Remedial Investigation / Alternatives Analysis Report

1050-1088 Niagara Street Site
Buffalo, New York

June 2015 0136-013-005

Prepared For:

9271 Group, LLC

Prepared By:

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REMEDIAL INVESTIGATION/ ALTERNATIVES ANALYSIS REPORT

1050-1088 NIAGARA STREET SITE
BUFFALO, NEW YORK
BCP SITE No. C915277

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Certification

I, Thomas H. Forbes, certify that I am currently a NYS registered professional engineer as defined in 6NYCRR Part 375 and that this May 2015 Remedial Investigation/Alternatives Analysis Report (RI/AAR) for the 1050-1088 Niagara Street Site (C915277) was prepared in general accordance with applicable statutes and regulations and in general conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and that activities were performed in general accordance with the DER-approved work plan and any DER-approved modifications.

_____

Date

1.0 INTRODUCTION

This Remedial Investigation/Alternatives Analysis Report (RI/AAR) has been prepared by Benchmark Environmental Engineering and Science, PLLC (Benchmark), in association with TurnKey Environmental Restoration, LLC (TurnKey), referred to herein as Benchmark-Turnkey, on behalf of 9271 Group, LLC (9271 Group), for the 1050-1088 Niagara Street Site, located in the City of Buffalo, Erie County, New York (Site; see Figures 1 and 2).

9271 Group elected to pursue cleanup and redevelopment of the Site under the New York State Brownfield Cleanup Program (BCP), and executed a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC) in November 2011 (Site No. C915277). The Remedial Investigation/Interim Remedial Measures (RI/IRM) Work Plan was approved by the NYSDEC, with concurrence of the New York State Department of Health (NYSDOH), on May 16, 2014. Benchmark-TurnKey performed RI activities at the Site between July 2014 and April 2015.

1.1 Background

1.1.1 Property and Site Description

The Site consists of three adjoining parcels, identified as 1050, 1054, and 1088 Niagara Street, totaling approximately 2.7 acres, located in the City of Buffalo, Erie County, New York. The Site is currently improved with a one three-story building, located on the 1050-1054 Niagara Street parcels, with the remainder of the Site primarily vacant.

The Site has a long history of being utilized for commercial and industrial operations (since at least 1889). The International Brewing Company and American Gelatine Corp. operated on-Site in the early 1900s. The northern portion of the Site (1088 Niagara St. parcel) included a filling station from at least the 1920s through at least 1960. Multiple gasoline tanks were identified on the northern portion of the site from at least 1925 through at least 1951. Gulf Oil Corporation and/or Hygrade Petroleum Co. were identified as on-Site operators from at least the 1920s through at least 1960. The Niagara Lithograph Company (current on-site building), a commercial printing company, was located on the

1050 Niagara Street parcel of the Site from at least 1930 through at least 1990; and Miken Companies, also a commercial printing company, was located on-Site until at least 2000.

1.1.2 Previous Investigations

1.1.2.1 June 2012 – Phase I Environmental Site Assessment

TurnKey completed a Phase I ESA in June 2012. Findings of the Phase I report are summarized below:

- Historic operators on-Site included commercial printing from at least 1930 through at least 2000, and the American Gelatine Company and the International Brewing Company in the early 1900s
- Two historic 25,000 gallon tanks were noted in the basement of 1050 Niagara Street based on historic Sanborn maps; contents unknown.
- Potential tank vents were noted on the west side of the building on the 1050 Niagara Street parcel and potential tank fill ports were noted on the surface in the southeast portion of the 1088 Niagara Street parcel.
- Building-mounted transformers were noted along the south side of the 1050 Niagara Street building.
- Historically Gulf Oil Corporation operated on-Site from the 1920s through the 1960s, Hygrade Oil and Fuel Corp./Hygrade Petroleum Co. operated on-Site from the 1920s through the 1940s.
- Historically the Site included a filling station from the 1920s through the 1960s. Multiple gasoline tanks, assumed to be USTs, were identified on the northern portion of the site in at least 1925 and 1951 based on historic Sanborn maps.
- Numerous closed/inactive spills were identified in connection with adjacent/nearby properties in the regulatory database.

1.1.2.2 July 2012 Limited Phase II Environmental Investigation Report

TurnKey completed a Limited Phase II Environmental Investigation Report in July 2012. Findings of the Limited Phase II investigation are detailed below:

- Three (3) abandoned USTs were encountered during the advancement of TP-4. The USTs appear to be associated with the former services station noted in the Phase I ESA;
- In-ground hydraulic lift were discovered on-Site;
- Field observations of apparent petroleum contamination, including elevated PID readings and petroleum odors, were observed in TP-3, TP-4 and TP-10. Apparent petroleum-stained soil was also noted in TP-4;
- Elevated VOCs, some exceeding Commercial Use SCOs were detected;
- Several metals were detected above their respective Unrestricted Use SCOs, including arsenic, cadmium, and lead above their respective Commercial Use SCOs;
- Based on the findings of the investigation NYSDEC Spill file No. 1201545 was opened for the Site [It should be noted that the Spill file was administratively closed upon acceptance into the BCP, and further investigation and remediation of the Site will be conducted under the guidance of the BCP].

1.1.2.3 August 2013 – Supplemental Phase II Site Investigation

TurnKey completed a Supplemental Phase II Environmental Investigation Report in August 2013. Findings of the Supplemental Phase II investigation included the following:

- Eight (8) shallow soil borings were advanced to further investigate the site (1050 Niagara Street).
- Some of the soils exhibited visible (black staining) olfactory (petroleum odors) evidence of subsurface contamination;
- Subsurface soil analytical results indicate select SVOCs and metals exceed Unrestricted, Residential, Restricted Residential, and Commercial Use SCOs.

1.2 Purpose and Scope

This RI/AAR has been prepared on behalf of 9271 Group to describe and present the findings of the RI activities, and evaluate remedial alternatives for the Site.

This report contains the following sections:

- Section 2.0 presents the approach for the RI

- Section 3.0 describes the physical characteristics of the Site as they pertain to the investigation findings
- Section 4.0 presents the investigation results by media
- Section 5.0 describes the fate and transport of the constituents of primary concern (COPCs)
- Section 6.0 presents the qualitative risk assessment
- Section 7.0 evaluates remedial alternatives for the Site
- Section 8.0 presents the RI/AAR summary and conclusions
- Section 9.0 provides a list of references for this report

2.0 INVESTIGATION APPROACH

The Remedial Investigation (RI) scope of work focused on further defining the nature and extent of contamination, identifying potential source(s) of contamination, defining chemical constituent migration pathways, qualitatively assessing human health and ecological risks (if necessary), and obtaining data of sufficient quantity and quality to perform the remedial alternatives evaluation in accordance with NYSDEC DER-10.

The RI was performed to supplement previous investigations and to more fully characterize surface and subsurface soil/fill materials, soil vapor, groundwater, and overburden stratigraphy within the Site boundaries. The RI tasks were performed in accordance with the approved RI/AA Work Plan. RI activities were completed at the Site between July 2014 and April 2015.

Field team personnel collected environmental samples (i.e., surface, near-surface, and subsurface soil/fill, soil vapor, and groundwater) in accordance with the rationale and protocols described in the Sampling and Analysis Plan (SAP) of the Quality Assurance Project Plan (included in the RI/AA Work Plan) as detailed on Table 1. Representative environmental samples were collected during the RI using dedicated sampling devices and were placed in pre-cleaned laboratory provided sample containers, cooled to 4ºC in the field (if necessary), and transported under chain-of-custody command to a NYSDOH Environmental Laboratory Accreditation Program (ELAP) certified analytical laboratory.

Samples for chemical analysis were analyzed in accordance with USEPA SW-846 methodologies to meet the definitive-level data requirements. A Category B deliverable package was provided for each sample delivery group to allow independent third-party data validation and provide defensible data. Analytical results were evaluated by a third-party data validation expert in accordance with provisions described in the QAPP. The investigation activities are described below. Figures 3 presents the historic and RI sample locations. Appendix A contains photographs of field activities. Field borehole logs and well completion details are included in Appendix B.

2.1 RI Soil/Fill Investigation

A soil/fill investigation was completed across the site to supplement previous environmental data and to further delineate contamination on-Site. The soil/fill investigation

included the advancement of test pits and soil borings across the Site, including accessible locations beneath the building. Surface samples and near surface samples were also collected from areas of the Site not covered by buildings, concrete or asphalt (1054 Niagara and 1088 Niagara parcels).

2.1.1 Surface Soil Investigation

A surface soil investigation was completed on the northern and western portion of the Site. Six (6) surface soil samples, identified as SS-1 through SS-6, were collected from the upper six-inches of soil/fill (see Figure 3). Surface soil/fill samples were collected and analyzed in accordance with the approved Work Plan and Sampling and Analysis Plan as detailed on Table 1.

In addition to the surface soil samples collected, five (5) near-surface soil/fill samples, identified as NS-01 through NS-05, were collected from the upper 0-2 feet below ground surface (fbgs) to characterize near surface soil/fill. NS-01, NS-02 and NS-04 were collected during the excavation of test pits (TP) TP-11, TP-12 and TP-13; and, NS-04 and NS-05 were collected by hand core on the former loading dock located along the western boundary of the Site (see Figure 3).

2.1.2 Subsurface Soil/Fill Investigation

In addition to the eight (8) soil borings and ten (10) test pits completed during historic investigations, the RI subsurface soil/fill investigation included the advancement of twenty (20) soil borings identified as: SB-9 through SB-19 (of which seven (7), including SB-9 through SB-15 were advanced within the basement and subbasement of the building); MW-1, MW-3 through MW-6; and, delineation borings B-1 through B-4. Four (4) test pits, identified as TP-11 through TP-14, were also excavated across the Site (see Figure 3). Soil borings were advanced using direct-push drilling techniques and continuous split spoon sampling to a target depth of approximately 16-20 feet below ground surface (fbgs), or refusal; continuous drilling techniques was utilized during hollow-stem auger advancement for installation of monitoring wells to a maximum depth of 32 fbgs; and test pits were excavated to a target depth of 14-16 fbgs. Test pits were excavated across the Site in July 2014, RI interior and exterior soil borings were completed in August 2014, and supplemental

RI borings were completed between January and March 2015. Boring logs are provided in Appendix B. Subsurface soil/fill boring samples were collected with a macro-core sampler which contained a 2-inch outer diameter by 48-inch long acetate liner. A new acetate liner was used for each 4-foot sample run. The soil/fill samples retrieved from the borings allowed for visual, olfactory, and photo ionization detector (PID) assessment of subsurface conditions. Soil/fill samples were collected from the borings for laboratory analysis (see Table 1).

2.1.3 Soil/Fill Sample Collection and Analyses

Soil/fill samples were collected using dedicated stainless steel sampling tools. Representative soil samples were placed in pre-cleaned laboratory provided sample bottles, cooled to 4ºC in the field, and transported under chain-of-custody command to a NYSDOH Environmental Laboratory Accreditation Program (ELAP)-certified analytical laboratory.

Representative soil/fill samples were analyzed in accordance with the approved work plan, for Target Compound List (TCL) plus Commissioner Policy (CP-51) VOCs and TCL semi-volatile organic compounds (SVOCs), Target Analyte List (TAL) metals, polychlorinated biphenyls (PCBs), pesticides and herbicides selectively as detailed on Table 1.

All samples were collected and analyzed in accordance with USEPA SW-846 methodology with equivalent NYSDEC Category B deliverables to allow for independent third-party data usability assessment.

2.2 Groundwater Investigation

Benchmark-TurnKey personnel provided oversight for the installation of eight (8) groundwater monitoring wells, identified as MW-1, MW-3 through MW-6, and TMW-1 through TMW-3, to investigate on-Site groundwater flow and quality. Details of the well installation, well development, and groundwater sampling are provided below. Figure 4 presents the location of the monitoring well network.

2.2.1 RI Monitoring Well Installation

As described in the approved RI Work Plan, RI groundwater monitoring wells were planned to be installed after completion of soil boring advancement, with planned target depths of up to 20 fbgs. Of the six (6) planned groundwater monitoring wells, only MW-6 was able to be installed during the August 2014 field work. During the RI, SBs planned for conversion to monitoring wells were completed to a maximum depth of 28 fbgs, with no indication of subsurface water being present in the overburden fill material. Borings SB-17, SB-18, and SB-19 were monitored to assess if groundwater was present in the overburden fill. After several rounds of water level measurements indicated that no measurable water was present within the upper 20-25 feet of overburden fill, it was determined in consultation with the Department, to complete a supplemental groundwater monitoring well installation. In February 2015, Benchmark-TurnKey mobilized a drill rig capable of advancing hollow-stem augers to the necessary depth to assess overburden water, or refusal. MW-1, MW-3, MW-4 and MW-5 were installed to a depth ranging from 22 to 32 fbgs (see well logs in Appendix B.) It should be noted that MW-2, planned for installation at SB-18, was initially advanced to a maximum depth of 24 fbgs, with no evidence of water, and it was determined in consultation with the Department to not install a well at that location.

Monitoring well construction details are presented in Appendix B. Location of the monitoring wells is presented on Figure 4.

2.2.2 Temporary Monitoring Well Installation

Three (3) temporary monitoring wells TMW-1, TWM-2, and TMW-3 were installed within the interior building soil boring locations (see Figure 3) using a direct push drilling system to facilitate the installation of 1-inch PVC monitoring wells below the concrete slab inside the basement (SB-12) and sub-basement (SB-14 and SB-15) of the building. Monitoring well construction details are presented in Appendix B. Location of the monitoring wells is presented on Figure 4.

2.2.3 Monitoring Well Development

The installed monitoring wells were developed after installation, in accordance with the approved work plan, Benchmark-TurnKey and NYSDEC protocols. Development of

the monitoring wells was completed with polyethylene bailers via surge and purge methodology. Field parameters including pH, temperature, turbidity, dissolved oxygen and specific conductance were measured during development until they became relatively stable. Stability was defined as variation between measurements of approximately 10 percent or less with no overall upward or downward trend in the measurements; or a minimum of three well volumes. MW-6, TMW-1, TMW-2, and TMW-3 were initially developed in November 2014. MW-3, MW-4, MW-5 were developed in February 2015.

2.2.4 Groundwater Sample Collection and Analyses

Prior to sampling, Benchmark-TurnKey personnel purged a minimum of one (1) well volume, or purged dry, due to low groundwater well recovery rates and sampled monitoring wells using dedicated bailers. Field measurements for pH, specific conductance, temperature, turbidity, dissolved oxygen, and water levels, as well as visual and olfactory field observations, were periodically recorded and monitored for stabilization. All collected groundwater samples were placed in pre-cleaned, pre-preserved laboratory provided sample bottles, cooled to 4°C in the field, and transported under chain-of-custody command to a NYSDOH ELAP-certified analytical laboratory

In November 2014, groundwater samples were collected and analyzed from TMW-1, TMW-2, TMW-3 and MW-6. In February 2015, groundwater samples were collected and analyzed from TMW-1, TMW-2, TMW-3, MW3, MW-4, and MW-5. MW-1 was not sampled due to lack of water (i.e., dry) at the time of sampling. Water level in MW-1 has been inspected on several occasions after the February 2015 sampling event, and has been dry on all occasions.

Groundwater samples were collected and analyzed for TCL plus CP-51 list VOCs, TCL SVOCs, TAL metals, PCBs, pesticides, and herbicides in accordance with the approved RI Work Plan and detailed on Table 1. All sampling was performed in accordance with USEPA SW-846 methodology with equivalent NYSDEC Category B deliverables to allow for independent third-party data usability assessment.

2.3 Soil Vapor Intrusion Investigation

A soil vapor intrusion (SVI) investigation was completed to assess the potential for soil vapor conditions within the existing building's basement and sub-basement. To perform the evaluation, four (4) locations within the building were selected as subslab vapor (SV) sample locations, two (2) SV samples were collected from the basement and two (2) SSV samples were collected from the sub-basement. Two (2) ambient air samples were also collected, one (1) indoor ambient air sample was collected in the basement (Ambient 1) and one (1) indoor ambient air sample was collected in the sub-basement (Ambient 2), with a common outdoor ambient air sample collected to establish background conditions (see Figure 3). One duplicate SSV sample was also collected.

2.3.1 Pre-sample Assessment

Prior to initiation of SV sampling, a pre-sampling inspection was performed to identify and minimize conditions that may interfere with or bias testing (e.g., open containers of solvents, paints, etc.). The pre-inspection inventory is provided in Appendix C.

Several source areas for potential indoor air contamination were observed in both the basement and sub-basement:

- In the Basement – (SSV-1, SSV-2 and Ambient 1) a shelving unit with several marked and unmarked 1 gallon cans of latex and enamel based paints were noted.
- In the Sub-Basement (SSV-3, SSV-4 and Ambient 2) one (1) three to five gallon bucket of mortar, one (1) unmarked three to five gallon can of varnish or oil based paint ¾ full, one (1) three to five gallon bucket of Permalastic Clear varnish, five (5) open buckets of oil, one (1) thirty gallon steal container of oil, one (1) 55 gallon drum of formula boiler treatment chemicals (A1A from Buffalo Industrial Chemicals), two (2) 5 gallon containers of Mobile Oil both ½ full, and one (1) five gallon bucket of polymatic in developer from Kodak.

2.3.2 Sub-Slab Vapor & Ambient Air Sample Collection

Sub-slab vapor and ambient air sampling was completed in general conformance with the NYSDOH Soil Vapor Intrusion Guidance and Benchmark-TurnKey's Ambient Air/Subslab Vapor Sampling Field Operating Procedure, which was included with the approved RI Work Plan.

At each SSV sampling location, Benchmark/TurnKey personnel drilled a hole through a competent portion of the concrete slab, away from cracks and floor drains using a hand-held hammer drill. Sub-slab vapor samples were collected in the following manner:

- After installation of the probes, one to three volumes (i.e., the volume of the sample probe and tube) were purged prior to collecting the samples to ensure they were representative;
- The SSV probes were sealed at the surface with non-VOC containing clay;
- Flow rates for both purging and sample collection were regulated to less than 0.2 liters per minute; and
- SSV sample canisters were equipped with a 24-hour regulator to allow the sample to be collected over an approximate twenty four-hour period.

Concurrent with the SSV samples, indoor ambient air samples and an outdoor air sample were collected. Indoor ambient air samples were collected from the basement and sub-basement (see Figure 3). It should be noted that the basement and subbasement are primarily large open spaces with minimal interior walls or dividers. One (1) outdoor air sample was also collected from a ground level location upwind of the facility, determined on the day of the SSV field activities. Both the indoor and outdoor air sample canisters were also equipped with a 24-hour regulator to allow the sample to be collected over the same approximate 24-hour period.

Each canister, with an initial vacuum of approximately 30 inches of mercury (in Hg) was fitted with an appropriate regulator for the 24-hour sampling period. The summa canister valves were kept closed until the SSV samples holes were complete and the ambient indoor air canisters were in their respective positions. Information regarding the sample duration and starting and ending vacuums were recorded on the sampling forms included in Appendix E.

After the sampling was completed, the regulator valves were closed and the soil vapor samples were transported to the laboratory for TCL VOCs analysis via USEPA Method TO-15 (see Table 1).

2.4 Field Specific Quality Assurance/Quality Control Sampling

In addition to the subsurface soil/fill and groundwater samples described above, field-specific quality assurance/quality control (QA/QC) samples were collected and analyzed to ensure the reliability of the generated data as described in the QAPP and to support the required third-party data usability assessment effort. Site-specific QA/QC samples included matrix spikes, matrix spike duplicates, blind duplicates, and trip blanks.

2.5 Site Mapping

A Site map was developed during the RI field investigation. All sample points and relevant Site features were located on the map. Benchmark-TurnKey personnel employed a handheld GPS unit to identify the locations of all exterior sample locations relative to state planar grid coordinates. For interior sample locations a hand held GPS unit was used to locate the corners of the existing building relative state planar grid coordinates, and interior building measurements were then recorded and sample locations were then adjusted to the state planar grid. Monitoring well elevations were measured by Benchmark-TurnKey's surveyor. An isopotential map showing the groundwater elevations was prepared based on water level measurements relative to the Site vertical datum (see Figure 4).

2.6 Decontamination & Investigation-Derived Waste Management

Every attempt was made to utilize dedicated sampling equipment during the RI, however, non-dedicated equipment was required and/or used (e.g., spilt spoons) and was decontaminated with a non-phosphate detergent (i.e., Alconox®) and potable water mixture, rinsed with distilled water, and air-dried before each use in accordance with the field operating procedure (FOP).

3.0 SITE PHYSICAL CHARACTERISTICS

The physical characteristics of the Site observed during the RI are described in the following sections.

3.1 General Site Features and Site Topography

The Site consists of three (3) parcels, including 1050 Niagara Street, 1054 Niagara Street and 1088 Niagara Street. The Site fronts Niagara Street to the east, former Albany Street to the north, commercial property to the south, and active rail lines and Interstate 190 to the west, with the Niagara River beyond. The 1050-1054 Niagara Street parcels are predominantly covered by the large multi-story building with former loading dock along the western boundary. The 1088 Niagara Street parcel is a vacant open lot, with a steep bank along the western and portion of the northern boundary (see Figure 2).

3.2 Geology and Hydrogeology

3.2.1 Overburden

The U.S. Department of Agriculture Soil Conservation Service soil survey map of Erie County describes the general soil type at the Site as Urban Land (Ud) which indicates level to gently sloping land with at least 60 percent of the soil surface covered by asphalt, concrete, buildings, or other impervious structures typical of an urban environment.

The presence of overburden fill material is widespread and common throughout the City of Buffalo.

The geology at the Site was investigated during the RI and is generally described as fill material to depths greater than 35 fbgs consisting of varying amounts of sandy lean clay and fine sand with brick, concrete, wood, and debris. Borehole logs are provided in Appendix B.

3.2.2 Bedrock

Based on the bedrock geologic map of Erie County, the Site is situated over the Onondaga Formation of the Middle Devonian Series. The Onondaga Formation is comprised of a varying texture from coarse to very finely crystalline with a dark gray to tan

color and chert and fossils within. The unit has an approximate thickness of 110 to 160 feet. Structurally, the bedrock formations strike in an east-west direction and exhibit a regional dip that approximates 40 feet per mile (3 to 5 degrees) toward the south and southwest.

Based on the 2015 Empire geotechnical report completed on the 1088 Niagara Street parcel, bedrock was encountered between 39 and 41 fbgs.

3.2.3 Hydrogeology

Based on the findings of the RI, perched and overburden groundwater was encountered at depths ranging from 11 to 15.5 fbgs from the interior wells, and ranging from 14 to 29 fbgs in the exterior wells. Lack of water was noted in the geotechnical report to a maximum depth of 41 fbgs.

The Site hydrogeology is further complicated by the presence of municipal subgrade utilities along Niagara Street and Albany Street; subgrade building structural footers and foundations, presence of historic overburden fill, location of the former Erie Canal and Niagara River, and significant historic development cycles that have occurred in this section of the City.

In general, localized groundwater flow was estimated to flow in a western direction toward the Niagara River. Figure 4 depicts the estimated overburden groundwater isopotential map based on the water level measurements collected in March 2015.

3.2.4 Hydraulic Gradients

Using well installation and water level information from the February 2015 sampling event, the estimated hydraulic gradient was calculated to be an average of 0.0585 ft./ft. As discussed above, calculating the hydraulic gradient is complicated by the presence of the multiple deep structural footers and foundation across the building footprint presence of significant overburden fill material, presence of subgrade utilities along the northern and western boundaries, and significant historic development is this area of the City.

4.0 INVESTIGATION RESULTS BY MEDIA

The nature and extent of contamination at the Site was further characterized using soil, groundwater, and soil vapor samples collected and analyzed as part of the RI. As described above, samples collected during previous investigations were used to supplement this RI.

The soil, groundwater, and SVI samples collected during the RI sampling events were submitted for analyses under chain-of-custody to a NYSDOH ELAP-certified laboratory. Analytical services were performed in accordance with SW-846 analytical methods and protocols. Appendix D contains laboratory analytical data packages for samples analyzed from the RI. Tabulated analytical data discussed in this section includes results from prior investigations as well as the RI data collected by Benchmark-TurnKey personnel. Tabulated analytical results are shown only for those parameters for which a value greater than the laboratory method detection limit was detected at a minimum of one (1) sample location.

Figure 3 shows the RI and previous investigation sampling locations. Table 1 summarizes the sampling and analytical program employed under RI.

4.1 Standards, Criteria, and Guidance

According to DER-10 Section 1.3(b)71, SCGs mean "*standards and criteria that are generally applicable, consistently applied, and officially promulgated, that are either directly applicable or not directly applicable but are relevant and appropriate, unless good cause exists why conformity should be dispensed with, and with consideration being given to guidance determined, after the exercise of scientific and engineering judgment, to be applicable. This term incorporates both the CERCLA concept of 'applicable or relevant and appropriate requirements' (ARARs) and the USEPA's 'to be considered' (TBCs) category of non-enforceable criteria or guidance. For purposes of this Guidance, 'soil SCGs' means the soil cleanup objectives and supplemental soil cleanup objectives identified in 6NYCRR 375-6.8 and the Commissioner Policy on Soil Cleanup Guidance (CP-Soil).*"

For discussion purposes, analytical results for the investigation were compared with the following SCG values.

Soil/Fill:

Soil Cleanup Objectives (SCOs) per 6 New York Code Rules and Regulation (6 NYCRR) Part 375 Environmental Remediation Programs, Subparts 375-12 to 375-4 & 375-6, effective December 14, 2006.

Groundwater

Class GA Groundwater Quality Standards and Guidance Values (GWQS/GVs) per NYSDEC's Division of Water, Technical and Operational Guidance Series (TOGS 1.1.1), June 1998, amended April 2000.

Soil Vapor Intrusion Samples

NYSDOH *Final Guidance for Evaluating Soil Vapor Intrusion in the State New York – Matrix 1 and Matrix 2*. October 2006 (NYSDOH Guidance).

NYSDOH *Summary of Indoor and Outdoor Levels of Volatile Organic Compounds from Fuel Oil Heated Homes in NYS (dated November 2005)*, Indoor 90th percentile values.

Sample results compared to the above criteria are described below according to media and contaminant class.

4.2 Historic Soil/Fill Investigation Results

As described above, TurnKey completed environmental investigations at the Site, with the findings requiring the issuance of Spill No. 1201545 for the Site. A total of 18 soil/fill sample locations, including ten (10) test pits and eight (8) soil borings were completed across the Site. Visual, olfactory and elevated PID readings were identified, including the presence of USTs and in-ground hydraulic lift components, with elevated PID readings as high as 1,268 ppm being recorded.

A total of 13 soil/fill samples were collected and analyzed for VOCs, SVOCs and metals. Table 2 summarizes the historic soil/fill analytical results with comparison to applicable 6NYCRR Part 375 Soil Cleanup Objectives (SCOs). Historic sample locations are identified on Figure 3.

Field evidence of petroleum impacts, including olfactory and elevated PID readings were primarily associated with the USTs, at TP-3, TP-4 and TP-10. Several petroleum-related VOCs were identified above their Unrestricted Use SCOs (USCOs) and Restricted Residential Use SCOS (RRSCOs).

Elevated SVOCs and metals detected above their respective RRSCOs and Commercial Use SCOs (CSCOs) were detected at several locations, primarily located on the western loading dock (see Table 2 and Figure 3).

4.3 RI Soil/Fill Investigation Results

Benchmark-TurnKey completed six (6) surface soil/fill, five (5) near-surface, four (4) test pits, and 16 soil borings on-site to further assess surface and subsurface conditions.

4.3.1 RI Surface and Near Surface Soil/Fill Results

Six (6) surface soil samples, identified as SS-1 through SS-6, and five (5) near-surface soil/fill samples, identified as NS-1 through NS-5, were collected from the accessible areas across the Site. Table 3 summarizes the analytical results of the surface and near surface soil/fill sample results with comparison to applicable SCGs.

4.3.1.1 Semi-Volatile Organic Compounds

The majority of SVOCs were reported as non-detectable or at trace (estimated) concentrations by the analytical laboratory. Select SVOCs, primarily polycyclic aromatic hydrocarbons (PAHs) were detected above their respective USCOs, RRSCOs, and CSCOs (see Table 3).

4.3.1.2 Inorganic Compounds

Certain metals, including arsenic, barium, cadmium, iron, lead, and mercury were detected above their respective CSCOs at select locations, primarily NS-04 and NS-05 located on the western loading dock. Certain naturally occurring metals were also detected above their respective USCOs and RRSCOs (see Table 3).

4.3.1.3 Polychlorinated Biphenyls

No PCBs were detected above USCOs, with all results being reported as non-detect (below the MDL) by the laboratory.

4.3.1.4 Pesticides and Herbicides

No herbicides were detected above laboratory detection limits and were reported as non-detect. No pesticides were detected above RRSCOs. Only one compound (4,4'-DDT) was detected slightly above its USCOs at two locations (see Table 3).

4.3.1.5 Surface and Near Surface Soil/Fill Summary

No PCBs, pesticides or herbicides were detected above RRSCOs, with the vast majority being reported as non-detect or estimated values by the laboratory. RI results identified elevated SVOCs, primarily PAHs, and metals above their respective RRSCOs and CSCOs (see Table 3).

4.4 RI Subsurface Soil/Fill Investigation

Twenty one (21) subsurface samples were collected across the site, including beneath the existing building basement and subbasement slab (see Figure 3). Table 4 presents a summary of the RI subsurface soil/fill sample results with comparison to applicable SCOs.

