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Remedial Investigation / Interim Remedial Measures / Alternatives Analysis Report

402 & 430 Buffalo Avenue Site

August 2015 0294-013-001

Prepared For:

Merani Hospitality, Inc.

Prepared By:

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

In Association With:

TURNKEY ENVIRONMENTAL RESTORATION, LLC

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REMEDIAL INVESTIGATION/ INTERIM REMEDIAL MEASURES / ALTERNATIVES ANALYSIS REPORT

402 AND 430 BUFFALO AVENUE SITE
NIAGARA FALLS, NEW YORK
BCP SITE NO. C932164

August 2015 0294-013-001

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Certification

I, Thomas H. Forbes, certify that I am currently a NYS registered professional engineer as defined in 6NYCRR Part 375 and that this August 2015 Remedial Investigation/Interim Remedial Measures/Alternatives Analysis Report (RI/IRM/AAR) for the 402 and 430 Buffalo Avenue Site (C932164) was prepared in general accordance with applicable statutes and regulations and in general conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and that activities were performed in general accordance with the DER-approved work plan and any DER-approved modifications.

_____

Date

1.0 INTRODUCTION

This Remedial Investigation/Interim Remedial Measures/Alternatives Analysis Report (RI/IRM/AAR) has been prepared by Benchmark Environmental Engineering and Science, PLLC (Benchmark), in association with TurnKey Environmental Restoration, LLC (TurnKey), referred to herein as Benchmark-Turnkey, on behalf of Merani Hospitality, Inc. (Merani), for the 402 and 430 Buffalo Avenue Site, located in the City of Niagara Falls, Niagara County, New York (Site; see Figures 1 and 2).

Merani elected to pursue cleanup and redevelopment of the Site under the New York State Brownfield Cleanup Program (BCP), and executed a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC) in August 2014, and amended in November 2014 (Site No. C932164). The RI/AA Work Plan was approved by the NYSDEC, with concurrence of the New York State Department of Health (NYSDOH), in February 2015. Benchmark-TurnKey performed RI activities at the Site between January and May 2015.

In addition to the RI/AA Work Plan, Benchmark–TurnKey prepared an Interim Remedial Measures (IRM) Work Plan for the 401 Buffalo Avenue portion of the BCP Site, and submitted to the Department. The IRM work plan was approved in November 2014. Benchmark-TurnKey performed IRM activities at the Site between April and August 2015.

1.1 Background

The Site is comprised of three (3) parcels totaling 6.2 acres, located in a highly developed mixed use commercial and residential area of the City of Niagara Falls, Niagara County, New York (see Figures 1 and 2). The parcels include:

- **401 Buffalo Avenue, S.B.L. # 159.13-2-9, 3.8 acres**
- **402 Buffalo Avenue, S.B.L. # 159.54-1-46, 0.35 acres**
- **430 Buffalo Avenue, S.B.L. # 159.54-1-45, 2.05 acres**

The Site is bound by 4th Street to the west, 6th Street and Holly Place to the east, a public alleyway from 4th Street the 6th Street to the north, and the Robert Moses State Parkway to the south, with the Niagara River beyond. Buffalo Avenue intersects the property from east to west. Land use surrounding the Site includes commercial and

residential properties to the north, Robert Moses Parkway to the south with the Niagara beyond, residential properties to the east, and vacant and residential properties to the west.

The southern portion of the Site, 401 Buffalo Avenue parcel, was improved with a vacant municipally-condemned former hotel and conference center (i.e., Fallside Hotel), parking areas and vegetated/landscaped areas.

The northern portion of the Site, 402 and 430 Buffalo Avenue parcels, are currently vacant, though historically were part of the manufacturing facility owned and operated by National Biscuit Co./Shredded Wheat Company. Manufacturing began on Site in at least 1914, and operations included use of underground storage tanks (USTs) noted as fuel oil. Baking ovens, likely utilizing the noted fuel oil, were located within the manufacturing facility (including both 402 and 430 Buffalo Avenue parcels) for drying raw materials, heating the various buildings and operations, and baking final products. Additional operations included paper box manufacturing and printing, material handling and shipping equipment, maintenance of manufacturing equipment and vehicles, and use and storage of paint, grease and lubricants common among former manufacturing operations.

Previous environmental investigations completed at the Site revealed evidence of environmental contamination related to the former uses of the Site; specifically elevated levels of semi-volatile organic compounds (SVOCs) and metals were detected on-Site at concentrations exceeding 6NYCRR Part 375 soil cleanup objectives (SCOs).

1.2 Previous Investigations

1.2.1 November 2013 Limited Phase II Environmental Investigation and December 2013 Supplemental Phase II Site Assessment

TurnKey completed a Limited Phase II Subsurface Environmental Investigation on the 401, 402, & 430 Buffalo Avenue Site, and the findings are summarized below:

- NYSDEC Spill No. 1312160 was assigned to the Site related to the vandalism/destruction of three transformers and spilling potential PCB-containing transformer oil;
- Visual evidence of similar historic subsurface fill materials across the Site on both the north and south sides of Buffalo Avenue;

- Elevated polycyclic aromatic hydrocarbons (PAHs) above Part 375 Unrestricted, Restricted-Residential and Commercial Use SCOs;
- Elevated metals, including barium and lead, above the Part 375 Unrestricted, Restricted-Residential and Commercial Use SCOs;
- Oil-leaking former hotel operation equipment in the basement, including compressors, elevator equipment, and transformers;
- Wide-spread floor staining in the basement associated with former mechanical system equipment (as noted above);
- Improper storage and handling of hazardous chemicals, including corrosive boiler chemicals, solvents, lubricants, degreasers, paints, thinners, hydraulic oils and maintenance equipment fuels, pesticides and herbicides, pool and water treatment chemicals;
- Former transformer vessels with staining noted;
- Universal and e-waste throughout the building.

1.2.2 September 2014 – 401 Buffalo Avenue Supplemental Investigation

TurnKey completed a pre-demolition supplemental investigation at the 401 Buffalo Avenue parcel and the findings are summarized below:

- Elevated PAHs above Part 375 Unrestricted, Restricted-Residential and/or Commercial Use SCOs were detected on-Site, including benzo(a)anthracene, benzo(a)pyrene, benzo(b)flouranthene, benzo(k)flouranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene;
- Elevated metals above Part 375 Unrestricted, Restricted-Residential, and/or Commercial Use SCOs were detected on-Site, including arsenic, cadmium, chromium, lead, and mercury; and,
- Based on the radiological screening results, elevated levels of NORM/TENORM are present on Site.

1.3 Purpose and Scope

This RI/IRM/AAR has been prepared on behalf of Merani Hospitality, Inc. to describe and present the findings of the RI activities, detail the completed IRMs, and evaluate remedial alternatives for the Site.

This report contains the following sections:

- Section 2.0 presents the approach for the RI
- Section 3.0 describes the physical characteristics of the Site as they pertain to the investigation findings
- Section 4.0 presents the investigation results by media
- Section 5.0 describes the Interim Remedial Measures (IRMs)
- Section 6.0 describes the fate and transport of the constituents of primary concern (COPCs)
- Section 7.0 presents the qualitative risk assessment
- Section 8.0 evaluates remedial alternatives for the Site
- Section 9.0 presents the RI/IRM/AAR summary and conclusions
- Section 10.0 provides a list of references for this report

2.0 INVESTIGATION APPROACH

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

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

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

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

2.1 Electrical/Transformer Room Investigation

As described above, the electrical room of the former Fallside Hotel (401 Buffalo Avenue parcel) was vandalized, including the destruction of three (3) electrical transformers.

The transformers were apparently vandalized for metal-theft, which resulted in the spilling of all contents of the transformers within the electrical room.

In consultation with the Department, PCB wipe samples were collected, including two (2) wipe samples of the electrical room concrete floor, identified as wipe sample 1 and wipe sample 2, and one (1) wipe sample from the interior of an open transformer, identified as Housing 103, based on manufacturing placard.

It should be noted that after the discovery of the transformer vandalism the Department was notified and Spill No. 1312160 was opened for the Site. Benchmark-TurnKey personnel placed oil-absorbent pads and booms within the electrical room in an attempt to contain the spill. Given the condition of the building, including asbestos-containing material (ACM), the electrical room was closed, and signs were placed cautioning against entering the room.

Wipe sampling analytical results indicated that the transformer oil was PCB-containing, and therefore the National Response Center was notified and file 1102311 was opened for the Site. The spill was investigated during the RI and remediated as an Interim Remedial Measure (IRM) directed under the guidance of NYSDEC. Details are provided below.

2.2 Radiologic Walk-Over Site Assessment

Prior to intrusive activities, Greater Radiological Dimensions, Inc. (GRD) completed a site-wide radiologic survey of all accessible areas of the Site to define areas with elevated radiologic material on-Site. GRD utilized hand-held alpha, beta, and gamma spec screening equipment across the Site prior to and during RI activities, including radiologic screening of spoils from the RI test pits and soil borings, screening of collected soil/fill samples prior to submission to the laboratory, and completion of equipment clearance for all RI equipment, including excavator and direct push drilling equipment. Results of the site walk-over are described below.

After completion of the above-grade portion of the three-story structure, GRD completed a radiologic pre-screening of the slab and foundations, provided screening during slab and footer removal, and completed post-demolition clearance screening of the area. Radiologic screening results are described in Section 4 below and provided in Appendix C.

2.3 RI Soil/Fill Investigation

A soil/fill investigation was completed across the Site to supplement previous environmental data and to further delineate contamination on-Site. The soil/fill investigation included the advancement of test pits and soil borings across the Site to assess to near-surface and subsurface soil, and the collection surface soil samples collected from areas of the Site not covered by hardscape (e.g., buildings, asphalt, and concrete). Figure 3 presents the sample locations.

2.3.1 Surface Soil Investigation

A surface soil investigation was completed across the Site. Seven (7) surface soil samples, identified as SS-1 through SS-7, were collected from the upper one foot (12-inches) of soil (see Figure 3). Surface soil/fill samples were collected and analyzed in accordance with the approved Work Plan and Sampling and Analysis Plan as detailed on Table 1.

2.3.2 Subsurface Soil/Fill Investigation

The subsurface soil/fill investigation included the advancement of nineteen test pits, identified as TP-10 through TP-20 on the 401 Buffalo Avenue parcel, and TP-22 through TP-29 on the 430 Buffalo Avenue parcel; and twenty-three (23) soil borings; identified as soil boring SB-07 through SB-19, and monitoring wells MW-1 through MW-10.

During the RI, the former factory foundation was discovered at several locations on the 430 Buffalo Avenue parcel (see Appendix B Boring Logs). One (1) subsurface soil/fill sample was collected from beneath the concrete slab at the MW-5 location.

Soil borings were advanced using direct-push drilling techniques and continuous split spoon sampling to a target depth of approximately 16 feet below ground surface (fbgs), or refusal, and test pits were excavated to a target depth of 14-16 fbgs, or refusal. Test pits and soil borings were advanced across the Site in February 2015, and monitoring wells were advanced in April 2015.

Boring logs are provided in Appendix B. Subsurface soil/fill boring samples were collected with a macro-core sampler which contained a 2-inch outer diameter by 48-inch long acetate liner. A new acetate liner was used for each 4-foot sample run. The soil/fill samples retrieved from the borings allowed for visual, olfactory, and photoionization

detector (PID) assessment of subsurface conditions. Subsurface soil/fill samples were collected from the borings for laboratory analysis (see Table 1).

2.3.3 Soil/Fill Sample Collection and Analyses

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

Representative soil/fill samples were analyzed in accordance with the approved work plan, for Target Compound List (TCL) plus Commissioner Policy (CP-51) VOCs and TCL semi-volatile organic compounds (SVOCs), Part 375 List metals, polychlorinated biphenyls (PCBs), pesticides and herbicides selectively as detailed on Table 1.

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

2.4 Groundwater Investigation

Benchmark-TurnKey personnel provided oversight for the installation of ten (10) groundwater monitoring wells, identified as MW-1 through MW-10, to investigate on-Site groundwater flow direction and quality. Wells were installed in April 2015. Details of the well installation, well development, and groundwater sampling are provided below. Figure 4 presents the location of the monitoring well network.

2.4.1 RI Monitoring Well Installation

In April 2015, Benchmark-TurnKey mobilized a direct-push drill rig capable of advancing hollow-stem augers to install groundwater monitoring wells to depth ranging from 11.5 to 18 fbgs. Monitoring well construction details are presented in Appendix B. Location of the monitoring wells is presented on Figure 4.

2.4.2 Monitoring Well Development

After installation, the monitoring wells were developed in accordance with the approved work plan as well as Benchmark-TurnKey and NYSDEC protocols. Development of the monitoring wells was completed with dedicated disposable polyethylene bailers via surge and purge methodology. Field parameters including pH, temperature, turbidity, dissolved oxygen and specific conductance were measured during development until they became relatively stable. Stability was defined as variation between measurements of approximately 10 percent or less with no overall upward or downward trend in the measurements; or a minimum of three well volumes. Wells were developed in April 2015.

2.4.3 Groundwater Sample Collection and Analyses

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

Groundwater samples were collected and analyzed for TCL plus CP-51 list VOCs, TCL SVOCs, Part 375 list metals (dissolved), PCBs, pesticides, and herbicides in accordance with the approved RI Work Plan and detailed on Table 1. All sampling was performed in accordance with USEPA SW-846 methodology with equivalent NYSDEC Category B deliverables to allow for independent third-party data usability assessment.

2.5 Field Specific Quality Assurance/Quality Control Sampling

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

2.6 Site Mapping

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

2.7 Decontamination & Investigation-Derived Waste Management

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

3.0 SITE PHYSICAL CHARACTERISTICS

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

3.1 General Site Features and Site Topography

The Site consists of three (3) parcels, including 401 Buffalo Avenue and 402 and 430 Buffalo Avenue (see Figure 2). The Site is bound by 4th Street to the west, 6th Street and Holly Place to the east, a public alleyway from 4th Street the 6th Street to the north, and the Robert Moses State Parkway with the Niagara River beyond to the south. Buffalo Avenue intersects the Site from east to west (see Figure 2). The Site slopes from north to south toward the Niagara River.

The 401 Buffalo Avenue is largely comprised of the former Fallside Hotel complex, including a 3-story (southern portion) and 4-story (western portion) sections of the hotel, asphalt and concrete paved areas, and vegetated areas (see Figures 2 and 3). The 402 and 430 Buffalo Avenue parcels are generally flat vacant with the 402 Buffalo Avenue parcel covered in asphalt and the 430 Avenue parcel covered in patchy grass and fill.

3.2 Geology and Hydrogeology

3.2.1 Overburden

The U.S. Department of Agriculture (USDA) Soil Conservation Service soil survey map of Niagara County shows the Site is located within an un-surveyed area. The geology at the Site was investigated during the RI. The 401 Buffalo Avenue parcel overburden is generally described as sandy lean clay, with fill noted to depths of up to 8 fbgs in select locations. The 402 and 430 Buffalo Avenue parcels are generally described as fill material ranging to depths of 6 fbgs (former concrete slab ranging from 3 to 7 fbgs) with varying amounts of sand and silty clay. Borehole logs are provided in Appendix B.

3.2.2 Bedrock

Based on the bedrock geologic map of Niagara County New York, the Niagara Falls region is underlain by Silurian and Devonian age stratified limestone, dolomite, and shale of marine origin. The bedrock is virtually flat lying, with a gentle dip to the south of only about 30 to 40 feet per mile and exhibits only very gentle folding.

The primary bedrock type that forms the bedrock surface in the northern part of the Lake Erie-Niagara River Basin is the fine- to coarse-grained Lockport Dolomite; a white or grey, magnesium-rich sedimentary rock resembling limestone, but harder and more resistant. The Lockport is the lowermost carbonate-rock unit in the region, which overlies the Rochester Shale, a black to gray carbonaceous shale with minor calcareous beds and limestone layers. The maximum thickness of the Lockport is approximately 150 feet.

During the RI, boring refusal (assumed bedrock) was encountered between 10 fbgs and greater than 18 fbgs (extent of RI investigation). Based on a 2013 Empire Geo-Services, Inc. (Empire) geotechnical report completed on the 401 Buffalo Avenue parcel, bedrock was encountered between 9.8 and 28.3 fbgs.

3.2.3 Hydrogeology

Groundwater elevation data was collected in April 2015. Depth to overburden groundwater was encountered at depths ranging from five (5) to greater than 11 fbgs, with the exception of MW-7 which was dry. The Site hydrogeology is complicated by the presence of municipal subgrade utilities surrounding the Site, particularly along Buffalo Avenue that intersects the Site, and the presence of the elevated Robert Moses Parkway to the south. In general, localized groundwater flow was estimated to flow in a southern direction toward the Niagara River. Figure 4 depicts the estimated overburden groundwater isopotential map based on the water level measurements collected in April 2015.

3.2.4 Hydraulic Gradients

Using well installation and water level information from the April 2015 sampling event, the estimated hydraulic gradient was calculated to be an average of 0.016 ft./ft.

4.0 INVESTIGATION RESULTS BY MEDIA

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

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

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

4.1 Standards, Criteria, and Guidance

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

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

Soil/Fill:

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

NYSDEC, Commissioner Policy, CP-51 Soil Cleanup Guidance, October 21, 2010.

Groundwater

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

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

4.2 Transformer Room - PCB Wipe Sample Results

Three (3) PCB wipe samples were collected, including two (2) floor wipe samples, identified as Wipe Sample 1 and Wipe Sample 2, and one (1) interior cavity transformer housing sample, identified as Housing 103. Analytical results indicate that the transformer oil was PCB-containing. Analytical results are reported by the laboratory as microgram-absolute (ug/Abs), with results being representative of a 100 centimeters square (cm-sq.) wipe sampling area; therefore, samples results are ug/100 cm-sq. Conversion of the wipe sample results to milligrams per kilogram (mg/Kg), or parts-per-million (ppm), is provided in 40CFR761; whereby wipe samples results less than 10 ug/100 cm-sq. is equivalent to less than 50 ppm, sample results between 10-100 ug/100 cm-sq. is equivalent to greater than 50 ppm and less than 500 ppm, and values greater than 100 ug/100 cm-sq. is equivalent to greater than 500 ppm.

Based on the analytical results, equivalent regulatory value for Wipe Sample 1 is between 50 and 500 ppm, with Wipe Sample 2 and Housing 103 sample results indicating a value of greater than 500 ppm equivalents (see Table 2). Based on the analytical results, the National Response Hotline was notified of the spill.

Remedial activities were completed in accordance with the approved 401 Buffalo Avenue IRM Work Plan, and details of the IRM are provided below.

4.3 Historic Soil/Fill Investigation Results

A total of 12 historic soil/fill samples were collected and selectively analyzed for VOCs, SVOCs, PCBs, and metals. Table 3 summarizes the historic soil/fill analytical results with comparison to applicable Part 375 SCOs. Historic sample locations are identified on Figure 3.

Elevated SVOCs were detected above their respective RRSCOs and Commercial Use SCOs (CSCOs) at several locations across the Site, primarily located on the 430 Buffalo Avenue parcel (see Table 3 and Figure 3). Lead and barium were detected above CSCOs at certain locations, with lead being detected above Industrial Use SCOs (ISCOs) at TP-3.

4.4 RI Soil/Fill Investigation Results

Benchmark-TurnKey completed surface and subsurface sampling across the Site to further assess on-Site conditions. Tables 4 and 5 summarize the surface soil and subsurface soil/fill samples, respectively, with comparison to applicable Part 375 SCOs. Sample locations are shown on Figure 3. Boring and test pit logs are provided in Appendix B.

4.4.1 RI Surface Soil Results

Seven (7) surface soil samples, identified as SS-1 through SS-7, were collected from the accessible areas across the Site. Table 4 summarizes the analytical results of the surface soil sample results with comparison to applicable SCGs.

4.4.1.1 Semi-Volatile Organic Compounds

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

4.4.1.2 Inorganic Compounds

Only arsenic was detected at a concentration of 18 mg/Kg, slightly above its RRSCO of 16 mg/Kg at SS-2. Certain metals, including chromium, lead, mercury, and zinc were detected above USCOs (see Table 4).

4.4.1.3 Polychlorinated Biphenyls

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

4.4.1.4 Pesticides and Herbicides

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

4.4.1.5 Surface Soil/Fill Summary

No SVOCs, PCBs, pesticides or herbicides were detected above RRSCOs, with the vast majority being reported as non-detect or estimated values by the laboratory. RI results identified only arsenic, slight above its RRSCO at SS-2.

4.4.2 RI Subsurface Soil/Fill Investigation

Thirty two (32) subsurface samples were collected across the site, including 19 test pits (TPs) and 17 soil boring (SBs). Table 5 presents a summary of the RI subsurface soil/fill sample results with comparison to applicable SCOs.

4.4.2.1 Volatile Organic Compounds

No VOCs were detected above RRSCOs, with the vast majority of results being reported as non-detect or estimated values by the laboratory. Only acetone was detected at two sample locations above its USCOs, however, both detections were estimated values.

4.4.2.2 Semi-Volatile Organic Compounds

Certain SVOCs, primarily polycyclic aromatic hydrocarbons (PAHs) were detected at TP-22, TP-24, TP-25 and TP-26, above USCOs, RRSCOs, and CSCOs. All elevated detections are located on the 430 Buffalo Avenue parcel, however, total PAHs were all below 500 ppm, with the majority below 100 ppm (see Table 5).

4.4.2.3 Inorganic Compounds

Barium, chromium, lead, and mercury were detected above their respective USCOs, RRSCOS, and CSCOs at certain locations (see Table 5). All detections above RRSCOs are located on the 430 Buffalo Avenue parcel.

4.4.2.4 Polychlorinated Biphenyls

No PCBs were detected above USCOs, with the vast majority of results being reported as non-detect by the laboratory (see Table 5).

4.4.2.5 Pesticides and Herbicides

No pesticides or herbicides were detected above USCOs, with the vast majority of results being reported as non-detect or estimated values by the laboratory.

4.4.2.6 Subsurface Soil/Fill Summary

As described above, no VOCs, PCBs, pesticides or herbicides were detected above USCOs, with the minor exception of acetone. Certain PAHS and metals were detected above their respective RRSCOs and CSCOs; however these exceedances were limited to the 430 Buffalo Avenue parcel.

4.5 Groundwater Investigation

Benchmark-TurnKey personnel provided oversight for the installation of RI groundwater monitoring wells to investigate on-Site groundwater quality and flow. Table 6 presents a comparison of the detected groundwater parameters to the applicable SCGs. Groundwater samples were collected in accordance with the work plan and analyzed in accordance with Table 1. MW-7 analysis was limited due to poor water recovery (dry).

4.5.1 Volatile Organic Compounds

The majority of analytes were reported as non-detectable or trace (estimated) concentrations below the laboratory quantitation limit. Benzene was detected at MW-3 (1.6

ug/L) slightly above its GWQS of 1 ug/L, and 1,2,4-trimethylbenzene was detected in MW-5 (7.3 ug/L) and MW-10 (5.3 ug/L) slightly above its GWQS of 5 ug/L (see Table 6).

4.5.2 Semi-Volatile Organic Compounds

The vast majority of analytes were reported as non-detectable or trace (estimated) concentrations below the laboratory quantitation limit. Certain SVOCs, primarily PAHs, were detected slight above their respective GWQS at MW-1, MW-2, and MW-6 (see Table 6).

4.5.3 Inorganic Compounds

The vast majority of analytes were reported as non-detectable or trace (estimated) concentrations below the laboratory quantitation limit. Lead was detected slightly above its GWQS at MW-6, and manganese was detected slightly above its GWQS at MW-1, MW-5, MW-6, MW-9, and MW-10.

4.5.4 Polychlorinated Biphenyls, Pesticides, and Herbicides

The vast majority of analytes were reported as non-detectable or trace (estimated) concentrations below the laboratory quantitation limit. Only chlordane was detected slightly above its GWQS at MW-6 (see Table 6).

4.5.5 Groundwater Summary

As described above no PCBs or herbicides were detected above the laboratory detection limit. Certain VOCs, PAHs, metals and pesticide were detected slightly above their GWQS.

4.6 Radiologic Screening Results

Prior to intrusive activities, GRD completed a site-wide assessment to identify potential areas of elevated radiologic activity across the Site. GRD established background values for the Site between 3,200–6,000 counts per minute (cpm). Results of the radiologic screening are described by parcel below. Figure 5 presents the results of the site-walkover.

- 401 Buffalo Avenue – three (3) specific areas were identified in the upper parking lot, including in the vicinity of TP-12 (6,000-21,000 cpm), TP-15 (6,000-17,000 cpm), and the upper parking lot island area (10,000-12,000 cpm). In addition to the previously identified pool area (6,000-40,000 cpm) an area in the vicinity of TP-20 (5,000-24,000 cpm) was identified in the lower parking lot along the southern boundary.
- 402 Buffalo Avenue – an area of approximately 0.25 acre was identified ranging from 20,000-45,000 cpm.
- 430 Buffalo Avenue – a single area in the vicinity of TP-29 (10,000-15,000 cpm). It should be noted that the elevated readings were related to a single slag-rock that was exposed during test pitting activities and GRD took position for future disposal. Post-screening results were 4,000-5,500 cpm.
- Off-Site – Several areas of elevated readings, ranging from 11,000-12,000 cpm were identified off-site along Buffalo Avenue, and an area of elevated radiologic activity was identified off-site to the south of the lower parking lot with readings as high as 30,000 cpm.
- GRD completed post-investigation clearance screenings of the drilling and excavation equipment, with all readings less than background.

4.7 Data Usability Summary

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

- Laboratory Narrative Discussion
- Custody Documentation
- Holding Times
- Surrogate and Internal Standard Recoveries

- Matrix Spike Recoveries/Duplicate Recoveries
- Field Duplicate Correlation
- Preparation/Calibration Blanks
- Control Spike/Laboratory Control Samples
- Instrumental IDLs
- Calibration/CRI/CRA Standards
- ICP Interference Check Standards
- ICP Serial Dilution Correlations
- Sample Results Verification

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

In summary, results are usable either as reported or with minor qualification, with the single exception of SVOCs in one soil sample (Pool Area) during the data validation. Additional qualifications of the data have been incorporated to the summary data tables. Appendix E includes the DUSR.

4.8 Constituents of Concern (COCs)

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

Soil/Fill: SVOCs, metals, PCBs, and radiologic slag-material

5.0 INTERIM REMEDIAL MEASURES

Merani Hospitality prepared and submitted a 401 Buffalo Avenue Interim Remedial Measures (IRM) Work Plan (December 2014) to detail planned interim remedial activities, which was approved in February 2015. Based on the results of the RI, additional IRMs were completed on the 401 Buffalo Avenue parcel, in accordance with the approved work plan, and in consultation with the Department. Details of the completed IRMs are presented below, and more fully documented in the 401 Buffalo Avenue Interim Remedial Measure Closure Report (submitted separately).

5.1 Demolition Activities

5.1.1 Pre-Demolition Activities

Merani's designated demolition subcontractor, Total Wrecking, LLC acquired a City of Niagara Falls demolition permit, and filed the NYS Department of Labor and USEPA notifications for asbestos abatement activities. Copies of the permit and notification were provided to the Department.

Prior to demolition of the 3-story section of the facility, and interior demolition activities of the 4-story section (remaining), a walk over survey was completed to identify recoverable universal and chemical wastes for removal prior to demolition of the structure. All recovered universal and chemical wastes were decontaminated of asbestos containing material (ACM) prior to temporary on-Site storage and off-site disposal.

5.1.2 Demolition

Exterior demolition of the above grade structures were completed from March through May 2015. Community air monitoring was completed during ACM abatement and demolition by 56 Services, LLC. Recyclable concrete and scrap were decontaminated and shipped off-site for recycling by Total Wrecking. ACM contaminated demolition debris, including west trench and south trench materials, was properly loaded into lined trailers, and shipped off-site for disposal at Hyland Landfill, located in Angelica New York, or loaded into lined dumpsters and shipped to Waste Management's Chaffee Landfill, located in Chaffee, New York.

