700	14900
Chromium, total	30	180	1,500	6,800	21.4	19.8	22.3	24.7	20.5	12.2	11.4	28.8	9.3	23.5	19.7	67.5	11.3	12	17.3	10.9
Cobalt	NV	NV	NV	NV	10	9.73	9.07	10.6	11.7	8.97	4.91	16.9	5.02	9.75	10.9	18.8	1.39 J	3.92	5.27	3.44
Copper	50	270	270	10,000	27.6	43.7	63.7	22.7	50.2	24.3	33.1	23.9	21.7	62.4	21.1	314	8.2	18.7	13.4	17.2
Iron	NV	NV	NV	NV	35,800	31,900	48,600	30,200	28,500	43,600	43,100	32,900	19,200	79,700	22,800	315,000	10,800	19,500	32,300	14200
Lead	63	400	1,000	3,900	77.8	130	120	18.8	3,310	38.4	150	15.1	69.8	65.3	9.94	564	25.3	70.3	61.5	46
Magnesium	NV	NV	NV	NV	9,520	6,510	3,500	5,900	10,300	2,240	1,400	5,570	1,050	2,240	15,800	1,430	14,000	5,210	2,960	2660
Manganese	1,600	2,000	10,000	10,000	544	1,530	470	300	602	963	84.4	326	470	1620	500	2,750	2,090	419	1,460	250
Mercury (total)	0.18	0.81	2.8	5.7	0.22	0.18	0.39	0.04 J	0.17	0.12	0.45	0.05 J	0.1	0.08	ND	0.63	0.11	ND	0.04 J	ND
Nickel	30	310	310	10,000	23.2	18.4	19.7	26.6	22.3	12.8	14.3	31.8	12.3	22.1	24.8	94.1	3.66	7.17	9.26	7.15
Potassium	NV	NV	NV	NV	1,740	1,300	1090	1,520	1,620	305	910	1520	872	1040	1640	530	896	831	699	571
Selenium	3.9	180	1,500	6,800	ND	ND	0.745 J	ND	ND	ND	5.64	ND	0.765 J	ND	ND	1.53 J	ND	0.914 J	ND	ND
Silver	2	180	1,500	6,800	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.252 j	ND	0.944	ND	ND	ND	ND
Sodium	NV	NV	NV	NV	151 J	171 J	253	97.7 J	198	119 J	569	73.6 J	144 J	190	300	120 J	635	167 J	181	122 J
Thallium	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND	1.12 J	ND	ND	ND	ND	1.89	ND	ND	ND	ND
Vanadium	NV	NV	NV	NV	28.2	32.0	47.9	33.6	26.7	27.6	24	37.4	16.9	38.7	35.2	71.4	5.89	24.1	32	10.7
Zinc	109	10,000	10,000	10,000	75.5	81.5	184	68.5	201	29.8	102	91	320	206	66.4	556	32.5	83.7	185	27.5

Notes:

1. Analytical testing performed by Alpha Analytical. Compounds detected in one or more samples are presented in this table. Refer to Appendix for the full analytical report.
2. ug/kg = parts per billion; mg/kg = parts per million.
3. ND = not detected; NT = not tested; NV = no value.
4. Analytical results compared to NYSDEC Part 375-6; Remedial Program Soil Cleanup Objectives, Table 375-(a) Unrestricted Use Soil Cleanup Objective; and Table 375-6.8(b): Restricted Use Soil Cleanup Objectives.
5. * = Concentration of analyte exceeded range of the calibration curve, which required a re-analysis at a higher dilution factor.
6. E = Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
7. J = Estimated value. The target analyte is below the reporting limit (RL), but above the method dectection limit (MDL).
8. P = The RPD between the results for the two columns exceeds the method-specified criteria.
9. Shading indicates:
   - (grey) exceeds UUSCO - Unrestriced Use Soil Cleanup Objective
   - (yellow) exceeds RRUSCO - Restricted Residential Use Soil Cleanup Objective
   - (blue) exceeds CUSCO - Commercial Use Soil Cleanup Objective
   - (pink) exceeds IUSCO - Industrial Use Soil Cleanup Objective

Table 5 - Metals
Subsurface Soil Analytical Testing Results
1801 Elmwood Avenue, Buffalo, NY

Parameter	UUSCO	RRUSCO	CUSCO	IUSCO	SB158 (0.5-3.5')	SB159 (0.5-3.5')	SB160 (0.5-3.5')	SB160 (0.5-3.5') Duplicate	SB161 (0.5-3.5')	SB162 (2-5')	SB163 (2-5')	SB164 (2-5')	SB165 (2-5')	SB166 (4-5.5')	SB167 (3-4')	SB168 (4-5.5')	SB169 (4-5.5')	SB170 (0.5-4')	SB171 (0-3')
Alpha Job Number					L1803664	L1803664	L1803664	L1803664	L1803664	L1803664	L1803664	L1803664	L1803664	L1803664	L1803664	L1803664	L1803664	L1803664	L1803664
Sampling Date					02/01/18	02/01/18	02/01/18	02/01/18	02/01/18	02/01/18	02/01/18	02/01/18	02/01/18	02/01/18	02/01/18	02/01/18	02/01/18	02/01/18	02/01/18
Metals Analysis (mg/kg)																			
Aluminum	NV	NV	NV	NV	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	8,100	5,340
Antimony	NV	NV	NV	NV	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND	ND
Arsenic	13	16	16	16	2.88	12.8	16.5	27.6	33.2	23.0	31.3	16.5	12.4	10.6	10.1	41.4	43.7	3.2	0.531 J
Barium	350	400	400	10,000	13.8	26.2	59.2	74.2	27.3	46.8	81.3	83.7	148	85.6	103	69.7	63.9	49.1	41
Beryllium	7.2	72	590	2,700	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.671	0.911
Cadmium	2.5	4.3	9.3	60	0.326 J	3.35	4.51	6.99	8.06	0.390 J	3.55	0.957	1.11	2.01	3.16	9.16	10.2	ND	ND
Calcium	NV	NV	NV	NV	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	51,900	191,000
Chromium, total	30	180	1,500	6,800	3.65	14.5	16.6	33.6	40.6	4.06	16.3	11.8	10.0	15.9	18.3	70.5	36.8	9.14	7.36
Cobalt	NV	NV	NV	NV	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	3.87	1.11 J
Copper	50	270	270	10,000	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	10.5	12
Iron	NV	NV	NV	NV	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	19,000	4,010
Lead	63	400	1,000	3,900	38.0	614	251	186	717	24.7	224	99.1	103	150	254	227	217	10.3	6.97
Magnesium	NV	NV	NV	NV	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	5,440	10,800
Manganese	1,600	2,000	10,000	10,000	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	800	566
Mercury (total)	0.18	0.81	2.8	5.7	ND	0.12	0.46	0.95	0.05 J	0.03 J	0.20	0.21	0.17	0.63	0.15	0.74	0.20	0.02 J	ND
Nickel	30	310	310	10,000	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	5.96	4.32
Potassium	NV	NV	NV	NV	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	656	369
Selenium	3.9	180	1,500	6,800	ND	ND	0.647 J	0.667 J	0.125 J	1.41	2.72	1.32	0.740 J	0.620 J	0.718 J	2.74	3.22	1.22 J	0.944 J
Silver	2	180	1,500	6,800	ND	ND	0.203 J	0.303 J	0.293 J	ND	ND	ND	ND	ND	0.196 J	0.620	0.592	ND	ND
Sodium	NV	NV	NV	NV	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	330	235
Thallium	NV	NV	NV	NV	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	ND	ND
Vanadium	NV	NV	NV	NV	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	18.2	6.00
Zinc	109	10,000	10,000	10,000	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	15.5	31.8