4.4.1 Qualitative Soil Screening

During the RI, fill material was identified across the Site to varying depths greater than 35 fbgs, consisting of sandy lean clay and fine sand with brick, concrete, wood, and debris. Petroleum odors and elevated PID readings were noted in six (6) of the subsurface locations, primarily associated with the UST and former tank area, with the highest PID reading of 1,117 ppm identified at SB-19 during the RI. Boring logs are provided in Appendix B.

4.4.2 Volatile Organic Compounds

No VOCs were detected above RRSCOs, with the vast majority of results being reported as non-detect or estimated values by the laboratory. Only two (2) constituents were detected above USCOs at one location, SB-12 (12-14'). Total tentatively identified compounds (TICs) are provided for reference (see Table 4).

4.4.3 Semi-Volatile Organic Compounds

No SVOCs were detected above USCOs, with the minor exception of two select PAHs at SB-18 (14-16'). All SVOCs results were below CSCOs and only one analyte (benzo(a) anthracene) was detected at an estimated concentration slightly above its RRSCO (see Table 4). Total TICs are provided for reference.

4.4.4 Inorganic Compounds

No analytes were detected above CSCOs with the minor exception of cadmium at SB-18 (14-16') and lead at TP-12 (10-16'). Cadmium (TP-12, 10-16'), chromium (TP-11, 6-8') and lead (TP-11, 6-8' and TP-12, 10-16') were detected above their respective RRSCOs. Certain naturally occurring metals were also detected above their respective USCOs.

4.4.5 Polychlorinated Biphenyls

Elevated PCBs above CSCOs and RRSCOS were detected in one sample location (SB-17). Select aroclors were detected above their respective USCOs in TP-11 and B-1 (MW-1).

Supplemental delineation boring analytical results indicate elevated PCBs above CSCOs and RRSCOs in B-3 (8-10') and B-3 (10-12') and B-4 (8-10'). Analytical results indicate that elevated PCBs are likely spatially limited to SB-17, B-3 and B-4 (see Table 5).

4.4.6 Pesticides and Herbicides

No pesticides or herbicides were detected above CSCOs or RRSCOs. Select pesticides were detected above their respective USCOs; however, all detections were reported as estimated values by the laboratory.

4.4.7 Subsurface Soil/Fill Summary

As described above, nuisance characteristics (petroleum odors and elevated PID readings) were identified in eleven (11) locations primarily associated with the USTs and former tank areas. However, no subsurface soil/fill analytical results for VOCs were detected above CSCOs or RRSCOs. One SVOC (benzo(a) anthracene) was detected at an estimate concentration in one sample location. Additionally, no pesticides or herbicides were detected above RRSCOs.

Cadmium (one sample location), chromium (one sample location) and lead (two sample locations) were detected above their respective RRSCOs; however, only cadmium and lead were detected slightly above their respective CSCOs, each in one sample location. Elevated PCBs above CSCOs and RRSCOs were detected in a limited area located proximate to SB-17.

4.5 Groundwater Investigation

Benchmark-TurnKey personnel provided oversight for the installation of RI groundwater monitoring wells to investigate on-Site groundwater quality and flow. Table 6 presents a comparison of the detected groundwater parameters to the applicable SCGs. Groundwater samples were collected in accordance with the work plan and analyzed in accordance with Table 1. It should be noted that MW-1 was not sampled due to lack of water (dry).

4.5.1 Volatile Organic Compounds

The majority of analytes were reported as non-detectable or trace (estimated) concentrations below the laboratory quantitation limit. Petroleum related VOCs were detected above GWQS in TMW-3, MW-3, MW-4 and MW-5 (see Table 6). Total petroleum VOCs do not exceed 1 mg/L Total TICs are provided for reference.

4.5.2 Semi-Volatile Organic Compounds

The vast majority of analytes were reported as non-detectable or trace (estimated) concentrations below the laboratory quantitation limit. Certain SVOCs, primarily PAHs, were detected at estimated concentrations above GWQS, at one location (TMW-3) and

phenol was detected above its GWQS in MW-5. Elevated detections are reasonably attributed to turbidity in the groundwater samples (see Table 6).

4.5.3 Inorganic Compounds

Dissolved metals detected at concentrations above GWQS were limited to naturally-occurring minerals, including magnesium, manganese, and sodium.

4.5.4 Polychlorinated Biphenyls Pesticides, and Herbicides

All PCBs and herbicide analytes were reported as non-detectable. Certain pesticides were detected above their respective GWQS in MW-3 and MW-4 (see Table 6).

4.5.5 Groundwater Summary

As described above no PCBs or herbicides were detected above the laboratory detection limit. Petroleum related VOCs, certain PAHs, and pesticides were detected above GWQS. Dissolved metals detected above GWQS are naturally occurring minerals.

4.6 Soil Vapor Investigation Results

4.6.1 RI SVI Results

Seven (7) air samples were collected and analyzed during the RI. The samples were analyzed for VOCs via Method TO-15 (see Figure 3). Table 7 summarizes the RI air sampling analytical results. Table 8 provides comparison of the indoor air sampling results to the NYSDOH 90th percentile values for indoor air, and Table 9 provides an assessment of the constituents identified in the NYSDOH SVI Guidance matrices.

The vast majority of detected air constituents were reported by the laboratory as non-detect or estimated values below the laboratory quantitation limit. Only one air constituent, trichloroflouromethane was detected slightly above its NYSDOH indoor air 90th percentile value of 17 ug/m3 at Ambient-1 (22 ug/m3).

Those chlorinated VOCs subject to the NYSDOH SVI Guidance were tabulated in Table 9 and compared to the respective decision matrices provided in the Guidance. Based

on the concentrations of these compounds detected in sub-slab and indoor air, results for the Matrix 1 compounds trichloroethene and vinyl chloride, and all Matrix 2 compounds indicated "No Further Action (NFA)". Only Matrix 1 compound carbon tetrachloride results for the basement (SSV-1, SSV-2 and Ambient-1) and subbasement (SSV-3, SSV-4 and Ambient-2) indicated "take reasonable and practical actions to identify source(s) and reduce exposures (I,R)". It is important to note that the indoor air concentrations of carbon tetrachloride for both Ambient-1 and Ambient-2 were greater than the associated subslab vapor concentrations for carbon tetrachloride, indicating the source is not from the subsurface.

To further evaluate the potential risk posed by the concentrations trichloroflouromethane the indoor air concentrations were compared to criteria established in the NYSDEC DAR-1, Guidelines for the Control of Toxic Ambient Air Contaminants. Specifically, the DAR-1 Guidelines establishes an Annual Guideline Concentration (AGC) to quantitatively assess a contaminant's potential to impact public health and the environment. The AGC for trichloroflouromethane is 5,000 ug/m^3, which is substantially higher than the detected indoor air concentration of 22 ug/m^3. As a final assessment, the detected concentration of trichloroflouromethane was compared to the Occupational Safety and Health Administration (OSGHA) Permissible Exposure Limit (PEL) of 5,6000,000 ug/m^3, multiple orders of magnitude greater than the detected concentration of 22 ug/m^3.

4.6.2 SVI Results Summary

The majority of air results indicate "No Further Action (NFA)", with the minor exception for carbon tetrachloride which indicated "take reasonable and practical actions to identify source(s) and reduce exposures (I,R)", though the ambient air concentrations were greater than the subslab concentrations. Only one air constituent was detected slightly above its NYSDOH Indoor Air 90th percentile value; however, the detected concentration was significantly below the NYSDEC DAR-1 and OSHA PEL guidelines (see Tables 7, 8, and 9).

4.7 Data Usability Summary

In accordance with the RI Work Plan, the laboratory analytical data from this investigation was assessed and, as required, submitted for independent review. Data Validation Services located in North Creek, New York performed the data usability summary assessment, which involved a review of the summary form information and sample raw data, and a limited review of associated QC raw data. Specifically, the following items were reviewed:

- Laboratory Narrative Discussion
- Custody Documentation
- Holding Times
- Surrogate and Internal Standard Recoveries
- Matrix Spike Recoveries/Duplicate Recoveries
- Field Duplicate Correlation
- Preparation/Calibration Blanks
- Control Spike/Laboratory Control Samples
- Instrumental IDLs
- Calibration/CRI/CRA Standards
- ICP Interference Check Standards
- ICP Serial Dilution Correlations
- Sample Results Verification

The Data Usability Summary Report (DUSR) was conducted using guidance from the USEPA Region 2 validation Standard Operating Procedures, the USEPA National Functional Guidelines for Data Review, as well as professional judgment. Appendix D includes the DUSR for the RI analytical data.

Based on the data validator's review, select SVOC data, specifically SS-1 through SS-6, BD#2, NS-4 and NS-5 were rejected by the data validator due to melted ice water entering the sample containers during laboratory shipment. It should be noted that samples were initially transported to the laboratory by Benchmark-TurnKey in sealed glass sample containers, and then were prepped/repackaged by the laboratory for transport to a

secondary facility for analysis. During the intra-laboratory transport, apparently some melted ice water entered the SVOC sample bags for those sample locations listed above. It should be noted that the laboratory did not reject or qualify the samples or analytical results; however, based on data validation protocols, the data validator was required to reject the sample results. Analytical results are in-line with historic investigation data results for proximately located sample locations.

Benchmark-TurnKey reviewed the analytical results with the laboratory and data validator, and both indicated that the sample results are likely usable and representative of site conditions. Furthermore, when evaluating the entire analytical results for the Site, the potential contamination of the samples does not modify the planned remedial activities for a Track 4 Restricted Residential Use cleanup for the Site. As such, Benchmark-TurnKey is providing the data and utilizing the results in the evaluation of the Site and remedial measures.

In summary, some data were edited or further qualified, and select SVOC samples were rejected, during the data validation. Additional qualifications of the data have been incorporated to the summary data tables.

4.8 Constituents of Concern (COCs)

Based on the findings of the RI and previous investigations, and the planned redevelopment of the Site, the Constituents of Potential (COCs) to be are presented below:

Soil/Fill: petroleum-related VOCs (nuisance characteristic), SVOCs, metals and PCBs
Groundwater: petroleum-related VOCs

5.0 FATE AND TRANSPORT OF COPCS

The surface and subsurface soil/fill and groundwater analytical sample results were incorporated with the physical characterization of the Site to evaluate the fate and transport of COPCs in Site media. The mechanisms by which the COPCs can migrate to other areas or media are briefly outlined below.

5.1 Fugitive Dust Generation

Volatile and non-volatile chemicals present in soil can be released to ambient air as a result of fugitive dust generation. Historic use of the Site has impacted surface and subsurface soil/fill, and as such fugitive dust generation during excavations related to remediation and redevelopment activities is considered a relevant potential short-term migration pathway.

Particulate monitoring in accordance with the approved Community Air Monitoring Plan (CAMP) will be completed during intrusive activities and, if required, dust mitigation measures will be employed during future remediation and redevelopment.

5.2 Volatilization

Volatile chemicals present in soil/fill and groundwater may be released to ambient or indoor air. Volatile chemicals typically have a low organic-carbon partition coefficient (K_{oc}), low molecular weight, and a high Henry's Law constant.

Historic operations on-Site have impacted on-Site soil/fill and groundwater with petroleum-related VOCs.

A soil vapor intrusion study complete the in the existing building did not identify a soil vapor intrusion concern in the existing building. However, based on the presence of VOCs in the subsurface, and in consideration of future redevelopment of the Site, a soil vapor assessment will be completed in future buildings prior to occupancy, or the Volunteer may elect to install a subslab depressurization system within future building(s).

Accordingly, volatilization from subsurface petroleum is considered a relevant migration pathway.

5.3 Surface Water Runoff

The potential for soil particle transport due to surface water runoff is low, as the majority of the Site is covered by concrete, asphalt or buildings and competent vegetated (grass) areas. Precipitation waters are collected in off-Site catch basins, and transmitted by municipal conveyance system and treated by the Buffalo Sewer Authority. The storm sewer system provides a mechanism for controlled surface water transport but will ultimately result in sediment capture in the Buffalo Sewer Authority's grit chambers followed by disposal at a permitted sanitary landfill. During intrusive remedial and redevelopment activities, the approved Soil/Fill Management Plan (SFMP; previously provided in the RI/IRM Work Plan), will be implemented to mitigate potential surface runoff.

5.4 Leaching

Leaching refers to chemicals present in soil/fill migrating downward to groundwater as a result of infiltration of precipitation. The majority of the Site is covered by impermeable surfaces (i.e., asphalt, concrete, and buildings) which limit infiltration of precipitation.

No VOCs were detected in soils above RRSCOs; however, potential for VOCs leaching from the abandoned UST system that is remaining on-Site is still a viable pathway. Certain PAHs and metals were detected in the non-saturated soil/fill interval. PAHs and metals tend to adsorb strongly to soil, sediments and particulate matter and are not expected to leach. This is further evidenced by the limited detections of PAHs and metals in groundwater above GWQS in the monitoring wells sampled.

5.5 Groundwater Transport

RI groundwater analytical results indicated concentrations of petroleum VOCs above GWQS. Groundwater transport of impacted groundwater is considered a relevant migration pathway; however, planned IRM activities will remove the existing USTs and associated petroleum-impacted soil/fill from the tank pit removing the likely source area and mitigating future transport of VOCs from the UST area and improving overall groundwater quality. Planned soil vapor extraction of other petroleum-VOC impacted soil on-Site will further improve groundwater quality. Additionally, the Site and surrounding area are serviced by a

municipal (supplied) potable water service, with no evidence of pumping wells in the area of the subject property.

5.6 Exposure Pathways

Based on the fate and transport analysis provided above, the pathways through which Site contaminants could potentially reach receptors at significant exposure point concentrations are: fugitive dust during intrusive activities, volatilization of petroleum VOCs related to the USTs and petroleum-impacted soil/fill, leaching and groundwater transport of petroleum VOCs, and incidental contact with on-Site groundwater. The potential significance of contaminants in terms of on-site and off-site receptors is further evaluated in Section 6.0.

6.0 QUALITATIVE RISK ASSESSMENT

6.1 Potential Human Health Risks

The 1050-1088 Niagara Street Site is planned for redevelopment for commercial use and residential apartments. The objective will be to meet Restricted-Residential SCOs. The planned reuse is consistent with the surrounding property use and zoning. Under current conditions (i.e., remediation and redevelopment) human contact with the Site can be reasonably expected to occur primarily by two types of receptors: construction workers involved in the remediation and/or redevelopment of the Site, and trespassers who may traverse the property during intrusive activities. Construction workers will be comprised of adults, and trespassers would likely be limited to adolescents and adults. In both instances, exposure frequency is expected to be minimal (short-term).

Elevated PAHs, PCBs and metals were detected above RRSCOs and CSCOs in on-Site soil/fill; therefore under the current use scenario exposure pathways would be limited to inhalation of dust and dermal contact with impacted soil/fill. An approved Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) will be followed during intrusive remedial and redevelopment activities to mitigate unacceptable exposures via these pathways.

Concerning groundwater, based on the depth of overburden groundwater, greater than 20 fbgs, and the availability of municipal water source at the Site, the potential for routine direct human contact or ingestion (i.e., as might occur with use of on-Site groundwater water for potable or process purposes) is highly unlikely in only the rarest occurrence of deep excavation beyond 15 fbgs for utility or structural work. Municipally supplied potable water is provided, and required to be used in the City of Buffalo.

Under the planned redevelopment scenario, the majority of the Site will be covered by hardscape (e.g., building, asphalt, concrete) with limited passive recreation areas on-Site. The planned commercial and restricted-residential use of the site will necessitate either achieving RRSCOs to depths of 15 feet below grade across the Site, or extending the redevelopment cover to assure that all areas of the property are covered by 24-inches of clean soil material and/or hard cover (asphalt, pavement, etc.). In either case exposures to routine end users would be mitigated with only potential short term exposures due to dust

inhalation and dermal contact by construction workers during deeper excavation (i.e., utility work) beneath the cover system.

6.2 Potential Ecological Risks

The Site is a former commercial facility located within a highly developed area of the City of Buffalo. The Site is predominantly covered with asphalt, concrete and buildings, and broken asphalt/gravel areas which provide little or no wildlife habitat or food value, and/or access to the detected subsurface contamination.

The Niagara River is located approximately 250-ft west of the Site. Remedial and redevelopment activities will be conducted in accordance with an approved Soil/Fill Management Plan (SFMP), CAMP and completion of Part 375 compliant cover system. Dust and erosion controls will be implemented, as necessary, during intrusive activities to mitigate potential short-term risks.

As such, no unacceptable ecological risks are anticipated under the reasonably anticipated future use scenario.

7.0 REMEDIAL ALTERNATIVES ANALYSIS

This section provides an analysis of the selected remedial approach by media using the Remedy Selection Evaluation Criteria identified in Section 4.2 of Guidance Document DER-10: Technical Guidance for Site Investigation and Remediation. In accordance with DER-10 Section 4.4(d)2, in addition to a "no action" baseline alternative, the following three alternatives are developed and assessed for each BCP Site based on NYSDEC-defined cleanup tracks as follows:

Track 1, 6 New York Codes, Rules and Regulations (6NYCRR) Part 375-3.8(e)(1) requires site media to meet Part 375 SCOs that will allow the site to be used for any purpose without restrictions on the use of the site (i.e., unrestricted use). The soil cleanup must achieve the unrestricted use criteria at any depth above bedrock. Details and evaluation of the Track 1 alternative are described below.

Track 2, 6NYCRR Part 375-3.8(e)(2) requires site media to meet Part 375 restricted use SCOs that are consistent with the end use. For the Site, the Track 2 cleanup must achieve the Restricted Residential Use SCOs to a depth of 15 fbgs. For Track 2 remedies, restrictions can be placed on the use of the property in the form of institutional and engineering controls, and future use and development will be completed in accordance with the environmental easement and site management plan. Details and evaluation of the of the Track 2 cleanup are described below.

Track 4, 6NYCRR Part 375-3.8(e)(4) soil cleanups uses site-specific information to identify site-specific SCOs (or site-specific action levels; SSALs) that are protective of public health and the environment under a restricted use scenario. For Track 4 remedies, restrictions can be placed on the use of the property in the form of institutional and engineering controls if they can be realistically implemented and maintained in a reliable and enforceable manner. As set forth in 6 NYCRR Part 375-3.8(e)(4)(iii)(a)(1), the top two (2) foot of all exposed surface soils, not otherwise covered by the components of the development of the site (e.g., buildings, pavement), shall not exceed the restricted use (Restricted Residential Use) SCOs. Areas that exceed these SCOs must be covered by material meeting the requirements of the generic soil cleanup table contained in Part 375-6.7(d) for the applicable future site uses (i.e., Restricted Residential).

7.1 Remedial Action Objectives

The development of an appropriate remedial approach begins with definition of site-specific Remedial Action Objectives (RAOs) to address substantial public health and significant environmental issues identified during remedial investigations. In developing the RAOs, consideration is given to the reasonably anticipated future use of the Property (i.e., commercial) and the applicable SCGs. Accordingly, appropriate RAOs for the BCP Sites have been defined as:

7.1.1 Former USTs RAO

- Removal USTs including associated piping and contents.

7.1.2 Soil/Fill RAOs

- Prevent ingestion of and/or direct contact with contaminated soil/fill.
- Prevent migration of contaminants that would result in groundwater and/or surface water contamination.

7.1.3 Groundwater RAOs

- Remove the source of ground or surface water contamination (i.e., USTs)
- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent ingestion of and/or direct contact with groundwater containing contaminant levels exceeding SCGs.

7.2 General Response Actions

General Response Actions (GRAs) are broad classes of actions that are developed to achieve the RAOs and form the foundation for the identification and screening of remedial technologies and alternatives.

7.2.1 Former USTs

The GRAs available to address the RAOs for former USTs include:

- Removal and off-site disposal/recycling
- Disposal/recycling of tank and piping contents

7.2.2 Soil/Fill

The GRAs available to address the RAOs for soil/fill include:

- Institutional controls (e.g., Site Management Plan, Environmental Easement)
- Engineering controls (e.g., cover system)
- Treatment/Stabilization
- Excavation and off-site disposal or treatment

7.2.3 Groundwater

The GRAs available to address the RAOs for groundwater include:

- Monitored natural attenuation
- Treatment
- Engineering Controls
- Institutional Controls

7.3 Evaluation of Alternatives

In addition to achieving the RAOs, NYSDEC's Brownfield Cleanup Program calls for remedy evaluation in accordance with Part 375-1.8(f) and DER-10 Technical Guidance for Site Investigation and Remediation. Specifically, the guidance states "When proposing an appropriate remedy, the person responsible for conducting the investigation and/or remediation should identify and develop a remedial action that is based on the following criteria..:"

- **Overall Protection of Public Health and the Environment**. – This criterion is an evaluation of the remedy's ability to protect public health and the environment, assessing how risks posed through each existing or potential pathway of exposure are eliminated, reduced, or controlled through removal, treatment, engineering controls, or institutional controls.

- **Compliance with Standards, Criteria, and Guidance (SCGs)**. – Compliance with SCGs addresses whether a remedy will meet applicable environmental laws, regulations, standards, and guidance.
- **Long-Term Effectiveness and Permanence**. – This criterion evaluates the long-term effectiveness of the remedy after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: (i) the magnitude of the remaining risks (i.e., will there be any significant threats, exposure pathways, or risks to the community and environment from the remaining wastes or treated residuals), (ii) the adequacy of the engineering and institutional controls intended to limit the risk, (iii) the reliability of these controls, and (iv) the ability of the remedy to continue to meet RAOs in the future.
- **Reduction of Toxicity, Mobility or Volume with Treatment**. – This criterion evaluates the remedy's ability to reduce the toxicity, mobility, or volume of Site contamination. Preference is given to remedies that permanently and significantly reduce the toxicity, mobility, or volume of the wastes at the Site.
- **Short-Term Effectiveness**. – Short-term effectiveness is an evaluation of the potential short-term adverse impacts and risks of the remedy upon the community, the workers, and the environment during construction and/or implementation. This includes a discussion of how the identified adverse impacts and health risks to the community or workers at the Site will be controlled, and the effectiveness of the controls. This criterion also includes a discussion of engineering controls that will be used to mitigate short term impacts (i.e., dust control measures), and an estimate of the length of time needed to achieve the remedial objectives.
- **Implementation**. – The implementation criterion evaluates the technical and administrative feasibility of implementing the remedy. Technical feasibility includes the difficulties associated with the construction and the ability to monitor the effectiveness of the remedy. For administrative feasibility, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc.
- **Cost**. – Capital, operation, maintenance, and monitoring costs are estimated for the remedy and presented on a present worth basis, where applicable.
- **Community Acceptance**. – This criterion evaluates the public's comments, concerns, and overall perception of the remedy.

- **Land Use –** This criterion includes the Department's determination of reasonable certainty of the use; and the evaluation of the reasonably anticipated future use of the site.

7.4 Anticipated Future Land Use Evaluation

In developing and screening remedial alternatives, NYSDEC's Part 375 regulations require that the reasonableness of the anticipated future land be factored into the evaluation. The regulations identify 16 criteria that must be considered. These criteria and the resultant outcome for the 1050-1088 Niagara Street Site are presented below.

1. *Current use and historical and/or recent development patterns:* The 1050-1088 Niagara Street Site was historically used for various commercial operations, including as an automobile filling station and fuel distribution operation, and printing operations, located in a historically commercial-industrial area of the City of Buffalo. The Site is planned for redevelopment into a mixed-use commercial development with apartments. **Accordingly, commercial site redevelopment with residential apartments would be consistent with historic and recent development patterns.**

2. *Applicable zoning laws and maps:* The Site is located in an area of the City of Buffalo zoned for commercial use. **Continued use in a commercial/restricted-residential capacity is consistent with current zoning and the draft Buffalo Green Code – Unified Development Ordinance.**

3. *Brownfield opportunity areas as designated set forth in GML 970-r:* The Brownfield Opportunity Area (BOA) Program provides municipalities and community based organizations with assistance to complete revitalization plans and implementation strategies for areas or communities affected by the presence of brownfield sites, and site assessments for strategic sites. **The subject property lies within the Tonawanda Street Corridor BOA.**

4. *Applicable comprehensive community master plans, local waterfront revitalization plans as provided for in EL article 42, or any other applicable land use plan formally adopted by a municipality*: According to the Transitional Analysis completed as part of the Buffalo Green Code, Unified Development Ordinance dated May 2014, the Site lies on the border between an area slated for transition to Urban Core (N-1D, N-1E and N-1S) and an area remaining the existing place–type. Based on the location of the Site to downtown Buffalo, N-1E, Downtown Edge, is likely the most applicable. It is described as a

"Full-Block, zero setbacks, zero side yard development with consistent pedestrian-orientated ground floor frontages and significant vertical mixed-use". **The proposed redevelopment of the Site for a mixed commercial-residential use is consistent with the Buffalo Green Code.**

5. *Proximity to real property currently used for residential use, and to urban, commercial, industrial, agricultural and recreational areas*: The Site is located on the boundary of the new Urban Core (N-1) designated in the Draft Unified Development Ordinance and Buffalo Green Code (2014). Residential properties are located across Niagara Street to the east. Commercial and industrial properties, including an active rail line, are located adjacent and proximate to the Site. **Nearby and adjacent properties are mixed use, including residential, commercial and industrial. The proposed redevelopment of the Site for a commercial/restricted-residential use is consistent with the Buffalo Green Code and current and planned future land uses adjacent to the Site.**

6. *Any written and oral comments submitted by members of the public on the proposed use as part of the activities performed pursuant to the citizen participation plan*: **No comments have been received from the public to date.**

7. *Environmental justice concerns, which include the extent to which the proposed use may reasonably be expected to cause or increase a disproportionate burden on the community in which the site is located, including low-income minority communities, or to result in a disproportionate concentration of commercial or industrial uses in what has historically been a mixed use or residential community*: **The Site does fall within the boundaries of the NYSDEC designated potential environmental justice area for the City of Buffalo (north detail), however, redevelopment of the site for mixed commercial and residential use capacity does not pose environmental justice issues. Remediation of the Site under the BCP would decrease potential environmental justice concerns related to the former operations at the Site.**

8. *Federal or State land use designations:* The property is designated Commercial by the City of Buffalo (GIS). **Reuse in a restricted capacity (commercial and residential) is consistent with the current land use designation.**

9. *Population growth patterns and projections:* The City of Buffalo, encompassing 40.38 square miles, has a population of 261,025 (2011 [estimate] US Census Bureau), a decrease of 285 from the 2010 U.S. Census. A slight decrease in population is not expected to have a significant impact on the housing market. **Redevelopment is consistent with the draft Unified Development Ordinance and Buffalo Green Code.**

10. *Accessibility to existing infrastructure:* Access to the Site is from Niagara Street. Utilities (sewer, water, electric) are present along Niagara Street. **Existing infrastructure supports reuse in a commercial/restricted-residential capacity**.

11. *Proximity of the site to important cultural resources, including federal or State historic or heritage sites or Native American religious sites*. **No such resources or sites are known to be present on or adjacent to the Site.**

12. *Natural resources, including proximity of the site to important federal, State or local natural resources, including waterways, wildlife refuges, wetlands, or critical habitats of endangered or threatened species:* No State or Federal wetlands exist on the Site. The Buffalo River is located along the western boundary of the Site. A NYS regulated wetland (BU-3) is located approximately 0.75-miles to the northwest. According to the NYSDEC's EnviroMapper the important plant habitat and species listed for the area encompassing the Site, include:

    - Golden Dock *Rumex fueginus*, listed as endangered rare plant species under NYS Protection Status.
    - American Burying Beetle Nicrophorus americanus, listed as an endangered rare animal species under NYS protection Status.

    The absence of significant ecological resources on or adjacent to the Site indicates that cleanup to restricted-residential use conditions will not pose an ecological threat.

13. *Potential vulnerability of groundwater to contamination that might emanate from the site, including proximity to wellhead protection and groundwater recharge areas and other areas identified by the Department and the State's comprehensive groundwater remediation and protection program established set forth in ECL article 15 title 31:* Groundwater at the Site is assigned Class "GA" by 6NYCRR Part 701.15. Eight (8) groundwater monitoring wells were installed during the RI. Groundwater data obtained during the RI indicates minor exceedance of the GWQS for petroleum related VOCs, certain SVOCs, naturally occurring metals and pesticides at varying location across the Site. There are no groundwater supply well(s) present on the Site or noted in the vicinity of the Site. Regionally, groundwater has not been developed for industrial, commercial agriculture, or public supply purposes. Potable water service is provided by the local municipal water authority.

    The planned removal of the USTs and petroleum-impacted soil/fill in the tank pit and in-situ SVE of petroleum-impacted soil would remove the source area of VOCs impacts and improve groundwater quality over time. **The absence of potable wells,**

wellhead protection and cleanup to restricted-residential use conditions will not pose a threat to drinking water.

14. *Proximity to flood plains:* The Erie County Internet Mapping System indicates that the Niagara River is located approximately 250-feet west of the Site, which is a designated flood zone. No flood zones are present on the property, and therefore there is a low risk of erosion due to flooding. Intrusive activities will be completed in accordance with the approved SFMP. **As such, based on the planned remediation and redevelopment of the Site, which includes cleanup to restricted-residential use standards, does not pose a threat to surface water.**

15. *Geography and geology:* The Site is located within the Erie-Ontario lake plain physiographic province, which is typified by little topographic relief and gentle slope toward Lake Erie (USDA, 1978). The surficial geology of the Lake Erie Plain consists of a thin glacial till (if present), glaciolacustrine deposits, recent alluvium, and the soils derived from these deposits. Surface soils within the vicinity of the Site are described as Urban Land (Ud) with level to gently sloping land with at least 60 percent of the soil surface covered by asphalt, concrete, buildings, or other impervious structures typical of an urban environment. The presence of overburden fill material is widespread and common throughout the City of Buffalo. Previous development patterns covered the Site in asphalt, concrete and building foundations. **Geography and geology are consistent with a commercial/restricted residential re-use.**

16. *Current institutional controls applicable to the site:* **No institutional controls are currently present that would affect redevelopment options.**

Based on the above analysis, reuse of the Site in a commercial and restricted-residential capacity is consistent with past, current and contemplated development and zoning on and around the Site, and does not pose additional environmental or human health risk.

