Site Management Plan

1050-1088 Niagara Street Site
Buffalo, New York

December 2017 0136-013-005

Prepared For:

9271 Group, LLC



Prepared By:

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BROWNFIELD CLEANUP PROGRAM

SITE MANAGEMENT PLAN

1050-1088 NIAGARA STREET SITE
NYSDEC SITE NUMBER: C915277
BUFFALO, NEW YORK

December 2017 0136-013-005

Prepared for:

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Revisions to Final Approved Site Management Plan:

Revision #	Submitted Date	Summary of Revision	DEC Approval Date

SITE MANAGEMENT PLAN
1050-1088 Niagara Street Site
BCP Site No. C915277

Certification Statement

I, Thomas H. Forbes, certify that I am currently a NYS registered professional engineer and that this December 2017 Site Management Plan for the 1050-1088 Niagara Street Site was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

_____ Signature

12-29-17
_____ Date

SITE MANAGEMENT PLAN
1050-1088 Niagara Street Site
BCP Site No. C915277

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List of Acronyms

AS	Air Sparging
ASP	Analytical Services Protocol
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CAMP	Community Air Monitoring Plan
C/D	Construction and Demolition
CFR	Code of Federal Regulation
CLP	Contract Laboratory Program
COC	Certificate of Completion
CO2	Carbon Dioxide
CP	Commissioner Policy
DER	Division of Environmental Remediation
EC	Engineering Control
ECL	Environmental Conservation Law
ELAP	Environmental Laboratory Approval Program
ERP	Environmental Restoration Program
EWP	Excavation Work Plan
FOP	Field Operating Procedure
GHG	Green House Gas
GWE&T	Groundwater Extraction and Treatment
HASP	Health and Safety Plan
IC	Institutional Control
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYCRR	New York Codes, Rules, and Regulations
O&M	Operations and Maintenance
OM&M	Operation, Maintenance and Monitoring
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PID	Photoionization Detector
PRP	Potentially Responsible Party
PRR	Periodic Review Report
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan

List of Acronyms

RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RP	Remedial Party
RSO	Remedial System Optimization
SAC	State Assistance Contract
SCG	Standards, Criteria, and Guidelines
SCO	Soil Cleanup Objective
SMP	Soil Management Plan
SOP	Standard Operating Procedures
SOW	Statement of Work
SPDES	State Pollutant Discharge Elimination System
SSD	Sub-slab Depressurization
SVE	Soil Vapor Extraction
SVI	Soil Vapor Intrusion
SVMS	Soil Vapor Mitigation System
TAL	Target Analyte List
TCL	Target Compound List
TCLP	Toxicity Characteristic Leachate Procedure
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VCA	Voluntary Cleanup Agreement
VCP	Voluntary Cleanup Program

EXECUTIVE SUMMARY

The following provides a brief summary of the controls implemented for the Site, as well as the inspections, monitoring, maintenance and reporting activities required by this Site Management Plan:

Site Identification: 1050-1088 Niagara Street Site – C915277

Institutional Controls:	1. The property may be used for restricted residential, commercial, and industrial use as described in 6 NYCRR Part 375-1.8(g), although land is subject to local zoning laws;
	2. All ECs must be inspected at a frequency and in a manner defined in the SMP.
	3. The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Erie County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department.
	4. Compliance with the Department approved Site Management Plan and Periodic Review Reporting is required.
	5. The remedial party or site owner is required to complete and submit a periodic certification of institutional and engineering controls to the Department in accordance with 6NYCRR Part 375-1.8(h)(3).
Engineering Controls:	1. A site cover has been placed over the site in all areas exceeding applicable SCOs. The cover is either a hardscape (asphalt and concrete, building) and/or a minimum of 24-inches of depth of material meeting the requirements as set forth in 6NYCRR Part 375—6.7(d) for restricted residential use.

Inspections:	Frequency
1. Cover inspection	Annually
Monitoring:	
1. Groundwater Monitoring	Semi-Annual
Reporting:	
1. Groundwater Data (electronically)	Annually
2. Annual Site Inspection	Annually
3. Periodic Review Report	Annually

Further descriptions of the above requirements are provided in detail in the latter sections of this Site Management Plan (SMP).

1.0 INTRODUCTION

This Site Management Plan (SMP) is a required element of the remedial program for the 1050-1088 Niagara Street Site located in Buffalo, New York (hereinafter referred to as the "Site"). The Site is currently in the New York State (NYS) Brownfield Cleanup Program (BCP) administered by New York State Department of Environmental Conservation (NYSDEC). The Site was remediated in accordance with Brownfield Cleanup Agreement (BCA) Index# C915277-09-13, which was executed in November 2011.

1.1 General

9271 Group, LLC entered into a BCA with the NYSDEC to investigate and remediate the Site, located in Buffalo, New York. The Site location and boundaries of the approximate 2.7 acre Site are provided in Figure 1 and Figure 2. The boundaries of the site are more fully described in the metes and bounds site description that is part of the Environmental Easement provided in Appendix A.

After completion of the remedial work, some contamination was left at this site, which is hereafter referred to as "remaining contamination." Institutional and Engineering Controls (ICs and ECs) have been incorporated into the site remedy to control exposure to remaining contamination to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC, and recorded with the Erie County Clerk, requires compliance with this SMP and all ECs and ICs placed on the site.

This SMP was prepared by Benchmark Environmental Engineering & Science, PLLC in affiliation with Turnkey Environmental Restoration, LLC, to manage remaining contamination at the site until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement, which is grounds for revocation of the Certificate of Completion (COC);

- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and the BCA, (Index #C915277-09-13; Site #C915277) for the site, and thereby subject to applicable penalties.

All reports associated with the site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

This SMP was prepared by Benchmark Environmental Engineering & Science, PLLC, in association with Turnkey Environmental Restoration, LLC, on behalf of 9271 Group, LLC, in accordance with the requirements of the NYSDEC's DER-10 ("Technical Guidance for Site Investigation and Remediation"), dated May 2010, and the guidelines provided by the NYSDEC. This SMP addresses the means for implementing the ICs and/or ECs that are required by the Environmental Easement for the site.

1.2 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring requirements, upgrades to or shut-down of a remedial system, post-remedial removal of contaminated sediment or soil, or other significant change to the site conditions. In accordance with the Environmental Easement for the site, the NYSDEC will provide a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

1.3 Notifications

Notifications will be submitted by the property owner to the NYSDEC, as needed, in accordance with NYSDEC's DER – 10 for the following reasons:

- 60-day advance notice of any proposed changes in site use that are required under the terms of the BCA, 6NYCRR Part 375 and/or Environmental Conservation Law.
- 7-day advance notice of any field activity associated with the remedial program.
- 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan (See Appendix B).

- Notice within 48-hours of any damage or defect to the foundation, structures, or EC that reduces or has the potential to reduce the effectiveness of an EC, and likewise, any action to be taken to mitigate the damage or defect.
- Verbal notice by noon of the following day of any emergency, such as a fire; flood; or earthquake that reduces or has the potential to reduce the effectiveness of ECs in place at the site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.
- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action submitted to the NYSDEC within 45 days describing and documenting actions taken to restore the effectiveness of the ECs.

The owner of the site at the time of issuance of this SMP is:

9271 Group, LLC
295 Main Street, Suite 210
Buffalo, New York 14203

Any change in the ownership of the site or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser/Remedial Party has been provided with a copy of the Brownfield Cleanup Agreement (BCA, and all approved work plans and reports, including this SMP.
- Within 15 days after the transfer of all or part of the site, the new owner's name, contact representative, and contact information will be confirmed in writing to the NYSDEC.