Notes:
1. Analytical testing performed by Alpha Analytical. Compounds detected in one or more samples are presented in this table. Refer to Appendix for the full analytical report.
2. ug/kg = parts per billion; mg/kg = parts per million.
3. ND = not detected; NT = not tested; NV = no value.
4. Analytical results compared to NYSDEC Part 375-6; Remedial Program Soil Cleanup Objectives, Table 375-(a) Unrestricted Use Soil Cleanup Objective; and Table 375-6.8(b): Restricted Use Soil Cleanup Objectives.
5. * = Concentration of analyte exceeded range of the calibration curve, which required a re-analysis at a higher dilution factor.
6. E = Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
7. J = Estimated value. The target analyte is below the reporting limit (RL), but above the method dectection limit (MDL).
8. P = The RPD between the results for the two columns exceeds the method-specified criteria.
9. Shading indicates:
   - (grey) exceeds UUSCO - Unrestriced Use Soil Cleanup Objective
   - (yellow) exceeds RRUSCO - Restricted Residential Use Soil Cleanup Objective
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   - (pink) exceeds IUSCO - Industrial Use Soil Cleanup Objective

Table 6 - PCBs, Pesticides and Herbicides
Subsurface Soil Analytical Testing Results
1801 Elmwood Avenue, Buffalo, NY

Parameter	UUSCO	RRUSCO	CUSCO	IUSCO	SB105 (2-6')	SB105 (2-6') Duplicate	SB107 (0-4')	SB110 (1-4')	SB116/MW-3 (0.5-2')	SB120 (0.5-3')	SB121/MW-5 (0-4')	SB126 (4-8')	SB135 (0.5-2')	SB137 (4-8')	SB137 (4-8') Duplicate	SB150 (10-14')	TP101 (2.5-5')	TP101 (2.5-5') Duplicate	TP104 (2-5')	TP107 (6-10')	TP112 (3-6')	SB171 (0-3')
Alpha Job Number					L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1738450	L1739051	L1739051	L1739051	L1740559	L1742080	L1742080	L1742080	L1742080	L1742080	L1803664
Sampling Date					10/23/17	10/23/17	10/23/17	10/23/17	10/24/17	10/24/17	10/24/17	10/24/17	10/27/17	10/27/17	10/27/17	11/04/17	11/15/17	11/15/17	11/15/17	11/16/17	11/16/17	02/01/18
PCB Analysis (ug/kg)																						
Aroclor 1254	100	1,000	1,000	25,000	ND	ND	ND	ND	413	ND	ND	ND	ND	ND	ND	16.6 J	ND	ND	ND	ND	ND	7.13 J
Aroclor 1260	100	1,000	1,000	25,000	4.46 J	3.95 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1268	100	1,000	1,000	25,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT
PCBs, total	100	1,000	1,000	25,000	4.46	3.95	ND	ND	413	ND	ND	ND	ND	ND	ND	16.6	ND	ND	ND	ND	ND	7.13 J
Pesticides Analysis (ug/kg)																						
4,4'-DDD	3.3	13,000	92,000	180,000	0.869 J	ND	NT	ND	NT	NT	NT	ND	NT	ND	ND	ND	NT	NT	NT	NT	NT	NT
4,4'-DDE	3.3	8,900	62,000	120,000	0.727 JPI	0.934 JPI	NT	ND	NT	NT	NT	ND	NT	ND	ND	ND	NT	NT	NT	NT	NT	NT
4,4'-DDT	3.3	7,900	47,000	94,000	ND	ND	NT	ND	NT	NT	NT	ND	NT	ND	ND	ND	NT	NT	NT	NT	NT	NT
cis-Chlordane	NV	NV	NV	NV	ND	ND	NT	ND	NT	NT	NT	ND	NT	ND	ND	ND	NT	NT	NT	NT	NT	NT
Dieldrin	5	200	1,400	2,800	ND	ND	NT	ND	NT	NT	NT	ND	NT	ND	ND	ND	NT	NT	NT	NT	NT	NT
Heptachlor epoxide	NV	NV	NV	NV	ND	ND	NT	ND	NT	NT	NT	ND	NT	ND	ND	ND	NT	NT	NT	NT	NT	NT
Herbicides Analysis (ug/kg)																						
	NV	NV	NV	NV	ND	ND	NT	ND	NT	NT	NT	ND	NT	ND	ND	ND	NT	NT	NT	NT	NT	NT

Notes:

1. Analytical testing performed by Alpha Analytical. Compounds detected in one or more samples are presented in this table. Refer to Appendix for the full analytical report.
2. ug/kg = parts per billion; mg/kg = parts per million.
3. ND = not detected; NT = not tested; NV = no value.
4. Analytical results compared to NYSDEC Part 375-6; Remedial Program Soil Cleanup Objectives, Table 375-(a) Unrestricted Use Soil Cleanup Objective; and Table 375-6.8(b): Restricted Use Soil Cleanup Objectives.
5. * = Concentration of analyte exceeded range of the calibration curve, which required a re-analysis at a higher dilution factor.
6. E = Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
7. J = Estimated value. The target analyte is below the reporting limit (RL), but above the method dectection limit (MDL).
8. P = The RPD between the results for the two columns exceeds the method-specified criteria.
9. Shading indicates:
   - exceeds UUSCO - Unrestriced Use Soil Cleanup Objective
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   - exceeds CUSCO - Commercial Use Soil Cleanup Objective
   - exceeds IUSCO - Industrial Use Soil Cleanup Objective

