Remedial Investigation/ Alternatives Analysis (RI/AA) Report

Former Trico Plant
BCP Site No. C915281
Buffalo, New York

January 2017

0092-016-001

Prepared For: The Krog Group, LLC
and
791 Washington Street, LLC

Prepared By:

Benchmark Environmental Engineering & Science, PLLC

In Association With:

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REMEDIAL INVESTIGATION/ ALTERNATIVES ANALYSIS REPORT

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

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REMEDIAL INVESTIGATION/ALTERNATIVE ANALYISIS REPORT

Former Trico Plant
Buffalo, New York

Table of Contents

Table of Contents

Table of Contents

Table of Contents

LIST OF TABLES

REMEDIAL INVESTIGATION/ALTERNATIVE ANALYISIS REPORT

Former Trico Plant
Buffalo, New York

Table of Contents

LIST OF FIGURES

LIST OF APPENDICES

REMEDIAL INVESTIGATION/ALTERNATIVE ANALYISIS REPORT

Former Trico Plant
Buffalo, New York

Certification

I, Thomas H. Forbes, certify that I am currently a NYS registered Professional Engineer and that this January 2017 Remedial Investigation/Alternatives Analysis (RI/AA) Report for the Former Trico Plant Site (C915281), located at 791 Washington Street, Buffalo, New York was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.

SEAL

1-17-17

Date

BENCHMARK TURNKEY

1.0 INTRODUCTION

Benchmark Environmental Engineering & Science, PLLC (Benchmark) in association with TurnKey Environmental Restoration, LLC (TurnKey) has prepared this Remedial Investigation/Alternatives Analysis (RI/AA) Report on behalf of The Krog Group, LLC, for the Former Trico Plan property (Site) located at 791 Washington Street in the City of Buffalo, New York (see Figures 1 and 2).

The Remedial Investigation (RI) work was completed under the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) and executed Brownfield Cleanup Agreement (BCA, Index # C915281-10-13) dated October 24, 2013 between the NYSDEC and 847 Main Street, LLC, an entity related to the Krog Group, LLC. At the time of the RI, the Site was owned by the Buffalo Brownfield Restoration Corporation.

The RI activities discussed in this report were completed by Benchmark-TurnKey under an approved NYSDEC RI/AA Work Plan (Ref. 1), which was approved on October 30, 2013 and to address NYSDEC comments received in a letter dated October 26, 2016 on the draft RI/AA Report that was submitted July 2016. The initial RI activities were completed between May and June 2016 with supplemental investigation activities being completed in November and December 2016.

Interpretations presented within this report are based on historic investigations (see Section 1.2) completed by Benchmark-TurnKey and others prior to the Site entering into the BCP and subsequent to RI activities. The analytical data generated as part of the previous Limited Subsurface Investigation has been included within this report and compared to the current applicable cleanup regulations.

1.1 Site Background

The Site consists of a single parcel totaling approximately 2.11 acres, located at 791 Washington Street in the City of Buffalo, Erie County, New York. The property is currently developed with a complex of five adjoining buildings totaling 617,627 square feet. The oldest of the five buildings was constructed circa 1890 as a portion of the Christian Weyand Brewery that operated at the Site until the enactment of prohibition. The building was purchased in 1920 by the Trico Products Corporation for the manufacturing of windshield wiper blades for the automobile industry. The remaining buildings were constructed from

1920 to 1954. The Trico Products Corporation operated at the Site until approximately 1993. The building complex is currently vacant and has been idle since at least 2000.

Historic operations included electroplating, smelting, die-casting, rubber extrusion, and metal fabrication. Additionally, a degreaser was identified by a former Trico building manager to be located in the northeast corner of the building on the 6th floor (Ref 9). A copy of this report was provided to the NYSDEC with the BCP application for the Former Trico Plant Site. Five (5) wipe samples were collected from in the vicinity of the former degreaser and the results did not indicate the presence of chlorinated volatile organic compounds (cVOCs). The RI activities discussed in Section 2.0 were completed in the basement (lowest level of the building), including below where the degreaser was reportedly located.

Figure 3 provides the building layout for the basement and first floor.

1.2 Historic Investigation Report

Benchmark-TurnKey completed a Limited Subsurface Investigation at the Site in 2013. The soil/fill sample results are summarized on Table 3A and Figure 5 shows the approximate locations of the investigation locations. The soil description and field observations are included in Appendix B with the RI soil boring and monitoring well logs. Findings of that report include:

- Oil staining was noted in numerous areas of the basement and first floor of the building.
- Open buckets/containers of oil were noted in multiple areas of the basement.
- Six in-ground lifts were noted in the western loading dock area of the building and oil-staining was noted surrounding the lifts. Apparent oil was observed within the void space exposed between two layers of the first floor concrete foundation in the soil boring identified as SB-1, proximate to the in-ground lifts. These lifts will require removal prior to site redevelopment.
- The sub-basement was filled with water at the time of the investigation; historic reports identified approximately 144,000 gallons water present in the sub-basement of the complex.
- Elevated concentrations of polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), and metals have been detected in sub-slab soil samples collected from beneath the building first floor and basement foundations. Based on these findings and field observations, compounds used in association with

historical industrial manufacturing activities at the Site have likely permeated the concrete building foundations and impacted Site soil.

1.3 Report Organization

This RI/AA Report contains the following sections:

- Section 1.0 provides an introduction to the project, Site background, and previous investigation information.
- Section 2.0 presents the investigation approach.
- Section 3.0 describes the Site physical characteristics as they pertain to the investigation findings.
- Section 4.0 presents the investigation results.
- Section 5.0 describes the fate and transport of the COCs.
- Section 6.0 presents the qualitative exposure assessment.
- Section 7.0 evaluates remedial alternatives for the Site.
- Section 8.0 presents the post-remedial requirements.
- 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 the source 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 (Ref. 2).

The RI was performed to supplement previous investigation data and to better characterize subsurface soil/fill materials, groundwater, soil vapor, and overburden stratigraphy within the Site boundaries. The RI tasks performed in accordance with the RI/AA Work Plan and subsequent additional investigations to address NYSDEC comments received in a letter dated October 26, 2016 consisted of the following:

- Completion of 31 interior soil borings within the footprint of the existing Site buildings to facilitate subsurface soil/fill sampling and to assess site stratigraphy. The soil borings were completed in accessible areas of the buildings.
- Completion of three exterior soil borings north of the building in former Burton Street to facilitate subsurface soil/fill sampling and to assess site stratigraphy. The soil borings were completed in accessible areas of the street, but access was limited due to underground utilities.
- Installation of one exterior and nine interior on-site monitoring wells at soil boring locations to facilitate groundwater sampling, assess site hydrogeology, and assess for contamination.
- Installation of two exterior off-site "deep" monitoring wells at soil boring locations to facilitate groundwater sampling and assess for off-site contamination.
- Site observations were made to locate on-site utilities and sewer services. Where accessible, structures were opened and inspected for the presence of standing water or solid contents and visual and/or olfactory indications of contamination.
- Completion of a soil vapor intrusion assessment inside the building that consisted of seven sub-slab samples, two indoor ambient air samples, and one outdoor air sample.
- Collection of one water sample from the water-filled sub-basement of the boiler room.
- Submittal of 26 subsurface soil/fill samples (excluding QA/QC) for analytical testing to better characterize the Site overburden chemistry.

- Submittal of 15 groundwater samples (excluding QA/QC) for analytical testing to better characterize the Site overburden groundwater chemistry.
- Submittal of three samples of the solid contents from three structures present within the former truck repair area.
- Groundwater level gauging and hydraulic conductivity testing were completed to further assess flow directions Site hydrogeologic conditions.
- Site-specific Quality Assurance/Quality Control (QA/QC) samples were collected to assist in evaluating the usability of the data in accordance with the RI/AA Work Plan.

Field team personnel collected environmental samples (i.e., subsurface soil, vapor/air samples, water, and groundwater) in accordance with the rationale and protocols described in the Sampling and Analysis Plan (SAP) of the Quality Assurance Project Plan (QAPP, Section 4.0 of the RI/AA Work Plan). 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 the laboratories. TestAmerica Laboratories (TestAmerica), located in Williamsville, New York was utilized during the initial RI activities and Alpha Analytical (Alpha) located in Westborough, Massachusetts was used during the subsequent investigation activities. Both laboratories are New York State Department of Health (NYSDOH) ELAP-certified.

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 scope of work completed for this RI was performed between May and December 2016 as described below.

2.1 Remedial Investigation Field Activities

2.1.1 Utility/Sewer Inspection and Sampling

A Site inspection was performed to locate on-site utility and sewer services. Where feasible, the structures were opened and inspected for the presence of standing water or sediment, and visual and/or olfactory indications of contamination. Photoionization

detector (PID) measurements were also recorded at the top of each structure. The locations of the utility and sewer structures are shown on Figure 4. The results of the inspection are tabulated in Appendix A and discussed in Section 4.2.

The solid contents of the six structures present in the former truck repair area were placed in a sealable plastic bag, if present, for field headspace screening with a PID. Three structures were sampled for VOC analysis based on the highest PID measurements during the subsequent investigation activities, as requested by NYSDEC.

2.1.2 Sub-basement Water Sampling

An inspection of the sub-basement was performed to confirm previous observations of standing water in the sub-basement. Standing water was observed at the top of the stairwell into the sub-basement (ceiling of the sub-basement) preventing access. Due to the elevation of the water within the sub-basement, observation could not be made within the sub-basement and a water sample was collected as outlined in the RI/AA Work Plan. The sub-basement water sample location is shown on Figure 5 and discussed in Section 4.5.

2.1.3 Soil/Fill Investigation

The initial subsurface soil/fill investigation was completed in June 2016 at select locations across the Site to assess whether additional impacts exist beyond the limits of known historical contamination. Based on the initial RI activities, a subsequent soil/fill investigation requested by NYSDEC was completed in November 2016 within the former truck repair area of the basement.

2.1.3.1 Soil Boring Investigation

A subsurface soil/fill investigation was completed to supplement the previous environmental data collected, collect soil/fill samples, and assess the conditions beneath the existing Site building and limited exterior portion of the Site. A total of 36 soil borings were advanced into the subsurface. Thirty-one locations were completed in accessible areas beneath the existing Site building through holes cored through the concrete slab. Five locations were completed in accessible exterior locations. These soil borings were designated RISB-12 through RISB-35. Twelve of the soil boring locations were completed as monitoring wells RIMW-1 through RIMW-12, as discussed in Section 2.1.4. Figure 5 shows the locations of the RI soil boring as well as previously completed soil borings SB-1 through SB-11.

The RI soil borings were completed in accessible portions of the building interior and exterior, as follows.

- RISB-12 through RISB-14 and RIMW-2 were completed in the former loading dock in the vicinity of the in-place hydraulic lifts.
- RISB-15, RISB-16 and RIMW-1 were completed on the exterior of the Site in the former Burton Street on the north side of the Site.
- RISB-19 through RISB-22 and RIMW-3 were completed in the former oil storage area in the northwestern portion of the building.
- RIMW-10 was completed in the former tool and dye storage area in the northeastern portion of the building.
- RISB-17, RISB-18, RIMW-9, and RISB-27 through RISB-35 were completed in the former truck repair area of the building in the eastern-central portion of the building.
- RIMW-7, RISB-25 and RISB-26 was completed in the central portion of the Site building in the vicinity of a former plastics molding area.
- RIMW-8 was completed in the former plastics molding and machine shop area in the southeastern portion of the Site building.
- RIMW-6 was completed in the southern central portion of the Site building.
- RISB-23, RISB-24, RIMW-4, and RIMW-5 were completed in the former machine shop area in the southwestern portion of the building.
- RIMW-11 was completed off-site in the sidewalk east of the eastern property boundary in vicinity of the former truck repair area and RIMW-9.
- RIMW-12 was completed off-site in the sidewalk south of the southern property boundary, downgradient of the building.

Prior to completing the soil borings inside the building, a concrete coring drill was used to provide access through the concrete floors. Soil borings were advanced using direct push methodology via hydraulic hammer on a track-mounted probe rig. Soil samples were collected with a macrocore sampler that contained a 2-inch outer diameter by 48-inch long acetate liner. A new acetate liner was used for each 4-foot sample run. Soil boring locations RISB-12 through RISB-24 and monitoring well locations RIMW-1 through RIMW-10 were advanced to approximately 16 feet below the starting grade. Two exceptions were RISB-13 and RISB-14, which were completed on the first floor in the former loading dock area.

Refusal was encountered in RISB-13 at 3 feet below ground surface (fbgs) and a void space was observed from approximately 3 feet below grade to refusal at 11 feet below grade. The void space is likely associated with the basement space with refusal due to the basement concrete floor slab. There was no evident access to this area.

The exterior and off-site soil boring/monitoring well locations (RIMW-11 and RIMW-12) were completed using a rotary drill rig advancing 4¼ inch inner diameter hollow stem augers (HSAs). The concrete sidewalks were cored prior to advancing the HSAs. The subsurface soil/fill was retrieved from the subsurface by driving a 2 foot long split spoon sampler ahead of the lead auger. The depth of the soil borings were 36 fbgs (RIMW-11) and 40 fbgs (RIMW-12) from exterior ground surface.

Table 1A provides elevation information for the soil borings and soil/fill samples relative to each other, as the investigation locations were at various starting elevations within the building interior and building exterior. Table 1B provides elevation and construction details for the monitoring wells.

Soil boring samples were examined by qualified Benchmark-TurnKey personnel. The soil/fill samples retrieved from the borings allowed for visual, olfactory, PID assessment of subsurface conditions. Soil/fill samples were collected from the borings for laboratory analysis (see Table 2). Soil samples retrieved were field screened for the presence of volatile organic compounds (VOCs) using a PID equipped with a 10.6 eV lamp to identify potentially impacted soil/fill samples for laboratory analysis and as a procedure for ensuring the health and safety of personnel at the Site. PID readings were not measured above background levels at the investigation locations. The subsurface conditions encountered in addition to field screening measurements are presented on the soil boring logs in Appendix B.

Representative soil/fill samples that were selected were placed in pre-cleaned laboratory provided sample jars, cooled to 4ºC in the field, and transported under chain-of-custody command to TestAmerica for analysis. The soil/fill samples were analyzed for Target Compound List (TCL) VOCs, TCL semi-volatile organic compounds (SVOCs), Target Analyte List (TAL) metals including cyanide, PCBs, pesticides, and herbicides as detailed on Table 2.

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.

2.1.4 Groundwater Investigation

Benchmark-TurnKey personnel provided oversight for the installation of 12 groundwater monitoring wells, identified as RIMW-1 through RIMW-12, to investigate groundwater flow direction and quality. RIMW-1 through RIMW-10 are located on-site and RIMW-11 and RIMW-12 are located off-site to the east and south, respectively. These two wells were installed to monitor the deeper groundwater zone than the groundwater zone assessed by RIMW-1 through RIMW-10 installed in June 2016. The purpose was to determine if there are "deep" cVOC impacts. Details of the well installation, well development, and groundwater sampling are provided below.

2.1.4.1 On-Site Monitoring Well Installations

Track-mounted direct-push drill rigs were used to install the 10 on-site groundwater monitoring wells. Due to interior ceiling height restrictions and underground utilities 4 of the 10 on-site monitoring wells identified in the RI Work Plan were installed within the soil borings as 1-inch diameter PVC monitoring wells (RIMW-1, -3, -4, and -5). The other six monitoring well locations were installed using a direct-push drill rig equipped with a rotary spindle with 4¼-inch hollow stem augers. The wells installed at these locations (RIMW-2, -6, -7, -8, -9, and -10) are constructed of 2-inch diameter PVC. The on-site monitoring wells were constructed of either 1-inch or 2-inch ID diameter flush-joint Schedule 40 PVC casing with a 10-foot flush-joint Schedule 40 PVC, 0.010-inch machine slotted well screen. The well screen and attached riser were placed at the bottom of the borehole and a silica sand filter pack was installed from the base of the well to approximately 2 feet above the top of the screen. A bentonite chip seal was installed over the sand pack and hydrated. Concrete used to restore the surface and install the steel flushed mounted road box was placed over the bentonite chips. The newly installed monitoring wells were completed with lockable J-plugs.

Figure 5 identifies the approximate location of the wells. Table 1B contains well construction information, and Appendix B contains the well construction logs.

2.1.4.2 Off-Site Monitoring Well Installations

A truck-mounted rotary drill rig was used to install the two off-site groundwater monitoring wells (RIMW-11 and RIMW-12). The off-site monitoring wells were constructed of 2-inch ID diameter flush-joint Schedule 40 PVC casing with an 8-foot flush-joint Schedule 40 PVC, 0.010-inch machine slotted well screen. The well screen and attached

riser were installed and a silica sand filter pack was installed from the base of the well to approximately 6 inches above the top of the screen. A 3 foot bentonite chip seal was installed over the sand pack and hydrated. The remainder of the borehole was filled with a cement-bentonite grout to approximately 1 foot below exterior grade. Concrete used to restore the surface and install the steel flushed mounted road box. The newly installed monitoring wells were completed with lockable J-plugs.

2.1.4.3 Monitoring Well Development

The installed monitoring wells were developed after installation, in accordance with the approved work plan, and Benchmark-TurnKey and NYSDEC protocols. Development of the monitoring wells was accomplished with dedicated disposable polyethylene bailers via surge and purge methodology. Field parameters including pH, temperature, turbidity, dissolved oxygen (DO), oxidation-reduction potential (ORP), and specific conductance were measured periodically (i.e., every well volume or as necessary) 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 10 well volumes. Development water was containerized in 55-gallon drums. The on-site wells were developed on June 7 and 8, 2016. The off-site monitoring wells were developed on November 23, 2016. Appendix C includes the well development logs.

2.1.4.4 Groundwater Sample Collection and Analysis

Groundwater samples from the 10 on-site monitoring wells were collected on June 14, 2016. Groundwater samples from the two off-site groundwater wells and on-site well RIMW-9 were collected on November 28, 2016. Due to the decrease in concentrations detected in RIMW-9 from the June to November 2016 sampling events, RIMW-9 was resampled again on December 9, 2016.

Prior to sampling, Benchmark-TurnKey personnel purged a minimum of one well volume and sampled monitoring wells using dedicated equipment. Field measurements for pH, specific conductance, temperature, turbidity, dissolved oxygen, ORP, and water levels, as well as visual and olfactory field observations, were periodically recorded and monitored for stabilization during sampling. Appendix C includes the well purge/sampling logs.

The 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. The on-site groundwater samples collected in June 2016 were analyzed for TCL VOCs, TCL SVOCs, TAL metals plus cyanide, PCBs, pesticides, and herbicides as detailed on Table 2. Based on the results of the initial RI, the off-site groundwater samples and the resample of RIMW-9 collected in November and December 2016 were anal6yzed for TCL VOCs only. The 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.

2.1.5 Soil Vapor Intrusion Investigation

A soil vapor intrusion (SVI) investigation was completed to assess the potential for soil vapor conditions within the existing building (basement and first floor). The area of the first floor that was assessed does not have an underlying basement. To perform the evaluation, seven locations were selected as sub-slab vapor (SSV) sample locations. Two indoor air samples (one from the first floor and one from the basement), and one outdoor ambient air sample were collected concurrently with the SSV samples. The outdoor ambient air sample (OA) was collected to establish background conditions. Figure 5 shows the SVI sample locations.

2.1.5.1 Pre-sample Assessment

Prior to initiation of SVI 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.). Figure 5 identifies the approximate interior partitions of the building and identifies the sample locations. Appendix D includes the completed NYSDOH Indoor Air Quality Questionnaire and Building Inventory.

2.1.5.2 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 (Ref. 3) and Benchmark-TurnKey's Ambient Air/Sub-slab 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. SSV samples were collected in the following manner:

- After installation of the borings, the sample tubing was sealed at the surface with non-VOC containing clay.
- Helium was used as a tracer gas to verify the surface seal of the soil vapor points were sufficient. A helium detector with internal air pump was connected to the tubing to monitor the soil vapor for helium prior to and during the release of helium into a shroud placed over the top of the sampling point at ground surface. The helium detector readings were within acceptable levels (i.e., less than 10% helium) and the surface seals considered to be acceptable.
- Once the surface seals were sufficient, the soil vapor sample canisters with regulators were connected to the polyethylene tubing and the sample values were opened to initiate the sampling.
- 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 24-hour period.

Concurrent with the SSV samples, two indoor ambient air sample (IA-1 and IA-2) and an outdoor air sample (OA-1) were collected. IA-1 was collected from within the former Truck Repair Area and IA-2 was collected from the former Machine Shop Area. OA-1 was collected from the exterior of the building along Ellicott Street, upwind of the facility determined the day of the SVI field activities, as shown on Figure 5.

Both the indoor air 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 as the SSV samples.

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 were completed and the ambient indoor and outdoor air canisters were in their respective positions. Appendix D includes sampling forms with sample duration and starting and ending vacuums.

The SVI samples were collected between May 19 and 20, 2016. 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 2).

2.1.6 Field Specific Quality Assurance/Quality Control Sampling

In addition to the soil/fill and groundwater samples described above, field-specific 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.

2.2 Site Mapping

A Site map was developed during the RI field investigation. Benchmark-TurnKey was provided a basement plan and first floor plan that identified the various interior features such as hallways, rooms, columns and doorways. These floor plans were used to locate the interior utilities/structures, soil borings, monitoring wells, and SVI sample locations based on the interior features and were overlain onto the various investigation location figures via AutoCAD.

Benchmark-TurnKey used existing Site features to identify the exterior investigation locations, as the majority of the Site is covered with building footprints.

Monitoring well monitoring point elevations were measured by Benchmark-TurnKey and used as the basis for the groundwater isopotential map showing the general direction of groundwater flow based on water level measurements (see Figure 6).

2.3 Decontamination & Investigation-Derived Waste Management

Every attempt was made to use dedicated sampling equipment during the RI; however, non-dedicated equipment was required and/or used (e.g., hollow stem augers, macrocore sampler, down-hole pump) 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 Benchmark-TurnKey's field operating procedures (FOPs).

Investigation-derived waste (IDW) consisting of drilling spoils and groundwater development water was containerized and staged on-site. Pending the results of the analytical samples, the soil/fill and water may be reused or discharged to the ground surface at the Site or properly disposed.

IDW will be reused, recycled, and/or disposed off-site, in accordance with the approved remedial activities.

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

The Site consists of a single parcel totaling approximately 2.11 acres, located at 791 Washington Street in the City of Buffalo, Erie County, New York. The Former Trico Plant is bounded by commercial properties to the north; Ellicott Street and a surface parking lot to the east; Goodell Street and the Eastman Machine Company to the south; and Washington Street and commercial and residential properties to the west.

The property is currently developed with a complex of five adjoining buildings totaling 617,627 square feet, with an 85,800 square-foot building footprint. The building complex is currently vacant and has been idle since at least 2000.

The Site is generally flat lying with limited topographic features as the building footprint occupies the majority of the Site. The surface elevation is about 635 feet above meal sea level. The area surrounding the Site increases in elevation to the north and decreases in elevation to the south.

Prior to the start of the RI activities, a chain-linked fence was installed around the entire property to restrict access.

3.2 Geology and Hydrogeology

3.2.1 Overburden

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, except in the immediate vicinity of major drainage ways. 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.

According to the 1978 United States Department of Agriculture (USDA) Erie County Soil Map (Ref. 4), the surface soils on the Site is characterized as Urban Land (Ud), consisting of level to gently sloping land with 80 percent or more of the soil surface covered by asphalt, concrete, buildings, or other impervious structures typical of an urban environment. Mapping of the surface soils in the vicinity of the Site, based on the USDA soil

survey, indicates the surficial geology of the area consists of various loams, with slopes typically ranging from 0 to 6%.

The geology at the Site was investigated during the RI. With the exception of RISB-15 and RISB-16, which were completed in the roadway of the former Burton Street on the north side of the Site, RI locations were located within the Site building footprint. In some locations underlying the concrete building slab, a thin veneer (2 to 3 inches) of fill material was present consisting of black fine to course sand with ash. The underlying native soils generally consisting of a varying thickness and alternating layers of reddish-brown sandy lean clays and sandy silts to depths of 40 feet below investigation starting grade. Appendix B includes the soil boring and well construction logs.

3.2.2 Bedrock

Based on the bedrock geologic map of Erie County (Ref. 5), 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 fine 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. Depth to and type of bedrock below the Site has not been determined by drilling.

3.2.3 Hydrogeology

The Site is located in the Erie-Niagara River Basin. In the Erie-Niagara Basin, the major areas of groundwater are within coarser overburden deposits and limestone and shale bedrock. Regional groundwater may flow south towards the Buffalo River and/or west towards Lake Erie.

Groundwater measurements collected during the RI on June 10, 2016 from the 10 monitoring wells indicate a southerly groundwater flow direction. Figure 6 presents the overburden groundwater isopotential map for the June 10 event.

3.2.4 Hydraulic Gradients

Using well installation and water level information collected during the RI (June 2016), the hydraulic gradient was calculated to range from 0.02 to 0.03 feet/foot.

4.0 REMEDIAL INVESTIGATION RESULTS

The nature and extent of contamination at the Site was further characterized using soil, groundwater, and SVI samples collected and analyzed as part of the RI. Solid content samples were also collected from select drainage structures located within the former truck repair area. As described above, samples collected during previous investigations were used to supplement this RI.

The soil, groundwater, drainage structure solids 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 E 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 (MDL) was detected at a minimum of one sample location.

Figure 5 shows the RI and previous investigation sampling locations. Table 2 summarizes the sampling and analytical program employed under RI.

4.1 Historic Soil/Fill Investigation Results

As described in Section 1.2, Benchmark-TurnKey completed a limited subsurface investigation at the Site in 2013. A total of 11 soil borings were completed through the first floor and basement foundations of the Site building (see Figure 5) to depths of approximately 2 fbgs. A total of 10 soil/fill samples were submitted for laboratory analysis.

The analytical results identified detectable concentrations of PAHs in every sample collected from beneath both the first floor and basement foundations. Concentrations of PAHs in exceedance of the 6NYCRR Part 375 (Ref. 5) Restricted-Residential SCOs (RRSCOs) were detected in soil borings identified as SB-10 (4 analytes) and to a lesser extent SB-11 (one analyte). PAHs in exceedance of the RRSCOS include benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

Five soil/fill sample locations contained detectable concentrations of PCBs, one with a concentration in slight exceedance of the RRSCOs (SB-8; 2.462 mg/kg over its RRSCO of 1.0 mg/kg).

Analytical results indicate that 3 of the 10 sample locations analyzed for metals contained concentrations in exceedance of the RRSCOs for at least one metal. Arsenic concentrations exceeded its Part 375 RRSCO in soil boring SB-2, mercury exceeded its RRSCO at SB-7, and barium exceeded its RRSCO at SB-8

Table 3A contains the historic sample results compared to RRSCOs.

4.2 Remedial Investigation Utility/Sewer Inspection

A Site inspection was performed to locate on-site utility and sewer services. Figure 4 shows the locations of the utility and sewer structures. Appendix A includes a tabulated summary of the inspection results.

In general 23 of the 36 structures observed contained sediment and/or standing water. No olfactory evidence of contamination was noted. Slight sheen was observed within three structures (S-1, S-15, and S-24) and some residual oil product was observed at structures S-1 and S-16. Black stained sediments were also observed at three structures (S-1, S-7, and S-8). PID measurements slightly above background (e.g., 0 ppm) were noted at four locations: S-13 (0.6 ppm); S-15 (0.7 ppm); S-16 (1.7 ppm), and S-17 (0.8 ppm). The locations of the structures noted above are as follows:

- S-1 was located in an area of former fuel oil pumps.
- S-7 and S-8 were located in the former tool & dye storage area.
- S-13 and S-15 were in the former truck repair area.
- S-16 and S-17 were located in the former plastic molding area.
- S-24 was located in the area of the former plastics molding and machine shop.

During the supplemental investigation activities in November 2016, NYSDEC requested that 3 samples of the solid content from structures present within the former truck repair area be submitted for the VOC analysis. The samples submitted were the 3 locations with the highest PID field screening of the solid content, if present. The structures sampled were S-12, S-14 and S-15.

4.3 Remedial Investigation Soil/Fill Investigation Results

Benchmark-TurnKey completed the RI soil/fill investigation across the Site in accordance with the Department's approved RI/AA Work Plan and to address NYSDEC

comments received in a letter dated October 26, 2016 on the draft RI/AA Report that was submitted July 2016. In total, 36 soil borings were advanced, of which 34 were on-site to further assess subsurface conditions across the Site and two soil borings were completed off-site. Of the 34 on-site locations, two locations (RI SB-15/RIMW-1 and RI SB-16) were located north of the building on the exterior portion of the Site in the former Burton Street roadway. The two off-site locations were also exterior locations completed in the sidewalks east and south of the building and property lines. The remaining 34 locations were completed within the building footprint and were advanced through the concrete building slab into the under lying soil/fill. Attempts were made to complete soil borings at each of the proposed locations. Due to utilities in the former Burton Street and the thickness of concrete in the former loading dock area, certain locations were moved to accommodate the condition.

Deviations to the RI/AA WP are as follows:

- RISB-14 was completed in the former loading dock area. A void space was present from 3 to 11 fbgs below the concrete/concrete block and refusal was encountered at 11 fbgs. This void space is likely associated with the foundation/basement in this area, which could not be accessed. Therefore, no soil samples were collected from RISB-14.
- After multiple attempts, the location of RIMW-2 was moved to the location of RISB-12 due to the thickness of concrete, quantity of rebar, and subsurface conditions that necessitated using hollow stem augers to install the well.
- Due to the presence of a water line and number of utilities present in the former Burton Street, the location of RIMW-1 was moved to the location of RISB-15.

Table 1A contains elevations for the soil/fill samples relative to each other. Table 3 presents a summary of the RI subsurface soil/fill sample results with comparison to applicable SCOs.

4.3.1 Qualitative Soil Screening

During the soil boring subsurface soil/fill investigation activities, a PID was used to field screen the subsurface soil/fill samples. No PID measurements above background (e.g., 0 ppm) were noted within the initial RI soil/fill samples (June 2016) or the two off-site soil borings. PID readings were noted during the supplemental investigation activities at 7 for the 11 soil boring locations. PID measurements at RISB-26, -30, and -31 were less than 1

ppm. PID measurements above background at RISB-27, -28, -32, and -33 ranged from 0.1 to 15 ppm (RISB-32 6.5 to 12 fbgs). No visual and/or olfactory evidence of contamination were observed within the soil borings. PID measurements are shown on the soil boring logs in Appendix B.

PID measurements slightly above background up to 1.7 ppm were noted at four utility/sewer structure locations, S-13, -15, -16 and -17 as shown on Figure 4. During the supplemental investigation, PID measurements of the solids collected and screened at S-12, S-14, and S-15 were 0.1 ppm, 2.5 ppm, and 8.6 ppm, respectively. The results were background (e.g., 0 ppm) from the other three locations.

4.3.2 Volatile Organic Compounds

A total of nine samples were submitted for TCL VOC analysis. No VOCs were detected above USCOs or Protection of Groundwater SCOs (PGWSCOs) in the four samples submitted for TCL VOC analysis during the June 2016 sampling (see Table 3).

During the supplemental investigation completed in the former truck repair area and former plastics in November 2016, five additional samples were submitted for TCL VOC analysis only. Cis-1,2-dichlorothene (cis-DCE) and trichloroethene (TCE) were detected in three samples (RISB-27, 7 to 8 fbgs; RISB-27, 11 to 12 fbgs; and RISB-28, 4 to 6 fbgs) at concentrations above their respective USCOs and PGWSCOs but well below their RRSCOs. Tetrachloroethene (PCE) was detected at one sample location (RISB-32, 7 to 8 fbgs) at a concentration above its USCOs and PGWSCOs but well below its RRSCOs.

4.3.3 Semi-Volatile Organic Compounds

No SVOCs were detected above USCOs in the 21 samples submitted for TCL SVOC analysis (see Table 3).

4.3.4 Metals

Arsenic was detected slightly above its RRSCO in one (RISB-13, 1 to 3 fbgs; 26.9 mg/kg) of the 21 samples submitted for TAL metals analysis. RISB-13 was completed in the former Loading Dock Area. The remaining metal analytes detected were below their respective RRSCOs (see Table 3).

4.3.5 Polychlorinated Biphenyls

There were no PCBs detected above MDLs in the 21 samples submitted for analysis.

4.3.6 Pesticides and Herbicides

There were no pesticides or herbicides detected above MDLs in the five samples submitted for pesticide and herbicide analysis.

4.3.7 Historic and Remedial Investigation Subsurface Soil/Fill Summary

VOCs, specifically cis-DCE, TCE, and PCE were detected in in the former truck repair area of the Site. The detections of these three compounds were above their respective USCOs and PGWSCOs but well below their RRSCOs.

No SVOCs were detected at concentrations exceeding their respective USCOs during the RI. Two sample locations (SB-10 and SB-11) from the historic investigation had slightly elevated SVOCs above RRSCOs; however, total SVOCs were 31.6 mg/kg in SB-10 and 5.1 mg/kg in SB-11.

No PCBs, pesticides, or herbicides were detected above MDLs during the RI. One sample location (SB-8) had slightly elevated PCB concentration of 2.462 mg/kg above its RRSCO of 1.0 mg/kg.

Arsenic was the only metal analyte detected during the RI above its respective RRCO and at only one location (RISB-13; 1-3'). Arsenic, mercury, and barium were the only metal analytes detected slightly above their respective RRSCOs during the historic investigation; arsenic in SB-2 (22 mg/kg), mercury in SB-7 (1.4 mg/kg), and barium in SB-8 (530 mg/kg).

4.4 Groundwater Investigation

Benchmark-TurnKey personnel provided oversight for the installation of 10 on-site and two off-site RI groundwater monitoring wells to investigate groundwater quality and flow. Table 4 presents a comparison of the detected groundwater parameters in the on and off-site groundwater samples collected to the applicable groundwater quality standards (GWQS) from NYSDEC's TOGS 1.1.1 (Ref 6). Groundwater samples were collected in accordance with the work plan and analyzed in accordance with parameters shown in Table 2.

4.4.1 Volatile Organic Compounds

The following five VOCs were detected above their respective GWQS in the on-site groundwater samples:

- cis-Dichloroethene (cis-DCE; two locations)

- Tetrachloroethene (PCE; one location)
- trans-DCE (two locations)
- Trichloroethene (TCE; four locations)
- Vinyl chloride (one location)

These five compounds will be referred to as cVOCs, as they contain at least one covalently bonded atom of chlorine that has an effect on the chemical behavior of the molecule. They are typical compounds found in chlorinated solvent products and/or are the chemical breakdown or daughter compounds of compounds found in chlorinated solvents. These compounds also have a specific gravity which is greater than water and are known in the "sink" within the groundwater.

The majority of the other VOC detections were reported by the laboratory as estimated (J-flagged) values and are below their respective GWQS (see Table 4).

In the June 2016 sampling event, PCE was detected in groundwater at a concentration of 4,200 micrograms per liter (ug/L) at RIMW-9 within the former Truck Repair area. TCE (7 ug/L) and cis-DCE (1.8 ug/L) were also detected in this location. The total cVOC concentration at this location (4,208 ug/L) was the highest cVOC concentration detected in groundwater at the Site.