Responsibilities of the owner and remedial party are provided in Appendix C.

Table 1 below includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full list of site contacts is provided in Appendix D.

Table 1: Notifications*

Name	Contact Information
NYSDEC Region 9 Division of Environmental Remediation – Closed Sites	716-851-7220
NYSDEC Regional HW Engineer	716-851-7220
NYSDOH Bureau of Environmental Exposure Investigation	518-402-7860 beei@health.ny.gov

* Note: Notifications are subject to change and will be updated as necessary.

2.0 SUMMARY OF PREVIOUS INVESTIGATION & REMEDIAL ACTIONS

2.1 Site Location and Description

The Site consists of two (2) adjoining parcels totaling 2.72 acres, located in the City of Buffalo, Erie County, New York and are identified on the Erie County Tax Map as:

- **1050 Niagara Street, S.B.L. #99.41-1-15.21, 2.05 acres**
- **1088 Niagara Street, S.B.L. #99.41-1-15.1, 0.67 acres**

The site bounded by Albany Street (paper street) to the north with commercial use properties beyond; commercial use properties to the south; Niagara Street to the east with residential and commercial properties beyond; and utility, rail line, and NYS Thruway (I-190) to the west, with the Black Rock Canal (Niagara River) beyond (see Figure 2). The boundaries of the site are more fully described in Appendix A – Environmental Easement.

2.2 Physical Setting

2.2.1 Land Use

The Site is currently improved with a three-story building, located on the 1050 Niagara Street parcels, and a newly constructed two-story building and parking areas on the 1088 Niagara Street parcel. Based on the recently approved City of Buffalo Unified Development Ordinance (January 2017), the Site is zoned Urban Core (N-1D, N-1E and N-1S), which is a mixed use commercial and residential designation. Based on the location of the Site to downtown Buffalo, N-1E, Downtown Edge, is likely the most applicable. It is described as a "Full-Block, zero setbacks, zero side yard development with consistent pedestrian-orientated ground floor frontages and significant vertical mixed-use". The Site is currently utilized for commercial and restricted-residential uses.

The properties adjoining the Site and in the neighborhood surrounding the Site primarily include commercial and residential properties. The properties immediately north include a vacant commercial manufacturing building, south of the Site include commercial

manufacturing properties; the properties immediately east of the Site include commercial and residential properties; and railroad tracks, utilities and the NYS Thruway (I-190) are immediately west of the Site.

2.2.2 Geology

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

The geology at the Site was investigated during the Remedial Investigation (RI) and is generally described as fill material to depths greater than 35 feet below ground surface (fbgs) consisting of varying amounts of sandy lean clay and fine sand with brick, concrete, wood, and debris. Previous investigation logs and RI borehole logs are provided in Appendix E.

Based on the bedrock geologic map of Erie County, the Site is situated over the Onondaga Formation of the Middle Devonian Series. The Onondaga Formation is comprised of a varying texture from coarse to very finely crystalline with a dark gray to tan color and chert and fossils within. The unit has an approximate thickness of 110 to 160 feet. Structurally, the bedrock formations strike in an east-west direction and exhibit a regional dip that approximates 40 feet per mile (3 to 5 degrees) toward the south and southwest.

Based on the 2015 Empire geotechnical report completed on the 1088 Niagara Street parcel, bedrock was encountered between 39 and 41 fbgs. A copy of the geotechnical report is included electronically in Appendix E.

2.2.3 Hydrogeology

Based on the findings of the RI, perched and overburden water was encountered at depths ranging from 14 to 29 fbgs in the exterior wells, with additional well locations being dry at over 25 fbgs, including the planned MW-2 location (SB-19) and MW-1. Lack of water was also noted in the Empire GeoServices, Inc. (Empire) geotechnical report (to a maximum depth of 41 fbgs – noted bedrock).

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

In general, localized groundwater flow was estimated to flow in a western direction toward the Niagara River. Figure 3 depicts the estimated overburden groundwater isopotential map based on the water level measurements collected during the RI.

2.3 Investigation History

The following narrative provides a summary of the investigation history timeline and a brief description of the available project records to document key investigative and remedial milestones for the Site. Full titles for each of the reports referenced below are provided in Section 8.0 - References.

2.3.1 June 2012 – Phase I Environmental Site Assessment

TurnKey Environmental Restoration, LLC (TurnKey) completed a Phase I Environmental Site Assessment (ESA) in June 2012. Findings of the Phase I report are summarized below:

- Historic operators on-Site included commercial printing from at least 1930 through at least 2000, and the American Gelatine Company and the International Brewing Company in the early 1900s
- Two historic 25,000 gallon tanks were noted in the basement of 1050 Niagara Street based on historic Sanborn maps; contents unknown.
- Potential tank vents were noted on the west side of the building on the 1050 Niagara Street parcel and potential tank fill ports were noted on the surface in the southeast portion of the 1088 Niagara Street parcel.
- Building-mounted transformers were noted along the south side of the 1050 Niagara Street building.
- Gulf Oil Corporation operated on-Site from the 1920s through the 1960s, Hygrade Oil and Fuel Corp./Hygrade Petroleum Co. operated on-Site from the 1920s through the 1940s.

- The Site included a filling station from the 1920s through the 1960s. Multiple gasoline tanks, assumed to be underground storage tanks (USTs), were identified on the northern portion of the site in at least 1925 and 1951 based on historic Sanborn maps.
- Numerous closed/inactive spills were identified in connection with adjacent/nearby properties in the regulatory database.

2.3.2 July 2012 Limited Phase II Environmental Investigation Report

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

- Three (3) abandoned USTs were encountered during the excavation of TP-4. The USTs appear to be associated with the former services station noted in the Phase I ESA;
- Field observations of apparent petroleum contamination, including elevated PID readings and petroleum odors, were observed in multiple test pits;
- Elevated VOCs, some exceeding Commercial Use SCOs were detected;
- Several metals were detected above their respective Unrestricted Use SCOs, including arsenic, cadmium, and lead above their respective Commercial Use SCOs;

2.3.3 August 2013 – Supplemental Phase II Site Investigation

TurnKey Environmental Restoration, LLC (TurnKey) completed a Supplemental Phase II Environmental Investigation Report in August 2013. Findings of the Supplemental Phase II investigation are detailed below:

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

2.3.4 BCP Remedial Investigation

A RI was completed at the Site in accordance with the approved RI-IRM-AA Work Plan (May 2014). The purpose of the RI was to more fully define the nature and extent of contamination on the BCP Site, and to collect data of sufficient quantity and quality to perform

the remedial alternatives evaluation. On-Site field activities included surface and subsurface soil sampling, groundwater sampling, and sub-slab vapor/ambient air sampling.

Based on the results of the previous investigations and the RI, it was determined that remediation of the Site was necessary. A RI/IRM/AAR was prepared to provide a summary of the investigations, and complete an assessment of remedial alternatives beyond the IRMs capable of achieving the Remedial Action Objectives (RAOs) for the Site as identified in the approved Decisions Document. Results of the RI are provided below.

Summary of RI Findings by Media

Surface and Near Surface Soil

Investigation results identified certain PAHs and metals above RRSCOs and/or Commercial Use SCOs (CSCOs).