7.5 Comparison of Remedial Alternatives

In addition to the evaluation of the alternatives to remediate the Site to the likely end use, NYSDEC regulations and policy calls for evaluation of more restrictive end-use scenarios. These include an Unrestricted Use scenario (considered under 6NYCRR Part 375 to be representative of cleanup to pre-disposal conditions), and a scenario less restrictive than the reasonably anticipated future use. Per NYSDEC DER-10 Technical Guidance for

Site Investigation and Remediation, evaluation of a "no action" alternative is also required to provide a baseline for comparison against other alternatives. The alternatives evaluated below in greater detail include:

- Alternative 1 - No Action;
- Alternative 2 - Unrestricted Use Cleanup (Track 1)
- Alternative 3 – Track 2 Restricted Residential Use Cleanup; and,
- Alternative 4 –Track 4 Restricted Residential Use Cleanup ;

7.5.1 Alternative 1 - No Action

Under this alternative, the Site would remain in its current state, with no additional controls in-place.

Overall Protection of Public Health and the Environment – The Site is not protective of human health and the environment, based on the presence of the soil/fill exceeding RRSCOs, and impacted groundwater and the absence of institutional controls to prevent more restrictive forms of future Site use (e.g., Unrestricted use). Uncontrolled access to the Site could lead to potential exposure to impacted soil/fill during intrusive work performed at the Site and workers who are unaware or untrained regarding the contamination.

Accordingly, no further action is not protective of public health and does not satisfy any of the RAOs.

Compliance with SCGs – The no action alternative would not make the Site compliant with SCGs. Based on the results of the RI, on-Site constituents detected in the soil/fill and groundwater exceeds the applicable SCOs and GWQS.

Long-Term Effectiveness and Permanence – Based on the findings of the RI, the no action alternative does not provide long-term effectiveness or permanence, and does not achieve any of the RAOs.

Reduction of Toxicity, Mobility, or Volume with Treatment – The no action alternative does not reduce the toxicity, mobility, or volume of contamination beyond natural degradation/attenuation, and therefore this alternative is not protective of public health and does not satisfy any of the RAOs.

Short-Term Effectiveness – There would be no short-term adverse impacts and risks to the community, workers, or the environment attributable to implementation of the no action alternative.

Implementation – No technical or administrative implementation issues are associated with this alternative.

Cost – There would be no capital or long-term operation, maintenance, or monitoring costs associated with the no action alternative.

Community Acceptance – Community acceptance will be evaluated based on comments to be received from the public in response to Fact Sheets and other planned Citizen Participation activities. Recent development patterns in the vicinity of the Site, would likely make the No Action alternative not acceptable to the community.

7.5.2 Alternative 2 - Unrestricted Use Cleanup

An Unrestricted Use alternative would necessitate remediation of all soil/fill where concentrations exceed the Unrestricted Use SCOs per 6NYCRR Part 375 (see Tables 2-4). For Unrestricted Use scenario, excavation and off-site disposal of impacted soil/fill is generally regarded as the most applicable remedial measure, because institutional controls cannot be used to supplement the remedy. As such, the Unrestricted Use alternative assumes that those areas which exceed Unrestricted Use SCOs would be excavated and disposed at an off-Site commercial solid waste landfill.

Exceedances of the Unrestricted Use SCOs were detected to 16 fbgs likely associated with subsurface fill material; however borings completed across the Site, identified fill material to depth of greater than 30 fbgs, with bedrock ranging from 39-40 fbgs. As such,

the Unrestricted Use cleanup could potentially require deep excavations to 30 fbgs, with an average of 20 fbgs used in this evaluation.

In total, approximately 51,000 CY of impacted soil/fill would require excavation and off-site disposal; and equivalent backfilling.

Overall Protection of Public Health and the Environment – Excavation and off-site disposal to achieve Unrestricted Use SCOs would be protective of public health under any reuse scenario. However, this alternative would permanently use and displace valuable landfill airspace, causing ancillary environmental issues due to reduced landfill capacity, and would require excavating, transporting, and placing a similar volume of clean soil from an off-site borrow source to backfill the excavation, also contributing to significant detrimental off-site environmental issues.

Compliance with SCGs – The Unrestricted Use alternative would be performed in accordance with applicable, relevant, and appropriate standards, guidance, and criteria. Excavation of soil to achieve Unrestricted Use SCOs would satisfy this criterion.

Long-Term Effectiveness and Permanence – The Unrestricted Use alternative would achieve removal of all residual impacted soil/fill; therefore, the Unrestricted Use alternative would provide long-term effectiveness and permanence. Post-remedial monitoring and certifications would not be required.

Reduction of Toxicity, Mobility, or Volume with Treatment – Through removal of all impacted soil/fill, the Unrestricted Use alternative would permanently and significantly reduce the toxicity, mobility, and volume of on-Site contamination.

Short-Term Effectiveness – The principal advantage of a large-scale excavation to achieve Unrestricted Use SCOs is reliability of effectiveness in the long-term. The short-term adverse impacts and risks to the community, workers, and environment during implementation of this alternative are significant.

There are several potential short-term impacts associated with this alternative.

- There is potential for impacts to human health (workers and construction personnel) due to direct contact with impacted soil and particulate releases. This alternative would require implementation of a health and safety plan (HASP) and community air monitoring, as outlined in the NYSDOH Generic Community Air Monitoring Plan (CAMP), in order to mitigate potential adverse conditions/short-term impacts. Additional health and safety measures would need to be employed during excavation activities within the building and under the building slab. Moreover, significant physical hazards may be encountered due to structural limitations associated with deep excavation and the proximity of adjacent buildings, utilities and roadways.
- Human health and the environment associated with chemical exposures would be protected under this alternative if the HASP and CAMP are properly implemented. This alternative is expected to meet RAOs at completion of the excavations, because the impacted soil will be removed from the Site. Confirmatory soil sampling would be performed.

This alternative would significantly increase the duration of time community, workers, and the environment is exposed to on-Site contamination and potential for off-site exposures during remediation.

Implementation – Significant technical and administrative implementation issues would be encountered in completion of the Unrestricted Use alternative. Technical implementation issues include, but are not limited to: shoring/stabilizing excavation sidewalls to prevent sloughing during the deep excavation; the need for construction, maintenance, and operation of dewatering facilities; groundwater and/or stormwater handling, treatment and/or discharge/disposal; and traffic coordination for trucks entering and exiting Niagara Street. As such, the feasibility of achieving an Unrestricted Use cleanup is questionable.

Administrative implementation issues may include: the need to coordinate and secure disposal contracts with numerous permitted off-site landfills as a single location would not be able to be relied upon to accept the volume of soil/fill generated under this alternative; difficulty locating local borrow sources for such a large volume of backfill; and the need for

rezoning of the area to allow for Unrestricted Uses (e.g., farming, livestock, single-family residential), which are not consistent with current surrounding land-use or the reasonably anticipated future use the Site.

Cost – The capital cost of implementing an Unrestricted Use cleanup alternative is estimated at $7.9 MM (see Table 10). Annual certification costs would not be incurred.

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

7.5.3 Alternative 3 – Track 2 Restricted Residential Use Cleanup

Under this alternative, the Site would be required to achieve 6NYRR Part 375 Restricted Residential Use SCOs without the use of a soil cover system to limit potential exposure to subsurface contaminant; therefore, the Track 2 alternative in general would include: excavation and off-Site disposal of soil/fill exceeding RRSCOs to a maximum depth of 15-ft below post-redevelopment final grade across the entire site.

Based on the historic and RI investigation findings, soil/fill exceeding RRSCOs is present on-Site, ranging in depth from 0-16 fbgs, with the average depth of 6 fbgs. In total, approximately 16,000 CY (25,600 tons) would be removed from the Site for this alternative. For Track 2 remedies, restrictions can be placed on the use of the property in the form of institutional and engineering controls, and future use and development will be completed in accordance with the environmental easement and site management plan.

Overall Protection of Public Health and the Environment – This alternative would satisfy the NYSDEC requirements for a Track 2 cleanup under the BCP regulations and would be protective of public health and the environment. The RAOs for the Site would be satisfied through the planned extent of remedial activities, including: removal and off-site disposal of targeted soil/fill exceeding RRSOCs; removal of USTs and off-site disposal/recycling of UST contents; installation of SVE system to address nuisance

petroleum related impacts at depths greater than 15 fbgs; and, the use of IC/ECs to limit the future use to commercial purposes.

Compliance with SCGs – The planned remedial activities would need to be performed in accordance with applicable, relevant, and appropriate SCGs. Imported backfill material would need to meet backfill quality criteria per DER-10. Subgrade intrusive activities would necessitate preparation of and adherence to a community air monitoring plan in accordance with Appendices 1A and 1B of DER-10. The planned remedial actions are fully protective of public health and the environment, and could achieve all RAOs for the Site.

Long-Term Effectiveness and Permanence – Completion of this remedial alternative would provide for long-term effectiveness and permanence. The SMP will include: an O&M Plan to confirm that engineering controls, including the SVE system, are operating and being maintained in accordance with the SMP, provisions for completion of vapor assessment or installation of ASD system(s) in future buildings; and a Site-wide inspection program to assure that the IC/ECs placed on-Site have not been altered and remain effective. Furthermore, an Environmental Easement will be filed with Erie County, which will limit the future use of the Site to restricted-residential or more restrictive uses, restrict groundwater use, and reference the Department-approved SMP. As such, this alternative will provide long-term effectiveness and permanence.

Reduction of Toxicity, Mobility, or Volume with Treatment – Through removal of the USTs and soil/fill exceeding RRSCOs and application of SVE this criteria would be achieved. The Site Management Plan will include a Site-wide Inspection and Certification program to assure that the Engineering and Institutional Controls placed on the Site have not been altered and remain effective. Accordingly, this alternative satisfies this criterion.

Short-Term Effectiveness – The principal advantage of a large-scale excavation to achieve Track 2 Restricted-Residential Use SCOs is reliability of effectiveness in the long-term. However, similar to achieving an Unrestricted Use cleanup, the short-term adverse

impacts and risks to the community, workers, and environment during implementation of this alternative are significant.

There are several potential short-term impacts associated with this alternative.

- There is potential for impacts to human health (workers and construction personnel) due to direct contact with impacted soil and particulate releases. This alternative would require implementation of a health and safety plan (HASP) and community air monitoring, as outlined in the NYSDOH Generic Community Air Monitoring Plan (CAMP), in order to mitigate potential adverse conditions/short-term impacts. Additional health and safety measures would need to be employed during excavation activities within the building and under the building slab. Moreover, significant physical hazards may be encountered due to structural limitations associated with deep excavation and the proximity of adjacent buildings, utilities and roadways.
- Human health and the environment associated with chemical exposures would be protected under this alternative if the HASP and CAMP are properly implemented. This alternative is expected to meet RAOs at completion of the excavations, because the impacted soil will be removed from the Site. Confirmatory soil sampling would be performed.

This alternative would significantly increase the duration of time community, workers, and the environment is exposed to on-Site contamination and potential for off-site exposures during remediation.

Implementation – Similar to the Unrestricted Use cleanup scenario, technical implementation would be a barrier to construction of this alternative. The Site is planned for commercial redevelopment and surface parking areas. Removal of the USTs and excavation and off-site disposal to a depth of 15 fbgs is feasible, however, as the Site is planned for restricted-residential and commercial use, the additional cleanup required to achieve Track 2 is consider a significant implementation issue. As a Track 2 cleanup does not allow for the use of a cover system, excavation and off-site disposal of over 25,000 tons of contaminated soil/fill would be required.

Given the location of the Site, and the required number of dump trucks for disposal and backfill (estimated at approx. 2,300 trucks total) the staging and access to the Site would likely impact neighboring residential streets/communities. Therefore, implementation of the Track 2 alternative is not cconsidered reasonable given the current and anticipated future use of the Site.

Cost – The capital cost of implementing a Restricted Residential Use (Track2) alternative is estimated at $3.6 MM (see Table 11).

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

7.5.4 Alternative 4 – Track 4 Restricted-Residential Use Cleanup

Under this alternative, the Site would be cleaned up to achieve a Track 4 Restricted-Residential Use Cleanup. For Track 4 remedies, restrictions can be placed on the use of the property in the form of IC/ECs if they can be realistically implemented and maintained in a reliable and enforceable manner. For restricted-residential use, the top two feet of all exposed soils that are not otherwise covered by the components of the development of the site (e.g. buildings, pavement) cannot exceed the restricted-residential SCOs. Areas that exceed the restricted-residential SCOs must be covered by material meeting the requirements of the generic soil cleanup table contained in 6NYCRR Part 375-6.7(d) for restricted-residential future Site use.

This alternative's remedial measures would include:

- **Excavation and removal of USTs,** including cleaning and disposal of residual contents, and removal and off-site recycling as scrap of USTs;
- **Excavation and off-site disposal** of soil/fill exceeding CSCOs[1], specifically petroleum impacted soil/fill in the UST tank pit, PCB impacted soil/fill in the vicinity of SB-17, and metals impacted soil/fill on the western loading dock.

[1] The Commercial Use SCOs are deemed protective of human health for adult outdoor workers who contact soil/fill on a routine basis (4 days/week during the warmer months of the year) and for child visitor scenarios. Therefore the commercial use SCOs are conservative when considered as a screening criteria for remediation of soil/fill prior to

For PAHs, which tend to be ubiquitous in urban areas of western NY, an alternate site specific action level (SSAL) of 500 mg/Kg total PAHs will be employed. This criterion is referenced under NYSDEC CP-51 guidance for sites where cover systems will be employed (i.e., Track 4 sites) and where an environmental easement will be enforced to assure that the cover is maintained, as would be the case under this Alternative. As indicated on Tables 3 and 4, total PAHs concentrations were well below this SSAL, with minor exceptions primarily limited to areas planned for remediation (e.g., NS-04).

- **Collection of post-excavation confirmatory samples,** in accordance with DER-10
- **Installation of Soil Vapor Extraction System,** to remediate petroleum VOCs nuisance characteristics in overburden soil/fill
- **Placement of Cover System,** including demarcation layer underlying DER-10 acceptable backfill in areas without hardscape (building, asphalt and concrete) to address remaining contamination above RRSCOs.
- **Implementation of a Site Management Plan (SMP)**. The SMP will include:
  - **Institutional Controls and Engineering Controls (IC/EC)** Engineering controls include any physical barrier or method employed to actively or passively contain, stabilize, or monitor contaminants; restrict the movement of contaminants; or eliminate potential exposure pathways to contaminants. Institutional controls at the site will include groundwater use restrictions and use restrictions of the Site to restricted residential or commercial use. In-well treatment socks will be placed in wells with residual VOC concentrations. Provisions for vapor intrusion assessment or installation of active subslab depressurizations system in future buildings, if necessary;
  - **Operation and Maintenance Plan** that describes the measures necessary to operate, monitor, and maintain any mechanical components of the remedial work;
  - **Excavation Work Plan** to assure that future intrusive activities and soil/fill handling at the Site are completed in a safe and environmentally responsible manner;

cover placement under a Track 4 restricted residential cleanup scenario, as future exposures would be limited to deep excavations related to one-time short-duration excavation activities (e.g., utility), which would be completed in accordance with the Site Management Plan.

- **Site Monitoring Plan** that includes: provisions for a Site-wide inspection program to assure that the IC/ECs have not been altered and remain effective; and,
- **Environmental Easement** filed with Erie County.

Based on the findings of the historic investigation and RI, evidence of petroleum impacted soil/fill in the UST tank pit ranges from 1 to 11 fbgs, with highest PID readings ranging from 3 to 8 fbgs; the SB-17 PCB area, impacted soil/fill was identified approximately between 8 to 14 fbgs; and metals impacted shallow soil/fill present on the western loading dock (NS-4 and NS-5). In total, approximately 1,500 CY (2,400 tons) would be removed from the Site (see Figure 9).

Placement of DER-10 compliant cover system in areas of the site not covered by hardscape (e.g., building, asphalt and concrete) would require approximately 4,000 CY of clean backfill material.

Figure 6 identifies the planned remedial measures necessary to achieve a Track 4 RRSCO cleanup. Specific details of the remediation will be provided in the Remedial Action Work Plan and submitted to the Department for review and approval.

Overall Protection of Public Health and the Environment – This alternative meets NYSDEC requirements for a Track 4 cleanup under the BCP regulations and is protective of public health and the environment. The RAOs for the Site would be satisfied through the planned remedial activities, including: removal of USTs and off-site disposal/recycling of UST contents; removal and off-site disposal of soil/fill exceeding CSCOs; installation of SVE system; placement of DER-10 compliant cover system, and the use of IC/ECs to prevent potential future exposure, and limit the future use to commercial purposes.

Compliance with SCGs – The planned remedial activities would need to be performed in accordance with applicable, relevant, and appropriate SCGs. Post-excavation samples would be collected to verify conformance with SCOs, and imported cover material would need to meet backfill criteria per DER-10. Cover placement would be performed under the BCP and require an equivalent SFMP. Subgrade intrusive activities would

necessitate adherence with the CAMP, in accordance with Appendices 1A and 1B of DER-10. The Site Management Plan will include: an Operation and Maintenance (O&M) plan to confirm that engineering controls, including the SVE system, treatment socks and soil cover are operating and being maintained in accordance with the SMP; an Excavation Work Plan to address any impacted soil/fill encountered during post-development maintenance activities; and, a Site-wide Inspection program to assure that the engineering and institutional controls placed on the Site have not been altered and remain effective.

The planned remedial activities for this alternative are fully protective of public health and the environment, and achieve RAOs for the Site.

Long-Term Effectiveness and Permanence – Removal of the USTs, petroleum VOC, PCB and metals impacted soil/fill, as well as installation of SVE and construction of a soil cover system would prevent direct contact with soil/fill exceeding RRSCOs will provide long-term effectiveness and permanence.

The SMP will include appropriate plans, controls, and measures and an environmental easement to ensure the restricted use remedy is protective of human health and the environment. The SMP will be followed by the current Site owner as well as future Site owners. As such, this alternative will provide long-term effectiveness and permanence.

Reduction of Toxicity, Mobility, or Volume with Treatment – Through the planned remedial measures described above, this criteria will be achieved. The Site Management Plan will include an Excavation Work Plan to address any residual material encountered during post-development maintenance activities and a Site-wide Inspection and Certification program to assure that the Engineering and Institutional Controls placed on the Site have not been altered and remain effective. Accordingly, this alternative satisfies this criterion.

Short-Term Effectiveness – The short-term adverse impacts and risks to the community, workers, and environment during implementation of this Restricted Residential Use alternative are not considered significant and are controllable.

During intrusive remedial activities air monitoring will be performed to assure conformance with community air monitoring action levels. Planned remedial activities will

be performed in accordance with an approved work plan, including health and safety plan (HASP), CAMP, and Soil-Fill Management Plan (SFMP). This alternative achieves the RAOs for the Site.

Implementation – No technical or action-specific administrative implementability issues are associated with the Track 4 Restricted Residential Use Cleanup alternative.

Cost – The capital cost of implementing a Track 4 RRSCO cleanup alternative is estimated at $1.24 MM (see Table 12).

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

7.6 Recommended Remedial Measure

Based on the alternatives evaluation, as described above, the proposed remedial approach for the Site is a Track 4 Restricted Residential Use Cleanup. A Track 4 Restricted Residential Use cleanup would be fully protective of public health and the environment, is significantly less disruptive to the surrounding community, is consistent with current and future land use, and represents a cost-effective approach that fully satisfies the RAOs for the Site.

The components and details of the remedial approach will be more fully described in a Remedial Action Work Plan to be submitted to the NYSDEC for approval. In summary, this alternative would involve:

- **Excavation and removal of USTs,** including cleaning and disposal of residual contents, and removal and off-site recycling as scrap of USTs;
- **Excavation and off-site disposal** of soil/fill exceeding CSCOs, specifically:
  - Petroleum impacted soil/fill in the UST tank pit (TP-4 area)
  - PCB impacted soil/fill in the vicinity of SB-17
  - Metals impacted soil/fill on the western loading dock.
- **Collection of post-excavation confirmatory samples,** in accordance with DER-10

- **Installation of Soil Vapor Extraction (SVE) System,** to remediate nuisance petroleum VOCs characteristics in overburden soil/fill
- **Placement of Cover System,** including demarcation layer underlying DER-10 acceptable backfill in areas without hardscape (building, asphalt and concrete) to address remaining contamination above RRSCOs.
- **Implementation of a Site Management Plan (SMP)**. The SMP will include:
    - **Institutional Controls and Engineering Controls (IC/EC)** Engineering controls include any physical barrier or method employed to actively or passively contain, stabilize, or monitor contaminants; restrict the movement of contaminants; or eliminate potential exposure pathways to contaminants. Institutional controls at the site will include groundwater use restrictions and use restrictions of the Site to restricted residential or commercial use. In-well treatment socks will be placed in wells with residual VOC concentrations. Provisions for vapor intrusion assessment or installation of active subslab depressurizations system in future buildings, if necessary
    - **Operation and Maintenance Plan** that describes the measures necessary to operate, monitor, and maintain any mechanical components of the remedial work.
    - **Excavation Work Plan** to assure that future intrusive activities and soil/fill handling at the Site are completed in a safe and environmentally responsible manner;
    - **Site Monitoring Plan** that includes: provisions for a Site-wide inspection program to assure that the IC/ECs have not been altered and remain effective; and,
    - **Environmental Easement** filed with Erie County.

8.0 RI/AAR SUMMARY AND CONCLUSIONS

Based on the data and analyses presented in the preceding sections, we offer the following summary and conclusions:

- Based on the surface/near surface soil data, certain SVOCs and metals were detected above their respective Restricted Residential and/or Commercial Use SCOs. All VOCs, PCBs, pesticides, herbicides were detected below their respective CSCOs.

- Based on the subsurface soil/fill data, certain metals and PCBs were detected above their respective Restricted-Residential and/or Commercial Use SCOs. All VOCs, SVOCs, pesticides, herbicides were detected below their respective CSCOs. Nuisance petroleum characteristics (odors and elevated PID readings) were identified related to the USTs and former tank area.

- Based on the groundwater data, the vast majority of analytes were detected below GWQS. Petroleum related VOCs were detected above GWQS in four sample locations, certain SVOCs and pesticides were also detected above GWQS, and several naturally occurring metals were detected above GWQS. No PCBs or herbicides were detected above GWQS.

- Given the nature and extent of contamination present in soil/fill and groundwater, and the long history of commercial/industrial use, it is not practicable to remediate the Property to pre-release (Unrestricted Use) or Track 2 Restricted-Residential conditions. The evaluation of remedial alternatives selected a Restricted-Residential Use (Track 4) Cleanup that is fully protective of public health and the environment.

9.0 REFERENCES

1. New York State Department of Environmental Conservation. *DER-10; Technical Guidance for Site Investigation and Remediation.* May 2010.

2. United States Department of Agriculture (USDA), Soil Conservation Service. *Soil Survey of Erie County, New York.* December 1986.

3. TurnKey Environmental Restoration, LLC. *Phase I Environmental Site Assessment, 1050-1088 Niagara Street, Buffalo, New York.* June 2012.

4. TurnKey Environmental Restoration, LLC. *Limited Phase II Environmental Investigation Report, 1050-1088 Niagara Street, Buffalo, New York.* July 2012.

5. TurnKey Environmental Restoration, LLC. *Supplemental Phase II Site Investigation Report, 1050-1088 Niagara Street, Buffalo, New York.* August 2013.

6. Benchmark Environmental Engineering and Science, PLLC and TurnKey Environmental Restoration, LLC. *Remedial Investigation/Interim Remedial Measures/Alternatives Analysis Work Plan, 1050-1088 Niagara Street, Buffalo, New York.* May 2014.

7. United States Department of Agriculture (USDA), Soil Conservation Service. *Soil Survey of Erie County, New York.* December 1986.

8. Chow, V., Maidment, D., and Mays, L. 1988. Applied Hydrology. McGraw-Hill.

TABLES

TABLE 1

SUMMARY OF SAMPLING AND ANALYSIS PROGRAM

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

Sample Identifier	Data Source	Depth Sampled/ Screened (fbgs)	Analysis										Date Sampled
			TCL+CP-51 VOCs	TCL+CP-51 SVOCs	TCL SVOCs	CP-51 SVOCs	B/N SVOCs	PCBs	TAL Metals	RCRA Metals	Pesticides	Herbicides	
Surface Soil/Fill													
SS-1	Remedial Investigation	0-0.5			X			X	X		X	X	08/01/2014
SS-2	Remedial Investigation	0-0.5			X				X				08/01/2014
SS-3	Remedial Investigation	0-0.5			X			X	X		X	X	08/01/2014
SS-4	Remedial Investigation	0-0.5			X				X				08/01/2014
SS-5	Remedial Investigation	0-0.5			X			X	X		X	X	08/01/2014
SS-6	Remedial Investigation	0-0.5			X				X				08/01/2014
NS-01	Remedial Investigation	0-2			X			X	X		X	X	07/31/2014
NS-02	Remedial Investigation	0-2			X				X				07/31/2014
NS-03	Remedial Investigation	0-2			X			X	X		X	X	07/31/2014
NS-04	Remedial Investigation	0-1					X			X			08/01/2014
NS-05	Remedial Investigation	0-1			X			X	X		X	X	08/01/2014
Subsurface Soil/Fill													
TP-1	Phase II ESI	7-9				X				X			05/16/2012
TP-3	Phase II ESI	4-5	X			X				X			05/16/2012
TP-4	Phase II ESI	3-5	X			X				X			05/16/2012
TP-5	Phase II ESI	7-9				X				X			05/16/2012
TP-10	Phase II ESI	9-11	X			X				X			05/16/2012
SB-01	Supplemental Phase II	0.5-1			X				X				07/15/2013
SB-02	Supplemental Phase II	0.5-1			X				X				07/15/2013
SB-03	Supplemental Phase II	0-0.5			X				X				07/15/2013
SB-04	Supplemental Phase II	0-0.5			X				X				07/15/2013
SB-05	Supplemental Phase II	0.5-1			X			X					07/15/2013
SB-06	Supplemental Phase II	0.5-1			X								07/15/2013
SB-07	Supplemental Phase II	0.5-1			X				X				07/15/2013
SB-08	Supplemental Phase II	0.5-1			X								07/15/2013
TP-11	Remedial Investigation	6-8	X		X			X	X		X	X	07/31/2014
TP-12	Remedial Investigation	10-16			X			X	X		X	X	07/31/2014
TP-13	Remedial Investigation	4-6	X		X			X	X				07/31/2014
TP-14	Remedial Investigation	2.5-4.5					X			X			07/31/2014
MW-3	Remedial Investigation	18-20			X			X	X		X	X	08/20/2014
MW-4	Remedial Investigation	2-4			X				X				08/20/2014
MW-4	Remedial Investigation	16-18	X										08/20/2014
MW-6	Remedial Investigation	2-4			X			X	X		X	X	08/19/2014
SB-09	Remedial Investigation	0.4-2	X				X			X			08/27/2014
SB-10	Remedial Investigation	0.4-2		X				X	X		X	X	08/27/2014
SB-11	Remedial Investigation	0.4-2					X			X			08/27/2014
SB-12	Remedial Investigation	12-14	X	X					X				08/27/2014
SB-13	Remedial Investigation	0.4-2		X					X				08/28/2014
SB-14	Remedial Investigation	11-12	X	X				X	X				08/28/2014
SB-15	Remedial Investigation	10-12	X	X				X	X		X	X	08/28/2014
SB-16	Remedial Investigation	4-6					X			X			08/28/2014
SB-17	Remedial Investigation	8-10			X			X	X		X	X	08/19/2014
SB-18	Remedial Investigation	14-16	X				X			X			08/19/2014
SB-19	Remedial Investigation	2-4			X				X				08/20/2014
SB-19	Remedial Investigation	9-10	X										08/20/2014
B-1 (8-10)	Remedial Investigation	8-10	X					X					01/29/2015
B-2 (8-10)	Remedial Investigation	8-10						X					01/30/2015
B-2 (10-12)	Remedial Investigation	10-12						X					01/30/2015
B-3 (8-10)	Remedial Investigation	8-10						X					01/30/2015
B-3 (10-12)	Remedial Investigation	10-12						X					01/30/2015
B-4 (8-10)	Remedial Investigation	8-10						X					03/03/2015
B-4 (10-12)	Remedial Investigation	10-12						X					03/03/2015
Groundwater													
MW-3	Remedial Investigation	--	X		X			X	X		X	X	02/11/2015
MW-4	Remedial Investigation	--	X		X			X	X		X	X	02/11/2015
MW-5	Remedial Investigation	--	X		X								02/11/2015
MW-6	Remedial Investigation	--	X		X			X	X		X	X	11/07/2014
TMW-1 (SB-12)	Remedial Investigation	--	X		X								11/07/2014
TMW-2 (SB-14)	Remedial Investigation	--	X		X			X	X		X	X	11/07/2014
TMW-3 (SB-15)	Remedial Investigation	--	X		X								11/07/2014
TMW-1 (SB-12)	Remedial Investigation		X										02/10/2015
TMW-2 (SB-14)	Remedial Investigation	--	X										02/10/2015
TMW-3 (SB-15)	Remedial Investigation	--	X										02/10/2015
Air													
SV-1	Remedial Investigation	0-0.5	X										08/01/2014
SV-2	Remedial Investigation	0-0.5	X										08/01/2014
Ambient-1	Remedial Investigation	--	X										08/01/2014
SV-3	Remedial Investigation	0-0.5	X										08/01/2014
SV-4	Remedial Investigation	0-0.5	X										08/01/2014
Ambient-2	Remedial Investigation	--	X										08/01/2014
Outdoor Air	Remedial Investigation	--	X										08/01/2014