Chlorinated VOCs were also detected at RIMW-7 (225 ug/L) and RIMW-4 (424.1 ug/L), at concentrations one order of magnitude less than those detected at RIMW-9. The cVOCs detected at RIMW-7 [TCE (89 ug/L), cis-DCE (36 ug/L) and trans-DCE (100 ug/L)] and RIMW-4 [TCE (82 ug/L), cis-DCE (140 ug/L) and trans-DCE (200 ug/L), and VC (2,1 ug/L)] are either breakdown products of PCE or the result of a release of TCE as the primary constituent.

TCE (11 ug/L) was the only compound detected slightly above its GWQS of 5 ug/L in the groundwater sample collected from MWRI-2.

No VOCs were detected above their respective GWQS in the groundwater samples collected from RIMW-11 and RIMW-12 in November 2016. As part of the November 2016 groundwater sampling, Benchmark-TurnKey elected to collect another groundwater sample from RIMW-9 to confirm the elevated concentrations. The groundwater sample and duplicate sample results from the resample of RIMW-9 indicated PCE was the only VOC detected above its respective GWQS at concentrations of 8.5 and 7.2 ug/L (in the duplicate). These results are four orders of magnitude lower than the initial sampling in June 2016. To

confirm the November 2016 results at RIMW-9, Benchmark-TurnKey collected an additional sample in December 2016. The results of the December 2016 groundwater sample from RIMW-9 did not have VOC detections above their respective GWQS. [PCE was detected at a concentration of 4.9 ug/L, which is slightly below its GWQS of 5 ug/L.]

Figure 7 provides the locations and concentrations of the cVOCs detected in the groundwater. As shown, the cVOCs detected at concentrations above their respective GWQS are located below the central portion of the building in an east-west direction.

4.4.2 Semi-Volatile Organic Compounds

Two SVOCs were detected above their respective GWQS in sample RIMW-9; benzo(b)fluoranthene (0.71 ug/L) and chrysene (0.56 ug/L). Both results were identified as estimated concentrations by the laboratory, as were the concentrations of the other SVOCs detected (see Table 4).

4.4.3 Metals

Groundwater samples collected during the RI were analyzed for both total metals (10 samples) and dissolved metals (six samples). The dissolved metals analyses were completed on samples with elevated turbidity, as required by the RI/AA Work Plan, and were filtered at the laboratory. As summarized in Table 4, total metals detected above their respective GWQS/GVs consist of the following analytes:

- Arsenic: two locations
- Barium: one location
- Beryllium: one location
- Chromium: two locations
- Cobalt: five locations
- Copper: one location
- Iron: nine locations
- Lead: four locations
- Magnesium: 10 locations
- Manganese: four locations
- Nickel: two locations
- Sodium: 10 locations
- Vanadium: four locations

A number of the metal analytes (i.e., iron, lead, magnesium, manganese and sodium) detected in the total metal groundwater samples are naturally occurring analytes and typical to urban setting such as the Site. Arsenic, barium, beryllium, chromium, cobalt, copper, nickel and vanadium are also natural occurring but less common in groundwater.

By comparison, the results of the six dissolved metal samples compared to the total metal samples collected from the same locations indicate a considerable decrease in the number of analytes and concentrations detected, with the exception of manganese and sodium. Dissolved metals detected above their respective GWQS/GV consist of the following analytes:

- Cobalt: two locations
- Iron: one location
- Magnesium: five locations
- Sodium: six locations

Based on RI groundwater data, there are minor metal analyte impacts to groundwater. The analytes detected above their respective GWQS/GV, with the exception of cobalt, iron, magnesium, and sodium detected in the dissolved samples, were from total metals in unfiltered samples with high turbidity. The results are likely biased high due to sediment present within those groundwater samples analyzed.

The Site and surrounding areas are on public-supplied water. Iron is a common analyte found in urban settings; and magnesium and sodium are common to road salt used on the streets surrounding the Site. Dissolved cobalt was detected at two locations: RIMW-3 (7.3 ug/L) and RIMW-8 (5.5 ug/L) at concentrations slightly above its GWQS of 5.0 ug/L. The other analytes are common in urban areas or present due to the suspended sediments in the total metal sample. Therefore, metals are not considered to be constituents of concern (COCs) in Site groundwater.

4.4.4 Polychlorinated Biphenyls

PCBs were not detected in the 10 samples submitted for PCB analysis. Therefore, PCBs are not considered to be COCs in Site groundwater.

4.4.5 Pesticides and Herbicides

The majority of pesticide and herbicide compounds were reported as non-detect or trace (estimated) concentrations below the laboratory quantitation limit and GWQS, with the

exception of delta-BHC which was detected slightly above its respective GWQS at RIMW-3. This delta-BHC result was reported by the laboratory as an estimated value and soil/fill samples did not have detectable concentrations of either pesticides or herbicides. Therefore, pesticides and herbicides are not considered to be COCs in Site groundwater.

4.4.6 Groundwater Results Summary

As described above, certain VOCs, and to a lesser extent SVOCs, metals, and pesticides, were detected above GWQS. Herbicides were not detected in the groundwater samples collected.

VOCs, specifically cVOCs, were detected at four locations in the central portion of the Site and are likely the cause of SVI as discussed in Section 4.6. The detected concentration of cVOCs in the groundwater is less than 0.5 milligrams per liter (mg/L) or 500 ug/L. Initially, the highest concentration of cVOCs was PCE at RIMW-9. However, subsequent sampling completed at this location in November and December 2016 indicate the cVOC concentrations are significantly lower in the 5 to 8 ug/L range.

The concentrations of cVOCs detected above their respective GWQS are located at RIMW-2, -4, -7 and -9 from west to east and are hydraulically cross-gradient of each other as it pertains to groundwater flow direction (north to south). Groundwater samples results indicate the presence of parent compounds PCE and/or TCE and their daughter products, including cis-DCE, trans-DCE and VC, which indicates on-going natural attenuation of cVOCs in groundwater.

Two SVOCS were detected at one location (RIMW-9) at concentrations above their respective GWQS; however, these detection are relatively low and not considered significant.

Minor metal analyte contaminants are present in the groundwater. The analytes detected above their respective GWQS/GV, with the exception of cobalt, iron, magnesium and sodium detected in the dissolved samples, were from total metals in unfiltered samples with high turbidity. The results are likely biased high due to sediment present within those groundwater samples. Iron is a common analyte found in groundwater in urban settings; and magnesium and sodium are common to road salt used on the streets surrounding the Site. Dissolved cobalt was detected in RIMW-3 and RIMW-8 at concentrations slightly above its GWQS. Metals are not considered to be COCs in Site groundwater.

PCBs were non-detected in the 10 samples submitted for PCB analysis; therefore, PCBs are not considered to be COCs in Site groundwater.

The pesticide and herbicides were reported as non-detect or trace (estimated) concentrations with the exception of delta-BHC, which was detected at an estimated concentration slightly above its respective GWQS at RIMW-3. Pesticides and herbicides are not considered to be COCs in Site groundwater.

In summary, concentrations of cVOCs in groundwater in RIMW-4, RIMW-7 and RIMW-9 are considered significant and will be further evaluated in Section 7.

4.5 Sub-Basement Surface Water Investigation

Benchmark-TurnKey collected one surface water sample from the standing water present in the sub-basement area in the vicinity of the Boiler Room. The sub-basement could not be entered as water was present at the floor surface of the Boiler Room basement, which is also considered the ceiling of the sub-basement. Table 5 present a summary of the water sample results.

4.5.1 Volatile Organic Compounds

No VOCs were detected above MDLs in the surface water sample.

4.5.2 Semi-Volatile Organic Compounds

No SVOCs were detected above MDLs in the surface water sample.

4.5.3 Metals

Nine metal analytes (barium, calcium, iron, magnesium, manganese, nickel, potassium, sodium and zinc) were detected in the surface water sample.

4.5.4 Polychlorinated Biphenyls

No PCBs were detected above MDLs in the surface water sample.

4.5.5 Pesticides and Herbicides

The majority of pesticide and herbicide compounds were reported as non-detect with the exception of 4,4'-DDD, which was reported with low estimated concentrations.

4.5.6 Basement Surface Water Summary

The results of the basement surface water sampling indicate that low levels of metals and pesticides are present in the water. No VOCs, PCBs, or herbicides were detected above MDLs.

4.6 Soil Vapor Intrusion Investigation Results

The SVI investigation consisted of the collection of indoor air (two samples), outdoor ambient air (one sample) and sub-slab vapor samples (six samples). Table 6 summarizes the results of the 10 air samples collected as part of the SVI investigation. The vast majority of detected air constituents were reported by the laboratory as non-detect or estimated values below the laboratory quantitation limit.

Table 7 summarizes and compares the indoor and outdoor air sample results to the NYSDOH *Study of Volatile Organic Chemicals in Air of Fuel Oil Heated Homes,* Summary of Indoor and Outdoor Levels of Volatile Organic Compounds from Fuel Oil Heated Homes in NYS, 1997-2003, revised date November 14, 2005 (NYSDOH Indoor Air criteria).

Table 8 compares the same indoor air and sub-slab results to the NYSDOH Decision Matrices in the Guidance for Evaluating Soil Vapor Intrusion in the State of New York, dated October 2006 (NYSDOH SVI Guidance). The NYSDOH SVI Guidance provides decision matrices for the following seven cVOCs: carbon tetrachloride; 1,1-DCE; cis-1,2-DCE; 1,1,1-TCE; TCE; PCE; and vinyl chloride.

The NYSDOH SVI Guidance matrices require the use of the indoor air and sub-slab vapor sample results in conjunction to determine the resultant outcome. For purposes of the discussion below and based on their respective locations within the building, the following indoor samples were used in conjunction the following sub-slab air samples when reviewing the decision matrix.

- IA -1 was used in conjunction with SSV-1, SSV-2, SSV-3, and SSV-7
- IA-2 was used in conjunction with SSV-4, SSV-5, and SSV-6.

4.6.1 Indoor Air Sample Results

Table 7 compares the indoor and outdoor air sample results to the 90th percentile concentrations presented in the NYSDOH Indoor Air criteria. The results from IA-1 indicate TCE (1.4 micrograms per cubic meter (ug/m^3) was detected above the 90th percentile concentration of 0.48 ug/m^3.

The results from IA-2 indicate that TCE (35 ug/m^3) and chloroethane (0.68 ug/m^3) were detected above their respective 90th percentile concentration. The 90th percentile concentration for chloroethane is <0.25 ug/m^3.

4.6.2 Indoor Air & Sub-slab Vapor Sample Results

Table 8 tabulates the cVOCs subject to the NYSDOH SVI Guidance and compares the results to the respective decision matrices provided in the Guidance. Based on the concentrations of the seven cVOCs detected in the indoor air and corresponding sub-slab samples, the decision matrices indicate that mitigation is required within the building based on the TCE concentrations detected in 5 of the 7 sub-slab sample locations.

4.6.3 Soil Vapor Intrusion Investigation Summary

Based on the NYSDOH SVI Guidance decision matrices the building will require mitigation due to elevated TCE concentrations in sub-slab and indoor air samples.

4.7 Data Usability Summary

In accordance with the RI/AA 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, NY 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. Two data usability summary reports (DUSRs) were prepared for the RI, one for the June 2016 investigation and one for the November-December 2016 subsequent investigation activities.

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 prepared using guidance from the USEPA Region 2 validation Standard Operating Procedures (Ref. 6), the USEPA National Functional Guidelines for Data Review (Refs. 7 and 8), as well as professional judgment.

In summary, most results are usable either as reported or with minor qualification. Total cyanide results in one sample (RISB-19; 2-4') and its respective field duplicate were rejected due to inconsistent results. The dissolved metals results were qualified as estimated due to the laboratory filtration. The results for 1,4-dioxane during the November and December 2016 supplemental investigation activities are not usable due to poor response inherent in the methodology, although 1,4-dioxane results were non-detect. The additional qualifications/rejections of the data have been incorporated to the summary data tables. Appendix F includes the DUSRs.

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 concern (COCs) for a restricted residential use are presented below:

Soil/Fill: cVOCs, PAHs, PCBs, metals

Groundwater: cVOCs in the central portion of the building

Sub-slab Vapor/Indoor Air: cVOCs

5.0 FATE AND TRANSPORT OF COCS

The subsurface soil/fill, groundwater, SVI, drainage structure solids, and sub-basement water analytical sample results were incorporated with the physical characterization of the Site to evaluate the fate and transport of COCs in Site media. The mechanisms by which the COCs 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. Impacted subsurface soil/fill has been identified at the Site and, as such, fugitive dust generation during excavations related to remediation and redevelopment activities is considered a relevant potential short-term migration pathway. Impacted soil/fill above RRSCOs are currently present beneath concrete floors throughout the entire Site.

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, drainage structure solids, 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 appear to have impacted groundwater with VOCs, specifically cVOCs in the central portion of the Site as well as the soil/fill and drainage structure solids in the former truck repair area. Based on the SVI investigation activities completed as part of the RI, vapor intrusion of cVOCs into the building is a concern and will required mitigation.

5.3 Surface Water Runoff

The potential for soil particle transport due to surface water runoff is low, as the entire Site is currently covered by concrete, asphalt, and buildings, and future redevelopment plans include the same. Any outdoor intrusive activity will incorporate erosion controls that

would be implemented in accordance with an approved stormwater pollution prevention plan (SWPPP). As such, surface water runoff is not considered a relevant migration pathway.

5.4 Leaching

Leaching refers to chemicals present in soil/fill migrating downward to groundwater as a result of infiltration of precipitation. The entire Site is currently, and is planned to remain after redevelopment, covered by impermeable surfaces (i.e., asphalt, concrete and buildings) effectively limiting infiltration of precipitation.

VOCs, specifically PCE, TCE, and cis-DCE, were detected in soils above USCOs and PGWSCOs but below their respective RRSCOs in the samples collected from former truck repair area. The cVOCs detected in soil are similar to those that have been detected in the groundwater, al be it at low concentrations (maximum 425 ug/L total cVOCs).

Certain PAHs, metals, and PCBs were also detected slightly above RRSCOs; however, these constituents tend to adsorb strongly to soil, sediment, and particulate matter and are not expected to leach. This is further evidenced by the limited detections of PAHs and metals (dissolved phase) in the groundwater above GWQS and lack of correlation to the soil analytical results.

5.5 Groundwater Transport

Groundwater underlying the Site flows southerly (see Figure 6) with a calculated average hydraulic gradient of 0.02 to 0.03 feet/foot. RI groundwater analytical results (see Table 4 and Figure 7) indicate cVOCs were detected in the groundwater above their respective GWQS. Two PAHs were detected at one location (RIMW-9) at estimated concentrations and limited metal analytes were present in the dissolved phase in the groundwater, typical of urban environments.

Two "deep" monitoring wells (RIMW-11 and RIMW-12) were installed to assess for deeper off-site groundwater contamination. VOCs were not detected above their respective GWQS at these off-site locations.

The Site and surrounding areas are serviced by a municipal (supplied) potable water service (City of Buffalo) with no evidence of pumping wells in the area of the Site. Site groundwater appears to have a southerly flow and cVOCs present in groundwater are limited to the central portion of the Site (i.e., not detected upgradient or downgradient). The cVOCs do not appear to follow the groundwater flow pathway, which is not typical and

were not detected in the two off-site "deep" groundwater wells installed. Therefore, cVOCs may be transported under the building via utility bedding or the result of localized surface discharges. Transport off-site via groundwater migration is not a relevant migration pathway as off-site groundwater results do not indicate exceedances of GWQS and the COCs present would not reach receptors at significant exposure point concentrations.

5.6 Exposure Pathways

Based on the analysis of chemical fate and transport provided above, the pathways through which Site COCs could reach receptors at significant exposure point concentrations are: fugitive dust during intrusive activities and volatilization. Off-site groundwater samples analyzed for VOCs as part of the supplemental investigation did not exceed their respective GWQS.

Mitigation within the building will be required as part of the remedial activities implemented as vapor intrusion is occurring.

During proposed remediation or redevelopment construction activities, a CAMP and erosion and sediment control strategies will be implemented to mitigate the potential for on- and off-site exposure; and, if necessary, excavation dewatering will be completed in accordance with an approved Buffalo Sewer Authority temporary discharge permit.

6.0 QUALITATIVE EXPOSURE ASSESSMENT

6.1 Human Health Exposure Assessment

A qualitative exposure assessment consists of characterizing the exposure setting (including the physical environment and potentially exposed human populations), identifying exposure pathways, and evaluating contaminant fate and transport.

An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has the following five elements:

- Receptor population
- Contaminant source
- Contaminant release and transport mechanism
- Point of exposure
- Route of exposure

An exposure pathway is complete when all five elements of an exposure pathway are documented; a potential exposure pathway exists when any one or more of the five elements comprising an exposure pathway is not documented but could reasonably occur. An exposure pathway may be eliminated from further evaluation when any one of the five elements comprising an exposure pathway does not exist in the present and will not exist in the future.

6.1.1 Receptor Population

The receptor population includes the people who are or may be exposed to contaminants at a point of exposure. The identification of potential human receptors is based on the characteristics of the Site, the surrounding land uses, and the probable future land uses. The Site is developed with a complex of five adjoining buildings that are currently vacant and have been since at least 2000. Under current Site use conditions (i.e., remediation and redevelopment), receptors would include 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).

The reasonably anticipated future use of the Site is for mixed commercial and residential use consistent with surrounding property use and Site zoning. Exposed receptors under the future use scenario may be comprised of indoor occupants, indoor workers, visitors/customers, outdoor workers (e.g., groundskeepers or maintenance staff), and construction workers who may be employed at or perform work on the property.

6.1.2 Contaminant Sources

The source of contamination is defined as either the source of contaminant release to the environment (such as a waste disposal area or point of discharge) or the impacted environmental medium (soil, air, biota, water) at the point of exposure. Section 4.0 discusses the COCs present in unremediated Site media at elevated concentrations. Limited areas contain PAHs, PCBs, and metals above RRSCOs in on-site overburden soil/fill material. CVOCs were also detected in the former truck repair area above their PGWSCOS but below their RRSCOs. Groundwater contains concentrations of cVOCs and metals above GWQS/GVs within the same general soil/fill impacted areas. In several basement areas, TCE and cis-1,2-DCE have been identified in soil vapor samples collected from the basement portion of the building at levels requiring mitigation.

No VOCs were detected above their respective GWQS at the off-site monitoring well locations and does not appear to have migrated from the Site.

6.1.3 Contaminant Release and Transport Mechanisms

Contaminant release and transport mechanisms carry contaminants from the source to points where people may be exposed, and are specific to the type of contaminant and site use. For the non-volatile COCs present in Site soil/fill, contaminant release and transport mechanisms will generally be limited to fugitive dust migration and direct contact during future planned intrusive work/remedial activities since the Site is currently covered by a building complex and asphalt/concrete. For the volatile COCs in the unsaturated zone, the contaminant release and transport mechanism is limited to volatilization during intrusive remedial activities and future Site redevelopment.

For volatile COCs present in the groundwater the transport mechanism would be the groundwater itself. No VOCs were detected above their respective GWQS in the two off-site wells requested by NYSDEC and does not appear to have migrated from the Site.

6.1.4 Point of Exposure

The point of exposure is a location where actual or potential human contact with a contaminated medium may occur. Based on the sporadic exceedances of RRSCOs in soil/fill for certain ubiquitous parameters (i.e., arsenic and PAHs), the point of exposure is defined as those areas that will remain after planned remedial activities. For both the current and future use scenarios, groundwater is not considered a relevant mechanism for exposure due to groundwater management procedures during intrusive activities; the availability of a municipal potable water source; and the requirement for an Environmental Easement that will restrict the use of Site groundwater. Additionally, VOCs were not detected above their respective GWQS in the two off-site wells requested by NYSDEC and therefore does not appear to have migrated from the Site.

6.1.5 Route of Exposure

The route of exposure is the manner in which a contaminant actually enters or contacts the body (i.e., ingestion, inhalation, dermal absorption). Based on the types of receptors and points of exposure identified above, potential routes of exposure are listed below:

Current Use Scenario

- Construction Worker/Environmental Personnel/Trespasser (short-term) – skin contact, inhalation, and incidental ingestion

Future Use Scenario

- Indoor Occupant – inhalation
- Indoor Worker/Visitor/Customer – inhalation
- Construction and Outdoor Workers (short-term) – skin contact, inhalation, and incidental ingestion

6.1.6 Exposure Assessment Summary

Based on the above assessment, the potential exposure pathways for the current and future use conditions are listed below.

Current Use Scenario

- Construction Worker/Environmental Personnel/Trespasser – direct contact, incidental ingestion, and inhalation of non-volatile COCs present in site-wide soil/fill, and inhalation of cVOCs in groundwater during intrusive activities.

Future Use Scenario

- Indoor Occupant – inhalation of cVOCs present in groundwater via the process known as soil vapor intrusion.
- Indoor Worker/Visitor/Customer – inhalation of cVOCs present in groundwater via the process known as soil vapor intrusion.
- Construction and Outdoor Worker – direct contact, incidental ingestion and inhalation of non-volatile COCs present in site-wide soil/fill, and inhalation of cVOCs present in impacted groundwater during intrusive activities.

In most instances, these exposures can be readily mitigated through the use of personal protective equipment (PPE); proper soil/fill management during intrusive activities; adherence to the approved health and safety plant (HASP) and CAMP; engineering controls including existing asphalt/concrete and buildings; and ventilation until the active sub-slab depressurization (ASD) system is installed as a remedial measure within existing buildings. Occupancy of the buildings will not occur until the ASD system is operational.

6.2 Fish and Wildlife Resource Impact Analysis (FWIRA)

The historical use of the Site has eliminated the majority of native species. The Site is currently vacant but the property consists of five adjoined buildings with asphalt/concrete, providing no wildlife habitat or food value. There are no significant natural communities within ½-mile of the Site according to the NYSDEC's Environmental Resource Mapper (ERM); however, the area is listed as containing a rare plant (i.e., Golden Dock last documented in 1898) and rare animals (i.e., Midland Clubtail last documented in 1906, and the American Burying Beetle with no documented date).

The Site is slated for mixed residential and commercial redevelopment, which is consistent with surrounding property use and zoning. The existing buildings, asphalt/ concrete, and maintained ornamental landscaping (if any) will substantially limit availability of suitable cover type for reestablishment of biota. Based on the Fish and Wildlife Resource Impact Analysis Decision Key included as Appendix G (NYSDEC DER-10 Appendix 3C), no FWRIA is warranted.

7.0 REMEDIAL ALTERNATIVES EVALUATION

7.1 Remedial Action Objectives

The remedial actions for the Former Trico Plant must satisfy Remedial Action Objectives (RAOs). RAOs are site-specific statements that convey the goals for minimizing substantial risks to public health and the environment. For the Former Trico Plant, appropriate RAOs have been defined as:

Soil/Fill RAOs

- Remove, treat, or mitigate contaminated soil/fill to the degree possible to protect public health and the environment and prevent further degradation of on-site and off-site groundwater quality.
- Prevent ingestion/direct contact with contaminated soil/fill.
- Prevent migration of contaminants that may further result in groundwater or surface water contamination.
- Prevent inhalation of or exposure to contaminants volatilizing from contaminated soil/fill.

Groundwater RAOs

- Prevent ingestion of groundwater containing contaminant levels exceeding NYSDEC Class GA GWQS/GVs or with visual/olfactory evidence of impact.
- Prevent contact with, or inhalation of, volatiles emanating from contaminated groundwater.
- Prevent degradation of on-site and off-site water quality.

Soil Vapor

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

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.

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 (e.g., in-situ or ex-situ)
- Excavation and off-site disposal

The GRAs available to address the RAOs for groundwater include:

- Monitored natural attenuation
- Institutional controls
- Engineering controls (e.g., pump-and-treat)
- Treatment (e.g., in-situ or ex-situ)

The GRAs available to address the RAOs for soil vapor include:

- Engineering controls (e.g., ASD system)

7.3 Standards, Criteria, and Guidance

According to DER-10 Section 1.3(b)71, standards, criteria, and guidance (SCGs) refers to: "*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).*"

Additional discussions concerning the specific chemical-, action-, and location-specific SCGs that may be applicable, relevant, or appropriate to remedy selection for the Site are presented below. In each case, the identified SCGs are generally limited to regulations or technical guidance in lieu of the environmental laws from which they are authorized, as the laws are typically less prescriptive in nature and inherently considered in the regulatory and guidance evaluations. Table 9 summarizes the SCGs by media that may be applicable or relevant and appropriate to the Site.

7.3.1 Chemical-Specific SCGs

Chemical-specific SCGs are usually health- or risk-based concentrations in environmental media (e.g., air, soil, water), or methodologies that when applied to site-specific conditions, result in the establishment of concentrations of a chemical that may be found in, or discharged to, the ambient environment. The determination of potential chemical-specific SCGs for a site is based on the nature and extent of contamination; potential migration pathways and release mechanisms for site contaminants; reasonably anticipated future site use; and likelihood that exposure to site contaminants will occur.

Previous sampling events included the collection and analysis of subsurface soil/fill, sub-slab and indoor air, groundwater, and basement surface water samples.

One of the remedial alternatives to be assessed for the Site is a Track 4 cleanup for soil/fill. This approach requires institutional controls (e.g., groundwater and land use restrictions, Site Management Plan, and Environmental Easement) and engineering controls (e.g., a soil cover system, ASD system in existing buildings) as components of the final remedy to reduce future potential exposure to impacted soil/fill.

7.3.2 Location-Specific SCGs

Location-specific SCGs are restrictions placed on the concentration of hazardous substances or the conduct of activities solely because they are in a specific location. Some examples of these unique locations include floodplains, wetlands, historic places, and sensitive ecosystems or habitats. The location of the site is a fundamental determinant of its impact on human health and the environment.

7.3.3 Action-Specific SCGs

Action-specific SCGs are restrictions placed on particular treatment or disposal technologies. Examples of action-specific SCGs are effluent discharge limits and hazardous waste manifest requirements.

7.4 Evaluation of Alternatives

In addition to achieving RAOs, NYSDEC's BCP calls for remedy evaluation using the following criteria set forth in DER-10 Technical Guidance for Site Investigation and Remediation (Ref. 2) and 6NYCRR 375-1.8(f):

- **Overall Protectiveness 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 of Contamination through Treatment**. This criterion evaluates the remedy's ability to reduce the toxicity, mobility, and volume of Site contamination. Preference is given to remedies that permanently and significantly reduce the toxicity, mobility, or volume of the contamination at the Site.
- **Short-Term Impacts and Effectiveness**. This criterion 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.
- **Implementability**. The implementability criterion evaluates the technical and administrative feasibility of implementing the remedy. Technical feasibility includes the difficulties associated with the construction and the ability to monitor the effectiveness of the remedy. For administrative feasibility, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc.

- **Cost-Effectiveness**. Capital, operation, maintenance, and monitoring costs are estimated for each remedial alternative and presented on a present worth basis. A remedy is cost effective if the costs are proportional to the overall effectiveness.
- **Community Acceptance**. This criterion evaluates the public's comments, concerns, and overall perception of the remedy. Therefore, 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, including a public comment period for the AAR.

7.5 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 of remedial alternatives. The regulations identify 16 criteria that must be considered. These criteria and the resultant outcome for the Former Trico Plant are presented below.

1. *Current use and historical and/or recent development patterns:* The Site has historically been used for various residential, commercial, and industrial purposes (e.g., auto repair, brewery, and windshield wiper blade manufacturing plant) since circa 1890. The Site has been vacant since at least 2000. The neighborhood was and continues to be developed as an urban mixed use commercial, residential, recreational, and vacant area. Future Site uses are anticipated to be a mix of commercial and residential uses. **Accordingly, residential and commercial Site redevelopment would be consistent with historic site use.**
2. *Applicable zoning laws and maps:* The Site is located in an area of the City zoned General Commercial District (CM). **Use in a mixed residential/commercial capacity is therefore consistent with current zoning.**
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 does not lay within a 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:* The Site lies within the boundaries of the City of Buffalo Comprehensive Plan. **Site remediation and redevelopment in a residential/ commercial capacity is consistent with the Buffalo Comprehensive Plan.**
5. *Proximity to real property currently used for residential use, and to urban, commercial, industrial, agricultural, and recreational areas:* The adjacent and surrounding land is an

urban mixed use residential, commercial, industrial, and vacant area. **Maintaining the use of the Site in a residential/commercial capacity is consistent with surrounding property.**

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 relevant to Site use concerns.**

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:* **Nearby and adjacent property is actively used in a residential, commercial, and industrial capacity. Maintaining use of the site in a residential/ commercial capacity does not pose environmental justice issues.**

8. *Federal or State land use designations:* The property is designated as a General Commercial District (CM) by the City of Buffalo Property Viewer. **Reuse in a restricted capacity (residential/commercial) is consistent with the current land use designation.**

9. *Population growth patterns and projections:* The City of Buffalo, encompassing 52.51 square miles, has a population of 258,071 (2015 Estimate US Census Bureau), a decrease of 1.3% from the 2010 US Census (3,254 people) and, as such, the redevelopment of the Site is not expected to have a significant impact on the housing market**. Reuse of the Site in a residential/commercial capacity provides opportunities for residential growth.**

10. *Accessibility to existing infrastructure:* Access to the Site is from Washington, Goodell, and Ellicott Streets. Utilities (sewer, water, electric) that service the Site, and adjacent and nearby properties are present along these corridors. **Existing infrastructure supports reuse in a residential/commercial capacity**.

11. *Proximity of the site to important cultural resources, including federal or State historic or heritage sites or Native American religious sites*: According to the NYS Historic Preservation Office GIS mapping website, the Site lies within an area considered archaeologically sensitive based on information reported to the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP). In addition, the Former Trico Plant is listed on the National Register of Historic Places (Trico Plant No. 1 - 00NR0701). Nineteen additional sites within ½-mile of the Site are listed on the National Register of Historic Place. **Redevelopment of the property in a residential/commercial capacity will not alter these historic site; in fact, the redevelopment will improve the area by remediating and re-using the existing buildings.**

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:* There are no significant natural communities within ½-mile of the Site according to the NYSDEC's ERM. Although the area is listed as containing a rare plant (i.e., Golden Dock last documented in 1898) and rare animals (i.e., Midland Clubtail last documented in 1906, and the American Burying Beetle with no documented date), these were documented over 100 years ago. **Since the Site does not provide wildlife habitat or food value, and no natural resources have been identified, residential/commercial redevelopment of the Former Trico Plant will not impact natural resources.**
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 contamination appears to be limited to the central portion of the Site as the two off-site groundwater wells installed and sampled did not have GWQS exceedances. There are no known deed restrictions on the use of groundwater at the Site. Potable water is supplied to the Site and surrounding vicinity by municipal water service (City of Buffalo). **The cleanup to restricted use conditions will not pose a drinking water threat.**
14. *Proximity to flood plains:* According to the Erie County On-line GIS mapping website, no State or Federal wetlands or floodplains exist within a ½-mile radius of the Site. **As such, cleanup to restricted use conditions 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. Surface soils on the Site are characterized as Urban Land (Ud), consisting of level to gently sloping land with 80 percent or more of the soil surface covered by asphalt, concrete, buildings, or other impervious structures typical of an urban environment. Surficial geology of the area consists of various loams, with slopes typically ranging from 0 to 6%. In some locations underlying the concrete building slab was a thin veneer (2 to 3 inches) of fill material consisting of black fine to course sand with ash underlain by native soils generally consisting of alternating layers of reddish-brown sandy lean clay and silty sands and/or sandy silts to depths of 40 feet below investigation starting grade. **Geography and geology are consistent with a residential/commercial 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, use of the Site in a residential/commercial capacity is consistent with past and current development and zoning on and near the Site, and does not pose additional environmental or human health risk.

7.6 Volume, Nature, and Extent of Contamination

Estimation of the volume, nature, and extent of media that may require remediation to satisfy the RAOs or that needs to be quantified to facilitate evaluation of remedial alternatives is presented in this section. For the unrestricted use scenario, the cleanup goal would involve achieving USCOs. For the reasonably anticipated future use scenario, the cleanup goal would involve achieving RRSCOs. The volume and extent of media requiring cleanup under these scenarios is presented in Sections 7.6.1 and 7.6.2. In all instances, these volume estimates (and associated cost estimates presented later in this AAR) are projected based on data collected and observations made during the Phase II and RI activities.

7.6.1 Comparison to Unrestricted SCOs (Track 1 Cleanup)

Exceedances of the USCOs were noted in discrete soil/fill samples collected, primarily for cVOCs, PAHs, PCBs, and metals. Figure 8 shows the approximate aerial extent (approximately 27,975 square feet) of USCO exceedances that defines the Track 1 Cleanup area. The depth of impact varies across these four areas. Three sample locations had a concentration above USCOs at a depths greater than 6 fbgs.

- RISB-15, 6-8 fbgs; nickel at a concentration of 30 mg/kg compared to the USCO of 30 mg/kg;
- RISB-27, 7-8 fbgs and 11-12 fbgs; cis-DCE and TCE were above their respective USCOs at this location. However, the 11-12 fbgs USCOs exceedances are in a saturated sample below the groundwater table;
- RISB-32 7-8 fbgs; PCE was detected above its USCO at this location which was collected from just above the groundwater table in this area.

Therefore, a conservative depth of impact of 8 fbgs has been assumed for all four areas. Thus, the volume of impacted soil/fill requiring remediation under the unrestricted use scenario is approximately 8,300 cubic yards.

7.6.2 Comparison to Restricted Residential SCOs (Track 4 Cleanup)

The soil/fill data indicates limited areas with exceedances of the Part 375 RRSCOs for several constituents. Four soil boring samples (1-2') analyzed during the Phase II and one soil boring sample from the RI exhibited exceedances of the RRSCOs for SVOCs (PAHs), metals, and/or PCBs.

7.6.3 Groundwater Impacts

Chlorinated VOCs and, to a lesser extent, SVOCs and metals were detected above GWQS. A slight odor was detected during sampling in RIMW-7 and RIMW-9 but not in RIMW-4. Concentrations of cVOCs in groundwater at RIMW-4, RIMW-7 and RIMW-9 are less than 500 ug/L and will be further evaluated for remedial measures. The groundwater contaminant plume covers an approximate 21,600-square foot area.

7.6.4 Basement Surface Water

The results of the basement surface water sampling indicate that low levels of metals and pesticides are present in the water. No VOCs, PCBs, or herbicides were detected above MDLs. An estimated 144,000 gallons of standing water is present in the basement.

7.6.5 Soil Vapor Intrusion

Based on the site-specific data and due to the potential for contaminated vapors to travel along a building foundation, the entire building footprint (i.e., 85,800 square feet) as shown on Figure 9 is defined as the soil vapor intrusion area.

7.7 Alternatives Evaluation

In addition to the evaluation of alternatives to remediate to the likely end use of the Site, NYSDEC regulation and policy calls for evaluation of more restrictive end-use scenarios, such as 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 include:

- Alternative 1: No Action

- Alternative 2: Unrestricted Use (Track 1) Cleanup
- Alternative 3: Restricted Residential Use (Track 4) Cleanup with Groundwater Extraction and Treatment
- Alternative 4: Restricted Residential Use (Track 4) Cleanup with In-Situ Groundwater Treatment

7.7.1 Alternative 1 – No Action

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

Overall Protection of Public Health and the Environment – The Site is not protective of human health and the environment, due to the presence of contamination remaining on-site above SCGs; and the absence of institutional controls to prevent more restrictive forms of future site use (e.g., unrestricted, residential, and restricted residential) or the export of Site soils to uncontrolled off-site locations. Accordingly, the no action alternative is not protective of public health and does not satisfy the RAOs.