Washed concrete was transported off-site for recycling at Swift River – 47th Street C&D recycling facility, located in Niagara Falls, New York. Metal was transported off-site for recycling at Niagara Metals, located in Niagara Falls, New York.

Prior to, and during removal of the slab and subgrade foundations, GRD completed radiologic field screening. No elevated readings above background were detected. Radiologic screening log are provided in Appendix C.

5.2 Universal Waste

Prior to demolition, recoverable universal wastes, including lamp bulbs and ballasts, fire extinguishers, smoke detectors, exit and security signs, batteries, and waste latex paint were removed, decontaminated of ACM, and shipped off-site for disposal or recycling. Universal waste was disposed/recycled at Waste Management, with smoke detectors being returned to the manufacturer for mercury recovery, and batteries were recycled at Niagara Metals. Disposal documents will be provided in the 401 Buffalo Avenue IRM Closeout Report.

5.3 Chemical Waste

Prior to demolition, chemical wastes from within the 3-story and 4-story sections of the building were collected, properly decontaminated of potential ACM, and temporarily stockpiled in on-Site storage containers. Benchmark-TurnKey inspected the consolidated chemical wastes, completed appropriate waste analysis and profiling, segregation and repackaging, and off-site shipment for disposal and/or recycling.

The chemical wastes included flammable aerosols, lead acid batteries, mercury containing compact fluorescents lamps, petroleum oils, lubricants, oil-based paints, off-spec boiler treatment and commercial laundry chemicals, and out-of-service fire extinguishers.

Chemical wastes were segregated, appropriately containerized by waste category, and transported off-site for disposal and/or recycling on May 13, 2015. Disposal documents will be provided in the 401 Buffalo Avenue IRM Closeout Report.

5.4 Radiologic Material Activities

Prior to excavation of elevated radiologic material, GRD conducted an on-Site Radiologic Safety Training for all individuals involved in the excavation, handling, and oversight of the Radiologic Material IRM on April 6, 2015. Personnel from Total Wrecking, Benchmark-TurnKey and the NYSDEC attended the training seminar.

During the radiologic material IRM activities, GRD provided field screening, directed material segregation and stockpiling, and completed post-removal clearance screening of the excavation areas and equipment. Readings above 10,000 cpm were considered elevated and handled as described below.

On April 10, 2015, elevated radiologic material identified in the pool area was excavated by Total Wrecking and temporarily stockpiled in accordance with the approved work plan on the lower asphalt parking lot of 401 Buffalo Avenue.

On April 11, 2015, areas of elevated radiologic material identified in the upper parking lot of the 401 Buffalo Avenue parcel during the RI (see Figure 5), was excavated by Total Wrecking and temporarily stockpiled on the upper asphalt parking lot of 401 Buffalo Avenue.

On May 1, 2015, approximately 72.5 tons of elevated radiologic material was loaded by Total Wrecking and transported off-site for disposal at WM's Mahoning Landfill, located in New Springfield, Ohio, by GRD.

GRD completed post-removal field screening in the pool area and upper parking lot areas, with no elevated readings above background identified on the 401 Buffalo Avenue parcel.

GRD completed post-removal clearance screening of equipment used in the excavation and loading, and post-removal screening of the stockpile areas. No results above background (3,500-5,000 cpm) were detected. GRD field notes are provided in Appendix C.

5.5 Transformer Room – PCB Activities

After completion of ACM abatement, the Transformer Room IRM activities were completed from July 16–July 27, 2015. Prior to remedial activities, Total Wrecking constructed plastic containment areas on the floor and walls adjacent to the transformer room.

Remedial activities included: removal and off-site disposal of non-load bearing interior concrete block walls and the concrete floor; excavation and off-site disposal of underlying subbase and soil; collection of post-excavation confirmatory soil samples; and, PCB wipe samples of structural concrete footers and walls. Post-excavation analytical results are below Residential Use SCOs (see Tables 7 and 8, and Figures 6 and 6B).

During remedial activities, a pipe of unknown origin or use (assumed to be an interior downspout for a former roof drain) was discovered under the concrete slab. Contents of the pipe were sampled for PCBs, with results below Residential Use SCOs (see Table 7). Additionally, an inspection of the exterior concrete access pit, accessible from a man door located within the transformer room was inspected. The concrete appeared competent with no staining or evidence of impacts noted.

In total, 60 tons of PCB-impacted concrete and soil was directly loaded into lined roll-offs, covered, placarded, and transported by a licensed transporter to Chemical Waste Management, Inc. (CWM) Landfill, located in Model City, New York. Three (3) former transformer housings and 9 drums of transformer windings were properly packaged, placarded, and transported off-site by a licensed transporter for disposal at CWM Model City Landfill, located in Model City, New York. Two (2) drums of PCB-impacted sorbent rags, spill pads and containment materials were properly packaged, placarded and transported off-site by licensed transporter for disposal at CWM Model City Landfill, located in Model City, New York.

Disposal documents will be provided in the 401 Buffalo Avenue IRM Closeout Report.

5.6 Petroleum- Impacted Soil/Fill Activities

During demolition of subgrade structures of the former 3-story building, an area of suspect petroleum impacts was identified and the Department was notified (see Figure 6).

On April 14, 2015, the area of suspect petroleum impacted soil/fill was excavated and stockpiled on-Site, in accordance with the approved work plan. During the excavation, a former pipe of unknown origin/use was identified. The pipe and petroleum-impacted bedding soil/fill was removed and temporarily stockpiled. Post-excavation PID readings were less than 1 ppm, and three (3) post-excavation samples were collected from the

excavation trench (see Figure 6). Post-excavation analytical results were below USCOs (see Table 9).

On June 3, approximately 70 tons of petroleum-impacted soil/fill was loaded and transported off-site by RE Lorenz for disposal at Modern Landfill, located in Model City New York. Disposal documents will be provided in the 401 Buffalo Avenue IRM Closeout Report.

5.7 Metals- and PAH-Impacted Soil/Fill Activities

Based on the RI and historic investigations, soil/fill located on the 401 Buffalo Ave parking lot island was contaminated with PAHs and metals exceeding RRSCOs (see Table 3). Approximately 500 tons of non-hazardous contaminated soil/fill was excavated and direct loaded into trucks for off-site transportation and disposal at Modern Landfill, located in Model City, New York (see Figure 6). Post-excavation samples were collected and all results are below USCOs (see Table 10).

During demolition of the hotel in-ground pool, a grey-blackish material was discovered underneath the deep end of the pool. In consultation with the Department, the material was sampled and analyzed for SVOCs, metals and PCBs. Results indicated elevated metals, specifically arsenic, exceeding CSCOs.

On June 3rd and 4th, 2015, approximately 50 tons of grey-black soil material was excavated, directly loaded, and transported off-site for disposal at Modern Landfill, located in Model City, New York. Post-excavation analytical results are all below USCOs (see Table 10).

After completion of the pool area IRM excavation, Merani, in consultation with the Department, elected to address arsenic impacts identified in the SS-2 area. The SS-2 excavation was completed to approximately 2 fbgs (see Figure 6). Soil was excavated, directly loaded and transported off-site for disposal at Modern Landfill, located in Model City, New York. Post-excavation analytical results are below USCOs (see Table 10).

6.0 FATE AND TRANSPORT OF COCS

The surface and subsurface soil/fill and groundwater analytical sample results were incorporated with the physical characterization of the Site to evaluate the fate and transport of COCs in Site media. The mechanisms by which the COCs can migrate to other areas or media are briefly outlined below. In all instances, the potential pathways are evaluated in the context of post-IRM conditions.

6.1 Fugitive Dust Generation

Volatile and non-volatile chemicals present in soil can be released to ambient air as a result of fugitive dust generation. As described above, soil/fill was excavated and disposed off-site from the 401 Buffalo Avenue parcel as part of the IRM activities and the completed remedial actions achieved RRSCOs on the 401 Buffalo Avenue parcel.

Historic use of the 402 and 430 Buffalo Avenue parcels has impacted soil/fill, and as such fugitive dust generation during excavations related to remediation activities is considered a relevant potential short-term migration pathway. Particulate monitoring in accordance with the approved Community Air Monitoring Plan (CAMP) was completed during RI and IRM activities and will be completed during future intrusive activities and, if required, dust mitigation measures will be employed during future remediation and redevelopment.

6.2 Volatilization

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

No volatile organic compounds were detected in on-Site soils above USCOs, with the minor exception of acetone at two locations. Two (2) VOCs were detected in on-Site groundwater slightly above their GWQS, however, both were detected in up-gradient wells and soil analytical results did not detect VOCs at those locations.

Limited minor petroleum impacts were detected on the 401 Buffalo Avenue parcel, as described above. Post-excavation analytical results were all below USCOs (see Table 10). Therefore, based on the RI and IRM results, it is unlikely that the low-level exceedances of

the USCOs and GWQS would result in a volatilization pathway, and therefore is not considered a relevant migration pathway.

6.3 Surface Water Runoff

The potential for soil particle transport due to surface water runoff is low, though is considered a short-term migration pathways for the 402 and 430 Buffalo Avenue parcels.

Surface water in contact with contaminated soil/fill that may be exposed during remedial excavation activities will be managed under the approved IRM Work Plan and Soil/Fill Management Plan, which would minimize or eliminate the potential of contaminated sediment particles migrating from the Site.

The storm sewer system provides a mechanism for controlled surface water transport but will ultimately result in sediment capture in the Niagara Falls sewer system grit chambers followed by disposal at a permitted sanitary landfill.

As such, surface water runoff is considered a relevant, but manageable migration pathway.

6.4 Leaching

Leaching refers to chemicals present in soil/fill migrating downward to groundwater as a result of infiltration of precipitation.

Select PAHs and metals were detected in the non-saturated soil/fill above SCOs. However, the detected PAHs and metals tend to adsorb strongly to soil, sediments and particulate matter and are not expected to leach under natural conditions (i.e., neutral pH). This is supported by the differential detections of analytes in the soil and groundwater analytical results.

As such, leaching is not considered a relevant migration pathway.

6.5 Groundwater Transport

Overburden groundwater underlying the Site flows in a southern direction towards the Niagara River. RI groundwater analytical results indicated low-level exceedance of two VOCs above GWQS, including the common laboratory contaminant acetone. Groundwater monitoring wells located down gradient of those with the low-level exceedances did not

show the same elevated constituents. Furthermore, low-level exceedances of 1,2,4-trimethylbenze in groundwater, were not detected in the soil sample from the same boring location (i.e., MW-10 and SB-08; and, MW-5)

Additionally, the Site and surrounding area is serviced by municipal (supplied) potable water service (Niagara Water Board), with no evidence of pumping wells in the area of the subject property. As such, contaminant transport via groundwater is not considered a relevant migration pathway.

6.6 Exposure Pathways

Based on the fate and transport analysis provided above, the pathways through which Site contaminants could potentially reach receptors at significant exposure point concentrations are: fugitive dust and surface water run-off during intrusive activities.

Remedial activities will be completed in accordance with the approved Interim Remedial Measures (IRM) Work Plan and will significantly minimize or eliminate the potential that contaminated soil/fill particles could migrate from the Site in the form of fugitive dust and/or surface runoff.

During future remedial activities, the approved CAMP and SFMP will be implemented to mitigate the potential for off-site exposure.

7.0 QUALITATIVE RISK ASSESSMENT

7.1 Potential Human Health Risks

The 402 and 430 Buffalo Avenue Site is planned for restricted residential cleanup and redevelopment. The planned reuse is consistent with the surrounding property use and zoning. Under current conditions (i.e., remediation and redevelopment) human contact with the Site can be reasonably expected to occur primarily by two types of receptors: construction workers involved in the remediation and/or redevelopment of the Site, and trespassers who may traverse the property during intrusive activities. Construction workers will be comprised of adults, and trespassers would likely be limited to adolescents and adults. In both instances, exposure frequency is expected to be minimal (short-term).

Elevated PAHs, PCBs and metals were detected above CSCOs on-Site; therefore under the current use scenario exposure pathways would be limited to inhalation of dust and dermal contact with impacted soil/fill and debris (concrete). Furthermore, the approved and completed IRMs have achieved RRSCOs. An approved HASP and CAMP were followed during completion of IRMs, and will be followed during intrusive remedial and redevelopment activities to mitigate unacceptable exposures via these pathways.

Under the planned redevelopment scenario, the majority of the 401 and 402 Buffalo Avenue parcels will be covered by hardscape (e.g., building, asphalt, concrete), and the 430 Buffalo Avenue parcel will be covered by DEC-approved soil cover system, limiting potential exposure pathways. The planned commercial use of the site will necessitate either achieving RRSCOs to depths of 15 feet below grade across the Site, or extending the redevelopment/DER-10 compliant cover to assure that all areas of the property are covered by a minimum of 24-inches of clean soil material and/or hard cover (asphalt, pavement, etc.). In either case exposures to routine end users would be mitigated with only potential short term exposures due to dust inhalation and dermal contact by construction workers during deeper excavation (i.e., utility work) beneath the cover system.

For groundwater, excavation waters encountered during remedial excavation will be managed in accordance with SCGs, approved work plan, and discharged to combined sewer system under an approved temporary discharge permit, if necessary. Furthermore, the availability of municipally supplied potable water at the Site mitigates the potential for

routine direct human contact or ingestion (i.e., as might occur with use of on-Site groundwater water for potable or process purposes). Human contact with groundwater can be expected to be limited to only one receptor: construction worker during deep intrusive activities.

7.2 Potential Ecological Risks

The Site is a former hotel and conference facility (401 Buffalo Ave.) and former commercial/industrial facility (402 and 430 Buffalo Ave.) located within a highly developed area of the City of Niagara Falls. The Site is predominantly covered with asphalt, concrete and buildings, and asphalt/gravel areas which provide little or no wildlife habitat or food value, and/or access to the detected subsurface contamination.

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

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

8.0 REMEDIAL ALTERNATIVES ANALYSIS

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

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

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

Track 4, 6NYCRR Part 375-3.8(e)(4) soil cleanups uses site-specific information to identify site-specific SCOs that are protective of public health and the environment under a restricted use scenario. For Track 4 remedies, restrictions can be placed on the use of the property in the form of institutional and engineering controls if they can be realistically implemented and maintained in a reliable and enforceable manner. As set forth in 6 NYCRR Part 375-3.8(e)(4)(iii)(b)(1), the top two (2) feet of all exposed surface soils, not otherwise covered by the components of the development of the site (e.g., buildings, pavement), shall not exceed the restricted use (Restricted Residential Use) SCOs. Areas that exceed these SCOs must be covered by material meeting the requirements of the generic soil cleanup table contained in Part 375-6.7(d) and/or DER-10, Appendix 5 for imported material, for the applicable future site use (i.e., Restricted Residential).

8.1 Remedial Action Objectives

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

Per DER-10, generic RAOs appropriate for the Site include:

8.1.1 Soil/Fill RAOs

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

8.1.2 Groundwater RAOs

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent ingestion of and/or direct contact with groundwater containing contaminant levels exceeding SCGs.

8.2 Evaluation of Alternatives

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

- **Overall Protection of Public Health and the Environment** – This criterion is an evaluation of the remedy's ability to protect public health and the environment, assessing how risks posed through each existing or potential pathway of exposure

are eliminated, reduced, or controlled through removal, treatment, engineering controls, or institutional controls.

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

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

8.3 Anticipated Future Land Use Evaluation

In developing and screening remedial alternatives, NYSDEC's Part 375 regulations require that the reasonableness of the anticipated future land be factored into the evaluation. The regulations identify 16 criteria that must be considered. These criteria and the resultant outcome for the 402 and 430 Buffalo Avenue Site are presented below.

1. *Current use and historical and/or recent development patterns:* The Site was historically used for various commercial operations, including a hotel and conference center (401 Buffalo Ave.) and commercial manufacturing, National Biscuit Co. (402 and 430 Buffalo Ave.), located in a historically commercial-industrial area of the City of Niagara Falls.

   The planned redevelopment includes the construction of a new hotel and conference center complex on the 401 Buffalo Ave. parcel. Future plans for the 402 and 430 Buffalo Ave. parcels are being developed, with similar land use expected. **Accordingly, planned redevelopment would be consistent with historic and recent development patterns.**

2. *Applicable zoning laws and maps:* The Site is located in an area of the City of Niagara Falls zoned for commercial use. **Continued use as a hotel and conference center is 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 lies within the City of Niagara Falls – Buffalo Avenue Industrial Corridor BOA.**

4. *Applicable comprehensive community master plans, local waterfront revitalization plans as provided for in EL article 42, or any other applicable land use plan formally adopted by a municipality*: **The proposed redevelopment of the Site is consistent with the Niagara Falls Urban Renewal Community and Niagara Falls Heritage Plans.**

5. *Proximity to real property currently used for residential use, and to urban, commercial, industrial, agricultural and recreational areas*: Residential properties are located adjacent to site, including west across 4th Street and east across 6th Street, with mixed use commercial use to the north, and recreational area (Robert Moses Parkway) to the south. **Nearby and adjacent properties are mixed use, including residential, recreational and commercial. The proposed redevelopment does not change the previous land use for the Site and is consistent with local zoning and development plans.**

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

7. *Environmental justice concerns, which include the extent to which the proposed use may reasonably be expected to cause or increase a disproportionate burden on the community in which the site is located, including low-income minority communities, or to result in a disproportionate concentration of commercial or industrial uses in what has historically been a mixed use or residential community*: **The Site does not fall within the boundaries of the NYSDEC designated potential environmental justice area for Niagara County and the City of Niagara Falls. A potential EJ area is located approximately 0.5-miles to the north and east according to the NYSDEC Potential Environmental Justice Areas in the City of Niagara Falls (west detail).**

8. *Federal or State land use designations:* The property is designated by Niagara County as Commercial land use. **Reuse in a restricted capacity (commercial) is consistent with the current land use designation.**

9. *Population growth patterns and projections:* The City of Niagara Falls, encompassing approximately 14.1 square miles, has a population of 49,468 (2013 estimate - US Census Bureau), a decrease of 1.4 percent from the 2010 census. **Redevelopment is consistent with the past use and would not have impact on residential capacity.**

10. *Accessibility to existing infrastructure:* Access to the Site is from Buffalo Avenue, 4th Street and 6th Street. Utilities (sewer, water, electric) are present around the Site along Buffalo Avenue, 4th Street and 6th Street, and alleyway. **Existing infrastructure supports planned reuse**.

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

12. *Natural resources, including proximity of the site to important federal, State or local natural resources, including waterways, wildlife refuges, wetlands, or critical habitats of endangered or threatened species:* No State or Federal wetlands exist on the Site. The Niagara River, a Significant Coastal Fish and Wildlife Habitat is located approximately 250-ft south of the Site. The nearest NYS regulated wetland (TW-3) is located approximately 3.4-miles to the east. According to the NYSDEC's EnviroMapper the important plant habitat and species listed for the area encompassing the Site, include:

- Rock-cress *Draba arabisans*, listed as threatened rare plant species under NYS Protection Status.
- Marsh Arrow-grass *Triglochin palustre*, listed as threatened rare plant species under NYS Protection Status.
- Marsh Valerian *Vaeriana uliginosa*, listed as endangered rare plant species under NYS Protection Status.
- Woodland Bluegrass *Poa sylvestris*, listed as endangered rare plant species under NYS Protection Status.
- Drummond's Rock-cress *Boechera stricta*, listed as endangered rare plant species under NYS Protection Status.

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

13. *Potential vulnerability of groundwater to contamination that might emanate from the site, including proximity to wellhead protection and groundwater recharge areas and other areas identified by the Department and the State's comprehensive groundwater remediation and protection program established set forth in ECL article 15 title 31:* Groundwater at the Site is assigned Class "GA" by 6NYCRR Part 701.15. Ten (10) groundwater monitoring wells were installed during the RI. Groundwater data obtained during the RI indicates minor exceedance of the GWQS for two select VOCs, certain PAHs, one pesticide, and certain metals at varying locations across the Site. There are no groundwater supply well(s) present on the Site or noted in the vicinity of the Site. Regionally, groundwater has not been developed for industrial, commercial agriculture, or public supply purposes. Potable water service is provided by the local municipal water authority. **The absence of potable wells, wellhead protection and cleanup to restricted use conditions will not pose a threat to drinking water.**

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

15. *Geography and geology:* The Site is located within the Lake Erie-Niagara River Basin physiographic province, which is typified by little topographic relief and gentle slope toward the south (USDA, 1978). Surface soils within the vicinity of the Site are described as Un-surveyed (Ua) by the USDA Niagara County Soil Map, and further described as Urban Land (Ud) by the Niagara County GIS. The presence of overburden fill material is widespread and common throughout the City of Niagara Falls. Previous development patterns covered the Site in asphalt, concrete and building foundations. The redevelopment plan is consistent with the **geography and geology of the Site.**

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

Based on the above analysis, planned reuse of the Site is consistent with past, current and contemplated development and zoning on and around the Site, and does not pose additional environmental or human health risk.

8.4 Evaluation of Remedial Alternatives

In addition to the evaluation of the alternatives to remediate the Site to the likely end use, NYSDEC regulations and policy calls for evaluation of more restrictive end-use scenarios. These include an Unrestricted Use scenario (considered under 6NYCRR Part 375 to be representative of cleanup to pre-disposal conditions), and a scenario less restrictive than the reasonably anticipated future use. Per NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, evaluation of a "no action" alternative is also required to provide a baseline for comparison against other alternatives. The alternatives evaluated below in greater detail include:

- Alternative 1 - No Action;
- Alternative 2 - Unrestricted Use Cleanup (Track 1);

- Alternative 3 - Track 2 Restricted Residential Use Cleanup; and,
- Alternative 4 - Track 4 Restricted Residential Use Cleanup

8.4.1 Alternative 1 - No Action

Under this alternative, the Site would remain in its current state, with no additional controls in-place, beyond the completed IRMs on the 401 Buffalo Avenue portion of the Site.

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

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

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

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

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

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

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

Cost **–** The capital cost of the IRMs completed was approximately $230,000 (see Table 11). There would be no capital or long-term operation, maintenance, or monitoring costs associated with the no action alternative.

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

8.4.2 Alternative 2 – Unrestricted Use Cleanup

An Unrestricted Use alternative would necessitate remediation of all soil/fill where concentrations exceed the 6NYCRR Part 375 Unrestricted Use SCOs (see Tables 3-5). For Unrestricted Use scenario, excavation and off-site disposal of impacted soil/fill is generally regarded as the most applicable remedial measure, because institutional controls cannot be used to supplement the remedy. As such, the Unrestricted Use alternative assumes that those areas which exceed Unrestricted Use SCOs would be excavated and disposed at an off-Site commercial solid waste landfill.

Exceedances of the USCOs were detected to a maximum sample depth of 10 fbgs with fill material being identified at varying depths across the Site, typically ranging from 4 to 8 fbgs. Approximately 3.5 acres of the Site would require excavation to an average depth of 6 fbgs under this remedial alternative. In total, approximately 33,800 CY of soil/fill would require excavation and off-site disposal; and equivalent backfill. Elevated radiologic material identified on the 402 Buffalo Avenue parcel would be excavated, loaded and transported off-site for disposal in accordance with the Radiologic Work Plan.

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

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

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

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

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

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

- There is potential for impacts to human health (workers and construction personnel) due to direct contact with impacted soil and particulate releases. This alternative would require implementation of a health and safety plan (HASP) and community air monitoring, as outlined in the NYSDOH Generic Community Air Monitoring Plan (CAMP), in order to mitigate potential adverse conditions/short-

term impacts. Additional health and safety measures would need to be employed during excavation activities within the building and under the building slab. Moreover, significant physical hazards may be encountered due to structural limitations associated with deep excavation and the proximity of adjacent buildings, utilities and roadways.

- Human health and the environment associated with chemical exposures would be protected under this alternative if the HASP and CAMP are properly implemented. This alternative is expected to meet RAOs at completion of the excavations, because the impacted soil will be removed from the Site. Confirmatory soil sampling would be performed.

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

Implementation **–** Significant technical and administrative implementation issues would be encountered in completion of the Unrestricted Use alternative. Technical implementation issues include, but are not limited to: shoring/stabilizing excavation sidewalls to prevent sloughing during the excavation; groundwater and/or storm water handling, treatment and/or discharge/disposal; and traffic coordination for trucks entering and exiting the Site, staging of trucks, and multiple landfill and backfill sources required for the project. As such the feasibility of achieving an Unrestricted Use cleanup is questionable.

Administrative implementation issues may include: the need to coordinate and secure disposal contracts with numerous permitted off-site landfills as a single location would not be able to be relied upon to accept the volume of soil/fill generated under this alternative; difficulty locating local borrow sources for such a large volume of backfill; and the need for rezoning of the area to allow for Unrestricted Uses (e.g., farming, livestock, single-family residential), which are not consistent with current surrounding land-use or the reasonably anticipated future use the Site.

Cost **–** The capital cost of implementing an Unrestricted Use cleanup alternative is estimated at $5.34 MM (see Table 11). Annual certification costs would not be incurred.

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

8.4.3 Alternative 3 – Track 2 Restricted Residential Use Cleanup

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

Based on the historic and RI investigation findings, soil/fill exceeding RRSCOs is present on-Site, ranging in depth from 0-6 fbgs, with the average depth of 5 fbgs (see Figure 7). In total, approximately 9,000 CY would be removed from the Site for this alternative. Elevated radiologic material identified on the 402 Buffalo Avenue parcel would be excavated, loaded and transported off-site for disposal in accordance with the Radiologic Work Plan.

For Track 2 remedies, restrictions can be placed on the use of the property in the form of institutional and engineering controls, and future use and development will be completed in accordance with the environmental easement and site management plan.

Overall Protection of Public Health and the Environment **–** This alternative would satisfy the NYSDEC requirements for a Track 2 cleanup under the BCP regulations and would be protective of public health and the environment. The RAOs for the Site would be satisfied through the planned extent of remedial activities, including: removal and off-site disposal of targeted soil/fill exceeding RRSOCs; and the use of IC/ECs to limit the future use to restricted residential purposes.

Compliance with SCGs – The planned remedial activities would need to be performed in accordance with applicable, relevant, and appropriate SCGs. Imported backfill material would need to meet backfill quality criteria per DER-10. Subgrade intrusive activities would necessitate preparation of and adherence to a community air monitoring

plan in accordance with Appendices 1A and 1B of DER-10. The planned remedial actions are fully protective of public health and the environment, and achieve all RAOs for the Site.

Long-Term Effectiveness and Permanence **–** Completion of this remedial alternative would provide for long-term effectiveness and permanence. The SMP will include: a Site-wide inspection program to assure that the IC/ECs placed on-Site have not been altered and remain effective. Furthermore, an Environmental Easement will be filed with Niagara County, which will limit the future use of the Site to restricted residential or commercial activity, restrict groundwater use, and reference the Department-approved SMP. As such, this alternative will provide long-term effectiveness and permanence.

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

Short-Term Effectiveness – This alternative does have short-term adverse impacts and risks to the community, workers, and environment during implementation of the Commercial Use alternative; however, they are not considered significant and can be managed.

During intrusive remedial activities air monitoring will be performed to assure conformance with community air monitoring action levels. The potential for chemical exposures and physical injuries can be reduced through safe work practices; proper personal protection equipment; environmental monitoring; establishment of work zones and Site control; and appropriate decontamination procedures. The remedial excavations and backfilling would take approximately 5-6 weeks to compete. Given the location and proximity to neighboring residential, excavation activities may require additional time and effort to address dust migration issues, if they arise. The planned remedial activities will be performed in accordance with an approved work plan, including health and safety plan (HASP) and community air monitoring plan (CAMP). This alternative achieves the RAOs for the Site.