Numerous semi-volatile organic compounds (SVOCs), primarily polycyclic aromatic hydrocarbons (PAHs) exceed unrestricted use soil cleanup objectives (USCOs) and restricted residential SCOs (RRSCOs) and in some instances, exceed commercial SCOs (CSCOs). Specific contaminants exceeding RRSCOs are as noted below.

PAH exceedances include:

- benzo(a)anthracene up to 240 parts per million (ppm) (1 ppm RRSCO);
- benzo(a)pyrene ranging up to 210 ppm (1 ppm RRSCO);
- benzo(b)flouranthrene up to 120 ppm (1 ppm RRSCO);
- benzo(k)flouranthrene up to 130 ppm (3.9 ppm RRSCO);
- chrysene up to 240 ppm (3.9 ppm RRSCO);
- dibenzo(a,h)anthracene up to 33 ppm (0.33 ppm RRSCO);
- flouranthrene up to 620 ppm (100 ppm RRSCO);
- indeno(1,2,3-cd)pyrene up to 140 ppm (0.5 ppm RRSCO);
- phenanthrene up to 600 ppm (100 ppm RRSCO); and
- pyrene up to 420 ppm (100 ppm RRSCO).

The total PAHs range from 176 ppm to 3,350 ppm (100/500 ppm RRSCO/CSCO) at six (6) locations and total SVOCs at corresponding locations up to 6,862 ppm. The PAH and SVOCs

levels grossly exceeding CSCOs are primarily located along the former rail loading dock area of the existing 1050 Niagara St. building (1054 Niagara St. parcel).

Specific metals exceeding respective RRSCOs include:

- arsenic up to 260 ppm (16 ppm RRSCO);
- barium at 7,580 ppm (400 ppm RRSCO);
- cadmium at 15 ppm (4.3 ppm RRSCO);
- copper up to 2,430 ppm (270 RRSCO);
- lead up to 16,300 ppm (400/1,000 ppm RRSCO/CSCO); and
- mercury up to 9 ppm (0.81 ppm RRSCO).

The metal levels significantly exceeding RRSCOs are also primarily located at the former rail loading dock area on the western side of the 1050 Niagara St. building.

Subsurface Soil

Fill material was identified across the 1088 Niagara St. parcel to varying depths up to 35 fbgs. Fill consisted of distinct and mixed layers, lenses and pockets of sandy lean clay fill soil, fine foundry sand, ash, stained soil like fill, and construction and demolition debris (concrete, brick, block, metal and some wood). The fill soil layers were intermixed with gravel, brick, concrete, slag, wood, and debris.

Nuisance characteristics (petroleum odors and elevated field screened vapor readings) were identified in eleven (11) locations primarily associated with the USTs and former tank area, southwestern section of the 1088 Niagara St. vacant lot, and below the western half of the 1050 Niagara St. building. However, no subsurface soil/fill analytical results for VOCs were detected above RRSCOs, but there were numerous VOC Tentatively Identified Compounds (TICs) in several borings along the western side of the site in the 1088 Niagara St. vacant lot and below the western half of the 1050 Niagara St. building. The TICs are characteristic of degraded petroleum compounds. Soil samples with gross visual characteristics noted above contained total VOC TICs that ranged from 59 to 1044 ppm at six (6) sample locations.

Most SVOCs results were below RRSCOs with only benzo(a) anthracene (1.3 ppm) detected at an estimated concentration slightly above its RRSCO (1 ppm) at the northern end of the 1088 Niagara St. vacant lot. Numerous SVOC TICs were identified in several borings with one sample totaling 89 ppm.

Specific metals exceeding respective SCOs include cadmium at 27.8 ppm (4.3 ppm RRSCO); chromium at 282 ppm (180 ppm RRSCO), and lead up to 1,010 ppm (400 ppm RRSCO).

A single PCB result of 120 ppm was detected in a limited area located along the eastern side of the 1088 Niagara St. vacant lot which was above the respective hazardous waste criteria (50 ppm), CSCO (1 ppm) and RRSCO (1 ppm) criteria. The PCB contaminated soil was removed from this area as part of the PCB IRM and remaining PCBs at a depth of 17 feet are at approximately 1 ppm or less.

Groundwater

Petroleum-related VOCs and SVOCs were the primary contaminants found in groundwater. Petroleum related VOCs were detected above groundwater quality standards (GWQS). Moderate GWQS exceedances include:

- 1,3,5-trimethylbenzene up to 64 ppb (5 parts per billion [ppb] GWQS);
- benzene up to 370 ppb) (5 ppb GWQS),
- cyclohexane up to 1000 ppb (no GWQS);
- isopropylbenzene up to 200 ppb (5 ppb GWQS); and
- n-propylbenzene up to 200 ppb (5 ppb GWQS);

Total VOCs range from 393 ppb to 2,924 ppb from five (5) wells with VOC parameters above respective GWQS. Additionally, petroleum VOC TICs from these same wells ranged from 373 ppb to 977 ppb indicating that there is a substantial mass of degraded petroleum VOCs in groundwater. These affected wells are located in the western side of the 1088 Niagara St. vacant lot and the western half of the 1050 Niagara St. building from soil sample locations where high VOC TIC totals were detected.

Most of the SVOC analytes were reported as non-detectable or trace (estimated) concentrations below the laboratory quantitation limit. Certain SVOCs, primarily PAHs, were detected at estimated concentrations moderately above GWQS, at one location below the northwest corner of the existing building at 1050 Niagara St. and include;

- benzo(a)anthracene at 0.46 ppb (0.002 ppb GWQS);
- benzo(a)pyrene at 0.66 ppb (non-detect GWQS);
- benzo(b)flouranthrene at 1.5 ppb (0.002 ppb GWQS);and
- chrysene at 0.49 ppb (0.002 ppb GWQS).

Total SVOCs in groundwater from this sample location amount to 136 ppb. Three of the wells located along the western side of the 1088 Niagara St. vacant lot area where petroleum impacts to soil were identified and SVOC impacts to groundwater also contained SVOC TIC totals ranging from 512 to 3,220 ppb. These are the same wells that are also impacted with VOCs and VOC TICs.

The above summary of VOC and SVOC contamination in groundwater suggests that degraded petroleum remains in soil and groundwater along the western section of the 1088 Niagara St. parcel and below the northwestern section of the existing building on the 1050 Niagara St. parcel. The proximity of the contaminants with respect to the western property boundary and westerly groundwater gradient suggest the potential for offsite migration.

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

Several pesticides, including 4,4'-DD, alpha-BHC, delta BHC and gamma-BHC, were detected nominally above their respective GWQS at the western side of the vacant 1088 Niagara St. parcel.

Subslab Vapor and Indoor Air

Four (4) basement floor sub-slab vapor samples and two (2) indoor air samples were collected at various locations at the existing 1050 Niagara St. structure. One (1) outdoor air sample was collected for comparison. Trichloroethene (TCE) was detected at 3.4 micro-grams/cubic

meter (ug/m^3) at one sub-slab sample. TCE was not detected in indoor air. Carbon tetrachloride was detected in all sub-slab samples from 0.091 to 0.45 ug/m^3 and in indoor air from 0.5 to 0.54 ug/m^3. Tetrachloroethene (PCE) was found in three of the sub-slab samples at 0.43 to 1.5 ug/m^3. PCE was not detected in the indoor air. 1,1,1-trichloroethane was detected in three sub-slab samples up to 29 ug/m^3. 1,1,1-trichloroethane was not detected in indoor air.