Table 7
Groundwater Sampling Results
1801 Elmwood Avenue, Buffalo, NY

		Sampling - November 2017										Sampling - February 2018					
Parameter	**GA**	SB103/MW-1	MW-1	SB113/MW-2	SB116/MW-3	SB116/MW-3 Duplicate	MW-4	SB121/MW-5	MW-6	MW-7	MW-10	SB116/MW-3 (020518)	SB116/MW-3 (020518) Duplicate	SB113/MW-2 (020518)	SB172/MW-11	SB173/MW-12	SB175/MW-13
Alpha Job Number		L1743342	L1743342	L1743342	L1743342	L1743342	L1743342	L1743342	L1743342	L1743342	L1743342	L1804088	L1804088	L1804088	L1804088	L1804088	L1804088
Volatiles 8260C Analysis (ug/L)																	
1,1-Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.0
2-Hexanone	50	ND	ND	ND	ND	ND	ND	1.1 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	50	3.2 J	ND	5.5	ND	ND	ND	7.7	2.4 J	ND	17	ND	ND	ND	9.4	2.2 J	ND
Benzene	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.16 J	ND	ND
Carbon disulfide	NV	ND	ND	ND	ND	ND	ND	ND	1.3 J	ND	ND	ND	ND	ND	1.1 J	ND	ND
cis-1,2-Dichloroethene	5	ND	ND	17	77	78	ND	ND	ND	ND	ND	80	13	12	3.1	ND	180
Methyl cyclohexane	NV	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.2 J
Methyl ethyl ketone (2-Butanone)	50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.3 J	ND	ND
trans-1,2-Dichloroethene	5	ND	ND	ND	14	14	ND	ND	ND	ND	ND	14	14	ND	2.9	ND	4.1
Trichloroethene	5	ND	1.5	0.39 J	280	280	ND	ND	ND	ND	ND	280	290	0.77	40	0.44 J	160
Vinyl chloride	2	ND	1	41	8.3	8.3	ND	ND	ND	ND	ND	13	13	18	5.6	ND	25
Semivolatile 8270D Analysis (ug/L)																	
2-Methylnaphthalene	NV	0.1 J	ND	0.1	ND	ND	ND	0.06 J	0.12	ND	0.15	NT	NT	NT	NT	NT	NT
Acenaphthene	20	0.05 J	ND	ND	ND	0.04 J	ND	0.07 J	0.19	ND	0.18	NT	NT	NT	NT	NT	NT
Acenapthylene	NV	ND	ND	ND	ND	ND	ND	ND	0.06 J	ND	0.13	NT	NT	NT	NT	NT	NT
Anthracene	50	0.04 J	0.04 J	ND	ND	0.05 J	ND	ND	0.1 J	ND	0.17	NT	NT	NT	NT	NT	NT
Benz(a)anthracene	0.002	0.26	0.06 J	0.02 J	0.06 J	0.15	0.06 J	ND	0.56	ND	0.67	NT	NT	NT	NT	NT	NT
Benzo(a)pyrene	ND	0.32	0.04 J	ND	0.05 J	0.14	0.06 J	ND	0.98	ND	0.73	NT	NT	NT	NT	NT	NT
Benzo(b)fluoranthene	0.002	0.74	0.05 J	ND	0.08 J	0.26	0.15	ND	2	ND	1.3	NT	NT	NT	NT	NT	NT
Benzo(k)fluoranthene	0.002	0.25	ND	ND	ND	0.09 J	0.06 J	ND	0.65	ND	0.43	NT	NT	NT	NT	NT	NT
Benzo(g,h,i)perylene	NV	0.48	ND	ND	0.06 J	0.15	0.09 J	ND	1.3	ND	0.78	NT	NT	NT	NT	NT	NT
Bis(2-ethylhexyl)phthalate	5	1.2 J	ND	ND	ND	ND	ND	ND	4.4	ND	1.9 J	NT	NT	NT	NT	NT	NT
Chrysene	0.002	0.44	0.05 J	ND	0.06 J	0.16	0.1 J	ND	1.2	ND	0.77	NT	NT	NT	NT	NT	NT
Dibenz(a,h)anthracene	NV	0.08 J	ND	ND	ND	ND	ND	ND	0.23	ND	0.19	NT	NT	NT	NT	NT	NT
Fluoranthene	50	0.81	0.12	ND	0.11	0.3	0.16	ND	2.5	ND	1.3	NT	NT	NT	NT	NT	NT
Fluorene	50	0.08 J	ND	0.1	0.05 J	0.09 J	ND	0.07 J	0.15	ND	0.3	NT	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	0.002	0.5	ND	ND	0.06 J	0.15	0.1 J	ND	1.4	ND	0.83	NT	NT	NT	NT	NT	NT
Naphthalene	10	0.1	0.05 J	ND	ND	0.05 J	ND	0.04 J	0.08 J	ND	0.2	NT	NT	NT	NT	NT	NT
Phenanthrene	50	0.41	0.17	0.26	0.08 J	0.2	0.07 J	ND	0.95	0.02 J	0.56	NT	NT	NT	NT	NT	NT
Pyrene	50	0.62	0.1	ND	0.11	0.29	0.13	ND	1.9	ND	1.2	NT	NT	NT	NT	NT	NT
Metals Analysis (ug/L)																	
Aluminum	2,000	1350	359	87.8	49.3	49.4	1730	4040	52200	519	2180	NT	NT	NT	NT	NT	NT
Antimony	3	ND	ND	1.83 J	1.43 J	1.4 J	0.73 J	ND	0.69 J	ND	0.46 J	NT	NT	NT	NT	NT	NT
Arsenic	25	3.81	3.47	2.56	3.6	3.67	2.76	2.13	31.84	1.02	5.79	NT	NT	NT	NT	NT	NT
Barium	1,000	39.97	58.57	62.39	52.99	54.4	124.4	24.84	870.5	18.61	123.8	NT	NT	NT	NT	NT	NT
Beryllium	3	ND	ND	ND	ND	ND	0.22 J	0.74	4.5	ND	0.24 J	NT	NT	NT	NT	NT	NT
Cadmium	5	ND	ND	ND	ND	ND	0.08 J	3.89	3.39	ND	0.23	NT	NT	NT	NT	NT	NT
Calcium	NV	122000	126000	116000	139000	141000	93700	575000	689000	117000	206000	NT	NT	NT	NT	NT	NT
Chromium	50	2.86	0.45 J	0.29 J	0.38 J	35.97	3.09	1.11	134.1	1.32	4.08	NT	NT	NT	NT	NT	NT
Cobalt	NV	3.29	ND	ND	0.54	0.82	2.52	169.2	76.86	0.44 J	3.85	NT	NT	NT	NT	NT	NT
Copper	200	3.76	0.52 J	1 U	ND	1.85	5.21	34.83	172	0.78 J	9.17	NT	NT	NT	NT	NT	NT
Iron	300	2980	11000	7840	515	687	2100	171	93100	668	3330	NT	NT	NT	NT	NT	NT
Lead	25	8.44	2.98	0.46 J	1 U	1 U	2.81	0.41 J	604.3	2	13.15	NT	NT	NT	NT	NT	NT
Magnesium	35,000	265000	26200	25700	19200	20000	58400	144000	220000	18500	88700	NT	NT	NT	NT	NT	NT
Manganese	300	345.7	278.9	587.6	278.8	276.9	332.5	11330	7566	27.35	1778	NT	NT	NT	NT	NT	NT
Mercury (total)	0.7	0.13 J	0.12 J	0.13 J	0.12 J	0.13 J	0.14 J	0.12 J	2.91	0.14 J	0.15 J	NT	NT	NT	NT	NT	NT
Nickel	100	7.29	1.05 J	2 U	1.36 J	9.84	7.32	444	136.2	0.8 J	9.47	NT	NT	NT	NT	NT	NT
Potassium	NV	9220	6530	7090	6140	6210	5670	6440	15500	9380	5320	NT	NT	NT	NT	NT	NT
Selenium	10	ND	ND	ND	2.1 J	2.32 J	1.91 J	5.11	27	1.8 J	1.85 J	NT	NT	NT	NT	NT	NT
Silver	50	ND	ND	ND	ND	ND	ND	ND	0.75	ND	ND	NT	NT	NT	NT	NT	NT
Sodium	20,000	126000	18400	39000	17300	17100	92800	75800	65700	128000	60500	NT	NT	NT	NT	NT	NT
Thallium	0.5	ND	ND	ND	ND	ND	ND	ND	0.67	ND	ND	NT	NT	NT	NT	NT	NT
Vanadium	NV	5.06	ND	ND	1.73 J	2.08 J	4.68 J	ND	114	2.4 J	8.63	NT	NT	NT	NT	NT	NT
Zinc	2,000	14.02	ND	ND	3.65 J	3.83 J	15.85	426.7	732.5	ND	36.08	NT	NT	NT	NT	NT	NT