Implementation – Technical implementation would be a barrier to construction of this alternative. The Site is planned for commercial redevelopment and surface parking areas. Excavation and off-site disposal is feasible, however, as the Site is planned for commercial use, the additional cleanup required to achieve Track 2 is consider a significant implementation issue. As a Track 2 cleanup does not allow for the use of a cover system, excavation and off-site disposal of the soil/fill would be required.

Given the location of the Site, and the required number of dump trucks for disposal and backfill (estimated at approx. 1400 trucks total) the staging and access to the Site would likely impact neighboring residential streets/communities. Therefore, implementation of the Track 2 alternative is not considered reasonable given the current and anticipated future use of the Site.

Cost – The capital cost of implementing a Restricted Residential Use (Track 2) alternative is estimated at $2.03 MM (see Table 12).

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

8.4.4 Alternative 4 – Track 4 Restricted Residential Use Cleanup

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

Figure 8 identifies the planned remedial measures necessary to achieve a Track 4 RRSCO cleanup. Table 13 provides a cost estimate to complete this alternative.

This alternative's remedial measures would include:

- **Excavation and off-site disposal** of elevated radiologic material identified on the 402 Buffalo Avenue parcel. Elevated radiologic material was identified within the asphalt parking lot subbase material. Material will be excavated and handled in accordance with the approved Radiologic Work Plan.
- **Excavation and off-site disposal** of lead-impacted soil/fill in the vicinity of TP-3 (430 Buffalo Avenue parcel). Remaining contamination exceeding CSCOs[1], will be addressed with the placement of the cover system, and managed in accordance with the Department's approved SMP.
- **Collection of post-excavation confirmatory samples,** in accordance with DER-10.
- **Placement of Cover System (430 Buffalo Avenue),** including demarcation layer underlying DER-10 acceptable backfill in areas without hardscape (building, asphalt and concrete) to address remaining contamination above RRSCOs. Cover system details are provided in Appendix F.
- **Implementation of a Site Management Plan (SMP)**. The SMP will include:
    - **Institutional Controls and Engineering Controls (IC/EC)** Engineering controls include any physical barrier or method employed to actively or passively contain, stabilize, or monitor contaminants; restrict the movement of contaminants; or eliminate potential exposure pathways to contaminants. Institutional controls at the site will include groundwater use restrictions and use restrictions of the Site to restricted residential use.
    - **Excavation Work Plan** to assure that future intrusive activities and soil/fill handling at the Site are completed in a safe and environmentally responsible manner;

[1] The Commercial Use SCOs are deemed protective of human health for adult outdoor workers who contact soil/fill on a routine basis (4 days/week during the warmer months of the year) and for child visitor scenarios. Therefore the commercial use SCOs are conservative when considered as a screening criteria for remediation of soil/fill prior to cover placement under a Track 4 restricted residential cleanup scenario, as future exposures would be limited to deep excavations related to one-time short-duration excavation activities (e.g., utility), which would be completed in accordance with the Site Management Plan.

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

Placement of DER-10 compliant cover system in areas of the site not covered by hardscape (e.g., building, asphalt and concrete) would require approximately 5,000 CY of clean cover material.

An Addendum to the IRM Work Plan (August 2015) was submitted to the Department detailing the planned additional IRMs for the 402 and 430 Buffalo Avenue parcels. Planned cover system layout and details are provided in Appendix F for the Department's 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, including: removal and off-site disposal of low-level radiologic material, removal and off-site disposal of soil/fill exceeding ISCOs; placement of DER-10 compliant cover system, and the use of IC/ECs to prevent potential future exposure, and limit the future use to restricted residential purposes.

Compliance with SCGs – The planned remedial activities would need to be performed in accordance with applicable, relevant, and appropriate SCGs. Post-excavation samples would be collected to verify conformance with SCOs, and imported cover material would need to meet backfill criteria per DER-10. Cover placement on a portion of 430 Buffalo Avenue parcel would be performed under the BCP and require an equivalent SFMP. Subgrade intrusive activities would necessitate adherence with the CAMP, in accordance with Appendices 1A and 1B of DER-10. The Site Management Plan will include: an Excavation Work Plan to address any impacted soil/fill encountered during post-development maintenance activities; and, a Site-wide Inspection program to assure that the engineering and institutional controls placed on the Site have not been altered and remain effective.

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

Long-Term Effectiveness and Permanence **–** Completion of the IRMs, and construction of a soil cover system would prevent direct contact with soil/fill exceeding RRSCOs will provide long-term effectiveness and permanence.

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

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

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

During intrusive remedial activities air monitoring will be performed to assure conformance with community air monitoring action levels. Planned remedial activities will be performed in accordance with an approved work plan, including HASP, CAMP, and SFMP. This alternative achieves the RAOs for the Site.

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

Cost **–** The capital cost of implementing a Track 4 RRSCO cleanup alternative is estimated at $865,000 (see Table 13).

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

8.5 Comparison of Remedial Alternatives

The previous section describes and evaluates the remedial alternatives for the 402 and 430 Buffalo Avenue Site against the screening criteria. Table 14 provides a comparison of the remedial alternatives to the screening criteria to identify appropriate remedial measures that will achieve the RAOs for the Site.

Overall, the Track 4 Restricted Residential Use cleanup alternative will achieve the goals of the remediation, with limited short-term impacts to the surrounding neighborhoods, be implemented in accordance with the requirements in the most cost effective manner, and is consistent with the surrounding land use of the Site.

8.6 Recommended Remedial Measure

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

The components and details of the remedial approach will be more fully described in the Addendum to the IRM Work Plan (August 2015), and cover system detail provided in Appendix F In summary, this alternative would involve:

- **Completed 401 Buffalo Avenue IRMs,** including: the excavation and off-site disposal of non-hazardous petroleum, PAH, and metals impacted soil/fill; excavation and off-site disposal of elevated radiologic material; collection, segregation, characterization and off-site disposal of chemical wastes from the former hotel; and, excavation and off-site disposal of PCB spill wastes.
- **Excavation and off-site disposal** of elevated radiologic slag material located on the 402 Buffalo Avenue parcel.

- **Excavation and off-site disposal** of lead-impacted soil/fill in the vicinity of TP-3.
- **Collection of post-excavation confirmatory samples,** in accordance with DER-10.
- **Placement of Cover System** on a portion of the 430 Buffalo Avenue parcel, including demarcation layer underlying DER-10 acceptable cover soil in areas without hardscape (building, asphalt and concrete) to address remaining contamination above RRSCOs.
- **Implementation of a Site Management Plan (SMP)**. The SMP will include:
    - **Institutional Controls and Engineering Controls (IC/EC)** Engineering controls include any physical barrier or method employed to actively or passively contain, stabilize, or monitor contaminants; restrict the movement of contaminants; or eliminate potential exposure pathways to contaminants. Institutional controls at the site will include groundwater use restrictions and use restrictions of the Site to restricted residential use.
    - **Excavation Work Plan** to assure that future intrusive activities and soil/fill handling at the Site are completed in a safe and environmentally responsible manner;
    - **Site Monitoring Plan** that includes: provisions for a Site-wide inspection program to assure that the IC/ECs have not been altered and remain effective; and,
    - **Environmental Easement** filed with Niagara County.

9.0 RI/IRM/AAR SUMMARY AND CONCLUSIONS

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

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

- Based on the RI groundwater data, the vast majority of analytes were detected below GWQS. One VOC (acetone) and certain PAHs, metal, and pesticide were detected slightly above GWQS. No PCBs or herbicides were detected above GWQS.

- Post-excavation confirmatory samples and screening of the completed IRMs on the 401 Buffalo Avenue parcel have achieved a Part 375 Residential Use cleanup. The completed IRMs included excavation and off-site disposal of non-hazardous petroleum, PAH, and metals impacted soil/fill; excavation and off-site disposal of elevated radiologic material; collection, segregation, characterization and off-site disposal of chemical wastes from the former hotel; and, excavation and off-site disposal of PCB spill wastes.

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

10.0 REFERENCES

1. New York State Department of Environmental Conservation. *DER-10; Technical Guidance for Site Investigation and Remediation.* May 2010.
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3. Benchmark Environmental Engineering and Science, PLLC, in association with TurnKey Environmental Restoration, LLC. *402 and 430 Buffalo Avenue Site, Remedial Investigation Work Plan, Niagara Falls, New York.* November 2014.
4. Benchmark Environmental Engineering and Science, PLLC, in association with TurnKey Environmental Restoration, LLC. 402 and 430 B*uffalo Avenue Site, Interim Remedial Measures Work Plan, Niagara Falls, New York.* November 2014.
5. TurnKey Environmental Restoration, LLC. *401Buffalo Avenue – Supplemental Investigation, Niagara Falls, New York.* September 2014.
6. TurnKey Environmental Restoration, LLC. *401Buffalo Avenue – Supplemental Phase II Investigation, Niagara Falls, New York.* April 2014.
7. TurnKey Environmental Restoration, LLC. *Limited Phase II Environmental Investigation Report, 401, 402 and 430 Buffalo Avenue, Niagara Falls, Niagara County, New York.* November 2013.
8. United States Department of Agriculture (USDA), Soil Conservation Service. *Soil Survey of Niagara County, New York.* December 1986.
9. Chow, V., Maidment, D., and Mays, L. 1988. Applied Hydrology. McGraw-Hill.

TABLES

TABLE 1

SUMMARY OF RI AND IRM SAMPLING AND ANALYSIS PROGRAM

REMEDIAL INVESTIGATION/INTERIM REMEDIAL MEASURES/ALTERNATIVES ANALYSIS REPORT

402 and 430 BUFFALO AVENUE SITE

NIAGARA FALLS, NEW YORK

Sample Identifier		Data Source	Depth Sampled/ Screened (fbgs)	Analysis						Date Sampled
				TCL plus CP-51 List VOCs	TCL SVOCs	Part 375 List Metals	PCBs	Pesticide	Herbicide	
Surface Soil										
401 Buffalo Avenue Parcel	SS-1	Remedial Investigation	0 - 0.5		1	1				2/10/2015
	SS-2		0 - 0.5		1	1	1			2/9/2015
	SS-3		0 - 0.5		1	1	1	1	1	2/10/2015
402 and 430 Buffalo Avenue Parcels	SS-4		0 - 0.5		1	1				2/10/2015
	SS-5		0 - 0.5		1	1	1	1	1	2/10/2015
	SS-6		0 - 0.5		1	1				2/10/2015
	SS-7		0 - 0.5		1	1				2/10/2015
Subsurface Soil										
401 Buffalo Avenue Parcel	TP-10	Remedial Investigation	2 - 16		1	1				2/10/2015
	TP-11		1 - 3	1	1	1				2/9/2015
	TP-12		6 - 8		1	1				2/9/2015
	TP-13		1 - 3	1	1	1	1	1	1	2/9/2015
	TP-14		4 - 10	1	1	1	1	1	1	2/9/2015
	TP-15		2 - 4		1	1				2/9/2015
	TP-16		4 - 14		1	1				2/9/2015
	TP-17		2 - 15	1	1	1	1	1	1	2/10/2015
	TP-18		1 - 8	1	1	1	1	1	1	2/10/2015
	TP-19		3 - 10		1	1				2/9/2015
	TP-20		1 - 3		1	1	1			2/10/2015
	TP-21		--	1	1	1	1	1	1	--
402 and 430 Buffalo Avenue Parcels	TP-22		1 - 3		1	1				2/11/2015
	TP-23		1 - 16	1	1	1	1	1	1	2/11/2015
	TP-24		1 - 4	1	1	1	1			2/11/2015
	TP-25		1 - 4		1	1				2/11/2015
	TP-26		1 - 3	1	1	1	1	1	1	2/10/2015
	TP-27		2 - 12	1	1	1	1	1	1	2/10/2015
	TP-28		1 - 4		1	1				2/10/2015
	TP-29		1 - 4		1	1				2/10/2015
401 Buffalo Avenue Parcel	MW-1		5-16		1	1	1			2/24/2015
	MW-2		0.5-3	1	1	1	1	1	1	2/24/2015
	MW-3		2-8	1	1	1	1	1	1	4/15/2015
	MW-4		3-12		1	1	1			2/25/2015
402 and 430 Buffalo Avenue Parcels	MW-5		2-8	1	1		1			4/14/2015
	MW-6		--							--
	MW-7		1-7	1	1	1	1	1	1	2/25/2015
	MW-8		4-12	1	1	1	1	1	1	2/25/2015
	MW-9		1-8		1	1				2/25/2015
	MW-9		13-16		1	1	1			2/25/2015
	SB - 7		1-5		1	1				2/25/2015
	SB - 8		8-10	1	1	1	1	1	1	2/25/2015
	SB - 9		--							--
	SB - 10		--							--
	SB - 11		1-16		1	1				2/10/2015
Groundwater										
401 Buffalo Avenue Parcel	MW-1	Remedial Investigation	13'-18'	1	1	1	1	1	1	4/16/2015
	MW-2		8'-13'	1	1	1	1	1	1	4/16/2015 & 5/8/2015
	MW-3		9'-14'	1	1	1	1	1	1	4/17/2015
	MW-4		8.5'-13.5'	1	1	1	1	1	1	4/17/2015
402 and 430 Buffalo Avenue Parcel	MW-5		12'-17'	1	1	1	1	1	1	4/17/2015
	MW-6		9'-14'	1	1	1	1	1	1	4/16/2015
	MW-7		6.5'-11.5'	1						6/10/2015
	MW-8		6.5'-11.5'	1	1	1	1	1	1	4/16/2015
	MW-9		11'-16'	1	1	1	1	1	1	4/17/2015
	MW-10		9'-14'	1	1	1	1	1	1	4/17/2015
Interim Remedial Measures - Post-Remedial Verification Samples										
401 Buffalo - Petroleum Area	East	IRM	--	1	1					4/14/2015
	Middle	IRM	--	1	1					4/14/2015
	West	IRM	--	1	1					4/14/2015
401 Buffalo - Parking Lot Area	Bottom Comp 1	IRM	--			1				6/3/2015
	Bottom Comp 2	IRM	--			1				6/3/2015
	Bottom Comp 3	IRM	--			1				6/3/2015
	Bottom Comp 4	IRM	--			1				6/3/2015
401 Buffalo - Pool Area	North Wall	IRM	--			1				6/4/2015
	South Wall	IRM	--			1				6/4/2015
	East Wall	IRM	--			1				6/4/2015
	West Wall	IRM	--			1				6/4/2015
	Bottom	IRM	--			1				6/4/2015
401 Buffalo - Southern Gas Line	Southern Gas Line	IRM	--		1	1				6/4/2015
401 Buffalo - SS-2 Area	SS-2 Comp.	IRM	--			1				6/4/2015
401 Buffalo - Transformer Room Soil Post-Ex	A1	IRM	--				1			7/22/2015
	B1	IRM	--				1			7/22/2015
	C1	IRM	--				1			7/22/2015
	D1	IRM	--				1			7/22/2015
	E1	IRM	--				1			7/22/2015
	F1	IRM	--				1			7/22/2015
	G2	IRM	--				1			7/22/2015
	H2	IRM	--				1			7/22/2015
	Pipe Sediment	IRM	--				1			7/23/2015
401 Buffalo - transformer Room Wipe Samples	South Footer	IRM					1			7/27/2015
	South Wall	IRM					1			7/27/2015
	West Footer	IRM					1			7/27/2015
	West Wall	IRM					1			7/27/2015

TABLE 2

SUMMARY OF TRANSFORMER ROOM PCB WIPE SAMPLE RESULTS

REMEDIAL INVESTIGATION/INTERIM REMEDIAL MEASURES/ALTERNATIVES ANALYSIS REPORT

402 and 430 BUFFALO AVENUE SITE

NIAGARA FALLS, NEW YORK

Parameter[1]	Wipe Sample 1	Wipe Sample 2	Housing 103
	11/11/2014		
Polychlorinated biphenyls (PCBs) - ug/Abs			
Aroclor 1016	ND	ND	ND
Aroclor 1221	ND	ND	ND
Aroclor 1232	ND	ND	ND
Aroclor 1242	ND	ND	ND
Aroclor 1248	ND	ND	ND
Aroclor 1254	ND	ND	ND
Aroclor 1260	77.6	276	322
Aroclor 1262	ND	ND	ND
Aroclor 1268	ND	ND	ND
Total Polychlorinated Biphenyls	77.6	276	322

Notes:

1. Sample results were reported by the laboratory in ug/Abs; equivalent to ug/100 cm^2.

Definitions:

ND = Parameter not detected above laboratory detection limit.

TURNKEY ENVIRONMENTAL RESTORATION, LLC

TABLE 3

SUMMARY OF HISTORIC SUBSURFACE SOIL/FILL ANALYTICAL RESULTS

REMEDIAL INVESTIGATION / INTERIM REMEDIAL MEASURES / ALTERNATIVE ANALYSIS REPORT

402 and 430 BUFFALO AVENUE SITE

NIAGARA FALLS, NEW YORK

Parameter[1]	Unrestricted Use SCOs[2]	Restricted Residential Use SCOs[2]	Commercial Use SCOs[2]	Sample Locations											
				SB-1 (0-2)	SB-2 (6-8)	TP-1 (1-6)	TP-3 (1-4.5)	TP-4 (1-2)	TP-5 (1-3)	TP-6 (2-4)	TP-7 (2-4)	WEST TRENCH	SOUTH TRENCH	ISLAND TEST PIT	POOL TEST PIT
				10/3/2013		10/4/2013						8/26/2014			
Volatile Organic Compounds (VOCs) - mg/Kg [3]															
Total VOCs	--	--	--	ND	ND	--	--	--	--	--	--	--	--	--	--
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg [3]															
Acenaphthene	**20**	**100**	**500**	ND	ND	0.35	1.4	ND	2.2	0.046 J	0.052 J	ND	8.2	ND	ND
Anthracene	**100**	**100**	**500**	0.042 J	ND	0.96	3.1	ND	9.8	ND	0.2	2.2 J	16	0.074 J	ND
Benzo(a)anthracene	**1**	**1**	**5.6**	0.21	ND	**3.3**	**5.9**	0.1 J	**31**	0.14	0.47	**10**	**43**	0.32	ND
Benzo(a)pyrene	**1**	**1**	**1**	0.19	ND	**2.9**	**5.1**	0.087 J	**30**	0.12 J	0.41	**12**	**43**	0.28	ND
Benzo(b)fluoranthene	**1**	**1**	**5.6**	0.31	ND	**3.8**	**6.3**	0.12	**38**	0.16	0.53	**25**	**57**	0.32	ND
Benzo(g,h,i)perylene	**100**	**100**	**500**	0.14 J	ND	1.8	3.1	0.061 J	18	0.077 J	0.22	14	29	0.15	ND
Benzo(k)fluoranthene	**0.8**	**3.9**	**56**	0.095 J	ND	**1.4**	**2.5**	0.05 J	**14**	0.06 J	0.23	**9.3**	**24**	0.17	ND
Chrysene	**1**	**3.9**	**56**	0.31	ND	**3.2**	5.7	ND	**31**	0.15	0.47	**21**	**46**	0.34	ND
Dibenzo(a,h)anthracene	**0.33**	**0.33**	**0.56**	ND	ND	**0.49**	**0.82**	ND	**5**	ND	0.069 J	**2.3 J**	**7.3**	0.046 J	ND
Fluoranthene	**100**	**100**	**500**	0.63	ND	6.8	12	0.18	68	0.27	0.93	31	99	0.48	ND
Fluorene	**30**	**100**	**500**	ND	ND	0.4	1.4	ND	2.8	ND	0.061 J	ND	7.3	ND	ND
Indeno(1,2,3-cd)pyrene	**0.5**	**0.5**	**5.6**	0.13 J	ND	**1.9**	**3.2**	0.059 J	**19**	0.082 J	0.24	**14**	**32**	0.16	ND
Naphthalene	**12**	**100**	**500**	0.11 J	ND	0.16 J	1.9	ND	0.92 J	ND	ND	ND	3.7 J	ND	ND
Phenanthrene	**100**	**100**	**500**	0.52	ND	4	11	0.094 J	29	0.17	0.65	13	66	0.18	ND
Pyrene	**100**	**100**	**500**	0.5	ND	5.6	10	0.16	56	0.23	0.75	23	72	0.42	ND
Polychlorinated biphenyls (PCBs) - mg/Kg [3]															
Aroclor 1260	--	--	--	--	--	ND	ND	--	0.0284 J	--	ND	--	--	--	--
Total PCBs	**0.1**	**1**	**1**	--	--	--	--	--	0.0284 J	--	--	--	--	--	--
Metals - mg/Kg															
Arsenic	**13**	**16**	**16**	7.2	1.1	9.6	8.9	--	6	--	6.3	7.1	4.7	21	3.6
Barium	**350**	**400**	**400**	64	12	**950**	**1000**	--	**970**	--	59	160	150	84	25
Cadmium	**2.5**	**4.3**	**9.3**	0.72	0.92	2.1	2.1	--	1.8	--	0.78	**2.6**	**8.2**	0.24 J	0.42 J
Chromium	**30**	**180**	**1500**	7.6	3	27	19	--	8.9	--	9.6	**32**	**98**	9.7	7.6
Lead	**63**	**400**	**1000**	**100**	23	**2700**	**6200**	--	**2100**	--	**130**	36	**150**	**540**	21
Selenium	**3.9**	**180**	**1500**	ND	ND	ND	ND	--	ND	--	ND	0.76 J	2 J	0.26 J	ND
Silver	**2**	**8.3**	**1500**	0.12 J	ND	0.2 J	0.24 J	--	0.22 J	--	ND	0.68 J	0.39 J	ND	ND
Mercury	**0.18**	**0.73**	**2.8**	ND	ND	0.05 J	0.03 J	--	0.17	--	0.09	0.18 J	**1**	**0.29**	0.03 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. Values per 6NYCRR 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.
"--" = 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.
BOLD	= Result exceeds Part 375 Commercial Use SCOs.

TABLE 4

SUMMARY OF SURFACE SOIL ANALYTICAL RESULTS

REMEDIAL INVESTIGATION / INTERIM REMEDIAL MEASURES / ALTERNATIVE ANALYSIS REPORT

402 AND 430 BUFFALO AVENUE SITE

NIAGARA FALLS, NEW YORK

PARAMETER[1]	Unrestricted Use SCOs[2]	Restricted Residential Use SCOs[2]	Commercial Use SCOs[2]	SAMPLE LOCATION						
				SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	SS-7
				2/9-10/2015						
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg [3]										
Anthracene	**100**	**100**	**500**	0.082 J	0.076 J	ND	ND	ND	0.034 J	ND
Benzaldehyde	**--**	**--**	**--**	ND	ND	ND	ND	0.1 J	ND	0.077 J
Benzo(a)anthracene	**1**	**1**	**5.6**	0.23	0.24	0.12 J	0.042 J	0.051 J	0.11 J	0.059 J
Benzo(a)pyrene	**1**	**1**	**1**	0.22	0.23	0.14 J	ND	0.049 J	0.11 J	0.067 J
Benzo(b)fluoranthene	**1**	**1**	**5.6**	0.31	0.3	0.21	0.049 J	0.071 J	0.12	0.11
Benzo(ghi)perylene	**100**	**100**	**500**	0.13 J	0.13 J	0.093 J	ND	ND	0.062 J	0.058 J
Benzo(k)fluoranthene	**0.8**	**3.9**	**56**	0.13	0.14	0.091 J	ND	ND	0.055 J	0.04 J
Carbazole	**--**	**--**	**--**	0.048 J	0.047 J	ND	ND	ND	ND	ND
Chrysene	**1**	**3.9**	**56**	0.25	0.24	0.14	0.037 J	0.054 J	0.1 J	0.067 J
Fluoranthene	**100**	**100**	**500**	0.5	0.48	0.26	0.073 J	0.11	0.22	0.091 J
Indeno(1,2,3-cd)pyrene	**0.5**	**0.5**	**5.6**	0.15 J	0.14 J	0.1 J	ND	ND	0.063 J	0.061 J
Phenanthrene	**100**	**100**	**500**	0.34	0.34	0.15	ND	0.062 J	0.15	0.039 J
Phenol	**100**	**100**	**500**	ND	ND	ND	ND	0.3	ND	ND
Pyrene	**100**	**100**	**500**	0.39	0.39	0.21	0.059 J	0.087 J	0.19	0.079 J
Metals - mg/Kg										
Arsenic	**13**	**16**	**16**	9.5	**18**	8.9	4.9	5.6	12	2.6
Barium	**350**	**400**	**400**	86	60	65	6.7	6.8	66	13
Beryllium	**7.2**	**72**	**590**	0.52	0.32	0.45	0.07 J	0.06 J	0.31	ND
Cadmium	**2.5**	**4.3**	**9.3**	0.24 J	0.38 J	0.24 J	0.94	0.28 J	0.6	1.3
Chromium	**30**	**180**	**1500**	**34**	14	23	3	2.8	16	2.4
Copper	**50**	**270**	**270**	18	16	14	3.5	3.6	16	4.2
Lead	**63**	**400**	**1000**	29	**78**	24	41	36	**96**	42
Manganese	**1600**	**2000**	**10000**	490	380	660	440	510	630	460
Mercury	**0.18**	**0.81**	**2.8**	0.17	**0.21**	0.14	0.04 J	0.02 J	**0.24**	0.06 J
Nickel	**30**	**310**	**310**	17	21	12	3	2.6	11	2.6
Selenium	**3.9**	**180**	**1500**	0.34 J	0.27 J	0.17	0.24 J	0.22 J	0.29 J	ND
Silver	**2**	**180**	**1500**	ND	ND	ND	0.1 J	ND	0.11 J	ND
Zinc	**109**	**10000**	**10000**	85	99	77	**280**	82	**200**	**410**
Polychlorinated biphenyls (PCBs) - mg/Kg [3]										
Aroclor 1248	**--**	**--**	**--**	**--**	ND	ND	**--**	0.0128 J	**--**	**--**
Total PCBs	**0.1**	**1**	**1**	**--**	ND	ND	**--**	0.0128 J	**--**	**--**
Pesticides and Herbicides - mg/Kg [3]										
4,4'-DDT	**0.0033**	**7.9**	**47**	**--**	**--**	0.00228 J	**--**	ND	**--**	**--**

Notes:

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

Definitions:

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

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

TURNKEY ENVIRONMENTAL RESTORATION, LLC

TABLE 5

SUMMARY OF SUBSURFACE SOIL/FILL ANALYTICAL RESULTS

REMEDIAL INVESTIGATION / INTERIM REMEDIAL MEASURES / ALTERNATIVE ANALYSIS REPORT

402 AND 430 BUFFALO AVENUE SITE

NIAGARA FALLS, NEW YORK

PARAMETER[1]	Unrestricted Use SCOs [2]	Restricted Residential Use SCOs [2]	Commercial Use SCOs [2]	SAMPLE LOCATION (DEPTH)														
				TP-10 (2-16')	TP-11 (1-3')	TP-12 (6-8')	TP-13 (1-3')	TP-14 (4-10')	TP-15 (2-4')	TP-16 (4-14')	TP-17 (2-15')	TP-18 (1-8')	TP-19 (1-3')	TP-20 (1-3')	TP-22 (1-3')	TP-23 (1-16')	TP-24 (1-4')	TP-25 (1-4')
				2/10/2015	2/9/2015						2/10/2015		2/10/2015	2/9/2015	2/11/2015			
Volatile Organic Compounds (VOCs) - mg/Kg [3]																		
1,2,4-Trimethylbenzene	**3.6**	**52**	**190**	--	ND	--	ND	ND	--	--	ND	ND	--	--	--	ND	ND	--
1,3,5-Trimethylbenzene	**8.4**	**52**	**190**	--	ND	--	ND	ND	--	--	ND	ND	--	--	--	ND	ND	--
Acetone	**0.05**	**100**	**500**	--	ND	--	**0.061 J**	0.044 J	--	--	ND	ND	--	--	--	ND	0.011 J	--
Cyclohexane	**--**	**--**	**--**	--	ND	--	ND	ND	--	--	ND	ND	--	--	--	ND	ND	--
Isopropylbenzene (Cumene)	**--**	**--**	**--**	--	ND	--	ND	ND	--	--	ND	ND	--	--	--	ND	ND	--
Methylcyclohexane	**--**	**--**	**--**	--	ND	--	ND	ND	--	--	ND	ND	--	--	--	ND	ND	--
n-Butylbenzene	**12**	**--**	**--**	--	ND	--	ND	ND	--	--	ND	ND	--	--	--	ND	ND	--
n-Propylbenzene	**3.9**	**100**	**500**	--	ND	--	ND	ND	--	--	ND	ND	--	--	--	ND	ND	--
sec-Butylbenzene	**11**	**100**	**500**	--	ND	--	ND	ND	--	--	ND	ND	--	--	--	ND	ND	--
Tetrachloroethene	**1.3**	**19**	**150**	--	ND	--	ND	ND	--	--	ND	ND	--	--	--	ND	0.0012	--
Toluene	**0.7**	**100**	**500**	--	ND	--	ND	ND	--	--	ND	ND	--	--	--	ND	0.0011 J	--
Trichloroethene	**0.47**	**21**	**200**	--	ND	--	ND	ND	--	--	ND	ND	--	--	--	ND	0.0012	--
Total Xylenes	**0.26**	**100**	**500**	--	ND	--	ND	ND	--	--	ND	ND	--	--	--	ND	ND	--
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg [3]																		
2-Methylnaphthalene	**--**	**--**	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.4 J	ND	ND	0.48 J
Benzo(a)anthracene	**1**	**1**	**5.6**	ND	ND	0.05 J	ND	ND	ND	ND	ND	ND	ND	ND	**7.7**	ND	**1.8**	**12**
Benzo(b)fluoranthene	**1**	**1**	**5.6**	ND	ND	0.071 J	ND	ND	ND	ND	ND	ND	ND	ND	**8.3**	ND	**2.2**	**15**
Chrysene	**1**	**3.9**	**56**	ND	ND	0.057 J	ND	ND	ND	ND	ND	ND	ND	ND	**7.1**	ND	**1.6**	**12**
Dibenzofuran	**7**	**59**	**350**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.82 J	ND	0.088 J	1.2
Fluoranthene	**100**	**100**	**500**	ND	ND	0.11	ND	ND	ND	ND	ND	ND	ND	0.042 J	15	ND	3.8	24
Fluorene	**30**	**100**	**500**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.3	ND	ND	2.2
Phenanthrene	**100**	**100**	**500**	ND	ND	0.039 J	ND	ND	ND	ND	ND	ND	ND	ND	14	ND	1.8	17
Pyrene	**100**	**100**	**500**	ND	ND	0.09 J	ND	ND	ND	ND	ND	ND	ND	ND	13	ND	2.9	19
Total PAHs	**--**	**--**	**500**	--	--	0.468 J	--	--	--	--	--	--	--	0.042	93.65	--	21.685	160.2
Metals - mg/Kg																		
Arsenic	**13**	**16**	**16**	4.6	5.2	2.9	6.4	4.3	4.1	4.3	4.9	4.3	5.3	4.9	10	3	9.5	5.1
Barium	**350**	**400**	**400**	18	66	21	34	22	18	29	10	9.3	43	47	**1400**	22	**780**	300
Beryllium	**7.2**	**72**	**590**	0.19 J	0.41	0.13 J	30	0.14 J	0.16 J	0.17 J	0.18 J	0.18 J	0.33	0.33	0.19 J	0.16 J	0.27	0.22
Cadmium	**2.5**	**4.3**	**9.3**	0.07 J	0.77	0.59	0.28 J	0.98	0.24 J	0.3 J	0.13 J	0.07 J	0.12 J	0.49 J	1	0.07 J	1 J	0.49 J
Chromium	**30**	**180**	**1500**	6.5	11	**36**	8.2	5.4	5.8	6.2	5.8	6	11	16	15	6.1	11	10
Copper	**50**	**270**	**270**	6.6	16	7	8.8	8.2	6.2	7.1	8	6.8	9.5	20	81	5.6	28	14
Lead	**63**	**400**	**1000**	4.5	**73**	18	20	46	7.4	11	11	3.8	6.9	23	**2400**	4.2	**1100**	**320**
Manganese	**1600**	**2000**	**10000**	340	870	380	660	390	360	360	340	380	290	260	320	330	320	260
Mercury	**0.18**	**0.81**	**2.8**	ND	0.1	0.02 J	0.12	0.03 J	ND	ND	0.02 J	ND	0.02 J	0.16	**0.29**	ND	**0.2**	**0.52 J**
Nickel	**30**	**310**	**310**	7.5	11	5.2	9.3	5.4	6.6	6.8	6.2	7.2	11	6.6	6.8	7.1	9.4	6.2
Silver	**2**	**180**	**1500**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.14 J	ND	0.13 J	ND
Zinc	**109**	**10000**	**10000**	37	**300**	**140**	81	**200**	62	67	51	32	59	**110**	**2500**	36	**1000**	**320**
Polychlorinated biphenyls (PCBs) - mg/Kg [3]																		
Aroclor 1254	**--**	**--**	**--**	**--**	**--**	**--**	ND	ND	**--**	**--**	ND	ND	**--**	ND	**--**	ND	ND	**--**
Total PCBs	**0.1**	**1**	**1**	**--**	**--**	**--**	ND	ND	**--**	**--**	ND	ND	**--**	ND	**--**	ND	ND	**--**
Pesticides and Herbicides - mg/Kg [3]																		
Chlordane	**0.094**	**4.2**	**24**	**--**	--	--	ND	ND	--	--			--	--	--		--	--
cis-Chlordane	**--**	**--**	**--**	**--**	--	--	ND	ND	--	--	ND	ND	--	--	--	ND	--	--
Heptachlor epoxide	**--**	**--**	**--**	**--**	--	--	ND	ND	--	--	ND	ND	--	--	--	ND	--	--
trans-Chlordane	**--**	**--**	**--**	**--**	--	--	ND	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 6NYCRR Part 375 Soil Cleanup Objectives (SCOs).
3. Sample results were reported by the laboratory in ug/kg and converted to mg/kg for comparisons to SCOs.

Definitions:

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

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

TABLE 5

SUMMARY OF SUBSURFACE SOIL/FILL ANALYTICAL RESULTS

REMEDIAL INVESTIGATION / INTERIM REMEDIAL MEASURES / ALTERNATIVE ANALYSIS REPORT

402 AND 430 BUFFALO AVENUE SITE

NIAGARA FALLS, NEW YORK

PARAMETER[1]	Unrestricted Use SCOs [2]	Restricted Residential Use SCOs [2]	Commercial Use SCOs [2]	SAMPLE LOCATION (DEPTH)															
				TP-26 (1-3')	TP-27 (2-12')	TP-28 (1-4')	TP-29 (1-4')	SB-17 (5-16')	SB-18 (0.5-3')	MW-3 (2-8')	SB-19 (3-12')	MW-5 (2-8')	SB-16 (1-7')	SB-14 (4-12')	SB-12 (1-8')	SB-12 (13-16')	SB-7 (1-5')	SB-8 (8-10')	SB-11 (1-16')
				2/10/2015				2/24/2015		4/15/2015	2/25/2015	4/14/2015	2/25/2015						
Volatile Organic Compounds (VOCs) - mg/Kg [3]																			
1,2,4-Trimethylbenzene	**3.6**	**52**	**190**	ND	ND	--	--	--	ND	ND	--	ND	--	ND	--	--	--	1.4	--
1,3,5-Trimethylbenzene	**8.4**	**52**	**190**	ND	ND	--	--	--	ND	ND	--	ND	--	ND	--	--	--	0.71 J	--
Acetone	**0.05**	**100**	**500**	ND	ND	--	--	--	0.0051 J	0.031	--	ND	--	0.0069 J	--	--	--	**0.44 J**	--
Cyclohexane	**--**	**--**	**--**	ND	ND	--	--	--	ND	ND	--	ND	--	ND	--	--	--	0.43 J	--
Isopropylbenzene (Cumene)	**--**	**--**	**--**	ND	ND	--	--	--	ND	ND	--	ND	--	ND	--	--	--	0.41	--
Methylcyclohexane	**--**	**--**	**--**	ND	ND	--	--	--	ND	ND	--	0.00087 J	--	ND	--	--	--	2.4	--
n-Butylbenzene	**12**	**--**	**--**	ND	ND	--	--	--	ND	ND	--	0.001 J	--	ND	--	--	--	1.1	--
n-Propylbenzene	**3.9**	**100**	**500**	ND	ND	--	--	--	ND	ND	--	0.00082 J	--	ND	--	--	--	0.69	--
sec-Butylbenzene	**11**	**100**	**500**	ND	ND	--	--	--	ND	ND	--	0.0055	--	ND	--	--	--	0.65	--
Tetrachloroethene	**1.3**	**19**	**150**	0.00082 J	0.001 J	--	--	--	ND	ND	--	0.00038 J	--	ND	--	--	--	ND	--
Toluene	**0.7**	**100**	**500**	ND	ND	--	--	--	ND	0.00028 J	--	0.00028 J	--	ND	--	--	--	ND	--
Trichloroethene	**0.47**	**21**	**200**	0.00035 J	ND	--	--	--	ND	ND	--	ND	--	ND	--	--	--	ND	
Total Xylenes	**0.26**	**100**	**500**	ND	ND	--	--	--	ND	ND	--	0.00029 J	--	0.00065 J	--	--	--	0.058 J	--
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg [3]																			
2-Methylnaphthalene	**--**	**--**	**--**	0.84 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.22 J	ND
Benzo(a)anthracene	**1**	**1**	**5.6**	**14**	0.039 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.054 J	ND	ND	ND	ND
Benzo(b)fluoranthene	**1**	**1**	**5.6**	**16**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.048 J	ND	ND	ND	ND
Chrysene	**1**	**3.9**	**56**	**13**	0.039 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.066 J	ND	ND	ND	ND
Dibenzofuran	**7**	**59**	**350**	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.17 J	ND
Fluoranthene	**100**	**100**	**500**	26	0.052 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.057 J	ND	ND	0.27	ND
Fluorene	**30**	**100**	**500**	2.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.19 J	ND
Phenanthrene	**100**	**100**	**500**	23	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.046 J	ND	ND	ND	ND
Pyrene	**100**	**100**	**500**	22	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.067 J	ND	ND	ND	ND
Total PAHs	**--**	**--**	**500**	168.44	0.13	--	--	--	--	--	--	--	--	--	0.338	--	--	0.85	--
Metals - mg/Kg																			
Arsenic	**13**	**16**	**16**	13	3.9	3.3	2.7	3.8	4.4	4.2	3.1	--	7.1	3.1	11	4.2	2.8	3.8	3.8
Barium	**350**	**400**	**400**	**1700**	53	17	17	15	36	52	18	--	48	15	110	96	13	15	10
Beryllium	**7.2**	**72**	**590**	0.41	0.25	0.15 J	0.15 J	0.2 J	0.36	0.33	0.17 J	--	0.32 J	0.14 J	0.18 J	0.38	0.08 J	0.16 J	0.24
Cadmium	**2.5**	**4.3**	**9.3**	1.1	0.14 J	0.5 J	0.49 J	0.08 J	0.17 J	0.1 J	0.17 J	--	0.84 J	0.14 J	0.16 J	0.23 J	0.93	0.11 J	0.11
Chromium	**30**	**180**	**1500**	18	8.7	5.2	5.1	6.6	10	11	6.2	--	9.5	5	3.5	13	3.9	5.6	7.4
Copper	**50**	**270**	**270**	97	9.3	8.1	9.6	6.6	9.2	11	6.7	--	15	6.6	11	17	12	6.5	7.2
Lead	**63**	**400**	**1000**	**2400**	9.9	39	33	5.4	16	18	7.2	--	**83**	14	43	9.8	39	6.7	6.7
Manganese	**1600**	**2000**	**10000**	320	360	550	400	410	260	420	470	--	700	380	330	420	410	360	440
Mercury	**0.18**	**0.81**	**2.8**	**0.46**	ND	0.03 J	0.02 J	ND	0.06 J	ND	ND	--	0.17 J	ND	0.03 J	0.02 J	0.02 J	0.02 J	ND
Nickel	**30**	**310**	**310**	11	9.7	4.9	5.3	8.9	12	12	8.5	--	9.2	6	6.1	16	4.3	7.2	10
Silver	**2**	**180**	**1500**	0.12 J	ND	ND	ND	ND	ND	ND	ND	--	0.14 J	ND	ND	ND	ND	ND	ND
Zinc	**109**	**10000**	**10000**	**2700**	70	**150**	**210**	38	76	**110**	60	--	**300**	50	44	95	**300**	41	52
Polychlorinated biphenyls (PCBs) - mg/Kg [3]																			
Aroclor 1254	**--**	**--**	**--**	ND	ND	--	--	ND	ND	0.0479	ND	ND	ND	ND	--	ND	--	ND	--
Total PCBs	**0.1**	**1**	**1**	ND	ND	--	--	ND	ND	0.0479	ND	ND	ND	ND	--	ND	--	ND	--
Pesticides and Herbicides - mg/Kg [3]																			
Chlordane	**0.094**	**4.2**	**24**	ND	ND	--	--	--	ND	0.0419	--	--	--	ND	--	--	--	ND	--
cis-Chlordane	**--**	**--**	**--**	0.0513	ND	--	--	--	ND	0.00864	--	--	--	ND	--	--	--	ND	--
Heptachlor epoxide	**--**	**--**	**--**	ND	ND	--	--	--	ND	0.00143 J	--	--	--	ND	--	--	--	ND	--
trans-Chlordane	**--**	**--**	**--**	0.0435 P I	ND	--	--	--	ND	0.00601	--	--	--	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 6NYCRR Part 375 Soil Cleanup Objectives (SCOs).
3. Sample results were reported by the laboratory in ug/kg and converted to mg/kg for comparisons to SCOs.

Definitions:

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

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

TABLE 6

SUMMARY OF REMEDIAL INVESTIGATION GROUNDWATER ANALYTICAL RESULTS

REMEDIAL INVESTIGATION / INTERIM REMEDIAL MEASURES / ALTERNATIVE ANALYSIS REPORT

402 AND 430 BUFFALO AVENUE SITE

NIAGARA FALLS, NEW YORK

Parameters [1]	Class GA GWQS [2]	Sample Location										
		MW-1	MW-2*	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10
		4/16/15		5/1/15	4/16/15				6/4/15	4/16/15		
Volatile Organic Compounds (VOCs) - ug/L												
1,2,4-Trimethylbenzene	**5**	ND	--	ND	0.82 J	ND	**7.3**	ND	ND	ND	ND	**5.3**
1,3,5-Trimethylbenzene	**5**	ND	--	ND	2.2 J	ND	1 J	ND	ND	ND	ND	0.87 J
2-Butanone	**50**	2.9 J	--	ND	ND	ND	3.5 J	4.3 J	ND	3.3 J	2.8 J	ND
2-Hexanone	**50**	ND	--	ND	ND	ND	ND	1.2 J	ND	1.1 J	1.1 J	ND
Acetone	**50**	13	--	ND	4 J	ND	16	41	2.5 J	15	15	ND
Benzene	**1**	ND	--	0.44 J	**1.5**	ND	0.81	0.19 J	0.17 J	0.61	ND	ND
Carbon disulfide	**--**	2.3 J	--	1.9 J	ND	ND	1.6 J	1.7 J	2.6 J	3.1 J	1.3 J	ND
Chloroform	**7**	ND	--	ND	ND	ND	ND	ND	ND	6.2	6.3	ND
Cyclohexane	**--**	ND	--	1.7 J	2.4 J	ND	0.48 J	ND	ND	ND	ND	0.63 J
Ethylbenzene	**5**	ND	--	ND	ND	ND	1.5 J	ND	ND	ND	ND	ND
Isopropylbenzene	**5**	ND	--	ND	ND	ND	1.5 J	ND	ND	ND	ND	3.3
Methylcyclohexane	**--**	ND	--	1.9 J	4 J	0.51 J	0.64 J	ND	ND	ND	ND	1.6 J
n-Propylbenzene	**5**	ND	--	ND	ND	ND	1.1 J	ND	ND	ND	ND	1.4 J
Xylene (total)	**5**	ND	--	1.64	4.9	ND	ND	ND	ND	1.4 J	ND	ND
sec-Butylbenzene	**5**	ND	--	ND	ND	ND	1.4 J	ND	ND	ND	ND	3.1
Tetrachloroethene	**5**	ND	--	ND	0.37 J	ND	ND	0.47 J	ND	0.23 J	ND	ND
Toluene	**5**	ND	--	1.2 J	4.5	ND	1.6 J	ND	ND	1.6 J	ND	ND
Trichloroethene	**5**	ND	--	ND	0.29 J	ND	ND	0.83	ND	1.6 J	ND	ND
Semivolatile Organic Compounds (SVOCs) - ug/L												
2-Methylnaphthalene	**--**	0.19 J	0.21	--	ND	ND	0.35 J	0.46	--	0.23	0.1 J	3.9
Acenaphthene	**20**	ND	ND	--	ND	ND	ND	0.32	--	ND	ND	1.4
Anthracene	**50**	ND	ND	--	ND	ND	ND	0.2	--	ND	ND	ND
Benzo(a)anthracene	**0.002**	**0.07 J**	ND	--	ND	ND	ND	**0.18 J**	--	ND	ND	ND
Benzo(a)pyrene	**ND**	**0.1 J**	ND	--	ND	ND	ND	**0.19 J**	--	ND	ND	ND
Benzo(b)fluoranthene	**0.002**	**0.2**	**0.08 J**	--	ND	ND	ND	**0.25**	--	ND	ND	ND
Benzo(ghi)perylene	**--**	0.09 J	ND	--	ND	ND	ND	0.12 J	--	ND	ND	ND
Benzo(k)fluoranthene	**0.002**	**0.08 J**	ND	--	ND	ND	ND	**0.09 J**	--	ND	ND	ND
Biphenyl	**5**	ND	ND	--	ND	ND	ND	ND	--	ND	ND	1 J
Bis(2-ethylhexyl) phthalate	**5**	ND	1.4 J	--	ND	ND	ND	ND	--	ND	ND	ND
Chrysene	**0.002**	**0.15 J**	**0.06 J**	--	ND	ND	ND	**0.17 J**	--	ND	ND	ND
Dibenzofuran	**--**	ND	ND	--	ND	ND	ND		--	ND	ND	1 J
Fluoranthene	**50**	0.44	0.16 J	--	ND	ND	ND	0.42	--	ND	ND	ND
Fluorene	**50**	0.07 J	0.07 J	--	ND	ND	0.31 J	0.34	--	0.11 J	ND	3.3
Indeno(1,2,3-cd)pyrene	**0.002**	**0.11 J**	ND	--	ND	ND	ND	**0.13 J**	--	ND	ND	ND
Naphthalene	**10**	ND	0.14 J	--	ND	ND	ND	1.4	--	0.12 J	ND	ND
Phenanthrene	**50**	0.4	0.3	--	ND	ND	0.24 J	0.66	--	0.46	0.16 J	0.81 J
Pyrene	**50**	0.31	0.12 J	--	ND	ND	ND	0.36	--	ND	ND	ND
Polychlorinated Biphenyls - ug/L												
Total PCBs	**0.09**	ND	ND	--	ND	ND	ND	ND	--	ND	ND	ND
Metals (Dissolved) - ug/L [3]												
Arsenic	**25**	0.85	0.8	--	0.65	0.21 J	1.27	1.84	--	2.89	ND	2.23
Barium	**1000**	17.03	10.4	--	32.57	123.8	57.82	13.93	--	17.03	32.43	354.4
Cadmium	**5**	0.11 J	0.1 J	--	0.37	0.07 J	0.07 J	ND	--	0.11 J	0.29	ND
Chromium	**50**	2.45	1.5	--	2.03	2.11	0.66 J	1.33	--	2.98	0.67 J	0.8 J
Copper	**200**	1.86	1.8	--	1.65	0.9 J	2.24	4.48	--	2.97	0.36 J	ND
Lead	**25**	ND	ND	--	23.76	0.57 J	0.34 J	**29.18**	--	ND	ND	ND
Manganese	**300**	247.8	**335.9**	--	103.1	7.59	**423.6**	**425.4**	--	28.9	**572.2**	**431.4**
Nickel	**100**	7.64	14.3	--	3.1	0.45 J	10.28	6.72	--	1.94	18.06	2.32
Selenium	**10**	1.56 J	2 J	--	3.92 J	2.44 J	5	2.36 J	--	ND	5.15	ND
Zinc	**2000**	33.63	27.4	--	119.3	39.68	25.55	86.07	--	17.26	28.88	6.83 J
Pesticides and Herbicides - ug/L												
4,4'-DDD	**0.3**	ND	ND	--	ND	ND	ND	0.037 J	--	ND	ND	ND
4,4'-DDE	**0.2**	ND	ND	--	ND	ND	ND	0.076	--	ND	ND	ND
4,4'-DDT	**0.2**	ND	ND	--	ND	ND	ND	0.165	--	ND	ND	ND
Chlordane	**0.05**	ND	ND	--	ND	ND	ND	**0.528 P,I**	--	ND	ND	ND
cis-Chlordane	**--**	ND	ND	--	ND	ND	ND	0.033 P,I	--	ND	ND	ND
Heptachlor epoxide	**0.03**	ND	ND	--	ND	ND	ND	0.008	--	ND	ND	ND
trans-Chlordane	**--**	ND	ND	--	ND	ND	ND	0.019 J,P,I	--	ND	ND	ND

Notes:

1. Only parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per NYSDEC TOGS 1.1.1 Class GA Groundwater Quality Standards.
3. Sample results were reported by the laboratory in mg/L and converted to ug/L for comparisons to GWQSs

* = Suspect Groundwater Analytical Results, resampled on 05/01/15.

Qualifiers:

ND = Parameter not detected above laboratory detection limit.
"--" = Sample not analyzed for parameter or no GWQS available for the parameter.
J = Estimated Value - Below calibration range
P = The dual column RPD's are above the acceptance criteria, the lower of the two results is reported.
I = The lower value for the two columns has been reported due to obvious interference.

BOLD = Result exceeds GWQS.

TABLE 7

SUMMARY OF TRANSFORMER ROOM IRM POST-EXCAVATION SOIL ANALYTICAL RESULTS

REMEDIAL INVESTIGATION / INTERIM REMEDIAL MEASURES / ALTERNATIVE ANALYSIS REPORT

402 AND 430 BUFFALO AVENUE SITE

NIAGARA FALLS, NEW YORK

PARAMETER[1]	Unrestricted Use SCOs[2]	Restricted Residential Use SCOs [2]	Commercial Use SCOs[2]	SAMPLE LOCATION								
				A-1 (1')	B-1 (1')	C-1 (1')	D-1 (1')	E-1 (1')	F-1 (1')	G-2 (2')	H-2 (2')	Pipe Sediment
				7/22/2015						7/24/2015		7/23/2015
Polychlorinated biphenyls (PCBs) - mg/Kg [3]												
Aroclor 1254	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	0.208
Aroclor 1260	--	--	--	0.0477	0.632	0.00653 J	0.317	0.07	0.0208 J	0.0245 J	ND	0.266
Total PCBs	**0.1**	**1**	**1**	0.0477	**0.632**	0.00653	**0.317**	0.07	0.0208	0.0245	ND	**0.474**

Notes:

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

Definitions:

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

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

TABLE 8

SUMMARY OF TRANSFORMER ROOM IRM POST-REMEDIAL PCB WIPE SAMPLE RESULTS

REMEDIAL INVESTIGATION/INTERIM REMEDIAL MEASURES/ALTERNATIVE ANALYSIS REPORT

402 and 430 BUFFALO AVENUE SITE

NIAGARA FALLS, NEW YORK

Parameter[1]	South Wall Wipe	South Footer Wipe	West Wall Wipe	West Footer Wipe
	7/23/2015			
Polychlorinated biphenyls (PCBs) - ug/Abs				
Aroclor 1016	ND	ND	ND	ND
Aroclor 1221	ND	ND	ND	ND
Aroclor 1232	ND	ND	ND	ND
Aroclor 1242	ND	ND	ND	ND
Aroclor 1248	ND	ND	ND	ND
Aroclor 1254	ND	ND	ND	ND
Aroclor 1260	ND	1.24	ND	0.921
Aroclor 1262	ND	ND	ND	ND
Aroclor 1268	ND	ND	ND	ND
Total PCBs	ND	1.24	ND	0.921

Notes:

1. Sample results were reported by the laboratory in ug Abs; equivalent to ug/100 cm^2.

Definitions:

ND = Parameter not detected above laboratory detection limit.

TABLE 9

SUMMARY OF PETROLEUM AREA IRM AREA POST-EXCAVATION CONFIRMATORY SOIL ANALYTICAL RESULTS

REMEDIAL INVESTIGATION / INTERIM REMEDIAL MEASURES / ALTERNATIVE ANALYSIS REPORT

402 AND 430 BUFFALO AVENUE SITE

NIAGARA FALLS, NEW YORK

PARAMETER[1]	Unrestricted Use SCOs [2]	Restricted Residential Use SCOs [2]	Commercial Use SCOs [2]	Sample Location		
				Petroleum Area East	Petroleum Area Middle	Petroleum Area West
				4/14/2015		
Volatile Organic Compounds (VOCs) - mg/Kg [3]						
2-Butanone (MEK)	**0.12**	**100**	**500**	ND	0.0056 J	ND
4-methyl-2-pentanone (MIBK)	**--**	**--**	**--**	ND	0.00094 J	0.0024 J
Acetone	**0.05**	**100**	**500**	ND	0.0097 J	ND
Tetrachloroethene	**1.3**	**19**	**150**	0.00027 J	ND	ND
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg [3]						
Bis(2-ethylhexyl) phthalate	**--**	**--**	**--**	0.048 J	ND	ND
Total PAHs	--	--	**500**	0.048	--	--

Notes:

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

Definitions:

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

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

TABLE 10

SUMMARY OF 401 BUFFALO AVENUE IRM POST EXCAVATION SOIL SAMPLING RESULTS

REMEDIAL INVESTIGATION / INTERIM REMEDIAL MEASURES / ALTERNATIVE ANALYSIS REPORT

402 AND 430 BUFFALO AVENUE SITE

NIAGARA FALLS, NEW YORK

PARAMETER[1]	Unrestricted Use SCOs [2]	Restricted Residential Use SCOs [2]	401 Buffalo Avenue IRM Excavation Areas - Sample Location										
			Parking Lot Island Area Bottom-Comp 1	Parking Lot Island Area Bottom-Comp 2	Parking Lot Island Area Bottom-Comp 3	Parking Lot Island Area Bottom-Comp 4	Pool Area North Wall	Pool Area South Wall	Pool Area East Wall	Pool Area West Wall	Pool Area Bottom	Southern Gas Line Comp	SS-2 Area Comp.
			6/3/2015				6/4/2015						6/4/2015
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg [3]													
2-Methylnaphthalene	--	--	--	--	--	--	--	--	--	--	--	0.24	--
Acenaphthene	**20**	**100**	--	--	--	--	--	--	--	--	--	0.046 J	--
Anthracene	**100**	**100**	--	--	--	--	--	--	--	--	--	0.035 J	--
Benzo(a)anthracene	**1**	**1**	--	--	--	--	--	--	--	--	--	0.1 J	--
Benzo(a)pyrene	**1**	**1**	--	--	--	--	--	--	--	--	--	0.075 J	--
Benzo(b)fluoranthene	**1**	**1**	--	--	--	--	--	--	--	--	--	0.11 J	--
Benzo(ghi)perylene	**100**	**100**	--	--	--	--	--	--	--	--	--	0.049 J	--
Chrysene	**1**	**3.9**	--	--	--	--	--	--	--	--	--	0.18	--
Dibenzofuran	**7**	**59**	--	--	--	--	--	--	--	--	--	0.079 J	--
Fluoranthene	**100**	**100**	--	--	--	--	--	--	--	--	--	0.16	--
Naphthalene	**12**	**100**	--	--	--	--	--	--	--	--	--	0.17 J	--
Phenanthrene	**100**	**100**	--	--	--	--	--	--	--	--	--	0.34	--
Pyrene	**100**	**100**	--	--	--	--	--	--	--	--	--	0.17	--
Total PAHs	--	--	--	--	--	--	--	--	--	--	--	1.754	--
Metals - mg/Kg													
Arsenic	**13**	**16**	1.8	3.2	1.4	2.8	2.4	1.9	1.6	0.77	2.1	9.2	2.5
Barium	**350**	**400**	31	18	42	40	22	30	13	11	24	71	24
Beryllium	**7.2**	**72**	0.21 J	0.18 J	0.27	0.1 J	0.2 J	0.22 J	0.14 J	0.1 J	0.15 J	0.37	0.2 J
Cadmium	**2.5**	**4.3**	ND	ND	ND	ND	ND	ND	ND	0.08 J	0.04 J	ND	ND
Chromium	**30**	**180**	6.2	5.2	5.9	3.1	5.8	6.3	4.6	3.1	4.3	4.8	5.5
Copper	**50**	**270**	8.8	9.6	6.7	6.9	7.1	7	5.1	3.4	6	39	6.2
Lead	**63**	**400**	24	1.7 J	33	60	3.2	5.1	2 J	22	22	22	6.3
Manganese	**1600**	**2000**	380	150	600	260	280	290	290	240	340	94	270
Mercury	**0.18**	**0.81**	0.08	0.08	0.16	0.12	0.077 J	0.09 J	0.068 J	0.08	0.1	**0.21**	0.03
Nickel	**30**	**310**	6.8	8.4	5.4	3.4	7.4	7.2	5.8	2.8	4.6	8.1	5.6
Silver	**2**	**180**	ND	ND	0.16 J	0.08 J	ND	ND	ND	0.09 J	0.09 J	ND	ND
Selenium	--	--	ND	ND	ND	ND	ND	ND	ND	ND	0.14 J	0.39 J	ND
Zinc	**109**	**10000**	70	28	63	59	37	41	29	100	99	67	43 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. Values per 6NYCRR Part 375 Soil Cleanup Objectives (SCOs).
3. Sample results were reported by the laboratory in ug/kg and converted to mg/kg for comparisons to SCOs.