The vast majority of detected air constituents were reported by the laboratory as non-detect or estimated values below the laboratory quantitation limit. Those chlorinated VOCs subject to the NYSDOH SVI Guidance were compared to their respective decision matrices provided in the Guidance. Based on the concentrations of these compounds detected in sub-slab and indoor air, results for the Matrix 1 compounds trichloroethene and vinyl chloride, and all Matrix 2 compounds indicated "No Further Action (NFA)". Only Matrix 1 compound carbon tetrachloride results for the basement (SSV-1, SSV-2 and Ambient-1) and subbasement (SSV-3, SSV-4 and Ambient-2) indicated "take reasonable and practical actions to identify source(s) and reduce exposures (I,R)". It is important to note that the indoor air concentrations of carbon tetrachloride for both Ambient-1 and Ambient-2 were greater than the associated sub-slab vapor concentrations for carbon tetrachloride, indicating the source is not from the subsurface.

2.4 Remedial History

Interim Remedial Measures (IRMs) were completed on-Site in accordance with the NYSDEC-approved RI-IRM Work Plan (May 2014), and the approved Addendum to the IRM Work Plan (June 2015). Details of the completed IRMs are presented below. Figure 4 and Figure 5 present the approximate extents of the IRM excavation areas and post-excavation confirmatory sample locations.

2.4.1 Petroleum IRM Activities

Petroleum IRM field activities were completed between June 11th through June 16th, 2015 to remove the historic USTs and associated petroleum impacted soil/fill (see Figure 4). The Petroleum IRM activities included:

- Excavation, cleaning and removal of four (4) approximately 1,000 gallon steel USTs. USTs were recycled for scrap at Metalico Inc., Buffalo NY.
- Approximately 635 tons of non-hazardous petroleum impacted soil/fill, including the contents of the USTs (flowable fill) was excavated and transported off-Site by Serafini (9A-737) for disposal at Waste Management's (WM) Chaffee Landfill, located in Chaffee, New York.
- Collection of eight (8) post-excavation confirmatory soil/fill samples from the UST Area, including six (6) sidewall samples and two (2) bottom samples. All post-excavation samples results are below RRSCOs, summarized on Table 2.
- Exploratory excavation was performed in the vicinity of the former hydraulic lift to identify any additional subgrade components related to the former hydraulic lift and/or fuel assets; no additional components were discovered.
- After field screening and confirmatory post-excavation samples indicated that the remedial excavation was complete,, , demarcation layer was installed and the excavation was backfilled to redevelopment subgrades with DEC-approved virgin source stone.

2.4.2 PCB IRM Activities

During the RI, elevated PCBs above RRSCOs were identified at SB-17. In order to better define the extents of the impacts, delineation borings, identified as B-1 through B-4, were advanced to the north, south, and west of SB-17 to assess the areal extents of PCB impacts. Based on the results of the delineation, the PCB impacts were limited to SB-17, B-3, and B-4.

An Addendum to the RI-IRM-AA Work Plan was submitted to the NYSDEC in June 2015 to address the PCB impacted material as an IRM. The Department approved the Addendum on June 23, 2015. The PCB IRM remedial activities were completed between June 24th and July 17th, 2015. Details of the PCB IRM are summarized below.

- Based on the depth of PCB contamination (8-12 fbgs) detected during the RI, non-hazardous overburden soil/fill was sampled from 0-6 fbgs for waste characterization parameters to allow for review and approval for disposal at WM Chaffee Landfill. A total of 948 tons of non-hazardous soil/fill was excavated and transported off-Site for disposal at WM Chaffee Landfill, located in Chaffee, New York

- A total of 583tons of PCB-impacted soil/fill was excavated and transported off-Site for disposal at Chemical Waste Management's (CWMs) Chemical Services, LLC landfill, located in Model City, New York.
- Collection of nine (9) post-excavation confirmatory samples, including six (6) sidewall samples and three (3) bottom samples. With DEC concurrence, no sidewall samples were collected from the east wall of the excavation, based on the presence of an existing stone wall with multiple subgrade utilities beyond along Niagara Street. All post excavation samples results are below RRSCOs, with the minor exception of B-3 (1.072 mg/Kg vs RRSCO of 1 mg/Kg). It should be noted that the excavation was completed to 17 fbgs, and redevelopment activities in this portion of the Site will completely cover the excavation area with a new building. Approximate lateral extents of the excavation and post-excavation confirmatory sample locations are shown on Figure 4, and PCB post-excavation analytical results are summarized on Table 3.
- After NYSDEC deemed the excavation complete, the excavation was backfilled to redevelopment subgrades with DEC-approved virgin source stone.

2.4.3 Western Loading Dock IRM Activities

Western loading dock IRM field activities were completed May 11th through May 31st, 2017 to remove metals and PAH impacted soil/fill and existing debris on the former loading dock and coal bin, and western boundary of the 1050 Niagara portion of the Site. Details of the western loading dock IRM activities are summarized below.

- Impacted soil/fill, debris, and vegetative cover that had accumulated on top of the loading dock and former concrete storage bin was removed to the existing concrete surface. Shallow soil/fill present in the upper 2-3 feet in the southwest corner of the 1050 Niagara portion of the site was excavated to remove accumulated soil/fill and debris, to a native soil-clay.
- A total of 302 tons of non-hazardous soil/fill was excavated and transported off-Site for disposal at WM Chaffee Landfill, located in Chaffee, New York.
- Collection of two (2) composite post-excavation confirmatory soil/fill bottom samples from the southwest area (see Figure 5). All post-excavation samples results are below RRSCOs, summarized on Table 4.
- After field screening and confirmatory post-excavation samples indicated that the remedial excavation was complete, a DER-10 compliant cover system was installed.

Documentation of the completed IRMs described above are provided in the Final Engineering Report.

2.5 Remedial Action Objectives

The Remedial Action Objectives (RAOs) for the Site as listed in Decision Document dated December 15, 2016 are as follows:

2.5.1 Soil:

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

2.5.2 Groundwater:

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.

RAOs for Environmental Protection

- Remove the source of ground or surface water contamination.

2.6 Remaining Contamination

The 1050-1088 Niagara Street Site was remediated to achieve a Track 4 Restricted Residential Use cleanup, which is consistent with the intended use of the Site.

Residual contamination remaining at the Site includes soil/fill located beneath the cover system site wide, though potential exposure is mitigated due to the depth of the contaminant, completion of the remedial activities, and placement of a Site cover system, including buildings, concrete, asphalt covered areas, and vegetated soil cover areas.

2.6.1 Soil/Fill

Residual contamination remaining in on-Site soil/fill above Unrestricted Use SCO (USCOs), includes nuisance odors, including TICs, one PAH and certain metals located beneath the cover system. The cover includes hardscape (buildings, asphalt and concrete) areas, and 24-inches of approved cover material above the demarcation layer. Details of the cover system are provided below. Table 5 and Figure 6 summarize the results of remaining soil samples that exceed the USCOs at the site after completion of remedial action.

Any remaining soil/fill constituents above regulatory guidelines remaining on-Site are located beneath the cover system, though potential exposure to the remaining contamination is mitigated due to the depth of the remaining contamination after the completion of the remedial excavation, and depth to on-Site groundwater, and the placement of a cover system.

2.6.2 Groundwater

RI results identified certain petroleum related VOCs and SVOCs, including TICs, certain metals, and pesticides were detected above their respective GWQS (see Table 6 and Figure 7).