Compliance with SCGs – Under the current and reasonably anticipated future use scenario (restricted residential), the contamination detected in on-site soil vapor, soil/fill and groundwater does not comply with applicable SCGs.

Long-Term Effectiveness and Permanence – The no action alternative involves no remedial activities, equipment, institutional controls, or facilities subject to maintenance, and provides no long-term effectiveness or permanence toward achieving the RAOs.

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

Short-Term Impacts and Effectiveness – The contamination on-site does pose short-term risks to on-site workers and the environment. Therefore, implementation of the no action alternative does not satisfy the RAOs.

Implementability **–** No technical or administrative implementability issues are associated with the no action alternative.

Cost-Effectiveness **–** 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 received from the public in response to Fact Sheets and other planned citizen participation activities, including a public comment period for the RI/AA Report.

7.7.2 Alternative 2 – Unrestricted Use (Track 1) Cleanup

An Unrestricted Use Cleanup alternative would necessitate remediation of soil/fill where concentrations exceed the USCO per 6NYCRR Part 375. For unrestricted use scenarios, excavation and off-site disposal of impacted soil/fill is generally regarded as the most applicable remedial measure because long-term engineering and institutional controls cannot be used to supplement the remedy. As such, the unrestricted use alternative assumes that those areas that exceed USCOs would be excavated and disposed at an off-site commercial solid waste landfill. Therefore, as described in Section 7.6.1, an estimated 8,300 cubic yards of soil/fill would be excavated to achieve USCOs. In order to access impacted material at depth, the building foundation/slabs within these four areas would need to be removed.

In addition, the contaminant groundwater plume would require remediation and monitoring as removal of groundwater contaminants (cVOCs) present in the soil/fill of the former truck repair area above USCOs would not address the on-site groundwater cVOC contamination plume. A restriction on groundwater use would be included as part of the remedial program per 6NYCRR Part 375. Furthermore, an ASD system would be required, at least in the short term, during remediation of cVOC-impacted groundwater.

Overall Protection of Public Health and the Environment **–** The Unrestricted Use Cleanup would be protective of public health under any reuse scenario. However, this alternative would permanently use and displace approximately 8,300 cubic yards of valuable landfill airspace, causing ancillary environmental issues due to reduced landfill capacity, and require excavating, transporting, and placing 8,300 cubic yards of clean soil from an off-site

borrow source to backfill the excavation, also contributing to significant detrimental off-site environmental issues. The unrestricted use alternative would achieve the corresponding Part 375 SCOs, which are designed to be protective of public health under any reuse scenario.

Compliance with SCGs – The Unrestricted Use Cleanup would need to be performed in accordance with applicable, relevant, and appropriate SCGs. Soil excavation activities would necessitate preparation of and adherence to a CAMP in accordance with Appendices 1A and 1B of DER-10.

Long-Term Effectiveness and Permanence – The Unrestricted Use Cleanup alternative would achieve removal of all residual impacted soil/fill; therefore, no soil/fill exceeding the USCOs would remain on the Site. In addition, groundwater treatment would destroy contaminants within the on-site plume and reduce the off-site migration of cVOCs. As such, the unrestricted use alternative would provide long-term effectiveness and permanence.

Reduction of Toxicity, Mobility, or Volume of Contamination through Treatment – Through removal of all impacted soil/fill and treatment of groundwater, the unrestricted use alternative would reduce the toxicity, mobility, and volume of Site contamination permanently and significantly. However, since this alternative transfers Site soil/fill from one environment to another, an overall reduction of toxicity and volume would not occur. Mobility of soluble constituents would be reduced in the commercial landfill with a liner, cover system, and leachate collection.

Short-Term Impacts and Effectiveness – The principal advantage of a large-scale excavation to achieve USCOs is reliability of effectiveness in the long-term. In the short-term, there would be significant increase in exposure of impacted soil/fill to on-site workers and the community under this alternative. Excavation activities would be completed over an approximate three-week period, and backfilling/concrete foundation repair would take approximately one to two weeks. Commercial construction equipment would be used, a health and safety plan would be followed, and community air monitoring would be completed during excavation activities. However, primary disadvantages include increased truck traffic during excavation and backfill; noise; and air emissions, including fugitive dust

and odors. This action would result in potential storm water impacts at the borrow source(s) and on-site; diesel fuel consumption on the order of 5,550 gallons (assuming 80 miles round trip to a local landfill; 8 miles per gallon) to transport the 555 truckloads of impacted soil/fill, with several thousands of gallons also consumed by construction equipment. The USEPA's estimated CO_2 generation rate for diesel engines is approximately 22.2 pounds per gallon of diesel consumed. Accordingly, this alternative would produce over 200,000 pounds of greenhouse gas. Therefore, this alternative represents a significant adverse effect in the short-term; however, the RAOs would be achieved once the soil/fill is removed from the Site, backfill soils are in place, and groundwater treatment has demonstrated a downward trend in cVOCs (est. 12 months).

Implementability **–** Excavation of impacted soil/fill beneath foundations within buildings to be reused poses technical implementability concerns relating to building stability. Excavating to depths of 8 fbgs in alternating layers of silty sands and sandy lean clays, particularly inside of a building, poses several technical implementability concerns. Sloughing of excavation walls could occur and shoring/stabilizing excavation sidewalls may be necessary. Groundwater handling, treatment, and/or discharge/disposal would be required. Given the high volume of soil/fill required for removal, a high volume of truck traffic in a densely populated area of the City would be needed to transport the impacted soil/fill off-site.

Cost-Effectiveness **–** The capital cost of implementing the unrestricted use alternative is estimated at $2.49 million. The annual groundwater sampling and annual reporting costs are estimated $8,000 per year. The present worth of this alternative assuming 30-years of sampling and reporting is estimated at estimated at $2.67 million. Table 10 provides a detailed breakdown of these costs.

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

7.7.3 Alternative 3 – Restricted Residential Use (Track 4) Cleanup with Groundwater Extraction and Treatment

Under Alternative 3, the Site would be cleaned up to facilitate the reasonably anticipated restricted residential use including:

- Removal and treatment of groundwater via a groundwater extraction and treatment system prior to discharging to the sanitary sewer.
- Removing hydraulic lift infrastructure and any associated impacted soil/fill.
- Managing impacted water during remedial activities and hydraulic lift removal.
- Pumping sub-basement water with on-site treatment, if required by BSA, prior to discharging to sanitary sewer.
- Cleaning accessible utility and/or sewer services with evidence of potential impacts.
- Removing and properly disposing off-site miscellaneous abandoned regulated waste materials; and abating building components for lead, asbestos, oil staining, PCBs, etc. as required during redevelopment. Building surfaces and features planned to remain with evidence of impacts from historic operations will be addressed (e.g., encapsulated or sealed) consistent with a Restricted Residential Use scenario.
- Engineering Controls:
  - Maintaining existing cover system consisting of the building foundations and asphalt on former Burton Street. Building foundations or asphalt cover removed for future development must be replaced by 6 inches of concrete or asphalt (including sub-base material), or a minimum of two feet of clean soil/gravel meeting RRSCOs.
  - Installing an ASD system within the existing buildings.
- Institutional Controls:
  - Implementing an SMP including an Environmental Easement, EC/IC Plan, Site Monitoring Plan, Excavation Work Plan, O&M Plan, Site use limitations, and groundwater use restrictions.

Specific details of the remediation would be provided in the Remedial Action Work Plan (RAWP) 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 extent of remedial activities listed above including hydraulic lift removal, limited soil/fill removal (if encountered); groundwater removal, treatment and discharge; removing sub-basement water; cleaning utility/sewer features; installation of an ASD system in the existing building to mitigate potential VOC vapor intrusion concerns; maintaining the existing cover systems; and, the use of ICs to prevent potential future exposure and limit the future use to restricted residential purposes. Groundwater extraction and treatment system performance and groundwater quality will be monitored over time in accordance with the SMP. Accordingly, the Restricted Residential (Track 4) Use Cleanup alternative is protective of public health and fully satisfies the soil, groundwater, and soil vapor RAOs.

Compliance with SCGs – The planned remedial activities will be performed in accordance with applicable, relevant, and appropriate SCGs including NYSDEC DER-10. The SMP will include an EC/IC Plan that describes the procedures for the implementation and management of all EC/ICs at the Site; a Site Monitoring Plan that describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the Site, including the existing cover and future ASD systems and all affected site media; an Excavation Work Plan to address any impacted soil/fill encountered during post-development intrusive and/or maintenance activities; an O&M Plan that describes the measures necessary to operate, monitor and maintain the mechanical components of the remedy selected for the Site; and a Site-wide inspection program to assure that the EC/ICs placed on the Site have not been altered and remain effective.

Long-Term Effectiveness and Permanence – Removal of hydraulic lifts and associated impacted soil/fill (if any), removal of sub-basement water and impacted utility/sewer sediments, and maintenance of the existing cover systems will prevent direct contact with soil/fill exceeding RRSCOs. Groundwater extraction and treatment will effectively and permanently reduce contaminant concentrations on-site and prevent the future potential for migrating off-site. Installation of an ASD system within the existing buildings will mitigate potential on-site VOC vapor intrusion concerns. An SMP will address any impacted soil/fill encountered during future Site intrusive/maintenance activities, and provides a mechanism to assure that the EC/ICs placed on the Site have not been altered

and remain effective. Furthermore, an Environmental Easement for the Site will be filed with Erie County, which will limit future Site use to restricted residential 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 of Contamination through Treatment – This alternative will reduce the toxicity, mobility, and volume of COCs significantly and permanently through removal of hydraulic lifts and associated impacted soil/fill (if any), removal of sub-basement water and impacted utility/sewer sediments and groundwater treatment. Maintenance of the existing cover system will prevent direct contact with soil/fill exceeding RRSCOs. Extraction and treatment of groundwater will reduce the toxicity, mobility, and volume of the contaminant plume. Installation of an ASD system within the existing buildings will mitigate potential on-site VOC vapor intrusion concerns. The SMP will include an Excavation Work Plan to address any impacted soil/fill encountered during future Site intrusive/maintenance activities and a Site-wide inspection program to assure that the EC/ICs placed on the Site have not been altered and remain effective. Accordingly, this alternative satisfies this criterion.

Short-Term Impacts and Effectiveness – The short-term adverse impacts and risks to the community, workers, and environment will be controlled during implementation of the remedy. During intrusive remedial activities, including hydraulic lifts, groundwater extraction well installation, and soil/fill excavation, backfilling, and handling of contaminated soil/fill, could potentially cause adverse short-term effects. Community air monitoring for vapors, dust particulates, and odors will be performed during intrusive activities to assure conformance with community air monitoring action levels. The potential for chemical exposure and physical injury are reduced through safe work practices; proper personal protection equipment (PPE); environmental monitoring; establishment of work zones and Site control; and appropriate decontamination procedures. The planned remedial activities will be completed within one construction season and performed in accordance with a Department-approved Work Plan, including a HASP and CAMP. This alternative achieves the RAOs for the Site.

Implementability **–** No action-specific administrative implementability issues are associated with the Restricted Residential Use (Track 4) Groundwater Extraction and Treatment Cleanup alternative. There will be technical issues associated with this alternative, similar to those identified during the RI, due to the building construction (i.e., ceiling height, door way access, and basement elevation). The ceiling heights and door way access will make utilization of traditional rotary drilling to properly install extraction wells difficult and unfeasible in some areas of the building which would need to be accessed. If proper extraction wells can be installed using alternative methods, sewer tie-ins will be challenging as the basement is 8 feet below exterior grade, groundwater below the lower basement elevation is approximately 2 feet below the basement floor and use of interior sewer connections would require a significant amount of concrete work.

Additionally, the redevelopment plans for the basement areas where groundwater extraction would be utilized is proposed to be used as a parking garage. The number of potential parking spots are limited by building layout and interior column locations. The installation of mechanical equipment associated with the extraction and treatment system would reduce the number of available parking spots.

Cost **–** The capital cost of implementing a Restricted Residential Use (Track 4) alternative is estimated at $875,000. The annual O&M costs (which include sampling and reporting) are estimated at $44,000 and has a present worth of $725,000 assuming 30-years of operation. The present worth of this alternative assuming 30-years of operation is approximately $1.6 million. Table 11 presents the capital and O&M cost estimate.

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

7.7.4 Alternative 4 – Restricted Residential Use (Track 4) Cleanup with In-Situ Groundwater Treatment

Under Alternative 4, the Site would be cleaned up to facilitate the reasonably anticipated restricted residential use including:

- Treating on-site groundwater in-situ.

- Removing hydraulic lift infrastructure and any associated impacted soil/fill.
- Managing impacted water during remedial activities and hydraulic lift removal.
- Pumping sub-basement water with on-site treatment, if required by BSA, prior to discharging to sanitary sewer.
- Cleaning accessible utility and/or sewer services with evidence of potential impacts.
- Removing and properly disposing off-site miscellaneous abandoned regulated waste materials; and abating building components for lead, asbestos, oil staining, PCBs, etc. as required during redevelopment. Building surfaces and features planned to remain with evidence of impacts from historic operations will be addressed (e.g., encapsulated or sealed) consistent with a Restricted Residential Use scenario.
- Engineering Controls:
  - Maintaining existing cover system consisting of the building foundations and asphalt on former Burton Street. Building foundations or asphalt cover removed for future development must be replaced by 6 inches of concrete or asphalt (including sub-base material), or a minimum of two feet of clean soil/gravel meeting RRSCOs.
  - Installing an ASD system within the existing buildings.
- Institutional Controls:
  - Implementing an SMP including an Environmental Easement, EC/IC Plan, Site Monitoring Plan, Excavation Work Plan, O&M Plan, Site use limitations, and groundwater use restrictions.

Specific details of the remediation will be provided in the Remedial Action Work Plan (RAWP) 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 extent of remedial activities listed above including hydraulic lift removal, limited soil/fill removal (if encountered); in-situ groundwater treatment; removing sub-basement water; cleaning utility/sewer features; installation of an ASD system in the existing building to mitigate potential VOC vapor intrusion concerns; maintaining the existing cover systems; and, the use of ICs to prevent potential future exposure and limit the

future use to restricted residential purposes. Groundwater quality will be monitored over time in accordance with the SMP. Accordingly, the Restricted Residential (Track 4) Use Cleanup alternative is protective of public health and fully satisfies the soil, groundwater, and soil vapor RAOs.

Compliance with SCGs – The planned remedial activities will be performed in accordance with applicable, relevant, and appropriate SCGs including NYSDEC DER-10. The SMP will include an EC/IC Plan that describes the procedures for the implementation and management of all EC/ICs at the Site; a Site Monitoring Plan that describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the Site, including the existing cover and future ASD systems and all affected site media; an Excavation Work Plan to address any impacted soil/fill encountered during post-development intrusive and/or maintenance activities; an O&M Plan that describes the measures necessary to operate, monitor and maintain the mechanical components of the remedy selected for the Site; and a Site-wide inspection program to assure that the EC/ICs placed on the Site have not been altered and remain effective.

Long-Term Effectiveness and Permanence – Removal of hydraulic lifts and associated impacted soil/fill (if any), removal of sub-basement water and impacted utility/sewer sediments, and maintenance of the existing cover systems will prevent direct contact with soil/fill exceeding RRSCOs. In-situ groundwater treatment will effectively and permanently reduce contaminant concentrations on-site and migrating off-site. Installation of an ASD system within the existing buildings will mitigate potential on-site VOC vapor intrusion concerns. An SMP will address any impacted soil/fill encountered during future Site intrusive/maintenance activities, and provides a mechanism to assure that the EC/ICs placed on the Site have not been altered and remain effective. Furthermore, an Environmental Easement for the Site will be filed with Erie County, which will limit future Site use to restricted residential 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 of Contamination through Treatment – This alternative will reduce the toxicity, mobility, and volume of COCs

significantly and permanently through removal of hydraulic lifts and associated impacted soil/fill (if any), removal of sub-basement water and impacted utility/sewer sediments and groundwater treatment. Maintenance of the existing cover system will prevent direct contact with soil/fill exceeding RRSCOs. Treatment of groundwater will reduce the toxicity, mobility, and volume of the contaminant plume. Installation of an ASD system within the existing buildings will mitigate potential on-site VOC vapor intrusion concerns. The SMP will include an Excavation Work Plan to address any impacted soil/fill encountered during future Site intrusive/maintenance activities and a Site-wide inspection program to assure that the EC/ICs placed on the Site have not been altered and remain effective. Accordingly, this alternative satisfies this criterion.

Short-Term Impacts and Effectiveness – The short-term adverse impacts and risks to the community, workers, and environment will be controlled during implementation of the remedy. During intrusive remedial activities, including hydraulic lift and soil/fill excavation, backfilling, and handling of contaminated soil/fill, could potentially cause adverse short-term effects. Community air monitoring for vapors, dust particulates, and odors will be performed during intrusive activities to assure conformance with community air monitoring action levels. The potential for chemical exposure and physical injury are reduced through safe work practices; proper personal protection equipment (PPE); environmental monitoring; establishment of work zones and Site control; and appropriate decontamination procedures. The planned remedial activities will be completed within one construction season and performed in accordance with a Department-approved Work Plan, including a HASP and CAMP. This alternative achieves the RAOs for the Site.

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

Cost – The capital cost of implementing a Restricted Residential Use (Track 4) with In-situ Groundwater Treatment alternative is estimated at $764,000. The annual sampling and reporting costs are estimated at $8,000 per year with a present worth of $172,000 assuming 30-years of reporting. The present worth of this alternative assuming 30-years of required sampling and reporting is approximately $958,000. Table 12 presents the capital and O&M cost estimate.

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

7.8 Comparison of Remedial Alternatives

The previous sections describe remedial alternatives for the Former Trico Plant and evaluate these alternatives against the screening criteria. Table 13 provides a comparison of the alternatives by media to identify remedial measures that will achieve the RAOs for the Site.

7.9 Recommended Remedial Alternative

Based on the alternatives analysis evaluation, *Alternative 4 – Restricted Residential Use (Track 4) Cleanup with In-situ Groundwater Treatment* is the recommended final remedial approach for the Former Trico Plant. This alternative is fully protective of public health and the environment; significantly less disruptive to the community; consistent with current and future land use; and represents a more cost-effective approach than Alternative 2 while fully satisfying the RAOs. The recommended remedial alternative would involve:

- Treating on-site groundwater in-situ.
- Removing hydraulic lift infrastructure and any associated impacted soil/fill.
- Managing impacted water during remedial activities and hydraulic lift removal.
- Pumping sub-basement water with on-site treatment, if required by BSA, prior to discharging to sanitary sewer.
- Cleaning accessible utility and/or sewer services with evidence of potential impacts.
- Removing and properly disposing off-site miscellaneous abandoned regulated waste materials; and abating building components for lead, asbestos, oil staining, PCBs, etc. as required during redevelopment. Building surfaces and features planned to remain with evidence of impacts from historic operations will be addressed (e.g., encapsulated or sealed) consistent with a Restricted Residential Use scenario.
- Engineering Controls:

  - Maintain existing cover system consisting of the building foundations and asphalt on former Burton Street. Building foundations removed for future development must be replaced by 6 inches of concrete or asphalt (including sub-base material), or a minimum of two feet of clean soil/gravel meeting RRSCOs.
  - Installing an ASD system within the existing buildings.

- Institutional Controls:
  - Implementing an SMP including an Environmental Easement, EC/IC Plan, Site Monitoring Plan, Excavation Work Plan, O&M Plan, Site use limitations, and groundwater use restrictions.

This remedy is fully protective of public health and the environment; is advantageous over other remedies when evaluated against the remedy selection criteria; and fully satisfies the RAOs for the Site. The components and details of the remaining tasks will be more fully described in an RAWP.

8.0 POST-REMEDIAL REQUIREMENTS

8.1 Final Engineering Report

Following completion of the remedial measures, a Final Engineering Report (FER) will be submitted to the NYSDEC. The FER will include the following information and documentation, consistent with the NYSDEC regulations contained in 6NYCRR Part 375-1.6(c):

- Background and Site description.
- Summary of the Site remedy that satisfied the RAOs for the Site.
- Certification by a Professional Engineer to satisfy the requirements outlined in 6NYCRR Part 375-1.6(c)(4).
- Description of engineering and institutional controls at the Site.
- Site map showing the areas remediated.
- Documentation of imported materials.
- Documentation of materials disposed off-site.
- Copies of daily inspection reports and, if applicable, problem identification and corrective measure reports.
- Air monitoring data and reports.
- Photo documentation of remedial activities.
- Text describing the remedial activities performed; a description of any deviations from the Work Plan and associated corrective measures taken; and other pertinent information necessary to document that the site activities were carried out in accordance with this Work Plan.
- Analytical data packages and DUSRs.

8.2 Site Management Plan

The Site Management Plan (SMP) for the Former Trico Plant will be prepared and submitted concurrent with the FER. The purpose of the SMP is to assure that proper procedures are in place to provide for long-term protection of public health and the environment after remedial construction is complete. The SMP is comprised of four main components:

- Engineering and Institutional Control Plan
- Site Monitoring Plan
- Operation and Maintenance Plan
- Inspections, Reporting, and Certifications

8.2.1 Engineering and Institutional Control Plan

An institutional control in the form of an Environmental Easement will be necessary to limit future use of the Site to restricted residential applications and prevent groundwater use for potable purposes or as industrial process water without prior approval from NYSDOH or an authorized county health department.

The Engineering and Institutional Control (EC/IC) Plan will include a complete description of all institutional and/or engineering controls employed at the Site, including the mechanisms that will be used to continually implement, maintain, monitor, and enforce such controls. The EC/IC Plan will include:

- A description of all EC/ICs on the Site.
- The basic implementation and intended role of each EC/IC.
- A description of the key components of the ICs set forth in the Environmental Easement.
- A description of the features to be evaluated during each required inspection and periodic review, including the EC/IC certification, reporting, and Site monitoring.
- A description of plans and procedures to be followed for maintenance of the cover system as required.
- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the Site remedy, as determined by the NYSDEC.

8.2.2 Site Monitoring Plan

The Site Monitoring Plan will describe the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the Site, including:

- Sampling and analysis of all appropriate media (e.g., groundwater).
- Assessing compliance with applicable NYSDEC SCGs, particularly ambient groundwater standards and Part 375 RRSCOs for soil.
- Assessing achievement of the remedial performance criteria.

- Evaluating Site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment.
- Preparing the necessary reports for the various monitoring activities.

To address these issues adequately, this Site Monitoring Plan will provide information on:

- Sampling locations, protocol, and frequency.
- Information on all designed monitoring systems (e.g., well logs).
- Analytical sampling program requirements.
- Reporting requirements.
- Quality assurance/quality control (QA/QC) requirements.
- Inspection and maintenance requirements for monitoring wells.
- Monitoring well decommissioning procedures.
- Annual inspection and periodic certification.

Quarterly groundwater monitoring to assess overall reduction in contamination on-site will be conducted for the first two years. The frequency thereafter will be discussed with the NYSDEC. Trends in contaminant levels in groundwater in the affected areas will be evaluated to determine if the remedy continues to be effective in achieving remedial goals.

8.2.3 Operation and Maintenance Plan

An Operation & Maintenance (O&M) Plan governing maintenance of the cover and ASD systems will:

- Include the O&M activities necessary to allow individuals unfamiliar with the Site to maintain the cover and ASD systems.
- Include an O&M contingency plan.
- Evaluate Site information periodically to confirm that the remedy continues to be effective for the protection of public health and the environment. If necessary, the O&M Plan will be updated to reflect changes in Site conditions or the manner in which the cover and/or ASD systems are maintained.

8.2.4 Inspections, Reporting, and Certifications

Site-wide inspections will be conducted annually or as otherwise approved by the NYSDEC. All applicable inspection forms and other records, including all media sampling data and system maintenance reports, generated for the Site during the reporting period will be provided in electronic format in a Periodic Review Report (PRR).

The PRR will be submitted to the NYSDEC annually (or as otherwise approved) beginning 18 months after the Certificate of Completion or equivalent document is issued. The PRR will be prepared in accordance with NYSDEC DER-10 and submitted within 45 days of the end of each certification period. The PRR will include:

- Identification, assessment, and certification of all EC/ICs required by the remedy for the Site.
- Results of the required annual Site inspections and severe condition inspections, if applicable.
- All applicable inspection forms and other records generated for the Site during the reporting period in electronic format.
- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions.
- Data summary tables and graphical representations of contaminants of concern by media (e.g., groundwater), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends.
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format.
- A Site evaluation that includes the following:
  - The compliance of the remedy with the requirements of the site-specific RAWP, and/or Decision Document.
  - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications.
  - Any new conclusions or observations regarding site contamination based on inspections or data generated by the Site Monitoring Plan for the media being monitored.

- Recommendations regarding any necessary changes to the remedy and/or Site Monitoring Plan.
- The overall performance and effectiveness of the remedy.

The signed EC/IC Certification will be included in the PRR. For each institutional or engineering control identified for the Site, a Professional Engineer licensed to practice in New York State will certify that all of the following statements are true:

- The inspection of the Site to confirm the effectiveness of the EC/ICs required by the remedial program was performed under my direction.
- The EC/ICs employed at this Site are unchanged from the date the control was put in place, or last approved by the NYSDEC.
- Nothing has occurred that would impair the ability of the control to protect the public health and environment.
- Nothing has occurred that would constitute a violation or failure to comply with any Site Management Plan for this control.
- Access to the Site will continue to be provided to the NYSDEC to evaluate the remedy, including access to evaluate the continued maintenance of this control.
- If a financial assurance mechanism is required under the oversight document for the Site, the mechanism remains valid and sufficient for the intended purpose under the document.
- Use of the Site is compliant with the Environmental Easement.
- The EC systems are effective and performing as designed.
- To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the Site remedial program and generally accepted engineering practices.
- The information presented in this report is accurate and complete.

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

9.0 RI/AA SUMMARY AND CONCLUSIONS

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

- Based on the RI soil/fill data, no VOCs or SVOCs were detected above RRSCOs. There were cVOCs detections in the former truck repair area that slightly exceeded their respective PGWSCOs. Two sample locations from the Phase II investigation had slightly elevated SVOCs above RRSCOs. No PCBs, pesticides, or herbicides were detected above MDLs during the RI; however, Phase II sample location SB-8 had a PCB concentration slightly above its RRSCO. Arsenic was the only metal analyte detected during the RI slightly above its respective RRCO and at only one location. Arsenic, mercury, and barium were the only metal analytes detected slightly above their respective RRSCOs during the Phase II investigation.
- Based on the groundwater data, SVOCs, metals, PCBs, pesticides, or herbicides are not considered to be COCs in Site groundwater. Two SVOCs were detected at one location at concentrations above their respective GWQS; however, these detection are relatively low and not considered significant. Certain metals were detected slightly above GWQS; however, the metals were primarily limited to naturally occurring minerals with the exception of iron, which is a common analyte found in groundwater in urban settings; and magnesium and sodium are common to road salt used on the streets surrounding the Site. Furthermore, municipally supplied potable water is available, and on-site groundwater is not used for potable or other purposes. cVOCs were detected at four locations in the central portion of the Site and are likely the cause of SVI. Concentrations of Total cVOCs in groundwater at RIMW-4, RIMW-7 and RIMW-9 do not exceed 500 ug/L at any one particular location. The Site and surrounding area are serviced by a municipal drinking water system.
- VOCs were not detected above their respective GWQS in the two deep off-site wells installed at NYSDEC's request. Deep and/or off-site groundwater does not appear to be a concern.
- Based on the NYSDOH SVI Guidance decision matrices the building will require mitigation due to elevated TCE concentrations in sub-slab and indoor air samples.
- The results of the basement surface water sampling indicate that low levels of metals and pesticides are present in the water. No VOCs, PCBs, or herbicides were detected above MDLs.
- Given the nature and extent of contamination present in shallow soil/fill and groundwater, and the long history of commercial/industrial use, it is not

reasonably practicable to remediate the property to pre-release (Unrestricted Use) or Track 2 Restricted-Residential Use conditions.

Based on the Alternatives Analysis, a Track 4 RRSCO cleanup with In-Situ Groundwater Treatment would achieve the Sites RAOs and is the selected remedy (see Table 13). Components of the selected remedy include:

- Treating on-site groundwater in-situ.
- Removing hydraulic lift infrastructure and any associated impacted soil/fill followed by collecting post-excavation confirmatory samples in accordance with DER-10.
- Managing impacted water during remedial activities and hydraulic lift removal.
- Pumping sub-basement water with on-site treatment, if required by BSA, prior to discharging to sanitary sewer.
- Cleaning accessible utility and/or sewer services with evidence of potential impacts.
- Removing and properly disposing off-site miscellaneous abandoned regulated waste materials; and abating building components for lead, asbestos, oil staining, PCBs, etc. as required during redevelopment. Building surfaces and features planned to remain with evidence of impacts from historic operations will be addressed (e.g., encapsulated or sealed) consistent with a Restricted Residential Use scenario.
- Installing an ASD system within the existing buildings.
- Maintaining existing cover system in accordance with 6NYCRR Part 375 and NYSDEC DER-10 guidelines. The cover system includes building foundations and asphalt on former Burton Street. Building foundations removed for future development must be replaced by six inches of concrete or asphalt (including sub-base material), or a minimum of two feet of clean soil/gravel meeting the import criteria for restricted-residential use sites, in accordance with Appendix 5 of DER-10.
- Implementing the Site Management Plan (SMP), which will include:
  - **Engineering Controls (ECs)** consisting of the existing building foundations and asphalt on former Burton Street to eliminate potential exposure pathways to contaminants and building ASD system for SVI control.
  - **Institutional Controls (IC)** to restrict groundwater use on-site and limit Site uses to restricted-residential use.
  - **Operation and Maintenance Plan** for the ASD System.

- **Excavation Work Plan** to assure that future intrusive activities and soil/fill handling at the Site is completed in a safe and environmentally responsible manner.
- **Site Monitoring Plan** that includes provisions for a Site-wide inspection program to assure that the EC/ICs have not been altered and remain effective.
- **Environmental Easement** filed with Erie County.

10.0 REFERENCES

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3. New York State Department of Health. *Guidance for Evaluating Soil Vapor Intrusion in the State of New York*. October 2006.

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

5. Edward Buehler and Irving Tesmer. *Geologic Map of Erie County, NY, Bedrock Geology*. 1963.

6. U.S. Environmental Protection Agency. *Requirements for Quality Assurance Project Plans for Environmental Data Operations (EPA QA/R-5)*. October 1998.

7. U.S. Environmental Protection Agency. *National Functional Guidelines for Organic Data Review (EPA-540/R-94-012)*. 1994a.

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9. Watts Architecture & Engineering, P.C. *Targeted Phase II Environmental Site Investigation Sampling Report for The Century Centre I, Six-Story Trico Production Facility, 791 Washington Street, Buffalo, New York*. May 2007.

TABLES

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TURNKEY ENVIRONMENTAL RESTORATION, LLC

TABLE 1A

SOIL PROBE & SAMPLE ELEVATIONS

REMEDIAL INVESTIGATION / ALTERNATIVE ANALYSIS REPORT

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

Location	Date Installed	Ground Elevation (ft) [1, 2]	Total Depth (fbgs)	Bottom Depth Elevation (ft)	Soil/Fill Sample Interval (fbgs)	Soil/Fill Sample Interval (ft) [1, 2]
RISB-12	05/23/2016	503.7	16.0	487.7	2 to 4	499.7 to 501.7
RISB-13	05/23/2016	503.7	4.0	499.7	1 to 3	500.7 to 502.7
RISB-14	05/23/2016	503.7	11.0	492.7	NS	NS
RISB-15	05/24/2016	503.1	16.0	487.1	6 to 8	495.1 to 497.1
RISB-16	05/26/2016	503.1	16.0	487.1	0 to 5	498.1 to 503.1
RISB-17	05/24/2016	497.3	16.0	481.3	4 to 6	491.3 to 493.3
RISB-18	05/24/2016	497.3	16.0	481.3	2 to 4	493.3 to 495.3
RISB-19	05/24/2016	497.3	16.0	481.3	2 to 4	493.3 to 495.3
RISB-20	05/24/2016	497.3	16.0	481.3	4 to 6	491.3 to 493.3
RISB-21	05/24/2016	497.3	16.0	481.3	6 to 8	489.3 to 491.3
RISB-22	05/24/2016	497.3	16.0	481.3	8 to 10	487.3 to 489.3
RISB-23	05/24/2016	491.5	16.0	475.5	2 to 4	487.5 to 489.5
RISB-24	05/24/2016	491.5	16.0	475.5	4 to 6	485.5 to 487.5
RISB-25	11/14/2016	491.3	12.0	479.3	NS	NS
RISB-26	11/14/2016	491.3	12.0	479.3	NS	NS
RISB-27	11/14/2016	497.3	12.0	485.3	7 to 8	489.3 to 490.3
					11 to 12	485.3 to 486.3
RISB-28	11/14/2016	497.3	12.0	485.3	4 to 6	491.3 to 493.3
RISB-29	11/14/2016	497.3	12.0	485.3	NS	NS
RISB-30	11/14/2016	497.3	12.0	485.3	NS	NS
RISB-31	11/14/2016	497.3	12.0	485.3	NS	NS
RISB-32	11/14/2016	497.3	12.0	485.3	7 to 8	489.3 to 490.3
RISB-33	11/14/2016	497.3	12.0	485.3	NS	NS
RISB-34	11/14/2016	497.3	12.0	485.3	NS	NS
RISB-35	11/14/2016	497.3	12.0	485.3	5 to 7	490.3 to 492.3
RIMW-1	05/23/2016	503.12	16.0	487.12	NS	NS
RIMW-2	05/23/2016	503.74	16.0	487.74	0 to 2	501.74 to 503.74
					8 to 10	493.74 to 495.74
RIMW-3	05/25/2016	497.26	16.0	481.26	0 to 2	495.26 to 497.26
RIMW-4	05/25/2016	491.46	16.0	475.46	0 to 2	489.46 to 491.46
RIMW-5	05/26/2016	491.54	16.0	475.54	6 to 8	483.54 to 485.54
RIMW-6	05/25/2016	491.39	16.0	475.39	4 to 7	484.39 to 487.39
RIMW-7	05/26/2016	491.30	16.0	475.30	2 to 4	487.30 to 489.30
RIMW-8	05/26/2016	491.51	16.0	475.51	0 to 2	498.51 to 491.51
RIMW-9	05/26/2016	497.26	16.0	481.26	0 to 2	495.26 to 497.26
RIMW-10	05/26/2016	497.34	16.0	481.34	2 to 4	493.34 to 495.34
RIMW-11	11/14/2016	501.3	36.0	465.30	NS	NS
RIMW-12	11/21/2016	499.4	40.0	459.40	NS	NS

Abbreviations:

NS = not sampled.
ft = feet.
fbgs = feet below ground surface
fbTOR = feet below top of riser

Notes:

1. Elevations are based on an assumed vertical elevation established using an arbitary benchmark (fire hydrant at corner of Washington St and Goodell).
2. Elevations were estimated based on survey measurements from nearby monitoring wells

TABLE 1B

MONITORING WELL CONSTRUCTION DETAILS

REMEDIAL INVESTIGATION / ALTERNATIVE ANALYSIS REPORT

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

LOCATION		Elevations						Well Screen Data		
Number	Date Installed	TOR Elevation (ft) [1]	Top of Road Box Elevation (ft) [1, 2]	Total Depth (fbgs)	Bottom of Well Elevation (ft)	Water Level Depth 6/10/2016	Water Level Evelation 6/10/2016	Well Diameter (inches)	Length of Well Screen (feet)	Well Screen Interval Elevation (ft) [1, 2]
RIMW-1	05/23/2016	502.82	503.12	16.0	487.12	8.34	494.48	1	10	487.12 to 497.12
RIMW-2	05/23/2016	503.09	503.74	16.0	487.74	11.75	491.34	2	10	487.74 to 497.74
RIMW-3	05/25/2016	497.06	497.26	16.0	481.26	3.61	493.45	1	10	481.26 to 491.26
RIMW-4	05/25/2016	491.15	491.46	16.0	475.46	1.65	489.50	1	10	475.46 to 485.46
RIMW-5	05/26/2016	491.33	491.54	16.0	475.54	4.22	487.11	1	10	475.54 to 485.54
RIMW-6	05/25/2016	490.99	491.39	16.0	475.39	2.28	488.71	2	10	475.39 to 485.39
RIMW-7	05/26/2016	490.89	491.30	16.0	475.30	1.87	489.02	2	10	475.30 to 485.30
RIMW-8	05/26/2016	491.19	491.51	16.0	475.51	5.58	485.61	2	10	475.51 to 485.51
RIMW-9	05/26/2016	496.73	497.26	16.0	481.26	8.85	487.88	2	10	481.26 to 491.26
RIMW-10	05/26/2016	497.02	497.34	16.0	481.34	6.65	490.37	2	10	481.34 to 491.34
RIMW-11	11/14/2016	501.0 [2]	501.30	36.0	465.30	NI	NA	2	8	457.3 to 465.3
RIMW-12	11/21/2016	499.1 [2]	499.40	40.0	459.40	NI	NA	2	8	451.4 to 459.4

Abbreviations:

ft = feet.
fmsl = feet above mean sea level
fbgs = feet below ground surface
NI = not installed
NA = not applicable

Notes:

1. Elevations are based on an assumed vertical elevation established using an arbitary benchmark (fire hydrant at corner of Washington St and Goodell).
2. Elevations were estimated based on survey measurements from nearby monitoring wells and assuming relatively level floors in the area.