TABLE 2

SUMMARY OF HISTORIC SUBSURFACE SOIL/FILL ANALYITCAL RESULTS

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

PARAMETER [1]	Unrestricted Use SCOs [3]	Restricted Residential Use SCOs [3]	Commercial Use SCOs [3]	SAMPLE LOCATION (DEPTH)													
				TP-1 (7-9)	TP-3 (4-5)	TP-4 (3-5)	TP-5 (7-9)	TP-10 (9-11)	SB-01 (0.5-1)	SB-02 (0.5-1)	SB-03 (0-0.5)	SB-04 (0-0.5)	SB-05 (0.5-1)	SB-06 (0.5-1)	SB-07 (0.5-1)	SB-08 (0.5-1)
				05/16/2012					07/15/2013							
Volatile Organic Compounds (VOCs) - mg/Kg [4]																	
1,2,4-Trimethylbenzene	**3.6**	**52**	**190**	--	0.7 B	**85**	--	0.0012 J	--	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	**8.4**	**52**	**190**	--	ND	**35**	--	ND	--	--	--	--	--	--	--	--
2-Butanone (MEK)	**0.12**	**100**	**500**	--	0.026 J	ND	--	0.006 J	--	--	--	--	--	--	--	--
4-Isopropyltoluene	**--**	**--**	**--**	--	ND	ND	--	ND	--	--	--	--	--	--	--	--
Acetone	**0.05**	**100**	**500**	--	**0.17**	ND	--	0.042	--	--	--	--	--	--	--	--
Benzene	**0.06**	**4.8**	**44**	--	ND	ND	--	ND	--	--	--	--	--	--	--	--
Cyclohexane	**--**	**--**	**--**	--	0.27	19	--	ND	--	--	--	--	--	--	--	--
Ethylbenzene	**1**	**41**	**390**	--	ND	**23**	--	ND	--	--	--	--	--	--	--	--
Isopropylbenzene (Cumene)	**--**	**--**	**--**	--	0.25	9.6	--	ND	--	--	--	--	--	--	--	--
Methylcyclohexane	**--**	**--**	**--**	--	0.55	120	--	ND	--	--	--	--	--	--	--	--
n-Butylbenzene	**12**	**--**	**--**	--	ND	7.7	--	ND	--	--	--	--	--	--	--	--
n-Propylbenzene	**3.9**	**100**	**500**	--	0.38	**130**	--	ND	--	--	--	--	--	--	--	--
p-Isopropyltoluene	**--**	**--**	**--**	--	ND	7.2	--	ND	--	--	--	--	--	--	--	--
sec-Butylbenzene	**11**	**100**	**500**	--	ND	3.3	--	ND	--	--	--	--	--	--	--	--
tert-Butylbenzene	**5.9**	**100**	**500**	--	0.019 J	ND	--	ND	--	--	--	--	--	--	--	--
trans-1,2-Dichloroethene	**0.19**	**100**	**500**	--	ND	ND	--	ND	--	--	--	--	--	--	--	--
Total Xylenes	**0.26**	**100**	**500**	--	0.091 B	**100**	--	0.003 J	--	--	--	--	--	--	--	--
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg [4]																	
2-Methylnaphthalene	**--**	**--**	**--**	ND	ND	ND	ND	ND	ND	ND	25	5.9	1.3 J	ND	ND	ND
3-Methylphenol/4-Methylphenol	**--**	**--**	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	**20**	**100**	**500**	0.025 J	ND	ND	ND	ND	ND	ND	**39**	7	7.3	ND	0.096 J	ND
Acenaphthylene	**100**	**100**	**500**	0.01 J	ND	ND	ND	ND	ND	ND	ND	6.2	1.2 J	ND	ND	ND
Anthracene	**100**	**100**	**500**	0.047 J	ND	ND	0.11 J	ND	ND	ND	60	18	15	ND	0.18	ND
Benzo(a)anthracene	**1**	**1**	**5.6**	0.17 B J	ND	ND	0.61 B J	ND	ND	ND	**130**	**46**	**40**	ND	0.59	ND
Benzo(a)pyrene	**1**	**1**	**1**	0.18 B J	ND	ND	0.58 B J	ND	ND	ND	**120**	**39**	**40**	ND	0.4	ND
Benzo(b)fluoranthene	**1**	**1**	**5.6**	0.2 B	ND	ND	0.72 B J	ND	ND	ND	**120**	**36**	**55**	ND	0.65	ND
Benzo(ghi)perylene	**100**	**100**	**500**	0.08 B J	ND	ND	0.32 B J	ND	ND	ND	67	21	26	ND	0.3	ND
Benzo(k)fluoranthene	**0.8**	**3.9**	**56**	0.11 B J	ND	ND	0.4 B J	ND	ND	ND	**110**	**33**	**19**	ND	0.22	ND
Biphenyl	**--**	**--**	**--**	ND	ND	ND	ND	ND	ND	ND	5.1 J	ND	ND	ND	ND	ND
Bis(2-ethylhexyl) phthalate	**--**	**--**	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.4 J	ND	ND	ND
Butyl benzyl phthalate	**--**	**--**	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1 J	ND	ND	ND
Carbazole	**--**	**--**	**--**	ND	ND	ND	ND	ND	ND	ND	41	10	13	ND	0.13 J	ND
Chrysene	**1**	**3.9**	**56**	0.15 B J	ND	ND	0.6 B J	ND	ND	ND	**120**	**44**	**45**	ND	0.63	ND
Dibenzo(a,h)anthracene	**0.33**	**0.33**	**0.56**	0.035 B J	ND	ND	ND	ND	ND	ND	**12**	**6.6**	ND	ND	0.1 J	ND
Dibenzofuran	**7**	**59**	**350**	ND	ND	ND	ND	ND	ND	ND	38	7.9	4.4	ND	ND	ND
Diethyl phthalate	**--**	**--**	**--**	ND	ND	ND	ND	ND	ND	0.086 J	ND	ND	ND	ND	ND	ND
Fluoranthene	**100**	**100**	**500**	0.22 B	ND	ND	0.96 B J	ND	ND	ND	**300**	97	85	ND	1.4	ND
Fluorene	**30**	**100**	**500**	0.016 J	ND	ND	ND	ND	ND	ND	**43**	9	ND	ND	0.08 J	ND
Indeno(1,2,3-cd)pyrene	**0.5**	**0.5**	**5.6**	0.092 B J	ND	ND	0.31 B J	ND	ND	ND	**85**	**24**	ND	ND	0.25	ND
Isophorone	**--**	**--**	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	**12**	**100**	**500**	0.1 J	0.052 J	4.4 J	ND	ND	ND	ND	**51**	**15**	2.2 J	ND	ND	ND
Phenanthrene	**100**	**100**	**500**	0.22 B	ND	ND	0.66 B J	ND	ND	0.17	**300**	67	ND	0.072 J	1.2	ND
Pyrene	**100**	**100**	**500**	0.22 B	ND	ND	1 B J	ND	ND	ND	**210**	84	69	ND	1	ND
Metals - mg/Kg																	
Aluminum	**--**	**--**	**--**	--	--	--	--	--	2000	5400	4300	4500	--	--	10000	--
Antimony	**--**	**--**	**--**	--	--	--	--	--	ND	2 J	5.8	9.4	--	--	ND	--
Arsenic	**13**	**16**	**16**	8.8	4.5	4.3	5.9	5.1	3.2	3.4	**42**	**86**	--	--	5.9	--
Barium	**350**	**400**	**400**	133	112	117	**375**	76.7	83	100	220	240	--	--	61	--
Beryllium	**7.2**	**72**	**590**	--	--	--	--	--	0.18 J	0.57	0.57	0.45 J	--	--	0.41 J	--
Cadmium	**2.5**	**4.3**	**9.3**	1.7	ND	0.33	**6**	0.25	0.34 J	0.78 J	**3.4**	**15**	--	--	0.52 J	--
Calcium	**--**	**--**	**--**	--	--	--	--	--	12000	21000	6200	23000	--	--	73000	--
Chromium	**30**	**180**	**1500**	**77.3**	18.8	14.4	**67.6**	15.3	4	12	**57**	**44**	--	--	13	--
Cobalt	**--**	**--**	**--**	--	--	--	--	--	62	140	18	8.6	--	--	21	--
Copper	**50**	**270**	**270**	--	--	--	--	--	29	**87**	**660**	**320**	--	--	36	--
Iron	**--**	**--**	**--**	--	--	--	--	--	9300	12000	100000	41000	--	--	15000	--
Lead	**63**	**400**	**1000**	**1160**	19	1.3	**292**	14	16	48	**670**	**550**	--	--	36	--
Magnesium	**--**	**--**	**--**	--	--	--	--	--	2700	5200	790	2000	--	--	31000	--
Manganese	**1600**	**2000**	**10000**	--	--	--	--	--	47	120	530	380	--	--	460	--
Mercury	**0.18**	**0.81**	**2.8**	**4**	ND	0.083	**0.35**	ND	ND	0.03 J	**0.99**	**2.2**	--	--	ND	--
Nickel	**30**	**310**	**310**	--	--	--	--	--	13	48	30	28	--	--	19	--
Potassium	**--**	**--**	**--**	--	--	--	--	--	380	950	320	540	--	--	1400	--
Selenium	**3.9**	**180**	**1500**	ND	ND	ND	ND	ND	1.2 J	0.36 J	2.1	**6.2**	--	--	0.35 J	--
Silver	**2**	**180**	**1500**	ND	ND	ND	0.73	ND	1.6	**9**	**11**	**8**	--	--	0.32 J	--
Sodium	**--**	**--**	**--**	--	--	--	--	--	150 J	220	140 J	320 J	--	--	190 J	--
Vanadium	**--**	**--**	**--**	--	--	--	--	--	8.3	16	11	15	--	--	20	--
Zinc	**109**	**10000**	**10000**	--	--	--	--	--	39	80	**410**	**670**	--	--	68	--

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per 6NYCRR Part 375 Soil Cleanup Objectives (SCOs).
3. Sample results were reported by the laboratory in ug/kg and converted to mg/kg for comparisons to SCOs

Definitions:

ND = Parameter not detected above laboratory detection limit.
"--" = No value available for the parameter. Or parameter not analysed for.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
B = Analyte was detected in assoziated method blank.

Bold	= Result exceeds Unrestricted Use SCOs.
Bold	= Result exceeds Restricted Residential Use SCOs.
Bold	= Result exceeds Commercial Use SCOs.

TABLE 3

SUMMARY OF RI SURFACE & NEAR-SURFACE SOIL ANALYITCAL RESULTS

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

PARAMETER [1]	Unrestricted Use SCOs [2]	Restricted Residential Use SCOs [2]	Commercial Use SCOs [2]	SAMPLE LOCATION (DEPTH)										
				SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	NS-01 (0-2)	NS-02 (0-2)	NS-03 (0-2)	NS-04 (0-1)	NS-05 (0-1)
				08/01/2014						07/31/2014			08/01/2014	
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg [3]														
2-Methylnaphthalene	--	--	--	0.21 J	0.038 J	ND	0.15 J	0.2 J	0.86	ND	ND	ND	26	1.5
Acenaphthene	**20**	**100**	**500**	0.68	0.067 J	ND	0.36 J	0.56	3.1	ND	ND	ND	**59**	0.86
Acenaphthylene	**100**	**100**	**500**	1.1	0.25 J	ND	0.092 J	2.3	0.42 J	0.15 J	ND	ND	5.1 J	0.42 J
Anthracene	**100**	**100**	**500**	4.8	0.57	0.082 J	0.77	2.3	6	0.41 J	ND	ND	99	1.8
Benzo(a)anthracene	**1**	**1**	**5.6**	**7.6**	**1.5**	0.31 J	**2.1**	**11**	**16**	**1**	ND	ND	**240**	**5.1**
Benzo(a)pyrene	**1**	**1**	**1**	**5.3**	**1.1**	0.28 J	**1.9**	**14**	**14**	0.75	ND	ND	**210**	**4.5**
Benzo(b)fluoranthene	**1**	**1**	**5.6**	**6.5**	**1.6**	0.37	**2.3**	**16**	**18**	**1.1**	ND	ND	**270**	**6.1**
Benzo(ghi)perylene	**100**	**100**	**500**	3.2	0.79	0.18 J	1.3	12	11	0.54	ND	ND	**150**	3.5
Benzo(k)fluoranthene	**0.8**	**3.9**	**56**	**2.1**	0.5	0.16 J	**1.3**	**5.6**	**6.9**	0.29 J	ND	ND	**130**	**2**
Biphenyl	--	--	--	ND	ND	ND	ND	ND	0.25 J	ND	ND	ND	ND	ND
Bis(2-ethylhexyl) phthalate	--	--	--	ND	4.2	ND	ND	ND	ND	ND	ND	ND	ND	ND
Butyl benzyl phthalate	--	--	--	ND	ND	ND	1.8 J	0.62 J	ND	ND	ND	ND	ND	ND
Carbazole	--	--	--	0.72	ND	ND	0.48	0.54	3.5	ND	ND	ND	80	1.2
Chrysene	**1**	**3.9**	**56**	**6.6**	**1.3**	0.24 J	**2.3**	**11**	**16**	0.94	ND	ND	**240**	**5.4**
Dibenzo(a,h)anthracene	**0.33**	**0.33**	**0.56**	**0.85**	0.2 J	ND	**0.41**	**2.6**	**3.1**	ND	ND	ND	**33**	**1.1**
Dibenzofuran	**7**	**59**	**350**	0.86 J	ND	ND	0.26 J	0.24 J	1.9 J	ND	ND	ND	**56**	1.2 J
Fluoranthene	**100**	**100**	**500**	16	3.1	0.52	4.6	17	35	1.9	ND	0.21 J	**620**	9.7
Fluorene	**30**	**100**	**500**	1.9	ND	ND	0.32 J	0.77	3.1	ND	ND	ND	**61**	1
Indeno(1,2,3-cd)pyrene	**0.5**	**0.5**	**5.6**	**3.1**	**0.73**	0.17 J	**1.3**	**10**	**9.6**	0.45	ND	ND	**140**	**3.3**
Naphthalene	**12**	**100**	**500**	ND	ND	ND	0.35 J	ND	2.6	ND	ND	ND	**73**	2
Phenanthrene	**100**	**100**	**500**	15	2.1	0.28 J	3.7	5.8	30	1.2	ND	0.13 J	**600**	8.2
Pyrene	**100**	**100**	**500**	12	2.5	0.49	4	19	31	1.6	ND	0.19 J	**420**	7.8
Total PAHs	--	--	**500**	88.52 J	20.545 J	3.082 J	29.792 J	131.53 J	212.33 J	10.33 J	0 J	0.53 J	**3512.1 J**	66.68 J
Total PCBs - mg/Kg														
Total PCBs	**0.1**	**1**	**1**	ND	--	ND	ND	ND	--	ND	ND	ND	--	ND
Metals - mg/Kg														
Aluminum	--	--	--	12400	7270	6940	2240	3970	7080	10700	2530	7730	--	4110
Antimony	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	54.4
Arsenic	**13**	**16**	**16**	3.7	4.9	3.9	4.8	4.3	**19.7**	4.5	5.2	4.3	**260**	**49.5**
Barium	**350**	**400**	**400**	128	71.7	77.8	29.3	49.3	123	117	29.1	75.5	163	**7580**
Beryllium	**7.2**	**72**	**590**	1.6	0.59	0.47	ND	0.49	0.53	1.1	0.21	0.58	--	0.66
Cadmium	**2.5**	**4.3**	**9.3**	ND	0.27 J	0.24	2.2	0.61	1.3	0.32	0.37	0.27	**4.2**	**26.1**
Calcium	--	--	--	83600	99600	59300	156000	119000	20100	94700	139000	85200	--	12500
Chromium	**30**	**180**	**1500**	23.8	**80**	10.1	9.1	15.9	21.1	**99.3**	10.6	24.4	**32.4**	**81.1**
Cobalt	--	--	--	5.1	4.6	5.8 J	2.2	2.2	6.4	5.1	3.8	5.4	--	19.5
Copper	**50**	**270**	**270**	18.1	34.1	16.5	**57.2**	20	**185**	24.3	16.2	16.7	--	**2430**
Iron	--	--	--	11800	17300	11100	8620	13100	15400	15200	11700	12100	--	52300
Lead	**63**	**400**	**1000**	**98.6**	**121**	**167**	**123**	**67.6**	**390**	**115**	**80.4**	**188**	**558**	**16300**
Magnesium	--	--	--	22200	24800	20400	67000	38500	6900	22300	61400	24400	--	1620
Manganese	**1600**	**2000**	**10000**	1240	**1770**	427	618	664	461	**2600**	599	777	--	288
Mercury	**0.18**	**0.81**	**2.8**	0.053	**0.39**	**0.97**	0.036	0.056	**1.3**	0.11	0.14	**0.32**	**9**	**2.3**
Nickel	**30**	**310**	**310**	12.4	13.1	14.4	7	7.8	19	14.7	10.2	14.6	**--**	27
Potassium	--	--	--	1120	1090	1270	562	542	943	951	923	1150	--	930
Selenium	**3.9**	**180**	**1500**	ND	ND	ND	ND	ND	ND	ND	ND	ND	**36.9**	ND
Silver	**2**	**180**	**1500**	ND	ND	ND	ND	ND	ND	ND	ND	ND	**13.9**	**11.6**
Sodium	--	--	--	365	304	270	184	189	263	996	208	816	--	398
Vanadium	--	--	--	17.2	37.3	14.5	5.4	9.6	18.9	30.6	8.6	19.9	--	18.7
Zinc	**109**	**10000**	**10000**	108	82.8	86	**471**	**144**	**443**	**118**	**109**	**120**	**--**	**8260**
Pesticides and Herbicides - mg/Kg [3]														
4,4'-DDT	**0.0033**	**7.9**	**47**	**0.012**	--	ND	--	ND	--	**0.012**	--	ND	--	--
delta-BHC	**0.04**	**100**	**500**	ND	--	ND	--	ND	--	0.0071 J	--	ND	--	--

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per 6NYCRR Part 375 Soil Cleanup Objectives (SCOs).
3. Sample results were reported by the laboratory in ug/kg and converted to mg/kg for comparisons to SCOs

Definitions:

ND = Parameter not detected above laboratory detection limit.
"--" = No value available for the parameter. Or parameter not analysed for.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
P = The RPD between the results for the two columns exceeds the method-specified criteria.

Bold	= Result exceeds Part 375 Unrestricted Use SCOs.
Bold	= Result exceeds Part 375 Restricted Residential Use SCO's.
Bold	= Result exceeds Part 375 Commercial Use SCOs.

TABLE 4

SUMMARY OF REMEDIAL INVESTIGATION SUBSURFACE SOIL/FILL ANALYTICAL RESULTS

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

PARAMETER [1]	Unrestricted Use SCOs [3]	Restricted Residential Use SCOs [3]	Commercial Use SCOs [3]	SAMPLE LOCATION (DEPTH)																			
				TP-11 (6-8)	TP-12 (10-16)	TP-13 (4-6)	TP-14 (2.5-4.5)	MW-3 (18-20)	MW-4 (2-4)	MW-4 (16-18)	MW-6 (2-4)	B-1 (MW-1) (8-10)	SB-09 [2] (0.4-2)	SB-10 [2] (0.4-2)	SB-11 [2] (0.4-2)	SB-12 [2] (12-14)	SB-13 (0.4-2)	SB-14 [2] (11-12)	SB-15 (10-12)	SB-16 [2] (4-6)	SB-17 (8-10)	SB-18 (14-16)	SB-19 (2-4)	SB-19 (9-10)
				07/31/2014				08/20/2014			08/19/2014	01/29/2015	08/27/2014					08/28/2014			08/19/2014		08/20/2014	
Volatile Organic Compounds (VOCs) - mg/Kg [4]																								
1,2,4-Trimethylbenzene	**3.6**	**52**	**190**	ND	--	**8**	--	--	--	0.97	--	ND	ND	--	--	**24**	--	ND	ND	--	--	ND	--	ND
1,3,5-Trimethylbenzene	**8.4**	**52**	**190**	ND	--	ND	--	--	--	ND	--	0.0027 J	ND	--	--	6.3	--	ND	ND	--	--	0.00045 J	--	ND
4-Isopropyltoluene	**--**	**--**	**--**	ND	--	ND	--	--	--	ND	--	0.0027 J	ND	--	--	2	--	ND	ND	--	--	0.00057 J	--	ND
Acetone	**0.05**	**100**	**500**	0.01 J	--	ND	--	--	--	ND	--	0.015 J	ND	--	--	ND	--	0.007 J	ND	--	--	ND	--	ND
Cyclohexane	**--**	**--**	**--**	ND	--	ND	--	--	--	0.39	--	0.029	ND	--	--	0.31 J	--	ND	1.2	--	--	ND	--	2.5
Ethylbenzene	**1**	**41**	**390**	ND	--	ND	--	--	--	ND	--	ND	ND	--	--	0.58	--	ND	ND	--	--	0.00063 B J	--	ND
Isopropylbenzene (Cumene)	**--**	**--**	**--**	ND	--	0.31	--	--	--	0.38	--	0.005 J	ND	--	--	0.55	--	ND	0.72	--	--	ND	--	1.1
Methylcyclohexane	**--**	**--**	**--**	ND	--	2.3	--	--	--	3.2	--	0.056	ND	--	--	3.1	--	ND	3.5	--	--	ND	--	13
n-Butylbenzene	**12**	**--**	**--**	ND	--	1.4	--	--	--	0.37	--	ND	ND	--	--	6.4	--	ND	ND	--	--	ND	--	0.82
n-Propylbenzene	**3.9**	**100**	**500**	ND	--	0.48	--	--	--	0.53	--	0.0059	ND	--	--	1.4	--	ND	0.96	--	--	ND	--	1.4
sec-Butylbenzene	**11**	**100**	**500**	ND	--	ND	--	--	--	0.38	--	ND	ND	--	--	1.1	--	ND	1.2	--	--	ND	--	0.66
tert-Butylbenzene	**5.9**	**100**	**500**	ND	--	0.13	--	--	--	0.047 J	--	ND	ND	--	--	ND	--	ND	ND	--	--	ND	--	0.047 J
trans-1,2-Dichloroethene	**0.19**	**100**	**500**	ND	--	ND	--	--	--	ND	--	ND	ND	--	--	ND	--	0.0007 J	ND	--	--	ND	--	ND
Total Xylenes	**0.26**	**100**	**500**	ND	--	ND	--	--	--	ND	--	ND	ND	--	--	**4.8**	--	ND	ND	--	--	0.0025 B J	--	ND
Total Tentatively Identified Compounds	--	--	**--**	ND	--	340.8	--	--	--	152.7	--	0.297	0.027	--	--	334	--	0.0371	1044	--	--	0.057	--	229.4
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg [4]																								
2-Methylnaphthalene	**--**	**--**	**--**	0.17 J	0.39	0.022 J	0.13	ND	0.024 J	--	ND	--	ND	ND	ND	1.1	ND	ND	ND	ND	ND	0.6 J	ND	--
3-Methylphenol/4-Methylphenol	**--**	**--**	**--**	0.41 J	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--
Acenaphthene	**20**	**100**	**500**	0.11 J	ND	ND	0.04 J	ND	0.043 J	--	ND	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.35 J	ND	--
Acenaphthylene	**100**	**100**	**500**	0.06 J	0.18 J	ND	ND	ND	0.0088 J	--	ND	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--
Anthracene	**100**	**100**	**500**	0.24 J	0.037 J	ND	0.062 J	ND	0.087	--	ND	--	ND	ND	ND	ND	ND	ND	ND	0.011 J	0.17 J	1 J	ND	--
Benzo(a)anthracene	**1**	**1**	**5.6**	0.38	0.1	ND	0.18	ND	0.32	--	ND	--	ND	ND	0.035 J	ND	ND	ND	ND	0.11	0.49	**1.3 J**	ND	--
Benzo(a)pyrene	**1**	**1**	**1**	0.26 J	0.085	ND	0.25	ND	0.31	--	ND	--	ND	ND	ND	ND	ND	ND	ND	0.32	0.38 J	1 J	ND	--
Benzo(b)fluoranthene	**1**	**1**	**5.6**	0.3 J	0.011	ND	0.27	ND	0.43	--	ND	--	ND	ND	ND	ND	ND	ND	ND	0.32	0.41	0.71 J	ND	--
Benzo(ghi)perylene	**100**	**100**	**500**	0.17 J	0.1	ND	0.25	ND	0.25	--	ND	--	ND	ND	ND	ND	ND	ND	ND	0.43	ND	ND	ND	--
Benzo(k)fluoranthene	**0.8**	**3.9**	**56**	0.14 J	0.043 J	ND	0.14	ND	0.098	--	ND	--	ND	ND	ND	ND	ND	ND	ND	0.098	0.18 J	ND	ND	--
Biphenyl	**--**	**--**	**--**	ND	0.054 J	ND	ND	ND	ND	--	ND	--	ND	ND	ND	0.16 J	ND	ND	ND	ND	ND	ND	ND	--
Bis(2-ethylhexyl) phthalate	**--**	**--**	**--**	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	0.14 J	ND	0.1 J	ND	3.6 J	ND	--
Butyl benzyl phthalate	**--**	**--**	**--**	0.51 J	ND	ND	ND	ND	ND	--	ND	--	ND	ND	0.055 J	ND	ND	ND	ND	ND	ND	ND	ND	--
Carbazole	**--**	**--**	**--**	ND	ND	ND	0.03 J	ND	0.061 J	--	ND	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--
Chrysene	**1**	**3.9**	**56**	0.31 J	0.11	ND	0.23	ND	0.36	--	ND	--	ND	ND	0.027 J	ND	ND	ND	ND	0.12	0.5	**1.3**	ND	--
Dibenzo(a,h)anthracene	**0.33**	**0.33**	**0.56**	ND	ND	ND	0.076 J	ND	0.069 J	--	ND	--	ND	ND	ND	ND	ND	ND	ND	0.072 J	ND	ND	ND	--
Fluoranthene	**100**	**100**	**500**	0.63	0.13	ND	0.34	0.028 J	0.7	--	ND	--	ND	ND	0.029 J	0.05 J	ND	ND	ND	0.085	1.1	2.7	ND	--
Fluorene	**30**	**100**	**500**	0.12 J	0.022 J	ND	0.033 J	ND	0.04 J	--	ND	--	ND	ND	ND	0.33	ND	ND	ND	ND	ND	0.93 J	ND	--
Indeno(1,2,3-cd)pyrene	**0.5**	**0.5**	**5.6**	0.13 J	0.071 J	ND	0.21	ND	0.21	--	ND	--	ND	ND	ND	ND	ND	ND	ND	0.29	ND	ND	ND	--
Naphthalene	**12**	**100**	**500**	0.14 J	0.39	ND	0.21	ND	0.025 J	--	ND	--	ND	ND	ND	0.15	ND	ND	ND	ND	ND	0.7 J	ND	--
Phenanthrene	**100**	**100**	**500**	0.76	0.25	ND	0.25	ND	0.52	--	ND	--	ND	ND	ND	0.71	ND	ND	ND	0.044 J	0.89	3.2	ND	--
Pyrene	**100**	**100**	**500**	0.62	0.15	ND	0.38	0.023 J	0.57	--	ND	--	ND	ND	0.025 J	0.07 J	ND	ND	ND	0.095	0.84	2.3	ND	--
Total PAHs	--	--	**500**	5.46 J	2.837 J	0.022 J	3.081 J	0.051 J	4.1258 J	--	ND	--	0 J	0 J	0.171 J	2.57 J	0 J	0.14 J	0 J	2.095 J	4.96 J	19.69 J	0 J	--
Total Tentatively Identified Compounds	--	--	**--**	ND	6.36	8.27	3.3	1.1	3.13	--	2.19	--	1.27	2.9	2.86	40	0.43	0.22	27.54	0.97	1.3	89.1	4.98	--
Metals - mg/Kg																								
Aluminum	**--**	**--**	**--**	9540	11100	11300	--	11700	12000	--	11700	--	--	10100	--	14500	2860	6450	9940	--	14000	--	6310	--
Arsenic	**13**	**16**	**16**	7	3.7	2.9	4.9	3.5	6.1	--	3.5	--	3.5	3.1	4.5	5.2	2.6	2.8	3.9	6.6	6.9	8.1	ND	--
Barium	**350**	**400**	**400**	139	285	68	170	91.9	104	--	81.4	--	75.7	69.9	108	124	13.8	53.1	57.4	135	139	74.6	61.3	--
Beryllium	**7.2**	**72**	**590**	0.69	0.95	0.66	--	0.77	0.68	--	0.73	--	--	0.49	--	0.69	ND	0.32	0.53	--	1.1	--	0.34	--
Cadmium	**2.5**	**4.3**	**9.3**	2	**5**	ND	2.4	0.6	0.29	--	0.34	--	ND	0.23	0.27	ND	ND	ND	0.24	0.82	0.5	**27.8**	0.22	--
Calcium	**--**	**--**	**--**	49200	30100	2750	--	53200	27600	--	4270	--	--	60700	--	20200	141000	32700	50300	--	40300	--	3740	--
Chromium	**30**	**180**	**1500**	**282**	29.6	14.8	29.9	13.1	15.4	--	15	--	14.7	12.4	15.9	17.4	5.4	8.5	13.3	15.9	27.4	**110**	8	--
Cobalt	**--**	**--**	**--**	5.4	2	8.6 J	--	7.4	9.2	--	10.4	--	--	7.4	--	9.2	2.6	5.1	6.6	--	10.8	--	4.3	--
Copper	**50**	**270**	**270**	**57.7**	**57.9**	9.1	--	17.7	24.4	--	14.3	--	--	17.8	--	18.8	11.5	11	17.9	--	**50.1**	**--**	13.6	--
Iron	**--**	**--**	**--**	43400	10300	17200	--	15600	17000	--	19900	--	--	13000	--	17700	6400	9970	13500	--	21900	--	10000	--
Lead	**63**	**400**	**1000**	**208**	**1010**	17.9	**359**	51.1	**71.6**	--	23.6	--	12.7	16.2	18.7	**137**	7.3	9.9	27.4	**69.1**	**116**	**865**	14.9	--
Magnesium	**--**	**--**	**--**	9470	15200	3390	--	22500	12000	--	2930	--	--	25500	--	9920	87800	13600	32500	--	9740	--	2310	--
Manganese	**1600**	**2000**	**10000**	**3000**	**2570**	349	--	571 B	448 B	--	1090 B	--	--	402 B	--	617	396	219	350	--	589 B	**--**	219 B	--
Mercury	**0.18**	**0.81**	**2.8**	**0.28**	**0.34**	0.023	0.085	0.13	0.05	--	0.069	--	ND	**0.63**	**0.42**	0.08	0.036	ND	0.073	**0.22**	0.04	0.17	**0.2**	--
Nickel	**30**	**310**	**310**	**30.4**	13.4	16.1	--	16.2	19.1	--	12.9	--	--	15.6	--	16.6	7.1	11.6	17.3	--	**30.8**	--	8	--
Potassium	**--**	**--**	**--**	794	841	1180	--	1420 B	1470 B	--	1040 B	--	--	2570 B	--	2210	966	1350	1640	--	1640 B	--	739 B	--
Selenium	**3.9**	**180**	**1500**	ND	ND	ND	ND	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--
Silver	**2**	**180**	**1500**	1.1	**2.1**	ND	0.81	ND	ND	--	ND	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	**5.2**	ND	--
Sodium	**--**	**--**	**--**	323	576	ND	--	185	ND	--	564	--	--	224	--	ND	ND	252	ND	--	244	--	ND	--
Vanadium	**--**	**--**	**--**	23	11.4	23.5	--	18.6	22.3	--	26.2	--	--	20.5	--	30.5	8.3	13.2	19.6	--	25	--	11.6	--
Zinc	**109**	**10000**	**10000**	**323**	**935**	50.4	--	103	85.3	--	82.3	--	--	58.3	--	79.3	34.2	44.8	61.6	--	**141**	**--**	69	--
Total PCBs - mg/Kg [4]																								
Aroclor 1248	**0.1**	**1**	**1**	**0.39**	ND	ND	--	ND	--	--	--	ND	--	ND	--	--	--	ND	ND	--	**120**	ND	--	--
Aroclor 1254	**0.1**	**1**	**1**	**0.5**	ND	ND	--	ND	--	--	--	**0.15 J**	--	ND	--	--	--	ND	ND	--	ND	ND	--	--
Pesticides and Herbicides - mg/Kg [4]																								
4,4'-DDD	**0.0033**	**13**	**92**	ND	ND	--	--	ND	--	--	ND	--	--	0.00038 J	--	--	--	--	ND	--	ND	--	--	--
4,4'-DDE	**0.0033**	**8.9**	**62**	**0.017 J**	ND	--	--	ND	--	--	ND	--	--	ND	--	--	--	--	ND	--	**0.14 J**	--	--	--
4,4'-DDT	**0.0033**	**7.9**	**47**	**0.029 J**	**0.0094 J**	--	--	ND	--	--	ND	--	--	ND	--	--	--	--	ND	--	**0.13 J**	--	--	--
delta-BHC	**0.04**	**100**	**500**	0.021 J	ND	--	--	ND	--	--	**0.43 J**	--	--	0.00056 J	--	--	--	--	ND	--	**1.2 J**	--	--	--
Dieldrin	**0.005**	**0.2**	**1.4**	**0.023 J**	ND	--	--	ND	--	--	ND	--	--	ND	--	--	--	--	ND	--	ND	--	--	--
gamma-BHC (Lindane)	**--**	**--**	**--**	ND	ND	--	--	ND	--	--	ND	--	--	ND	--	--	--	--	ND	--	0.079 J	--	--	--
gamma-Chlordane	**--**	**--**	**--**	0.015 J	ND	--	--	ND	--	--	ND	--	--	ND	--	--	--	--	ND	--	0.098 J	--	--	--
Heptachlor	**--**	**--**	**--**	ND	ND	--	--	ND	--	--	ND	--	--	ND	--	--	--	--	ND	--	0.12 J	--	--	--