Depth to water ranged from 14 to 29 fbgs in the exterior wells, with several locations showing a lack of water to refusal at 41 fbgs (bedrock). Due to the depth of contamination and the placement of a cover system, potential exposure to the remaining contamination is highly unlikely.

Table 6 and Figure 7 summarize the results of all samples of groundwater that exceed the SCGs after completion of the remedial action.

3.0 INSTITUTIONAL & ENGINEERING CONTROL PLAN

3.1 General

Since remaining contamination exists at the site, Institutional Controls (ICs) and Engineering Controls (ECs) are required to protect human health and the environment. This IC/EC Plan describes the procedures for the implementation and management of all IC/ECs at the site. The IC/EC Plan is one component of the SMP and is subject to revision by the NYSDEC.

This plan provides:

- A description of all IC/ECs on the site;
- The basic implementation and intended role of each IC/EC;
- A description of the key components of the ICs set forth in the Environmental Easement;
- A description of the controls to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of IC/ECs, such as the implementation of the Excavation Work Plan (EWP) (as provided in Appendix B) for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the site; and
- Any other provisions necessary to identify or establish methods for implementing the IC/ECs required by the site remedy, as determined by the NYSDEC.

3.2 Institutional Controls

A series of ICs is required by the Decision Document to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination; and, (3) limit the use and development of the site to restricted residential uses only. Adherence to these ICs on the site is required by the Environmental Easement and will be implemented under this SMP. ICs identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement.

These ICs are:

- The property may be used for: restricted residential; commercial, industrial use;

- All ECs must be operated and maintained as specified in this SMP;
- All ECs must be inspected at a frequency and in a manner defined in the SMP.
- The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Erie County DOH to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department.
- Groundwater and other environmental or public health monitoring must be performed as defined in this SMP;
- Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP;
- All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP;
- Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP;
- Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in this SMP;
- Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement, and.
- Vegetable gardens and farming on the site are prohibited.

3.3 Engineering Controls

3.3.1 Cover System

Exposure to remaining contamination at the site is prevented by a cover system placed over the site. This cover system is comprised of a minimum of 24 inches of DER-10 compliant soil/stone material over demarcation layer, and hardscape elements of the redevelopment, including asphalt, concrete-covered sidewalks, and concrete building slabs. Figure 8 presents the location of the different cover system elements. Redevelopment details, prepared by others, are provided in Appendix F.

The Excavation Work Plan (EWP) provided in Appendix B outlines the procedures required to be implemented in the event the cover system is breached, penetrated, or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection of this cover are provided in the Monitoring and Sampling Plan included in Section 4.0 of this SMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and associated Community Air Monitoring Plan (CAMP) prepared for the site and provided in Appendix G.

3.3.1.1 Cover System

The composite cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in accordance with this SMP in perpetuity.

3.3.1.2 Groundwater Remedial Measures

Groundwater treatment was a specific remedial element in the Decision Document approved for the site. The completed IRMs removed historic USTs and petroleum contaminated soil/fill. Additionally, a SVE system was installed to remove residual degraded petroleum source within the vadose and smear zone prior to in-situ groundwater treatment. The treatment of residual degraded petroleum contamination within the vadose and smear zone, prior to implementation of a groundwater treatment, is important to limit the potential for recontamination.

The SVE system is expected to enhance groundwater contaminant degradation and improve groundwater quality. Initial groundwater data collected after completion of the IRMs and installation of the SVE shows a reduction in VOC groundwater concentrations. The impact of the SVE system on groundwater concentrations will be assessed during vadose zone source removal relative to achieving the Site's RAOs for groundwater.

If groundwater contamination is not reduced to meet the groundwater RAOs, in-situ groundwater treatment will be implemented per the approved Decision Document

4.0 MONITORING AND SAMPLING PLAN

4.1 General

This Monitoring and Sampling Plan describes the measures for evaluating the overall performance and effectiveness of the remedy. This Monitoring and Sampling Plan may only be revised with the approval of the NYSDEC. Details regarding the sampling procedures, data quality usability objectives, analytical methods, etc. for all samples collected as part of site management for the site are included in the Quality Assurance Project Plan provided in Appendix I.

This Monitoring and Sampling Plan describes the methods to be used for:

- Monitoring the performance and effectiveness of the ECs.
- Sampling and analysis of all appropriate media (e.g., groundwater, air, soils);
- A schedule of monitoring and the frequency of submittals to the department.
- Assessing compliance with applicable NYSDEC standards, criteria and guidance (SCGs), particularly groundwater standards and Part 375 SCOs for soil; and
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment;

To adequately address these issues, this Monitoring and Sampling Plan provides information on:

- Sampling locations, protocol and frequency;
- Information on all designed monitoring systems;
- Analytical sampling program requirements;
- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and
- Annual inspection and periodic certification.

Reporting requirements are provided in Section 7.0 of this SMP.

4.2 Site-Wide Inspection

Site-wide inspections will be performed at a minimum of once per year (annually), and/or at a lesser frequency as approved by the Department. Modification to the frequency or duration of the inspections will require approval from the NYSDEC. Site-wide inspections will also be performed after all severe weather conditions that may affect ECs or monitoring devices. During these inspections, an inspection form will be completed as provided in Appendix J – Site Management Forms. The form will compile sufficient information to assess the following:

- Compliance with all ICs, including site usage;
- An evaluation of the condition and continued effectiveness of ECs;
- General site conditions at the time of the inspection;
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection; and
- Confirm that site records are up to date.

Inspections of all remedial components installed at the site will be conducted. A comprehensive site-wide inspection will be conducted and documented according to the SMP schedule, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether ECs continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP and the Environmental Easement;
- Achievement of remedial performance criteria; and
- If site records are complete and up to date; and

Reporting requirements are outlined in Section 7.0 of this plan.

Inspection of the cover system will include a visual assessment of invasive plants in the soil cover areas. Invasive plants will be controlled to the extent necessary to maintain the integrity of the cover. Invasive plant controls, if any, will need to be completed in accordance with all local and state guidelines.

Inspections will also be performed in the event of an emergency. If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs that reduces or has the potential to reduce the effectiveness of ECs in place at the site, verbal notice to the NYSDEC must be given by noon of the following day. In addition, an inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the IC/ECs implemented at the site by a qualified environmental professional, as determined by the NYSDEC. Written confirmation must be provided to the NYSDEC within 7 days of the event that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

4.3 Groundwater Sampling

Groundwater monitoring will be performed semi-annually to assess the performance of the remedy. Specifically, MW-3 and MW-6 will be sampled and analyzed annually for 2 years (i.e., 4 events) after which time a request may be made to the Department to modify the sampling frequency by the Site owner. Modification to the frequency or sampling requirements will require approval from the NYSDEC. Samples will be collected and analyzed as described below. Figure 3 identifies the monitoring well locations and representative isopotential map. Well depths and screened intervals for the groundwater monitoring network are provided below. RI monitoring well construction logs are included in Appendix E.

Table 7 – Monitoring Well Construction Details

Monitoring Well ID	Coordinates (Northing/Easting)	Well Diameter (inches)	Elevation			
			Casing	Surface	Screen Top	Screen Bottom
MW-3	1061401.646/ 1063208.683	2	613.44	614.21	585.94	580.94
MW-6	1061119.559/ 1063438.703	2	622.01	622.34	614.74	604.74

If biofouling or silt accumulation occurs in the on-site monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced, if an event renders the wells unusable.

Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance.