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TABLE 2

SUMMARY OF HISTORIC AND REMEDIAL INVESTIGATION SAMPLING AND ANALYSIS PROGRAM

REMEDIAL INVESTIGATION / ALTERNATIVE ANALYSIS REPORT

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

Sample Identifier	Depth Sampled/ Screened (fbgs)	Analysis										Date Sampled
		PAHs	RCRA 8 Metals	TCL VOCs	TCL SVOCs	PCBs	Pesticides	Herbicides	TAL Metals & Cyanide	TAL Metals - Dissolved	VOCs via TO-15	
2013 LIMITED SUBSURFACE INVESTIGATION SAMPLES												
Soil/Fill Samples												
SB-1	1 - 2	X	X			X						07/01/2013
SB-2	1 - 2	X	X			X						07/01/2013
SB-3	0.5 - 1	X	X			X						07/01/2013
SB-4	0.5 - 1	X	X			X						07/01/2013
SB-5	0.5 - 1	X	X			X						07/01/2013
SB-6	0.5 - 1	X	X			X						07/01/2013
SB-7	1 - 1.5	X	X			X						07/01/2013
SB-8	1 - 1.5	X	X			X						07/01/2013
SB-9	1 - 1.5	X	X			X						07/01/2013
SB-10	1 - 2	X	X			X						07/01/2013
SB-11	1 - 2	X	X			X						07/01/2013
REMEDIAL INVESTIGATION SAMPLES												
Air & Sub-Slab Vapor												
SSV-1	0.1										X	05/14/2016
SSV-2	0.1										X	05/14/2016
SSV-3	0.1										X	05/14/2016
SSV-4	0.1										X	05/14/2016
SSV-5	0.1										X	05/14/2016
SSV-6	0.1										X	05/14/2016
SSV-7	0.1										X	05/14/2016
IA-1	NA										X	05/14/2016
IA-2	NA										X	05/14/2016
OA-1	NA										X	05/14/2016
Subsurface Soil/Fill												
RISB-12	2 - 4				X	X	X	X	X			05/23/2016
RISB-13	1 - 3				X	X			X			05/23/2016
RISB-15	6 - 8				X	X			X			05/23/2016
RISB-16	0 - 5				X	X			X			05/23/2016
RISB-17	4 - 6				X	X	X	X	X			05/24/2016
RISB-18	2 - 4			X	X	X			X			05/24/2016
RISB-19	2 - 4			X	X	X	X	X	X			05/24/2016
RISB-20	4 - 6				X	X			X			05/24/2016
RISB-21	6 - 8				X	X			X			05/24/2016
RISB-22	8 - 10				X	X			X			05/24/2016
RISB-23	2 - 4				X	X			X			05/24/2016
RISB-24	4 - 6				X	X	X	X	X			05/24/2016
RIMW-2	0 - 2			X								05/23/2016
RIMW-2	8 - 10				X	X	X	X	X			05/23/2016
RIMW-3	0 - 2				X	X			X			05/25/2016
RIMW-4	0 - 2			X	X	X			X			05/25/2016
RIMW-5	6 - 8				X	X			X			05/26/2016
RIMW-6	4 - 7				X	X			X			05/25/2016
RIMW-7	2 - 4				X	X			X			05/26/2016
RIMW-8	0 - 2				X	X			X			05/26/2016
RIMW-9	0-2				X	X			X			05/26/2016
RIMW-10	2 - 4				X	X			X			05/26/2016
RISB-27	7 - 8			X								11/15/2016
RISB-27	11 - 12			X								11/15/2016
RISB-28	4 - 6			X								11/15/2016
RISB-32	7 - 8			X								11/15/2016
RISB-35	5 - 7			X								11/15/2016
Groundwater												
RI MW-1	6 - 16			X	X	X	X	X	X			06/14/2016
RI MW-2	6 - 16			X	X	X	X	X	X	X		06/14/2016
RI MW-3	6 - 16			X	X	X	X	X	X	X		06/14/2016
RI MW-4	6 - 16			X	X	X	X	X	X	X		06/14/2016
RI MW-5	6 - 16			X	X	X	X	X	X			06/14/2016
RI MW-6	6 - 16			X	X	X	X	X	X	X		06/14/2016
RI MW-7	6 - 16			X	X	X	X	X	X	X		06/14/2016
RI MW-8	6 - 16			X	X	X	X	X	X			06/14/2016
RI MW-9	6 - 16			X	X	X	X	X	X			06/14/2016
RIMW-9	6 - 16			X								11/28/2016
RIMW-9	6 - 16			X								12/09/2016
RI MW-10	6 - 16			X	X	X	X	X	X			06/14/2016
RIMW-11	28 - 36			X								11/28/2016
RIMW-12	30 - 38			X								11/28/2016
Sub-Basement Water												
Basement Surface Water Sample	--			X	X	X	X	X	X			05/20/2016
Drainage Structure Solids												
S-12	--			X								11/15/2016
S-14	--			X								11/15/2016
S-15	--			X								11/15/2016

Notes:
1. Sub-slab samples listed as SSV-1 through SSV-7 were identifed in the laboratory report as SV-1 through SV-7.
2. For sample depths noted as 0-2 or 0-5 fbgs, soil samples were colected from beneath the concrete or asphalt.

Definitions:
fbgs = feet below ground surface
PAHs = polycyclic aromatic hydrocarbons
RCRA = Resource Conservation and Recovery Act
TCL VOCs = Target Compound List Volatile Organic Compounds
TCL SVOCs = Target Compound List Volatile Organic Compounds
PCBs = Polychlorinated biphenyls
TAL = Target Analyte List
IA = Indoor Air
OA = Outdoor Air
SSV = Sub-slab soil vapor

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TURNKEY ENVIRONMENTAL RESTORATION, LLC

TABLE 3A

SUMMARY OF 2013 LIMITED SUBSURFACE SOIL/FILL ANALYTICAL RESULTS

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

Parameter[1]	Unrestricted Use SCOs[2]	Restricted Residential Use SCOs[2]	Sample Locations										
			SB-1 (1-2')	SB-2 (1-2')	SB-3 (0.5-1')	SB-4 (0.5-1')	SB-5	SB-6 (0.5-1')	SB-7 (1-1.5')	SB-8 (1-1.5')	SB-9 (1-1.5')	SB-10 (1-2')	SB-11 (1-2')
			7/1/2013	7/1/2013	7/1/2013	7/1/2013	7/1/2013	7/1/2013	7/1/2013	7/1/2013	7/1/2013	7/1/2013	7/1/2013
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg [3]													
2-Methylnaphthalene	--	--	0.0062 J	0.0084	0.029	0.0037 J	ND	0.046	0.061	0.012 J	0.0055 J	0.19	0.037
Acenaphthene	**20**	**100**	0.0049 J	0.0023 J	ND	ND	ND	0.043	0.025	0.015 J	ND	0.58	0.1
Acenaphthylene	**100**	**100**	ND	ND	0.0022 J	ND	ND	ND	0.0055 J	0.23	ND	0.074 J	0.0061 J
Anthracene	**100**	**100**	0.0091	0.0054 J	0.0051 J	ND	0.0054 J	0.084	0.048	0.24	0.004 J	1.5	0.27
Benzo(a)anthracene	**1**	**1**	0.036	0.017	0.024	ND	0.016	0.22	0.15	0.77	0.013	**2.6**	0.41
Benzo(a)pyrene	**1**	**1**	0.028	0.013	0.019	ND	0.016	0.17	0.12	0.59	0.011	**1.8**	0.29
Benzo(b)fluoranthene	**1**	**1**	0.062	0.048	0.03	ND	0.021	0.24	0.22	1	0.017	**2.6**	0.38
Benzo(g,h,i)perylene	**100**	**100**	0.013	0.0079 J	0.0078	ND	0.011	0.083	0.1	0.28	0.0051 J	0.9	0.13
Benzo(k)fluoranthene	**0.8**	**3.9**	0.02	0.013	0.011	ND	0.0078 J	0.1	0.073	0.4	0.006 J	**0.97**	0.14
Chrysene	**1**	**3.9**	0.042	0.031	0.027	ND	0.022	0.2	0.16	0.69	0.015	**2.1**	0.31
Dibenzo(a,h)anthracene	**0.33**	**0.33**	ND	ND	0.0064 J	ND	0.0059 J	ND	0.03	0.084	ND	0.28	**0.46**
Fluoranthene	**100**	**100**	0.081	0.065	0.037	ND	0.037	0.57	0.28	2.1	0.03	6	0.84
Fluorene	**30**	**100**	0.0042 J	0.0029 J	ND	ND	ND	0.053	0.027	0.057	ND	0.51	0.1
Indeno(1,2,3-cd)pyrene	**0.5**	**0.5**	0.019	0.013	0.013	ND	0.014	ND	0.1	0.37	0.0095	**1.1**	0.16
Naphthalene	**12**	**100**	0.0047 J	0.003 J	0.013	0.0026 J	ND	0.037	0.073	0.019 J	0.0036 J	0.25	0.046
Phenanthrene	**100**	**100**	0.048	0.03	0.035	ND	0.023	0.45	0.22	1	0.019	5.4	0.72
Pyrene	**100**	**100**	0.056	0.037	0.03	ND	0.032	ND	0.22	1.6	0.023	4.7	0.67
Total PCBs - mg/Kg [3]													
Aroclor 1248			0.189	0.0852	ND	ND	ND	ND	0.232	1.02	ND	0.023 J	ND
Aroclor 1254			0.15	0.0482	ND	ND	ND	ND	ND	0.762	ND	ND	ND
Aroclor 1260			0.0531	0.0198 J	ND	ND	ND	ND	ND	0.68	ND	ND	ND
Total PCBs	**0.1**	**1**	**0.3921**	**0.1532**	0	0	0	0	**0.232**	**2.462**	0	0.023 J	0
Total Metals - mg/Kg													
Arsenic	**13**	**16**	**16**	**22**	2.5	3	2.8	2.5	9.4	2	1.2	2.4	1.9
Barium	**350**	**400**	200	69	26	35	80	70	73	**530**	28	57	42
Cadmium	**2.5**	**4.3**	0.82	0.55	0.29 J	0.36 J	0.6	0.38 J	0.37 J	**2.6**	0.32 J	0.4 J	0.31 J
Chromium	**30**	**180**	24	10	5.9	8	12	13	9.5	**110**	7.8	21	8.5
Lead	**63**	**400**	16	11	17	13	25	16	27	**160**	14	16	14
Selenium	**3.9**	**180**	0.68 J	1.1	0.58 J	ND	0.27 J	ND	0.33 J	0.4 J	0.36 J	ND	0.28 J
Silver	**2**	**180**	ND	ND	ND	ND	ND	ND	ND	0.65	ND	ND	ND
Mercury	**0.18**	**0.81**	**0.34**	ND	ND	ND	ND	ND	**1.4**	ND	ND	ND	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 Part 375 Soil Cleanup Objectives (December 2006)
3. Sample results were reported by the laboratory in ug/kg and converted to mg/kg for comparison to SCOs.

Definitions:

ND = Parameter not detected above laboratory detection limit.
"--" = Sample not analyzed for parameter or no SCO available for the parameter.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.

BOLD	= Result exceeds Part 375 Unrestricted Use SCOs.
BOLD	= Result exceeds Part 375 Restricted Residential Use SCOs.

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TURNKEY ENVIRONMENTAL RESTORATION, LLC

TABLE 3B

SUMMARY OF REMEDIAL INVESTIGATION SUBSURFACE SOIL-FILL ANALYTICAL RESULTS

REMEDIAL INVESTIGATION / ALTERNATIVE ANALYSIS REPORT

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NY

PARAMETER[1]	Unrestricted Use SCOs[2]	Protection of Groundwater SCOs[2]	Restricted Residential Use SCOs[2]	SAMPLE LOCATIONS																																
				RI MW-2 (0-2)	RI MW-2 (8-10)	RI MW-3 (0-2)	RI MW-4 (0-2)	RI MW-5 (6-8)	BLIND DUPLICATE 2 RI MW-5 (6-8)	RI MW-6 (4-7)	RI MW-8 (0-2)	RI MW-7 (2-4)	RI MW-9 (0-2)	RI MW-10 (2-4)	RI SB-12 (2-4)	RI SB-13 (1-3)	RI SB-15 (6-8)	RI SB-16 (0-5)	RI SB-17 (4-6)	RI SB-18 (2-4)	RI SB-19 (2-4)	BLIND DUPLICATE RI SB-19 (2-4)	RI SB-20 (4-6)	RI SB-21 (6-8)	RI SB-22 (8-10)	RI SB-23 (2-4)	RI SB-24 (4-6)	RI SB-27 (7-8)	RI SB-27 (11-12)	RI SB-28 (4-6)	RI SB-32 (7-8)	RI SB-35 (5-7)
Volatile Organic Compounds (VOCs) - mg/Kg [3]																																				
1,1,1-Trichloroethane	0.68	0.68	100	ND	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	--	--	--	--	--	ND	--	--	--	--	--	--	--
1,1-Dichloroethane	0.27	0.27	26	ND	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	--	--	--	--	--	ND	0.026 J	0.043 J	0.0023	0.075	--	--	--
1,1-Dichloroethene	0.33	0.33	100	ND	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	--	--	--	--	--	ND	ND	ND	0.0014	0.01	--	--	--
1,2-Dichlorobenzene	1.1	1.1	100	ND	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	--
1,4-Dichlorobenzene	1.8	1.8	13	ND	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	--
2-Butanone (MEK)	0.12	0.12	100	ND	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	--
4-methyl-2-pentanone (MIBK)	--	--	--	ND	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	--
Acetone	0.05	0.05	100	ND	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	--	--	--	--	--	ND	ND	ND	0.0061	0.0094 J	--	--	--
Benzene	0.06	0.06	4.8	ND	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	--	--	--	--	--	ND	ND	ND	ND	0.00036 J	--	--	--
n-Butylbenzene	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	--
sec-Butylbenzene	11	11	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	--
Chlorobenzene	1.1	1.1	100	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	--	--	--	--	--	ND	ND	ND	ND	0.00079 J	--	--	--
cis-1,2-Dichloroethene	0.25	0.25	100	ND	--	--	0.011 J	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	--	--	--	--	--	0.34	0.65	0.58	0.17	0.019	--	--	--
Cyclohexane	--	--	--	ND	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	--	--	--	--	--	ND	ND	ND	ND	0.0012 J	--	--	--
Ethylbenzene	1	1	41	ND	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	--
Isopropylbenzene (Cumene)	--	--	--	ND	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	--
p-Isopropyltoluene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	--
n-Propylbenzene	3.9	3.9	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	--
1,3,5-Trimethylbenzene	8.4	8.4	52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	--
1,2,4-Trimethylbenzene	3.6	3.6	52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	--
Methylcyclohexane	--	--	--	ND	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	--	--	--	--	--	ND	0.018 J	0.052 J	ND	ND	--	--	--
Methylene chloride	0.05	0.05	100	ND	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	--
Tetrachloroethene	1.3	0.47	19	ND	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	--
Toluene	0.7	0.7	100	ND	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	--
trans-1,2-Dichloroethene	0.19	0.19	100	ND	--	--	0.0081 J	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	--	--	--	--	--	0.079 J	0.18	0.021 J	0.59	0.022	--	--	--
Trichloroethene	0.47	0.47	21	ND	--	--	0.01	--	--	--	--	--	--	--	--	--	--	--	--	0.0026 J	ND	ND	--	--	--	--	--	1.9	2.9	5.4	0.024	0.14	--	--	--
Vinyl chloride	0.02	0.02	0.9	ND	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	--
Total Xylenes	0.26	1.6	100	ND	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	--
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg [3]																																				
Acenaphthene	20	98	100	--	ND	ND	--	ND	ND	0.075 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.032 J	--	--	--	--	--	--	--
Anthracene	100	1,000	100	--	ND	ND	--	ND	ND	0.18 J, F2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.11 J	--	--	--	--	--	--	--
Benzo(a)anthracene	1	1	1	--	ND	ND	--	ND	ND	0.37 J	ND	ND	ND	ND	0.021 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.18 J	--	--	--	--	--	--	--
Benzo(a)pyrene	1	22	1	--	ND	ND	--	ND	ND	0.3 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.16 J	--	--	--	--	--	--	--
Benzo(b)fluoranthene	1	1.7	1	--	ND	ND	--	ND	ND	0.38 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.18 J	--	--	--	--	--	--	--
Benzo(ghi)perylene	100	1,000	100	--	ND	ND	--	ND	ND	0.17 J, F2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1 J	--	--	--	--	--	--	--
Benzo(k)fluoranthene	0.8	1.7	3.9	--	ND	ND	--	ND	ND	0.17 J, F2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.087 J	--	--	--	--	--	--	--
Bis(2-ethylhexyl) phthalate	--	--	--	--	0.085 J	ND	--	ND	ND	0.085 J	ND	ND	ND	ND	ND	0.13 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
Carbazole	--	--	--	--	ND	ND	--	ND	ND	0.083 J, F2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.026 J	--	--	--	--	--	--	--
Chrysene	1	1	3.9	--	ND	ND	--	ND	ND	0.35 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.16 J	--	--	--	--	--	--	--
Diethyl phthalate	--	--	--	--	ND	ND	--	ND	ND	0.042 J	ND	ND	ND	ND	ND	0.038 J	0.032 J	ND	ND	ND	ND	0.04 J	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
Di-n-Butyl phthalate	--	--	--	--	ND	ND	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.53	0.066 J	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
Dibenzofuran	--	--	--	--	ND	ND	--	ND	ND	0.051 J, F2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.032 J	--	--	--	--	--	--	--
Fluoranthene	100	1000	100	--	ND	ND	--	ND	ND	0.92 J	ND	ND	0.035 J	ND	0.037 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.39	--	--	--	--	--	--	--
Fluorene	30	386	100	--	ND	ND	--	ND	ND	0.067 J, F2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.049 J	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	0.5	8.2	0.5	--	ND	ND	--	ND	ND	0.15 J, F2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.089 J	--	--	--	--	--	--	--
Phenanthrene	100	1000	100	--	ND	ND	--	ND	ND	0.84 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.33	--	--	--	--	--	--	--
Pyrene	100	1000	100	--	ND	ND	--	ND	ND	0.77 J	ND	ND	0.03 J	ND	0.03 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.32	--	--	--	--	--	--	--
Total Metals - mg/Kg [3]																																				
Aluminum	--	--	--	--	8,950 B	13,000	7,840	16,200	13,400	3,980 J	3,340	11,200	3,460	10,400	7,500 J	9,750 B	22,800 B	8,510	8,140 J	3,460 B	9,960 B	10,200 B	15,100 B	14,100 B	11,300 B	3,690 B	13,500 B	--	--	--	--	--	--	--	--	--	--
Arsenic	13	16	16	--	ND	ND	ND	ND	ND	ND	ND	ND	2.7	3.2	2.3	26.9	6.1	2.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--
Barium	350	820	400	--	60.2	132	55.9	102	99.3	25.7 F1	18.3	80.3	66	60.4	28.7	94.1	230	36.3	56.3 J	17.5	49.2	48.7	74.8	74	51.7	19.1	49.1	--	--	--	--	--	--	--	--	--
Beryllium	7.2	47	72	--	0.36	0.5	0.3	0.67	0.55	ND	ND	0.45	0.23	0.42	0.3	0.88	0.93	0.37	0.33	ND	0.39	0.4	0.58	0.52	0.43	ND	0.57	--	--	--	--	--	--	--	--	--
Cadmium	2.5	7.5	4.3	--	ND	ND	ND	ND	ND	ND	0.28	0.27	0.23	0.29	ND	ND	ND	0.24	0.37	ND	0.32	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--
Calcium	--	--	--	--	64,200 B	58,600	59,400	40,300	34,000	55,900	47,200	60,800	35,700	59,100	20,700 B	51,300 B	51,100 B	17,200	58,700 B	54,100 B	60,100 B	58,000 B	59,400 B	61,600 B	64,300 B	54,100 B	38,500 B	--	--	--	--	--	--	--	--	--
Chromium	30	19	180	--	12.1	16	10.4	21.2	17.4	8.7	6	14.8	7.9	13.8	17.9	15.1	28.4	12.5	11 F2	5.7	13.7	13.5	18.2	16.9	14	6.1	18.5	--	--	--	--	--	--	--	--	--
Cobalt	--	--	--	--	5.8	7.3	4.5	7.7	5.9	2.5	2.1	5.6	2.8	5.3	3.8	14.2	11.9	3.8	4.7	2.2	5.2	6.3	7.8	7	6	2.3	8.5	--	--	--	--	--	--	--	--	--
Copper	50	1720	270	--	10.6	12	8.7	13.9	10.1	7.1	5.2	10	9.9	8.9	11.8	20.2	22.4	7.6	10	5.2	10.7	10.2	12.3	12.2	12.2	5.3	17.7	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	12,500 B	14,900	10,600	16,900 *	13,400 *	7,180 J	5,910 *	12,800 *	10,500 *	15,800 *	12,300 B	17,100 B	26,300 B	11,500 *	11,400 J	7,680 B	13,400 B	12,900 B	17,000 B	15,200 B	13,400 B	6,780 B	17,600 B	--	--	--	--	--	--	--	--	--	--
Lead	63	450	400	--	11.7	12.8	12.7	10.2	7.6	13.1 F1	7.6	12.8	22.1	13.5	93.9	12.2	16.7	14.3	11.8	9.9	21.9	14.1	13.4	14.6	15.2	9.7	13.5	--	--	--	--	--	--	--	--	--
Magnesium	--	--	--	--	29,900 B	25,600	27,500	18,400	15,700	26,700	24,800	28,800	16,600	29,200	10,500 B	8,640 B	19,400 B	6,240	26,500 B	26,200 B	26,400 B	26,400 B	24,700 B	27,000 B	28,900 B	26,700 B	18,900 B	--	--	--	--	--	--	--	--	--
Manganese	1,600	2,000	2,000	--	378 B	373	332	344	284	281	234	392	179	354	277 B	331 B	398 B	221	330 B, F2	292 B	357 B	370 B	415 B	411 B	386 B	278 B	291 B	--	--	--	--	--	--	--	--	--
Mercury	0.18	0.73	0.81	--	ND	ND	ND	ND	ND	ND	ND	ND	0.025	ND	0.044	ND	ND	0.037	ND	ND	0.042	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--
Nickel	30	130	310	--	12.3	15.9	9.4	19.8	15.1	ND	ND	13.2	6.8	13	9.6	20.4	33.6	9.1	10.8 F2	116	12.7	13.4	18.2	16.9	13.8	ND	20.8	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	3,010	4,650	2,830	5,580	4,850	1,310 J	1,130	4,070	949	3,630	1,900	2130	7160	1,590	2,780 J	1,030	3,400	3,500	5,430	5,050	4,120	1,310	4,360	--	--	--	--	--	--	--	--	--
Sodium	--	--	--	--	441	463	288	517	441	231	223	275	204	225	1,910	963	2160	1,180	264	192	252	266	331	292	447	212	199	--	--	--	--	--	--	--	--	--
Vanadium	--	--	--	--	20.2	26	18.7	30.2	25	12.4	11	22.5	13.9	21.2	18.9	24.3	42.8	21.9	18.9 F1, F2	13.2	22.4	22.9	28.9	27.5	23	12.4	28.8	--	--	--	--	--	--	--	--	--
Zinc	109	2,480	10,000	--	51.7	51.8	60.1	55.3	64.5	58.7 F1	61.4	70.8	58.7 F1, F2	63	87	64.1	78.6	70	61.4	25.1	77.7	57.3	59.7	58.8	59.7	64.6	132	--	--	--	--	--	--	--	--	--
Cyanide - Total	27	40	27	--	6.3	ND	ND	ND	ND	ND	ND	ND	ND	7.4	ND	ND	ND	ND	ND	23.7	R	R	1.8	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--
Polychlorinated biphenyls (PCBs) - mg/Kg [3]																																				
Total PCBs	0.1	0.1	1	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--
Pesticides and Herbicides - mg/Kg [3]																																				
				--	ND															ND		ND					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 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 SCO 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.
* = ICV, CCV, ICB, CCB, ISA, ISB, CRI, DLCK, or MRL standard: instrument related QC is outside acceptance limits.
F1 = MS and/or MSD Recovery is outside acceptance limits.
F2= MS/MSD RPD exceeds control limits
B= Compound was found in the blank and sample.

Bold	= Result exceeds Part 375 Unrestricted SCOs
Bold	Result exceeds Part 375 Protection of Groundwater SCOs
Bold	= Results exceeds Part 375 Restricted Residential SCOs

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TURNKEY ENVIRONMENTAL RESTORATION, LLC

TABLE 3C

SUMMARY OF REMEDIAL INVESTIGATION DRAINAGE STRUCTURE ANALYTICAL RESULTS

REMEDIAL INVESTIGATION / ALTERNATIVE ANALYSIS REPORT

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NY

PARAMETER[1]	Restricted Residential Use SCOs [2]	DRAINAGE STRUCTURE SAMPLE LOCATIONS		
		S-12	S-14	S-15
Volatile Organic Compounds (VOCs) - mg/Kg [3]				
1,1,1-Trichloroethane	**100**	0.0052	ND	ND
1,1-Dichloroethane	**26**	ND	0.0012 J	ND
1,1-Dichloroethene	**100**	ND	0.00066 J	ND
1,2-Dichlorobenzene	**100**	ND	0.00064 J	ND
1,4-Dichlorobenzene	**13**	0.00072 J	0.00053 J	0.0005 J
2-Butanone (MEK)	**100**	ND	0.045	0.023 J
4-methyl-2-pentanone (MIBK)	**--**	ND	0.0029 J	0.0044 J
Acetone	**100**	ND	0.2	0.28 J
Benzene	**4.8**	ND	0.00072 J	0.0021 J
n-Butylbenzene	**--**	ND	0.001 J	ND
sec-Butylbenzene	**100**	ND	0.0012 J	ND
Chlorobenzene	**100**	ND	0.0082	ND
cis-1,2-Dichloroethene	**100**	ND	0.014	0.0012 J
Cyclohexane	**--**	ND	0.0031 J	0.0054 J
Ethylbenzene	**41**	ND	0.014	0.0011 J
Isopropylbenzene (Cumene)	**--**	ND	0.0061	0.00077 J
p-Isopropyltoluene	**--**	ND	0.0042	0.0023 J
n-Propylbenzene	**100**	ND	0.0024	0.001 J
1,3,5-Trimethylbenzene	**52**	ND	0.0062 J	0.0042 J
1,2,4-Trimethylbenzene	**52**	ND	0.017	0.0082 J
Methylcyclohexane	**--**	ND	0.027	0.0016 J
Tetrachloroethene	**19**	0.0015	0.00087 J	0.0019 J
Toluene	**100**	ND	0.086	0.0024 J
trans-1,2-Dichloroethene	**100**	ND	0.0023 J	ND
Trichloroethene	**21**	0.00079 J	0.16	0.0078 J
Vinyl chloride	**0.9**	ND	0.00044 J	ND
Total Xylenes	**100**	ND	0.098	0.0053 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. Sample results were reported by the laboratory in ug/kg and converted to mg/kg.

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 exceed the Restricted Residential Soil Cleanup Objectives.

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TURNKEY ENVIRONMENTAL RESTORATION, LLC

TABLE 4

SUMMARY OF REMEDIAL INVESTIGATION GROUNDWATER ANALYTICAL RESULTS

REMEDIAL INVESTIGATION / ALTERNATIVE ANALYSIS REPORT

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

PARAMETER [1]	GWQS [2]	Sample Location															
		RI MW-1	RI MW-2	RI MW-3	RI MW-4	RI MW-5	RI MW-6	RI MW-7	RI MW-8	RI MW-9	RI MW-9	Blind Duplicate RI MW-9	RI MW-9	RI MW-10	Blind Duplicate RI MW-10	RI MW-11	RI MW-12
		06/14/16	06/14/16	06/14/16	06/14/16	06/14/16	06/14/16	06/14/16	06/14/16	06/14/16	11/28/16	11/28/16	12/09/16	06/14/16	06/14/16	11/28/16	
Volatile Organic Compounds (VOCs) - ug/L																	
1,1-Dichloroethene	**5**	ND	ND	ND	0.6 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone (MEK)	**50**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.4 J	ND	ND
Acetone	**50**	ND	44	3 J	3.2 J	ND	3.8 J	14	4.3 J	16 J	6.7	5.8	ND	20	19	3 J	8.5
Benzene	**1**	ND	ND	0.73 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.54	0.34 J
Carbon disulfide	**120**	ND	0.96 J	ND	ND	ND	0.38 J	0.42 J	ND	1.4 J	ND	ND	ND	1.9	1.9	ND	ND
Chlorobenzene	**5**	ND	ND	0.93 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	**5**	ND	ND	ND	**140**	ND	1.9	**36 F1**	ND	1.8 J	3.1	2.2 J	ND	ND	ND	2.8	ND
Cyclohexane	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.28 J
Methylcyclohexane	**--**	0.64 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl tert butyl ether (MTBE)	**10**	ND	ND	ND	2 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	**5**	ND	ND	ND	ND	ND	ND	ND	ND	3.3	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	**5**	ND	ND	ND	ND	ND	ND	0.54 J	ND	**4,200**	**8.5**	**7.2**	**4.9**	ND	ND	ND	ND
trans-1,2-Dichloroethene	**5**	ND	ND	ND	**200**	ND	1.3	**100 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	**5**	ND	**11**	ND	**82**	ND	ND	**89 J**	ND	**7**	1	0.74	0.45 J	2.5	2.8	ND	0.33 J
Vinyl chloride	**2**	ND	ND	ND	**2.1**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-Volatile Organic Compounds (SVOCs) - ug/L																	
Acetophenone	**--**	ND	0.95 J	ND	ND	ND	ND	ND	ND	0.5 J	--	--	--	0.51 J	ND	--	--
Benzaldehyde	**--**	ND	ND	0.28 J	ND	ND	ND	ND	ND	ND	--	--	--	ND	ND	--	--
Benzo(a)pyrene	**ND**	ND	ND	ND	ND	ND	ND	ND	ND	0.48 J	--	--	--	ND	ND	--	--
Benzo(b)fluoranthene	**0.002**	ND	ND	ND	ND	ND	ND	ND	ND	**0.71 J**	--	--	--	ND	ND	--	--
Benzo(ghi)perylene	**--**	ND	ND	ND	ND	ND	ND	ND	ND	0.5 J	--	--	--	ND	ND	--	--
Butyl benzyl phthalate	**--**	ND	ND	ND	ND	ND	ND	ND	2.3 J	ND	--	--	--	ND	ND	--	--
Chrysene	**0.002**	ND	ND	ND	ND	ND	ND	ND	ND	**0.56 J**	--	--	--	ND	ND	--	--
Diethyl phthalate	**--**	ND	ND	0.7 J	ND	ND	ND	ND	ND	ND	--	--	--	ND	ND	--	--
Fluoranthene	**50**	ND	ND	ND	ND	ND	ND	ND	ND	1.1 J	--	--	--	0.68 J	0.46 J	--	--
Phenanthrene	**50**	ND	ND	ND	ND	ND	ND	0.75 J	ND	ND	--	--	--	0.74 J	0.81 J	--	--
Pyrene	**50**	ND	ND	ND	ND	ND	ND	ND	ND	0.84 J	--	--	--	0.46 J	ND	--	--
Total Metals - ug/L																	
Aluminum	**--**	24,400	3,200	69,800	122,000	15,000	3,700	1,800	1,400	430	--	--	--	1300	1,300	--	--
Arsenic	**25**	ND	ND	**26**	**48**	ND	ND	ND	ND	ND	--	--	--	ND	ND	--	--
Barium	**1,000**	340 B	55 B	**1600 B**	850 B	180 B	120 B	180 J	360 B	110 B	--	--	--	49 B	44 B	--	--
Beryllium	**3**	ND	ND	2.9	**5.1**	ND	ND	ND	ND	ND	--	--	--	ND	ND	--	--
Cadmium	**5**	2.2	ND	3.9	3.8	ND	ND	ND	ND	ND	--	--	--	ND	ND	--	--
Calcium	**--**	610,000	219,000	849,000	1,830,000	164,000	142,000	224,000	151,000	104,000	--	--	--	111,000	113,000	--	--
Chromium	**50**	40	ND	**110**	**170**	18	5.9	ND	9.9	ND	--	--	--	ND	ND	--	--
Cobalt	**5**	**20**	ND	**75**	**120**	**7.1**	ND	ND	**6.6**	ND	--	--	--	ND	ND	--	--
Copper	**200**	42	ND	130	**210**	16	ND	ND	13	ND	--	--	--	ND	ND	--	--
Cyanide, Total	**200**	ND	ND	ND	36	ND	ND	ND	ND	ND	--	--	--	ND	ND	--	--
Iron	**300**	**40,800**	**3,000**	**103,000**	**185,000**	**17,800**	**3,800**	**2,100**	**1,700**	**410**	--	--	--	**1,300**	**1,200**	--	--
Lead	**25**	**81**	ND	**220**	**390**	**32**	10	ND	19	ND	--	--	--	ND	ND	--	--
Magnesium	**35,000**	**231,000**	**122,000**	**350,000**	**692,000**	**66,600**	**71,700**	**103,000**	**61,600**	**50,300**	--	--	--	**44,600**	**45,100**	--	--
Manganese	**300**	**1,800**	200	**4,400**	**7,400**	**540**	120	140	160	120	--	--	--	140	140	--	--
Mercury	**0.7**	ND	ND	0.65	0.47	ND	ND	ND	0.24	ND	--	--	--	ND	ND	--	--
Nickel	**100**	44	18	**160**	**260**	17	ND	ND	14	ND	--	--	--	ND	ND	--	--
Potassium	**--**	28,200	67,200	30,600	44,600	8,000	9,800	8,700	37,900	4,000	--	--	--	9,900	9,500	--	--
Sodium	**20,000**	**2,260,000**	**882,000**	**563,000**	**362,000 J**	**566,000**	**300,000**	**78,600**	**248,000**	**84,500**	--	--	--	**89,100**	**89,100**	--	--
Vanadium	**14**	**56**	ND	**150**	**240**	**26**	5.5	ND	ND	ND	--	--	--	ND	ND	--	--
Zinc	**2,000**	370	41	1,100	820	90	70	100 J	190	760	--	--	--	31	25	--	--
Dissolved Metals - ug/L																	
Aluminum	**--**	--	ND	270 J	630 J	ND	--	ND	ND	--	--	--	--	--	--	--	--
Barium	**1,000**	--	17 J	60 J	27 J	32 J	--	15 J	19 J	--	--	--	--	--	--	--	--
Calcium	**--**	--	209,000 J	184,000 J	230,000 J	70,000 J	--	215,000 J	144,000 J	--	--	--	--	--	--	--	--
Cobalt	**5**	--	ND	**7.3 J**	ND	ND	--	ND	**5.5 J**	--	--	--	--	--	--	--	--
Iron	**300**	--	ND	230 J	**530 J**	ND	--	ND	ND	--	--	--	--	--	--	--	--
Magnesium	**35,000**	--	**120,000 J**	**77,600 J**	**123,000 J**	27,400 J	--	**99,900 J**	**59,700 J**	--	--	--	--	--	--	--	--
Manganese	**300**	--	160 J	240 J	110 J	27 J	--	87 J	120 J	--	--	--	--	--	--	--	--
Nickel	**100**	--	15 J	11 J	ND	ND	--	ND	ND	--	--	--	--	--	--	--	--
Potassium	**--**	--	63,000 J	12800 J	17,400 J	2600 J	--	8,300 J	32,700 J	--	--	--	--	--	--	--	--
Sodium	**20,000**	--	**884,000 J**	**607000 J**	**437,000 J**	**569,000 J**	--	**77,900 J**	**244,000 J**	--	--	--	--	--	--	--	--
Zinc	**2,000**	--	15 J	27 J	ND	ND	--	94 J	52 J	--	--	--	--	--	--	--	--
PCB (ug/L)																	
Aroclor 1248	**0.09**	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND	ND	--	--
Pesticides and Herbicides - ug/L																	
4,4'-DDD	**0.3**	ND	0.088 J	ND	ND	ND	ND	ND	ND	ND	--	--	--	ND	ND	--	--
delta-BHC	**0.01**	ND	ND	**0.011 J**	ND	ND	ND	ND	ND	ND	--	--	--	ND	ND	--	--
Field Measurements (Units as Indicated)																	
pH (units)	**6.5 - 8.5**	7.6	7.2	7.5	7.5	7.8	7.4	7.2	7.5	7.2	7.36	7.36	7.27	7.1	7.1	7.46	7.53
Temperature (oC)	**--**	11.3	8.9	9.5	9.5	10.2	9.4	9.5	9.8	10.5	10.1	10.1	10.8	10.4	10.4	8.4	7.6
Specific Conductance (uS)	**--**	1340	5180	4762	3870	3282	2350	1793	2184	1293	2503	2503	2407	1016	1016	2507	3502
Turbidity	**--**	>1000	131	>1000	>1000	>1000	47.9	113	172	122	10	10	25.8	41	41	21.7	14.1
DO (ppm)	**--**	2.61	5.24	4.34	2.75	3.44	4.98	5.34	3.66	8.48	1.99	1.99	3.26	7.39	7.39	2.29	4.62
ORP (mV)	**--**	-25	-248	41	-58	-34	-209	-70	-204	47	-88	-88	-12	167	167	-92	-96

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds or analytes were reported as non-detect.
2. Values per NYSDEC Division of Water Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations - Class GA (TOGS 1.1.1)

Definitions:

ND = Parameter not detected above laboratory detection limit.
"--" = No value available for the parameter; Parameter not analysed for.
B = Compound was found in the blank and the sample.
F1 = MS and/or MSD Recovery is outside acceptance limits.
J = Estimated value; result is less than the reporting limit but greater than zero.
BOLD = Result exceeds GWQS.