Definitions:

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

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

TABLE 11

ALTERNATIVE 2 - UNRESTRICTED USE COST ESTIMATE

REMEDIAL INVESTIGATION / INTERIM REMEDIAL MEASURES / ALTERNATIVE ANALYSIS REPORT

402 and 430 BUFFALO AVENUE SITE

BUFFALO, NEW YORK

Item	Quantity	Units	Unit Cost	Total Cost
IRM Completed - 401 Buffalo Avenue parcel				
Petroleum IRM Excavation and Disposal	1	LS	$ 10,000	$ 10,000
Transformer Room IRM Excavation and Disposal	1	LS	$ 85,000	$ 85,000
Radiologic Material IRM Excavation and Disposal	1	LS	$ 65,000	$ 65,000
UW/Chemical Waste IRM and Disposal	1	LS	$ 20,000	$ 20,000
Parking Lot Island IRM Excavation and Disposal	1	LS	$ 25,000	$ 25,000
Pool Area and SS-3 IRM Excavation and Disposal	1	LS	$ 35,000	$ 35,000
Subtotal:				**$ 240,000**
Additional Remedial Measures				
402 Buffalo Avenue Radiologic Material				
Soil/Fill Excavation & Loading	750	TN	$ 20.00	$ 15,000
Disposal	750	TN	$ 250.00	$ 187,500
Waste Characterization Analytical	1	EA	$ 1,500.00	$ 1,500
Radiologic Screening and Oversight	1	EST	$ 15,000.00	$ 15,000
Subtotal:				**$ 219,000**
Additional Soil/Fill Exceeding USCOs				
Soil/Fill Excavation & Hauling	33800	CY	$ 20.00	$ 676,000
Disposal at TSDF (1.6 tons per CY)	54080	TON	$ 30.00	$ 1,622,400
Waste Characterization Analytical	25	EA	$ 600.00	$ 15,000
Post-Excavation Confirmatory Sampling	150	EA	$ 500.00	$ 75,000
Subtotal:				**$ 2,388,400**
Backfill Excavation with Off-Site Soil/Fill				
Haul, Place & Compact	34275	CY	$ 35.00	$ 1,199,625
Backfill Characterization and Sampling	50	EA	$ 750.00	$ 37,500
Subtotal:				**$ 1,237,125**
Final Engineering Report/Site Management Plan				**$ 30,000**
Subtotal Capital Cost				**$ 4,114,525**
Contractor Mobilization/Demobilization (3%)				$ 123,436
Health and Safety (2%)				$ 82,291
Engineering/Contingency (25%)				$ 1,028,631
Capital Cost				**$ 5,349,000**

TABLE 12

ALTERNATIVE 2 - Track 2 RESTRICTED RESIDENTIAL USE COST ESTIMATE

REMEDIAL INVESTIGATION / INTERIM REMEDIAL MEASURES / ALTERNATIVE ANALYSIS REPORT

402 and 430 BUFFALO AVENUE SITE

BUFFALO, NEW YORK

Item	Quantity	Units	Unit Cost	Total Cost
IRM Completed - 401 Buffalo Avenue parcel				
Petroleum IRM Excavation and Disposal	1	LS	$ 10,000	$ 10,000
Transformer Room IRM Excavation and Disposal	1	LS	$ 85,000	$ 85,000
Radiologic Material IRM Excavation and Disposal	1	LS	$ 65,000	$ 65,000
UW/Chemical Waste IRM and Disposal	1	LS	$ 20,000	$ 20,000
Parking Lot Island IRM Excavation and Disposal	1	LS	$ 25,000	$ 25,000
Pool Area and SS-3 IRM Excavation and Disposal	1	LS	$ 35,000	$ 35,000
Subtotal:				**$ 240,000**
Additional Remedial Measures				
402 Buffalo Avenue Radiologic Material				
Soil/Fill Excavation & Loading	750	TN	$ 20.00	$ 15,000
Disposal	750	TN	$ 250.00	$ 187,500
Waste Characterization Analytical	1	EA	$ 1,500.00	$ 1,500
Radiologic Screening and Oversight	1	EST	$ 15,000.00	$ 15,000
Subtotal:				**$ 219,000**
Additional Soil/Fill Exceeding RRSCOs				
Soil/Fill Excavation & Hauling	9000	CY	$ 20.00	$ 180,000
Disposal at TSDF (1.6 tons per CY)	14400	TON	$ 30.00	$ 432,000
Waste Characterization Analytical	25	EA	$ 600.00	$ 15,000
Post-Excavation Confirmatory Sampling	150	EA	$ 500.00	$ 75,000
Subtotal:				**$ 702,000**
Backfill Excavation with Off-Site Soil/Fill				
Haul, Place & Compact	9475	CY	$ 35.00	$ 331,625
Backfill Characterization and Sampling	50	EA	$ 750.00	$ 37,500
Subtotal:				**$ 369,125**
Final Engineering Report/Site Management Plan				**$ 30,000**
Subtotal Capital Cost				**$ 1,560,125**
Contractor Mobilization/Demobilization (3%)				$ 46,804
Health and Safety (2%)				$ 31,203
Engineering/Contingency (25%)				$ 390,031
Capital Cost				**$ 2,028,000**

TABLE 13

ALTERNATIVE 4 - TRACK 4 RESTRICTED RESIDENTIAL USE COST ESTIMATE

REMEDIAL INVESTIGATION / INTERIM REMEDIAL MEASURES / ALTERNATIVE ANALYSIS REPORT

402 and 430 BUFFALO AVENUE SITE

BUFFALO, NEW YORK

Item	Quantity	Units	Unit Cost	Total Cost
IRM Completed - 401 Buffalo Avenue parcel				
Petroleum IRM Excavation and Disposal	1	LS	$ 10,000	$ 10,000
Transformer Room IRM Excavation and Disposal	1	LS	$ 85,000	$ 85,000
Radiologic Material IRM Excavation and Disposal	1	LS	$ 65,000	$ 65,000
UW/Chemical Waste IRM and Disposal	1	LS	$ 20,000	$ 20,000
Parking Lot Island IRM Excavation and Disposal	1	LS	$ 25,000	$ 25,000
Pool Area and SS-3 IRM Excavation and Disposal	1	LS	$ 35,000	$ 35,000
Subtotal:				**$ 240,000**
Additional Remedial Measures				
402 Buffalo Avenue Radiologic Material				
Soil/Fill Excavation & Loading	750	TN	$ 20.00	$ 15,000
Disposal	750	TN	$ 250.00	$ 187,500
Waste Characterization Analytical	1	EA	$ 1,500.00	$ 1,500
Radiologic Screening and Oversight	1	EST	$ 15,000.00	$ 15,000
Subtotal:				**$ 219,000**
TP-3 IRM Excavation (Soil/Fill Exceeding ISCOs)				
Soil/Fill Excavation & Hauling	600	CY	$ 20.00	$ 12,000
Disposal at TSDF (1.6 tons per CY)	960	TN	$ 30.00	$ 28,800
Waste Characterization Analytical	2	EA	$ 600.00	$ 1,200
Post-Excavation Confirmatory Sampling	12	EA	$ 500.00	$ 6,000
Subtotal:				**$ 48,000**
Backfill Excavation with On-Site Soil/Fill				
Excavate, Load, Transport, Place & Compact	1710	TN	$ 20.00	$ 34,200
Backfill Characterization and Sampling	5	EA	$ 750.00	$ 3,750
Subtotal:				**$ 37,950**
Cover System - 430 Buffalo Avenue (1.5 acre)				
Excavation, Loading, On-Site Haul, Placement, Grading and Hydroseeding	1	EST	$ 80,000.00	$ 80,000
Demarcation Fabric	3	EA	$ 700.00	$ 2,100
Cover Soil Characterization and Sampling	10	EA	$ 750.00	$ 7,500
Subtotal:				**$ 89,600**
Final Engineering Report/Site Management Plan				**$ 30,000**
Subtotal Capital Cost				**$ 664,550**
Contractor Mobilization/Demobilization (3%)				$ 19,937
Health and Safety (2%)				$ 13,291
Engineering/Contingency (25%)				$ 166,138
Total Capital Cost				**$ 864,000**
Annual Operation Maintenance & Monitoring (OM&M):				
Annual Certification	5	Yr	$ 2,500	$ 12,500
Total Capital and O&M Cost				**$ 877,000**

TABLE 14

COMPARISON OF REMEDIAL ALTERNATIVES

REMEDIAL INVESTIGATION/INTERIM REMEDIAL MEASURES/ALTERNATIVES ANALYSIS REPORT

402 and 430 BUFFALO AVENUE SITE

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 Further Action								TBE	
Alternative 2 - Track 1 Cleanup	✓	✓	✓	✓				TBE	
Alternative 3 - Track 2 Cleanup	✓	✓	✓	✓		✓		TBE	✓
Alternative 4 - Track 4 Cleanup	✓	✓	✓	✓	✓	✓	✓	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 (Costs noted include costs of the IRMs completed)
8. Community Acceptance
9. Land Use

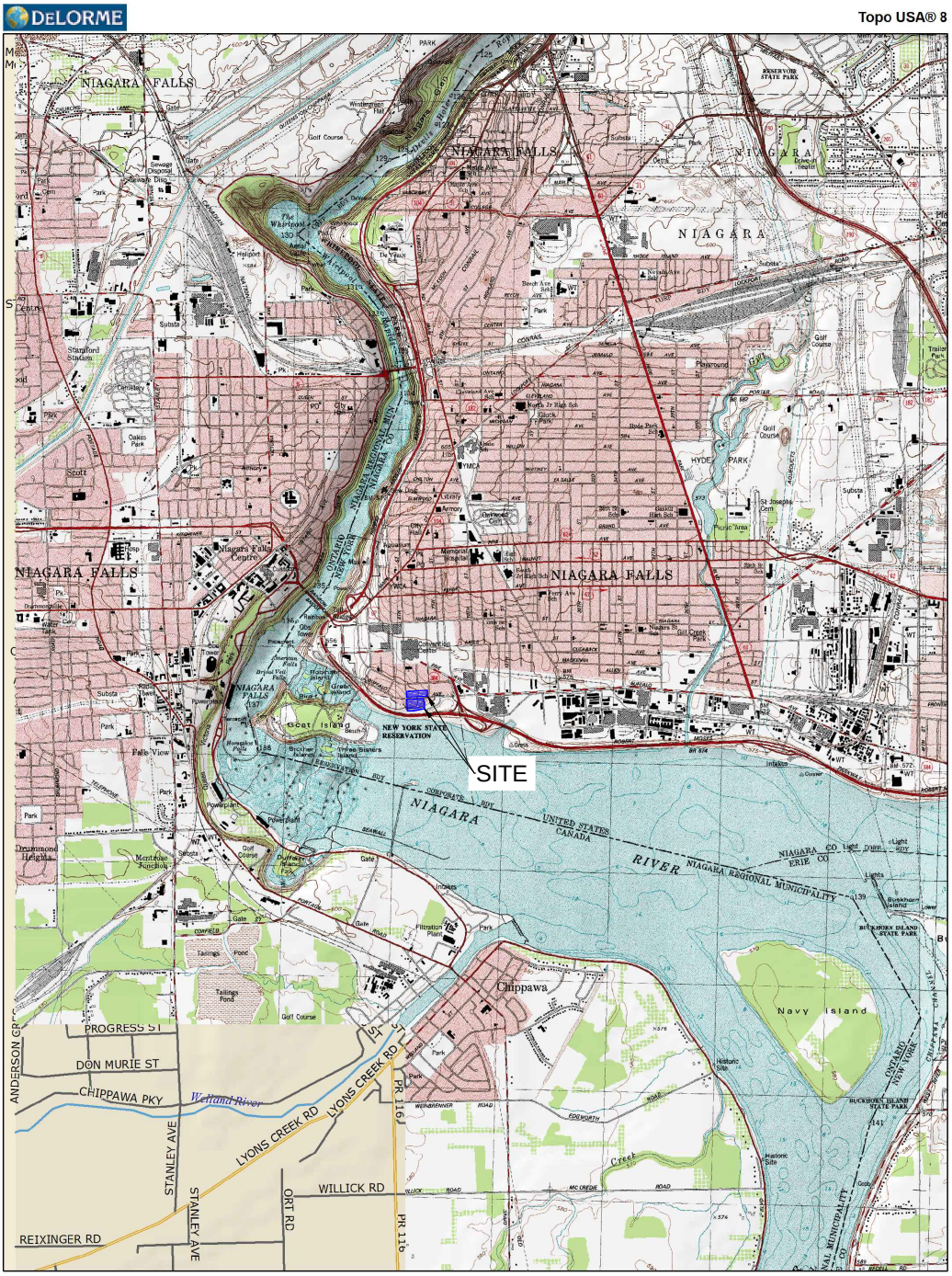
✓ = Alternative satisfies criterion

TBE = To be evaluated following public comment period

FIGURES

F:\CAD\TurnKey\Merani Hospitality\401, 402, and 430 Buffalo Ave\RI-IRM-AA REPORT\Figure 1; Site Location and Vicinity Map.dwg

FIGURE 1



TurnKey Environmental Restoration, LLC

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

PROJECT NO.: 0294-013-001

DATE: MARCH 2015

DRAFTED BY: BLR

SITE LOCATION AND VICINITY MAP

RI-IRM-AA REPORT

402 & 430 BUFFALO AVENUE SITE
BCP SITE No. C932164
NIAGARA FALLS, NEW YORK

PREPARED FOR

MERANI HOSPITALITY, INC.

DATE: AUGUST 2015
DRAFTED BY: KRR

SITE PLAN (AERIAL)

FIGURE 2

RI-IRM-AA REPORT

402, & 430 BUFFALO AVENUE SITE
BCP SITE NO. C932164
NIAGARA FALLS, NEW YORK

PREPARED FOR

MERANI HOSPITALITY, INC.

TURNKEY ENVIRONMENTAL RESTORATION, LLC
2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635

JOB NO.: 0294-013-001

F:\CAD\TurnKey\Merani Hospitality\401, 402, and 430 Buffalo Ave\RI-IRM-AA REPORT\Figure 3; Historic and RI Sample Locations.dwg, 9/1/2015 3:03:18 PM, DWG To PDF.pc3

LEGEND:

- BCP BOUNDARY
- PARCEL BOUNDARY
- MW-1 RI MONITORING WELL LOCATION
- TP-25 RI TEST PIT LOCATION
- SS-7 RI SURFACE SOIL LOCATION
- SB-14 RI SOIL BORING LOCATION
- TP-3 HISTORIC TEST PIT LOCATION
- ISLAND HISTORIC TEST PIT LOCATION
- SB-1 HISTORIC SOIL BORING LOCATION

430 BUFFALO AVE

401 BUFFALO AVE

402 BUFFALO AVE

4TH STREET

6TH STREET

HOLLY PLACE

BUFFALO AVENUE

SB-13, MW-10 / SB-08, MW-5, SB-07, SB-09, SB-10, SB-11, MW-9 / SB-12, TP-22, TP-1, TP-3, TP-2, TP-4, TP-23, SS-4, TP-24, TP-26, TP-25, TP-5, TP-27, TP-6, SS-5, MW-8 / SB-14, SB-15, MW-6, SS-7, TP-8, TP-28, TP-29, TP-7, SS-6, SB-16, MW-7

MW-1 / SB-17, SS-1, PAVEMENT, TP-10, ISLAND TEST PIT, SB-1, EXISTING BUILDING, TP-11, MW-2, SB-18, TP-12, TP-15, TP-16, SB-2, PAVEMENT, TP-14, TP-13, SS-3, TP-17, TP-18, WEST TRENCH, FORMER BUILDING - DEMOLISHED, SOUTH TRENCH, TP-19, MW-3, SS-2, PAVEMENT, SB-3, TP-20, MW-4 / SB-19

N

80' 0' 80' 160'

SCALE: 1 INCH = 80 FEET
SCALE IN FEET
(approximate)

DATE: JUNE 2015
DRAFTED BY: BLR

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

TURNKEY ENVIRONMENTAL RESTORATION, LLC

JOB NO.: 0294-013-001

HISTORIC AND REMEDIAL INVESTIGATION SAMPLE LOCATIONS

RI-IRM-AA REPORT

402 & 430 BUFFALO AVENUE SITE
BCP SITE No. C932164
NIAGARA FALLS, NEW YORK

PREPARED FOR
MERANI HOSPITALITY, INC.

FIGURE 3

LEGEND:

- BCP BOUNDARY
- PARCEL BOUNDARY
- MW-1 — RI MONITORING WELL LOCATION
- 569.3 — GROUNDWATER ELEVATION (FEBRUARY 2015)
- 570 — GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
- GROUNDWATER FLOW DIRECTION

430 BUFFALO AVE

402 BUFFALO AVE

401 BUFFALO AVE

4TH STREET

6TH STREET

BUFFALO AVENUE

HOLLY PLACE

573.7 MW-10

MW-5 572.2

570.3 MW-6

MW-9 574.4

MW-8 571.0

DRY MW-7

573.0 MW-1

MW-2 569.3

572

570

565

560

559.3 MW-3

560.5 MW-4

PAVEMENT

EXISTING BUILDING

FORMER BUILDING - DEMOLISHED

N

80' 0' 80' 160'

SCALE: 1 INCH = 80 FEET
SCALE IN FEET
(approximate)

DATE: AUGUST 2015
DRAFTED BY: KRR

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

TURNKEY ENVIRONMENTAL RESTORATION, LLC

JOB NO.: 0294-013-001

GROUNDWATER ISOPOTENTIAL MAP

RI-IRM-AA REPORT
402 & 430 BUFFALO AVENUE SITE
BCP SITE No. C932164
NIAGARA FALLS, NEW YORK
PREPARED FOR
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FIGURE 4

F:\CAD\TurnKey\Merani Hospitality\401, 402, and 430 Buffalo Ave\RI-IRM-AA REPORT\Figure 5; Radiological Survey Results.dwg, 9/1/2015 3:04:53 PM, DWG To PDF.pc3

LEGEND:

- BCP BOUNDARY
- PARCEL BOUNDARY
- TP-25 RI TEST PIT LOCATION
- SS-7 RI SURFACE SOIL LOCATION
- SB-10 RI SOIL BORING LOCATION
- MW-1 RI MONITORING WELL LOCATION
- ELEVATED RADIOLOGIC FIELD READING ABOVE BACKGROUND)

430 BUFFALO AVE

402 BUFFALO AVE

401 BUFFALO AVE

BUFFALO AVENUE

4TH STREET

6TH STREET

HOLLY PLACE

SB-13, MW-10 / SB-08, SB-07, MW-5, TP-22, SB-09, SB-10, SB-11, MW-9 / SB-12, TP-23, SS-4, TP-24, TP-26, SB-15, MW-6, SS-7, TP-28, TP-29, TP-27, TP-25, SS-5, MW-8 / SB-14, SB-16, SS-6, MW-7

SS-1, MW-1 / SB-17, MW-2, SB-18, TP-11, TP-12, PAVEMENT, TP-10, TP-15, TP-16, EXISTING BUILDING, TP-14, TP-13, SS-3, TP-17, TP-18, FORMER BUILDING - DEMOLISHED, TP-19, MW-3, SS-2, PAVEMENT, TP-20, MW-4 / SB-19

N

80' 0' 80' 160'

SCALE: 1 INCH = 80 FEET
SCALE IN FEET
(approximate)

DATE: JUNE 2015
DRAFTED BY: BLR

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

TURNKEY ENVIRONMENTAL RESTORATION, LLC

JOB NO.: 0294-013-001

RI RADIOLOGIC SURVEY RESULTS

RI-IRM-AA REPORT
402 & 430 BUFFALO AVENUE SITE
BCP SITE No. C932164
NIAGARA FALLS, NEW YORK
PREPARED FOR
MERANI HOSPITALITY, INC.

FIGURE 5

LEGEND:

BCP BOUNDARY

PARCEL BOUNDARY

BUFFALO AVENUE

ISLAND AREA EXCAVATION

COMP-4

PAVEMENT

COMP-3

RADIATION EXCAVATION LIMITS

SEE FIGURE 6B

EXISTING BUILDING

COMP-2

PAVEMENT

COMP-1

FORMER CONCRETE

4TH STREET

HOLLY PLACE

PETRO-MIDDLE

PETRO-WEST

PETRO-EAST

FORMER BUILDING - DEMOLISHED

PETROLEUM AREA EXCAVATION

POOL-NW

SS-2 COMP

POOL-WW

PAVEMENT

SS-2 EXCAVATION AREA

POOL-EW

POOL-BM

POOL-SW

POOL AREA EXCAVATION

N

60' 0' 60' 120'

SCALE: 1 INCH = 60 FEET
SCALE IN FEET
(approximate)

DATE: AUGUST 2015
DRAFTED BY: KRR

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

JOB NO.: 0294-013-001

401 BUFFALO AVENUE IRM ACTIVITIES

RI-IRM-AA REPORT

402 & 430 BUFFALO AVENUE SITE
BCP SITE No. C932164
NIAGARA FALLS, NEW YORK

PREPARED FOR
MERANI HOSPITALITY, INC.

FIGURE 6A

DATE: AUGUST 2015
DRAFTED BY: KRR

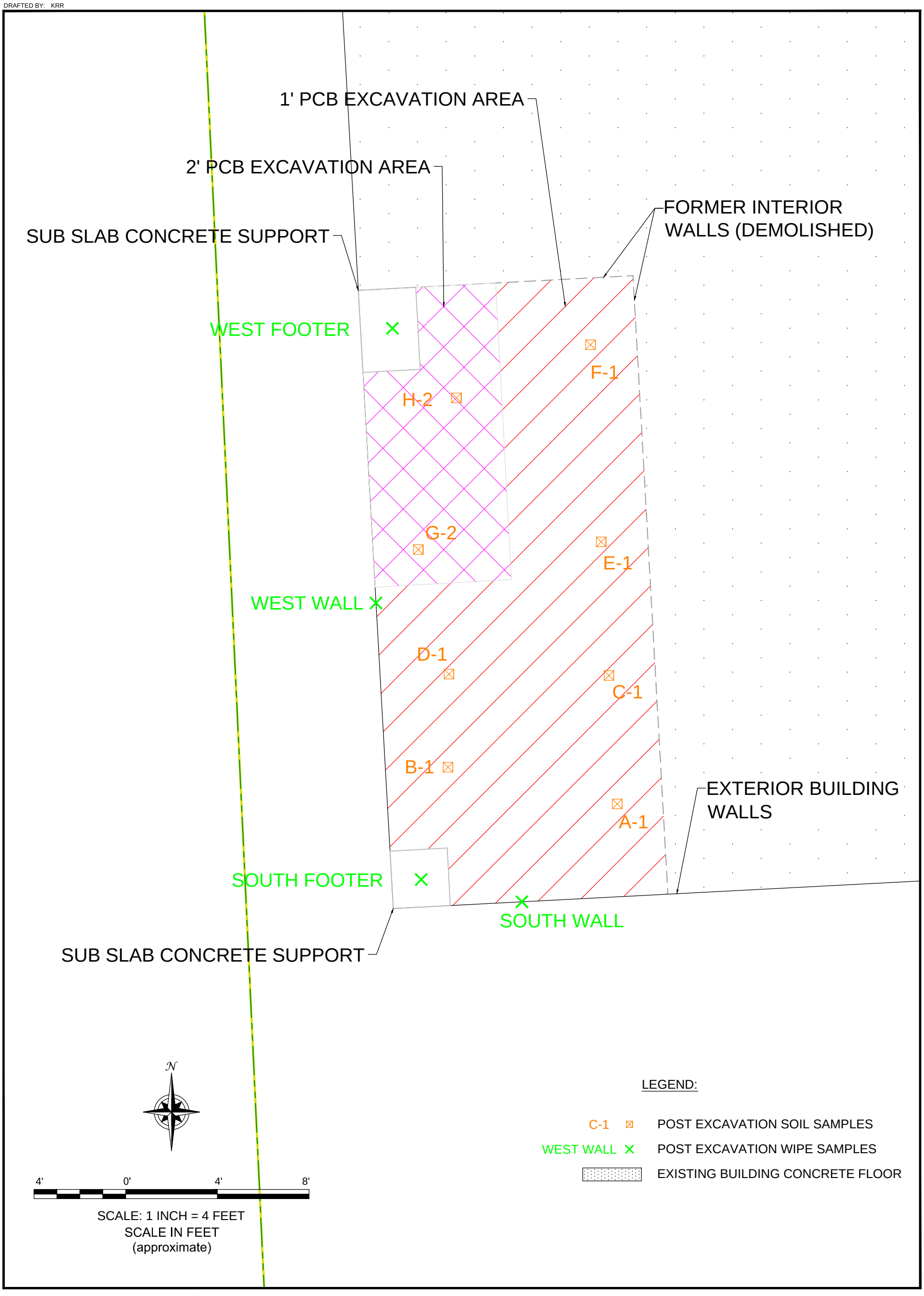

FIGURE 6B

TRANSFORMER ROOM IRM ACTIVITIES

RI-IRM-AA REPORT

402 & 430 BUFFALO AVENUE SITE
BCP SITE No. C932164
NIAGARA FALLS, NEW YORK

PREPARED FOR

MERANI HOSPITALITY, INC.