Table 7
Groundwater Sampling Results
1801 Elmwood Avenue, Buffalo, NY

		Sampling - November 2017										Sampling - February 2018					
Parameter	**GA**	SB103/MW-1	MW-1	SB113/MW-2	SB116/MW-3	SB116/MW-3 Duplicate	MW-4	SB121/MW-5	MW-6	MW-7	MW-10	SB116/MW-3 (020518)	SB116/MW-3 (020518) Duplicate	SB113/MW-2 (020518)	SB172/MW-11	SB173/MW-12	SB175/MW-13
Dissolved Metals Analysis (ug/L)																	
Aluminum	2,000	17.8	3.6 J	ND	7.06 J	6.72 J	47.4	1960	96.1	17.7	26.9	NT	NT	NT	NT	NT	NT
Antimony	3	0.95 J	ND	1.79 J	1.79 J	1.74 J	0.84 J	0.48 J	1.17 J	0.46 J	0.8 J	NT	NT	NT	NT	NT	NT
Arsenic	25	1.91	0.47 J	0.62	1.78	1.73	1.45	1.68	2.39	0.87	1.91	NT	NT	NT	NT	NT	NT
Barium	1,000	31.86	45.61	49.13	52.62	53.06	68.86	24.75	59.52	15.6	31.42	NT	NT	NT	NT	NT	NT
Beryllium	3	ND	ND	ND	ND	ND	ND	0.62	ND	ND	ND	NT	NT	NT	NT	NT	NT
Cadmium	5	ND	ND	ND	ND	ND	ND	3.73	ND	ND	0.08 J	NT	NT	NT	NT	NT	NT
Calcium	NV	113000	124000	118000	146000	143000	92000	592000	152000	114000	195000	NT	NT	NT	NT	NT	NT
Chromium	50	0.44 J	ND	ND	ND	ND	1.07	0.51 J	0.51 J	0.65 J	0.53 J	NT	NT	NT	NT	NT	NT
Cobalt	NV	2.19	ND	ND	0.55	0.61	1.36	163.4	2.54	ND	2.35	NT	NT	NT	NT	NT	NT
Copper	200	0.98 J	ND	ND	ND	ND	3.21	24.01	2.61	ND	3.1	NT	NT	NT	NT	NT	NT
Iron	300	47.7 J	ND	ND	ND	ND	105	ND	131	ND	42.6 J	NT	NT	NT	NT	NT	NT
Lead	25	ND	ND	ND	ND	ND	ND	ND	0.43 J	ND	ND	NT	NT	NT	NT	NT	NT
Magnesium	35,000	273000	25300	26400	20000	20200	58200	140000	129000	18000	86200	NT	NT	NT	NT	NT	NT
Manganese	300	310.5	244	592.6	276.2	267.2	301.2	11610	1695	9.37	1647	NT	NT	NT	NT	NT	NT
Mercury (total)	0.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT
Nickel	100	5.08	ND	ND	1.15 J	0.99 J	4.16	410.9	4.79	ND	4.32	NT	NT	NT	NT	NT	NT
Potassium	NV	9430	6600	7570	6380	6430	5580	6280	8770	9480	5020	NT	NT	NT	NT	NT	NT
Selenium	10	ND	ND	ND	1.91 J	2.2 J	ND	3.65 J	ND	ND	ND	NT	NT	NT	NT	NT	NT
Silver	50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT
Sodium	20,000	128000	17000	37600	16200	16400	86800	69800	67800	123000	56400	NT	NT	NT	NT	NT	NT
Thallium	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT
Vanadium	NV	2.01 J	5 U	5 U	5 U	5 U	2.48 J	5 U	2.1 J	5 U	3.12 J	NT	NT	NT	NT	NT	NT
Zinc	2,000	ND	ND	ND	ND	ND	ND	404.4	ND	ND	ND	NT	NT	NT	NT	NT	NT
PCB Analysis (ug/L)																	
PCBs, total	0.09	ND	NT	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Pesticides Analysis (ug/L)																	
trans-Chlordane	0.05	ND	NT	0.017 J	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Heptachlor	0.04	ND	NT	0.008 J	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Lindane	NV	0.018 J	NT	ND	0.011 J	0.007 J	ND	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Herbicides Analysis (ug/kg)																	
Pesticides, total		ND	NT	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

Notes:
1. Analytical testing performed by Alpha Analytical. Compounds detected in one or more samples are presented in this table. Refer to Appendix for the full analytical report.
2. ug/L = parts per billion; mg/L = parts per million.
3. ND = not detected; NT = not tested; NV = no value.
4. Analytical results compared to NYSDEC Division of Water Technical and Operational Guidance Series (TOGS 1.1.1) Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
5. * = Concentration of analyte exceeded range of the calibration curve, which required a re-analysis at a higher dilution factor.
6. E = Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
7. J = Estimated value. The target analyte is below the reporting limit (RL), but above the method dectection limit (MDL).
8. P = The RPD between the results for the two columns exceeds the method-specified criteria.
9. Shading indicates: EC Class GA criteria

Table 8
Soil Vapor Intrusion Analytical Testing Results
1801 Elmwood Avenue, Buffalo, NY

	Guidance Values- Indoor Air		December 26, 2017 Sampling									April 5, 2018 Sampling								
Parameter	Table C2 Commercial Indoor Air Background (90%)	NYSDOH Air Guideline Value	SS-1 Sub-Slab	IA-1 Indoor Air	SS-2 Sub-Slab	IA-2 Indoor Air	SS-3 Sub-Slab	IA-3 Indoor Air	SS-4 Sub-Slab	IA-4 Indoor Air	OA-1 Outdoor Air	SS-5 Sub-Slab	IA-5 Indoor Air	SS-6 Sub-Slab	IA-6 Indoor Air	SS-7 Sub-Slab	IA-7 Indoor Air	SS-8 Sub-Slab	IA-8 Indoor Air	OA-2 Outdoor Air
1,1,1-Trichloroethane	20.6		ND	ND	ND	ND	1.34	ND	ND	ND	ND	ND	ND	ND	ND	26.6	ND	ND	ND	ND
1,2,4-Trimethylbenzene	9.5		2.84	34.2	8.31	16.0	4.92	2.15	ND	1.22	ND	ND	202	ND	212	7.67	76.2	ND	ND	ND
1,3,5-Trimethylbenzene	3.7		ND	9.34	5.56	4.28	1.23	ND	ND	ND	ND	ND	57	ND	66.9	ND	23.4	ND	ND	ND
1,3-Butadiene	<3.0		1.39	ND	ND	ND	2.39	ND	2.02	0.569	ND	ND	ND	ND	ND	1.93	ND	4.54	ND	ND
1,4-Dioxane	NV		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2,4-trimethylpentane	NV		ND	1.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	12		7.31	ND	9.41	ND	31.6	ND	4.75	ND	ND	ND	1.98	ND	2.52	14	1.69	ND	ND	ND
2-Hexanone	NV		ND	ND	3.00	ND	10.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-ethyltoluene	3.6		ND	8.06	3.91	3.34	1.47	ND	ND	ND	ND	ND	60	ND	68.8	3.31	23.4	ND	ND	ND
4-Methyl-2-pentanone	6.0		ND	ND	2.13	ND	3.62	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	98.9		67.5	98.6	216	79.3	622	15.1	41.6	3.90	4.23	ND	793	ND	701	8.91	219	ND	12.8	24.7
Benzene	9.4		15.7	ND	4.28	ND	8.95	ND	24.2	2.03	ND	ND	0.639	ND	ND	4.41	ND	28.3	ND	ND
Carbon disulfide	4.2		4.76	ND	ND	ND	0.850	ND	4.95	ND	ND	ND	ND	ND	ND	ND	ND	8.94	ND	ND
Carbon tetrachloride	<1.3		ND	0.403	ND	0.409	2.82	0.415	ND	0.403	0.403	ND	0.415	ND	0.44	ND	0.421	ND	0.421	0.44
Chloroform	1.1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	3.7		0.589	0.968	ND	0.940	ND	0.962	ND	0.948	0.973	ND	1.1	ND	1.07	ND	1.04	ND	0.917	1.09
cis-1,2-Dichloroethene	<1.9		ND	0.087	ND	ND	ND	ND	ND	ND	ND	ND	0.087	ND	0.107	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	NV		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyclohexane	NV		65.7	ND	4.30	ND	6.82	ND	90.5	ND	ND	ND	3.14	ND	4.27	14.9	1.51	1500	ND	ND
Dichlorodifluoromethane	16.5		2.72	2.41	2.09	2.30	2.21	2.42	1.71	2.42	2.37	ND	1.82	ND	1.79	ND	2.09	ND	2.15	2.13
Ethanol	210		12.6	ND	11.1	12.9	81.8	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	NT
Ethyl acetate	5.4		5.59	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl Alcohol	NV		NT	NT	NT	NT	NT	NT	NT	NT	NT	ND	125	ND	119	ND	60.3	ND	ND	ND
Ethylbenzene	5.7		4.18	13.4	59.5	7.47	5.82	ND	1.33	ND	ND	ND	18.5	ND	20.5	23.2	6.82	ND	ND	ND
Heptane	NV		68.8	13.9	7.09	8.57	11.9	ND	173	ND	ND	47.5	25.3	ND	31.4	12.5	9.06	1610	ND	ND
n-Hexane	NV		113	0.818	8.25	0.705	12.4	ND	185	1.05	ND	44.4	11	ND	14.1	16	4.3	1920	ND	ND
Isopropanol	NV		6.07	82.3	19.9	256	32.7	23.0	1.87	2.32	ND	NT	NT	NT	NT	NT	NT	NT	NT	NT
Iso-propyl Alcohol	NV		NT	NT	NT	NT	NT	NT	NT	NT	NT	60.7	1020	ND	1290	21.7	452	ND	6.51	30
m&p-Xylene	22.2		14.9	57.8	180	30.2	22.2	3.28	3.74	3.36	ND	ND	81.2	ND	89.5	55.6	28.2	ND	ND	ND
Methylene chloride	10	60	5.49	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	7.9		3.85	18.3	59.5	8.25	5.39	1.06	0.925	1.15	ND	ND	28.1	ND	31.4	15.7	10.2	ND	ND	ND
Styrene	1.9		ND	1.22	ND	ND	ND	ND	ND	ND	ND	ND	4.85	ND	5.88	ND	3.9	ND	ND	ND
Tertiary butyl Alcohol	NV		ND	ND	1.93	ND	8.09	ND	ND	ND	ND	ND	2.65	ND	3.94	8.61	2.52	ND	ND	ND
Tetrachloroethene	15.9	30	ND	0.292	1.69	0.420	ND	ND	ND	ND	ND	ND	0.312	ND	0.346	11	0.17	ND	ND	ND
Tetrahydrofuran	NV		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.1	ND	ND	ND	ND	ND
Toluene	43		31.4	9.46	17.3	26.7	36.6	2.34	30.0	4.90	ND	ND	37.3	ND	49	28.8	19.9	42.6	1.04	2.16
Trichloroethene	4.2	2	14.4	1.68	ND	2.20	ND	0.188	32.2	0.301	ND	27,300	1.67	13,600	2.25	ND	0.274	99.4	0.215	ND
Trichlorofluoromethane	18.1		ND	1.37	ND	1.71	3.30	1.34	2.08	1.33	1.30	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