TABLE 5

SUMMARY OF REMEDIAL INVESTIGATION SUB-BASEMENT WATER ANALYTICAL RESULTS

REMEDIAL INVESTIGATION / ALTERNATIVE ANALYSIS REPORT

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

PARAMETER [1]	Basement Surface Water
	05/20/16
Volatile Organic Compounds (VOCs) - ug/L	
	ND
Semi-Volatile Organic Compounds (SVOCs) - ug/L	
	ND
Total Metals - ug/L	
Barium	0.01
Calcium	200
Iron	2.7
Magnesium	36.9
Manganese	0.42
Nickel	0.059
Potassium	80.8
Sodium	191
Zinc	0.045
PCB (ug/L)	
	ND
Pesticides and Herbicides - ug/L	
4,4'-DDD	0.08 J

Notes:

Definitions:

ND = Parameter not detected above laboratory detection limit.

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

B = Compound was found in the blank and the sample.

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

TABLE 6

SUMMARY OF REMEDIAL INVESTIGATION SOIL VAPOR INTRUSION AIR ANALYTICAL RESULTS

REMEDIAL INVESTIGATION / ALTERNATIVE ANALYSIS REPORT

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

PARAMETERS	Indoor Air IA-1	Indoor Air IA-2	Sub-Slab Vapor SSV-1	Sub-Slab Vapor SSV-2	Sub-Slab Vapor SSV-3	Sub-Slab Vapor SSV-4	Sub-Slab Vapor SSV-5	Sub-Slab Vapor SSV-6	Sub-Slab Vapor SSV-7	Outdoor Air OA-1
Volatile Organic Compounds (VOCs) - micrograms per cubic meter (ug/m3)										
1,1,1- TRICHLOROETHANE	0.26 J	ND	ND	ND	890	13	0.4 J	5.7	ND	ND
1,1- DICHLOROETHANE	ND	ND	ND	ND	290	0.9 J	ND	ND	ND	ND
1,2,4-TRIMETHYLBENZENE	0.25 J	0.32 J	0.3 J	0.52 J	ND	0.79 J	0.25 J	ND	0.36 J	0.31 J
1,2-DICHLOROETHENE, Total	0.22 J	6.3	ND	0.52 J	810	20	0.71 J	310	ND	ND
1,3-BUTADIENE	0.25 J	0.38 J	ND	ND	ND	ND	ND	ND	ND	ND
1,4-DICHLOROBENZENE	1.3	0.45 J	ND	ND	ND	ND	ND	ND	ND	ND
1,4-DIOXANE (P-DIOXANE)	ND	110	ND	ND	ND	ND	ND	ND	49	ND
2,2,4-TRIMETHYLPENTANE	0.33 J	0.37 J	ND	ND	ND	2.1	0.7 J	1.5 J	0.88 J	0.45 J
ACETONE	2.5 J	16	6.2 J	40	ND	12 J	12	14 J	140	6 J
BENZENE	1.4	2.3	0.63	1.7	ND	3.2	1 J	2.3 J	6.8	0.69
BROMODICHLOROMETHANE	ND	ND	0.32 J	1.9 J	ND	0.66 J	ND	ND	ND	ND
CARBON DISULFIDE	ND	0.93 J	0.48 J	0.88 J	ND	1.9 J	ND	ND	2 J	0.24 J
CARBON TETRACHLORIDE	0.5 J	0.46 J	0.26 J	0.78 J	ND	ND	0.27 J	ND	0.47 J	0.41 J
CHLOROETHANE	ND	0.68 J	ND	ND	ND	ND	ND	ND	0.55 J	ND
CHLOROFORM	ND	ND	12	93	160 J	17	ND	2.4 J	ND	ND
CHLOROMETHANE	0.93 J	1.4	0.2 J	ND	ND	ND	ND	ND	ND	1.1
CIS-1,2-DICHLOROETHENE	0.22 J	5.9	ND	0.5 J	730	18	0.71 J	220	ND	ND
CYCLOHEXANE	0.17 J	ND	0.35 J	4	ND	3.4	0.75	1.7 J	95	ND
DICHLORODIFLUOROMETHANE	2.7	2.5	2.5	3 J	ND	2.7 J	0.98 J	30	1.9 J	2.4 J
ETHYLBENZENE	0.22 J	0.3 J	0.21 J	0.39 J	ND	1 J	0.3 J	ND	0.45 J	0.3 J
FREON TF	0.65 J	0.58 J	0.58 J	0.87 J	ND	ND	ND	ND	ND	ND
ISOPROPYL ALCOHOL	ND	ND	ND	ND	ND	ND	2.5 J	ND	4.1 J	3.4 J
M,P-XYLENES	0.95 J	1.2 J	0.74 J	1.4 J	ND	3.8 J	1.1 J	2.2 J	1.3 J	1.1 J
METHYL BUTYL KETONE (2-HEXANONE)	ND	ND	ND	0.53 J	ND	ND	ND	ND	ND	ND
METHYL ETHYL KETONE (2-BUTANONE)	ND	1.4 J	1.5	3.8	ND	2.6 J	3	3.8 J	11	0.6 J
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	ND	ND	ND	0.66 J	ND	ND	0.48 J	ND	2.3 J	ND
METHYLENE CHLORIDE	0.83 J	0.69 J	0.88 J	1.5 J	ND	ND	0.79 J	ND	1.3 J	0.83 J
NAPHTHALENE	ND	ND	ND	0.53 J	ND	ND	ND	ND	ND	ND
N-HEPTANE	0.19 J	ND	0.39 J	1.7	ND	4.2	1.2	2 J	42	0.25 J
N-HEXANE	0.57 J	0.85	0.84	3	ND	8	2.2	4.5	100	0.62 J
O-XYLENE (1,2-DIMETHYLBENZENE)	0.32 J	0.37 J	0.28 J	0.53 J	ND	1.2 J	0.34 J	0.77 J	0.46 J	0.4 J
STYRENE	ND	0.2 J	ND	ND	ND	ND	0.28 J	ND	ND	0.2 J
TETRACHLOROETHENE	0.16 J	0.24 J	1.5	2.4	ND	2.8	0.89 J	2.2 J	1.4 J	ND
TOLUENE	2.2	2.5	2.4	3.6	ND	8.8	4.5	4.6	9	2.1
TRANS-1,2-DICHLOROETHENE	ND	0.42 J	ND	ND	99 J	2.2	ND	90	ND	ND
TRICHLOROETHENE	1.4	35	1.5	260	19,000	390	9.4	610	5.9	0.23 J
TRICHLOROFLUOROMETHANE	1.6	1.3	1.6	2.1	ND	3	0.75 J	1.4 J	1.4 J	1.2
VINYL CHLORIDE	ND	0.089 J	ND	ND	ND	ND	ND	0.51 J	ND	ND
XYLENES, TOTAL	1.3 J	1.5 J	1 J	1.9 J	ND	5 J	1.4 J	3 J	1.8 J	1.5 J

Notes:
1. Only those parameters detected above the method detection limits, at a minimum of one location are presented in this table.
2. ND = compound concentration below reporting limit.
3. J = estimated concentrations; results is lees than reporting limit but greater than zero.
4. Sub-slab samples listed as SSV-1 through SSV-7 were identifed in the laboratory report as SV-1 through SV-7.

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TURNKEY ENVIRONMENTAL RESTORATION, LLC

TABLE 7

SUMMARY OF INDOOR AIR SAMPLING RESULTS VS NYSDOH INDOOR & OUTDOOR AIR CRITERIA

REMEDIAL INVESTIGATION / ALTERNATIVE ANALYSIS REPORT

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

PARAMETERS	NYSDOH Indoor 90th Percentile Comparison (ug/m3)	INDOOR AIR IA-1	INDOOR AIR IA-2	OUTDOOR AIR OA-1
1,1,1-TRICHLOROETHANE	**3.1**	0.26 J	ND	ND
1,1-DICHLOROETHANE	**NV**	ND	ND	ND
1,2,4-TRIMETHYLBENZENE	**9.5**	0.25 J	0.32 J	0.31 J
1,2-DICHLOROETHENE	**NV**	0.22 J	6.3	ND
1,3-BUTADIENE	**NV**	0.25 J	0.38 J	ND
1,4-DICHLOROBENZENE	**1.3**	1.3	0.45 J	ND
1,4-DIOXANE (P-DIOXANE)	**NV**	ND	110	ND
2,2,4-TRIMETHYLPENTANE	**NV**	0.33 J	0.37 J	0.45 J
ACETONE	**110**	2.5 J	16	6 J
BENZENE	**15**	1.4	2.3	0.69
BROMODICHLOROMETHANE	**NV**	ND	ND	ND
CARBON DISULFIDE	**NV**	ND	0.93 J	0.24 J
CARBON TETRACHLORIDE	**0.81**	0.5 J	0.46 J	0.41 J
CHLOROETHANE	**<0.25**	ND	**0.68 J**	ND
CHLOROFORM	**1.4**	ND	ND	ND
CHLOROMETHANE	**3.3**	0.93 J	1.4	1.1
CIS-1,2-DICHLOROETHENE	**<0.25**	0.22 J	5.9	ND
CYCLOHEXANE	**8.1**	0.17 J	ND	ND
DICHLORODIFLUOROMETHANE	**15**	2.7	2.5	2.4 J
ETHYLBENZENE	**7.4**	0.22 J	0.3 J	0.3 J
FREON TF	**NV**	0.65 J	0.58 J	ND
ISOPROPYL ALCOHOL	**NV**	ND	ND	3.4 J
M,P-XYLENES	**12**	0.95 J	1.2 J	1.1 J
METHYL BUTYL KETONE (2-HEXANONE)	**NV**	ND	ND	ND
METHYL ETHYL KETONE (2-BUTANONE)	**16**	ND	1.4 J	0.6 J
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	**2.2**	ND	ND	ND
METHYLENE CHLORIDE	**22**	0.83 J	0.69 J	0.83 J
NAPHTHALENE	**NV**	ND	ND	ND
N-HEPTANE	**19**	0.19 J	ND	0.25 J
N-HEXANE	**18**	0.57 J	0.85	0.62 J
O-XYLENE (1,2-DIMETHYLBENZENE)	**7.6**	0.32 J	0.37 J	0.4 J
STYRENE	**1.3**	ND	0.2 J	0.2
TETRACHLOROETHENE	**2.9**	0.16 J	0.24 J	ND
TOLUENE	**58**	2.2	2.5	2.1
TRANS-1,2-DICHLOROETHENE	**NV**	ND	0.42 J	ND
TRICHLOROETHENE	**0.48**	**1.4**	**35**	0.23 J
TRICHLOROFLUOROMETHANE	**17**	1.6	1.3	1.2
VINYL CHLORIDE	**<0.25**	ND	0.089 J	ND
XYLENES, TOTAL	**NV**	1.3 J	1.5 J	1.5 J

Notes:
1. Only those parameters detected above the method detection limits, at a minimum of one location are presented in this table.
2. NV = No Value
3. ND = compound concentration below reporting limit.
4. J = estimated concentration. Results is less than the reporting limit but greater than or equal to the method detection limit.

= Indoor Results Exceeds NYSDOH 90th Percentile

TABLE 8

COMPARISON OF AIR SAMPLNG RESULTS TO NYSDOH SVI GUIDANCE MATRICES

REMEDIAL INVESTIGATION / ALTERNATIVE ANALYSIS REPORT

Former Trico Plant
791 Washington Street
Buffalo, New York

Sample Location	Carbon Tetrachloride		Trichloroethene (TCE)		Vinyl Chloride		Tetrachloroethene (PCE)		1,1,1 -Trichloroethane		cis-1,2-Dichloroethene		1,1-Dichloroethene	
	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	0.26 J	NFA	1.5	I, R	ND	NFA	1.5	NFA	ND	NFA	ND	NFA	ND	NFA
SSV-2	0.78 J	NFA	260	Mitigate	ND	NFA	2.4	NFA	ND	NFA	0.5 J	NFA	ND	NFA
SSV-3	ND	NFA	19000	Mitigate	ND	NFA	ND	NFA	890	Monitor	730	Monitor	810	Monitor
SSV-7	0.47 J	Background	5.9	Monitor	ND	NFA	1.4 J	NFA	ND	NFA	ND	NFA	ND	NFA
IA-1	0.5 J		1.4		ND		0.16 J		0.26 J		0.22 J		ND	
OA-1	0.41 J	Background	0.23 J	Background	ND	Background	ND	Background	ND	Background	ND	Background	ND	Background

Sample Location	Carbon Tetrachloride		Trichloroethene (TCE)		Vinyl Chloride		Tetrachloroethene (PCE)		1,1,1 -Trichloroethane		cis-1,2-Dichloroethene		1,1-Dichloroethene	
	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-4	ND	NFA	390	Mitigate	ND	NFA	2.8	NFA	13	NFA	18	I, R	ND	NFA
SSV-5	0.27 J	NFA	9.4	Mitigate	ND	NFA	0.89 J	NFA	0.4 J	NFA	0.71 J	I, R	ND	NFA
SSV-6	ND	NFA	610	Mitigate	ND	NFA	2.2 J	NFA	5.7	NFA	220	Monitor/Mitigate	ND	NFA
IA-2	0.46 J		35		0.089 J		0.24 J		ND		5.9		ND	
OA-1	0.41 J	Background	0.23 J	Background	ND	Background	ND	Background	ND	Background	ND	Background	ND	Background

Notes:

1. Sub-slab samples listed as SSV-1 through SSV-7 were identifed in the laboratory report as SV-1 through SV-7.

Definitions:

ND = Not Detected
NFA = No further action.
I, R = Take reasonable and practical actions to identify source(s) and reduce exposures.
Monitor = Monitor soil vapor / indoor air
Mitigate = Mitigate source of identified parameter.

= NYSDOH Matrix 1 Compounds
= NYSDOH Matrix 2 Compounds

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TURNKEY ENVIRONMENTAL RESTORATION, LLC

TABLE 9

STANDARDS, CRITERIA, AND GUIDANCE (SCGs)

REMEDIAL INVESTIGATION / ALTERNATIVES ANALYSIS REPORT

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

Citation	Title	Regulatory Agency
General		
29CFR 1910.120	Hazardous Waste Operations and Emergency Response	US Dept. of Labor, OSHA
29CFR 1910.1000	OSHA General Industry Air Contaminants Standard	US Dept. of Labor, OSHA
29CFR 1926	Safety and Health Regulations for Construction	US Dept. of Labor, OSHA
Not Applicable	Analytical Services Protocol	NYSDEC
6NYCRR Part 608	Use and Protection of Waters	NYSDEC
6NYCRR Part 621	Uniform Procedures Regulations	NYSDEC
6NYCRR Parts 750-757	State Pollutant Discharge Elimination System	NYSDEC
Not Applicable	New York State Stormwater Management Design Manual	NYSDEC
Section 404	Clean Water Act	USACE
Soil/Fill		
6NYCRR Part 375	Environmental Remediation Programs	NYSDEC
DEC Policy CP-51	Soil Cleanup Guidance	NYSDEC
NYSDEC, June 2014	Technical Guidance for Screening Contaminated Sediments: LEL/SEL	NYSDEC
Groundwater		
6NYCRR Part 700-705	Surface Water and Ground Water Classification Standards	NYSDEC
TOGS 1.1.1	Ambient Water Quality Standards and Guidance Values	NYSDEC
TOGS 2.1.3	Primary and Principal Aquifer	NYSDEC
Air/Soil Vapor		
DER-10 Appendix 1B	Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites	NYSDEC
NYSDOH, October 2006	Final - Guidance for Evaluating Soil Vapor Intrusion in the State of NY	NYSDOH
Solid Waste		
6NYCRR 360	Solid Waste Management Facilities	NYSDEC
6NYCRR 364	Waste Transporters	NYSDEC

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TURNKEY ENVIRONMENTAL RESTORATION, LLC

TABLE 10

COST ESTIMATE FOR UNRESTRICTED USE (TRACK 1) ALTERNATIVE

REMEDIAL INVESTIGATION / ALTERNATIVES ANALYSIS REPORT

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

Item	Quantity	Units	Unit Cost	Total Cost	Remarks
Demolition					
Foundation Demolition	26,820	SF	$ 1.00	$ 26,820	3 of 4 areas; 4th on Burton St.
Hydraulic Lift Infrastructure	1	LS	$ 20,000	$ 20,000	
Loading/Trucking/Disposing C&D Material	134	TON	$ 45	$ 6,035	
Subtotal:				**$ 53,000**	
Impacted Soil/Fill Removal					
Excavation Dewatering and Treatment	100,000	GAL	$ 0.35	$ 35,000	
Soil/Fill Excavation and Loading	12,433	TON	$ 6	$ 74,600	27,975 SF (4 areas) and 8 fbgs
Transportation and Disposal at TSDF	12,433	TON	$ 35	$ 435,167	1.5 tons per CY
Post-Excavation Confirmatory Sampling	20	EA	$ 375	$ 7,500	4 sidewalls and 1 bottom in each area
Data Validation	20	EA	$ 105	$ 2,100	
Subtotal:			.	**$ 555,000**	
Backfilling/Site Restoration					
Geotextile	26,820	SF	$ 1.50	$ 40,230	
Import, Backfill, Place & Compact	12,433	TON	$ 22	$ 273,533	
Backfill Characterization Sampling	32	Ea	$ 100	$ 3,158	VOCs
Data Validation	32	EA	$ 25	$ 789	
Backfill Characterization Sampling	14	EA	$ 500	$ 7,144	SVOCs, PCBs, Pesticides, Metals
Data Validation	14	EA	$ 80	$ 1,143	
Poured 8" Concrete Foundation	26,820	SF	$ 12.00	$ 321,840	
Subtotal:				**$ 648,000**	
Basement Water Removal					
BSA Discharge Permit	1	LS	$ 10,000	$ 10,000	
Pumping Water	150,000	GAL	$ 0.10	$ 15,000	
Water Treatment and Discharge	150,000	GAL	$ 0.25	$ 38,000	
Vacuum Removal & Disposal of Sediment	1	LS	$ 20,000	$ 20,000	
Subtotal:				**$ 83,000**	
In-Situ Groundwater Treatment					
Injection Amendments	2	Events	$ 102,140	$ 205,000	
Injection Subcontractor and Oversight	14	DAY	$ 3,800	$ 54,000	
Performance Groundwater Monitoring	3	Events	$ 6,000	$ 18,000	
Subtotal:				**$ 277,000**	
Installation of ASD System					
System Design and Engineering	1	LS	$ 10,000	$ 10,000	
System Material and Installation	85,800	SF	$ 1.50	$ 128,700	Approx. 330' x 260'
Subtotal:				**$ 138,700**	
Subtotal Capital Cost				**$ 1,755,000**	
Contractor Mobilization/Demobilization (5%)				$ 87,750	
Health and Safety (2%)				$ 35,100	
Engineering/Contingency (35%)				$ 614,250	
Total Capital Cost				**$ 2,493,000**	
Operation Maintenance & Monitoring (Present Value):					
Groundwater Monitoring (39 events, $6,000 per event, discount rate of 5%)				$ 141,000	Quarterly (2 yrs), Semi-Annual (3 yrs), Annual (25 yrs)
Annual Certification (30 reports, $2,000 per report, discount rate of 5%)				$ 31,000	GW PRR
Total OM&M Cost				**$ 172,000**	
Total Capital Cost for Unrestricted Use (Track 1)				**$ 2,665,000**	

Notes:

1. Costs for disposal of regulated wastes and abatement required for redevelopment are not included.

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TURNKEY ENVIRONMENTAL RESTORATION, LLC

TABLE 11

COST ESTIMATE FOR RESTRICTED RESIDENTIAL USE (TRACK 4) ALTERNATIVE WITH GROUNDWATER EXTRACTION & TREATMENT

REMEDIAL INVESTIGATION / ALTERNATIVES ANALYSIS REPORT

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

Item	Quantity	Units	Unit Cost	Total Cost	Remarks
Impacted Soil/Fill Removal					
Hydraulic Lift Infrastructure Demolition	1	LS	$ 20,000	$ 20,000	
Soil/Fill Excavation and Loading	356	TON	$ 6	$ 2,133	40' x 40' x 4' deep
Transporation and Disposal at TSDF	356	TON	$ 35	$ 12,444	1.5 tons per CY
Post-Excavation Confirmatory Sampling	10	EA	$ 375	$ 3,750	VOCs, SVOCs, Metals
Data Validation	10	EA	$ 60	$ 600	
Subtotal:				**$ 39,000**	
Backfilling/Cover System					
Backfilling Excavation with Crushed Gravel	356	TON	$ 22	$ 7,822	
Analytical	5	EA	$ 100	$ 547	VOCs
Data Validation	5	EA	$ 25	$ 137	
Analytical	1	EA	$ 500	$ 619	SVOCs, PCBs, Pesticides, Metals
Data Validation	1	EA	$ 80	$ 99	
Geotextile	1,600	SF	$ 1.50	$ 2,400	
Demarcation Layer	1	Rolls	$ 2,500	$ 2,500	
Subtotal:				**$ 15,000**	
Basement Water and Sediment Removal					
BSA Discharge Permit	1	LS	$ 10,000	$ 10,000	
Pumping Water	150,000	GAL	$ 0.10	$ 15,000	
Water Treatment and Discharge	150,000	GAL	$ 0.25	$ 38,000	
Vacuum Removal & Disposal of Sediment	1	LS	$ 20,000	$ 20,000	
Subtotal:				**$ 83,000**	
Groundwater Extraction & Treatment					
System Design and Engineering	1	EST	$ 50,000	$ 50,000	
Extraction Well, Force Main & Pump Installation/Controls	1	EST	$ 95,000	$ 95,000	
Groundwater Treatment System	1	EST	$ 150,000	$ 150,000	
Electrical Work & System Star-up	1	EST	$ 45,000	$ 45,000	
Subtotal:				**$ 340,000**	
Installation of ASD System					
System Design and Engineering	1	LS	$ 10,000	$ 10,000	
System Material and Installation	85,800	SF	$ 1.50	$ 128,700	Approx. 330' x 260'
Subtotal:				**$ 138,700**	
Subtotal Capital Cost				**$ 616,000**	
Contractor Mobilization/Demobilization (5%)				$ 30,800	
Health and Safety (2%)				$ 12,320	
Engineering/Contingency (35%)				$ 215,600	
Total Capital Cost				**$ 875,000**	
Operation Maintenance & Monitoring:					
Groundwater Treatment OMM Costs includes electrical/operator to make monthly checks/maintenance on system ($36,000, 30 years, discount factor of 5%)				$ 553,000	
Groundwater Monitoring (39 events, $6,000 per event, discount rate of 5%)				$ 141,000	Quarterly (2 yrs), Semi-Annual (3 yrs), Annual (25 yrs)
Annual Certification (30 reports, $2,000 per report, discount rate of 5%)				$ 31,000	GW PRR
Total OM&M Cost				**$ 725,000**	
Total 30-Year Cost for Restricted Residential Use (Track 4)				**$ 1,600,000**	

Notes:

1. Costs for disposal of regulated wastes and abatement required for redevelopment are not included.

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TURNKEY ENVIRONMENTAL RESTORATION, LLC

TABLE 12

COST ESTIMATE FOR RESTRICTED RESIDENTIAL USE (TRACK 4) ALTERNATIVE WITH IN-SITU GROUNDWATER TREATMENT

REMEDIAL INVESTIGATION / ALTERNATIVES ANALYSIS REPORT

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

Item	Quantity	Units	Unit Cost	Total Cost	Remarks
Impacted Soil/Fill Removal					
Hydraulic Lift Infrastructure Demolition	1	LS	$ 20,000	$ 20,000	
Soil/Fill Excavation and Loading	356	TON	$ 6	$ 2,133	40' x 40' x 4' deep
Transporation and Disposal at TSDF	356	TON	$ 35	$ 12,444	1.5 tons per CY
Post-Excavation Confirmatory Sampling	10	EA	$ 375	$ 3,750	VOCs, SVOCs, Metals
Data Validation	10	EA	$ 60	$ 600	
Subtotal:				**$ 39,000**	
Backfilling/Cover System					
Backfilling Excavation with Crushed Gravel	356	TON	$ 22	$ 7,822	
Analytical	5	EA	$ 100	$ 547	VOCs
Data Validation	5	EA	$ 25	$ 137	
Analytical	1	EA	$ 500	$ 619	SVOCs, PCBs, Pesticides, Metals
Data Validation	1	EA	$ 80	$ 99	
Geotextile	1,600	SF	$ 1.50	$ 2,400	
Demarcation Layer	1	Rolls	$ 2,500	$ 2,500	
Subtotal:				**$ 15,000**	
Basement Water and Sediment Removal					
BSA Discharge Permit	1	LS	$ 10,000	$ 10,000	
Pumping Water	150,000	GAL	$ 0.10	$ 15,000	
Water Treatment and Discharge	150,000	GAL	$ 0.25	$ 38,000	
Vacuum Removal & Disposal of Sediment	1	LS	$ 20,000	$ 20,000	
Subtotal:				**$ 83,000**	
In-Situ Groundwater Treatment					
Injection Amendments	2	Events	$ 102,140	$ 205,000	
Injection Subcontractor and Oversight	14	DAY	$ 3,800	$ 54,000	
Performance Groundwater Monitoring	3	Events	$ 6,000	$ 18,000	
Subtotal:				**$ 277,000**	
Installation of ASD System					
System Design and Engineering	1	LS	$ 10,000	$ 10,000	
System Material and Installation	85,800	SF	$ 1.50	$ 128,700	Approx. 330' x 260'
Subtotal:				**$ 138,700**	
Subtotal Capital Cost				**$ 553,000**	
Contractor Mobilization/Demobilization (5%)				$ 27,650	
Health and Safety (2%)				$ 11,060	
Engineering/Contingency (35%)				$ 193,550	
Total Capital Cost				**$ 786,000**	
Operation Maintenance & Monitoring:					
Groundwater Monitoring (39 events, $6,000 per event, discount rate of 5%)				$ 141,000	Quarterly (2 yrs), Semi-Annual (3 yrs), Annual (25 yrs)
Annual Certification (30 reports, $2,000 per report, discount rate of 5%)				$ 31,000	GW PRR
Total OM&M Cost				**$ 172,000**	
Total 30-Year Cost for Restricted Residential Use (Track 4)				**$ 958,000**	

Notes:

1. Costs for disposal of regulated wastes and abatement required for redevelopment are not included.

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TURNKEY ENVIRONMENTAL RESTORATION, LLC

TABLE 13

COMPARISON OF REMEDIAL ALTERNATIVES

REMEDIAL INVESTIGATION / ALTERNATIVE ANALYSIS REPORT

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

Remedial Alternative	NYSDEC DER-10 Evaluation Criteria								
	1. Overall	2. SCGs	3. Eff & Perm	4. Reduction	5. Imp & Eff	6. Implement	7. Cost Eff	8. Community	9. Land Use
Alternative 1 - No Action						✓	$0	TBE	
Alternative 2 - Track 1 Cleanup	✓	✓	✓	✓			$2.67 million	TBE	✓
Alternative 3 - Track 4 Cleanup with Groundwater Extraction & Treatment	✓	✓	✓	✓	✓		$1.6 million	TBE	✓
Alternative 4 - Track 4 Cleanup with In-Situ Groundwater Treatment	✓	✓	✓	✓	✓	✓	$958,000	TBE	✓

Notes:

1. Overall Protectiveness of Public Health and the Environment
2. Compliance with Standards, Criteria, and Guidance (SCGs)
3. Long-Term Effectiveness and Permanence
4. Reduction of Toxicity, Mobility, or Volume of Contamination through Treatment
5. Short-Term Impacts and Effectiveness
6. Implementability (Technical and Administrative)
7. Cost Effectiveness provided in Present Worth
8. Community Acceptance
9. Land Use

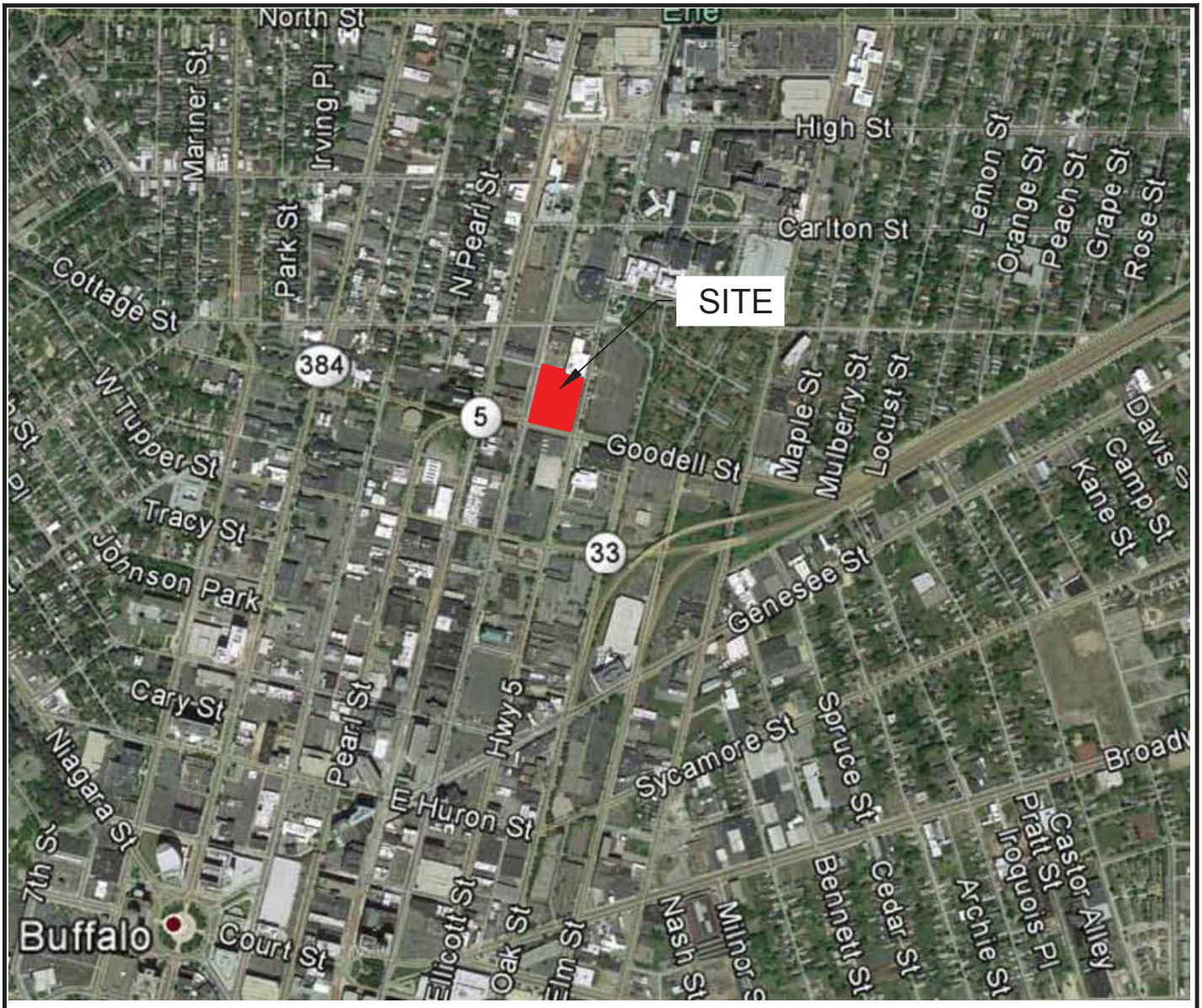
✓ = Alternative satisfies criterion

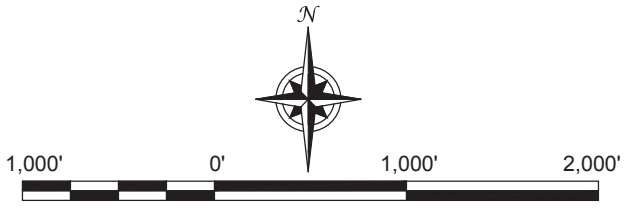
TBE = To be evaluated following public comment period