The NYSDEC will be notified prior to any repair or decommissioning of any monitoring well for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent Periodic Review Report. Well decommissioning without replacement will be done only with the prior approval of the NYSDEC. Well abandonment will be performed in accordance with NYSDEC's guidance entitled "CP-43: Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells that are decommissioned because they have been rendered unusable will be replaced in kind in the nearest available location, unless otherwise approved by the NYSDEC.

The sampling frequency may only be modified with the approval of the NYSDEC. This SMP will be modified to reflect changes in sampling plans approved by the NYSDEC.

Deliverables for the groundwater monitoring program are specified in Section 7.0 – Reporting Requirements.

4.3.1 Groundwater Sampling Protocol

Field personnel will sample monitoring wells using a submersible pump with dedicated pump tubing following low-flow/minimal drawdown purge and sample collection procedures. In the event of pump failure or the saturated unit does not permit the proper implementation of low-flow sampling, a dedicated polyethylene bailer will be used to sample the well.

Sample collection methods that will be implemented include:

- **Submersible Pump with Dedicated Pump Tubing**

  All monitoring wells will be purged and sampled using a non-dedicated submersible pump and dedicated pump tubing following low-flow (minimal drawdown) purge and sample collection procedures, as described above. Non-dedicated pumps will require decontamination prior to use at each well location and the collection of an equipment blank.

- **Polyethylene Disposable Bailer**

  Wells of any depth (up to 100 fbgs) may be purged and sampled using a polyethylene disposable bailer via direct grab. In general, a bottom filling dedicated polyethylene bailer is attached to a length of dedicated hollow-braid polypropylene rope and lowered into the well smoothly and slowly as not to agitate the groundwater or damage the well. Purging continues until a predetermined volume of water has been removed (typically three well volumes.)

Groundwater samples will be collected from the monitoring well network and analyzed for TCL VOCs including TICs and TCL SVOCs including TICs. All collected groundwater samples will be 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-approved laboratory for analysis.

All sampling activities will be recorded in a field book and associated sampling log as provided in Appendix J - Site Management Forms. Other observations (e.g., groundwater monitoring well integrity, etc.) will be noted on the sampling log. The sampling log will serve as the inspection form for the monitoring network.

5.0 OPERATION & MAINTENANCE PLAN

5.1 General

The site remedy does not rely on any mechanical systems, such as groundwater treatment systems, sub-slab depressurization systems or air sparge/soil vapor extraction systems to protect public health and the environment. Therefore, the operation and maintenance of such components is not included in this SMP.

6.0 PERIODIC ASSESSMENTS/EVALUATIONS

6.1 Climate Change Vulnerability Assessment

Increases in both the severity and frequency of storms/weather events, an increase in sea level elevations along with accompanying flooding impacts, shifting precipitation patterns and wide temperature fluctuation, resulting from global climactic change and instability, have the potential to significantly impact the performance, effectiveness and protectiveness of a given site and associated remedial systems. Vulnerability assessments provide information so that the site and associated remedial systems are prepared for the impacts of the increasing frequency and intensity of severe storms/weather events and associated flooding.

The subject site is considered to have a very low vulnerability related to climatic conditions. There is FEMA floodplains located on the western boundary of the Site associated with the Niagara River., however, the cover system and SVE system are located a minimum of 20 ft above the Niagara River average water level (approx. 573 FMSL, NOAA, Buffalo Station 9063020), and the toe of cover system located at approx. 594 fmsl, and the SVE trailer located at an elevation of approx. 615 fmsl.

The SVE system is potentially vulnerable to a regional electrical outage; however, the auto dialer has a battery backup and will notify the responsible party to alert them to loss of electrical power, so that the system can be restarted once electrical service is restored.

6.2 Green Remediation Evaluation

NYSDEC's DER-31 Green Remediation requires that green remediation concepts and techniques be considered during all stages of the remedial program including site management, with the goal of improving the sustainability of the cleanup and summarizing the net environmental benefit of any implemented green technology. This section of the SMP provides a summary of any green remediation evaluations to be completed for the site during site management, and as reported in the Periodic Review Report (PRR).

6.2.1 Timing of Green Remediation Evaluations

For major remedial system components, green remediation evaluations and corresponding modifications will be undertaken as part of a formal Remedial System

Optimization (RSO), or at any time that the Project Manager feels appropriate, e.g. during significant maintenance events or in conjunction with storm recovery activities.

Modifications resulting from green remediation evaluations will be routinely implemented and scheduled to occur during planned/routine operation and maintenance activities. Reporting of these modifications will be presented in the PRR.

6.3 Remedial System Optimization

A Remedial Site Optimization (RSO) study will be conducted any time that the NYSDEC or the remedial party requests in writing that an in-depth evaluation of the remedy is needed. An RSO may be appropriate if any of the following occur:

- The remedial actions have not met or are not expected to meet RAOs in the time frame estimated in the Decision Document;
- The management and operation of the remedial system is exceeding the estimated costs;
- The remedial system is not performing as expected or as designed;
- Previously unidentified source material may be suspected;
- Plume shift has potentially occurred;
- Site conditions change due to development, change of use, change in groundwater use, etc.;
- There is an anticipated transfer of the site management to another remedial party or agency; and
- A new and applicable remedial technology becomes available.

An RSO will provide a critique of a site's conceptual model, give a summary of past performance, document current cleanup practices, summarize progress made toward the site's cleanup goals, gather additional performance or media specific data and information and provide recommendations for improvements to enhance the ability of the present system to reach RAOs or to provide a basis for changing the remedial strategy.

7.0 REPORTING REQUIREMENTS

7.1 Site Management Reports

All site management inspection, maintenance, and monitoring events will be recorded on the appropriate site management forms provided in Appendix J. These forms are subject to NYSDEC revision.

All applicable inspection forms and other records, including media sampling data and system maintenance reports, generated for the site during the reporting period will be provided in electronic format to the NYSDEC in accordance with the requirements of Table 8 and summarized in the Periodic Review Report.

Table 8: Schedule of Monitoring/Inspection Reports

Task/Report	Reporting Frequency*
Groundwater Monitoring	Laboratory data provided electronically (semi-annual) and reported with the annual PRR.
Periodic Review Report	Annually, or as otherwise determined by the Department

* The frequency of events will be conducted as specified until otherwise approved by the NYSDEC.

All monitoring/inspections reports will include, at a minimum:

- Date of event or reporting period;
- Name, company, and position of person(s) conducting monitoring/inspection activities;
- Description of the activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet);
- Type of samples collected (e.g., sub-slab vapor, indoor air, outdoor air, etc.);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);

- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format);
- Any observations, conclusions, or recommendations; and
- A determination as to whether contaminant conditions have changed since the last reporting event.

Routine maintenance event reporting forms will include, at a minimum:

- Date of event;
- Name, company, and position of person(s) conducting maintenance activities;
- Description of maintenance activities performed;
- Any modifications to the system;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet); and,
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

Non-routine maintenance event reporting forms will include, at a minimum:

- Date of event;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Description of non-routine activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

Data will be reported in digital format as determined by the NYSDEC. Currently, data is to be supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link **http://www.dec.ny.gov/chemical/62440.html**.