TURNKEY ENVIRONMENTAL RESTORATION, LLC
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BUFFALO, NY 14218
(716) 856-0635

JOB NO.: 0294-013-001

F:\CAD\TurnKey\Merani Hospitality\401, 402, and 430 Buffalo Ave\RI-IRM-AA REPORT\Figure 7: Track 2 RR Cleanup Objectives.dwg, 9/1/2015 3:45:24 PM, DWG To PDF.pc3

LEGEND:

- BCP BOUNDARY
- PARCEL BOUNDARY
- MW-1 RI MONITORING WELL LOCATION
- TP-25 RI TEST PIT LOCATION
- SS-7 RI SURFACE SOIL LOCATION
- SB-14 RI SOIL BORING LOCATION
- TP-3 HISTORIC TEST PIT LOCATION
- TRACK 2 EXCAVATION LIMITS

430 BUFFALO AVE

402 BUFFALO AVE

401 BUFFALO AVE

BUFFALO AVENUE

4TH STREET

6TH STREET

HOLLY PLACE

SB-13, MW-10 / SB-08, SB-07, MW-5, TP-22, TP-24, SB-15, MW-6, SS-7, TP-28, TP-8, TP-26, TP-29, TP-1, TP-3, TP-5, TP-27, SB-09, SB-10, TP-2, TP-4, TP-25, TP-6, TP-7, SB-16, SS-6, SB-11, TP-23, SS-5, MW-7, SS-4, MW-9 / SB-12, MW-8 / SB-14

SS-1, MW-1 / SB-17, MW-2, SB-18, TP-11, TP-12, PAVEMENT, TP-10, EXISTING BUILDING, TP-15, TP-16, PAVEMENT, TP-14, TP-13, SS-3, TP-17, TP-18, FORMER BUILDING - DEMOLISHED, TP-19, MW-3, SS-2, PAVEMENT, TP-20, MW-4 / SB-19

N

80' 0' 80' 160'

SCALE: 1 INCH = 80 FEET
SCALE IN FEET
(approximate)

DATE: AUGUST 2015
DRAFTED BY: KRR

2558 HAMBURG TURNPIKE
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TURNKEY ENVIRONMENTAL RESTORATION, LLC

JOB NO.: 0294-013-001

TRACK 2 RESTRICTED RESIDENTIAL CLEANUP ALTERNATIVE

RI-IRM-AA REPORT

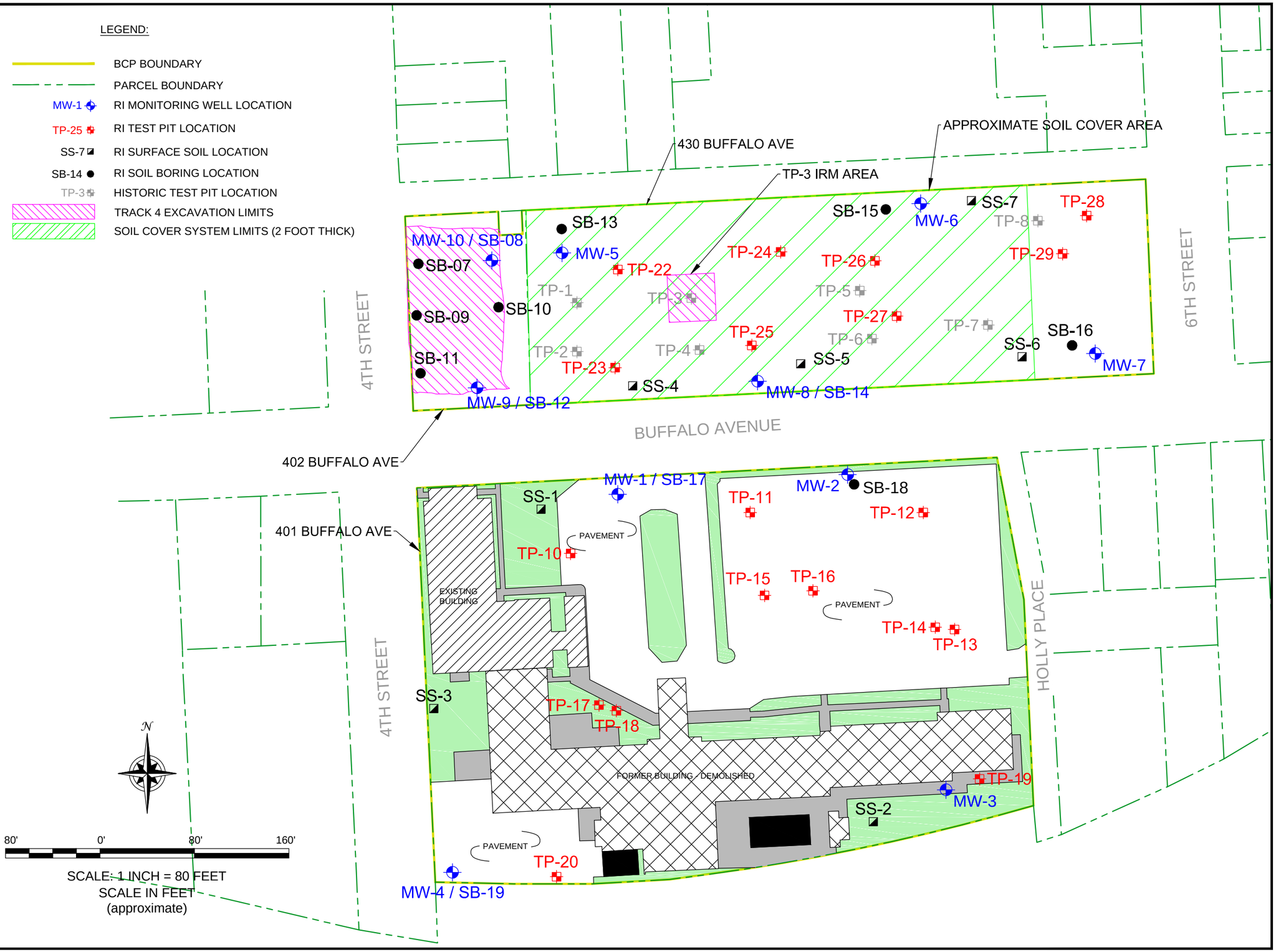
402 & 430 BUFFALO AVENUE SITE
BCP SITE No. C932164
NIAGARA FALLS, NEW YORK

PREPARED FOR
MERANI HOSPITALITY, INC.

FIGURE 7

LEGEND:

- BCP BOUNDARY
- PARCEL BOUNDARY
- MW-1 RI MONITORING WELL LOCATION
- TP-25 RI TEST PIT LOCATION
- SS-7 RI SURFACE SOIL LOCATION
- SB-14 RI SOIL BORING LOCATION
- TP-3 HISTORIC TEST PIT LOCATION
- TRACK 4 EXCAVATION LIMITS
- SOIL COVER SYSTEM LIMITS (2 FOOT THICK)



DATE: JUNE 2015
DRAFTED BY: BLR

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

TURNKEY ENVIRONMENTAL RESTORATION, LLC

JOB NO.: 0294-013-001

TRACK 4 RESTRICTED RESIDENTIAL CLEAN UP ALTERNATIVE

RI-IRM-AA REPORT

402 & 430 BUFFALO AVENUE SITE
BCP SITE No. C932164
NIAGARA FALLS, NEW YORK

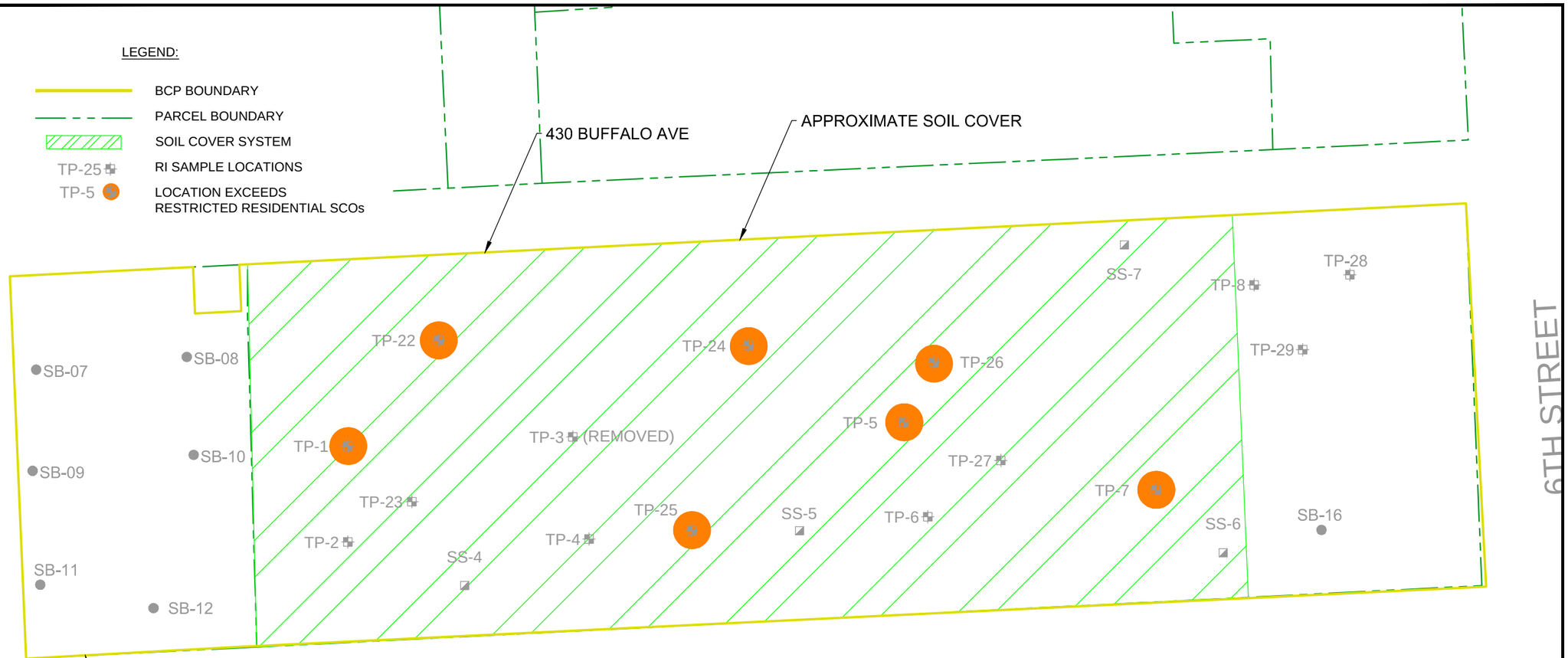
PREPARED FOR
MERANI HOSPITALITY, INC.

FIGURE 8

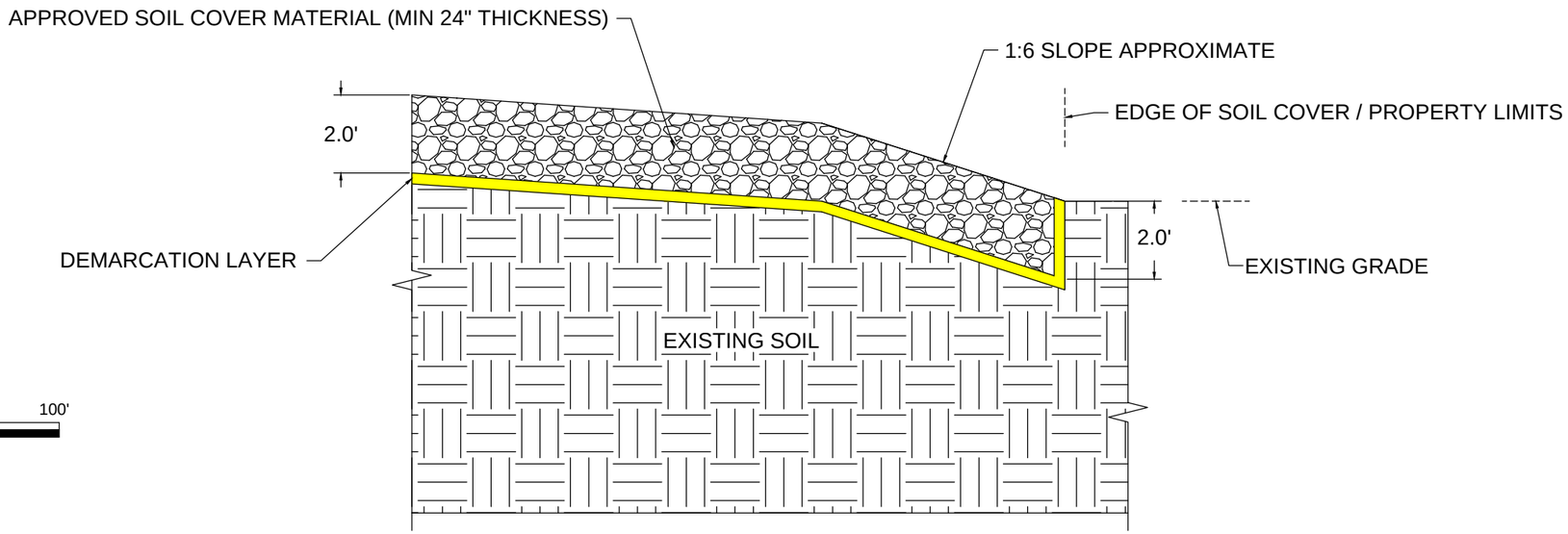
F:\CAD\TurnKey\Merani Hospitality\401, 402, and 430 Buffalo Ave\RI-IRM-AA REPORT\Figure 9; Planed Soil Cover Detail.dwg, 9/1/2015 11:18:00 AM, DWG To PDF.pc3

LEGEND:

- BCP BOUNDARY
- PARCEL BOUNDARY
- SOIL COVER SYSTEM
- TP-25 RI SAMPLE LOCATIONS
- TP-5 LOCATION EXCEEDS RESTRICTED RESIDENTIAL SCOs



SOIL COVER DETAILS



50' 0' 50' 100'

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

DATE: AUGUST 2015
DRAFTED BY: KRR

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

JOB NO.: 0294-013-001

PLANNED SOIL COVER DETAIL

RI-IRM-AA REPORT
402 & 430 BUFFALO AVENUE SITE
BCP SITE No. C932164
NIAGARA FALLS, NEW YORK
PREPARED FOR
MERANI HOSPITALITY, INC.

FIGURE 9

APPENDIX A

PROJECT PHOTOLOG

APPENDIX B

FIELD BOREHOLE LOGS AND WELL COMPLETION DETAILS

Project No: 0294-013-001

Borehole Number: SB-07

Project: 402 and 430 Buffalo Avenue Remedial Investigation

A.K.A.:

Client: Merani Hospitality, Inc.

Logged By: PWW

Site Location: Niagara Falls, New York

Checked By: NTM

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	***Gravel Sub-base***							
	-1.0								
	1.0	***Poorly Graded Sand with Silt*** Reddish brown, mostly fine sand, little non-plastic fines, little gravel, loose, massive	S-1	NA	2.6		0.0	Sample collected	
	-4.0						0.0		
	4.0	As above							
5.0			S-2	NA	3.8		0.0		
							0.0		
	-8.0								
	8.0	As above, refusal on suspected bedrock at 11 fbgs							
10.0			S-3	NA	4		0.0		
	-11.0						0.0		
	11.0	End of Borehole							
15.0									
20.0									

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe 6620DT
Drill Method: Direct-push w/ 4' macro-core
Comments:
Drill Date(s): 2-25-15

Hole Size: 3"
Stick-up: NA
Datum: Mean Sea Level

Sheet: 1 of 1

Project No: 0294-013-001

Borehole Number: SB-08

Project: 402 and 430 Buffalo Avenue Remedial Investigation

A.K.A.:

Client: Merani Hospitality, Inc.

Logged By: PWW

Site Location: Niagara Falls, New York

Checked By: NTM

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

SUBSURFACE PROFILE			SAMPLE						
Depth (ftbgs)	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	***Gravel Sub-Base***							
	-1.0								
	1.0	***Sandy Lean Clay with Fill*** Blackish brown, moist, mostly low plasticity fines, some fine sand, brick and gravel pieces, stiff, petroleum like odor	S-1	NA	2.6		0.0 5.9 10.6		
	-4.0								
	4.0	As Above	S-2	NA	4.0		31.0 39.6		
5.0									
	-8.0								
	8.0	***Poorly Graded Sand with Silt*** Reddish brown, moist to wet at 8 fbgs, mostly fine sand, little non-plastic fines, loose, petroleum-like odor	S-3	NA	4.0		55.2 22.3	Sample Collected	
10.0									
	-12.0								
	12.0	As Above, wet							
	-13.0								
	13.0	***Lean Clay with Gravel*** Reddish brown, moist, mostly medium plasticity fines, little angular gravel, massive	S-4	NA	4.0		1.8 0.0		
15.0									
	-16.0								
	16.0	End of Borehole							
20.0									

First Water at 8 fbgs

Drilled By: Trec Environmental, Inc.
Drill Rig Type: Geoprobe 6620DT
Drill Method: Direct-push w/ 4' macro-core
Comments:
Drill Date(s): 2-25-15

Hole Size: 3"
Stick-up: NA
Datum: Mean Sea Level

Sheet: 1 of 1

Project No: 0294-013-001

Borehole Number: SB-09

Project: 402 and 430 Buffalo Avenue Remedial Investigation

A.K.A.:

Client: Merani Hospitality, Inc.

Logged By: PWW

Site Location: Niagara Falls, New York

Checked By: NTM

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	***Gravel Sub-base***							
	-1.0								
	1.0	***Fill*** Reddish brown, moist, mostly red and yellow brick pieces, some fine sand, loose when disturbed, massive	S-1	NA	1.9		0.0		
	-3.0								
	3.0	***Poorly Graded Sand with Silt*** Reddish brown, mostly fine sand, little non-plastic fines, loose, massive					0.0		
	-4.0								
	4.0	As above, moist to wet (8')							
5.0			S-2	NA	2.9		0.0		
							0.0		
	-8.0								
	8.0	As above, wet							
10.0			S-3	NA	4.0		0.0		
							0.0		
	-12.0								
	12.0	As above, refusal at 14 fbgs on suspected bedrock							
	-14.0						0.0		
	14.0	End of Borehole	S-4	NA	4.0				
15.0									
20.0									

Drilled By: Trec Environmental, Inc.
Drill Rig Type: Geoprobe 6620DT
Drill Method: Direct-push w/ 4' macro-core
Comments:
Drill Date(s): 2-25-15

Hole Size: 3"
Stick-up: NA
Datum: Mean Sea Level

Sheet: 1 of 1

Project No: 0294-013-001

Borehole Number: SB-10

Project: 402 and 430 Buffalo Avenue Remedial Investigation

A.K.A.:

Client: Merani Hospitality, Inc.

Logged By: PWW

Site Location: Niagara Falls, New York

Checked By: NTM

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	***Gravel Sub-base***							
	-1.0								
	1.0	***Fill*** Reddish brown, moist, mostly red and yellow brick pieces, some fine sand, concrete pieces, loose when disturbed, massive	S-1	NA	2.6		0.0		
	-4.0						0.0		
	4.0	As above							
5.0			S-2	NA	4.0		0.0		
	-8.0						0.0		
	8.0	***Poorly Graded Sand with Silt*** Reddish brown, moist to wet (8'), mostly fine sand, little non-plastic fines, loose, massive					0.0		
10.0			S-3	NA	4.0		0.0		
	-12.0								
	12.0	As above, wet					0.0		
	-14.0		S-4	NA	4.0				
	14.0	***Lean Clay*** Reddish brown, moist, mostly medium plasticity fines, little angular gravel, hard, massive					0.0		
15.0	-16.0								
	16.0	End of Borehole							
20.0									

Drilled By: Trec Environmental, Inc.
Drill Rig Type: Geoprobe 6620DT
Drill Method: Direct-push w/ 4' macro-core
Comments:
Drill Date(s): 2-25-15

Hole Size: 3"
Stick-up: NA
Datum: Mean Sea Level

Sheet: 1 of 1

Project No: 0294-013-001

Borehole Number: SB-11

Project: 402 and 430 Buffalo Avenue Remedial Investigation

A.K.A.:

Client: Merani Hospitality, Inc.

Logged By: PWW

Site Location: Niagara Falls, New York

Checked By: NTM

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	***Gravel Sub-base***							
	-1.0								
	1.0	***Poorly Graded Sand with Silt*** Reddish brown, mostly fine sand, little non-plastic fines, loose, massive	S-1	NA	3.1		0.0		
	-4.0						0.0		
	4.0	As above, wet							
5.0			S-2	NA	3.8		0.0		
	-8.0						0.0		
	8.0	As above, wet							
							0.0		sample collected
10.0			S-3	NA	4.0		0.0		
	-12.0								
	12.0	As above, wet					0.0		
			S-4	NA	4.0		0.0		
15.0									
	-16.0								
	16.0	End of Borehole							
20.0									

Drilled By: Trec Environmental, Inc.
Drill Rig Type: Geoprobe 6620DT
Drill Method: Direct-push w/ 4' macro-core
Comments:
Drill Date(s): 2-25-15

Hole Size: 3"
Stick-up: NA
Datum: Mean Sea Level

Sheet: 1 of 1

Project No: 0294-013-001

Borehole Number: SB-12

Project: 402 and 430 Buffalo Avenue Remedial Investigation

A.K.A.:

Client: Merani Hospitality, Inc.

Logged By: PWW

Site Location: Niagara Falls, New York

Checked By: NTM

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	***Gravel Sub-base***							
	-1.0								
	1.0	***Fill*** Reddish brown, moist, mostly red and yellow brick fragments, some fine sand, little concrete pieces, loose when disturbed	S-1	NA	2.2		0.0		
	-4.0						0.0		
	4.0	As above	S-2	NA	3.8		0.0	Sample Collected	
5.0							0.0		
	-8.0								
	8.0	***Poorly Graded Sand with Silt*** Reddish brown, moist to wet at 8 fbgs, mostly fine sand, little non-plastic fines, loose	S-3	NA	4.0		0.0		▽ First Water at 8 fbgs
10.0							0.0		
	-12.0								
	12.0	As above, wet	S-4	NA	4.0		0.0		
	-14.0								
	14.0	***Lean Clay with Gravel*** Reddish brown, moist, mostly medium plasticity fines, little angular gravel, hard, massive					0.0	Sample Collected	
15.0	-16.0								
	16.0	End of Borehole							
20.0									

Drilled By: Trec Environmental, Inc.
Drill Rig Type: Geoprobe 6620DT
Drill Method: Direct-push w/ 4' macro-core
Comments:
Drill Date(s): 2-25-15

Hole Size: 3"
Stick-up: NA
Datum: Mean Sea Level

Sheet: 1 of 1

Project No: 0294-013-001

Borehole Number: SB-13

Project: 402 and 430 Buffalo Avenue Remedial Investigation

A.K.A.:

Client: Merani Hospitality, Inc.

Logged By: PWW

Site Location: Niagara Falls, New York

Checked By: NTM

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	***Gravel Sub-base***							
	-1.0								
	1.0	***Fill*** Reddish brown, moist, mostly red and yellow brick pieces, some fine sand, concrete pieces, wood debris, loose when disturbed, massive	S-1	NA	3.2		0.0 0.0		
	-4.0								
	4.0	Refusal on Suspected Concrete Floor at 4 fbgs							
5.0		End of Borehole							
10.0									
15.0									
20.0									

Drilled By: Trec Environmental Inc.
Drill Rig Type: Geoprobe 6620DT
Drill Method: Direct-push w/ 4' macro-core
Comments:
Drill Date(s): 2-25-15

Hole Size: 3"
Stick-up: NA
Datum: Mean Sea Level

Sheet: 1 of 1

Project No: 0294-013-001

Borehole Number: SB-14

Project: 402 and 430 Buffalo Avenue Remedial Investigation

A.K.A.:

Client: Merani Hospitality, Inc.

Logged By: PWW

Site Location: Niagara Falls, New York

Checked By: NTM

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	***Topsoil***					0.0		
	-1.0								
	1.0	***Fill*** Reddish brown, moist, mostly red and yellow brick pieces, some fine sand, concrete pieces, loose when disturbed, massive	S-1	NA	2.1		0.0		
	-4.0								
	4.0	***Poorly Graded Sand with Silt*** Reddish brown, moist to wet at 5 fbgs, mostly fine sand, little non-plastic fines, loose, massive	S-2	NA	3.8		0.0		First Water at 5 fbgs
5.0							0.0		
	-8.0								
	8.0	As above, wet	S-3	NA	4.0		0.0	Sample Collected	
10.0							0.0		
	-12.0								
	12.0	Refusal on Suspected Bedrock at 12 fbgs							
		End of Borehole							
15.0									
20.0									

Drilled By: Trec Environmental, Inc.
Drill Rig Type: Geoprobe 6620DT
Drill Method: Direct-push w/ 4' macro-core
Comments:
Drill Date(s): 2-25-15

Hole Size: 3"
Stick-up: NA
Datum: Mean Sea Level

Sheet: 1 of 1

Project No: 0294-013-001

Borehole Number: SB-15

Project: 402 and 430 Buffalo Avenue Remedial Investigation

A.K.A.:

Client: Merani Hospitality, Inc.

Logged By: PWW

Site Location: Niagara Falls, New York

Checked By: NTM

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	***Gravel Sub-base***							
	-1.0								
	1.0	***Fill*** Reddish brown, moist, mostly red and yellow brick pieces, some fine sand, concrete pieces, wood debris, loose when disturbed	S-1	NA	2.7		0.0		
	-3.0						0.0		
	3.0	Refusal on Suspected Concrete Floor at 3 fbgs							
		End of Borehole							
5.0									
10.0									
15.0									
20.0									

Drilled By: Trec Environmental, Inc.
Drill Rig Type: Geoprobe 6620DT
Drill Method: Direct-push w/ 4' macro-core
Comments:
Drill Date(s): 2-25-15

Hole Size: 3"
Stick-up: NA
Datum: Mean Sea Level

Sheet: 1 of 1

Project No: 0294-013-001

Borehole Number: SB-16

Project: 402 and 430 Buffalo Avenue Remedial Investigation

A.K.A.:

Client: Merani Hospitality, Inc.

Logged By: PWW

Site Location: Niagara Falls, New York

Checked By: NTM

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	***Topsoil***							
	-1.0								
	1.0	***Poorly Graded Sand with Silt*** Reddish brown, moist, mostly fine sand, some non-plastic fines, loose, massive	S-1	NA	2.0		0.0		
							0.0		
								Sample Collected	
5.0			S-2	NA	2.8		0.0		
	-7.0						0.0		
	7.0	Refusal on Suspected Bedrock at 7 fbgs							
		End of Borehole							
10.0									
15.0									
20.0									

Drilled By: Trec Environmental, Inc.
Drill Rig Type: Geoprobe 6620DT
Drill Method: Direct-push w/ 4' macro-core
Comments:
Drill Date(s): 2-25-15

Hole Size: 3"
Stick-up: NA
Datum: Mean Sea Level

Sheet: 1 of 1

Project No: 0294-013-001

Borehole Number: SB-17

Project: 402 and 430 Buffalo Avenue Remedial Investigation

A.K.A.:

Client: Merani Hospitality, Inc.

Logged By: PWW

Site Location: Niagara Falls, New York

Checked By: NTM

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	***Asphalt***							
	-0.5								
	0.5	***Gravel Sub-base***							
		Sandy Lean Clay Blackish brown, moist, mostly low plasticity fines, some fine sand, stiff, massive	S-1	NA	3.1		0.0		
							0.0		
	-4.0								
	4.0	***Poorly Graded Sand with Silt*** Reddish brown, moist to wet (7'), mostly fine sand, little non-plastic fines, loose, massive	S-2	NA	4.0		0.0		
5.0							0.0		
	-8.0								
	8.0	As above, wet	S-3	NA	4.0		0.0	Sample Collected	
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							
20.0									

First Water at 7 fbgs

Drilled By: Trec Environmental, Inc.
Drill Rig Type: Geoprobe 6620DT
Drill Method: Direct-push w/ 4' macro-core
Comments:
Drill Date(s): 2-24-15

Hole Size: 3"
Stick-up: NA
Datum: Mean Sea Level

Sheet: 1 of 1

Project No: 0294-013-001

Borehole Number: SB-18

Project: 402 and 430 Buffalo Avenue Remedial Investigation

A.K.A.:

Client: Merani Hospitality, Inc.