FIGURES

F:\CAD\TurnKey\Krog\Former Trico Building BCP\RI AAR\Figure 1; Site Location and Vicinity Map.dwg

FIGURE 1





SCALE: 1 INCH = 1,000 FEET
SCALE IN FEET
(approximate)

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

PROJECT NO.: 0092-016-001

DATE: JULY 2016

DRAFTED BY: RFL

SITE LOCATION AND VICINITY MAP

RI/AA REPORT

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

PREPARED FOR

THE KROG GROUP, LLC

F:\CAD\TurnKey\Krog\Former Trico Building BCP\RI AAR\Figure 2; Site Plan Aerial.dwg

DATE: JULY 2016
DRAFTED BY: RFL

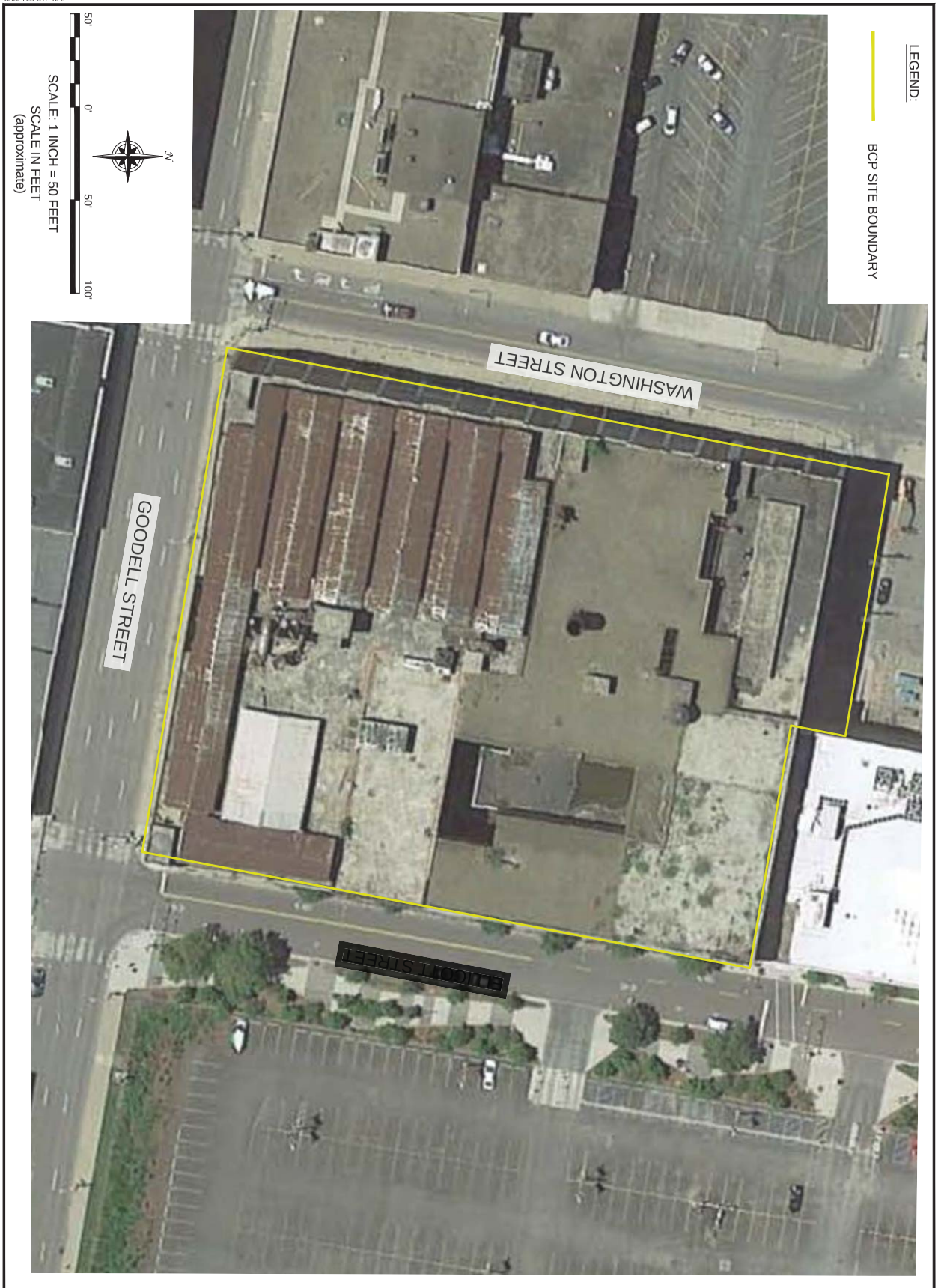


FIGURE 2

SITE PLAN (AERIAL)

RI/AA REPORT

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

PREPARED FOR
THE KROG GROUP, LLC

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TURNKEY ENVIRONMENTAL RESTORATION, LLC
2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

JOB NO.: 0092-016-001

F:\CAD\TurnKey\Krog\Former Trico Building BCP\RI AAR\Figure 3; Floor PlansREV.dwg

DATE: JULY 2016
DRAFTED BY: RFL

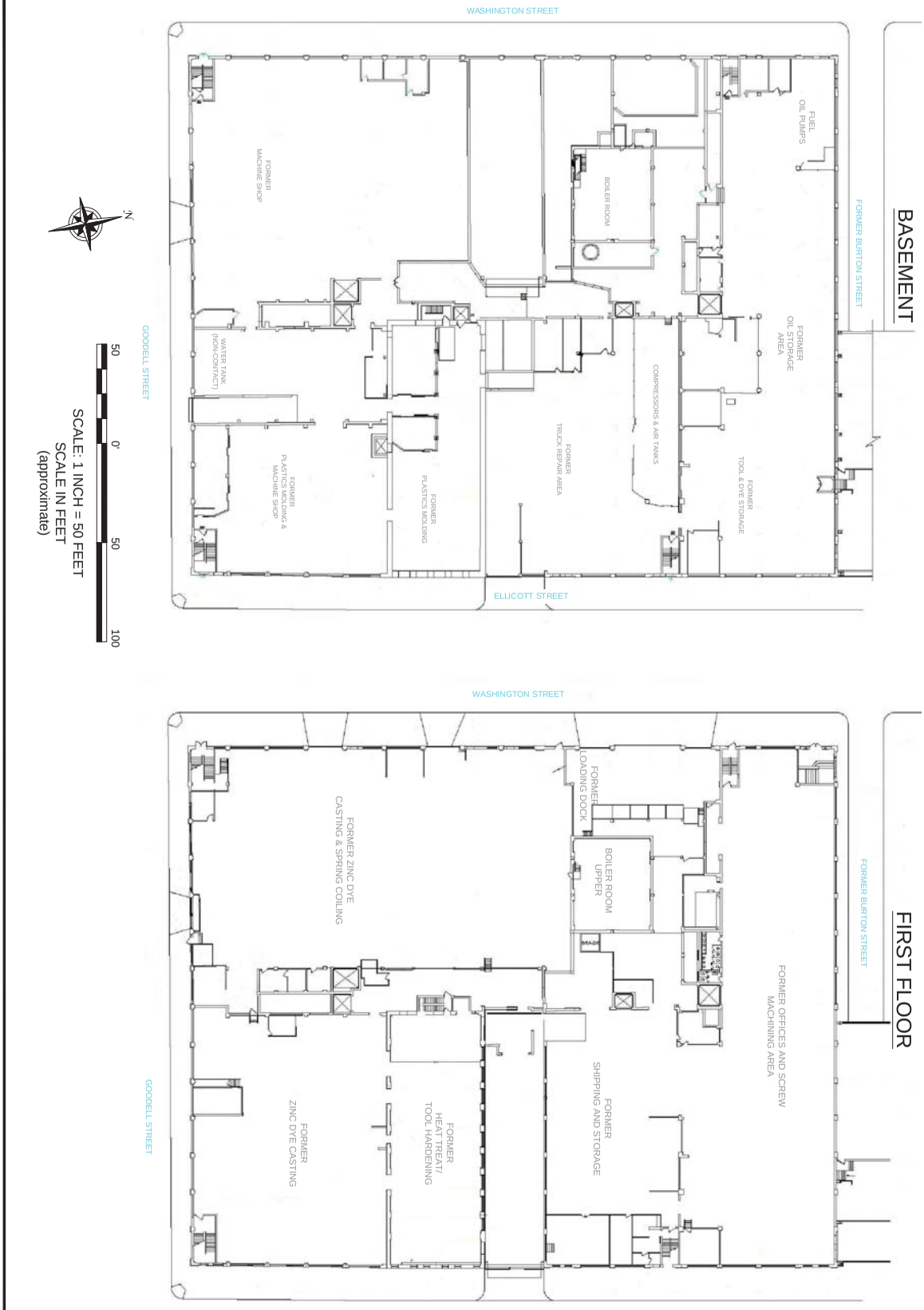

FIGURE 3

BUILDING FLOOR PLAN
BASEMENT & 1ST FLOOR

RI/AA REPORT

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

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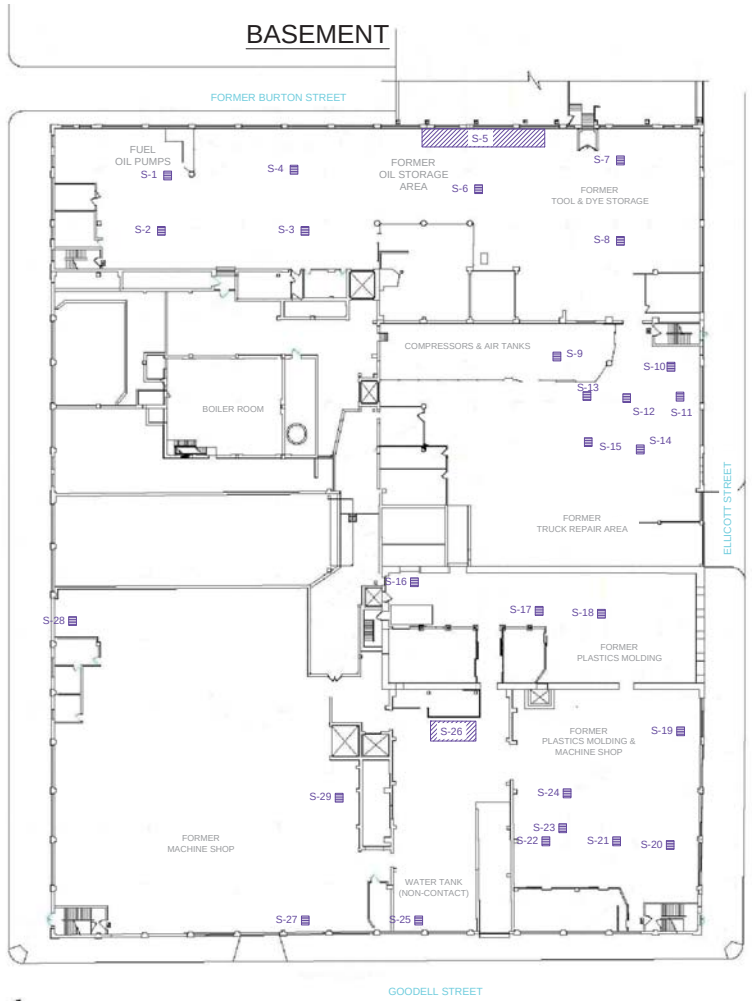
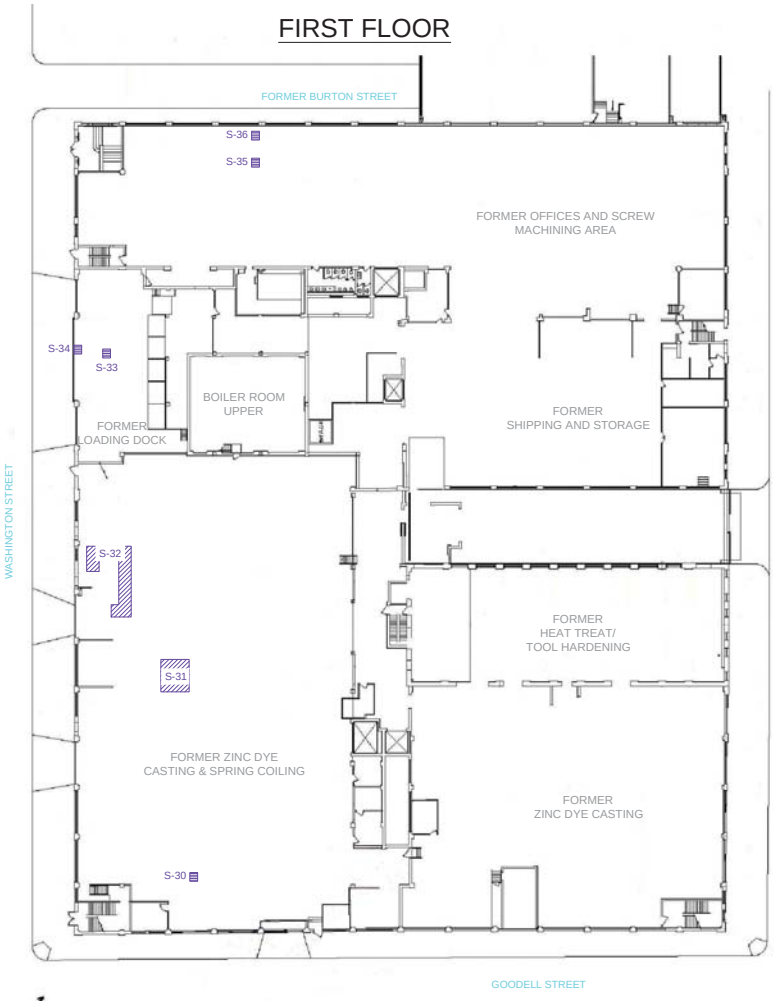
TURNKEY ENVIRONMENTAL RESTORATION, LLC
2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

JOB NO.: 0092-016-001

F:\CAD\TurnKey\Krog\Former Trico Building BCP\RI AAR\Figure 4 - Utility and Surface Structures.dwg





LEGEND

S-10 UTILITY AND SEWER SERVICE SURFACE/SUBSURFACE FEATURE LOCATION (SEE APPENDIX A FOR DESCRIPTION)

N

50 0' 50 100

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

DATE: JULY 2016
DRAFTED BY: RFL

UTILITY AND SEWER SERVICE FEATURES BASEMENT & 1ST FLOOR

RI/AA REPORT

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

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TURNKEY ENVIRONMENTAL RESTORATION, LLC
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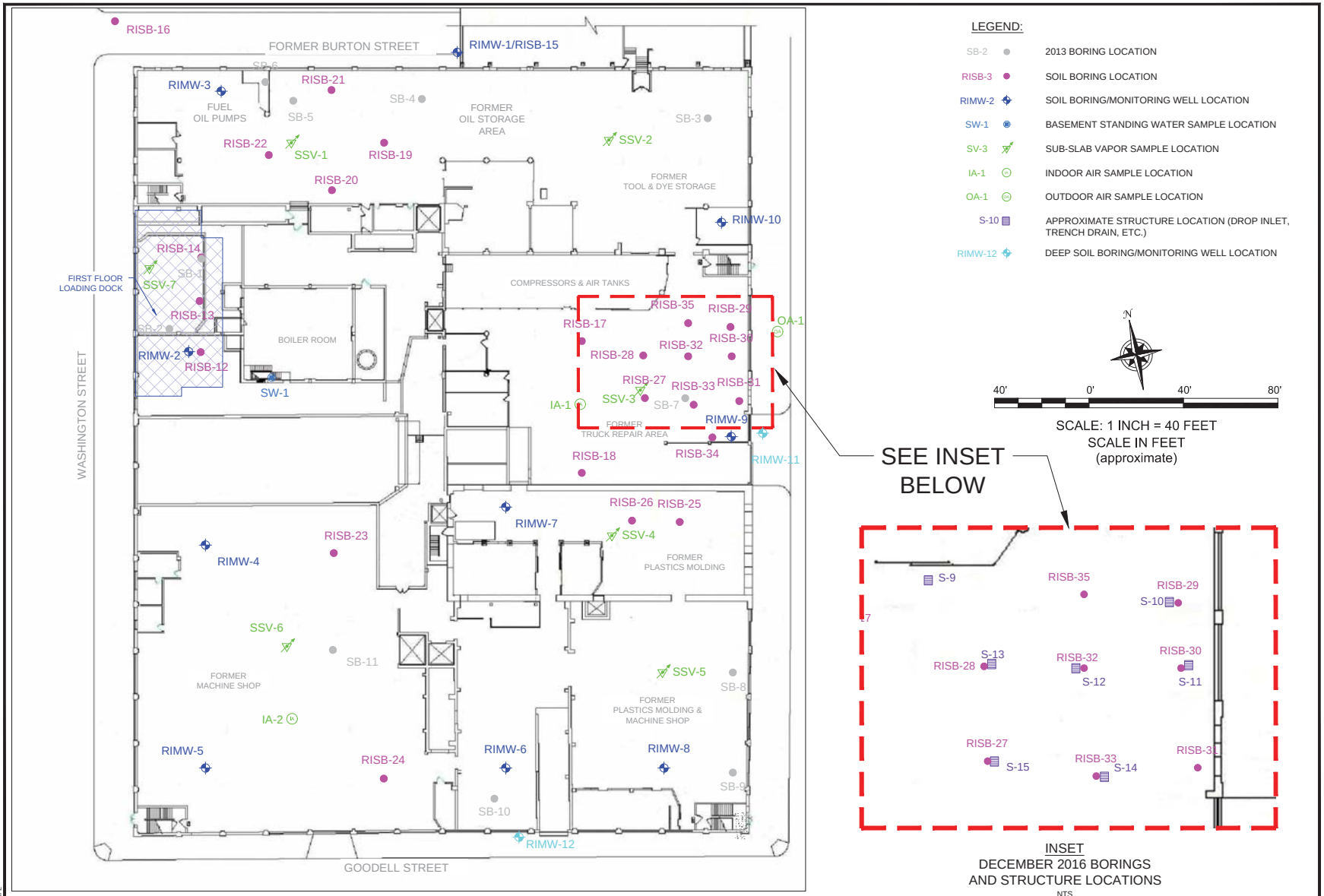
JOB NO.: 0092-016-001

FIGURE 4



SEE INSET BELOW

INSET
DECEMBER 2016 BORINGS
AND STRUCTURE LOCATIONS
NTS

LEGEND:

SB-2	2013 BORING LOCATION
RISB-3	SOIL BORING LOCATION
RIMW-2	SOIL BORING/MONITORING WELL LOCATION
SW-1	BASEMENT STANDING WATER SAMPLE LOCATION
SV-3	SUB-SLAB VAPOR SAMPLE LOCATION
IA-1	INDOOR AIR SAMPLE LOCATION
OA-1	OUTDOOR AIR SAMPLE LOCATION
S-10	APPROXIMATE STRUCTURE LOCATION (DROP INLET, TRENCH DRAIN, ETC.)
RIMW-12	DEEP SOIL BORING/MONITORING WELL LOCATION

N

40' 0' 40' 80'

SCALE: 1 INCH = 40 FEET
SCALE IN FEET
(approximate)

REMEDIAL INVESTIGATION SAMPLE LOCATIONS

RI/AA REPORT
FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

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JOB NO.: 0092-016-001

FIGURE 5

F:\CAD\TurnKey\Krog\Former Trico Building BCP\RI AAR\Figure 5; RI Sample Locations Revised Dec 2016.dwg
DATE: JULY 2016
DRAFTED BY: RFL

F:\CAD\TurnKey\Krog\Former Trico Building BCP\RI AAR\Figure 6; GW Flow Direction.dwg

DATE: JUNE 2016
DRAFTED BY: RFL

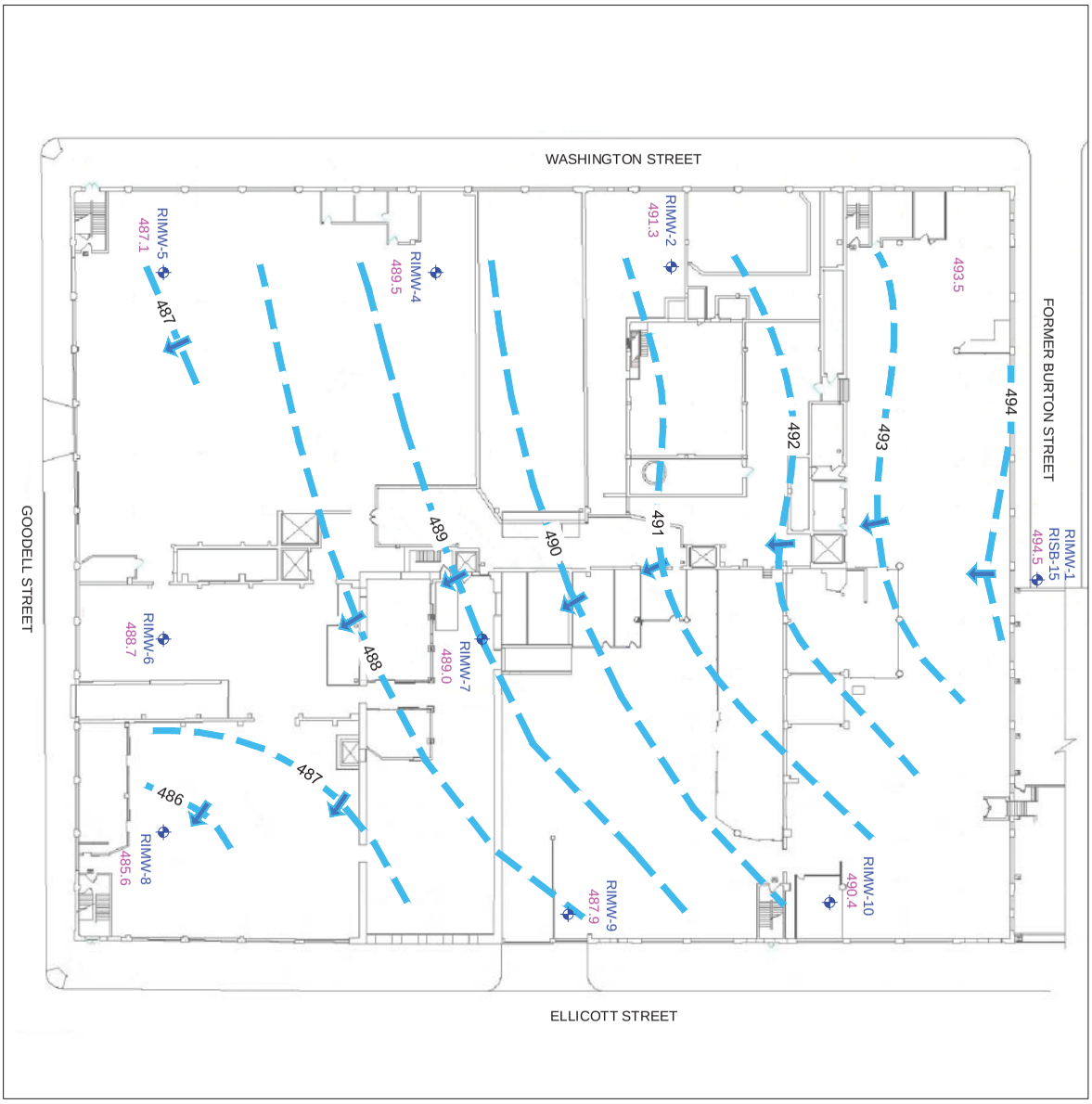

FIGURE 6

GROUNDWATER ISOPOTENTIAL MAP
JUNE 10, 2016

RI/AA REPORT

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

PREPARED FOR
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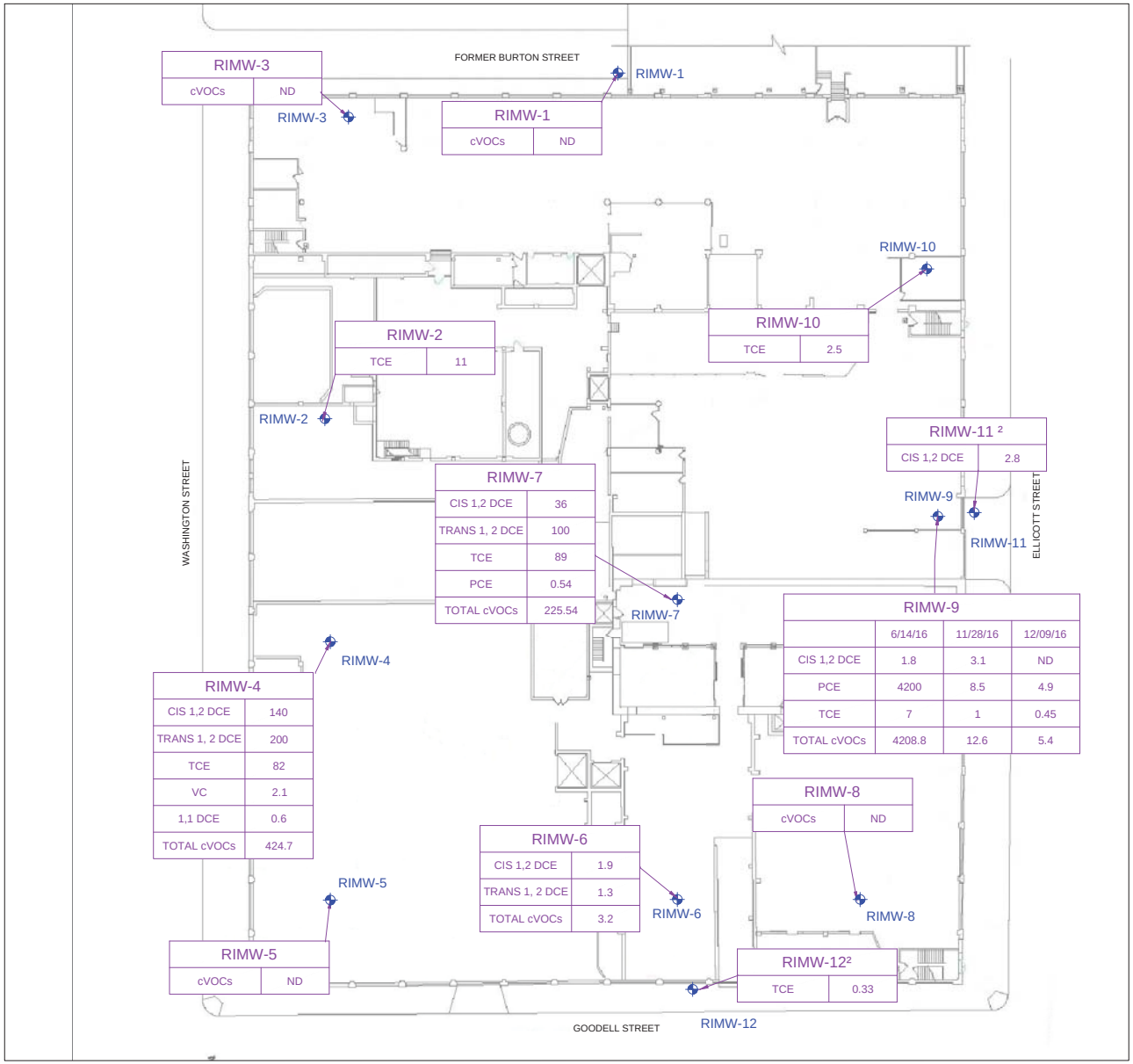
F:\CAD\TurnKey\Krog\Former Trico Building BCP\RI AAR\Figure 7; Extent of Contamination.dwg



LEGEND:

RIMW-2 — MONITORING WELL LOCATION

RIMW-10 — WELL NUMBER

TCE 2.5 — CONCENTRATION (ug/l)

COMPOUND

NOTES:

1. ALL SAMPLES COLLECTED IN JUNE 2016 EXCEPT WHERE NOTED.
2. SAMPLES COLLECTED ON NOVEMBER 28, 2016
3. CIS 1, 2 DCE = CIS-1,2-DICHLOROETHENE
   TRANS 1, 2 DCE = TRANS-1,2-DICHLOROETHENE
   PCE = TETRACHLOROETHENE
   TCE = TRICHLOROETHENE
   VC = VINYL CHLORIDE
4. ug/l = MICROGRAMS PER LITER
5. cVOC MEANS CHLORINATED VOLATILE ORGANIC COMPOUNDS LISTED ABOVE IN NOTE 3

N

40' 0' 40' 80'

SCALE: 1 INCH = 40 FEET
SCALE IN FEET
(approximate)

DATE: JANUARY 2017
DRAFTED BY: RFL

cVOCs IN GROUNDWATER

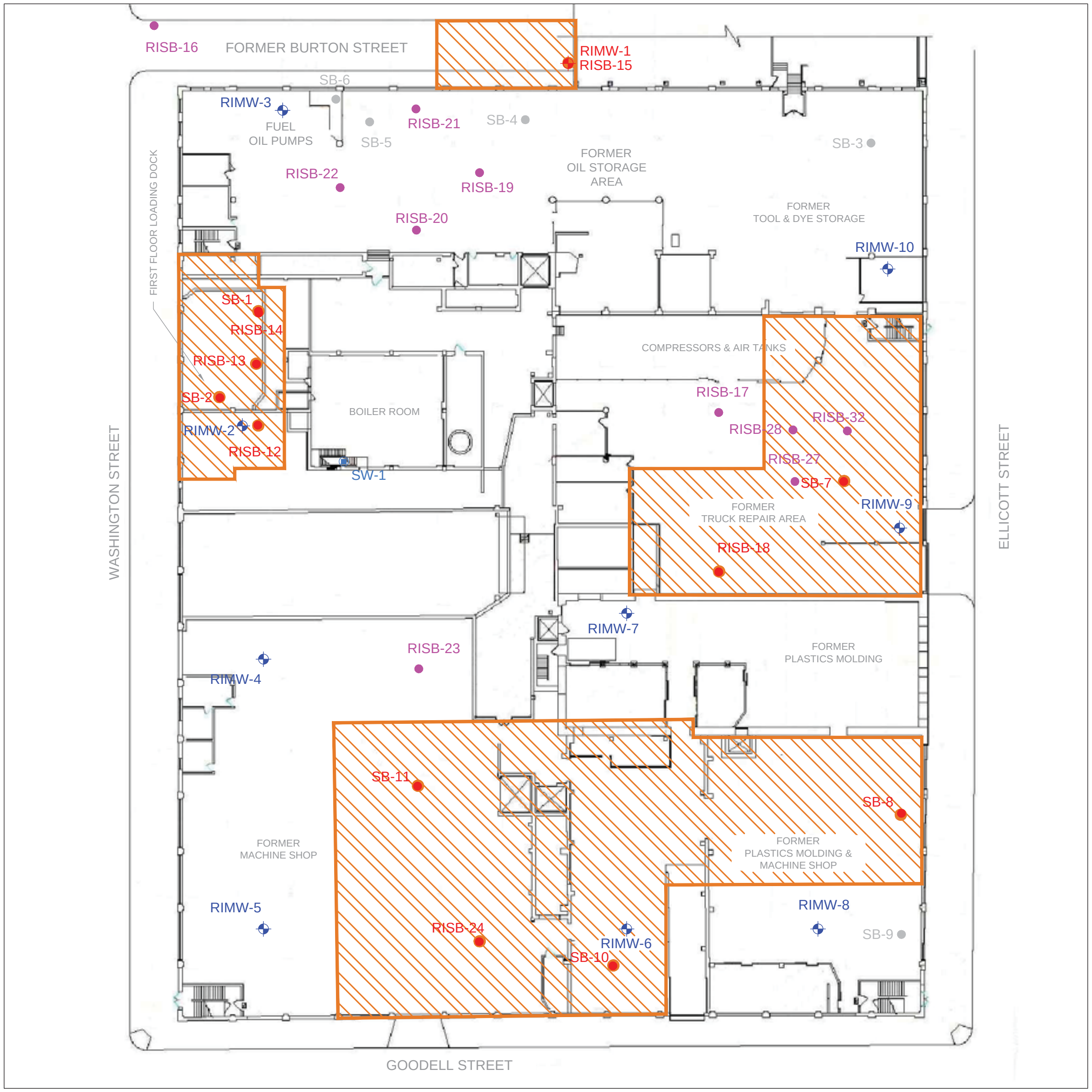
RI/AA REPORT
FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

PREPARED FOR
THE KROG GROUP, LLC

FIGURE 7

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

JOB NO.: 0092-016-001



LEGEND:

SB-2 ●	2013 BORING LOCATION
RISB-3 ●	SOIL BORING LOCATION
RIMW-2 ⊕	SOIL BORING/MONITORING WELL LOCATION
RIMW, SB, RISB ●	USCO SOIL FILL EXCEEDANCE
(hatched)	AREA OF USCO EXCEEDANCE REMOVAL

NOTES:
1. USCO = UNRESTRICTED SOIL CLEANUP OBJECTIVE.
2. AREAS OF USCO EXCEEDANCE REMOVAL ARE BASKED ON LIMITED DATA. RATIONAL OF LIMITS WERE TO IDENTIFY AREAS ½ THE DISTANCE TO AN ADJACENT SAMPLE LOCATION WHICH DID NOT CONTAIN AN USCO EXCEEDANCE, OR USED THE BOUNDARY OF THE BUILDING WALL OR CHANGE IN FLOOR GRADE ELEVATION.