1. Compounds detected in one or more samples included in this table. For a list of all compounds, refer to analytical report in Attachment C.
2. Analytical testing for VOCs via TO-15 completed by Alpha Analytical.
3. Results present in ug/m^3 or microgram per cubic meter.
4. Samples were collected during an 8-hour sample duration.
5. 90th percentile values as presented in C2 (EPA 2001: Building assessment and survey evaluation (BASE) database) Appendix C, in the NYSDOH Guidance Manual, as indicated for Indoor and Outdoor air only.
6. Air Guidance Values from "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" dated October 2006, prepared by New York State Department of Health.
7. NYSDOH does not currently have standards, criteria or guidance values for concentrations in sub-slab vapor. The detection of VOCs in sub-slab vapor samples does not necessarily indicate soil vapor intrusion is occurring or action should be taken to address exposures.
8. Grey shaded values represent exceedance of table C2 guidance values; yellow shaded values represent exceedance of NYSDOH Air Guidance Values.
9. ND = Non Detect; NV = No Value; NT = Not Tested

Table 8
Soil Vapor Intrusion Analytical Testing Results
1801 Elmwood Avenue, Buffalo, NY

	Guidance Values- Indoor Air		May 30, 2018 Sampling										
Parameter	Table C2 Commercial Indoor Air Background (90%)	NYSDOH Air Guideline Value	SS-9 Sub-Slab	IA-9 Indoor Air	SS-10 Sub Slab	IA-10 Indoor Air	IA-10 Duplicate	SS-11 Sub-Slab	IA-11 Indoor Air	SS-12 Sub-Slab	IA-12 Indoor Air	OA-3 Outdoor Air	Table C2 Outdoor Air Guidance Values
1,1,1-Trichloroethane	20.6		No Sample Recovery	ND	ND	0.12	-	ND	0.147	ND	ND	ND	2.6
1,2,4-Trimethylbenzene	9.5			98.3	48.8	103	107	21.7	121	40.9	5.75	ND	5.8
1,3,5-Trimethylbenzene	3.7			42.8	18.5	43.8	45.6	ND	53.1	11.6	2.01	ND	2.7
1,3-Butadiene	<3.0			ND	17.9	ND	ND	6.22	ND	3.81	ND	ND	<3.4
1,4-Dioxane	NV			ND	ND	ND	ND	ND	ND	4.94	ND	ND	NV
2,2,4-trimethylpentane	NV			ND	ND	ND	ND	ND	ND	ND	1.12	ND	NV
2-Butanone	12			16.6	150	12.6	18.6	86.7	34.2	216	3.51	ND	11.3
2-Hexanone	NV			ND	39.3	ND	ND	25.7	ND	64.8	ND	ND	NV
4-ethyltoluene	3.6			33.2	12.9	34.5	34.2	ND	39.4	13	1.35	ND	3.0
4-Methyl-2-pentanone	6.0			ND	200	ND	ND	ND	ND	28.5	ND	ND	1.9
Acetone	98.9			1940	2240	2070	2380	558	2730	1800	93.6	10.5	43.7
Benzene	9.4			ND	35.5	ND	ND	15.9	ND	23.6	1.08	ND	6.6
Carbon disulfide	4.2			ND	9.93	ND	ND	ND	ND	3.8	ND	ND	3.7
Carbon tetrachloride	<1.3			0.497	ND	0.428	ND	ND	0.497	ND	0.459	0.421	0.7
Chloroform	1.1			1.96	ND	2.81	3.07	ND	2.28	ND	ND	ND	0.6
Chloromethane	3.7			1.64	ND	1.03	1.03	ND	1.42	ND	1.51	1	3.7
cis-1,2-Dichloroethene	<1.9			ND	ND	ND	ND	ND	0.083	ND	ND	ND	<1.8
cis-1,3-Dichloropropene	NV			ND	ND	ND	ND	9.08	ND	ND	ND	ND	
Cyclohexane	NV			ND	45.1	ND	ND	7.88	0.812	32.4	ND	ND	NV
Dichlorodifluoromethane	16.5			3.08	ND	2.18	2.22	ND	3.18	ND	3.06	2.14	8.1
Ethanol	210			NT	NT	NT	NT	NT	NT	NT	NT	NT	57.0
Ethyl acetate	5.4			1.87	ND	ND	ND	ND	2.7	ND	ND	ND	1.5
Ethyl Alcohol	NV			34.7	56.5	21.7	22.2	97	37.7	125	24.9	ND	NV
Ethylbenzene	5.7			30.6	185	30.9	31.5	24	45.2	30	1.51	ND	3.5
Heptane	NV			136	116	148	164	22.4	75.8	52	1.17	ND	NV
n-Hexane	NV			1.56	84.9	1.31	1.23	17.9	1.28	57.8	1.2	ND	6.4
Isopropanol	NV			NT	NT	NT	NT	NT	NT	NT	NT	NT	NV
Iso-propyl Alcohol	NV			607	450	413	435	339	524	79.9	242	ND	NV
m&p-Xylene	22.2			128	478	131	132	99.9	185	135	6.21	ND	12.8
Methylene chloride	10	60		ND	ND	ND	ND	ND	ND	ND	ND	ND	6.1
o-Xylene	7.9			41.9	189	43.4	44.3	29.7	61.2	40	2.51	ND	4.6
Styrene	1.9			2.28	ND	1.84	1.76	ND	1.46	ND	ND	ND	1.3
Tertiary butyl Alcohol	NV			1.96	47.6	ND	ND	47	ND	84.3	ND	ND	NV
Tetrachloroethene	15.9	30		0.773	ND	0.909	0.773	ND	1.42	ND	0.305	0.156	6.5
Tetrahydrofuran	NV			ND	ND	ND	ND	ND	3.6	ND	ND	ND	NV
Toluene	43			171	203	205	227	112	115	154	7.2	1.91	33.7
Trichloroethene	4.2	2		0.64	ND	0.726	0.661	2260	1.18	ND	0.306	ND	1.3
Trichlorofluoromethane	18.1			3.78	ND	2.93	2.79	ND	5.5	ND	2.17	1.21	4.3