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Soil boring samples taken from inside existing building onsite.
3. Values per 6NYCRR Part 375 Soil Cleanup Objectives (SCOs).
4. Sample results were reported by the laboratory in ug/kg and converted to mg/kg for comparisons to SCOs

Definitions:

ND = Parameter not detected above laboratory detection limit.
"--" = No value available for the parameter. Or parameter not analysed for.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.

Bold	= Result exceeds Unrestricted Use SCOs.
Bold	= Result exceeds Restricted Residential Use SCOs.
Bold	= Result exceeds Commercial Use SCOs.

TURNKEY ENVIRONMENTAL RESTORATION, LLC

TABLE 5

SUMMARY OF PCB SUBSURFACE SOIL/FILL DELINEATION BORING ANALYITCAL RESULTS

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

PARAMETER [1]	Unrestricted Use SCOs [2]	Restricted Residential Use SCOs [2]	Commercial Use SCOs [2]	SAMPLE LOCATION (DEPTH)						
				SB-17 (8-10)	B-1 (8-10)	B-2 (8-10)	B-3 (8-10)	B-3 (10-12)	B-4 (8-10)	B-4 (10-12)
Total PCBs - mg/Kg [3]										
Aroclor 1242	**0.1**	**1**	**1**	ND	ND	**0.27 J**	**150**	**70**	ND	ND
Aroclor 1248	**0.1**	**1**	**1**	**120**	ND	ND	ND	ND	ND	ND
Aroclor 1254	**0.1**	**1**	**1**	ND	**0.15**	**0.34**	ND	ND	**2.2**	ND
Aroclor 1260	**0.1**	**1**	**1**	ND	ND	ND	ND	ND	0.73 J	ND

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per 6NYCRR Part 375 Soil Cleanup Objectives (SCOs).
3. Sample results were reported by the laboratory in ug/kg and converted to mg/kg for comparisons to SCOs

Definitions:

ND = Parameter not detected above laboratory detection limit.

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

Bold	= Results exceeds Unrestricted Use SCOs.
Bold	= Result exceeds Restricted Residential Use SCOs.
Bold	= Result exceeds Commercial Use SCOs.

TABLE 6

SUMMARY OF REMEDIAL INVESTIGATION GROUNDWATER ANALYTICAL RESULTS

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

Parameters [1]	Class GA GWQS[2]	Sample Location									
		TMW-1	TMW-1	TMW-2	TMW-2	TMW-3	TMW-3	MW-3	MW-4	MW-5	MW-6
		11/9/14	2/12/15	11/9/14	2/12/15	11/9/14	2/12/15		2/12/15		11/9/14
Volatile Organic Compounds (VOCs) - ug/L											
1,1 Dichloroethane	**5**	ND	ND	ND	ND	ND	ND	1.7	0.59	ND	ND
1,2,4-Trimethylbenzene	**5**	ND	ND	ND	ND	ND	ND	0.83	**10**	2.5	ND
1,3,5-Trimethylbenzene	**5**	ND	ND	ND	ND	ND	ND	**64**	**8.1**	3.4	ND
2-Butanone	**--**	ND	ND	ND	ND	ND	1.7	ND	6.5	ND	ND
2-Hexanone	**50**	ND	ND	ND	ND	ND	ND	7.6	4.9	ND	ND
4-Isopropyltoluene	**5**	ND	ND	ND	ND	ND	0.62	**29**	2.4	ND	ND
Acetone	**50**	ND	ND	ND	ND	ND	4.1	21	17	ND	ND
Benzene	**1**	ND	ND	ND	ND	ND	ND	**71**	**370 D**	**110**	ND
Carbon disulfide	**60**	ND	ND	ND	ND	ND	ND	0.37	1	ND	ND
Chloroform	**7**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyclohexane	**--**	ND	ND	0.27 J	ND	75	66	1000 D	240 D	150	ND
Ethylbenzene	**5**	ND	ND	ND	ND	ND	1.5	**24**	**6.2**	ND	ND
Isopropylbenzene	**5**	ND	ND	ND	ND	**91**	**87**	**200 D**	**120 D**	**7.1**	ND
Methylcyclohexane	**--**	ND	ND	0.27 J	ND	130	90	1200 D	240 D	140	ND
Methylene Chloride	**5**	2 J,B	ND	ND	ND	2.6 J,B	ND	**18**	5	ND	ND
n-Butylbenzene	**5**	ND	ND	ND	ND	**20**	**17**	**26**	**20**	2.5	ND
n-Proplybenzene	**5**	ND	ND	ND	ND	**100**	**98**	**200 D**	**130 D**	**6.7**	ND
sec-Butylbenzene	**5**	ND	ND	ND	ND	ND	**21**	**23**	**21**	2.7	ND
tert-butylbenzene	**5**	ND	ND	ND	ND	ND	2.8	2.6	3	ND	ND
Toluene	**5**	ND	ND	ND	ND	ND	1.9	**7.1**	**10**	ND	ND
Xylene, Total	**5**	ND	ND	ND	ND	ND	1.6	**16**	**22**	2.4	ND
Tentatively Identified Compounds (TICs)	**--**	--	307	--	19	--	977	373	801	751	--
Semi-volatile Organic Compounds (SVOCs) - ug/L											
2-Methylnaphthalene	**--**	12 J	--	ND	--	44	--	ND	0.94	ND	ND
Acetophenone	**--**	ND	--	ND	--	27	--	86	6	1.8	ND
Anthracene	**--**	ND	--	ND	--	0.7 J	--	ND	ND	ND	ND
Benzaldehyde	**--**	ND	--	ND	--	ND	--	ND	ND	ND	0.54 J,B
Benzo(a)anthracene	**0.002**	ND	--	ND	--	**0.46 J**	--	ND	ND	ND	ND
Benzo(a)pyrene	**ND**	ND	--	ND	--	**0.66 J**	--	ND	ND	ND	ND
Benzo(b)fluoranthene	**0.002**	ND	--	ND	--	**1.5 J**	--	ND	ND	ND	ND
Benzo(ghi)perylene	**--**	ND	--	ND	--	0.67 J	--	ND	ND	ND	ND
Bis(2-ethylhexyl) phthalate	**5**	ND	--	ND	--	**6.7 B**	--	ND	ND	ND	4.5 J,B
Chrysene	**0.002**	ND	--	ND	--	**0.49 J**	--	ND	ND	ND	ND
Dibenzofuran	**--**	ND	--	ND	--	0.95 J	--	ND	ND	ND	ND
Fluoranthene	**50**	ND	--	ND	--	1.3 J	--	ND	ND	ND	ND
Fluorene	**50**	ND	--	ND	--	1.2 J	--	ND	0.7	ND	ND
Indeno(1,2,3-cd)pyrene	**--**	ND	--	ND	--	0.64 J	--	ND	ND	ND	ND
Isophorone	**50**	ND	--	ND	--	37	--	ND	ND	ND	ND
Naphthalene	**10**	ND	--	ND	--	9.6	--	ND	ND	ND	ND
Phenanthrene	**50**	ND	--	ND	--	2.5 J	--	ND	0.63	0.56	ND
Phenol	**1**	ND	--	ND	--	ND	--	ND	ND	**8.5**	ND
Pyrene	**50**	ND	--	ND	--	1 J	--	ND	ND	ND	ND
Tentatively Identified Compounds (TICs)	**--**	--	--	--	--	--	--	3220	655	512.1	--
Dissolved Metals - ug/L [3]											
Barium	**1000**	--	--	--	--	--	--	160	130	--	120
Calcium	**--**	--	--	--	--	--	--	14000	85500	--	180000
Magnesium	**35000**	--	--	--	--	--	--	**50200**	**82500**	--	153000
Manganese	**300**	--	--	--	--	--	--	**180**	**100**	--	120
Potassium	**--**	--	--	--	--	--	--	2600	13000	--	10300
Sodium	**20000**	--	--	--	--	--	--	**43400**	**84800**	--	227000
Zinc	**2000**	--	--	--	--	--	--	ND	ND	--	11
Polychlorinated Biphenyls - ug/L											
Total PCBs	**0.09**	--	--	--	--	--	--	ND	ND	--	ND
Herbicides - ug/L											
Total Herbicides	**--**	--	--	--	--	--	--	ND	ND	--	ND
Pesticides - ug/L											
4,4'-DDD	**0.03**	--	--	--	--	--	--	**0.15**	ND	--	ND
alpha-BHC	**0.01**	--	--	--	--	--	--	**0.09**	**0.059**	--	ND
delta-BHC	**0.01**	--	--	--	--	--	--	ND	**0.06**	--	ND
gamma-BHC (Lindane)	**0.05**	--	--	--	--	--	--	ND	**0.073**	--	ND

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per NYSDEC TOGS 1.1.1 Class GA Groundwater Quality Standards.
3. Sample results were reported by the laboratory in mg/L and converted to ug/L for comparisons to GWQSs
4. MW-1 was not sampled due to lack of water (dry).

Qualifiers:

ND = Parameter not detected above laboratory detection limit.
"--" = Sample not analyzed for parameter or no GWQS available for the parameter.
B = Compund was found in blank sample.
J = Estimated Value - Below calibration range

BOLD = Result exceeds GWQS.

TABLE 7

SUMMARY OF AIR SAMPLING ANALYTICAL RESULTS

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

Parameter [1]	Sample Location						
	SV-1	SV-2	AMBIENT-1	SV-3	SV-4	AMBIENT-2	OUTDOOR
Volatile Organics Compounds (VOCs) - ug/m³							
1,1,2,2-Tetrachloroethane	0.39 J	ND	ND	ND	0.58 J	ND	0.64 J
1,2,4-Trichlorobenzene	ND	ND	ND	ND	0.22 J B	0.74 J	ND
1,2,4-Trimethylbenzene	4.4	1.7	2	2.5	4.9	ND	0.79 J
1,3,5-Trimethylbenzene	1.4	0.49 J	0.62 J	0.84 J	1.6	0.25 J	0.21 J
1,2-Dichlorobenzene	ND	ND	ND	ND	0.092 J B	ND	ND
1,3-Butadiene	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	0.86 J B	0.086 J B	0.11 J B	0.61 J B	1.1 J B	0.19 J B	ND
1,4-Dioxane	0.75 J	ND	2.1 J	0.76 J	0.77 J	2 J	ND
1,1-Dichloroethane	ND	ND	ND	ND	0.51 J	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane (TCA)	29	0.14 J	0.14 J	0.28 J	ND	ND	0.19 J
2-Butanone	ND	ND	ND	ND	ND	ND	ND
2-Chlorotoluene	ND	ND	ND	0.24 J	ND	ND	ND
2,2,4-Trimethylpentane	1.4	0.24 J	0.22 J	0.27 J	0.78 J	0.14 J	0.36 J
4-Ethyltoluene	1.2	0.32 J	0.36 J	0.77 J	1.6	0.13 J	0.22 J
4-Isopropyltoluene	ND	0.5 J	1.2	ND	ND	0.97 J	ND
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
Acetone	26	9.1 J	19	19	18	21	8.5 J
Benzene	1.5	0.48 J	0.48 J	0.72	1.2	0.5 J	0.46 J
Bromomethane	ND	ND	ND	ND	ND	0.13 J	ND
Carbon disulfide	4.2	0.71 J	3.2	2	6.7	14	1.1 J
Chlorobenzene	ND	ND	ND	0.064 J	0.11 J	ND	ND
Chloroethane	ND	0.15 J	0.25 J	0.087 J	ND	0.1 J	ND
Chloroform	0.38 J	0.15 J	0.21 J	0.18 J	0.81 J	ND	0.14 J
Chloromethane	ND	0.99 J	2.6	0.42 J	ND	0.93 J	0.95 J
Cumene (Isopropylbenzene)	1	0.087 J	ND	0.45 J	1.6	ND	0.079 J
Cyclohexane	2	ND	0.17 J	0.82	1.3	ND	0.18 J
Dichlorodifluoromethane	3	2.5	2.7	2.7	2.7	ND	2.5
Ethylbenzene	3.1	0.42 J	0.32 J	1.3	4.1	0.41 J	0.36 J
Freon 22	1 J	0.91 J	1.1 J	0.94 J	ND	0.83 J	1 J
Freon TF	ND	ND	ND	0.69 J	0.72 J	ND	0.6 J
Hexachlorobutadiene	ND	ND	ND	ND	0.29 J B	ND	0.34 J B
Isopropyl alcohol	6.4 J	3.4 J	4.1 J	1 J	1.4 J	2.6 J	0.92 J
Methyl butyl ketone	4.9	ND	ND	0.94 J	3.4	ND	ND
Methyl ethyl ketone	18	1.6	3.5	3.5	7.8	6.2	1.9
Methyl isobutyl ketone	1.1 J	0.28 J	0.41 J	0.27 J	0.66 J	0.43 J	0.12 J
Methyl methacrylate	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	1.2 J	0.59 J	1.4 J	3.3	0.68 J	0.46 J	1.9 J
Napthalene	1.7 J	1.5 J	1.6 J	ND	1.8 J	ND	ND
n-Butane	2.3	0.9 J	0.97 J	1.2	1.9	ND	0.71 J
n-Heptane	8.2	0.64 J	ND	1.7	6.5	0.51 J	0.42 J
n-Hexane	6.1	0.63 J	0.44 J	1.3	3.2	0.3 J	0.5 J
n-Propylbenzene	0.76 J	ND	ND	0.44 J	1	ND	ND
Styrene	3.8	0.12 J	0.084 J	0.95	5.6	ND	ND
tert-Butyl alcohol	5 J	ND	ND	1.3 J	2.5 J	ND	ND
Tetrahydrofuran	2.7 J	1.7 J	0.37 J	0.32 J	1.2 J	0.57 J	ND
Toluene	41	3	2.1	11	44	1.4	1.5
Trichloroethene	3.4	ND	ND	ND	ND	ND	1.1
Trichlorofluoromethane	27	19	**22**	4	5.7	8.3	1.7
Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND
o-Xylene	3.4	0.51 J	0.47 J	1.6	4.7	0.39 J	0.51 J
p/m-Xylene	11	1.4 J	1.1 J	4.9	15	1 J	1.4 J
Volatile Organics Compounds (VOCs) in SIM - ug/m³							
Carbon tetrachloride	0.091	0.47	0.54	0.45	0.37	0.5	0.43
Tetrachloroethene	1.5	ND	ND	0.43	1.3	ND	ND

Notes:

1. Only those parameters detected above the method detection limit, at a minimum of one location, are presented in this table.
2. Constituent monitored under NYSDOH Vapor/ Indoor Air Quality Standards - October 2006/June 2007.
3. NYSDEC Policy DAR-1, Guidelines for the Control of Toxic Ambient Air Contaminants, Annual Guideline Concentration (AGC).
4. Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL).

Definitions:

ND = Parameter not detected above laboratory detection limit.

"--" = No value available for the parameter. Or parameter not analysed for.

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

TABLE 8

INDOOR AIR SAMPLING ANALYTICAL RESULTS

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

Parameter [1]	NYSDOH Indoor Air 90th Value (ug/m3) [2]	DAR-1 AGCs (ug/m3) [3]	OSHA PEL (ug/m3) [4]	Sample Location	
				AMBIENT-1	AMBIENT-2
Volatile Organics Compounds (VOCs) - ug/m3 [3]					
1,1,2,2-Tetrachloroethane	<0.25	NA	NA	ND	ND
1,2,4-Trichlorobenzene	3.4	NA	NA	ND	0.74 J
1,2,4-Trimethylbenzene	9.5	NA	NA	2	ND
1,3,5-Trimethylbenzene	3.6	NA	NA	0.62 J	0.25 J
1,2-Dichlorobenzene	0.72	NA	NA	ND	ND
1,3-Butadiene	--	NA	NA	ND	ND
1,4-Dichlorobenzene	1.3	NA	NA	0.11 J B	0.19 J B
1,4-Dioxane	--	NA	NA	2.1 J	2 J
1,1-Dichloroethane	<0.25	NA	NA	ND	ND
1,1-Dichloroethene	<0.25	NA	NA	ND	ND
1,1,1-Trichloroethane (TCA)	3.1	NA	NA	0.14 J	ND
2-Butanone	--	NA	NA	ND	ND
2-Chlorotoluene	--	NA	NA	ND	ND
2,2,4-Trimethylpentane	--	NA	NA	0.22 J	0.14 J
4-Ethyltoluene	--	NA	NA	0.36 J	0.13 J
4-Isopropyltoluene	--	NA	NA	1.2	0.97 J
cis-1,2-Dichloroethene	<0.25	NA	NA	ND	ND
Acetone	110	NA	NA	19	21
Benzene	15	NA	NA	0.48 J	0.5 J
Bromomethane	0.6	NA	NA	ND	0.13 J
Carbon disulfide	--	NA	NA	3.2	14
Chlorobenzene	<0.25	NA	NA	ND	ND
Chloroethane	<0.25	NA	NA	0.25 J	0.1 J
Chloroform	1.4	NA	NA	0.21 J	ND
Chloromethane	3.3	NA	NA	2.6	0.93 J
Cumene (Isopropylbenzene)	0.88	NA	NA	ND	ND
Cyclohexane	8.1	NA	NA	0.17 J	ND
Dichlorodifluoromethane	15	NA	NA	2.7	ND
Ethylbenzene	7.4	NA	NA	0.32 J	0.41 J
Freon 22	--	NA	NA	1.1 J	0.83 J
Freon TF	--	NA	NA	ND	ND
Hexachlorobutadiene	4.6	NA	NA	ND	ND
Isopropyl alcohol	--	NA	NA	4.1 J	2.6 J
Methyl butyl ketone	--	NA	NA	ND	ND
Methyl ethyl ketone	16	NA	NA	3.5	6.2
Methyl isobutyl ketone	2.2	NA	NA	0.41 J	0.43 J
Methyl methacrylate	0.45	NA	NA	ND	ND
Methylene Chloride	22	NA	NA	1.4 J	0.46 J
Napthalene	--	NA	NA	1.6 J	ND
n-Butane	--	NA	NA	0.97 J	ND
n-Heptane	19	NA	NA	ND	0.51 J
n-Hexane	18	NA	NA	0.44 J	0.3 J
n-Propylbenzene	1.7	NA	NA	ND	ND
Styrene	1.3	NA	NA	0.084 J	ND
tert-Butyl alcohol	--	NA	NA	ND	ND
Tetrahydrofuran	3.3	NA	NA	0.37 J	0.57 J
Toluene	58	NA	NA	2.1	1.4
Trichloroethene	0.48	NA	NA	ND	ND
Trichlorofluoromethane	17	5,000	5,600,000	**22**	8.3
Vinyl Chloride	<0.25	NA	NA	ND	ND
o-Xylene	7.6	NA	NA	0.47 J	0.39 J
p/m-Xylene	12	NA	NA	1.1 J	1 J
Volatile Organics Compounds (VOCs) in SIM - ug/m3 [3]					
Carbon tetrachloride	0.81	NA	NA	0.54	0.5
Tetrachloroethene	2.9	NA	NA	ND	ND

Notes:

1. Only those parameters detected above the method detection limit, at a minimum of one location, are presented in this table.
2. Constituent monitored under NYSDOH Vapor/ Indoor Air Quality Standards - October 2006/June 2007.
3. NYSDEC Policy DAR-1, Guidelines for the Control of Toxic Ambient Air Contaminants, Annual Guideline Concentration (AGC).
4. Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL).

Definitions:

ND = Parameter not detected above laboratory detection limit.
"--" = No value available for the parameter. Or parameter not analysed for.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.

Bold = Results exceed NYSDOH Summary of Indoor Levels of VOC for Fuel Oil Heated Homes - 90th percentile (20

TABLE 9

COMPARISON OF AIR ANALYTICAL RESULTS TO NYSDOH MATRIX 1 and MATRIX 2

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

Sample Location	Trichloroethene (TCE)		Carbon Tetrachloride		Vinyl Chloride		Tetrachloroethene (PCE)		1,1-Dichloroethene		cis-1,2-Dichloroethene		1,1,1 -Trichloroethane	
	Lab Reported Concentration (ug/m^3)	Soil Vapor / Indoor Air Matrix 1	Lab Reported Concentration (ug/m^3)	Soil Vapor / Indoor Air Matrix 1	Lab Reported Concentration (ug/m^3)	Soil Vapor / Indoor Air Matrix 1	Lab Reported Concentration (ug/m^3)	Soil Vapor / Indoor Air Matrix 2	Lab Reported Concentration (ug/m^3)	Soil Vapor / Indoor Air Matrix 2	Lab Reported Concentration (ug/m^3)	Soil Vapor / Indoor Air Matrix 2	Lab Reported Concentration (ug/m^3)	Soil Vapor / Indoor Air Matrix 2
SSV-1	3.4	NFA	0.091	I,R	ND	NFA	1.5	NFA	ND	NFA	ND	NFA	29	NFA
SSV-2	ND		0.47		ND		ND		ND		ND		0.14 J	
AMBIENT - 1	ND		0.54		ND		ND		ND		ND		0.14 J	
SSV-3	ND	NFA	0.45	I,R	ND	NFA	0.43	NFA	ND	NFA	ND	NFA	0.28 J	NFA
SSV-4	ND		0.37		ND		1.3		ND		ND		ND	
AMBIENT - 2	ND		0.5		ND		ND		ND		ND		ND	
Outdoor Ambient	1.1		0.43		ND		ND		ND		ND		ND	

Notes:

ND = Not Detected

NFA = No further action.

I, R = Take reasonable and practical actions to identify source(s) and reduce exposures.