N

40' 0' 40' 80'

SCALE: 1 INCH = 40 FEET
SCALE IN FEET
(approximate)

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JOB NO.: 0092-016-001

LOCATION OF UNRESTRICTED SOIL CLEANUP OBJECTIVE EXCEEDANCES

RI/AA REPORT

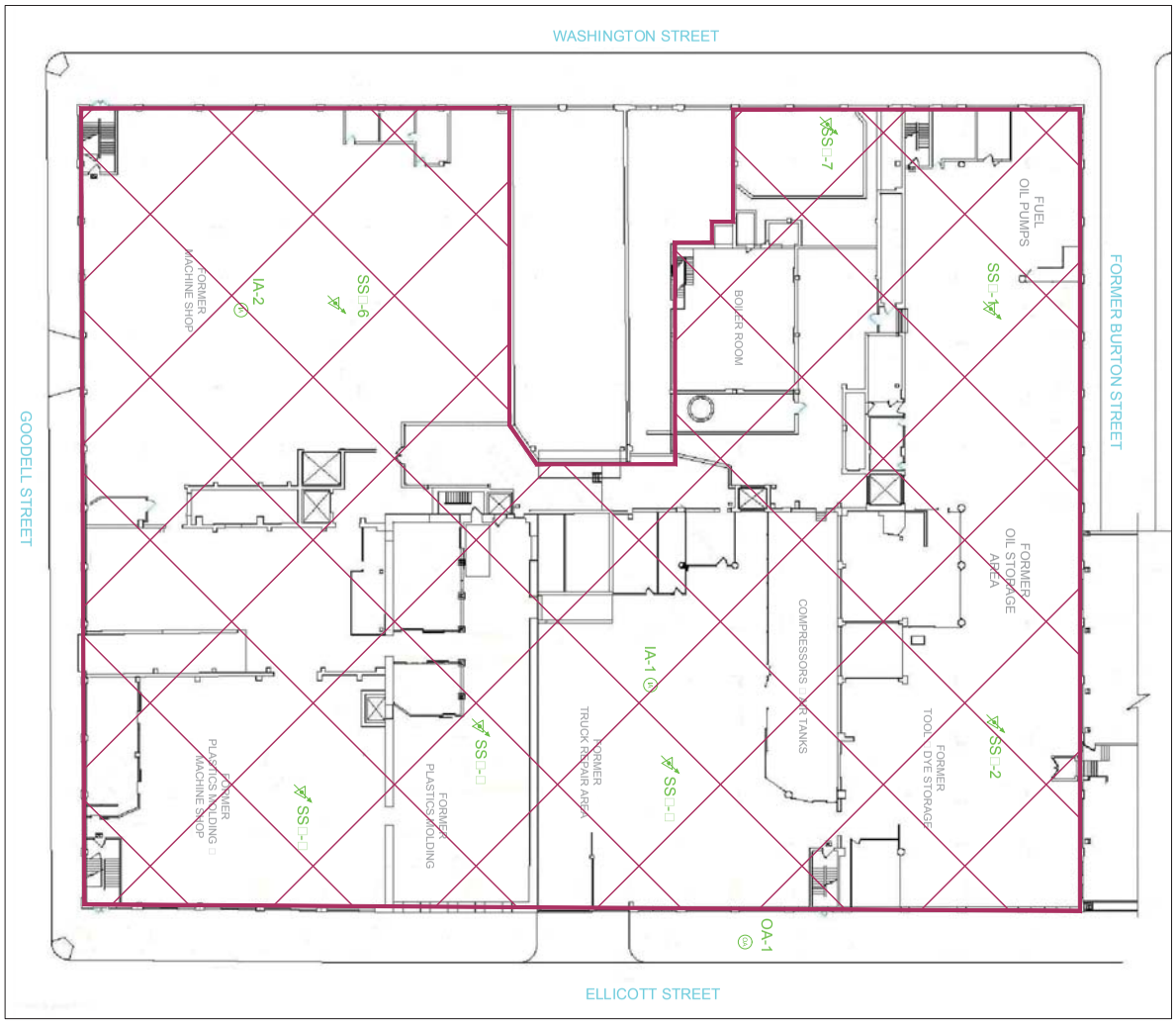
FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

PREPARED FOR
THE KROG GROUP, LLC

FIGURE 8

DATE: JULY 2016
DRAFTED BY: RFL

DATE: JULY 2016
DRAFTED BY: RFL



LEGEND:

SS-□ SUB-SLAB VAPOR SAMPLE LOCATION

IA-1 INDOOR AIR SAMPLE LOCATION

OA-1 OUTDOOR AIR SAMPLE LOCATION

AREA OF SVI MITIGATION

NOTES:
1. SVI = SOIL VAPOR INTRUSION

SCALE: 1 INCH = 40 FEET
SCALE IN FEET
(approximate)

0' 20' 40' 80'

N

FIGURE 9

AREA OF BUILDING REQUIRING SVI MITIGATION

RI/AA REPORT

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

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JOB NO.: 0092-016-001

APPENDIX A

UTILITY & SEWER OBSERVATIONS TABLE

APPENDIX A

UTILITY AND SEWER SERVICE FEATURES OBSERVATION SUMMARY TABLE

REMEDIAL INVESTIGATION / ALTERNATIVE ANALYSIS REPORT

FORMER TRICO PLANT
791 WASHINGTON STREET
BUFFALO, NEW YORK

Structure Indentification	Structure Location	Structure Type	Observations	Standing Water or Sediment Present	Visual Observations of Contamination	Olfactory Evidence of Contamination	PID Reading (ppm)	Notes
S-1	Basement - FOSA	Floor Drain	6-inch diameter concrete structure with 3-inch diameter pipe existing bottom vertically	Water & Sediment	Black staining and product around pipe. Sheen on sediment.	No	0	
S-2	Basement - FOSA	Floor Drain	6-inch diameter concrete structure with 3-inch diameter hole in bottom.	Sediment	No	No	0	
S-3	Basement - FOSA	Floor Drain	6-inch diameter	filled with sediment	No	No	0	could not open
S-4	Basement - FOSA	Floor Drain	6-inch diameter	filled with sediment	No	No	0	
S-5	Basement - FT&DA	Steel grate covered Pit	54 ft by 9 ft by 1.3 ft deep	Water	No	No	0	
S-6	Basement - FT&DA	Floor Drain	6-inch diameter concrete structure that elbows 45° towards east 6-inches below slab	No	No	No	0	could not open
S-7	Basement - FT&DA	Floor Drain	6-inch diameter concrete drain with perforated cover	Sediment	black stained sediment observed through cover	No	0	could not open
S-8	Basement - FT&DA	Floor Drain	6-inch diameter concrete drain with perforated cover	Sediment	black stained sediment observed through cover	No	0	could not open
S-9	Basement - C&ATA	Floor Drain	6-inch diameter concrete, elbows 45° towards east 6-inches below slab	No	No	No	0	no cover present
S-10	Basement - FTRA	Sump	24-inch diameter, 4-inch diameter iron pipe present in center extend to 48-inches below grade in southwestern direction	Sediment	No	No	0	grated cover
S-11	Basement - FTRA	Sump	24-inch diameter, 4-inch diameter iron pipe present in center extend to bottom of manhole in southwestern direction	Sediment	No	No	0	solid diamond plate cover
S-12	Basement - FTRA	Sump	24-inch diameter, pipes observed heading to east and north. Appears to be connected to S-11.	Sediment	No	No	0.1	
S-13	Basement - FTRA	Sump	24-inch diameter, pipe observed heading southeast towards S-14.	Sediment	No	No	0.6	grated cover
S-14	Basement - FTRA	Sump	24-inch diameter, pipe observed heading to northeast.	Water & Sediment	No	No	0	grated cover
S-15	Basement - FTRA	Sump	24-inch diameter, pipe observed heading to southeast.	Water & Sediment	slight sheen	No	0.7	
S-16	Basement - FPMA	Trench	4-inch by 8-inch by 18-inch deep trench. A 4-inch diameter pipe from floor above enters the trench. A 2-inch pipe is present in the trench in an east-west direction.	Water & Sediment	Oil present in west end of trench	No	1.7	
S-17	Basement - FPMA	Floor Drain	2-inch diameter drain that extends into a concrete covered floor trench	Sediment	No	No	0.8	Perforated Cover
S-18	Basement - FPMA	Floor Drain	2-inch diameter drain that extends into a concrete covered floor trench	No	No	No	0	slotted cover, could not open
S-19	Basement - FPM&MS	Sump	10-inch diameter	Sediment	No	No	0	no cover present
S-20	Basement - FPM&MS	Drainage Pipe	3-inch diameter	Sediment	No	No	0	Former use is unknown
S-21	Basement - FPM&MS	Roof Drain	4-inch diameter	No	No	No	0	Cut off at ceiling
S-22	Basement - FPM&MS	Floor Drain	3-inch diameter	Sediment	No	No	0	Perforated Cover
S-23	Basement - FPM&MS	Sump	12-inch by 12-inch by 8-inch deep	Sediment	No	No	0	Metal cover
S-24	Basement - FPM&MS	Drain	6-inch diameter	Water	slight sheen	No	0	
S-25	Basement	Drain	3-inch diameter	Water	No	No	0	
S-26	Basement	Metal Structure	6-foot by 6-foot	No	No	No	0	Could not Access
S-27	Basement - FMS	Sump	3-foot Diameter Sump Sealed Shut	No Access	No	No	0	could not open
S-28	Basement - FMS	Floor Drain	3-inch diameter	Sediment & Water	water is rust colored	No	0	
S-29	Basement - FMS	Roof Drain	4-inch diameter 45 degrees to west	No	No	No	0	Former roof drain
S-30	First Floor - FZDC & SC	Penetration	2-inch Penetrattion in slab	Sediment & Water	No	No	0	Could not see bottom
S-31	First Floor - FZDC & SC	No access	No access	No	No	No	0	could not open
S-32	First Floor - FZDC & SC	Trench	20-feet by 12-feet by 3-inches deep	No	No	No	0	diamond-plate cover
S-33	First Floor - FLD	Man Hole	No access	No	No	No	0	Could not open
S-34	First Floor - FLD	Sealed Grates	No access	No	No	No	0	Could not open
S-35	First Floor - SMA	Holding Tank	Above grade structure with drain. Approximately 12-inches wide by 12-inch tall	No	No	No	0	Black Stained
S-36	First Floor - SMA	Holding Tank	Above grade structure with drain. Approximately 12-inches wide by 12-inch tall	No	No	No	0	Black Stained

Notes:

1. Utility and subsurface structure assessment completed on May 18, 2016Assumes SVOC and metals-impacted soil/fill can be disposed of as non-hazardous waste. TCLP waste characterization will be required;
2. PID = photoionization detector
3. ppm = parts per million
4. FOSA = Former Oil Storage Area
5. FT&DA = Former Tool & Dye Area
6. C&ATA = Compressor & Air Tanks Area
7. FTRA = Former Truck Repair Area
8. FPMA = Former Plastic Molding Area
9. FMS = Former Machine Shop
10. FZDC & SC = Former Zinc Dye Casting & Spring Coiling
11. FLD = Former Loading Dock
12. SMA = Screw Machine Area

APPENDIX B

SOIL BORING AND WELL CONSTRUCTION LOGS

Summary of 2013 Limited Subsurface Investigation Sample Locations
Soil Description & Field Observations

Former Trico Plant
791 Washington Street
Buffalo, New York

Location	Total Soil Boring Depth*	Soil Sample Interval (fbgs)**	Soil Description/Field Observations/Notes	Location Description
Boring Sample Locations				
SB-1	2'	1-2'	3" concrete layer with visible oil-like substance between foundation layers 9" of concrete over cinder blocks Sample collected 1-2 ft	1st floor Former loading dock Near hydraulic lifts
SB-2	2'	1-2'	12" of concrete over cinder blocks Sample collected 1-2 ft	First floor Former loading dock Near hydraulic lifts
SB-3	1'	0.5-1.0'	6" of concrete Sand grading to clay	Basement Former tool and dye storage
SB-4	1'	0.5-1.0'	6" of concrete Petroleum like odor Gravel sub-base grading to clay	Basement Near oil storage
SB-5	1'	0.5-1.0'	6" of concrete Oil on floor near borings	Basement Near fuel oil pumps
SB-6	1'	0.5-1.0'	6" of concrete Oil on floor near borings	Basement Near fuel oil pumps
SB-7	1.5'	1.0-1.5'	8" of concrete Round gravel and cobbles grading to sand and clay	Basement Former truck repair area
SB-8	1.5'	1.0-1.5'	8" of concrete No odor Slag and sand	Basement Maintenance area
SB-9	1.5'	1.0-1.5'	8" of concrete No odor Slag and sand	Basement Maintenance area
SB-10	2'	1.0-2.0'	1' of concrete Pea stone grading to clay	Basement Near water tank
SB-11	2'	1.0-2.0'	1' of concrete Sand	Basement Former machine shop

Notes:

* - Total boring depth below the concrete foundation.

** - Interval depth of the layer of soil being sampled relative to depth below concrete slab

Project No: 0092-016-001

Borehole Number: RI SB-15/ RI MW-1

Project: Remedial Investigation

A.K.A.:

Client: The Krog Group, LLC.

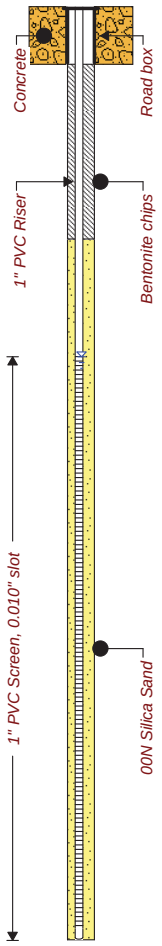
Logged By: PWW

Site Location: 791 Washington Street, Buffalo, NY

Checked By: CZB

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

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	***Asphalt and Concrete Aggregate***	S-1	NA	2.7		0.0 / 0.0 / 0.0		
	-3.0 / 3.0	***Sandy Lean Clay*** Reddish brown, moist, mostly medium plasticity fines, some fine sand, stiff massive							
	-4.0 / 4.0	As above, moist to wet (6')	S-2	NA	3.0		0.0 / 0.0	Sampled (6-8)	
5.0	-8.0 / 8.0	As above	S-3	NA	4.0		0.0 / 0.0		
	-9.0 / 9.0	***Poorly Graded Sand*** Brown, wet, mostly fine sand, trace gravel, massive, loose							
10.0	-12.0 / 12.0	As above	S-4	NA	4.0		0.0 / 0.0		
15.0	-16.0 / 16.0	End of Borehole					0.0 / 0.0		
20.0									



Drilled By: *Trec Environmental Inc.*
Drill Rig Type: *Geoprobe LT54 Track Mounted Rig*
Drill Method: *Direct Push w/ 4' macro-core*
Comments:
Drill Date(s): *5-23-16*

Hole Size: *3"*
Stick-up: *NA*
Datum:

Sheet: *1 of 1*

Project No: 0092-016-001

Borehole Number: RI MW-2

Project: Remedial Investigation

A.K.A.:

Client: The Krog Group, LLC.

Logged By: PWW

Site Location: 791 Washington Street, Buffalo, NY

Checked By: CZB

Benchmark Environmental Engineering & Science, PLLC
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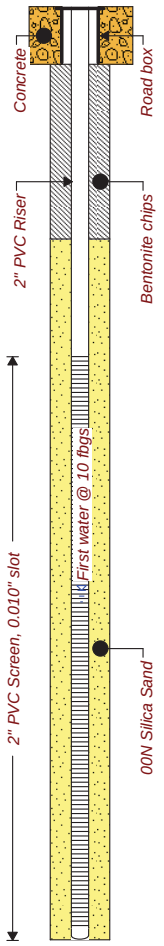
Buffalo, NY 14218
(716) 856-0599

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***					0.0		
	-0.8 0.8	***Fill*** Black, moist, mostly ash, some fine to coarse sand, loose	S-1	NA	2.7		0.0		
		Silty Sand Brown, moist, mostly fine sand, some non-plastic fines, loose when disturbed, massive					0.0		
	-4.0 4.0	***Sandy Lean Clay*** Reddish brown, moist, mostly medium plasticity fines, some fine sand, stiff massive					0.0		
5.0			S-2	NA	3.2		0.0		
	-8.0 8.0	As above, moist to wet (10')					0.0	Sampled (8-10')	
10.0			S-3	NA	4.0		0.0		
	-12.0 12.0	As above, wet					0.0		
15.0			S-4	NA	4.0		0.0		
	-16.0 16.0	End of Borehole					0.0		
20.0									



Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe LT54 Track Mounted Rig
Drill Method: Direct Push w/ 4' macro-core
Comments:
Drill Date(s): 5-23-16

Hole Size: 3"
Stick-up: NA
Datum:

Sheet: 1 of 1

Project No: 0092-016-001

Borehole Number: RI MW-3

Project: Remedial Investigation

A.K.A.:

Client: The Krog Group, LLC.

Logged By: PWW

Site Location: 791 Washington Street, Buffalo, NY

Checked By: CZB

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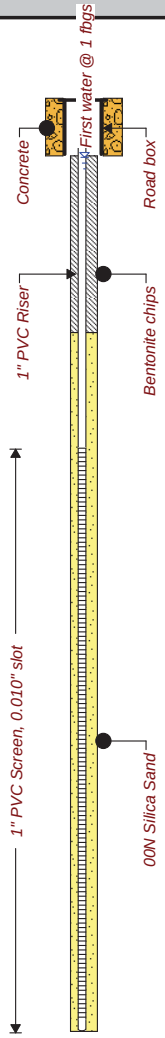
Buffalo, NY 14218
(716) 856-0599

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
-1.0	0.0	Ground Surface							
	0.0	***Concrete***					0.0		
	-0.8								
	0.8	***Sandy Lean Clay*** Reddish brown, moist to wet (1'), mostly medium plasticity fines, some fine sand, stiff massive	S-1	NA	3.6		0.0	Sampled (0-2')	
	-4.0								
4.0	4.0	As above, wet	S-2	NA	3.8		0.0		
	-8.0								
	8.0	As above	S-3	NA	4.0		0.0		
9.0									
	-12.0								
	12.0	As above	S-4	NA	4.0		0.0		
14.0									
	-16.0								
	16.0	End of Borehole							
19.0									



Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe LT54 Track Mounted Rig
Drill Method: Direct Push w/ 4' macro-core
Comments:
Drill Date(s): 5-25-16

Hole Size: 3"
Stick-up: NA
Datum:

Sheet: 1 of 1

Project No: 0092-016-001

Borehole Number: RI MW-4

Project: Remedial Investigation

A.K.A.:

Client: The Krog Group, LLC.

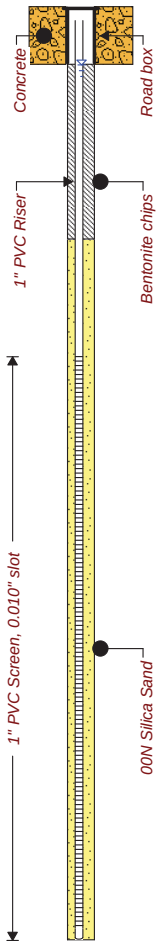
Logged By: PWW

Site Location: 791 Washington Street, Buffalo, NY

Checked By: CZB

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

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***					0.0		
	-1.0						0.0		
	1.0	***Silty Sand*** Brown, moist to wet (1'), mostly fine sand, some non-plastic fines, medium dense, massive	S-1	NA	2.4		0.0	Sampled (0-2')	
	-4.0								
	4.0	As above, wet					0.0		
5.0			S-2	NA	3.2		0.0		
	-8.0								
	8.0	As above					0.0		
10.0			S-3	NA	4.0		0.0		
	-12.0								
	12.0	As above					0.0		
			S-4	NA	4.0		0.0		
15.0							0.0		
	-16.0								
	16.0	End of Borehole							
20.0									



Drilled By: *Trec Environmental Inc.*
Drill Rig Type: *Geoprobe LT54 Track Mounted Rig*
Drill Method: *Direct Push w/ 4' macro-core*
Comments:
Drill Date(s): *5-25-16*

Hole Size: *3"*
Stick-up: *NA*
Datum:

Sheet: *1 of 1*

Project No: 0092-016-001

Borehole Number: RI MW-5

Project: Remedial Investigation

A.K.A.:

Client: The Krog Group, LLC.

Logged By: PWW

Site Location: 791 Washington Street, Buffalo, NY

Checked By: CZB

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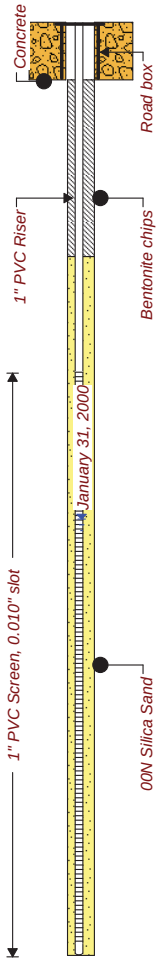
Buffalo, NY 14218
(716) 856-0599

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
-1.0	0.0	Ground Surface							
	0.0	***Concrete***					0.0		
	-1.0 1.0	***Lean Clay*** Reddish brown, moist to wet (3'), mostly medium plasticity fines, few fine sand, firm, massive	S-1	NA	1.9		0.0		
4.0	-4.0 4.0	As above, wet	S-2	NA	2.9		0.0	Sampled (6-8')	
	-8.0 8.0	***Silty Sand*** Reddish brown, wet, mostly fine sand, some non-plastic fines, medium dense, massive	S-3	NA	4.0		0.0		
9.0	-12.0 12.0	As above	S-4	NA	4.0		0.0		
14.0	-16.0 16.0	End of Borehole					0.0		
19.0									



Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe LT54 Track Mounted Rig
Drill Method: Direct Push w/ 4' macro-core
Comments:
Drill Date(s): 5-26-16

Hole Size: 3"
Stick-up: NA
Datum:

Sheet: 1 of 1

Project No: 0092-016-001

Borehole Number: RI MW-6

Project: Remedial Investigation

A.K.A.:

Client: The Krog Group, LLC.

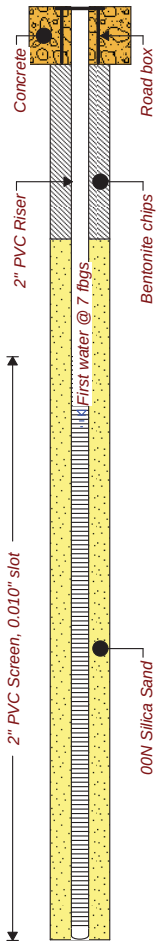
Logged By: PWW

Site Location: 791 Washington Street, Buffalo, NY

Checked By: CZB

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

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***					0.0		
	-0.8 / 0.8	***Poorly Graded Gravel*** Blackish brown, wet, mostly sub-rounded fine gravel, trace black fine sand					0.0		
		Silty Sand Reddish brown, moist, mostly fine sand, some non-plastic fines, medium dense, massive	S-1	NA	1.6		0.0		
	-4.0 / 4.0	***Lean Clay*** Reddish brown, moist, mostly medium plasticity fines, few fine sand, firm, massive					0.0		
5.0			S-2	NA	3.0		0.0	Sampled (4-7')	
	-7.0 / 7.0	***Silty Sand*** Reddish brown, moist to wet (7'), mostly fine sand, some non-plastic fines, medium dense, massive					0.0		
	-8.0 / 8.0	As above					0.0		
10.0			S-3	NA	4.0		0.0		
	-12.0 / 12.0	As above					0.0		
			S-4	NA	4.0		0.0		
15.0							0.0		
	-16.0 / 16.0	End of Borehole					0.0		
20.0									



Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe LT54 Track Mounted Rig
Drill Method: Direct Push w/ 4' macro-core
Comments:
Drill Date(s): 5-25-16

Hole Size: 3"
Stick-up: NA
Datum:

Sheet: 1 of 1

Project No: 0092-016-001

Borehole Number: RI MW-7

Project: Remedial Investigation

A.K.A.:

Client: The Krog Group, LLC.

Logged By: PWW

Site Location: 791 Washington Street, Buffalo, NY

Checked By: CZB

Benchmark Environmental Engineering & Science, PLLC
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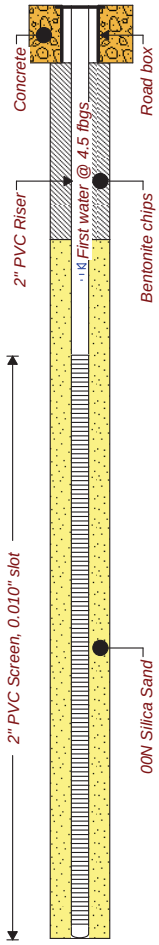
Buffalo, NY 14218
(716) 856-0599

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
-1.0							0 12.5 25		
	0.0	Ground Surface							
	0.0	***Concrete***					0.0		
	-1.0 1.0	***Silty Sand*** Brown, moist to wet (3'), mostly fine sand, some non-plastic fines, medium dense, massive	S-1	NA	2.6		0.0	Sampled (2-4')	
	-4.0 4.0	As above, wet					0.0		
4.0			S-2	NA	3.1		0.0		
	-8.0 8.0	As above					0.0		
9.0			S-3	NA	4.0		0.0		
	-12.0 12.0	As above					0.0		
14.0			S-4	NA	4.0		0.0		
	-16.0 16.0	End of Borehole					0.0		
19.0									



Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe LT54 Track Mounted Rig
Drill Method: Direct Push w/ 4' macro-core
Comments:
Drill Date(s): 5-26-16

Hole Size: 3"
Stick-up: NA
Datum:

Sheet: 1 of 1

Project No: 0092-016-001

Borehole Number: RI MW-8

Project: Remedial Investigation

A.K.A.:

Client: The Korg Group, LLC.

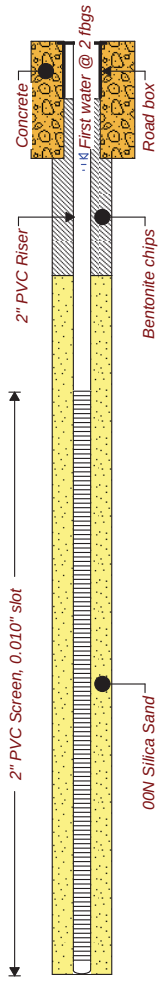
Logged By: PWW

Site Location: 791 Washington Street, Buffalo, NY

Checked By: CZB

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

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
-1.0	0.0	Ground Surface							
	0.0	***Concrete***					0.0		
	-1.0 1.0	***Silty Sand*** Brown, moist to wet (3'), mostly fine sand, some non-plastic fines, medium dense, massive	S-1	NA	2.1		0.0	Sampled (0-2')	
	-4.0						0.0		
4.0	4.0	As above, wet	S-2	NA	3.6		0.0		
	-8.0 8.0	As above					0.0		
9.0			S-3	NA	4.0		0.0		
	-12.0 12.0	As above					0.0		
14.0			S-4	NA	4.0		0.0		
	-16.0 16.0	End of Borehole					0.0		
19.0									



Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe LT54 Track Mounted Rig
Drill Method: Direct Push w/ 4' macro-core
Comments:
Drill Date(s): 5-26-16

Hole Size: 3"
Stick-up: NA
Datum:

Sheet: 1 of 1

Project No: 0092-016-001

Borehole Number: RI MW-9

Project: Remedial Investigation

A.K.A.:

Client: The Krog Group, LLC.

Logged By: PWW

Site Location: 791 Washington Street, Buffalo, NY

Checked By: CZB

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

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

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
-1.0									
	0.0	Ground Surface							
	0.0 / -0.5	***Concrete***					0.0	Sampled (0-2')	Concrete; Road box
	0.5 / -1.0	***Poorly Graded Gravel with Sand*** Blackish brown, wet, mostly sub-rounded fine gravel, some black fine sand					0.0		
	1.0	***Silty Sand*** Reddish brown, moist, mostly fine sand, some non-plastic fines, medium dense, massive	S-1	NA	2.6		0.0		
	-4.0								
4.0	4.0	As above, moist to wet (7')					0.0		2" PVC Riser; Bentonite chips
			S-2	NA	3.4		0.0		First water @ 7 fbgs
	-8.0								
	8.0	As above, wet					0.0		
9.0			S-3	NA	4.0		0.0		2" PVC Screen, 0.010" slot
	-12.0								
	12.0	As above					0.0		00N Silica Sand
14.0			S-4	NA	4.0		0.0		
	-16.0						0.0		
	16.0	End of Borehole							
19.0									

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe LT54 Track Mounted Rig
Drill Method: Direct Push w/ 4' macro-core
Comments:
Drill Date(s): 5-26-16

Hole Size: 3"
Stick-up: NA
Datum:

Sheet: 1 of 1

Project No: 0092-016-001

Borehole Number: RI MW-10

Project: Remedial Investigation

A.K.A.:

Client: The Krog Group, LLC.

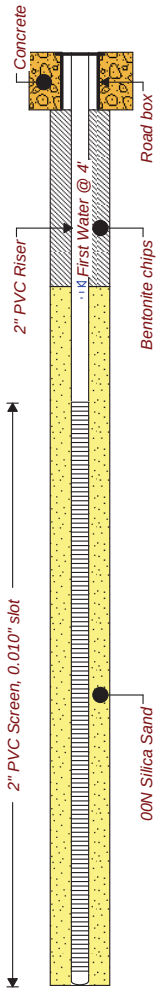
Logged By: PWW

Site Location: 791 Washington Street, Buffalo, NY

Checked By: CZB

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

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
-1.0	0.0	Ground Surface							
	0.0 / -1.0	***Concrete***					0.0		
	1.0 / -4.0	***Lean Clay*** Reddish brown, moist, mostly medium plasticity fines, few fine sand, firm, massive	S-1	NA	3.0		0.0 0.0	Sampled (2-4')	
4.0	4.0 / -8.0	***Silty Sand*** Reddish brown, moist to wet (4'), mostly fine sand, some non-plastic fines, medium dense, massive	S-2	NA	4.0		0.0 0.0		
9.0	8.0 / -12.0	As above, wet	S-3	NA	4.0		0.0 0.0		
14.0	12.0 / -16.0	As above	S-4	NA	4.0		0.0 0.0 0.0		
	16.0	End of Borehole							
19.0									



Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe LT54 Track Mounted Rig
Drill Method: Direct Push w/ 4' macro-core
Comments:
Drill Date(s): 5-26-16

Hole Size: 3"
Stick-up: NA
Datum:

Sheet: 1 of 1

Project No: 0092-016-001-005-001

Borehole Number: RIMW-11

Project: Remedial Investigation

A.K.A.:

Client: The Krog Group, LLC

Logged By: TAB

Site Location: 791 Washington Street, Buffalo, NY

Checked By: CZB

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
0.0	0.0	Ground Surface					0 12.5 25		
		Concrete Sidewalk.					0.0		Concrete
		Poorly Graded Gravel Grey, moist, mostly angular gravel (sidewalk sub-base), trace non-plastic fines, loose.							
		Alternating Fine Sand and Clay. Hand Cleared to 5.0 fbgs, Brown, moist, mostly, fine sand with medium plasticiy fines, medium dense to stiff.					0.0		
5.0	5.0	***Poorly Graded Sand with Silt*** Reddish brown, moist, mostly fine sand, few non-plastic fines, medium dense, loose when disturbed.	S1	12	1.0		0.0		2" PVC Riser
	6.0	***Lean Clay*** Reddish brown, moist, mostly medium plasticity fines, trace fine sand, medium toughness, medium dry strength, stiff, massive.	S2	9	1.6		0.0		Cemnt/Bentonite grout
	7.0								
	8.0	***Poorly Graded Sand with Silt*** As (5.0 to 5.25 fbgs) above, loose.	S3	12	1.7		0.0		First water 10.0 fbgs.
		Lean Clay As (5.25 to 6.0 fbgs) above, trace sub-rounded gravel.							
10.0	10.0	***Silty Sand*** Reddish brown, wet (10.0 fbgs), mostly fine sand, some non-plastic fines, dense, rapid dilatancy.	S4	31	1.8		0.0		
	11.0								
	12.0	***Sandy Lean Clay*** Reddish brown, moist, mostly medium plasticity fines, some fine sand, medium toughness, medium dry strength, massive, hard.	S5	48	1.0		0.0		
		Silty Sand As (10.0 to 11.0 fbgs) above, trace medium plasticity fines, very dense, slow dilatancy.							
15.0	14.0		S6	41	1.6		0.0		
	16.0	***Sandy Lean Clay*** As (11.0 to 12.0 fbgs), above, moist, stiff.	S7	11	1.7		0.0		
	18.0	As above, trace sub-rounded fine gravel, very stiff.	S8	18	1.9		0.0		
20.0	20.0						0.0		

Drilled By: Nature's Way Environmental
Drill Rig Type: CME 550
Drill Method: Continuous split spoon.
Comments:
Drill Date(s): 11/14/16

Hole Size: 8 1/2-inch.
Stick-up: NA
Datum: NA

Sheet: 1 of 2

Project No: 0092-016-001-005-001

Borehole Number: RIMW-11

Project: Remedial Investigation

A.K.A.:

Client: The Krog Group, LLC

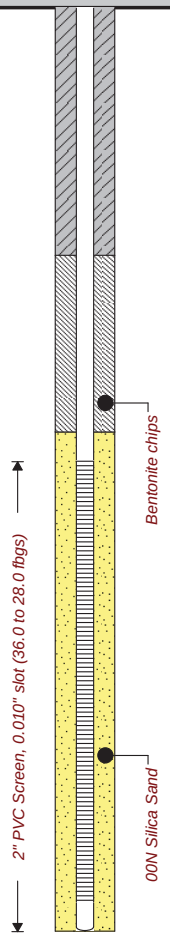
Logged By: TAB

Site Location: 791 Washington Street, Buffalo, NY

Checked By: CZB

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
	21.0	***Silty Sand***	S9	22	1.8		0.0		
	21.5	As (10.0 to 11.0fbgs) above, medium dense.							
	22.0	***Clayey Sand*** Reddish Brown, moist, mostly fine sand, little low plasticity fines, dense.	S10	12	1.7		0.0		
		Sandy Lean Clay As (16.0 to 18.0 fbgs) above, wet.							
	24.0		S11	13	1.4		0.0		
25.0									
	26.0	As above, hard.	S12	23	1.7		0.0		
	27.0	***Silty Sand*** As (21.0 to 21.5 fbgs) above, dense.							
	28.0	.	S13	17	1.6		0.0		
	29.8	***Sandy Lean Clay*** As (22.0 to 24.0fbgs) above, very stiff.							
30.0		***Silty Sand*** As (27.0 to 28.0 fbgs) above.	S14	19	1.1		0.0		
	32.0		S15	19	1.3		0.0		
	34.0	As above, dense.							
35.0			S16	25	1.2		0.0		
	35.5	***Sandy Lean Clay*** As (29.75 to 30.0 fbgs) above.							
	36.0	End of Borehole							
40.0									



Drilled By: Nature's Way Environmental
Drill Rig Type: CME 550
Drill Method: Continuous split spoon.
Comments:
Drill Date(s): 11/14/16

Hole Size: 8 1/2-inch.
Stick-up: NA
Datum: NA

Sheet: 2 of 2

Project No: 0092-016-001-005-001 **Borehole Number: RIMW-12**

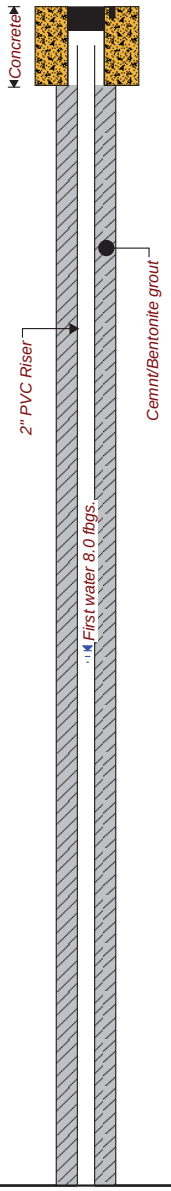
Project: Remedial Investigation ***A.K.A.:***

Client: The Krog Group, LLC ***Logged By:*** TAB

Site Location: 791 Washington Street, Buffalo, NY ***Checked By:*** CZB

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							
	0.4	***Concrete*** Sidewalk.					0.0		
	0.8	***Poorly Graded Gravel*** Grey, moist, mostly angular gravel (sidewalk sub-base), trace non-plastic fines, loose.							
		Alternating Fine Sand and Clay. Hand Cleared to 5.0 fbgs, Brown, moist, mostly, fine sand with medium plasticiy fines, medium dense to stiff.					0.0		
5.0	5.0	***Lean Clay with Sand*** Reddish brown, moist, mostly medium plasticity fines, trace fine sand, medium toughness, medium dry strength, stiff, massive.	S1	11	0.9		0.0		
	5.5								
	6.0	***Silty Sand*** Reddish brown, moist, mostly fine sand, some non-plastic fines, dense..	S2	20	1.5		0.0		
		Sandy Lean Clay Reddish brown, moist, mostly medium plasticity fines, some fine sand, medium toughness, medium dry strength, massive, very stiff.							
	8.0	***Silty Sand*** As (5.5 to 6.0 fbgs) above, wet (8.0 fbgs), medium dense, rapid dilatancy.	S3	23	1.2		0.0		
10.0	10.0		S4	29	1.4		0.0		
	12.0								
	13.0	***Sandy Lean Clay*** As (8.0 to 10.0 fbgs) above.	S5	18	1.3		0.0		
	13.5								
	14.0						0.0		



Drilled By: Nature's Way Environmental
Drill Rig Type: CME 550
Drill Method: Continuous split spoon.
Comments:
Drill Date(s): 11/21/16

Hole Size: 8 1/2-inch
Stick-up: NA
Datum: NA

Sheet: 1 of 3

Project No: 0092-016-001-005-001 **Borehole Number: RIMW-12**

Project: Remedial Investigation ***A.K.A.:***

Client: The Krog Group, LLC ***Logged By:*** TAB

Site Location: 791 Washington Street, Buffalo, NY ***Checked By:*** CZB

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
		Silty Sand As (8.0 to 10.0 fbgs) above, medium dense, slow dilatency. As above, very dense.	S6	50	1.1		0.0		
	16.0	***Sandy Lean Clay*** As (13.0 to 13.5 fbgs), above, moist, stiff.	S7	16	1.7		0.0		
	18.0	As above, trace sub-rounded fine gravel, very stiff.					0.0		
19.0	19.0	***Silty Sand*** As (13.5 to 14.0 fbgs) above.	S8	18	1.6		0.0		
	20.0								
	20.5	***Sandy Lean Clay*** As (16.0 to 18.0 fbgs) above.	S9	22	1.5		0.0		
	22.0	***Clayey Sand*** Reddish Brown, wet, mostly fine sand, some medium plasticity fines, slow dilatency, dense.	S10	31	1.2		0.0		
24.0	24.0	***Silty Sand*** As (20.0 to 20.5fbgs) above, dense.	S11	33	1.4		0.0		
	26.0	As above, hard.	S12	50	1.4		0.0		Bentonite chips
	28.0	***Sandy Lean Clay*** As (20.5 to 22.0 fbgs) above, hard.							
29.0	28.5		S13	53	1.3		0.0		

Drilled By: Nature's Way Environmental
Drill Rig Type: CME 550
Drill Method: Continuous split spoon.
Comments:
Drill Date(s): 11/21/16

Hole Size: 8 1/2-inch
Stick-up: NA
Datum: NA

Sheet: 2 of 3

Project No: 0092-016-001-005-001 **Borehole Number: RIMW-12**

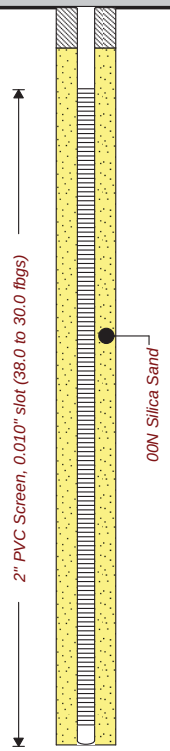
Project: Remedial Investigation ***A.K.A.:***

Client: The Krog Group, LLC ***Logged By:*** TAB

Site Location: 791 Washington Street, Buffalo, NY ***Checked By:*** CZB

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
		Silty Sand As (24.0 to 26.0 fbgs) very dense.	S13	33			0.0		
	30.0	As above, trace sub-rounded fine gravel.							
	30.5	***Sandy Lean Clay*** As (28.0 to 28.5 fbgs) above.	S14	40	1.3		0.0		
	31.5	***Silty Sand*** As (28.5 to 30.0 fbgs) above, very dense.							
	32.0		S15	62	1.4		0.0		
34.0	34.0	***Sandy Lean Clay*** As (30.5 to 31.5 fbgs) above.							
	34.5	***Silty Sand*** As (31.5 to 32.0 fbgs) above.	S16	81	1.4		0.0		
	36.0								
	37.0	***Sandy Lean Clay*** As (34.0 to 34.5 fbgs) above.	S17	54	1.3				
	38.0	As above, stiff.							
39.0			S18	14	1.7				
	40.0	End of Borehole							



Drilled By: Nature's Way Environmental
Drill Rig Type: CME 550
Drill Method: Continuous split spoon.
Comments:
Drill Date(s): 11/21/16

Hole Size: 8 1/2-inch
Stick-up: NA
Datum: NA

Sheet: 3 of 3

Project No: 0092-016-001

Borehole Number: RI SB-12

Project: Remedial Investigation

A.K.A.:

Client: The Krog Group, LLC.