Table 9
Soil Vapor Intrusion Decision Matrices
1801 Elmwood Avenue, Buffalo, NY

Sample ID	Parameter	Sub-slab Vapor Concentrations (ug/m^3)	Indoor Air Concentration (ug/m^3)	Recommended Action
Matrix A Trichloroethene (TCE); cis-1,2-dichloroethene (cis-DCE); 1,1-dichloroethene (1,1-DCE); Carbon Tetrachloride				
SS-1/IA-1	TCE	14.4	1.68	Mitigate
	cis-DCE	ND	0.087	No further action
	1,1-DCE	ND	ND	No further action
	Carbon Tetrachloride	ND	0.403	No further action
SS-2/IA-2	TCE	ND	2.20	Identify source(s) and Resample or Mitigate
	cis-DCE	ND	ND	No further action
	1,1-DCE	ND	ND	No further action
	Carbon Tetrachloride	ND	0.409	No further action
SS-3/IA-3	TCE	ND	0.188	No further action
	cis-DCE	ND	ND	No further action
	1,1-DCE	ND	ND	No further action
	Carbon Tetrachloride	2.82	0.415	No further action
SS-4/IA-4	TCE	32.2	0.301	Monitor
	cis-DCE	ND	ND	No further action
	1,1-DCE	ND	ND	No further action
	Carbon Tetrachloride	ND	0.403	No further action
SS-5/IA-5	TCE	27,300	1.67	Mitigate
	cis-DCE	ND	0.087	No further action
	1,1-DCE	ND	ND	No further action
	Carbon Tetrachloride	ND	0.415	No further action
SS-6/IA-6	TCE	13,600	2.25	Mitigate
	cis-DCE	ND	0.107	No further action
	1,1-DCE	ND	ND	No further action
	Carbon Tetrachloride	ND	0.44	No further action
SS-7/IA-7	TCE	ND	0.274	No further action
	cis-DCE	ND	ND	No further action
	1,1-DCE	ND	ND	No further action
	Carbon Tetrachloride	ND	0.421	No further action
SS-8/IA-8	TCE	99.4	0.215	Mitigate
	cis-DCE	ND	ND	No further action
	1,1-DCE	ND	ND	No further action
	Carbon Tetrachloride	ND	0.421	No further action
SS-9/IA-9	TCE	No Recovery	0.64	No further action
	cis-DCE	No Recovery	ND	No further action
	1,1-DCE	No Recovery	ND	No further action
	Carbon Tetrachloride	No Recovery	0.497	No further action
SS-10/IA-10	TCE	ND	0.73	No further action
	cis-DCE	ND	ND	No further action
	1,1-DCE	ND	ND	No further action
	Carbon Tetrachloride	ND	0.428	No further action
SS-11/IA-11	TCE	2,260	1.18	Mitigate
	cis-DCE	ND	ND	No further action
	1,1-DCE	ND	BD	No further action
	Carbon Tetrachloride	ND	0.421	No further action
SS-12/IA-12	TCE	ND	0.306	No further action
	cis-DCE	ND	ND	No further action
	1,1-DCE	ND	ND	No further action
	Carbon Tetrachloride	ND	0.459	No further action

Table 9
Soil Vapor Intrusion Decision Matrices
1801 Elmwood Avenue, Buffalo, NY

Sample ID	Parameter	Sub-slab Vapor Concentrations (ug/m^3)	Indoor Air Concentration (ug/m^3)	Recommended Action
Matrix B Methylene Chloride (MC); 1,1,1- Trichloroethane (1,1,1-TCA); Tetrachloroethylene (PCE)				
SS-1/IA-1	MC	5.49	ND	No further action
	1,1,1-TCA	ND	ND	No further action
	PCE	ND	0.292	No further action
SS-2/IA-2	MC	ND	ND	No further action
	1,1,1-TCA	ND	ND	No further action
	PCE	1.69	0.42	No further action
SS-3/IA-3	MC	ND	ND	No further action
	1,1,1-TCA	1.34	ND	No further action
	PCE	ND	ND	No further action
SS-4/IA-4	MC	ND	ND	No further action
	1,1,1-TCA	ND	ND	No further action
	PCE	ND	ND	No further action
SS-5/IA-5	MC	ND	ND	No further action
	1,1,1-TCA	ND	ND	No further action
	PCE	ND	0.312	No further action
SS-6/IA-6	MC	ND	ND	No further action
	1,1,1-TCA	ND	ND	No further action
	PCE	ND	0.346	No further action
SS-7/IA-7	MC	ND	ND	No further action
	1,1,1-TCA	26.6	ND	No further action
	PCE	11	0.17	No further action
SS-8/IA-8	MC	ND	ND	No further action
	1,1,1-TCA	ND	ND	No further action
	PCE	ND	ND	No further action
SS-9/IA-9	MC	No Recovery	ND	No further action
	1,1,1-TCA	No Recovery	ND	No further action
	PCE	No Recovery	0.312	No further action
SS-10/IA-10	MC	ND	0.12	No further action
	1,1,1-TCA	ND	ND	No further action
	PCE	ND	0.909	No further action
SS-11/IA-11	MC	ND	ND	No further action
	1,1,1-TCA	ND	0.147	No further action
	PCE	ND	1.42	No further action
SS-12/IA-12	MC	ND	ND	No further action
	1,1,1-TCA	ND	ND	No further action
	PCE	ND	0.305	No further action
Matrix C Vinyl Chloride (VC)				
SS-1/IA-1	VC	ND	ND	No further action
SS-2/IA-2	VC	ND	ND	No further action
SS-3/IA-3	VC	ND	ND	No further action
SS-4/IA-4	VC	ND	ND	No further action
SS-5/IA-5	VC	ND	ND	No further action
SS-6/IA-6	VC	ND	ND	No further action
SS-7/IA-7	VC	ND	ND	No further action
SS-8/IA-8	VC	ND	ND	No further action
SS-9/IA-9	VC	ND	ND	No further action
SS-10/IA-10	VC	ND	ND	No further action
SS-11/IA-11	VC	ND	ND	No further action
SS-12/IA-12	VC	ND	ND	No further action

Table 10
Surface Soil Analytical Testing Results
1801 Elmwood Avenue, Buffalo, NY