Logged By: PWW

Site Location: Niagara Falls, New York

Checked By: NTM

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

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 – 12.5 – 25)	Lab Sample	Well Completion Details or Remarks
0.0	0.0	Ground Surface							
	0.0 -0.5	***Asphalt***							
	0.5	***Gravel Sub-base***							
		Sandy Lean Clay Blackish brown, moist, mostly low plasticity fines, some fine sand, stiff, massive	S-1	NA	3.1		0.0 0.0	Sample Collected	
	-3.0 3.0	***Poorly Graded Sand with Silt*** Reddish brown, moist, mostly fine sand, little non-plastic fines, loose, massive							
5.0			S-2	NA	4.0		0.0 0.0		First Water at 8 fbgs
	-8.0 8.0	As above, wet	S-3	NA	4.0		0.0		
10.0	-10.0 10.0	Refusal on Suspected Bedrock at 10 fbgs End of Borehole							
15.0									
20.0									

Drilled By: Trec Environmental, Inc.
Drill Rig Type: Geoprobe 6620DT
Drill Method: Direct-push w/ 4' macro-core
Comments:
Drill Date(s): 2-24-15

Hole Size: 3"
Stick-up: NA
Datum: Mean Sea Level

Sheet: 1 of 1

Project No: 0294-013-001

Borehole Number: SB-19

Project: 402 and 430 Buffalo Avenue Remedial Investigation

A.K.A.:

Client: Merani Hospitality, Inc.

Logged By: PWW

Site Location: Niagara Falls, New York

Checked By: NTM

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	***Asphalt***							
	-0.5								
	0.5	***Gravel Sub-base***							
		Sandy Lean Clay with Fill Blackish brown, moist, mostly low plasticity fines, some fine sand, brick and gravel pieces, stiff, massive	S-1	NA	2.3		0.0		
	-3.0								
	3.0	***Poorly Graded Sand with Silt*** Reddish brown, moist, mostly fine sand, little non-plastic fines, loose, massive					0.0		
	-4.0								
	4.0	As above, moist to wet (5')	S-2	NA	4.0		0.0		
5.0							0.0		
	-8.0							Sample Collected	
	8.0	As Above	S-3	NA	4.0		0.0		
10.0							0.0		
	-12.0								
	12.0	Refusal on Suspected Bedrock at 12 fbgs							
		End of Borehole							
15.0									
20.0									

First Water at 5 fbgs

Drilled By: Trec Environmental ,Inc.
Drill Rig Type: Geoprobe 6620DT
Drill Method: Direct-push w/ 4' macro-core
Comments:
Drill Date(s): 2-25-15

Hole Size: 3"
Stick-up: NA
Datum: Mean Sea Level

Sheet: 1 of 1

TEST PIT EXCAVATION LOG

Project No: 0294-013-001 ***Test Pit I.D.:*** TP-10

Project: 402 and 430 Buffalo Ave Remedial Investigation ***Logged By:*** PWW

Client: Merani Hospitality, Inc. ***Checked By:*** NTM

Site Location: Niagara Falls, New York

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

SUBSURFACE PROFILE

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Lithologic Symbol	PID VOCs (ppm)	Lab Sample	Remarks
0.0	0.0	Ground Surface				
	0.0	***Asphalt***				
		Gravel Sub-Base				
	-1.0 1.0	***Poorly Graded Sand with Silt*** Reddish brown, moist, mostly fine sand, few non-plastic fines, loose when disturbed, massive, limit of excavator at 14 fbgs		0.0		
5.0				0.0 0.0 0.0	Sample Collected	▽ First Water at 10 fbgs
10.0				0.0 0.0 0.0		
	-14.0 14.0	End of Test Pit				
15.0						

PID VOCs: ppm scale 0 25 50 75 100

Excavated By: R.E. Lorenz Construction, Inc. ***Length: 12 ft*** ***Depth to Water: 10 fbgs***

Excavator Type: Kobelco SK140 ***Width: 2 ft*** ***Visual Impacts: None***

Excavation Date(s): 2-10-15 ***Depth: 14 fbgs*** ***Olfactory Observations: None***

Comments:

Sheet: 1 of 1

TEST PIT EXCAVATION LOG

Project No: 0294-013-001 ***Test Pit I.D.:*** TP-11

Project: 402 and 430 Buffalo Ave Remedial Investigation ***Logged By:*** PWW

Client: Merani Hospitality, Inc. ***Checked By:*** NTM

Site Location: Niagara Falls, New York

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

SUBSURFACE PROFILE

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Lithologic Symbol	PID VOCs (ppm)	Lab Sample	Remarks
0.0	0.0	Ground Surface				
	0.0	***Asphalt***				
	-0.5					
	0.5	***Gravel Sub-Base***				
		Sandy Lean Clay Blackish brown, moist, mostly medium plasticity fines, some fine sand, stiff, massive		0.0	Sample Collected	
	-3.0					
	3.0	***Poorly Graded Sand with Silt*** Reddish brown, moist, mostly fine sand, few non-plastic fines, loose when disturbed, massive, refusal at suspected bedrock at 12 fbgs		0.0		
5.0				0.0		
				0.0		
				0.0		
10.0				0.0		
	-12.0					
	12.0	Refusal on Suspect Bedrock at 12 fbgs		0.0		
		End of Test Pit				

Excavated By: R.E. Lorenz Construction, Inc. ***Length: 12 ft*** ***Depth to Water: None***

Excavator Type: Kobelco SK140 ***Width: 2 ft*** ***Visual Impacts: None***

Excavation Date(s): 2-9-15 ***Depth: 12 fbgs*** ***Olfactory Observations: None***

Comments:

TEST PIT EXCAVATION LOG

Project No: 0294-013-001 ***Test Pit I.D.:*** TP-12

Project: 402 and 430 Buffalo Ave Remedial Investigation ***Logged By:*** PWW

Client: Merani Hospitality, Inc. ***Checked By:*** NTM

Site Location: Niagara Falls, New York

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

SUBSURFACE PROFILE

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Lithologic Symbol	PID VOCs (ppm)	Lab Sample	Remarks
0.0	0.0	Ground Surface				
	0.0	***Asphalt***				
	-0.5	***Gravel Sub-Base***				
	0.5	***Sandy Lean Clay*** Blackish brown, moist, mostly medium plasticity fines, some fine sand, stiff, massive, refusal on suspected weathered bedrock at 11 fbgs		0.0		
				0.0		
5.0				0.0		
				0.0	Sample Collected	
				0.0		
10.0				0.0		
	-11.0	Refusal on Suspected Bedrock at 11 fbgs				
	11.0	End of Test Pit				

PID VOCs scale: 0 25 50 75 100 ppm

Excavated By: R.E. Lorenz Construction, Inc. ***Length: 12 ft*** ***Depth to Water: None***

Excavator Type: Kobelco SK140 ***Width: 2 ft*** ***Visual Impacts: None***

Excavation Date(s): 2-9-15 ***Depth: 11 fbgs*** ***Olfactory Observations: None***

Comments:

TEST PIT EXCAVATION LOG

Project No: 0294-013-001 ***Test Pit I.D.:*** TP-13

Project: 402 and 430 Buffalo Ave Remedial Investigation ***Logged By:*** PWW

Client: Merani Hospitality, Inc. ***Checked By:*** NTM

Site Location: Niagara Falls, New York

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

SUBSURFACE PROFILE

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Lithologic Symbol	PID VOCs (ppm)	Lab Sample	Remarks
0.0	0.0	Ground Surface				
	0.0	***Asphalt***				
	-0.5	***Gravel Sub-Base***				
	0.5	***Sandy Lean Clay*** Blackish brown, moist, mostly medium plasticity fines, some fine sand, stiff, massive		0.0	Sample Collected	
	-3.0					
	3.0	***Poorly Graded Sand with Silt*** Reddish brown, moist, mostly fine sand, few non-plastic fines, loose when disturbed, massive, refusal at suspected bedrock at 10 fbgs		0.0		
5.0				0.0		
				0.0		
				0.0		
10.0	-10.0					
	10.0	Refusal on Suspected Bedrock at 10 fbgs				
		End of Test Pit				

PID VOCs ppm scale: 0 25 50 75 100

Excavated By: R.E. Lorenz Construction, Inc. ***Length: 12 ft*** ***Depth to Water: None***

Excavator Type: Kobelco SK140 ***Width: 2 ft*** ***Visual Impacts: None***

Excavation Date(s): 2-9-15 ***Depth: 10 fbgs*** ***Olfactory Observations: None***

Comments:

TEST PIT EXCAVATION LOG

Project No: 0294-013-001 ***Test Pit I.D.:*** TP-14

Project: 402 and 430 Buffalo Ave Remedial Investigation ***Logged By:*** PWW

Client: Merani Hospitality, Inc. ***Checked By:*** NTM

Site Location: Niagara Falls, New York

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

SUBSURFACE PROFILE

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Lithologic Symbol	PID VOCs (ppm)	Lab Sample	Remarks
0.0	0.0	Ground Surface				
	0.0	***Asphalt***				
	-0.5 / 0.5	***Gravel Sub-Base***				
		Sandy Lean Clay Blackish brown, moist, mostly medium plasticity fines, some fine sand, stiff, massive		0.0		
	-3.0 / 3.0	***Poorly Graded Sand with Silt*** Reddish brown, moist, mostly fine sand, few non-plastic fines, loose when disturbed, massive, refusal at 10 fbgs on suspected bedrock		0.0		
5.0				0.0	Sample Collected	
				0.0		
				0.0		
10.0	-10.0 / 10.0	Refusal on Suspected Bedrock at 10 fbgs				
		End of Test Pit				

PID VOCs scale: 0 25 50 75 100 ppm

Excavated By: R.E. Lorenz Construction, Inc. ***Length: 12 ft*** ***Depth to Water: None***

Excavator Type: Kobelco SK 140 ***Width: 2 ft*** ***Visual Impacts: None***

Excavation Date(s): 2-9-15 ***Depth: 10 fbgs*** ***Olfactory Observations: None***

Comments:

TEST PIT EXCAVATION LOG

Project No: 0294-013-001 ***Test Pit I.D.:*** TP-15

Project: 402 and 430 Buffalo Ave Remedial Investigation ***Logged By:*** PWW

Client: Merani Hospitality, Inc. ***Checked By:*** NTM

Site Location: Niagara Falls, New York

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

SUBSURFACE PROFILE

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Lithologic Symbol	PID VOCs (ppm)	Lab Sample	Remarks
0.0	0.0	Ground Surface				
	0.0	***Asphalt***				
		Gravel Sub-Base				
		Sandy Lean Clay Reddish brown, moist, mostly low to medium plasticity fines, some fine sand, firm, massive, refusal at 14 fbgs on suspected bedrock		0.0		
				0.0	Sample Collected	
5.0				0.0		
				0.0		
				0.0		
10.0				0.0		
				0.0		
	-14.0 14.0	Refusal on Suspected Bedrock at 14 fbgs				
15.0		End of Test Pit				

PID VOCs scale: 0 25 50 75 100 ppm

Excavated By: R.E. Lorenz Construction, Inc. ***Length: 12 ft*** ***Depth to Water: None***

Excavator Type: Kobelco SK140 ***Width: 2 ft*** ***Visual Impacts: None***

Excavation Date(s): 2-9-15 ***Depth: 14 fbgs*** ***Olfactory Observations: None***

Comments:

TEST PIT EXCAVATION LOG

Project No: 0294-013-001 ***Test Pit I.D.:*** TP-16

Project: 402 and 430 Buffalo Ave Remedial Investigation ***Logged By:*** PWW

Client: Merani Hospitality, Inc. ***Checked By:*** NTM

Site Location: Niagara Falls, New York

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

SUBSURFACE PROFILE

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Lithologic Symbol	PID VOCs (ppm)	Lab Sample	Remarks
0.0	0.0	Ground Surface				
	0.0	***Asphalt***				
		Gravel Sub Base				
		Poorly Graded Sand with Silt and Fill Reddish brown, moist, mostly fine sand, few non-plastic fines, wood debris to 3 fbgs, stiff, massive		0.0		
	-3.0 3.0	***Poorly Graded Sand with Silt*** Reddish brown, moist, mostly fine sand, few non-plastic fines, stiff, massive, refusal on suspected bedrock at 14 fbgs		0.0		
5.0				0.0		
				0.0		
				0.0	Sample Collected	
10.0				0.0		
				0.0		
	-14.0 14.0	Refusal on Suspected Bedrock at 14 fbgs				
15.0		End of Test Pit				

Excavated By: R.E. Lorenz Construction, Inc. ***Length: 12 ft*** ***Depth to Water: None***

Excavator Type: Kobelco SK140 ***Width: 2 ft*** ***Visual Impacts: None***

Excavation Date(s): 2-9-15 ***Depth: 14 fbgs*** ***Olfactory Observations: None***

Comments:

TEST PIT EXCAVATION LOG

Project No: 0294-013-001 ***Test Pit I.D.:*** TP-17

Project: 402 and 430 Buffalo Ave Remedial Investigation ***Logged By:*** PWW

Client: Merani Hospitality, Inc. ***Checked By:*** NTM

Site Location: Niagara Falls, New York

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

SUBSURFACE PROFILE

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Lithologic Symbol	PID VOCs (ppm)	Lab Sample	Remarks
0.0	0.0	Ground Surface				
	0.0	***Topsoil***		0.0		
	-1.0 1.0	***Poorly Graded Sand with Silt*** Reddish brown, moist, mostly fine sand, few non-plastic fines, loose when disturbed, massive, limit of excavator at 14 fbgs		0.0		
5.0				0.0		
				0.0		
				0.0	Sample Collected	
10.0				0.0		
				0.0		
	-14.0 14.0	End of Test Pit				
15.0						

PID VOCs: 0 25 50 75 100 ppm

Excavated By: R.E. Lorenz Construction, Inc. ***Length: 12 ft*** ***Depth to Water: None***

Excavator Type: Kobelco SK140 ***Width: 2 ft*** ***Visual Impacts: None***

Excavation Date(s): 2-10-15 ***Depth: 14 fbgs*** ***Olfactory Observations: None***

Comments:

TEST PIT EXCAVATION LOG

Project No: 0294-013-001

Project: 402 and 430 Buffalo Ave Remedial Investigation

Client: Merani Hospitality, Inc.

Site Location: Niagara Falls, New York

Test Pit I.D.: TP-18

Logged By: PWW

Checked By: NTM

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

SUBSURFACE PROFILE

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Lithologic Symbol	PID VOCs (ppm)	Lab Sample	Remarks
0.0	0.0	Ground Surface				
	0.0	***Topsoil***		0.0		
	-1.0 / 1.0	***Poorly Graded Sand with Silt*** Reddish brown, moist, mostly fine sand, few non-plastic fines, loose when disturbed, massive, limit of excavator at 14 fbgs		0.0	Sample Collected	
5.0				0.0		
				0.0		
				0.0		
10.0				0.0		
				0.0		
	-14.0 / 14.0	Refusal on Suspected Bedrock at 14 fbgs				
15.0		End of Test Pit				

PID VOCs: 0 25 50 75 100 ppm

Excavated By: R.E. Lorenz Construction, Inc.
Excavator Type: Kobelco SK140
Excavation Date(s): 2-10-15
Comments:

Length: 12 ft
Width: 2 ft
Depth: 14 fbgs

Depth to Water: None
Visual Impacts: None
Olfactory Observations: None

TEST PIT EXCAVATION LOG

Project No: 0294-013-001 ***Test Pit I.D.:*** TP-19

Project: 402 and 430 Buffalo Ave Remedial Investigation ***Logged By:*** PWW

Client: Merani Hospitality, Inc. ***Checked By:*** NTM

Site Location: Niagara Falls, New York

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

SUBSURFACE PROFILE

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Lithologic Symbol	PID VOCs (ppm)	Lab Sample	Remarks
0.0	0.0	Ground Surface				
	0.0	***Topsy å***		0.0		
	-1.0 / 1.0	***Sandy Lean Clay*** Blackish brown, moist, mostly low plasticity fines, some fine sand, stiff, massive		0.0		
	-3.0 / 3.0	***Poorly Graded Sand with Silt*** Reddish brown, moist, mostly fine sand, few non-plastic fines, loose when disturbed, massive, refusal at 10 fbgs on suspected bedrock		0.0	Sample Collected	
5.0				0.0		
				0.0		
10.0	-10.0 / 10.0	Refusal on Suspected Bedrock at 10 fbgs End of Test Pit				

PID VOCs scale: 0 25 50 75 100 ppm

Excavated By: R.E. Lorenz Construction, Inc. ***Length: 12 ft*** ***Depth to Water: None***

Excavator Type: Kobelco SK140 ***Width: 2 ft*** ***Visual Impacts: None***

Excavation Date(s): 2-9-15 ***Depth: 10 fbgs*** ***Olfactory Observations: None***

Comments:

TEST PIT EXCAVATION LOG

Project No: 0294-013-001 ***Test Pit I.D.:*** TP-20

Project: 402 and 430 Buffalo Ave Remedial Investigation ***Logged By:*** PWW

Client: Merani Hospitality, Inc. ***Checked By:*** NTM

Site Location: Niagara Falls, New York

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

SUBSURFACE PROFILE

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Lithologic Symbol	PID VOCs (ppm)	Lab Sample	Remarks
0.0	0.0	Ground Surface				
	0.0	***Asphalt***				
		Gravel Sub-Base				
	-1.0 / 1.0	***Sandy Lean Clay with Fill*** Black, moist, mostly medium plasticity fines, some fine sand, red brick, stiff, massive		0.0	Sample Collected	
	-3.0 / 3.0	***Poorly Graded Sand with Silt*** Reddish brown, moist to wet (5'), mostly fine sand, few non-plastic fines, loose when disturbed, massive, refusal at 10 fbgs on suspected bedrock		0.0		*First Water at 5 fbgs*
5.0				0.0		
				0.0		
				0.0		
10.0	-10.0 / 10.0	Refusal on Suspected Bedrock at 10 fbgs				
		End of Test Pit				

Excavated By: R.E. Lorenz Construction, Inc. ***Length: 12 ft*** ***Depth to Water: 5 fbgs***

Excavator Type: Kobelco SK140 ***Width: 2 ft*** ***Visual Impacts: None***

Excavation Date(s): 2-10-15 ***Depth: 10 fbgs*** ***Olfactory Observations: None***

Comments:

TEST PIT EXCAVATION LOG

Project No: 0294-013-001 ***Test Pit I.D.:*** TP-22

Project: 402 and 430 Buffalo Ave Remedial Investigation ***Logged By:*** PWW

Client: Merani Hospitality, Inc. ***Checked By:*** NTM

Site Location: Niagara Falls, New York

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

SUBSURFACE PROFILE

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Lithologic Symbol	PID VOCs (ppm: 0, 25, 50, 75, 100)	Lab Sample	Remarks
0.0	0.0	Ground Surface				
	0.0	***Gravel Sub-Base***				
	-1.0			0.0		
	1.0	***Fill*** Reddish brown, mostly red and yellow brick, concrete, wood debris, some fine sand, loose when disturbed, refusal on concrete floor at 4 fbgs			Sample Collected	
				0.0		
	-4.0					
	4.0	Refusal on Suspected Concrete Floor				
		End of Test Pit				
5.0						

Excavated By: R.E. Lorenz Construction, Inc. ***Length: 10 ft*** ***Depth to Water: None***

Excavator Type: Kobelco SK140 ***Width: 2 ft*** ***Visual Impacts: None***

Excavation Date(s): 2-11-15 ***Depth: 3 fbgs*** ***Olfactory Observations: None***

Comments:

TEST PIT EXCAVATION LOG

Project No: 0294-013-001 ***Test Pit I.D.:*** TP-23

Project: 402 and 430 Buffalo Ave Remedial Investigation ***Logged By:*** PWW

Client: Merani Hospitality, Inc. ***Checked By:*** NTM

Site Location: Niagara Falls, New York

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

SUBSURFACE PROFILE

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Lithologic Symbol	PID VOCs (ppm)	Lab Sample	Remarks
0.0	0.0	Ground Surface				
	0.0	***Topsoil***		0.0		
	-1.0					
	1.0	***Poorly Graded Sand with Silt*** Reddish brown, moist, mostly fine sand, few non-plastic fines, loose when disturbed, massive, limit of excavator at 14 fbgs		0.0	Sample Collected	
5.0				0.0		
				0.0		
				0.0		
10.0				0.0		
				0.0		
	-14.0					
	14.0	End of Test Pit				
15.0				0.0		

Excavated By: R.E. Lorenz Construction, Inc. ***Length: 12 ft*** ***Depth to Water: None***

Excavator Type: Kobelco SK140 ***Width: 2 ft*** ***Visual Impacts: None***

Excavation Date(s): 2-11-15 ***Depth: 14 fbgs*** ***Olfactory Observations: None***

Comments:

TEST PIT EXCAVATION LOG

Project No: 0294-013-001 ***Test Pit I.D.:*** TP-24

Project: 402 and 430 Buffalo Ave Remedial Investigation ***Logged By:*** PWW

Client: Merani Hospitality, Inc. ***Checked By:*** NTM

Site Location: Niagara Falls, New York

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

SUBSURFACE PROFILE

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Lithologic Symbol	PID VOCs (ppm)	Lab Sample	Remarks
0.0	0.0	Ground Surface				
	0.0	***Gravel Sub-Base***		0.0		
	-1.0					
	1.0	***Fill*** Reddish brown, moist, mostly red and yellow brick, concrete pieces, wood debris, little fine sand, loose when disturbed		0.0	Sample Collected	
	-4.0					
	4.0	***Concrete*** Concrete floor starts at 4 fbgs but a pit was found to 6 fbgs with tapered walls, refusal on concrete at 6 fbgs (bottom of pit)		0.0		
5.0	-6.0					
	6.0	Refusal on Suspected Concrete Floor				
		End of Test Pit				
10.0						
15.0						
20.0						

PID VOCs ppm: 0 25 50 75 100

Excavated By: R.E. Lorenz Construction, Inc. ***Length: 10 ft*** ***Depth to Water: None***

Excavator Type: Kobelco SK140 ***Width: 2 ft*** ***Visual Impacts: None***

Excavation Date(s): 2-11-15 ***Depth: 6 fbgs*** ***Olfactory Observations: None***

Comments:

TEST PIT EXCAVATION LOG

Project No: 0294-013-001 ***Test Pit I.D.:*** TP-25

Project: 402 and 430 Buffalo Ave Remedial Investigation ***Logged By:*** PWW

Client: Merani Hospitality, Inc. ***Checked By:*** NTM

Site Location: Niagara Falls, New York

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

SUBSURFACE PROFILE

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Lithologic Symbol	PID VOCs (ppm)	Lab Sample	Remarks
0.0	0.0	Ground Surface				
	0.0	***Gravel Sub-Base***		0.0		
	-1.0					
	1.0	***Fill*** Reddish brown, mostly red and yellow brick, concrete, wood debris, some fine sand, loose when disturbed, refusal on concrete floor at 4 fbgs		0.0	Sample Collected	
				0.0		
	-4.0			0.0		
	4.0	Refusal on Suspected Concrete Floor at 4 fbgs				
5.0		End of Test Pit				
10.0						
15.0						

PID VOCs: ppm 0 25 50 75 100

Excavated By: R.E. Lorenz Construction, Inc. ***Length: 10 ft*** ***Depth to Water: None***

Excavator Type: Kobelco SK140 ***Width: 2 ft*** ***Visual Impacts: None***

Excavation Date(s): 2-11-15 ***Depth: 4 fbgs*** ***Olfactory Observations: None***

Comments:

TEST PIT EXCAVATION LOG

Project No: 0294-013-001 ***Test Pit I.D.:*** TP-26

Project: 402 and 430 Buffalo Ave Remedial Investigation ***Logged By:*** PWW

Client: Merani Hospitality, Inc. ***Checked By:*** NTM

Site Location: Niagara Fallls, New York

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

SUBSURFACE PROFILE

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Lithologic Symbol	PID VOCs (ppm)	Lab Sample	Remarks
0.0	0.0	Ground Surface				
	0.0	***Gravel Sub-Base***		0.0		
	-1.0					
	1.0	***Fill*** Reddish brown, mostly red and yellow brick, concrete, wood debris, some fine sand, loose when disturbed, refusal on concrete floor at 3 fbgs		0.0	Sample Collected	
	-3.0			0.0		
	3.0	Refusal on Suspected Bedrock at 3 fbgs				
		End of Test Pit				
5.0						
10.0						
15.0						

PID VOCs ppm scale: 0 25 50 75 100

Excavated By: R.E. Lorenz Construction, Inc. ***Length: 10 ft*** ***Depth to Water: None***

Excavator Type: Kobelco SK140 ***Width: 2 ft*** ***Visual Impacts: None***

Excavation Date(s): 2-10-15 ***Depth: 3 fbgs*** ***Olfactory Observations: None***

Comments:

TEST PIT EXCAVATION LOG

Project No: 0294-013-001

Project: 402 and 430 Buffalo Ave Remedial Investigation

Client: Merani Hospitality, Inc.

Site Location: Niagara Falls, New York

Test Pit I.D.: TP-27

Logged By: PWW

Checked By: NTM

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

SUBSURFACE PROFILE

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Lithologic Symbol	PID VOCs (ppm)	Lab Sample	Remarks
0.0	0.0	Ground Surface				
	0.0	***Topsoil***		0.0		
	-1.0					
	1.0	***Poorly Graded Sand with Silt*** Reddish brown, moist, mostly fine sand, few non-plastic fines, loose when disturbed, massive, limit of excavator reached at 14 fbgs		0.0	Sample Collected	
5.0				0.0		
				0.0		
10.0				0.0		
				0.0		
	-14.0					
	14.0	End of Test Pit				
15.0						

Excavated By: R.E. Lorenz Construction, Inc.
Excavator Type: Kobelco SK140
Excavation Date(s): 2-10-15
Comments:

Length: 12 ft
Width: 2 ft
Depth: 14 fbgs

Depth to Water: None
Visual Impacts: None
Olfactory Observations: None

TEST PIT EXCAVATION LOG

Project No: 0294-013-001 ***Test Pit I.D.:*** TP-28

Project: 402 and 430 Buffalo Ave Remedial Investigation ***Logged By:*** PWW

Client: Merani Hospitality, Inc. ***Checked By:*** NTM

Site Location: Niagara Falls, New York

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

SUBSURFACE PROFILE

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Lithologic Symbol	PID VOCs (ppm)	Lab Sample	Remarks
0.0	0.0	Ground Surface				
	0.0	***Gravel Sub-Base***				
	-1.0					
	1.0	***Sandy Lean Clay*** Reddish brown, moist, mostly medium plasticity fines, some fine sand, firm, massive		0.0 0.0 0.0 0.0	Sample Collected	
	-4.0					
	4.0	***Suspected Weathered Bedrock*** Refusal on suspected weathered bedrock at 6 fbgs				
5.0		End of Test Pit				
10.0						
15.0						

PID VOCs ppm scale: 0 25 50 75 100

Excavated By: R.E. Lorenz Construction, Inc. ***Length: 10 ft*** ***Depth to Water: None***

Excavator Type: Kobelco SK140 ***Width: 2 ft*** ***Visual Impacts: None***

Excavation Date(s): 2-10-15 ***Depth: 6 fbgs*** ***Olfactory Observations: None***

Comments:

TEST PIT EXCAVATION LOG

Project No: 0294-013-001 ***Test Pit I.D.:*** TP-29

Project: 402 and 430 Buffalo Ave Remedial Investigation ***Logged By:*** PWW

Client: Merani Hospitality, Inc. ***Checked By:*** NTM

Site Location: Niagara Falls, New York

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

SUBSURFACE PROFILE

Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Lithologic Symbol	PID VOCs (ppm)	Lab Sample	Remarks
0.0	0.0	Ground Surface				
	0.0	***Gravel Sub-Base***		0.0		
	-1.0					
	1.0	***Sandy Lean Clay*** Reddish brown, moist, mostly medium plasticity fines, some fine sand, firm, massive		0.0	Sample Collected	
				0.0		
	-4.0					
	4.0	***Suspected Weathered Bedrock*** Refusal on suspected weathered bedrock at 6 fbgs		0.0		
5.0	-6.0			0.0		
	6.0	End of Test Pit				
10.0						
15.0						

PID VOCs ppm: 0 25 50 75 100

Excavated By: R.E. Lorenz Construction, Inc. ***Length: 10 ft*** ***Depth to Water: None***

Excavator Type: Kobelco SK140 ***Width: 2 ft*** ***Visual Impacts: None***

Excavation Date(s): 2-10-15 ***Depth: 6 fbgs*** ***Olfactory Observations: None***

Comments:

Project No: 0294-013-001

Borehole Number: MW-1

Project: 402 and 430 Buffalo Ave Remedial Investigation

A.K.A.:

Client: Merani Hospitality, Inc.