Logged By: PWW

Site Location: 791 Washington Street, Buffalo, NY

Checked By: CZB

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

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

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***					0.0		
	-0.5								
	0.5	***Fill*** Black, moist, mostly ash, some fine to coarse sand, loose					0.0		
		Silty Sand Brown, moist, mostly fine sand, some non-plastic fines, loose when disturbed, massive	S-1	NA	2.5		0.0	Sampled (2-4')	
	-4.0								
	4.0	As above					0.0		
5.0			S-2	NA	3.2				
	-7.0						0.0		
	7.0	***Sandy Lean Clay*** Reddish brown, moist, mostly medium plasticity fines, some fine sand, stiff massive							
	-8.0								
	8.0	As above					0.0		
10.0			S-3	NA	4.0		0.0		
	-12.0								
	12.0	As above, moist to wet (13')					0.0		
15.0			S-4	NA	4.0		0.0		
	-16.0						0.0		
	16.0	End of Borehole							
20.0									

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe LT54 Track Mounted Rig
Drill Method: Direct Push w/ 4' macro-core
Comments:
Drill Date(s): 5-23-16

Hole Size: 3"
Stick-up: NA
Datum:

Sheet: 1 of 1

Project No: 0092-016-001

Borehole Number: RI SB-13

Project: Remedial Investigation

A.K.A.:

Client: The Krog Group, LLC.

Logged By: PWW

Site Location: 791 Washington Street, Buffalo, NY

Checked By: CZB

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

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***					0.0		
	-1.0						0.0		
	1.0	***Gravel and Sand*** Grey, moist, mostly fine to coarse gravel and, some fine to coarse sand, loose	S-1	NA	1.4				
							0.0		
	-4.0	Refusal on concrete					0.0		
	4.0	End of Borehole							
5.0									
10.0									
15.0									
20.0									

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe LT54 Track Mounted Rig
Drill Method: Direct Push w/ 4' macro-core
Comments:
Drill Date(s): 5-23-16

Hole Size: 3"
Stick-up: NA
Datum:

Sheet: 1 of 1

Project No: 0092-016-001

Borehole Number: RI SB-14

Project: Remedial Investigation

A.K.A.:

Client: The Krog Group, LLC.

Logged By: PWW

Site Location: 791 Washington Street, Buffalo, NY

Checked By: CZB

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

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 and Concrete Block***	S-1	NA	1.4		0.0		
							0.0		
	-3.0						0.0		
	3.0	***Void Space*** Open void space					0.0		
5.0									
10.0									
	-11.0	Refusal on concrete @ 11 fbgs							
	11.0	End of Borehole							
15.0									
20.0									

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe LT54 Track Mounted Rig
Drill Method: Direct Push w/ 4' macro-core
Comments:
Drill Date(s): 5-23-16

Hole Size: 3"
Stick-up: NA
Datum:

Sheet: 1 of 1

Project No: 0092-016-001

Borehole Number: RI SB-16

Project: Remedial Investigation

A.K.A.:

Client: The Krog Group, LLC.

Logged By: PWW

Site Location: 791 Washington Street, Buffalo, NY

Checked By: CZB

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

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
0.0	0.0	Ground Surface							
	0.0	***Asphalt and Concrete Aggregate***	S-1	NA	2.7		0.0 0.0 0.0	Sampled (0-5')	
	-3.0								
	3.0	***Sandy Lean Clay*** Reddish brown, moist, mostly medium plasticity fines, some fine sand, stiff massive							
	-4.0								
	4.0	As above, moist to wet (6')	S-2	NA	3.0		0.0 0.0		
5.0									
	-8.0								
	8.0	As above							
	-9.0								
	9.0	***Poorly Graded Sand*** Brown, wet, mostly fine sand, trace gravel, massive, loose	S-3	NA	4.0		0.0 0.0		
10.0									
	-12.0								
	12.0	As above	S-4	NA	4.0		0.0 0.0 0.0		
15.0									
	-16.0								
	16.0	End of Borehole							
20.0									

PID VOCs: 0 – 12.5 – 25 ppm

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe LT54 Track Mounted Rig
Drill Method: Direct Push w/ 4' macro-core
Comments:
Drill Date(s): 5-26-16

Hole Size: 3"
Stick-up: NA
Datum:

Sheet: 1 of 1

Project No: 0092-016-001

Borehole Number: RI SB-17

Project: Remedial Investigation

A.K.A.:

Client: The Krog Group, LLC.

Logged By: PWW

Site Location: 791 Washington Street, Buffalo, NY

Checked By: CZB

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

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***					0.0		
	-0.8 0.8	***Fill*** Black, moist, mostly ash, some fine to coarse sand, loose	S-1	NA	4.0		0.0		
		Sandy Lean Clay Reddish brown, moist to wet (2'), mostly medium plasticity fines, some fine sand, stiff massive					0.0		
	-4.0 4.0	As above, wet					0.0		
5.0			S-2	NA	4.0			Sampled (4-6')	
							0.0		
	-8.0 8.0	As above					0.0		
10.0			S-3	NA	4.0				
							0.0		
	-12.0 12.0	As above					0.0		
15.0			S-4	NA	4.0				
							0.0		
	-16.0 16.0	End of Borehole					0.0		
20.0									

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe LT54 Track Mounted Rig
Drill Method: Direct Push w/ 4' macro-core
Comments:
Drill Date(s): 5-24-16

Hole Size: 3"
Stick-up: NA
Datum:

Sheet: 1 of 1

Project No: 0092-016-001

Borehole Number: RI SB-18

Project: Remedial Investigation

A.K.A.:

Client: The Krog Group, LLC.

Logged By: PWW

Site Location: 791 Washington Street, Buffalo, NY

Checked By: CZB

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

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***					0.0		
	-0.8 0.8	***Fill*** Black, moist, mostly ash, some fine to coarse sand, loose	S-1	NA	4.0		0.0		
		Silty Sand Brown, moist, mostly fine sand, some non-plastic fines, loose when disturbed, massive					0.0	Sampled (2-4')	
	-4.0 4.0	***Sandy Lean Clay*** Reddish brown, moist to wet (6'), mostly medium plasticity fines, some fine sand, stiff massive					0.0		
5.0			S-2	NA	4.0		0.0		
	-8.0 8.0	As above, wet					0.0		
10.0			S-3	NA	4.0		0.0		
	-12.0 12.0	As above					0.0		
15.0			S-4	NA	4.0		0.0		
	-16.0 16.0	End of Borehole					0.0		
20.0									

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe LT54 Track Mounted Rig
Drill Method: Direct Push w/ 4' macro-core
Comments:
Drill Date(s): 5-24-16

Hole Size: 3"
Stick-up: NA
Datum:

Sheet: 1 of 1

Project No: 0092-016-001

Borehole Number: RI SB-19

Project: Remedial Investigation

A.K.A.:

Client: The Krog Group, LLC.

Logged By: PWW

Site Location: 791 Washington Street, Buffalo, NY

Checked By: CZB

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

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***					0.0		
	-0.8								
	0.8	***Fill*** Black, moist, mostly ash, some fine to coarse sand, loose	S-1	NA	4.0		0.0		
		Sandy Lean Clay Reddish brown, moist to wet (2'), mostly medium plasticity fines, some fine sand, stiff massive					0.0	Sampled (2-4')	
	-4.0								
	4.0	As above, wet							
5.0			S-2	NA	4.0		0.0		
	-8.0								
	8.0	As above					0.0		
10.0			S-3	NA	4.0		0.0		
	-12.0								
	12.0	As above					0.0		
15.0			S-4	NA	4.0		0.0		
	-16.0						0.0		
	16.0	End of Borehole							
20.0									

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe LT54 Track Mounted Rig
Drill Method: Direct Push w/ 4' macro-core
Comments:
Drill Date(s): 5-24-16

Hole Size: 3"
Stick-up: NA
Datum:

Sheet: 1 of 1

Project No: 0092-016-001

Borehole Number: RI SB-20

Project: Remedial Investigation

A.K.A.:

Client: The Krog Group, LLC.

Logged By: PWW

Site Location: 791 Washington Street, Buffalo, NY

Checked By: CZB

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

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***					0.0		
	-0.8 0.8	***Fill*** Black, moist, mostly ash, some fine to coarse sand, loose	S-1	NA	4.0		0.0		
		Sandy Lean Clay Reddish brown, moist to wet (2'), mostly medium plasticity fines, some fine sand, stiff massive					0.0		
	-4.0 4.0	As above, wet					0.0	Sampled (4-6')	
5.0			S-2	NA	4.0		0.0		
	-8.0 8.0	As above					0.0		
10.0			S-3	NA	4.0		0.0		
	-12.0 12.0	As above					0.0		
15.0			S-4	NA	4.0		0.0		
	-16.0 16.0	End of Borehole					0.0		
20.0									

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe LT54 Track Mounted Rig
Drill Method: Direct Push w/ 4' macro-core
Comments:
Drill Date(s): 5-24-16

Hole Size: 3"
Stick-up: NA
Datum:

Sheet: 1 of 1

Project No: 0092-016-001

Borehole Number: RI SB-21

Project: Remedial Investigation

A.K.A.:

Client: The Krog Group, LLC.

Logged By: PWW

Site Location: 791 Washington Street, Buffalo, NY

Checked By: CZB

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

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***					0.0		
	-0.8 / 0.8	***Fill*** Black, moist, mostly ash, some fine to coarse sand, loose	S-1	NA	3.1		0.0		
		Sandy Lean Clay Reddish brown, moist, mostly medium plasticity fines, some fine sand, stiff massive					0.0		
	-4.0 / 4.0	As above, moist to wet (6')	S-2	NA	4.0		0.0	Sampled (6-8')	
5.0							0.0		
	-8.0 / 8.0	As above, wet	S-3	NA	4.0		0.0		
10.0							0.0		
	-12.0 / 12.0	As above	S-4	NA	4.0		0.0		
15.0							0.0		
	-16.0 / 16.0	End of Borehole					0.0		
20.0									

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe LT54 Track Mounted Rig
Drill Method: Direct Push w/ 4' macro-core
Comments:
Drill Date(s): 5-24-16

Hole Size: 3"
Stick-up: NA
Datum:

Sheet: 1 of 1

Project No: 0092-016-001

Borehole Number: RI SB-22

Project: Remedial Investigation

A.K.A.:

Client: The Krog Group, LLC.

Logged By: PWW

Site Location: 791 Washington Street, Buffalo, NY

Checked By: CZB

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

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***					0.0		
	-0.8 0.8	***Fill*** Black, moist, mostly ash, some fine to coarse sand, loose	S-1	NA	4.0		0.0		
		Sandy Lean Clay Reddish brown, moist, mostly medium plasticity fines, some fine sand, stiff massive					0.0		
	-4.0 4.0	As above, moist to wet (6')							
5.0			S-2	NA	4.0		0.0		
	-8.0 8.0	As above, wet					0.0	Sampled (8-10')	
10.0			S-3	NA	4.0		0.0		
	-12.0 12.0	As above					0.0		
15.0			S-4	NA	4.0		0.0		
	-16.0 16.0	End of Borehole					0.0		
20.0									

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe LT54 Track Mounted Rig
Drill Method: Direct Push w/ 4' macro-core
Comments:
Drill Date(s): 5-24-16

Hole Size: 3"
Stick-up: NA
Datum:

Sheet: 1 of 1

Project No: 0092-016-001

Borehole Number: RI SB-23

Project: Remedial Investigation

A.K.A.:

Client: The Krog Group, LLC.

Logged By: PWW

Site Location: 791 Washington Street, Buffalo, NY

Checked By: CZB

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

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***					0.0		
	-0.8						0.0		
	0.8	***Sandy Lean Clay*** Reddish brown, moist to wet (1'), mostly medium plasticity fines, some fine sand, stiff massive	S-1	NA	2.8		0.0	Sampled (2-4')	
	-4.0								
	4.0	As above, wet					0.0		
5.0			S-2	NA	4.0		0.0		
	-8.0								
	8.0	As above					0.0		
10.0			S-3	NA	4.0		0.0		
	-12.0								
	12.0	As above					0.0		
			S-4	NA	4.0		0.0		
15.0							0.0		
	-16.0								
	16.0	End of Borehole							
20.0									

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe LT54 Track Mounted Rig
Drill Method: Direct Push w/ 4' macro-core
Comments:
Drill Date(s): 5-24-16

Hole Size: 3"
Stick-up: NA
Datum:

Sheet: 1 of 1

Project No: 0092-016-001

Borehole Number: RI SB-24

Project: Remedial Investigation

A.K.A.:

Client: The Krog Group, LLC.

Logged By: PWW

Site Location: 791 Washington Street, Buffalo, NY

Checked By: CZB

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

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***					0.0		
	-0.8								
	0.8	***Sandy Lean Clay*** Reddish brown, moist to wet (1'), mostly medium plasticity fines, some fine sand, stiff massive	S-1	NA	3.0		0.0		
	-4.0						0.0		
	4.0	As above, wet							
5.0			S-2	NA	4.0		0.0	Sampled (4-6')	
	-8.0						0.0		
	8.0	As above							
10.0			S-3	NA	4.0		0.0		
	-12.0						0.0		
	12.0	As above							
15.0			S-4	NA	4.0		0.0		
	-16.0						0.0		
	16.0	End of Borehole							
20.0									

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe LT54 Track Mounted Rig
Drill Method: Direct Push w/ 4' macro-core
Comments:
Drill Date(s): 5-24-16

Hole Size: 3"
Stick-up: NA
Datum:

Sheet: 1 of 1

Project No: 0092-016-001-005-001 **Borehole Number: RISB-25**

Project: Remedial Investigation ***A.K.A.:***

Client: The Krog Group, LLC ***Logged By:*** TAB

Site Location: 791 Washington Street, Buffalo, NY ***Checked By:*** CZB

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 / 0.4	***Concrete*** Concrete floor							
		Poorly Graded Gravel with Silt and Sand Grey, moist, mostly sub-rounded fine gravel, little fine sand, trace non-plastic fines, medium dense loose when disturbed.					0.0		
		Poorly Graded Sand with Silt Reddish brown, wet (0.5 fbgs), mostly fine sand, few non-plastic fines, medium dense, rapid dilatancy.	C1	NA	3.2		0.0		
	-3.0 / 3.0	***Lean Clay*** Reddish brown, moist, mostly medium plasticity fines, trace fine sand, stiff, medium toughness, medium dry strength, massive.							
	-4.0 / 4.0								
5.0			C2	NA	2.4		0.0 / 0.0		
	-8.0 / 8.0	***Lean Clay with Sand*** Reddish brown, moist, mostly medium plasticity fines, little fine sand, stiff, medium toughness, medium dry strength.							
10.0			C3	NA	0.8		0.0 / 0.0		
	-11.5 / 11.5	End of boring 12.0 fbgs.							
	-12.0 / 12.0	End of Borehole							

0.5 fbgs.

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe 54LT
Drill Method: Directpush w/4' macro-core.
Comments:
Drill Date(s): 11/14/16

Hole Size: 3-inch.
Stick-up: NA
Datum: NA

Sheet: 1 of 1

Project No: 0092-016-001-005-001 **Borehole Number: RISB-26**

Project: Remedial Investigation ***A.K.A.:***

Client: The Krog Group, LLC. ***Logged By:*** TAB

Site Location: 791 Washington Street, Buffalo, NY ***Checked By:*** CZB

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***							
	-0.4	Concrete floor							
	0.4	***Poorly Graded Gravel with Silt and Sand*** Grey, moist, mostly sub-rounded fine gravel, little fine sand, trace non-plastic fines, medium dense loose when disturbed.					0.0		
		Lean Clay Reddish brown, wet, mostly medium plasticity fines, trace fine sand, stiff, medium toughness, medium dry strength, massive.	C1	NA	1.5		0.1		
							0.9		
	-4.0								
	4.0	As above, moist.					0.2		
5.0			C2	NA	2.9				
							0.2		
	-8.0								
	8.0						0.1		
10.0			C3	NA	2.5				
							0.0		
	-11.5								
	11.5	End of boring 12.0 fbgs.							
	-12.0								
	12.0	End of Borehole							

0.5 fbgs.

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe 54LT
Drill Method: Directpush w/ 4' macro-core.
Comments:
Drill Date(s): 11/14/16

Hole Size: 3-inch.
Stick-up: NA
Datum: NA

Sheet: 1 of 1

Project No: 0092-016-001-005-001 **Borehole Number: RISB-27**

Project: Remedial Investigation ***A.K.A.:***

Client: The Krog Group, LLC ***Logged By:*** TAB

Site Location: 791 Washington Street, Buffalo, NY ***Checked By:*** CZB

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***							
	-0.4	Concrete floor							
	0.4	***Poorly Graded Gravel with Silt and Fill*** Black, moist, mostly angular gravel, trace non-plastic fines, cinders, loose.					0.0		
		Sandy Lean Clay Reddish brown, moist, mostly medium plasticity fines, some fine sand, stiff, medium toughness, medium dry strength, massive.	C1	NA	2.5		0.0 1.4		
	-4.0								
	4.0								
5.0							2.2		
	-6.0								
	6.0	***Poorly Graded Sand with Silt*** Reddish brown, wet (7.0 fbgs), mostly fine sand, few non-plastic fines, medium dense, rapid dilatancy.	C2	NA	3.6		4.6		*First water 7.0 fbgs.*
	-7.5							Sample Location	
	7.5	***Sandy Lean Clay*** As above (0.60 to 4.0 fbgs).					0.6		
	-8.0								
	8.0						0.0		
10.0			C3	NA	2.6				
	-11.5						9.0		
	11.5	End of boring 12.0 fbgs.						Sample Location	
	-12.0								
	12.0	End of Borehole							

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe 54LT
Drill Method: Directpush w/ 4' macro-core
Comments:
Drill Date(s): 11/14/16

Hole Size: 3-inch.
Stick-up: NA
Datum: NA

Sheet: 1 of 1

Project No: 0092-016-001-005-001 **Borehole Number: RISB-28**

Project: Remedial Investigation ***A.K.A.:***

Client: The Krog Group, LLC ***Logged By:*** TAB

Site Location: 791 Washington Street, Buffalo, NY ***Checked By:*** CZB

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***							
	-0.4	Concrete floor							
	0.4	***Poorly Graded Gravel with Silt and Fill*** Black, moist, mostly angular gravel, trace non-plastic fines, cinders, loose.					1.4		
		Lean Clay Reddish brown, moist, mostly medium plasticity fines, few fine sand, stiff, medium toughness, medium dry strength, massive.	C1	NA	3.7		1.4		
	-4.0								
	4.0								
5.0							3.3	Sample Location	
	-6.0								
	6.0	***Poorly Graded Sand with Silt*** Reddish brown, wet (6.5 fbgs), mostly fine sand, few non-plastic fines, medium dense, rapid dilatency.	C2	NA	3.5		2.3		*First water 6.5 fbgs.*
	-8.0								
	8.0								
10.0			C3	NA	0.8		1.4		
	-11.5								
	11.5	End of boring 12.0 fbgs.							
	-12.0								
	12.0	End of Borehole							

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe 54LT
Drill Method: Directpush w/ 4' macro-core.
Comments:
Drill Date(s): 11/14/16

Hole Size: 3-inch.
Stick-up: NA
Datum: NA

Sheet: 1 of 1

Project No: 0092-016-001-005-001 **Borehole Number: RISB-29**

Project: Remedial Investigation ***A.K.A.:***

Client: The Krog Group, LLC ***Logged By:*** TAB

Site Location: 791 Washington Street, Buffalo, NY ***Checked By:*** CZB

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***							
	-0.4	Concrete floor							
	0.4	***Poorly Graded Gravel with Silt and Fill*** Black, moist, mostly angular gravel, trace non-plastic fines, cinders, loose.					0.0		
		Lean Clay with Sand Reddish brown, moist, mostly low plasticity fines, little fine sand, stiff, medium toughness, medium dry strength, massive.	C1	NA	3.9		0.0		
	-4.0								
	4.0	***Poorly Graded Sand*** Brown, moist, mostly fine sand, trace non-plastic fines, medium dense, loose when disturbed.							
	-4.5								
5.0	4.5	***Poorly Graded Sand with Silt*** Reddish brown, wet (7.0 fbgs), mostly fine sand, few non-plastic fines, medium dense, rapid dilatancy.					0.0		First water 7.0 fbgs.
			C2	NA	2.5				
	-7.0								
	7.0	***Sandy Lean Clay*** Reddish brown, moist, mostly medium plasticity fines, some fine sand, stiff, medium toughness, medium dry strength, massive.					0.0		
	-8.0								
	8.0	***Silty Sand*** Reddish brown, wet, mostly fine sand, some non-plastic fines, medium dense, rapid dilatancy.					0.0		
10.0	-10.0								
	10.0	***Sandy Lean Clay*** As (7.0 to 8.0 fbgs) above.	C3	NA	1.8		0.0		
	-11.5								
	11.5	End of boring 12.0 fbgs.							
	-12.0								
	12.0	End of Borehole							

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe 54LT
Drill Method: Directpush w/4' macro-core.
Comments:
Drill Date(s): 11/14/16

Hole Size: 3-inch.
Stick-up: NA
Datum: NA

Sheet: 1 of 1

Project No: 0092-016-001-005-001 **Borehole Number: RISB-30**

Project: Remedial Investigation ***A.K.A.:***

Client: The Krog Group, LLC ***Logged By:*** TAB

Site Location: 791 Washington Street, Buffalo, NY ***Checked By:*** CZB

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***							
	-0.4	Concrete floor							
	0.4	***Poorly Graded Gravel with Silt and Fill***							
	-1.0	Black, moist, mostly angular gravel, trace non-plastic fines, cinders, loose.					0.0		
	1.0	***Poorly Graded Sand***							
		Brown, moist, mostly fine sand, trace non-plastic fines, medium dense, loose when disturbed.							
		Sandy Lean Clay	C1	NA	2.9		0.0		
		Reddish brown, moist, mostly medium plasticity fines, some fine sand, stiff, medium toughness, medium dry strength, massive.							
	-3.5								
	3.5	***Poorly Graded Sand with Silt***							
	-4.0	Reddish brown, moist, mostly fine sand, few non-plastic fines, medium dense, rapid dilatency.							
	4.0								
5.0							0.1		
		As above, wet (7.0 fbgs).	C2	NA	1.9				*First water 7.0 fbgs.*
							0.2		
	-8.0								
	8.0	As above.							
							0.3		
10.0	-10.0								
	10.0	***Sandy Lean Clay***	C3	NA	2.8				
		As (1.0 to 3.5fbgs) above.							
							0.3		
	-11.5								
	11.5	End of boring 12.0 fbgs.							
	-12.0								
	12.0	End of Borehole							

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe 54LT
Drill Method: Directpush w/4' macro-core
Comments:
Drill Date(s): 11/14/16

Hole Size: 3-inch.
Stick-up: NA
Datum: NA

Sheet: 1 of 1

Project No: 0092-016-001-005-001 **Borehole Number: RISB-31**

Project: Remedial Investigation ***A.K.A.:***

Client: The Krog Group, LLC ***Logged By:*** TAB

Site Location: 791 Washington Street, Buffalo, NY ***Checked By:*** CZB

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***							
	-0.4	Concrete floor							
	0.4	***Poorly Graded Gravel with Silt and Fill*** Black, moist, mostly angular gravel, trace non-plastic fines, cinders, loose.					0.0		
		Poorly Graded Sand Brown, moist, mostly fine sand, trace non-plastic fines, medium dense, loose when disturbed.	C1	NA	1.8		0.2		
	-4.0								
	4.0						0.0		
5.0									
	-6.0								
	6.0	***Sandy Lean Clay*** Reddish brown, moist, mostly medium plasticity fines, some fine sand, medium toughness, medium dry strength, massive.	C2	NA	2.8		0.0		*First water 7.0 fbgs.*
	-6.5								
	6.5	***Silty Sand*** Reddish brown, wet (7.0 fbgs), mostly fine sand, little non-plastic fines, medium dense, rapid dilatancy.							
	-8.0								
	8.0						0.0		
10.0	-10.0								
	10.0	***Sandy Lean Clay*** As (6.0 to 6.5 fbgs) above.	C3	NA	2.1				
							0.0		
	-11.5								
	11.5	End of boring 12.0 fbgs.							
	-12.0								
	12.0	End of Borehole							

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe 54LT
Drill Method: Directpush w/ 4' macro-core.
Comments:
Drill Date(s): 11/14/16

Hole Size: 3-inch.
Stick-up: NA
Datum: NA

Sheet: 1 of 1

Project No: 0092-016-001-005-001

Borehole Number: RISB-32

Project: Remedial Investigation

A.K.A.:

Client: The Krog Group, LLC

Logged By: TAB

Site Location: 791 Washington Street, Buffalo, NY

Checked By: CZB

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 / 0.4	***Concrete*** Concrete floor							
	-1.0 / 1.0	***Poorly Graded Gravel with Silt and Fill*** Black, moist, mostly angular gravel, trace non-plastic fines, cinders, loose.					1.4		
		Poorly Graded Sand Brown, moist, mostly fine sand, trace non-plastic fines, medium dense, loose when disturbed.							
		Sandy Lean Clay Reddish brown, moist, mostly medium plasticity fines, some fine sand, medium toughness, medium dry strength, massive.	C1	NA	3.6		2.5		
	-4.0 / 4.0								
5.0			C2	NA	2.2		8.1		
	-6.5 / 6.5	***Silty Sand*** Reddish brown, wet (8.0 fbgs), mostly fine sand, little non-plastic fines, medium dense, rapid dilatancy.					15.3	Sample Location	*First water 8.0 fbgs.*
	-8.0 / 8.0								
10.0			C3	NA	1.5		15.2		
							15.3		
	-11.5 / 11.5	End of boring 12.0 fbgs.							
	-12.0 / 12.0	End of Borehole							

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe 54LT
Drill Method: Directpush w/ 4' macro-core.
Comments:
Drill Date(s): 11/14/16

Hole Size: 3-inch.
Stick-up: NA
Datum: NA

Sheet: 1 of 1

Project No: 0092-016-001-005-001 **Borehole Number: RISB-33**

Project: Remedial Investigation ***A.K.A.:***

Client: The Krog Group, LLC ***Logged By:*** TAB

Site Location: 791 Washington Street, Buffalo, NY ***Checked By:*** CZB

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 / 0.4	***Concrete*** Concrete floor							
		Poorly Graded Gravel with Silt and Fill Black, moist, mostly angular gravel, trace non-plastic fines, cinders, loose.					0.6		
		Sandy Lean Clay Reddish brown, moist, mostly medium plasticity fines, some fine sand, medium toughness, medium dry strength, massive.	C1	NA	3.8		1.6		
	-4.0 / 4.0								
5.0			C2	NA	2.7		1.4		*First water 7.0 fbgs.*
	-7.0 / 7.0	As above, wet (7.0 fbgs).					1.8		
	-8.0 / 8.0	***Silty Sand*** Reddish brown, wet, mostly fine sand, little non-plastic fines, medium dense, rapid dilatancy.					1.9		
10.0			C3	NA	2.5		3.6		
	-11.5 / 11.5	End of boring 12.0 fbgs.							
	-12.0 / 12.0	End of Borehole							

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe 54LT
Drill Method: Directpush w/ 4' macro-core.
Comments:
Drill Date(s): 11/14/16

Hole Size: 3-inch.
Stick-up: NA
Datum: NA

Sheet: 1 of 1

Project No: 0092-016-001-005-001

Borehole Number: RISB-34

Project: Remedial Investigation

A.K.A.:

Client: The Krog Group, LLC

Logged By: TAB

Site Location: 791 Washington Street, Buffalo, NY

Checked By: CZB

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***							
	-0.4	Concrete floor							
	0.4	***Poorly Graded Gravel with Silt and Fill*** Black, moist, mostly angular gravel, trace non-plastic fines, cinders, loose.					0.0		
		Sandy Lean Clay Reddish brown, moist, mostly medium plasticity fines, some fine sand, medium toughness, medium dry strength, massive.	C1	NA	1.7		0.0		
	-3.5								
	3.5	***Silty Sand*** Reddish brown, moist, mostly fine sand, little non-plastic fines, medium dense, rapid dilatancy.							
	-4.0								
	4.0	***Sandy Lean Clay*** As (0.6 to 3.5 fbgs) above.					0.0		
5.0									
	-6.0								
	6.0	***Silty Sand*** As (3.5 to 4.0 fbgs) above, wet at (7.0 fbgs).	C2	NA	2.7		0.0		First water 7.0 fbgs.
	-8.0								
	8.0						0.0		
10.0	-10.0								
	10.0	***Sandy Lean Clay*** As (0.6 to 3.5 fbgs) above.	C3	NA	3.1		0.0		
	-11.5								
	11.5	End of boring 12.0 fbgs.							
	-12.0								
	12.0	End of Borehole							

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe 54LT
Drill Method: Directpush w/ 4' macro-core.
Comments:
Drill Date(s): 11/14/16

Hole Size: 3-inch.
Stick-up: NA
Datum: NA

Sheet: 1 of 1

Project No: 0092-016-001-005-001 **Borehole Number: RISB-35**

Project: Remedial Investigation ***A.K.A.:***

Client: The Krog Group, LLC ***Logged By:*** TAB

Site Location: 791 Washington Street, Buffalo, NY ***Checked By:*** CZB

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 floor							
	0.4	***Poorly Graded Gravel with Silt and Fill*** Black, moist, mostly angular gravel, trace non-plastic fines, cinders, loose.					0.0		
	-1.0 1.0	***Poorly Graded Sand*** Brown, moist, mostly, fine sand, trace non-plastic fines, medium dense, loose when disturbed.							
		Sandy Lean Clay Reddish brown, moist, mostly medium plasticity fines, some fine sand, medium toughness, medium dry strength, massive.	C1	NA	1.7		0.0		
	-3.0 3.0	***Silty Sand*** Reddish brown, moist, mostly fine sand, little non-plastic fines, medium dense, rapid dilatancy.							
	-4.0 4.0	***Sandy Lean Clay*** As (1.0 to 3.0 fbgs) above.					0.0		
5.0			C2	NA	2.7			Sample location.	*First water 7.0 fbgs.*
	-7.0 7.0	As above, wet (7.0 fbgs).					0.0		
	-8.0 8.0						0.0		
10.0			C3	NA	3.1				
	-11.5 11.5	End of boring 12.0 fbgs.					0.0		
	-12.0 12.0	End of Borehole							

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe 54LT
Drill Method: Directpush w/4' macro-core.
Comments:
Drill Date(s): 11/14/16

Hole Size: 3-inch.
Stick-up: NA
Datum: NA

Sheet: 1 of 1