Parameter	UUSCO	RRUSCO	CUSCO	IUSCO	SS-101 (0-2")	SS-102 (0-2")	SS-102 (0-2") Duplicate	SS-103 (0-2")	SS-104 (0-2")	SS-105 (0-2")
Alpha Job Number					L1803664	L1803664	L1803664	L1803664	L1803664	L1803664
Sampling Date					02/02/18	02/02/18	02/02/18	02/02/18	02/02/18	02/02/18
Volatiles 8260C Analysis (ug/kg)										
1,3-Dichlorobenzene	2,400	49,000	280,000	560,000	ND	ND	ND	ND	0.66 J	ND
1,4-Dichlorobenzene	1,800	13,000	130,000	250,000	ND	ND	ND	ND	0.94 J	ND
Acetone	50	100,000	500,000	1,000,000	35	ND	ND	ND	ND	20
Ethylbenzene	1,000	41,000	390,000	780,000	ND	ND	ND	ND	1.2 J	0.40 J
Isopropylbenzene	NV	NV	NV	NV	ND	ND	ND	ND	1.3 J	ND
Styrene	NV	NV	NV	NV	ND	ND	ND	ND	1.5 J	ND
Toluene	700	100,000	500,000	1,000,000	0.70 J	ND	ND	ND	1.1 J	0.42 J
Trichloroethene	470	21,000	200,000	400,000	7.6	ND	ND	ND	ND	ND
o-Xylene	260	100,000	500,000	1,000,000	ND	ND	ND	ND	2.1 J	0.66 J
p/m-Xylene	260	100,000	500,000	1,000,000	ND	ND	ND	ND	2.5 J	0.97 J
Semivolatile 8270D Analysis (ug/kg)										
2-Methylnaphthalene	NV	NV	NV	NV	99 J	98 J	270	42 J	58 J	28 J
3-Methylphenol/4-Methylphenol	NV	NV	NV	NV	ND	ND	ND	ND	44 J	ND
Acenaphthene	20,000	100,000	500,000	1,000,000	160	330	1,900	140 J	100 J	27 J
Acenaphthylene	100,000	100,000	500,000	1,000,000	93 J	88 J	130 J	63 J	54 J	44 J
Acetophenone	NV	NV	NV	NV	160 J	ND	ND	ND	ND	ND
Anthracene	100,000	100,000	500,000	1,000,000	430	750	4,600	370	280	98 J
Benzaldehyde	NV	NV	NV	NV	62 J	ND	ND	ND	ND	85 J
Benz(a)anthracene	1,000	1,000	5,600	11,000	1,200	2,000	8,000	1,100	900	380
Benzo(a)pyrene	1,000	1,000	1,000	1,100	1,100	1,900	6,900	1,000	780	410
Benzo(b)fluoranthene	1,000	1,000	5,600	11,000	1,400	2,600	8,500	1,400	1,100	590
Benzo(g,h,i)perylene	100,000	100,000	500,000	1,000,000	730	1,100	3,900	660	470	370
Benzo(k)fluoranthene	800	3,900	56,000	110,000	500	880	3,300	540	360	150
Biphenyl	NV	NV	NV	NV	ND	ND	93 J	ND	ND	ND
Bis(2-ethylhexyl)phthalate	NV	NV	NV	NV	170 JB	110 JB	94 JB	100 JB	ND	120 JB
Carbazole	NV	NV	NV	NV	230	490	2,300	240	190 J	69 J
Chrysene	1,000	3,900	56,000	110,000	1,000	2,000	6,900	1,100	790	390
Dibenzo(a,h)anthracene	330	330	560	1,100	170	290	950	160	120 J	68 J
Dibenzofuran	NV	NV	NV	NV	140 J	230	1,200	67 J	68 J	20 J
Fluoranthene	100,000	100,000	500,000	1,000,000	2,400	4,300	24,000	2,300	1,800	800
Fluorene	30,000	100,000	500,000	1,000,000	220	330	2,000	130 J	120 J	33 J
Indeno(1,2,3-cd)pyrene	500	500	5,600	11,000	840	1,400	4,700	800	560	330
m-Cresol	330	100,000	500,000	1,000,000	ND	ND	ND	ND	ND	ND
Naphthalene	12,000	100,000	500,000	1,000,000	220	190 J	400	70 J	81 J	33 J
Phenanthrene	100,000	100,000	500,000	1,000,000	1,600	3,200	20,000	1,300	1,200	390
Phenol	330	100,000	500,000	1,000,000	ND	ND	55 J	ND	ND	ND
Pyrene	100,000	100,000	500,000	1,000,000	1,900	3,400	18,000	1,800	1,500	650
Metals Analysis (mg/kg)										
Aluminum	NV	NV	NV	NV	5,560	4,340	4,890	9.450	9,100	8,620
Antimony	NV	NV	NV	NV	ND	ND	ND	ND	ND	0.896 J
Arsenic	13	16	16	16	11.7	10.7	141	8.33	24.2	19.1
Barium	350	400	400	10,000	62.0	81.3	112	96.1	66.2	219
Beryllium	7.2	72	590	2,700	0.342 J	0.273 J	0.294 J	0.517	0.471 J	0.524
Cadmium	2.5	4.3	9.3	60	ND	ND	ND	ND	ND	ND
Calcium	NV	NV	NV	NV	71,400	25,200	25,600	3,520	5,820	18,800
Chromium, total	30	180	1,500	6,800	11.1	9.18	21.2	13.9	13.7	26.6
Cobalt	NV	NV	NV	NV	3.22	3.54	5.83	10.1	5.46	6.89
Copper	50	270	270	10,000	32.2	54.7	67.9	35.1	23.6	128
Iron	NV	NV	NV	NV	15,800	15,200	77,800	21,500	18,200	20,000
Lead	63	400	1,000	3,900	45.0	82.2	63.2	57.9	53	932
Magnesium	NV	NV	NV	NV	13,800	3,300	3,290	2,160	2,440	5,060
Manganese	1,600	2,000	10,000	10,000	473	346	815	1,240	397	414
Mercury (total)	0.18	0.81	2.8	5.7	0.06 J	0.04 J	0.05 J	0.09	0.11	0.58
Nickel	30	310	310	10,000	8.65	8.64	24.7	10.8	12.7	47.6
Potassium	NV	NV	NV	NV	514	525	552	674	905	1,080
Selenium	3.9	180	1,500	6,800	0.405 J	0.575 J	0.588 J	0.958 J	0.88 J	1.05 J
Sodium	NV	NV	NV	NV	222	98.8 J	109 J	39.8 J	41.9 J	85.3 J
Zinc	109	10,000	10,000	10,000	106	225	276	136	137	986
PCB Analysis (ug/kg)										
Aroclor 1254	100	1,000	1,000	25,000	12.3 J	11.3 J	23.7 J	8.12 J	9.27 J	15.1 J
Aroclor 1260	100	1,000	1,000	25,000	14.0 J	6.91 J	10.9 J	19.4 J	8.71 J	16.2 J
Aroclor 1268	100	1,000	1,000	25,000	ND	ND	ND	ND	3.50 J	9.80 J
PCBs, total	100	1,000	1,000	25,000	26.3 J	18.2 J	34.6 J	27.5 J	21.5 J	41.1 J
Pesticides Analysis (ug/kg)										
4,4'-DDD	3.3	13,000	92,000	180,000	1.76 J	ND	ND	ND	ND	1.31 J
4,4'-DDE	3.3	8,900	62,000	120,000	8.54	ND	ND	ND	ND	4.62
4,4'-DDT	3.3	7,900	47,000	94,000	11.6	ND	ND	ND	ND	23.3
cis-Chlordane	NV	NV	NV	NV	1.58 J	ND	ND	ND	ND	2.60 P
Dieldrin	5	200	1,400	2,800	3.24	ND	ND	3.39	ND	3.48 P
Heptachlor epoxide	NV	NV	NV	NV	1.61 J	ND	ND	ND	ND	ND
Herbicides Analysis (ug/kg)										
	NV	NV	NV	NV	ND	ND	ND	ND	ND	ND

Notes:

1. Analytical testing performed by Alpha Analytical. Compounds detected in one or more samples are presented in this table.
   Refer to Appendix for the full analytical report.
2. ug/kg = parts per billion; mg/kg = parts per million.
3. ND = not detected; NT = not tested; NV = no value.
4. Analytical results compared to NYSDEC Part 375-6; Remedial Program Soil Cleanup Objectives,
   Table 375-(a) Unrestricted Use Soil Cleanup Objective; and Table 375-6.8(b): Restricted Use Soil Cleanup Objectives.
5. * = Concentration of analyte exceeded range of the calibration curve, which required a re-analysis at a higher dilution factor.
6. E = Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
7. J = Estimated value. The target analyte is below the reporting limit (RL), but above the method dectection limit (MDL).
8. P = The RPD between the results for the two columns exceeds the method-specified criteria.
9. Shading indicates:
   - (grey) exceeds UUSCO - Unrestriced Use Soil Cleanup Objective
   - (yellow) exceeds RRUSCO - Restricted Residential Use Soil Cleanup Objective
   - (blue) exceeds CUSCO - Commercial Use Soil Cleanup Objective
   - (pink) exceeds IUSCO - Industrial Use Soil Cleanup Objective

Table 11
VOC Concentration in off-site Groundwater Samples
1801 Elmwood Avenue, Buffalo, NY

Parameter	GA	SB201		SB203		SB204		SB207	
		6/4/2018		6/1/2018		6/1/2018		6/1/2018	
		L1820300-10		L1820300-04		L1820300-05		L1820300-03	
Volatiles 8260C Analysis (ug/L)									
2-Butanone	50	4.2	J	11		ND		ND	
Acetone	50	53		51		8.6		ND	
Benzene	1	0.17	J	0.5	U	0.5	U	ND	
Carbon disulfide	60	1.8	J	1.3	J	ND		ND	
cis-1,2-Dichloroethene	5	2.5		ND		ND		ND	
Trichloroethene	5	8.4		ND		ND		ND	
Vinyl chloride	2	0.52	J	ND		ND		ND	

Notes:
1. Analytical testing performed by Alpha Analytical. Compounds detected in one or more samples are presented in this table.
Refer to Appendix for the full analytical report.
2. ug/L = parts per billion; mg/L = parts per million.
3. ND = not detected; NT = not tested; NV = no value.
4. Analytical results compared to NYSDEC Division of Water Technical and Operational Guidance Series (TOGS 1.1.1)
Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
5. J = Estimated value. The target analyte is below the reporting limit (RL), but above the method dectection limit (MDL).
6. Shading indicates: exceeds NYSDEC Class GA criteria