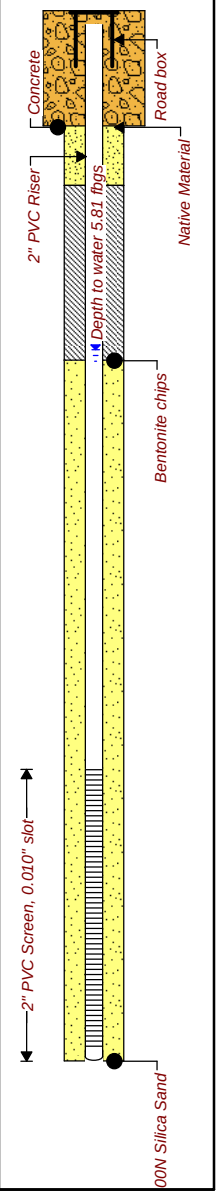
Logged By: JJR

Site Location: Niagara Falls, New York

Checked By: NTM

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
0.0	0.0 / 0.0	Ground Surface						
		Augered to 18 fbgs. Auger refusal on Suspected Bedrock at 18 fbgs.						
		For Soil Descriptions see SB-18 boring log.						
5.0								
10.0								
15.0								
	-18.0 / 18.0	End of Borehole						
20.0								



Drilled By: Earth Dimensions, Inc.
Drill Rig Type: Diedrich D120
Drill Method: 3 1/4-inch HSA
Comments:
Drill Date(s): 04/10/2015

Hole Size: 8 1/4 inch
Stick-up: NA
Datum: Mean Sea Level

Sheet: 1 of 1

Project No: 0294-013-001

Borehole Number: MW-2

Project: 402 and 430 Buffalo Ave Remedial Investigation

A.K.A.:

Client: Merani Hospitality, Inc.

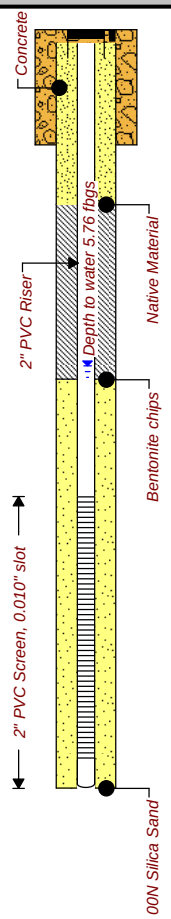
Logged By: JJR

Site Location: Niagara Falls, New York

Checked By: NTM

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 / 0.0	Ground Surface Augered to 13 fbgs. Auger refusal at 13 fbgs.							
5.0									
10.0									
	-13.0 / 13.0	End of Borehole							
15.0									
20.0									



Drilled By: Earth Dimensions, Inc.
Drill Rig Type: Diedrich D120
Drill Method: 3 1/4 inch HSA
Comments:
Drill Date(s): 04/10/2015

Hole Size: 8 1/4 inch
Stick-up: NA
Datum: Mean Sea Level

Sheet: 1 of 1

Project No: 0294-013-001

Borehole Number: MW-3

Project: 402 and 430 Buffalo Ave Remedial Investigation

A.K.A.:

Client: Merani Hospitality, Inc.

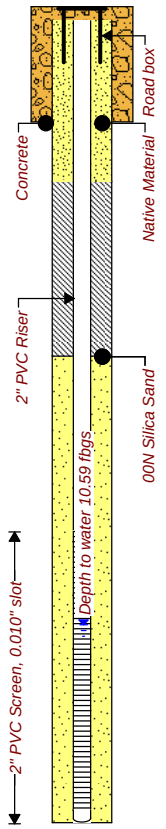
Logged By: JJR

Site Location: Niagara Falls, New York

Checked By: NTM

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	***Poorly Graded Sand with Silt*** Brown, moist, mostly fine sand, little non-plastic fines, trace organic material, loose	S1	4	1.0		0.0		
			S2	5	1.1		0.0		
	-4.0 4.0	***Silty Sand*** Reddish brown, mostly fine sand, few non-plastic fines, trace coarse sand, medium dense, massive	S3	23	1.8		0.0	Sample Collected	
5.0	-6.0 6.0	***Poorly Graded Sand with Gravel*** Reddish brown, moist, mostly fine sand, few cobbles, very dense, spoon refusal at 7 fbgs.	S4	100/WH	1.3		0.0		
	-7.0 7.0	Augered to 8 fbgs.							
	-8.0 8.0	***Poorly Graded Sand with Gravel*** Reddish brown, moist, mostly fine sand, few fine gravel (sub-angular), little coarse sand, very dense	S5	100/WH	0.6		0.0		
	-8.7 8.7	Augered to 10 fbgs.							
10.0	-10.0 10.0	***Poorly Graded Sand with Gravel*** Brown, wet, mostly fine sand, some fine gravel (sub-angular), very dense, massive	S6	63	1.0		0.0		
			S7	118	1.75		0.0		
	-14.0 14.0	End of Borehole							
15.0									
20.0									



Drilled By: Earth Dimensions, Inc.
Drill Rig Type: Diedrich D120
Drill Method: Continuous SS with 3 1/4 inch HSA
Comments: Soil Cuttings screened for RAD by Greater Radiological Dimensions (GRD)
Drill Date(s): 04/15/2015

Hole Size: 8 1/4 inch
Stick-up: NA
Datum: Mean Sea Level

Sheet: 1 of 1

Project No: 0294-013-001

Borehole Number: MW-4

Project: 402 and 430 Buffalo Ave Remedial Investigation

A.K.A.:

Client: Merani Hospitality, Inc.

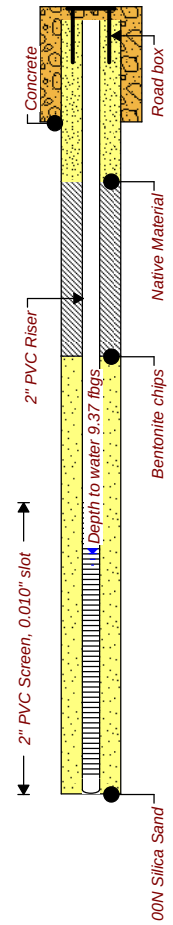
Logged By: JJR

Site Location: Niagara Falls, New York

Checked By: NTM

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 / 0.0	Ground Surface							
		Augered to 13.5 fbgs. Auger refusal on suspected bedrock at 13.5 fbgs.							
		For soil descriptions see SB-19 boring log.							
5.0									
10.0									
	-13.5 / 13.5	End of Borehole							
15.0									
20.0									



Drilled By: Earth Dimensions, Inc.
Drill Rig Type: Diedrich D120
Drill Method: 3 1/4 inch HSA
Comments:
Drill Date(s): 04/10/2015

Hole Size: 8 1/4 inch
Stick-up: NA
Datum: Mean Sea Level

Sheet: 1 of 1

Project No: 0294-013-001

Borehole Number: MW-5

Project: 402 and 430 Buffalo Ave Remedial Investigation

A.K.A.:

Client: Merani Hospitality, Inc.

Logged By: JJR

Site Location: Niagara Falls, New York

Checked By: NTM

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 / 0.0	Ground Surface							
		Augered to 17 fbgs. Auger refusal on suspected bedrock at 17 fbgs. For soil descriptions see SB-13 boring log.					0.0; 0.0; 0.0; 7.8; 20.7; 9.5; 5.6; 0.0; 0.0; 0.0; 0.0; 0.0; 0.0; 0.0; 0.0; 0.0; 0.0	Sample Collected	Concrete; Road box; Native Material; Depth to water 6.05 fbgs; Bentonite chips; 2" PVC Riser; 2" PVC Screen, 0.010" slot; 00N Silica Sand
5.0									
10.0									
15.0									
20.0	-17.0 / 17.0	End of Borehole							

Drilled By: Earth Dimensions, Inc.
Drill Rig Type: Diedrich D120
Drill Method: 3 1/4 inch HSA
Comments:
Drill Date(s): 04/14/2015

Hole Size: 8 1/4 inch
Stick-up: NA
Datum: Mean Sea Level

Sheet: 1 of 1

Project No: 0294-013-001

Borehole Number: MW-6

Project: 402 and 430 Buffalo Ave Remedial Investigation

A.K.A.:

Client: Merani Hospitality, Inc.

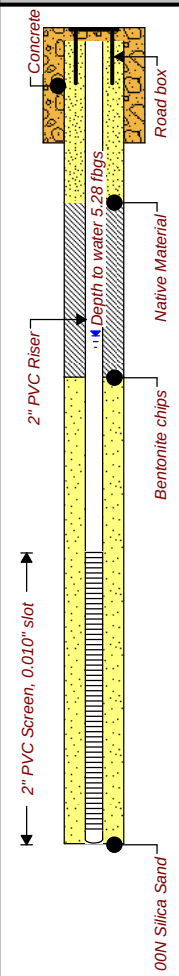
Logged By: JJR

Site Location: Niagara Falls, New York

Checked By: NTM

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	Augered to 14 fbgs. Auger refusal on suspected bedrock at 14 fbgs. For soil descriptions see SB-15 boring log.							
5.0									
10.0									
	-14.0								
	14.0	End of Borehole							
15.0									
20.0									



Drilled By: Earth Dimensions, Inc.
Drill Rig Type: Diedrich D120
Drill Method: 3 1/4 inch HSA
Comments:
Drill Date(s): 04/13/2015

Hole Size: 8 1/4 inch
Stick-up: NA
Datum: Mean Sea Level

Sheet: 1 of 1

Project No: 0294-013-001

Borehole Number: MW-7

Project: 402 and 430 Buffalo Ave Remedial Investigation

A.K.A.:

Client: Merani Hospitality, Inc.

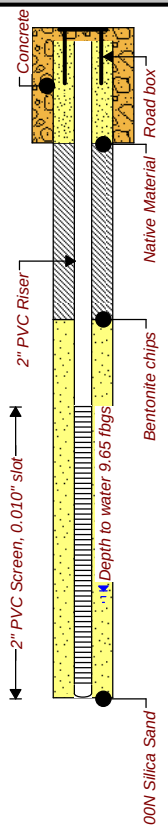
Logged By: JJR

Site Location: Niagara Falls, New York

Checked By: NTM

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 / 0.0	Ground Surface							
		Augered to 11.5 fbgs. Auger refusal on suspected bedrock at 11.5 fbgs.							
		For soil descriptions see SB-16 boring log.							
5.0									
10.0									
	-11.5 / 11.5	End of Borehole							
15.0									
20.0									



Drilled By: Earth Dimensions, Inc.
Drill Rig Type: Diedrich D120
Drill Method: 3 1/4 inch HSA
Comments:
Drill Date(s): 04/13/2015

Hole Size: 8 1/4 inch
Stick-up: NA
Datum: Mean Sea Level

Sheet: 1 of 1

Project No: 0294-013-001

Borehole Number: MW-8

Project: 402 and 430 Buffalo Ave Remedial Investigation

A.K.A.:

Client: Merani Hospitality, Inc.

Logged By: JJR

Site Location: Niagara Falls, New York

Checked By: NTM

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 / 0.0	Ground Surface Augered to 11.5 fbgs. Auger refusal on suspected bedrock at 11.5 fbgs. For soil descriptions see SB-14 boring log.							Concrete; Road box; Native Material; Depth to water 5.36 fbgs; 2" PVC Riser; Bentonite chips; 2" PVC Screen, 0.010" slot; 00N Silica Sand
5.0									
10.0									
15.0									
20.0	-11.5 / 11.5	End of Borehole							

Drilled By: Earth Dimensions, Inc.
Drill Rig Type: Diedrich D120
Drill Method: 3 1/4 inch HSA
Comments:
Drill Date(s): 04/13/2015

Hole Size: 8 1/4 inch
Stick-up: NA
Datum: Mean Sea Level

Sheet: 1 of 1

Project No: 0294-013-001

Borehole Number: MW-9

Project: 402 and 430 Buffalo Ave Remedial Investigation

A.K.A.:

Client: Merani Hospitality, Inc.

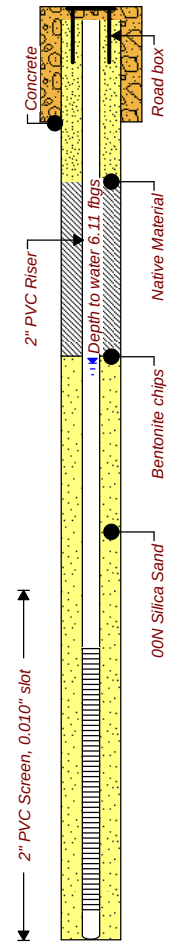
Logged By: JJR

Site Location: Niagara Falls, New York

Checked By: NTM

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 / 0.0	Ground Surface							
		Augered to 16.0 fbgs. Auger refusal on suspected bedrock at 16.0 fbgs.							
		For soil descriptions see SB-12 boring log.							
5.0									
10.0									
15.0									
	-16.0 / 16.0	End of Borehole							
20.0									



Drilled By: Earth Dimensions, Inc.
Drill Rig Type: Diedrich D120
Drill Method: 3 1/4 inch HSA
Comments:
Drill Date(s): 04/14/2015

Hole Size: 8 1/4 inch
Stick-up: NA
Datum: Mean Sea Level

Sheet: 1 of 1

Project No: 0294-013-001

Borehole Number: MW-10

Project: 402 and 430 Buffalo Ave Remedial Investigation

A.K.A.:

Client: Merani Hospitality, Inc.

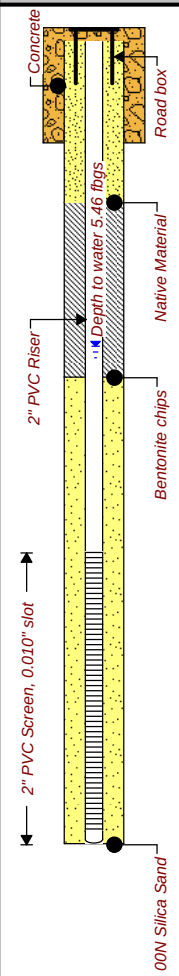
Logged By: JJR

Site Location: Niagara Falls, New York

Checked By: NTM

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	Augered to 14 fbgs. Auger refusal on suspected bedrock at 14 fbgs. For soil descritions see SB-17 boring log.							
	-14.0	End of Borehole							
5.0	14.0								
10.0									
15.0									
20.0									



Drilled By: Earth Dimensions, Inc.
Drill Rig Type: Diedrich D120
Drill Method: 3 1/4-inch HSA
Comments:
Drill Date(s): 04/14/2015

Hole Size: 8 1/4 inch
Stick-up: NA
Datum: Mean Sea Level

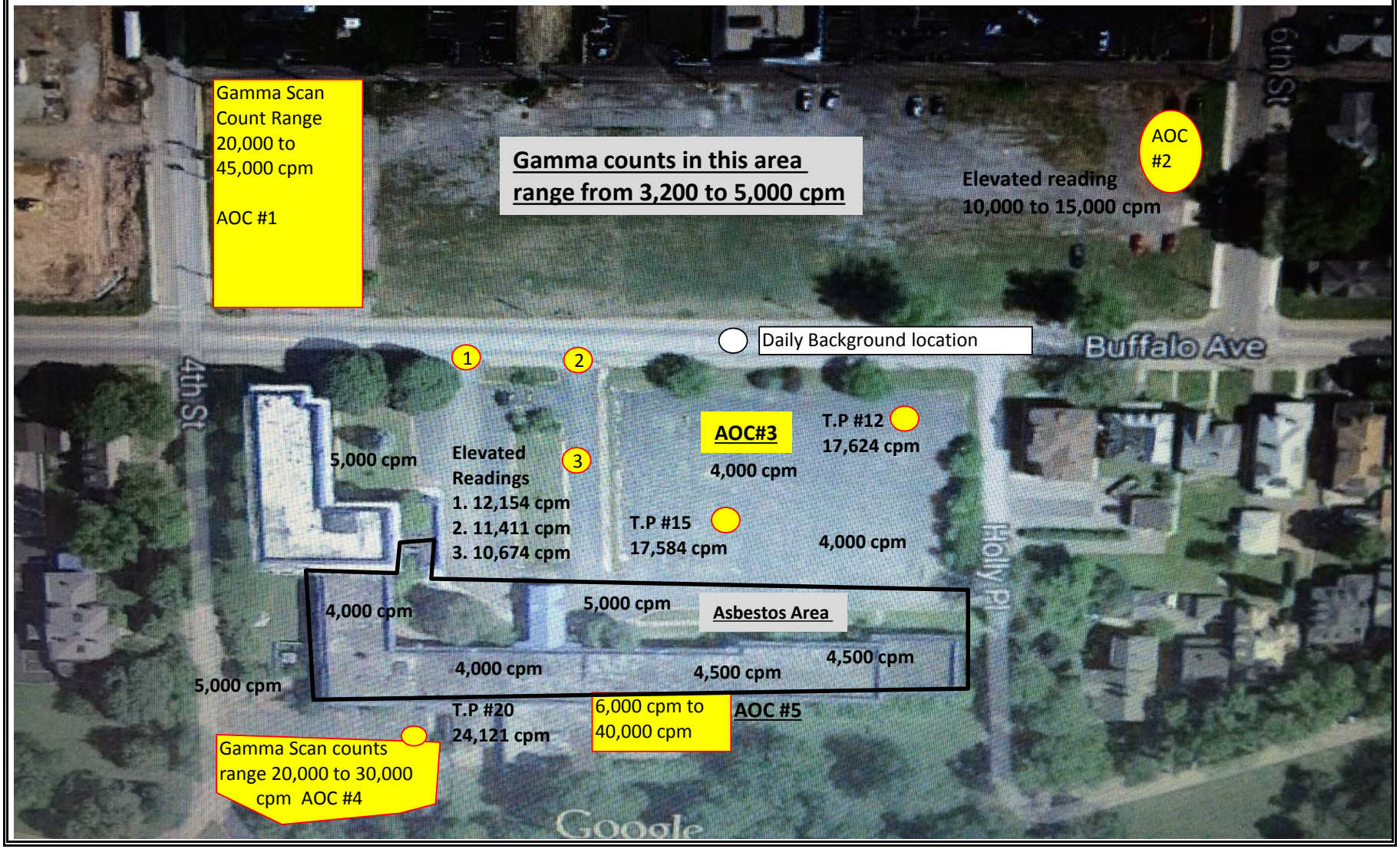
Sheet: 1 of 1

APPENDIX C

RADIOLOGIC SCREENING FIELD NOTES

BCP Site No. C932164 / 401, 402 and 430 Buffalo Ave: Gamma Walkover Survey Map — Figure 1

Survey No.:	GRD-292015-01	**Item Surveyed:**	401, 402 and 430 Buffalo Ave. BCP Site No. C932164
Date:	2/9/2015 thru 2/25/2015	**Instrument Info:**	Model 2221 Sr#187760 / Probe 44-10 Sr#226924 Cal Due 4/15/2015
Survey Tech.:	Adrian Segarra	**Comments:**	Bkgd Cnts 3200 cpm / Gamma Scan Ranges From 3200 to 4000 cpm Unless Noted



APPENDIX D

LABORATORY ANALYTICAL DATA

(PROVIDED ELECTRONICALLY ON ENCLOSED CD)

APPENDIX E

DATA USABILITY SUMMARY REPORT (DUSR)

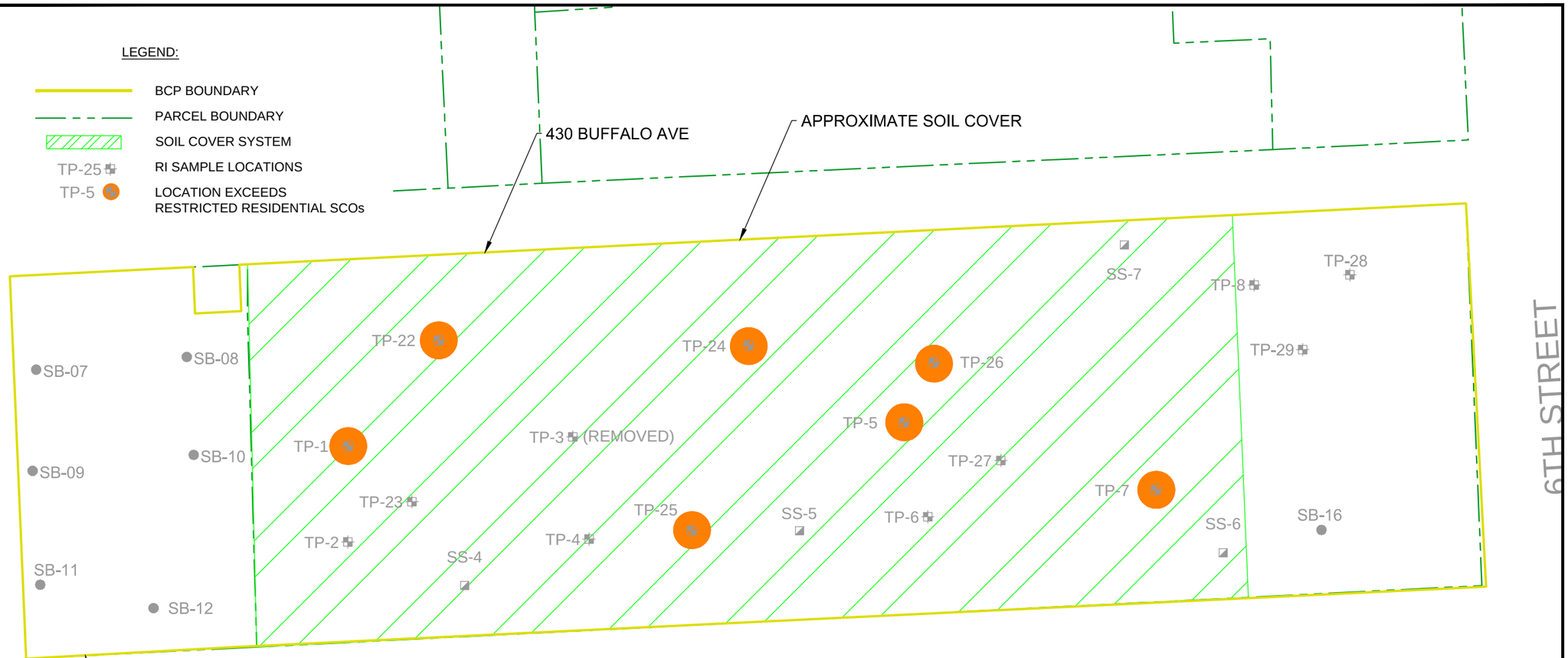
APPENDIX F

430 BUFFALO AVENUE
SOIL COVER SYSTEM LAYOUT AND DETAIL

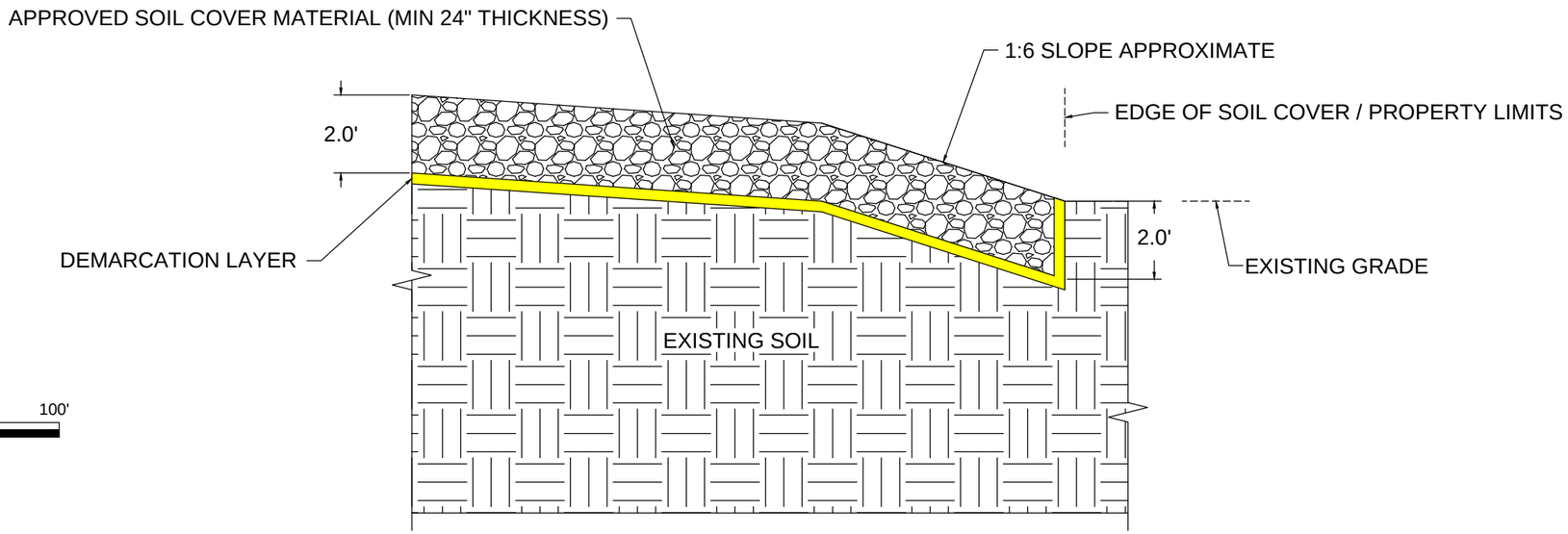
F:\CAD\TurnKey\Merani Hospitality\401, 402, and 430 Buffalo Ave\RI-IRM-AA REPORT\Figure 9; Planed Soil Cover Detail.dwg, 9/1/2015 11:18:00 AM, DWG To PDF.pc3

LEGEND:

- BCP BOUNDARY
- PARCEL BOUNDARY
- SOIL COVER SYSTEM
- TP-25 RI SAMPLE LOCATIONS
- TP-5 LOCATION EXCEEDS RESTRICTED RESIDENTIAL SCOs



SOIL COVER DETAILS



50' 0' 50' 100'

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

DATE: AUGUST 2015
DRAFTED BY: KRR

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

JOB NO.: 0294-013-001

PLANNED SOIL COVER DETAIL

RI-IRM-AA REPORT
402 & 430 BUFFALO AVENUE SITE
BCP SITE No. C932164
NIAGARA FALLS, NEW YORK
PREPARED FOR
MERANI HOSPITALITY, INC.

FIGURE 9

APPENDIX G

ELECTRONIC COPY OF RI/IRM/AA REPORT