7.2 Periodic Review Report

A Periodic Review Report (PRR) will be submitted to the Department beginning sixteen (16) months after the Certificate of Completion is issued. After submittal of the initial Periodic Review Report, the next PRR shall be submitted annually to the Department or at another frequency as may be required by the Department. In the event that the site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the site described in Appendix A -Environmental Easement. The report will be prepared in accordance with NYSDEC's DER-10 and submitted within 30 days of the end of each certification period. Media sampling results will also be incorporated into the Periodic Review Report. The report will include:

- Identification, assessment, and certification of all ECs/ICs required by the remedy for the site.
- Results of the required annual site inspections and severe condition inspections, if applicable.
- All applicable site management forms and other records generated for the site during the reporting period in the NYSDEC-approved electronic format, if not previously submitted.
- A summary of any discharge monitoring data and/or information generated during the reporting period, with comments and conclusions.
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor, etc.), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends.
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted in digital format as determined by the NYSDEC. Currently, data

is supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link: http://www.dec.ny.gov/chemical/62440.html.

- A site evaluation, which includes the following:
- The compliance of the remedy with the requirements of the site-specific RAWP, ROD or Decision Document;
- The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;
- Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring and Sampling Plan for the media being monitored;
- Recommendations regarding any necessary changes to the remedy and/or Monitoring and Sampling Plan; and
- Trends in contaminant levels in the affected media will be evaluated to determine if the remedy continues to be effective in achieving remedial goals as specified by the Decision Document.
- The overall performance and effectiveness of the remedy.
- A performance summary for all treatment systems at the site during the calendar year, including information such as:
    - The number of days the system operated for the reporting period;
    - The average, high, and low flow rates;
    - The contaminant mass removed;
    - A description of breakdowns and/or repairs along with an explanation for any significant downtime;
    - A description of the resolution of performance problems;
    - Alarm conditions;
    - Trends in equipment failure;
    - A summary of the performance, effluent and/or effectiveness monitoring; and
    - Comments, conclusions, and recommendations based on data evaluation.

7.2.1 Certification of Institutional and Engineering Controls

Following the last inspection of the reporting period, a qualified environmental professional or Professional Engineer licensed to practice in New York State will prepare, and include in the Periodic Review Report, the following certification as per the requirements of NYSDEC DER-10:

"*For each institutional or engineering control identified for the site, I certify that all of the following statements are true:*

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

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner/Remedial Party or Owner's/Remedial Party's Designated Site Representative]

In addition, every five years the following certification will be added:

- *The assumptions made in the qualitative exposure assessment remain valid.*

The signed certification will be included in the Periodic Review Report.

The Periodic Review Report will be submitted, in electronic format, to the NYSDEC Central Office, Regional Office in which the site is located, and the NYSDOH Bureau of Environmental Exposure Investigation. The Periodic Review Report may need to be submitted in hard-copy format, as requested by the NYSDEC project manager.

7.3 Corrective Measures Work Plan

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

8.0 REFERENCES

1. Benchmark Environmental Engineering and Science, PLLC, in association with - TurnKey Environmental Restoration, LLC. *Remedial Investigation/Alternatives Analysis Report, 1050-1088 Niagara Street Site, Buffalo, New York*. June 2015.

2. Benchmark Environmental Engineering and Science, PLLC, in association with - TurnKey Environmental Restoration, LLC. *Addendum to the RI-IRM-AA Work Plan, 1050-1088 Niagara Street Site, Buffalo, New York*. June 2015.

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

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

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

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

7. 6NYCRR Part 375, Environmental Remediation Programs. December 14, 2006.

8. NYSDEC DER-10 – "Technical Guidance for Site Investigation and Remediation". May 2010.

9. NYSDEC, 1998. Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1. June 1998 (April 2000 addendum).

TABLES

TABLE 2

SUMMARY OF UST IRM POST-EXCAVATION CONFIRMATORY ANALYTICAL RESULTS

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

PARAMETER [1]	Unrestricted Use SCOs [3]	Restricted Residential Use SCOs [3]	SAMPLE LOCATION (UST AREA)							
			NW-1	NW-2	SW-1	SW-2	EW-1	WW-1	B-1	B-2
			06/15/2015	06/16/2015	06/15/2015	06/16/2015	06/15/2015	06/16/2015	06/15/2015	06/16/2015
Volatile Organic Compounds (VOCs) - mg/Kg [4]										
1,2,4-Trimethylbenzene	**3.6**	**52**	0.0027	0.00025	ND	ND	ND	0.0022 J	2.6	0.00046 J
1,3,5-Trimethylbenzene	**8.4**	**52**	0.0024	ND	ND	ND	ND	0.0082	0.81	0.00026 J
2-Butanone (MEK)	**0.12**	**100**	0.0059	ND	ND	ND	ND	ND	ND	ND
4-Isopropyltoluene	**--**	**--**	ND	ND	ND	ND	ND	ND	0.058 J	ND
Acetone	**0.05**	**100**	0.025 B	ND	0.035 B	ND	ND	ND	ND	ND
Cyclohexane	**--**	**--**	ND	ND	ND	ND	ND	ND	0.27	ND
Ethylbenzene	**1**	**41**	0.0013	ND	ND	ND	ND	0.001 J	0.68	ND
Isopropylbenzene (Cumene)	**--**	**--**	0.00037 J	ND	ND	ND	ND	0.00041 J	0.13	ND
Methylcyclohexane	**--**	**--**	ND	ND	ND	ND	ND	0.0014 J	0.97	ND
Methylene chloride	**0.05**	**100**	0.00073 JB	ND	0.00088 JB	ND	0.00062 JB	ND	ND	ND
Naphthalene	**--**		ND	ND	ND	ND	ND	ND	0.07 J	ND
n-Butylbenzene	**12**	**100**	0.00069 J	ND	ND	ND	ND	0.00058 J	0.23	ND
n-Propylbenzene	**3.9**	**100**	0.0011	ND	ND	ND	ND	0.0011 J	0.44	ND
sec-Butylbenzene	**11**	**100**	0.0004 J	ND	ND	ND	ND	0.00036 J	0.071 J	ND
Toluene	**0.7**	**100**	0.0013	0.00026	ND	ND	0.00035 J	0.002	ND	0.00047 J
Xylenes (total)	**0.26**	**100**	0.0066	0.00073	ND	ND	ND	0.0152	**2.741 J**	0.000973 J
Tentatively Identified Compounds (TICs)	--	--	0.1429	0.0031	ND	ND	ND	0.059	10.45	ND
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg [4]										
2-Methylnaphthalene	**--**	**--**	ND	ND	ND	ND	ND	ND	.11 J	ND
Fluoranthene	**100**	**100**	0.067 J	ND	ND	ND	ND	ND	ND	ND
Naphthalene	**12**	**100**	ND	ND	ND	ND	ND	0.00039 J	ND	ND
Phenanthrene	**100**	**100**	0.057 J	ND	ND	ND	ND	ND	ND	ND
Pyrene	**100**	**100**	0.031 J	ND	ND	ND	ND	ND	ND	ND
Tentatively Identified Compounds (TICs)	--	--	15.89	0.290	ND	0.270	0.93	0.32	1.9	0.29

Notes:

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

Definitions:

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

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

TABLE 3

SUMMARY OF PCB IRM POST-EXCAVATION CONFIRMATORY ANALYTICAL RESULTS

1050 - 1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

PARAMETER[1]	Unrestricted Use SCOs [2]	Restricted Residential Use SCOs [2]	SAMPLE LOCATION - PCB IRM AREA								
			NW1	NW2	SW1r	SW2	WW1r	WW2	B1	B2	B3
			6/24/2015	6/26/2015	7/10/2015	7/8/2015	7/2/2015	7/13/2015	6/25/2015	6/30/2015	7/8/2015
Polychlorinated Biphenyls (PCBs) - mg/Kg [3]											
Aroclor 1242	--	--	ND	ND	ND	ND	ND	0.304	ND	0.0374 J	ND
Aroclor 1248	--	--	0.698	0.0609	ND	0.156	ND	ND	0.194	ND	0.302
Aroclor 1254	--	--	0.223	0.048	0.0171 J	0.108	0.0365 J	0.244	0.342	0.225	0.653
Aroclor 1260	--	--	0.0365 J	0.01 J	0.00991 J	0.0112 J	0.0291 J	0.0396 J	0.0724	0.0557	0.117
PCBs, Total	0.1	1	0.9575	0.1189	0.02701	0.2752	0.0656	0.5876	0.6084	0.3181	**1.072**

Notes:

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

Definitions:

ND = Parameter not detected above laboratory detection limit.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.