= NYSDOH Matrix 1 Compounds

= NYSDOH Matrix 2 Compounds

TABLE 10

COST ESTIMATE FOR UNRESTRICTED USE ALTERNATIVE

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

Item	Quantity	Units	Unit Cost	Total Cost
Impacted Soil/Fill Removal				
PCB Area				
Soil/Fill Excavation & Hauling	450	CY	$ 50.00	$ 22,500
Disposal at TSDF (1.6 tons per CY)	720	TON	$ 175.00	$ 126,000
Waste Characterization Analytical	2	EA	$ 600.00	$ 1,200
Post-Excavation Confirmatory Sampling	10	EA	$ 500.00	$ 5,000
Subtotal:				**$ 154,700**
Western Loading Dock Area				
Soil/Fill Excavation & Hauling	150	CY	$ 20.00	$ 3,000
Disposal at TSDF (1.6 tons per CY)	240	TON	$ 30.00	$ 7,200
Waste Characterization Analytical	1	EA	$ 600.00	$ 600
Post-Excavation Confirmatory Sampling	5	EA	$ 500.00	$ 2,500
Subtotal:				**$ 13,300**
Additional Soil/Fill Exceeding SCOs				
Soil/Fill Excavation & Hauling	51000	CY	$ 20.00	$ 1,020,000
Disposal at TSDF (1.6 tons per CY)	81600	TON	$ 30.00	$ 2,448,000
Waste Characterization Analytical	40	EA	$ 600.00	$ 24,000
Post-Excavation Confirmatory Sampling	100	EA	$ 500.00	$ 50,000
Subtotal:				**$ 3,542,000**
Backfill Excavation with Off-Site Soil/Fill				
Haul, Place & Compact	51600	CY	$ 35.00	$ 1,806,000
Backfill Characterization and Sampling	40	EA	$ 750.00	$ 30,000
Subtotal:				**$ 1,836,000**
In-Situ Groundwater Treatment				
In-Situ Chemical Reagents	4	EA	$ 2,500.00	$ 10,000
Subtotal:				**$ 10,000**
Subtotal Capital Cost				**$ 5,556,000**
Contractor Mobilization/Demobilization (5%)				$ 277,800
Health and Safety (2%)				$ 111,120
Engineering/Contingency (35%)				$ 1,944,600
Total Cost				**$ 7,890,000**

TABLE 11

COST ESTIMATE FOR TRACK 2 RESTRICTED RESIDENTUIAL USE ALTERNATIVE

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

Item	Quantity	Units	Unit Cost	Total Cost
Impacted Soil/Fill Removal				
UST/TP-4 area				
Excavate USTs, clean and dispose	1	EST	$ 5,000.00	$ 5,000
Dispose of residual contents	1	EST	$ 2,000.00	$ 2,000
Soil/Fill Excavation & Hauling	800	CY	$ 20.00	$ 16,000
Disposal at TSDF (1.6 tons per CY)	1280	TON	$ 30.00	$ 38,400
Waste Characterization Analytical	3	EA	$ 600.00	$ 1,800
Post-Excavation Confirmatory Sampling	15	EA	$ 500.00	$ 7,500
Subtotal:				**$ 63,700**
PCB Area				
Soil/Fill Excavation & Hauling	450	CY	$ 50.00	$ 22,500
Disposal at TSDF (1.6 tons per CY)	720	TON	$ 175.00	$ 126,000
Waste Characterization Analytical	2	EA	$ 600.00	$ 1,200
Post-Excavation Confirmatory Sampling	10	EA	$ 500.00	$ 5,000
Subtotal:				**$ 154,700**
Western Loading Dock Area				
Soil/Fill Excavation & Hauling	150	CY	$ 30.00	$ 4,500
Disposal at TSDF (1.6 tons per CY)	240	TON	$ 30.00	$ 7,200
Waste Characterization Analytical	1	EA	$ 600.00	$ 600
Post-Excavation Confirmatory Sampling	5	EA	$ 500.00	$ 2,500
Subtotal:				**$ 14,800**
Additional Soil/Fill Exceeding SCOs				
Soil/Fill Excavation & Hauling	16000	CY	$ 20.00	$ 320,000
Disposal at TSDF (1.6 tons per CY)	25600	TON	$ 30.00	$ 768,000
Waste Characterization Analytical	15	EA	$ 600.00	$ 9,000
Post-Excavation Confirmatory Sampling	100	EA	$ 500.00	$ 50,000
Subtotal:				**$ 1,147,000**
Backfill Excavation with Off-Site Soil/Fill				
Haul, Place & Compact	17400	CY	$ 35.00	$ 609,000
Backfill Characterization and Sampling	25	EA	$ 750.00	$ 18,750
Subtotal:				**$ 627,750**
Soil Vapor Extraction System				
Installation of SVE Wells and Piping	1	EST	$ 25,000.00	$ 25,000
SVE and Vapor GAC Treatment System	1	EA	$ 60,000.00	$ 60,000
Subtotal:				**$ 85,000**
In-Situ Groundwater Treatment				
In-Situ Chemical Reagents	4	EA	$ 2,500.00	$ 10,000
Subtotal:				**$ 10,000**
Active Subslab Depressurization (New Bldg.)				
ASD System Installation and Certification	1	EST	$ 15,000.00	$ 15,000
Subtotal:				**$ 15,000**
Cover System				
Asphalt, concrete and soil cover	1	EST	$ 200,000.00	$ 200,000
Cover Soil Characterization and Sampling	20	EA	$ 750.00	$ 15,000
Subtotal:				**$ 215,000**
Subtotal Capital Cost				**$ 2,332,950**
Contractor Mobilization/Demobilization (5%)				$ 116,648
Health and Safety (2%)				$ 46,659
Engineering/Contingency (35%)				$ 816,533
Total Capital Cost				**$ 3,312,789**
Institutional Controls				
Environmental Easement	1	LS	$ 10,000.00	$ 10,000
Site Management Plan	1	LS	$ 15,000.00	$ 15,000
Subtotal:				**$ 25,000**
Annual Operation Maintenance & Monitoring (OM&M):				
ASD System (1 HP; annual electrical cost)	6570	Kw-Hr	$ 0.25	$ 1,643
SVE System (7.5 HP; annual electrical)	49275	Kw-Hr	$ 0.25	$ 12,319
Annual OM&M	12	MO	$ 850.00	$ 10,200
ASD and SVE Maintenance and Repair	1	EST	$ 5,000.00	$ 5,000
Groundwater Monitoring	2	Ea	$ 7,500.00	$ 15,000
Annual Certification	1	Yr	$ 2,500.00	$ 2,500
Total Annual OM&M Cost				**$ 46,661**
Engineering Controls (SVE, ASD, and GWM) OM&M Present Worth (PW):				
Number of Years (n):				5
Interest Rate (I):				3%
p/A value:				4.58
EC OM&M Present Worth (PW):				**$ 202,214**
Annual Certification OM&M Present Worth (PW):				
Number of Years (n):				30
Interest Rate (I):				3%
p/A value:				19.6
Annual Certification OM&M Present Worth (PW):				**$ 49,000**
Total OM&M Present Worth (PW):				**$ 251,214**
Total Cost				**$ 3,590,000**

TABLE 12

COST ESTIMATE FOR TRACK 4 RESTRICTED RESIDENTIAL USE ALTERNATIVE

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

Item	Quantity	Units	Unit Cost	Total Cost
Impacted Soil/Fill Removal				
UST/TP-4 area				
Excavate USTs, clean and dispose	1	EST	$ 5,000.00	$ 5,000
Dispose of residual contents	1	EST	$ 2,000.00	$ 2,000
Soil/Fill Excavation & Hauling	800	CY	$ 20.00	$ 16,000
Disposal at TSDF (1.6 tons per CY)	1280	TON	$ 30.00	$ 38,400
Waste Characterization Analytical	3	EA	$ 600.00	$ 1,800
Post-Excavation Confirmatory Sampling	15	EA	$ 400.00	$ 6,000
Subtotal:				**$ 62,200**
PCB Area				
Soil/Fill Excavation & Hauling	450	CY	$ 50.00	$ 22,500
Disposal at TSDF (1.6 tons per CY)	720	TON	$ 175.00	$ 126,000
Waste Characterization Analytical	2	EA	$ 600.00	$ 1,200
Post-Excavation Confirmatory Sampling	10	EA	$ 400.00	$ 4,000
Subtotal:				**$ 153,700**
Western Loading Dock Area				
Soil/Fill Excavation & Hauling	150	CY	$ 30.00	$ 4,500
Disposal at TSDF (1.6 tons per CY)	240	TON	$ 30.00	$ 7,200
Waste Characterization Analytical	1	EA	$ 600.00	$ 600
Post-Excavation Confirmatory Sampling	5	EA	$ 400.00	$ 2,000
Subtotal:				**$ 14,300**
Backfill Excavation with Off-Site Soil/Fill				
Haul, Place & Compact	1500	CY	$ 35.00	$ 52,500
Backfill Characterization and Sampling	10	EA	$ 750.00	$ 7,500
Subtotal:				**$ 60,000**
Soil Vapor Extraction System				
Installation of SVE Wells and Piping	1	EST	$ 25,000.00	$ 25,000
SVE and Vapor GAC Treatment System	1	EA	$ 60,000.00	$ 60,000
Subtotal:				**$ 85,000**
In-Situ Groundwater Treatment				
In-Situ Chemical Reagents	4	EA	$ 2,500.00	$ 10,000
Subtotal:				**$ 10,000**
Active Subslab Depressurization (New Bldg.)				
ASD System Installation and Certification	1	EST	$ 15,000.00	$ 15,000
Subtotal:				**$ 15,000**
Cover System				
Asphalt, concrete and soil cover	1	EST	$ 250,000.00	$ 250,000
Cover Soil Characterization and Sampling	20	EA	$ 750.00	$ 15,000
Subtotal:				**$ 265,000**
Subtotal Capital Cost				**$ 665,200**
Contractor Mobilization/Demobilization (5%)				$ 33,260
Health and Safety (2%)				$ 13,304
Engineering/Contingency (35%)				$ 232,820
Total Capital Cost				**$ 944,584**
Institutional Controls				
Environmental Easement	1	LS	$ 10,000.00	$ 10,000
Site Management Plan	1	LS	$ 15,000.00	$ 15,000
Subtotal:				**$ 25,000**
Annual Operation Maintenance & Monitoring (OM&M):				
ASD System (1HP; annual electrical cost)	6570	Kw-Hr	$ 0.25	$ 1,643
SVE System (7.5 HP; annual electrical)	49275	Kw-Hr	$ 0.25	$ 12,319
Annual OM&M	12	MO	$ 850.00	$ 10,200
ASD and SVE Maintenance and Repair	1	EST	$ 5,000.00	$ 5,000
Groundwater Monitoring	2	EA	$ 7,500.00	$ 15,000
Annual Certification	1	YR	$ 3,500.00	$ 3,500
Total Annual OM&M Cost				**$ 47,661**
Engineering Controls (SVE, ASD, and GWM) OM&M Present Worth (PW):				
Number of Years (n):				5
Interest Rate (I):				3%
p/A value:				4.58
EC OM&M Present Worth (PW):				**$ 202,214**
Annual Certification OM&M Present Worth (PW):				
Number of Years (n):				30
Interest Rate (I):				3%
p/A value:				19.6
Annual Certification OM&M Present Worth (PW):				**$ 68,600**
Total OM&M Present Worth (PW):				**$ 270,814**
Total Cost				**$ 1,241,000**

FIGURES

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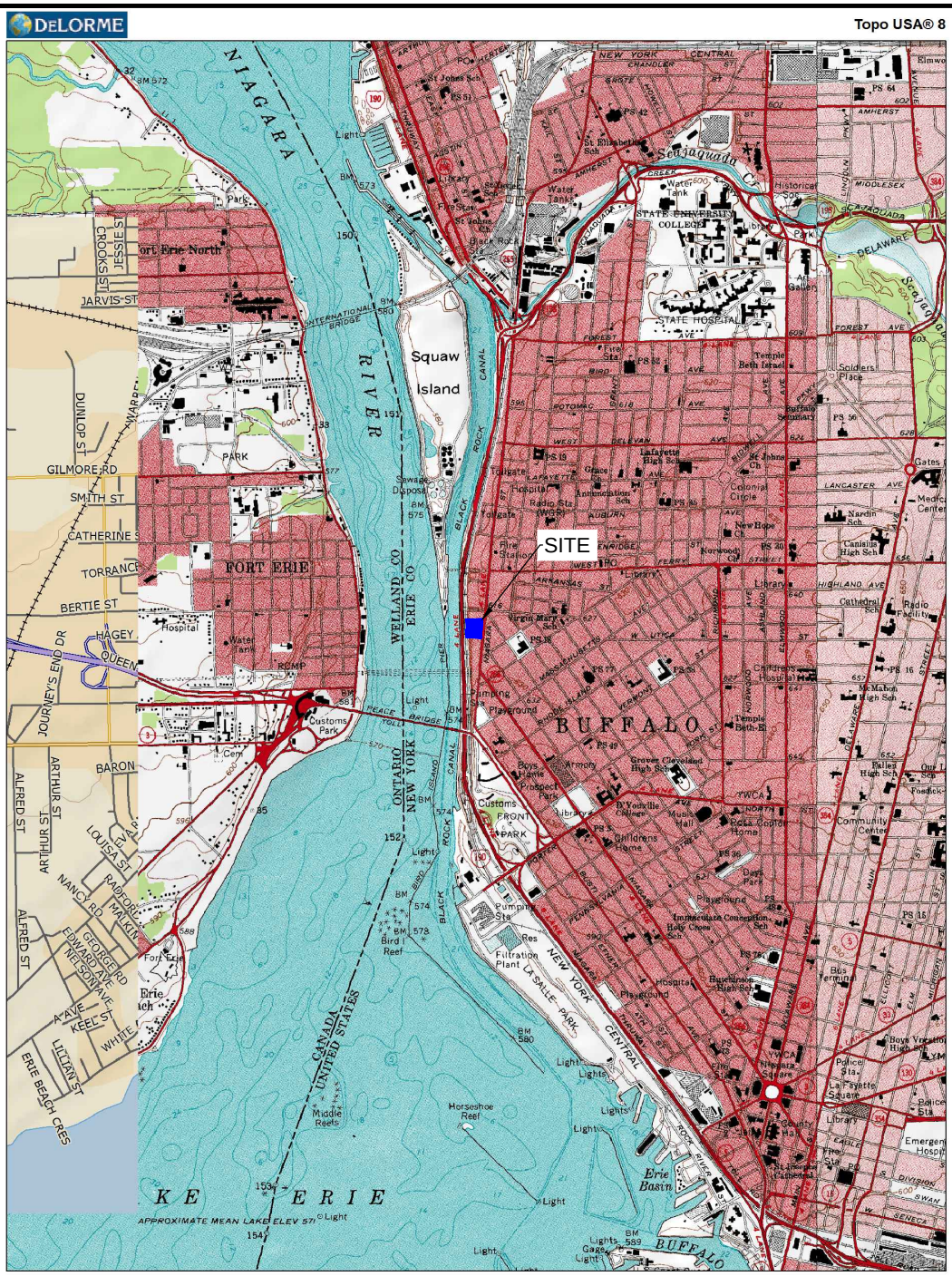
FIGURE 1



TurnKey Environmental Restoration, LLC

2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

PROJECT NO.: 0136-013-005

DATE: MARCH 2015

DRAFTED BY: BLR

SITE LOCATION AND VICINITY MAP

RI-AA REPORT

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

PREPARED FOR

9271 GROUP, LLC

DATE: MARCH 2015
DRAFTED BY: BLR

SITE PLAN (AERIAL)

RI-AA REPORT

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

PREPARED FOR

9271 GROUP, LLC

FIGURE 2

TURNKEY ENVIRONMENTAL RESTORATION, LLC

2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

JOB NO.: 0136-013-005

LEGEND:

- BCP SITE BOUNDARY
- PARCEL BOUNDARY
- FENCE
- BUILDINGS ONSITE
- TP-1 TEST PIT (MAY 2012)
- SB-1 SOIL BORING (JULY 2013)
- SS-1 RI SURFACE SOIL SAMPLE LOCATION
- NS-1 RI NEAR SURFACE SOIL SAMPLE LOCATION
- SB-9 RI SOIL BORING LOCATION (AUGUST 2014)
- TP-11 RI TEST PIT LOCATION
- MW-1 RI MONITORING WELL LOCATION
- SV-1 RI SUBSLAB VAPOR LOCATION
- B-4 SOIL BORING LOCATION (JANUARY 2015)

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ALBANY STREET

NIAGARA STREET

STEEP GRADE

TP-11 NS-1

SS-2 SB-18

TP-12 NS-2 TP-1

TP-8 TP-6

MW-1 B-1 SS-1 B-2 SB-17 B-3 B-4

TP-5

MW-3 SS-3 TP-2

TP-9

TP-14 TP-7

TP-4 AREA

USTs

IN-GROUND LIFT

TP-3

TP-10 MW-5

TP-13 NS-3

SS-4 MW-4

Outdoor

SB-19 SS-5

SB-15/TMW-3 SV-3

SB-3 NS-4 SB-1

SB-13

SV-2 Ambient-1

SB-10

SV-1 SB-6 SB-9

SUB-BASEMENT

BASEMENT

SB-14/TMW-2 Ambient-2

SB-4

SB-12/TMW-1

SB-2

SB-16

SB-7

SB-11

NS-5

SV-4

SB-8

SB-5

SS-6 MW-6

BUILDING MOUNTED TRANSFORMERS

190

N

50' 0' 50' 100'

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

DATE: MAY 2015
DRAFTED BY: BLR/NTM

2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

TURNKEY ENVIRONMENTAL RESTORATION, LLC

JOB NO.: 0136-013-005

REMEDIAL INVESTIGATION SAMPLE LOCATIONS

REMEDIAL INVESTIGATION/ALTERNATIVES ANALYSIS REPORT

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

PREPARED FOR

9271 GROUP, LLC

FIGURE 3

LEGEND:

- BCP SITE BOUNDARY
- PARCEL BOUNDARY
- FENCE
- BUILDINGS ONSITE
- TP-1 TEST PIT (MAY 2012)
- SB-1 SOIL BORING (JULY 2013)
- SS-1 RI SURFACE SOIL SAMPLE LOCATION
- NS-1 RI NEAR SURFACE SOIL SAMPLE LOCATION
- SB-9 RI SOIL BORING LOCATION (AUGUST 2014)
- TP-11 RI TEST PIT LOCATION
- MW-1 RI MONITORING WELL LOCATION
- SV-1 RI SUBSLAB VAPOR LOCATION
- B-4 SOIL BORING LOCATION (JANUARY 2015)
- 596 GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER ELEVATION CONTOUR

NOTE: ELEVATION PER MARCH 23, 2015

190

ALBANY STREET

NIAGARA STREET

STEEP GRADE

TP-11 NS-1
SS-2 SB-18
TP-12 NS-2 TP-1
TP-8
TP-6
(DRY) MW-1 SS-1 SB-17
(BOTTOM DEPTH ELEVATION 587.83)
TP-5
MW-3 SS-3 (587.1)
TP-2
588
TP-9
592
TP-14
596
TP-7
TP-4 AREA
USTs
IN-GROUND LIFT
TP-3
TP-10 MW-5 (595.8)
SS-4 (587.9) MW-4
TP-13 NS-3
Outdoor
SB-19 SS-5
SB-15/TMW-3 (588.4)
SB-3
NS-4
SB-1
SB-13
SV-2
Ambient-1
SB-10
SV-1
SB-6
SB-9
SB-14/TMW-2 (588.2)
Ambient-2
SUB-BASEMENT
BASEMENT
SB-4
SB-12/TMW-1 (596.5)
(FLOOR ELEVATION 614-615')
SB-2
SB-16
SB-7
SB-11
588
592
596
NS-5
SV-4
SB-8
SB-5
SS-6 (612.4) MW-6
BUILDING MOUNTED TRANSFORMERS

190

N

50' 0' 50' 100'

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

DATE: MAY 2015
DRAFTED BY: BLR/NTM

GROUNDWATER ISOPOTENTIAL MAP

REMEDIAL INVESTIGATION/ALTERNATIVES ANALYSIS REPORT

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

PREPARED FOR
9271 GROUP, LLC

2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

TURNKEY ENVIRONMENTAL RESTORATION, LLC

JOB NO.: 0136-013-005

FIGURE 4

LEGEND:

- BCP SITE BOUNDARY
- PARCEL BOUNDARY
- FENCE
- BUILDINGS ONSITE
- TP-1 TEST PIT (MAY 2012)
- SB-1 SOIL BORING (JULY 2013)
- SS-1 RI SURFACE SOIL SAMPLE LOCATION
- NS-1 RI NEAR SURFACE SOIL SAMPLE LOCATION
- SB-9 RI SOIL BORING LOCATION (AUGUST 2014)
- TP-11 RI TEST PIT LOCATION
- MW-1 RI MONITORING WELL LOCATION
- SV-1 RI SUBSLAB VAPOR LOCATION
- B-4 SOIL BORING LOCATION (JANUARY 2015)
- PLANNED REMEDIAL EXCAVATION AREA
- SVE-1 PLANNED SVE WELL LOCATION

190

ALBANY STREET

NIAGARA STREET

STEEP GRADE

TP-11 NS-1

SS-2 SB-18

TP-12 NS-2 TP-1

SVE-6

TP-8 TP-6

MW-1 B-1 SS-1 B-2 SB-17 B-3 B-4

TP-5

MW-3 SS-3 TP-2

TP-9 TP-14 TP-7

SVE-5

SVE SYSTEM

TP-4 AREA

USTs

TP-3 TP-10 MW-5

TP-13 NS-3 SS-4 MW-4 Outdoor

SB-19 SS-5

IN-GROUND LIFT

SVE-4 SVE-3 SVE-2 SVE-1

SB-15/TMW-3 SV-3 SB-3 NS-4 SB-1

SB-13 SV-2 Ambient-1 SB-10 SV-1 SB-6 SB-9

SUB-BASEMENT

BASEMENT

SB-14/TMW-2 Ambient-2 SB-4

SB-12/TMW-1

SB-2 SB-16 NS-5 SV-4

SB-7 SB-11

SB-8 SB-5 SS-6 MW-6

BUILDING MOUNTED TRANSFORMERS

190

N

50' 0' 50' 100'

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

DATE: MAY 2015
DRAFTED BY: BLR/NTM

2556 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

TURNKEY ENVIRONMENTAL RESTORATION, LLC

JOB NO.: 0136-013-005

PLANNED T4 RESTRICTED RESIDENTIAL USE CLEANUP

REMEDIAL INVESTIGATION/ALTERNATIVES ANALYSIS REPORT

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

PREPARED FOR

9271 GROUP, LLC

FIGURE 5

APPENDIX A

PROJECT PHOTOLOG

SITE PHOTOGRAPHS

Photo 1:

Photo 2:

Photo 3:

Photo 4:

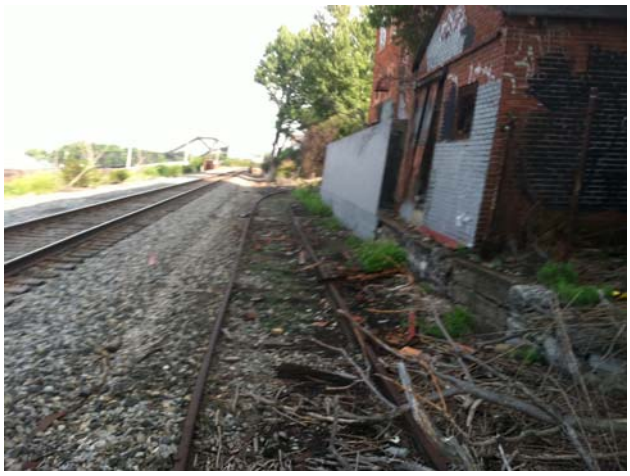


Photo 1: Site condition (1088 Niagara) from corner of Albany Street and Niagara Street (looking southwest).

Photo 2: Site conditions 1050 and 1088 Niagara Street (looking west).

Photo 3: Northern property boundary (looking west)

Photo 4: Western property boundary -1054 Niagara (looking north).

SITE PHOTOGRAPHS

Photo 5:

Photo 6:

Photo 7:

Photo 8:

Photo 5: Excavation of TP-11 (looking southwest).

Photo 6: Excavation of TP-13 (looking north).

Photo 7: Excavation of TP-14 (looking northwest)

Photo 8: Subsurface conditions (TP-14)

SITE PHOTOGRAPHS

Photo 9:

Photo 10:

Photo 11:

Photo 12:

Photo 9: Example of interior SVI sample location in basement (SV-2).

Photo 10: Example of interior SVI sample location in subbasement (SV-3).

Photo 11: Advancement and installation of MW-6 along southern boundary (looking west)

Photo 12: Advancement of SB-17 (looking southeast).

SITE PHOTOGRAPHS

Photo 13:

Photo 14:

Photo 15:

Photo 16:

Photo 13: Interior soil boring SB-9 in basement.

Photo 14: Interior soil boring SB-15 in subbasement.

Photo 15: Monitoring well MW-3 installation (looking north).

Photo 16: Advancement of delineation boring B-2 (looking south)

APPENDIX B

FIELD BOREHOLE LOGS AND WELL COMPLETION DETAILS

TEST PIT EXCAVATION LOG

Project No: 0136-013-005

Project: 1050 Niagara St, Remdial Investigation

Client: 9271 Group, LLC.

Site Location: Buffalo NY

Test Pit I.D.: TP-11

Logged By: TAB

Checked By:

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Lithologic Symbol	PID VOCs (ppm)	Lab Sample	Remarks
0.0	0.0	Ground Surface				
	0.0	***Poorly Graded Sand with Silt and Gravel and Fill*** Brown, dry, mostly fine sand, few non-plastic fines, little coarse gravel, medium dense, loose when disturbed, with trace orange brick and glass fragments.		0.0	Sample Location	
	-1.0 1.0	***Slag Fill*** Grey, dry, mostly coarse gravel (slag), little fine gravel (slag), with some coarse sands (slag), few non-plastic fines, dense, loose when disturbed.		0.0		
	-2.0 2.0	***Lean Clay with Sand and Fill*** Reddish Brown, moist, mostly low plasticity fines, little fine sand, trace orange brick and wood, massive, stiff, medium dry strength, medium toughness.		0.0		
5.0				0.0		
	-6.5 6.5	***Poorly Graded Sand with Silt and Gravel and Fill*** Brown/Black, moist, mostly fine sand, some medium black fine sand (foundry), little coarse gravel, few non-plastic fines, field stones, concerete blocks, orange brick, circler mold of foundry sand.		0.0	Sample Location	
10.0				0.0		
				0.0		
	-13.5 13.5	End of Test Pit		0.0		
15.0						

Excavated By: RE Lorenze, INC.
Excavator Type: Kobelco SK-1403R
Excavation Date(s): 7/31/14
Comments:

Length: 19.0
Width: 2.0
Depth: 13.5

Depth to Water: NA
Visual Impacts: Foundry Sand
Olfactory Observations: NA

TEST PIT EXCAVATION LOG

Project No: 0136-013-005

Project: 1050 Niagara St, Remdial Investigation

Client: 9271 Group, LLC.

Site Location: Buffalo NY

Test Pit I.D.: TP-12

Logged By: TAB

Checked By:

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Lithologic Symbol	PID VOCs (ppm)	Lab Sample	Remarks
0.0	0.0	Ground Surface				
	0.0	***Poorly Graded Sand with Silt and Gravel and Fill*** Brown, dry, mostly fine sand, few non-plastic fines, little coarse gravel, medium dense, loose when disturbed, with trace orange brick and glass fragments.		0.0	Sample Location	
	-2.0			0.0		
	2.0	***Lean Clay with Sand and Fill*** Reddish Brown, moist, mostly low plasticity fines, little fine sand, trace orange brick and wood, intemixed with foundry sand, massive, stiff, medium dry strength, medium toughness.		0.0		
5.0				0.0		
				0.0		
				0.0		
10.0	-10.0			0.0		
	10.0	***Foundry Sand*** Black, moist, mostly medium sand, trace non-plastic fines, medium dense, loose when disturbed.		0.0	Sample Location	
				0.0		
15.0				0.0		
	-16.0					
	16.0	End of Test Pit				

Excavated By: RE Lorenze, INC.
Excavator Type: Kobelco SK-1403R
Excavation Date(s): 7/31/14
Comments:

Length: 20.0
Width: 2.5
Depth: 16.0

Depth to Water: NA
Visual Impacts: Foundry Sand
Olfactory Observations: NA

TEST PIT EXCAVATION LOG

Project No: 0136-013-005

Project: 1050 Niagara St, Remdial Investigation

Client: 9271 Group, LLC.

Site Location: Buffalo NY

Test Pit I.D.: TP-13

Logged By: TAB

Checked By:

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Lithologic Symbol	PID VOCs (ppm)	Lab Sample	Remarks
0.0	0.0	Ground Surface				
	0.0 -0.5 0.5	***Concrete Slab*** Concrete				
	-1.5 1.5	***Poorly Graded Sand with Silt and gravel with Fill*** Brown/reddish brown, mostly fine sand, some coarse gravel, few non-plastic fines, medium dense, loose when disturbed, with orange brick.				
5.0		***Lean Clay with Sand and Fill*** Black/grey, moist, mostly low plasticity fines, little fine sand, trace orange brick and wood, medium dense, strong petroleum like odor, at 4.0 fbgs 4-inch pipe running north to south, massive, stiff, medium dry strength, medium toughness.		0.0 0.0 0.0 266 1024 493 1087 847	Sample Location	
	-7.5 7.5	***As above*** As above, reddish brown, grey fine sand filled fractures, blocky.				
10.0				187		
15.0				413		
	-15.5 15.5	End of Test Pit				

Excavated By: RE Lorenze, INC.
Excavator Type: Kobelco SK-1403R
Excavation Date(s): 7/31/14
Comments:

Length: 25.0
Width: 4.0
Depth: 15.5

Depth to Water: NA
Visual Impacts: 4-inch pipe running north to south ~4.0 fbgs.
Olfactory Observations: Petroleum type odor.

TEST PIT EXCAVATION LOG

Project No: 0136-013-005

Project: 1050 Niagara St, Remdial Investigation

Client: 9271 Group, LLC.

Site Location: Buffalo NY

Test Pit I.D.: TP-14

Logged By: TAB

Checked By:

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Lithologic Symbol	PID VOCs (ppm)	Lab Sample	Remarks
0.0	0.0	Ground Surface				
	0.0	***Poorly Graded Sand with Silt and Gravel and Fill*** Brown, dry, mostly fine sand, few non-plastic fines, little coarse gravel, medium dense, loose when disturbed, with trace orange brick and glass fragments, with slag		0.0	Sample Location	
	-2.0 2.0	***Lean Clay with Sand and Foundry Sand*** Reddish Brown, moist, mostly low plasticity fines, little fine sand, trace orange brick and wood, mixed with foundry sand, massive, stiff, medium toughness medium dry strength.		0.0		
	-3.5 3.5	***Foundry Sand*** Black, moist, mostly medium sand, few fine sand, medium dense, loose when disturbed.		0.0	Sample Location	
5.0	-4.5 4.5	***Lean Clay with Sand*** As (2.0 to 3.5 fbgs), no fill materials.		0.0		
				0.0		
10.0				0.0		
				0.0		
				0.0		
15.0	-15.0 15.0	End of Test Pit				

Excavated By: RE Lorenze, INC.
Excavator Type: Kobelco SK-1403R
Excavation Date(s): 7/31/14
Comments:

Length: 21
Width: 2.0
Depth: 15.0

Depth to Water: NA
Visual Impacts: Foundry Sand
Olfactory Observations: NA

Project No: 0136-013-005

Borehole Number: SB-9

Project: 1050 - 1088 Niagara Street Remdial Investigation

A.K.A.:

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By:

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 12.5 – 25)	Lab Sample	Well Completion Details or Remarks
0.0	0.0	Ground Surface							
	0.0 -0.4	***Concrete*** Concrete							
	0.4	***Lean Clay with Sand and Fill*** Reddish brown, moist, mostly low plasticity fines, little fine sand, cinders, orange brick, medium toughness, medium dry strength, stiff, massive.	C1		2.0		0.0	Sample Location.	
	-2.0 2.0	As above.	C2		2.0		0.0		
	-4.0 4.0	***Sandy Lean Clay*** Reddish brown, moist, mostly low plasticity fines, little fine sand, trace coarse sand, trace fine gravel (sub-rounded), medium toughness, medium dry strength, stiff, massive.	C3		1.2		0.0		
5.0	-6.0 6.0	***Silty Sand*** Reddish brown, moist, mostly fine sand, little non-plastic fines, few fine gravel (sub-rounded), very dense, loose when disturbed..	C4		3.8		0.0		
	-6.8 6.8 -7.0	Equipment refusal at 9.5 fbgs.							
	7.0	End of Borehole							

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe 54LT
Drill Method: Direct Push.
Comments: Interior Basement.
Drill Date(s): 8/27/14

Hole Size: 3-inch
Stick-up: NA
Datum: Mean sea level.