Table 12
Emergent Contaminant Sampling Results
1801 Elmwood Avenue, Buffalo, NY

Parameter	SB103/MW1	SB103/MW1 DUPLICATE	SB127/MW7	SB116/MW3	EQUIPMENT BLANK	FIELD BLANK
LAB ID:	**L1820011-01**	**L1820011-04**	**L1820011-02**	**L1820011-03**	**L1820011-05**	**L1820011-06**
COLLECTION DATE:	**5/31/2018**	**5/31/2018**	**5/31/2018**	**5/31/2018**	**5/31/2018**	**5/31/2018**
1,4 DIOXANE BY 8270D-SIM (ug/l)						
1,4-Dioxane	ND <0.15 U	ND <0.144 U	ND <0.147 U	ND <0.15 U	ND <0.147 U	ND <0.147 U
PERFLUORINATED ALKYL ACIDS BY ISOTOPE DILUTION (ng/l)						
Perfluorobutanoic Acid (PFBA)	ND <1.85 U	ND <1.78 U	7.48	17.4	ND <1.72 U	ND <1.85 U
Perfluoropentanoic Acid (PFPeA)	ND <1.85 U	ND <1.78 U	10.6	13.3	ND <1.72 U	ND <1.85 U
Perfluorobutanesulfonic Acid (PFBS)	ND <1.85 U	ND <1.78 U	ND <2 U	2.53	ND <1.72 U	ND <1.85 U
Perfluorohexanoic Acid (PFHxA)	ND <1.85 U	ND <1.78 U	7.93	10.3	ND <1.72 U	ND <1.85 U
Perfluoroheptanoic Acid (PFHpA)	ND <1.85 U	ND <1.78 U	6.42	8.27	ND <1.72 U	ND <1.85 U
Perfluorohexanesulfonic Acid (PFHxS)	ND <1.85 U	ND <1.78 U	13.2	13.4	ND <1.72 U	ND <1.85 U
Perfluorooctanoic Acid (PFOA)	1.98	1.95	11.9	51.2	ND <1.72 U	ND <1.85 U
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND <1.85 U	ND <1.78 U	ND <2 U	8.29	ND <1.72 U	ND <1.85 U
Perfluoroheptanesulfonic Acid (PFHpS)	ND <1.85 U	ND <1.78 U	ND <2 U	ND <1.92 U	ND <1.72 U	ND <1.85 U
Perfluorononanoic Acid (PFNA)	ND <1.85 U	ND <1.78 U	ND <2 U	150	ND <1.72 U	ND <1.85 U
Perfluorooctanesulfonic Acid (PFOS)	2.41	2.26	28.3	22.6	ND <1.72 U	ND <1.85 U
Perfluorodecanoic Acid (PFDA)	ND <1.85 U	ND U	ND <2 U	3.19	ND <1.72 U	ND <1.85 U
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND <1.85 U	ND <1.78 U	ND <2 U	ND <1.92 U	ND <1.72 U	ND <1.85 U
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND <1.85 U	ND <1.78 U	ND <2 U	ND <1.92 U	ND <1.72 U	ND <1.85 U
Perfluoroundecanoic Acid (PFUnA)	ND <1.85 U	ND <1.78 U	ND <2 U	8.36	ND <1.72 U	ND <1.85 U
Perfluorodecanesulfonic Acid (PFDS)	ND <1.85 U	ND <1.78 U	ND <2 U	ND <1.92 U	ND <1.72 U	ND <1.85 U
Perfluorooctanesulfonamide (FOSA)	ND <1.85 U	ND <1.78 U	ND <2 U	ND <1.92 U	ND <1.72 U	ND <1.85 U
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND <1.85 U	ND <1.78 U	ND <2 U	ND <1.92 U	ND <1.72 U	ND <1.85 U
Perfluorododecanoic Acid (PFDoA)	ND <1.85 U	ND <1.78 U	ND <2 U	ND <1.92 U	ND <1.72 U	ND <1.85 U
Perfluorotridecanoic Acid (PFTrDA)	ND <1.85 U	ND <1.78 U	ND <2 U	ND <1.92 U	ND <1.72 U	ND <1.85 U
Perfluorotetradecanoic Acid (PFTA)	ND <1.85 U	ND <1.78 U	ND <2 U	ND <1.92 U	ND <1.72 U	ND <1.85 U

Notes:
1. Analytical testing performed by Alpha Analytical. Compounds detected in one or more samples are presented in this table.
Refer to Appendix for the full analytical report.
2. ng/l = parts per trillion; ug/L = parts per billion; mg/L = parts per million.
3. ND = not detected; NT = not tested; NV = no value.
4. J = Estimated value. The target analyte is below the reporting limit (RL), but above the method dectection limit (MDL).

Table 13
Commercial Use Remedial Cost Estimate

Task	Estimated Quantity		Unit Cost		Track 4 Commercial Use with Site Management Plan
Stormwater, Roadway, Parking Lot					
Limited Stormwater Detention System with Heavy duty roadway					
Stormwater Detention Excavation	850	cy			
Stormwater Conveyance Excavation	1,130	cy			
Cut from Heavy Duty Asphalt	4,350	cy			
total cut	6,330	cy	$8	cy	$50,640
Stormwater Detention & Conveyance	1	est	$155,000	est	$155,000
Soil Pile Cut					
Limited Cut from Soil Pile - slopped field	5,190	cy	$8	cy	$41,520
Cut from Soil Pile to account for height due to retaining wall	4,300	cy	$8	cy	
Debris/metal Transportation and Disposal	200	tons	$65	ton	$13,000
Post Cut/Excavation Sampling	100	samples	$500	sample	$50,000
Net Export	3600	cy			
Soil Transporation and Disposal (due to height of retaining wall)	5,400.00	ton	$45	ton	
Cover System					
Site grading/Fill placement \	3,900	cy	$8	cy	$31,200
Demarcation layer	1	est	$25,000	est	$25,000
seeding	240,000	sf	$0	est	$14,400
1.0 ft soil cover system	8,900	cy	$30	est	$267,000
soil cover material testing	10	samples	$800	each	$8,000
1 ft crusher run cover - parking lot	1,200	cy	$30	cy	$36,000
Asphalt repair of parking lots	1	est	$200,000	est	$200,000
Limited Heavy Duty Roadway Cover					
Subbase for Road	3,310	cy	$45	cy	$148,950
Road Asphalt Top	645	tons	$75	ton	$48,375
Road Asphalt Binder	1,325	tons	$72	ton	$95,400
Sawcut existing pavement	210	lf	$5	lf	$1,050
Exposed Surface Areas					
Excavatation of impacted surface soils	556	cy	$8	cy	$4,444
Backfill with clean backfill material	611	cy	$22	cy	$13,444
Confirmatory Soil Samples	15	each	$500	each	$7,500
Characterization sample analysis	2	each	$800	each	$1,600
Soil Transporation and Disposal	833	ton	$45	ton	$37,500
Subslab Depressurization System					
Engineering and Design	1	est	$25,000	est	$25,000
System Installation	1	est	$75,000	est	$75,000
Reporting and Engineering					
Health and Safety (CAMP)	3%				$40,501
Contractor Contingency Fee	5%				$67,501
Engineering/oversight	15%				$208,579
Site Management Plan					
Final Engineering Report					
Environmental Easement					
Total Estimated Remedial Cost					$1,666,604
Total Estimated Additional Site Features					
Total Estimated Cost					**$1,666,604**
7. Annual Operation and Maintenance					
Groundwater Monitoring	1	year	$7,500	year	
Site Inspection and Annual Certification	1	year	$3,000	year	
Electricity and O&M of SDDS	1	year	$5,000	year	
total annual Operation and Maintenance			**$15,500**	**year**	
Estimate over 30 years			**$465,000**	**over 30 years**	

Appendix A

Soil Boring Logs

Appendix B

Monitoring Well Completion Logs

Appendix C

Soil Vapor Intrusion Testing Logs

Appendix D

Analytical Testing Results (CD Only)

Appendix E

Data Validation Reports