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: SB-10

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.:

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 12.5 – 25)	Lab Sample	Well Completion Details or Remarks
0.0	0.0	Ground Surface							
	0.0	***Concrete***							
	-0.5	Concrete							
	0.5	***Lean Clay with Sand and Fill*** Reddish brown, moist, mostly low plasticity fines, little fine sand, coal pieces, medium toughness, medium dry strength, stiff, massive.	C1		1.3		0.0	Sample Location.	
	-2.0								
	2.0	***Sandy Lean Clay*** Reddish brown, moist, mostly low plasticity fines, little fine sand, trace coarse sand, trace fine gravel (sub-rounded), medium toughness, medium dry strength, stiff, massive.	C2		1.9		0.0		
	-4.0								
	4.0	As above, hard.	C3		3.4		0.0		
5.0							0.0		
	-8.0								
	8.0	As above.	C4		1.5		0.0		
	-9.0								
	9.0	Macro-core refusal at 9.5 fbgs.							
	-9.5								
	9.5	End of Borehole							
10.0									

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe 54LT
Drill Method: Direct Push.
Comments: Interior boring.
Drill Date(s): 8/27/14

Hole Size: 3-inch
Stick-up: NA
Datum: Mean sea level.

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: SB-11

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.:

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 12.5 – 25)	Lab Sample	Well Completion Details or Remarks
0.0	0.0	Ground Surface							
	0.0 -0.5	***Concrete*** Concrete							
	0.5 -2.0	***Lean Clay with Sand and Fill*** Reddish brown, moist, mostly low plasticity fines, little fine sand, coal pieces, medium toughness, medium dry strength, stiff, massive.	C1		1.7		0.0	Sample Location.	
	2.0 -4.0	As above, iron staining, no coal fragments.	C2		1.6		0.0		
5.0	4.0 -8.0	As above, coal fragments.	C3		3.3		0.0 0.0		
	8.0	***Lean Clay with Sand*** Reddish brown, moist, mostly low plasticity fines, little fine sand, medium toughness, medium dry strength, stiff, massive.	C4		3.5		0.1 0.2		
10.0	-12.0 12.0	As above, grey at 15.0 fbgs.	C5		2.9		0.0 0.0		
15.0	-16.0 16.0	As above.	C6		1.0		0.0		
	-18.0 18.0	Macro-core refusal at 18.4 fbgs.							
20.0		End of Borehole							

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe 54LT
Drill Method: Direct Push.
Comments: Interior Boring.
Drill Date(s): 8/27/14

Hole Size: 3-inch
Stick-up: NA
Datum: Mean sea level.

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: SB-12

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.: TMW-1

Client: 9271 Group, LLC

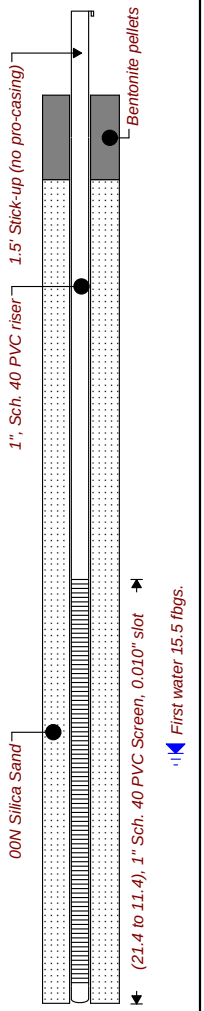
Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs (ppm)	Lab Sample
	0.0	Ground Surface						
	0.0	***Concrete*** Concrete						
3.0	-4.0	***Sandy Lean Clay with Fill*** Reddish brown, moist, mostly low plasticity fines, little fine sand, few fine gravel angular, medium toughness, medium dry strength, stiff, massive.	C1		3.3		0.0	
	4.0	***Lean Clay with Sand*** Reddish brown, moist, mostly low plasticity fines, little fine sand, medium toughness, medium dry strength, stiff massive	C2		3.6		0.0	
8.0	-8.0						0.0	
	8.0	As above, petroleum like odor.	C3		3.2		206	
	-12.0						90.6	
	12.0	As above, hard.	C4		3.5		212	Sample Location.
13.0	-15.0							
	15.0	***Poorly Graded Gravel with Silt and Sand*** Black/grey, wet, mostly fine gravel, some fine sand, few non-plastic fines, rapid dilatency, petroleum-like odor.						
	-16.0							
	16.0	As above.	C5		1.5		60.2	
18.0							75.3	
	-20.0							
	20.0	As above, with with coarse sand.	C6		1.3		55.9	
		Lean Clay With Sand Reddish brown/brown, mostly medium plasticity fines, little fine sand, trace coarse sand (black angular), soft, slight petroleum-like odor.						
23.0		Macro-core refusal at 21.4 fbgs.						
		End of Borehole						



Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe 54LT
Drill Method: Direct Push.
Comments: Interior Borings.
Drill Date(s): 8/27/14

Hole Size: 3-inch
Stick-up: 1.5 feet.
Datum: Mean sea level.

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: SB-13

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.:

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By:

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 250 – 500)	Lab Sample	Well Completion Details or Remarks
0.0	0.0	Ground Surface							
	0.0	***Concrete*** Concrete							
	-0.4 / 0.4	***Poorly Graded Sand with gravel*** Brown, moist, mostly fine sand, little fine gravel (sub-rounded and angular), trace non-plastic fines, medium dense, loose when disturbed.	C1		1.0		0.0		
	-2.0 / 2.0	As above, wet (3.5 fbgs).	C2		1.5		0.0		
	-4.0 / 4.0	As above, grey.	C3		0.4				
	-4.1 / 4.1	Macro-core refusal at 4.1 fbgs. End of Borehole							

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe 420
Drill Method: Direct Push.
Comments: Interior sub-basement boring.
Drill Date(s): 8/28/14

Hole Size: 3-inch
Stick-up: NA
Datum: Mean sea level.

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: SB-14

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.: TMW-2

Client: 9271 Group, LLC

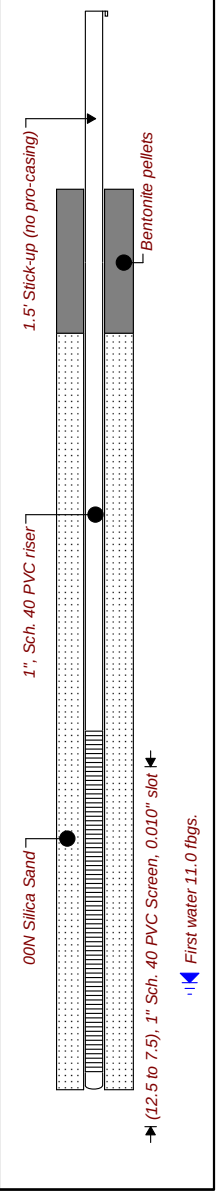
Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm	Lab Sample	Well Completion Details or Remarks
-2.0							0 250 500		
	0.0	Ground Surface							
	0.0 / -0.4 / 0.4	***Concrete*** Concrete							
		Sandy Lean Clay with Fill Reddish brown, moist, mostly low plasticity fines, some fine sand, coal fragments and ash, medium toughness, medium dry strength, stiff, massive.	C1		0.9		0.0		
	-2.0 / 2.0	***Poorly Graded Gravel with Silt and Sand*** Grey, moist, mostly fine grave (angular limestone fragments), little fine sand, few non-plastic fines, dense, loose when disturbed.	C2		0.8		0.0		
3.0	-3.0 / 3.0								
	-4.0 / 4.0	***Poorly Graded Sand with Silt and Gravel*** Brown, moist, mostly fine sand, few fine gravel (angular), few non-plastic fines, medium dense loose when disturbed.	C3		2.5		0.0		
		Lean Clay with Sand Reddish brown, moist, mostly medium plasticity fines, little fine sand, trace fine gravel (sub-rounded), stiff, medium dry strength, medium toughness, stiff, masssive.					0.0		
8.0	-8.0 / 8.0	As above, wet at 11.0 fbgs.	C4		2.7		0.0		
							0.0		
	-12.0 / 12.0							Sample Location.	
	-12.5 / 12.5	As above, slight petroleum-like odor with LNAPL on groundwater.	C5		0.4		0.0		
13.0		Macro-core refusal at 12.5 fbgs.							
		End of Borehole							



Drilled By: Trec Environmental, Inc.
Drill Rig Type: Geoprobe 420
Drill Method: Direct Push.
Comments: Interior Boring.
Drill Date(s): 8/28/14

Hole Size: 3-inch
Stick-up: 2.5-feet
Datum: Mean sea level.

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: SB-15

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.: TMW-3

Client: 9271 Group, LLC

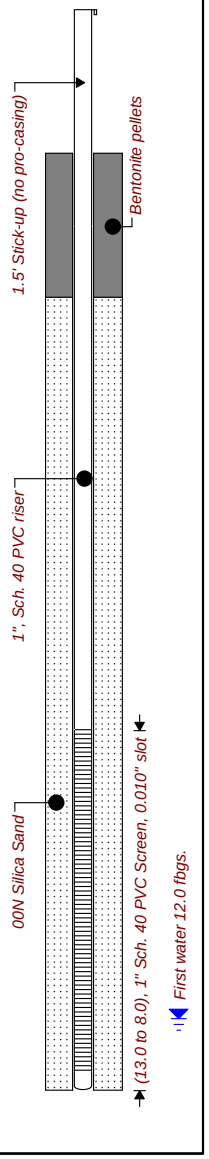
Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 / 250 / 500)	Lab Sample	Well Completion Details or Remarks
-2.0									
	0.0	Ground Surface							
	0.0 / -0.4 / 0.4	***Concrete*** Concrete							
	-2.0 / 2.0	***Poorly Graded Sand with Silt and Fill*** Black, moist, mostly, fine sand, trace fine gravel (angular), few fine sand, cinders, orange brick, dense, loose when disturbed.	C1		0.5		0.0		
3.0		***Sandy Lean Clay with Fill*** Reddish brown, moist, mostly low plasticity fines, some fine sand, cinders,, medium toughness, medium dry strength, stiff, massive.	C2		2.0		0.0		
	-4.0 / 4.0	As above. As above,	C3		2.0		0.0		
	-6.0 / 6.0	As above, at 9.0 fbgs slight petroleum-like odor.	C4		3.8		0.0 / 0.0		
8.0									
	-10.0 / 10.0	As above, petroleum-like odor, wet (12.0 fbgs).	C5		3.8		224 / 55.6	Sample Location.	
	-12.5 / 12.5 / -13.0	Macro-core refusal at 13.0 fbgs.							
13.0	13.0	End of Borehole							



Drilled By: Trec Environmental, Inc.
Drill Rig Type: Geoprobe 420
Drill Method: Direct Push.
Comments: Interior sub-basement boring.
Drill Date(s): 8/28/14

Hole Size: 3-inch
Stick-up: 2.5-feet
Datum: Mean sea level.

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: SB-16

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.:

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 / 12.5 / 25)	Lab Sample	Well Completion Details or Remarks
0.0	0.0	Ground Surface							
	0.0	***Concrete***							
	-0.5	Concrete							
	0.5	***Poorly Graded Sand with Silt and Fill*** Brown, moist, mostly fine sand, few non-plastic fines, few fine gravel, ceramic pieces, medium dense, loose when disturbed.	C1		1.5		0.0		
	-2.0								
	2.0	***Sandy Lean Clay with Fill*** Reddish brown, moist, mostly low plasticity fines, little fine sand, coal fragments, medium toughness, medium dry strength, stiff, massive.	C2		1.8		0.2		
	-4.0								
	4.0	As above, whith ash.	C3		1.8		0.5	Sample Location.	
5.0	-6.0								
	6.0	***Sandy Lean Clay*** Grey, moist, mostly medium plasticity fines, little fine sand, trace coarse sand, medium dry strength, medium toughness, stiff, massive.	C4		2.0		0.0		
							0.0		
10.0	-10.0								
	10.0	As above.					0.4		
	-12.0								
	12.0	As, above, reddish brown, some fine sand, few fine gravel (sub-rounded).	C5		1.2		0.3		▼ First Water 14.0 fbgs.
	-14.0								
	14.0						0.1		
	-14.4	Macro-core refusal at 14.4 fbgs.	C6		0.3				
	14.4	End of Borehole							
15.0									

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe 420
Drill Method: Direct Push.
Comments: Interior sub-basement boring.
Drill Date(s): 8/28/14

Hole Size: 3-inch
Stick-up: NA
Datum: Mean sea level.

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: B-2

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.:

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 25 – 50)	Lab Sample	Well Completion Details or Remarks
0.0	0.0 / 0.0	Ground Surface							
		Augered to 8.0 fbgs, for soil descriptions see MW-1 borehole log.							
5.0									
	-8.0 / 8.0	***Sandy Lean Clay with Fill*** Brown, moist, mostly, medium plasticity fines, some fine sand, trace fine gravel (angular), firm, massive, medium toughness, medium dry strength.	S1	5	0.8		0.0	Sample Location	
10.0	-10.0 / 10.0	As above, stiff.	S2	13	0.5		0.0		
	-12.0 / 12.0	As above, firm.	S3	7	0.4		0.0		
	-14.0 / 14.0	End of Borehole							
15.0									

Drilled By: Earth Diemensions, Inc.
Drill Rig Type: Diedrich D120
Drill Method: 4 1/4-inch HSA w/continous SS from (8.0 fbgs).
Comments:
Drill Date(s): 1/30/15

Hole Size: 8 1/4-inch
Stick-up: NA
Datum: Mean sea level.

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: B-3

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.:

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 25 – 50)	Lab Sample	Well Completion Details or Remarks
0.0	0.0 / 0.0	Ground Surface							
		Augered to 8.0 fbgs, for soil descriptions see MW-1 borehole log.							
5.0									
	-8.0 / 8.0	***Lean Clay with Fill*** Reddish brown, moist, mostly, medium plastic fines, some fine sand, cinders, orange brick, very stiff, massive, medium toughness, medium dry strength.	S1	16	1.3		0.0	Sample Location	
10.0	-10.0 / 10.0	As above.	S2	17	0.7		0.0		
	-12.0 / 12.0	As above.	S3	17	0.5		0.0		
	-14.0 / 14.0	End of Borehole							
15.0									

Drilled By: Earth Diemensions, Inc.
Drill Rig Type: Diedrich D120
Drill Method: 4 1/4-inch HSA w/ continuous SS (from 8.0 fbgs).
Comments:
Drill Date(s): 1/30/15

Hole Size: 8 1/4-inch
Stick-up: NA
Datum: Mean sea level.

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: SB-17

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.: Former MW-1

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 / 12.5 / 25)	Lab Sample	Well Completion Details or Remarks
0.0	0.0	Ground Surface							
	0.0	***Silty Sand with Gravel and Fill*** Brown/black, moist, mostly fine sand, little non-plastic fines, little fine gravel (angular), slag, cinders, orange brick, medium dense, loose when disturbed.					0.0		
	-2.0		C1		1.9				
	2.0	***Lean Clay with Fill*** Reddish brown moist, mostly, low plasticiy fines, little fine sand, orange brick fragments, stiff, massive, medium toughness, medium dry strength.					0.0		
	-4.0								
	4.0	As above.					0.0		
5.0	-6.0		C2		2.7				
	6.0	As above, black layer of coal and ciders (4.5 to 5.0 fbgs).					0.0		
	-8.0								
	8.0	***Fill*** Concrete, coal fines, cinders, reddish brown sand stone.	C3		2.1		0.0	Sample Location	
	-10.0								
10.0	10.0	Limestone (flag stone).	C4		1.0		0.0		
	-12.0								
	12.0	***Silt with Sand and Fill*** Brown/Black, moist, mostly non-plastic fines, some fine sand, medium dense, orange brick fragments, coal fines,loose when disturbed.	C5		0.1		0.0		
15.0							0.0		
	-16.0								
	16.0	As above.	C6		0.9				
	-16.5								
	16.5	As above.	C7		1.2		0.0		
	-17.5								
	17.5	***Poorly Graded Sand With Silt and Fill***	C8		0.5		0.0		
	-18.0								
	18.0	Brown, moist, moistly fine sand, few non-plastic fines, few fine gravel angular (chert).	C9		0.4		0.0		
	-20.0	***Sandy Lean Clay with Fill*** Brown, moist, mostly low plasticity fines, some fine sand, trace fine gravel angular (chert), medium toughness, medium dry strength.							
20.0	20.0	Macro-core refusal at 20 fbgs.							
		End of Borehole							

Drilled By: Zoladz Construction, Co.
Drill Rig Type: Geoprobe 6610DT
Drill Method: Direct Push.
Comments:
Drill Date(s): 8/19/14 and 1/29/15

Hole Size: 3-inch
Stick-up: NA
Datum: Mean sea level.

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: SB-18

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.: Former MW-2

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 / 12.5 / 25)	Lab Sample	Well Completion Details or Remarks
0.0	0.0	Ground Surface							
	0.0	***Silty Sand with Gravel*** Brown/black, moist, mostly fine sand, little non-plastic fines, little fine gravel (angular), slag, cinders, orange brick, medium dense, loose when disturbed.	C1		2.1		0.0 0.0		
	-4.0								
	4.0	***Fill*** Wood, concrete mixed with ciders.							
5.0	-5.0 5.0	***Lean Clay with Sand and Fill*** Reddish brown moist, mostly, medium plasticity fines, few fine sand, trace coarse sand, orange brick fragments, stiff, massive, medium toughness, medium dry strength.	C2		1.1		0.0 0.0		
	-8.0								
	8.0	As above.							
10.0	-10.5		C3		3.0		0.0 0.0		
	10.5	***Poorly graded Sand with Silt and Fill*** Black, moist, mostly fine sand (foundry sand), few non-plastic fines, few coarse sand, few fine gravel (angular), cinders and coal fines, medium dense, loose when disturbed.							
	-12.0 12.0	As above, concrete, musty odor.	C4		3.0		0.0 2.0	Sample Location	
15.0	-16.0								
	16.0	As above, no concrete.	C5		3.3		0.0 0.0		
20.0	-20.0								
	20.0	Reddish brown, moist, mostly low plasticity fines, with few fine sand, stiff, with coal fines and cinders.	C6		2.0		0.0 0.0		
	-23.5								
	23.5	End of borehole 24.0 fbgs.							
25.0		End of Borehole							

Drilled By: Zoladz Construction, Co.
Drill Rig Type: Geoprobe 6610DT
Drill Method: Direct Push.
Comments:
Drill Date(s): 8/19/14 - 8/20/14

Hole Size: 3-inch
Stick-up: NA
Datum: Mean sea level.

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: SB-19

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.: Former MW-5

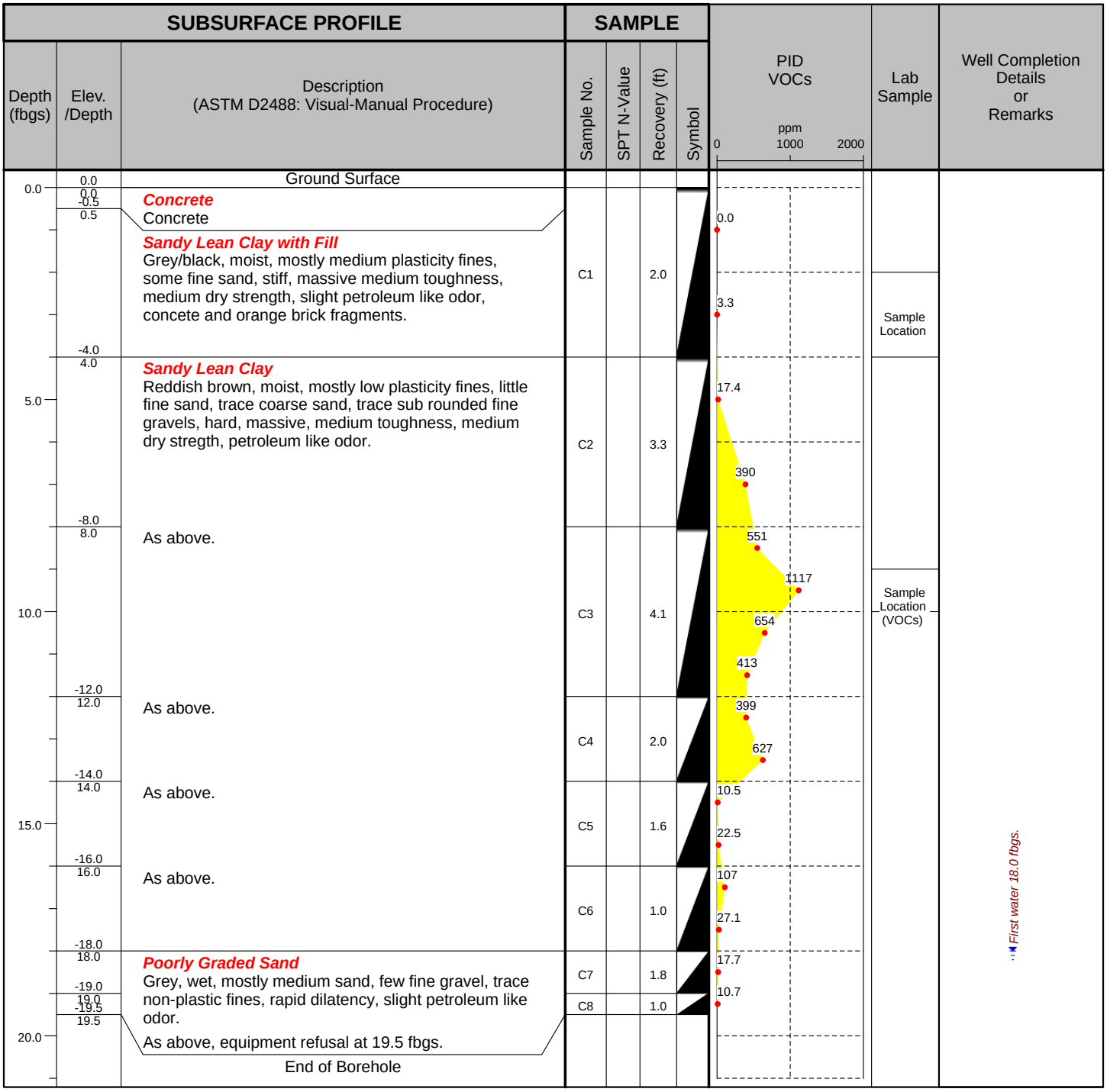
Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635



Drilled By: Zoladz Construction, Co.
Drill Rig Type: Geoprobe 6610DT
Drill Method: Direct Push.
Comments:
Drill Date(s): 8/19/14

Hole Size: 3-inch.
Stick-up: NA
Datum: Mean sea level.

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: MW-1

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.: B-1

Client: 9271 Group, LLC

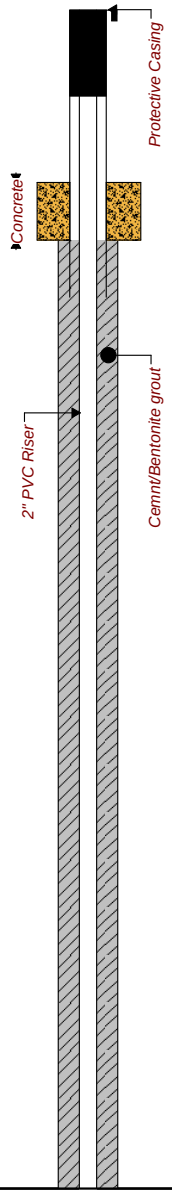
Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 25 – 50)	Lab Sample	Well Completion Details or Remarks
-3.0									
	0.0	Ground Surface							
	0.0	Augered to 8.0 fbgs, for soil descriptions see SB-17 borehole log.							
2.0									
7.0									
	-8.0								
	8.0	***Lean Clay with Fill*** Brown, moist, mostly, low plasticiy fines, some fine sand, orange brick fragments, hard, massive, medium toughness, medium dry strength, slight petroleum-like odor.	S1	37	0.9		26.2	Sample Location	
	-10.0								
	10.0	***Limestone Cobble*** Grey, moist, limestone fragments (angular).	S2	64	1.2		1.5		
	-10.5								
	10.5	***Poorly Graded Sand with Fill*** Brown, mostly fine sand, few fine gravels (red sandstone angular fragments), trace non-plastic fines, very dense, loose when disturbed.	S3	13	1.2		0.4		
12.0	-12.0								
	12.0								
	-12.5								
	12.5	***Limestone Cobble*** As 10.0 to 10.5 above.							
	-14.0								
	14.0	***Lean Clay with Fill*** As 8.0 to 10.0 above, stiff. As above, with limestone fragments, black fine sand, very stiff.	S4	15	1.1		0.1		
	-16.0								
	16.0	***Fill*** Slag and Orange brick, loose.	S5	8	0.5		0.2 0.0		
17.0									



Drilled By: Earth Diemensions, Inc.
Drill Rig Type: Diedrich D120
Drill Method: 4 1/4-inch HSA, w/ continous SS (from 8.0 fbgs).
Comments:
Drill Date(s): 1/29/15

Hole Size: 8 1/4-inch
Stick-up: 3.0
Datum: Mean sea level.

Sheet: 1 of 2

Project No: 0136-013-005

Borehole Number: MW-1

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.: B-1

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

TurnKey Environmental Restoration, LLC
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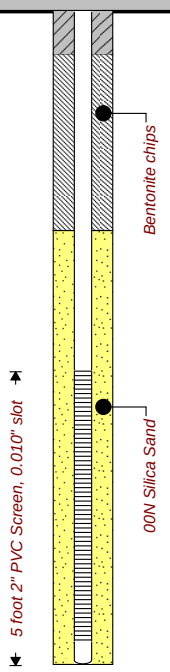
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm	Lab Sample	Well Completion Details or Remarks
	-18.0 / 18.0	As above, dark grey/ black, medium dense.	S6	15	1.2		0.2 / 0.0 / 0.0		
	-20.0 / 20.0	As above.	S7	14	0.2		0.0		
22.0	-22.0 / 22.0	***Poorly Graded Sand with Fill*** Brown, moist, moistly fine sand, trace non-plastic fines, trace fine gravel angular (limestone), loose.	S8	9	1.3		0.0		
	-22.5 / 22.5	***Sandy Lean Clay*** Reddish brown, moist, mostly medium plastic fines, little fine sand, few fine gravel (sub-rounded), stiff, massive, medium toughness, medium dry strength.	S9	14	0.9		0.0		
	-24.0 / 24.0	As above.							
	-25.5 / 25.5	***Poorly Graded Gravel with Sand*** Grey/brown, moist, mostly fine gravel, some fine sand, trace non-plastic fines, very dense, loose when disturbed.	S10	100 / 4	0.3		0.0		
27.0	-26.0 / 26.0	As above.					0.0		
	-28.0 / 28.0	As above.	S11	100 / 4	0.1				
		Auger refusal at 28.4 fbgs (suspected top of bedrock). End of Borehole							
32.0									
37.0									



Drilled By: Earth Diemensions, Inc.
Drill Rig Type: Diedrich D120
Drill Method: 4 1/4-inch HSA, w/ continous SS (from 8.0 fbgs).
Comments:
Drill Date(s): 1/29/15

Hole Size: 8 1/4-inch
Stick-up: 3.0
Datum: Mean sea level.

Sheet: 2 of 2

Project No: 0136-013-005

Borehole Number: MW-3

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.:

Client: 9271 Group, LLC

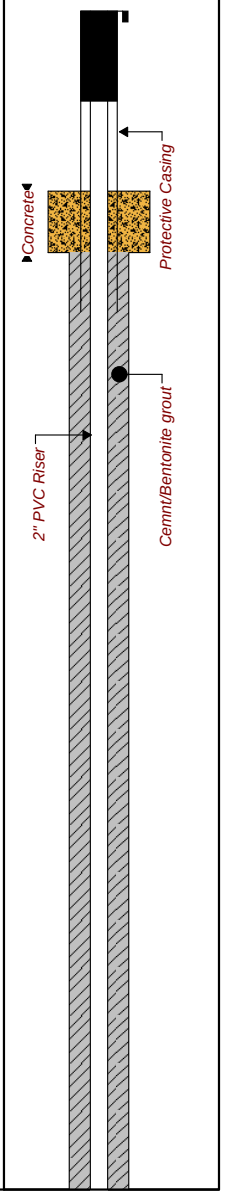
Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 / 250 / 500)	Lab Sample	Well Completion Details or Remarks
-3.0									
	0.0	Ground Surface							
	0.0	***Poorly Graded Sand with Silt and Gravel*** Brown/black, moist, mostly fine sand and coarse sand, little fine gravel (angular), few non-plastic fines, medium dense, orange brick, cinders, loose when disturbed.	C1		2.4		0.0		
2.0							0.0		
	-3.5								
	3.5 -4.0	***Concrete*** Concrete							
	4.0	***Sandy lean clay with Fill*** Reddish brown, moist, mostly medium plasticity fines, little fine sand, trace coarse sand, cinders and coal fragments, medium toughness, medium dry strength, stiff, massive.	C2		1.5		0.0		
7.0							0.0		
	-8.0								
	8.0	***Sandy Lean Clay*** Reddish brown, moist, mostly medium plasticity fines, little fine sand, few fine gravel (sub-rounded), trace coarse sand, medium toughness, medium dry strength, sitff, massive.	C3		1.8		0.0		
							0.0		
12.0	-12.0								
	12.0	As above, hard.	C4		1.2		0.0		
	-14.0								
	14.0	As above.					0.0		
	-16.0								
	16.0	As above.					120		



Drilled By: Zoladz Construction, Co./Earth Dimensions, Inc.
Drill Rig Type: Geoprobe 6610DT/Diedrich d120
Drill Method: Direct Push, W/ 4 1/4-inch HSA, Continous SS.
Comments:
Drill Date(s): 8/20/14 and 1/28/15

Hole Size: 8 1/4-inch.
Stick-up: 3.0 feet.
Datum: Mean sea level.

Sheet: 1 of 2

Project No: 0136-013-005

Borehole Number: MW-3

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.:

Client: 9271 Group, LLC

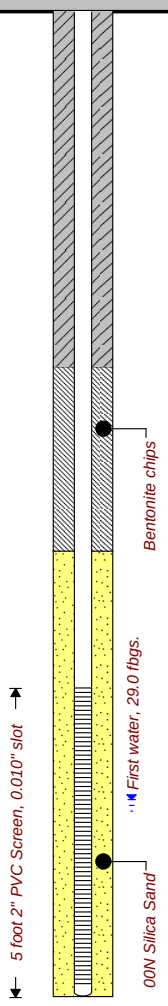
Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm	Lab Sample	Well Completion Details or Remarks
	-17.5 / 17.5	***Poorly Graded Sand with Silt*** Black, moist, mostly fine sand, few non-plastic fines, medium dense, loose when disturbed..	C5		1.2		0.0		
	-20.0 / 20.0	***Sandy Lean Clay*** Reddish brown, moist, mostly medium plasticity fines, little fine sand, few fine gravel (sub-rounded), trace coarse sand, medium toughness, medum dry strength, stiff, massive.					0.0	Sample Location	
21.0			C6		1.6		0.0		
	-24.0 / 24.0	As above, with grey, rootletts.					0.0		
26.0			C7		2.2		0.0		
	-28.0 / 28.0	As above, reddish brown, no rootletts, hard, slight petroleum-like odor.					12.6		
	-29.0 / 29.0	***Poorly Graded Sand with Gravel*** Grey, wet, mostly, fine sand, little fine gravel (sub-rounded), trace non-plastic fines, very dense, rapid dilatency, strong petroleum-like odor.	S8	113	1.8		777	Sample Location	
	-30.0 / 30.0								
	-30.5 / 30.5	As above.					46.6		
31.0	-31.0 / 31.0	***Sandy Lean Clay*** As (20.0 to 24.0) fbgs above, hard.	S9	68	1.2		191		
	-32.0 / 32.0	***Poorly Graded Sand with Gravel*** As (29.0 to 30.5) above.	S10	100	0.3		120		
		As above.							
		Auger refusal at 32.2 fbgs (suspected top of bedrock). End of Borehole							



Drilled By: Zoladz Construction, Co./Earth Dimensions, Inc.
Drill Rig Type: Geoprobe 6610DT/Diedrich d120
Drill Method: Direct Push, W/ 4 1/4-inch HSA, Continous SS.
Comments:
Drill Date(s): 8/20/14 and 1/28/15

Hole Size: 8 1/4-inch.
Stick-up: 3.0 feet.
Datum: Mean sea level.

Sheet: 2 of 2

Project No: 0136-013-005

Borehole Number: MW-4

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.:

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 250 – 500)	Lab Sample	Well Completion Details or Remarks
-3.0									
	0.0	Ground Surface							
	0.0	***Concrete***							
	-0.5 / 0.5	***Orange Brick***							
		Lean Clay with Sand and Fill Reddish brown, moist, mostly medium plasticity fines, little fine sand, with cinders and coal fragments, medium toughness, medium dry strength, stiff, massive.	C1		1.5		0.0	Sample Location.	
2.0	-4.0 / 4.0								
		As above, no coal fragments.	C2		2.3		0.0		
7.0							0.0		
	-8.0 / 8.0								
		Sandy Lean Clay Reddish brown, moist, mostly medium plasticity fines, little fine sand, few fine gravel, trace coarse sand, medium toughness, medium dry strength, stiff, massive	C3		2.4		0.0		
							0.0		
12.0	-12.0 / 12.0	As above, hard.	C4		1.2		0.0		
	-14.0 / 14.0	No recovery.					191		

Well Completion Details or Remarks: Concrete; Protective Casing; 2" PVC Riser; Cemnt/Bentonite grout

Drilled By: Zoladz Construction, Co./Earth Dimensions, Inc.
Drill Rig Type: Geoprobe 6610DT/Diedrich D120
Drill Method: Direct Push/4 1/4-inch HSA w/ continuous SS.
Comments:
Drill Date(s): 8/20/14 and 1/28/15

Hole Size: 8 1/4-inch
Stick-up: NA
Datum: Mean sea level.

Project No: 0136-013-005

Borehole Number: MW-4

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.:

Client: 9271 Group, LLC

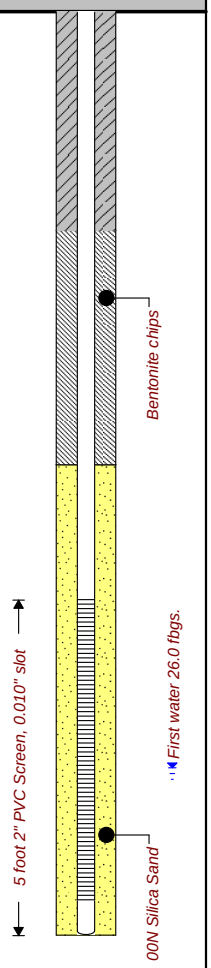
Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs (ppm)	Lab Sample	Well Completion Details or Remarks
	-16.0		C5		0.0		0.0		
	16.0	As above, petroleum like odor.	C6		3.3		393, 11.7	Sample Location.	
19.0	-19.5								
	19.5 -20.0	As above.	C7		1.3		334		
	20.0	No recovery.	C8		0.0				
	-22.0 22.0	As above, hard.	S1	39	1.8		126		
24.0	-24.0 24.0	As above.	S2	40	1.8		2.6		
	-25.5 25.5 -26.0 26.0	***Poorly Graded Sand*** Grey, mostly fine sand, few fine gravel (sub-rounded), trace non-plastic fines, dense, loose when disturbed, strong petroleum-like odor. As above, very dense.	S3	130	1.6		191		
	-28.0 28.0 -28.5 28.5	No recovery.	S4	100 3	0.0				
29.0		Auger refusal at 28.5 fbgs (suspected top of rock). End of Borehole							



Drilled By: Zoladz Construction, Co./Earth Dimensions, Inc.
Drill Rig Type: Geoprobe 6610DT/Diedrich D120
Drill Method: Direct Push/4 1/4-inch HSA w/ continuous SS.
Comments:
Drill Date(s): 8/20/14 and 1/28/15

Hole Size: 8 1/4-inch
Stick-up: NA
Datum: Mean sea level.

Sheet: 2 of 2

Project No: 0136-013-005

Borehole Number: MW-5

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.:

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 / 25 / 50)	Lab Sample	Well Completion Details or Remarks
-3.0									
	0.0	Ground Surface							
	0.0	Augered to 16.0 fbgs, heavey rig chatter through upper sixteen feet, presumably uncolsolidated fill.							
2.0									
7.0									
12.0									
	-16.0								
	16.0	***Poorly Graded Sand with Fill*** Brown, mostly fine sand, few fine gravels (lime stone fragments), trace non-plastic fines, orange brick, very dense, loose when disturbed.	S1	30	0.8		0.2 / 0.0		
17.0	-18.0								
	18.0	As above, red/grey, wet (19.5 fbgs).	S2	50 / 4	0.5		0.0		
	-20.0								
	20.0	***Weathered Concrete*** Grey, wet, weathered concrete.	S3	100 / 3	0.3		0.0		
	-21.5								
	21.5	End of Borehole							
22.0									

Well Completion Details: Protective Casing; -Concrete-; 2" PVC Riser; Cemnt/Bentonite grout; Bentonite chips; 00N Silica Sand; —5 foot 2" PVC Screen, 0.010" slot—

Drilled By: Earth Diemensions, Inc.
Drill Rig Type: Diedrich D120
Drill Method: 4 1/4-inch HSA w/ continouos SS.
Comments:
Drill Date(s): 1/30/15

Hole Size: 8 1/4-inch
Stick-up: 3.0
Datum: Mean sea level.

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: MW-6

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.:

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

TurnKey Environmental Restoration, LLC
2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 / 12.5 / 25)	Lab Sample	Well Completion Details or Remarks
0.0	0.0	Ground Surface							
	0.0	***Silt with Sand*** Black, moist, mostly non-plastic fines, some fine sand, medium dense, organic debris (roots, leaf litter), medium dense, loose when disturbed.					0.0		Concrete
	-0.5 0.5	***Lean Clay with Fill*** Reddish brown moist, mostly, low plasticiy fines, little fine sand, orange brick fragments and cinders, stiff, massive, medium toughness, medium dry strength.	C1		1.8		0.0	Sample Location	
	-4.0 4.0	***Sandy Lean Clay*** Reddish brown, moist, mostly low plasticity fines, little fine sand, trace coarse sand, trace sub rounded fine gravels, hard, massive, medium toughness, medium dry stregth.	C2		3.9		0.0		2" PVC Riser
5.0							0.0		Bentonite chips
	-8.0 8.0	As above.	C3		3.9		0.0		00N Silica Sand
10.0							0.0		
	-12.0 12.0	As above, wet at 14.0 fbgs.	C4		0.2		0.0		(17.6 to 7.6) 2" PVC Screen, 0.010" slot
15.0							0.0		▼ 14.0 fbgs.
	-16.0 16.0	***Silty Sand*** Reddish brown, wet, mostly fine sand, little non-plastic fines, dense, loose when desturbed, rapid dilatancy.	C5		1.0		0.0		
	-18.0 18.0	As above, macro-core refusal at 18.2 fbgs.	C6		0.1		0.0		
20.0		End of Borehole							

Drilled By: Zoladz Construction, Co.
Drill Rig Type: Geoprobe 6610DT
Drill Method: Direct Push followed by 4 1/4-inch augers.
Comments:
Drill Date(s): 8/19/14

Hole Size: 8 1/2 inch.
Stick-up: Flushmount.
Datum: Mean sea level.

Sheet: 1 of 1

APPENDIX C

SUB-SLAB VAPOR ASSESSMENT FIELD NOTES

BENCHMARK
ENVIRONMENTAL
ENGINEERING &
SCIENCE, PLLC

AIR CANISTER FIELD RECORD

PROJECT INFORMATION:

Project: 1050 Niagara St
Job No: 0136-013-005
Location: Buffalo NY
Field Staff: TAB
Client: Ellicott Development

SAMPLE I.D.: SV-1

WEATHER CONDITIONS:

Ambient Air Temp. - A.M.: 70's
Ambient Air Temp. - P.M.: 70's
Wind Direction: W
Wind Speed: 10-15
Precipitation: None

Size of Canister: 6L
Canister Serial No.: 4793
Flow Controller No.: 5194
Sample Date(s): 7/30/14
Shipping Date:
Sample Type: ☐ Indoor Air ☐ Outdoor Air
☒ Subslab, complete section below ☐ Soil Gas
Soil Gas Probe Depth:

FIELD SAMPLING INFORMATION:

READING	TIME	VACUUM (inches Hg) or PRESSURE (psig)	DATE	INITIALS
Lab Vacuum (on tag)	1514	-30	7/31/14	TAB
Field Vacuum Check [1]				
Initial Field Vacuum [2]	1528	-30	7/31/14	TAB
Final Field Vacuum [3]	[illegible]	[illegible]	[illegible]	[illegible]
Duration of Sample Collection	1334	-5		

LABORATORY CANISTER PRESSURIZATION:

Initial Vacuum (inches Hg and psia)		
Final Pressure (psia)		
Pressurization Gas		

SUBSLAB SHROUD:

Shroud Helium Concentration: 90300
Calculated tubing volume: 145 x 3 = 180 mL
Purged Tubing Volume Concentration: 0%
Is the purged volume concentration less than or equal to 10% in shroud?
☒ YES, continue sampling
☐ NO, improve surface seal and retest

COMPOSITE TIME (hours)	FLOW RATE RANGE (ml/min)
15 Min.	316 - 333
0.5 Hours	158 - 166.7
1	79.2 - 83.3
2	39.6 - 41.7
4	19.8 - 20.8
6	13.2 - 13.9
8	9.9 - 10.4
10	7.92 - 8.3
12	6.6 - 6.9
24	3.5 - 4.0

NOTES:

~~Blank Not collected~~

1 Vacuum measured using portable vacuum gauge (provided by Lab)
2 Vacuum measured by canister gauge upon opening valve
3 Vacuum measured by canister gauge prior to closing valve

Signed:

BENCHMARK
ENVIRONMENTAL
ENGINEERING &
SCIENCE, PLLC

AIR CANISTER FIELD RECORD

PROJECT INFORMATION:

Project: 1050 Niagara St
Job No: 0136-013-005
Location: Buffalo NY
Field Staff: TAB, Mat K
Client: Ellicott Development

SAMPLE I.D.: Ambient-1

Size of Canister: 6L
Canister Serial No.: 5124
Flow Controller No.: ~~7314~~ 3985
Sample Date(s): 7-31-14
Shipping Date:
Sample Type: ☐ Indoor Air ☐ Outdoor Air
☒ Subslab, complete section below ☐ Soil Gas
Soil Gas Probe Depth:

WEATHER CONDITIONS:

Ambient Air Temp. - A.M.: 70's
Ambient Air Temp. - P.M.: 70's
Wind Direction: W
Wind Speed: 10-15
Precipitation: NONE

FIELD SAMPLING INFORMATION:

READING	TIME	VACUUM (inches Hg) or PRESSURE (psig)	DATE	INITIALS
Lab Vacuum (on tag)	1512	-30.2	7/30/14	~~TAB~~
Field Vacuum Check [1]				
Initial Field Vacuum [2]	1513	-30	7/31/14	TAB
Final Field Vacuum [3]	1406	~8	8/1/14	TAB
Duration of Sample Collection				

LABORATORY CANISTER PRESSURIZATION:

Initial Vacuum (inches Hg and psia)		
Final Pressure (psia)		
Pressurization Gas		

SUBSLAB SHROUD:

Shroud Helium Concentration:
Calculated tubing volume: x 3 =
Purged Tubing Volume Concentration:
Is the purged volume concentration less than or equal to 10% in shroud?
☐ YES, continue sampling
☐ NO, Improve surface seal and retest

COMPOSITE TIME (hours)	FLOW RATE RANGE (ml/min)
15 Min.	316 - 333
0.5 Hours	158 - 166.7
1	79.2 - 83.3
2	39.6 - 41.7
4	19.8 - 20.8
6	13.2 - 13.9
8	9.9 - 10.4
10	7.92 - 8.3
12	6.6 - 6.9
24	3.5 - 4.0

NOTES:

1 Vacuum measured using portable vacuum gauge (provided by Lab)
2 Vacuum measured by canister gauge upon opening valve
3 Vacuum measured by canister gauge prior to closing valve

Signed:

BENCHMARK
ENVIRONMENTAL
ENGINEERING &
SCIENCE, PLLC

AIR CANISTER FIELD RECORD

PROJECT INFORMATION:

Project: 1050 Niagara St
Job No: 0136-013-005
Location: Buffalo NY
Field Staff: TAB/MK
Client: Ellicott

SAMPLE I.D.: SV-2

Size of Canister: 6L
Canister Serial No.: 3625
Flow Controller No.: 4578
Sample Date(s): 7-31-14
Shipping Date:
Sample Type: ☐ Indoor Air ☐ Outdoor Air
☒ Subslab, complete section below ☐ Soil Gas
Soil Gas Probe Depth: ~5"

WEATHER CONDITIONS:

Ambient Air Temp. - A.M.: 70's
Ambient Air Temp. - P.M.: 70's
Wind Direction: W
Wind Speed: 10-15
Precipitation: None

FIELD SAMPLING INFORMATION:

READING	TIME	VACUUM (inches Hg) or PRESSURE (psig)	DATE	INITIALS
Lab Vacuum (on tag)	1509	-30.2	7/31/14	TAB
Field Vacuum Check [1]				
Initial Field Vacuum [2]	1510	-30	7/31/14	TAB
Final Field Vacuum [3]	1630	-2	7/31/14	TAB
Duration of Sample Collection				

LABORATORY CANISTER PRESSURIZATION:

Initial Vacuum (inches Hg and psia)		
Final Pressure (psia)		
Pressurization Gas		

SUBSLAB SHROUD:

Shroud Helium Concentration: 9475 ppm
Calculated tubing volume: 6 x 3 = 174
Purged Tubing Volume Concentration: 0%
Is the purged volume concentration less than or equal to 10% in shroud?
☐ YES, continue sampling
☐ NO, improve surface seal and retest

COMPOSITE TIME (hours)	FLOW RATE RANGE (ml/min)
15 Min.	316 - 333
0.5 Hours	158 - 166.7
1	79.2 - 83.3
2	39.6 - 41.7
4	19.8 - 20.8
6	13.2 - 13.9
8	9.9 - 10.4
10	7.92 - 8.3
12	6.6 - 6.9
24	3.5 - 4.0

NOTES:

Blind Dup Collected

1 Vacuum measured using portable vacuum gauge (provided by Lab)
2 Vacuum measured by canister gauge upon opening valve
3 Vacuum measured by canister gauge prior to closing valve

Signed:

BENCHMARK
ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

AIR CANISTER FIELD RECORD

PROJECT INFORMATION:

Project: 1050 Niagara st
Job No: 0136 - 013 - 005
Location: Buffalo NY
Field Staff: TAB, Matt K
Client: Ellicott Development

SAMPLE I.D.: SV-4

WEATHER CONDITIONS:

Ambient Air Temp. - A.M.: 70's
Ambient Air Temp. - P.M.: 70's
Wind Direction: W
Wind Speed: 10-15
Precipitation: None

Size of Canister: 6L
Canister Serial No.: 4818
Flow Controller No.: 3687
Sample Date(s): 7-31-14
Shipping Date:
Sample Type: ☐ Indoor Air ☐ Outdoor Air
☒ Subslab, complete section below ☐ Soil Gas
Soil Gas Probe Depth: ~6"

FIELD SAMPLING INFORMATION:

READING	TIME	VACUUM (inches Hg) or PRESSURE (psig)	DATE	INITIALS
Lab Vacuum (on tag)	1430	1456	7/31/14	TAB
Field Vacuum Check [1]	1430	1457	7/31/14	
Initial Field Vacuum [2]				
Final Field Vacuum [3]	1411	-10	8/1/14	TAB
Duration of Sample Collection				

LABORATORY CANISTER PRESSURIZATION:

Initial Vacuum (inches Hg and psia)		
Final Pressure (psia)		
Pressurization Gas		

SUBSLAB SHROUD:

Shroud Helium Concentration: 4650
Calculated tubing volume: 6 x 3 = 174
Purged Tubing Volume Concentration: 0%
Is the purged volume concentration less than or equal to 10% in shroud?
☐ YES, continue sampling
☐ NO, improve surface seal and retest

COMPOSITE TIME (hours)	FLOW RATE RANGE (ml/min)
15 Min.	316 - 333
0.5 Hours	158 - 166.7
1	79.2 - 83.3
2	39.6 - 41.7
4	19.8 - 20.8
6	13.2 - 13.9
8	9.9 - 10.4
10	7.92 - 8.3
12	6.6 - 6.9
24	3.5 - 4.0

NOTES:

1 Vacuum measured using portable vacuum gauge (provided by Lab)
2 Vacuum measured by canister gauge upon opening valve
3 Vacuum measured by canister gauge prior to closing valve

Signed:

BENCHMARK
ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

AIR CANISTER FIELD RECORD

PROJECT INFORMATION:

Project: 1050 Niagara St
Job No: 0136-013-005
Location: Buffalo NY
Field Staff: TAB, Matt K
Client: Elliott Davidson

SAMPLE I.D.: Ambient-2

Size of Canister: 6L
Canister Serial No.: 4093
Flow Controller No.: 3613
Sample Date(s): 7-31-14
Shipping Date:
Sample Type: ☒ Indoor Air ☐ Outdoor Air
☒ Subslab, complete section below ☐ Soil Gas
Soil Gas Probe Depth:

WEATHER CONDITIONS:

Ambient Air Temp. - A.M.: 70's
Ambient Air Temp. - P.M.: 70's
Wind Direction: W
Wind Speed: 10-15
Precipitation: NONE

FIELD SAMPLING INFORMATION:

READING	TIME	VACUUM (inches Hg) or PRESSURE (psig)	DATE	INITIALS
Lab Vacuum (on tag)	1454	-30.2	7/31/14	TAB
Field Vacuum Check [1]	1455	-30	7/31/14	TAB
Initial Field Vacuum [2]				
Final Field Vacuum [3]	1037	0	8/1/14	TAB
Duration of Sample Collection				

LABORATORY CANISTER PRESSURIZATION:

Initial Vacuum (inches Hg and psia)		
Final Pressure (psia)		
Pressurization Gas		

SUBSLAB SHROUD:

Shroud Helium Concentration:
Calculated tubing volume: x 3 =
Purged Tubing Volume Concentration:
Is the purged volume concentration less than or equal to 10% in shroud?
☐ YES, continue sampling
☐ NO, improve surface seal and retest

COMPOSITE TIME (hours)	FLOW RATE RANGE (ml/min)
15 Min.	316 - 333
0.5 Hours	158 - 166.7
1	79.2 - 83.3
2	39.6 - 41.7
4	19.8 - 20.8
6	13.2 - 13.9
8	9.9 - 10.4
10	7.92 - 8.3
12	6.6 - 6.9
24	3.5 - 4.0

NOTES:

1 Vacuum measured using portable vacuum gauge (provided by Lab)
2 Vacuum measured by canister gauge upon opening valve
3 Vacuum measured by canister gauge prior to closing valve

Signed:

BENCHMARK
ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

AIR CANISTER FIELD RECORD

PROJECT INFORMATION:

Project: 1050 Niagara St
Job No: 0036-013-005
Location: Buffalo, NY
Field Staff: TAB, MattK
Client: Ellicott Development

SAMPLE I.D.: SV-3

WEATHER CONDITIONS:

Ambient Air Temp. - A.M.: 70's
Ambient Air Temp. - P.M.: 70's
Wind Direction: W
Wind Speed: 10-15
Precipitation: None

Size of Canister: 6L
Canister Serial No.: 4314
Flow Controller No.: 5178
Sample Date(s): 7-31-14
Shipping Date:
Sample Type: ☐ Indoor Air ☐ Outdoor Air
☒ Subslab, complete section below ☐ Soil Gas
Soil Gas Probe Depth:

FIELD SAMPLING INFORMATION:

READING	TIME	VACUUM (inches Hg) or PRESSURE (psig)	DATE	INITIALS
Lab Vacuum (on tag)	1452	-30	7/31/14	TAB
Field Vacuum Check [1]	1453	-30	7/31/14	TAB
Initial Field Vacuum [2]				
Final Field Vacuum [3]	1346	-9	8/1/14	TAB
Duration of Sample Collection				

LABORATORY CANISTER PRESSURIZATION:

Initial Vacuum (inches Hg and psia)		
Final Pressure (psia)		
Pressurization Gas		

SUBSLAB SHROUD:

Shroud Helium Concentration: 2300 ppm
Calculated tubing volume: 6 x 3 = 173
Purged Tubing Volume Concentration: 0%
Is the purged volume concentration less than or equal to 10% in shroud?
☐ YES, continue sampling
☐ NO, improve surface seal and retest

COMPOSITE TIME (hours)	FLOW RATE RANGE (ml/min)
15 Min.	316 - 333
0.5 Hours	158 - 166.7
1	79.2 - 83.3
2	39.6 - 41.7
4	19.8 - 20.8
6	13.2 - 13.9
8	9.9 - 10.4
10	7.92 - 8.3
12	6.6 - 6.9
24	3.5 - 4.0

NOTES:

1 Vacuum measured using portable vacuum gauge (provided by Lab)
2 Vacuum measured by canister gauge upon opening valve
3 Vacuum measured by canister gauge prior to closing valve

Signed:

BENCHMARK
ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

AIR CANISTER FIELD RECORD

PROJECT INFORMATION:

Project: 1050 Niagara st
Job No: 0136-013-005
Location: Buffalo NY
Field Staff: TAB, Matt K
Client:

SAMPLE I.D.: Outdoor

Size of Canister: 6L
Canister Serial No.: 4340
Flow Controller No.: 3607
Sample Date(s): 7-31-14
Shipping Date:
Sample Type: ☐ Indoor Air ☒ Outdoor Air
~~☒~~ Subslab, complete section below ☐ Soil Gas
Soil Gas Probe Depth:

WEATHER CONDITIONS:

Ambient Air Temp. - A.M.: 70's
Ambient Air Temp. - P.M.: 70's
Wind Direction: West
Wind Speed: 10-15
Precipitation: None

FIELD SAMPLING INFORMATION:

READING	TIME	VACUUM (inches Hg) or PRESSURE (psig)	DATE	INITIALS
Lab Vacuum (on tag)	1522	-30.2	7/31/14	TAB
Field Vacuum Check [1]				
Initial Field Vacuum [2]	1525	-30	7/31/14	TAB
Final Field Vacuum [3]	1400	-8	8/1/14	TAB
Duration of Sample Collection				

LABORATORY CANISTER PRESSURIZATION:

Initial Vacuum (inches Hg and psia)		
Final Pressure (psia)		
Pressurization Gas		

SUBSLAB SHROUD:

Shroud Helium Concentration:
Calculated tubing volume: x 3 =
Purged Tubing Volume Concentration:
Is the purged volume concentration less than or equal to 10% in shroud?
☐ YES, continue sampling
☐ NO, improve surface seal and retest

COMPOSITE TIME (hours)	FLOW RATE RANGE (ml/min)
15 Min.	316 - 333
0.5 Hours	158 - 166.7
1	79.2 - 83.3
2	39.6 - 41.7
4	19.8 - 20.8
6	13.2 - 13.9
8	9.9 - 10.4
10	7.92 - 8.3
12	6.6 - 6.9
24	3.5 - 4.0

NOTES:

1 Vacuum measured using portable vacuum gauge (provided by Lab)
2 Vacuum measured by canister gauge upon opening valve
3 Vacuum measured by canister gauge prior to closing valve

Signed:

BENCHMARK
ENVIRONMENTAL
ENGINEERING &
SCIENCE, PLLC

AIR CANISTER FIELD RECORD

PROJECT INFORMATION:

Project: 1050 Niagara St
Job No: 0136-013-005
Location: Buffalo NY
Field Staff: TAB, Matt K
Client: Ellicott Development

SAMPLE I.D.: Dup Blind

Size of Canister: 6L
Canister Serial No.: 5614
Flow Controller No.: 4514
Sample Date(s): 7-31-14
Shipping Date:
Sample Type: ☐ Indoor Air ☐ Outdoor Air
☒ Subslab, complete section below ☐ Soil Gas
Soil Gas Probe Depth: ~6'

WEATHER CONDITIONS:

Ambient Air Temp. - A.M.:
Ambient Air Temp. - P.M.:
Wind Direction:
Wind Speed:
Precipitation:

FIELD SAMPLING INFORMATION:

READING	TIME	VACUUM (inches Hg) or PRESSURE (psig)	DATE	INITIALS
Lab Vacuum (on tag)	1510	-30.2	7/31/14	TAB
Field Vacuum Check [1]				
Initial Field Vacuum [2]	1511	-30	7/31/14	TAB
Final Field Vacuum [3]	~~1417~~ 1420	-12	8/1/14	TAB
Duration of Sample Collection				

LABORATORY CANISTER PRESSURIZATION:

Initial Vacuum (inches Hg and psia)		
Final Pressure (psia)		
Pressurization Gas		

SUBSLAB SHROUD:

Shroud Helium Concentration:
Calculated tubing volume: x 3 =
Purged Tubing Volume Concentration:
Is the purged volume concentration less than or equal to 10% in shroud?
☐ YES, continue sampling
☐ NO, improve surface seal and retest

COMPOSITE TIME (hours)	FLOW RATE RANGE (ml/min)
15 Min.	316 - 333
0.5 Hours	158 - 166.7
1	79.2 - 83.3
2	39.6 - 41.7
4	19.8 - 20.8
6	13.2 - 13.9
8	9.9 - 10.4
10	7.92 - 8.3
12	6.6 - 6.9
24	3.5 - 4.0

NOTES:

Dup collected @ SV-2

1 Vacuum measured using portable vacuum gauge (provided by Lab)
2 Vacuum measured by canister gauge upon opening valve
3 Vacuum measured by canister gauge prior to closing valve

Signed:

APPENDIX D

LABORATORY ANALYTICAL DATA

(PROVIDED ELECTRONICALLY ON ENCLOSED CD)

APPENDIX F

ELECTRONIC COPY OF RI/AA REPORT