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

TABLE 4

SUMMARY OF WESTERN LOADING DOCK IRM POST-EXCAVATION CONFIRMATORY ANALYTICAL RESULTS

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

PARAMETER [1]	Unrestricted Use SCOs [3]	Restricted Residential Use SCOs [3]	SAMPLE LOCATION	
			WEST IRM B-1 (1') (G-1 & G-2)	WEST IRM B-2 (1') (G-3 & G-4)
			06/14/2017	06/14/2017
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg [4]				
Benzo(a)anthracene	**1**	**1**	0.036 J	ND
Benzo(b)fluoranthene	**1**	**1**	0.04 J	ND
Chrysene	**1**	**3.9**	0.036 J	ND
Fluoranthene	**100**	**100**	0.065 J	ND
Phenanthrene	**100**	**100**	0.041 J	ND
Pyrene	**100**	**100**	0.054 J	ND
Total PAHs	--	--	0.272 J	ND
Tentatively Identified Compounds (TICs)	--	--	ND	ND
Metals - mg/Kg				
Arsenic	**13**	**16**	2.73	2.77
Barium	**350**	**400**	121	80.2
Cadmium	**2.5**	**4.3**	1.11	0.871
Chromium	**30**	**180**	20.1	12.6
Lead	**63**	**400**	14	15.5
Mercury	**0.18**	**0.81**	0.04 J	0.04 J
Selenium	**3.9**	**180**	ND	0.114 J
Silver	**2**	**180**	ND	ND

Notes:

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

Definitions:

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

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

TABLE 5

REMAINING SOIL/FILL SAMPLE EXCEEDANCES ABOVE SCOS

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

PARAMETER [1]	Unrestricted Use SCOs [4]	Restricted Residential Use SCOs [4]	SAMPLE LOCATION (DEPTH)																						
			SS-4	SS-4R [2]	SS-5	SS-5R [2]	SS-6	SS-6R [2]	NS-02 (0-2)	NS-03 (0-2)	TP-1 (7-9)	TP-3 (4-5)	SB-02 (0.5-1)	SB-05 (0.5-1)	TP-11 (6-8)	TP-12 (10-16)	TP-14 (2.5-4.5)	MW-4 (2-4)	MW-6 (2-4)	SB-10 [3] (0.4-2)	SB-11 [3] (0.4-2)	SB-12 [3] (12-14)	SB-16 [3] (4-6)	SB-18 (14-16)	SB-19 (2-4)
			8/1/2014	3/25/2016	8/1/2014	3/25/2016	8/1/2014	3/25/2016	7/31/2014		5/16/2012		7/15/2013		07/31/2014			08/20/2014	08/19/2014	08/27/2014			08/28/2014	08/19/2014	08/20/2014
Volatile Organic Compounds (VOCs) - mg/Kg [5]																									
1,2,4-Trimethylbenzene	**3.6**	**52**	--	--	--		--	--	--	--	--	0.7 B	--	--	ND	--	--	--	--	--	--	**24**	--	ND	--
Acetone	**0.05**	**100**	--	--	--		--	--	--	--	--	**0.17**	--	--	0.01 J	--	--	--	--	--	--	ND	--	ND	--
m&p-Xylene	**0.26**	**100**	--	--	--		--	--	--	--	--	0.091 B	--	--	ND	--	--	--	--	--	--	**3**	--	0.0025 B J	--
o-Xylenes	**0.26**	**100**	--	--	--		--	--	--	--	--	ND	--	--	ND	--	--	--	--	--	--	**1.8**	--	ND	--
Total Xylenes	**0.26**	**100**	--	--	--		--	--	--	--	--	0.091 B	--	--	ND	--	--	--	--	--	--	**4.8**	--	0.0025 B J	--
Total VOCs	**--**	**--**	--	--	--		--	--	--	--	--	2.547 B	--	--	0.01	--	--	--	--	--	--	55.34	--	0.00696	--
Total Tentatively Identified Compounds (TICs)	--	--	--	--	--		--	--	--	--	--	ND	--	--	ND	--	--	--	--	--	--	334	--	0.057	--
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg [5]																									
2-Methylnaphthalene	**--**	**--**	0.15 J, R	1.4	0.2 J, R	0.17 J	0.86 R	0.84	ND	ND	ND	ND	ND	1.3 J	0.17 J	0.39	0.13	0.024 J	ND	ND	ND	1.1	ND	0.6 J	ND
2-Methylphenol	**--**	**--**	ND	0.069 J	ND	ND	ND	0.041 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Methylphenol/4-Methylphenol	**--**	**--**	ND	0.23 J	ND	ND	ND	0.14 J	ND	ND	ND	ND	ND	ND	0.41 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	**20**	**100**	0.36 J, R	3	0.56 R	0.12 J	3.1 R	2.5	ND	ND	0.025 J	ND	ND	7.3	0.11 J	ND	0.04 J	0.043 J	ND	ND	ND	ND	ND	0.35 J	ND
Acenaphthylene	**100**	**100**	0.092 J, R	0.68	2.3 R	1.2	0.42 J, R	1.6	ND	ND	0.01 J	ND	ND	1.2 J	0.06 J	0.18 J	ND	0.0088 J	ND	ND	ND	ND	ND	ND	ND
Anthracene	**100**	**100**	0.77 R	5.6	2.3 R	0.69	6 R	4.7	ND	ND	0.047 J	ND	ND	15	0.24 J	0.037 J	0.062 J	0.087	ND	ND	ND	ND	ND	1 J	ND
Benzo(a)anthracene	**1**	**1**	**2.1 R**	**15**	**11 R**	**1.6**	**16 R**	**16**	ND	ND	0.17 B J	ND	ND	**40**	0.38	0.1	0.18	0.32	ND	ND	0.035 J	ND	0.11	**1.3 J**	ND
Benzo(a)pyrene	**1**	**1**	**1.9 R**	**12**	**14 R**	**3**	**14 R**	**13**	ND	ND	0.18 B J	ND	ND	**40**	0.26 J	0.085	0.25	0.31	ND	ND	ND	ND	0.32	1 J	ND
Benzo(b)fluoranthene	**1**	**1**	**2.3 R**	**17**	**16 R**	**3.9**	**18 R**	**21**	ND	ND	0.2 B	ND	ND	**55**	0.3 J	0.011	0.27	0.43	ND	ND	ND	ND	0.32	0.71 J	ND
Benzo(ghi)perylene	**100**	**100**	1.3 R	7.6	12 R	4	11 R	10	ND	ND	0.08 B J	ND	ND	26	0.17 J	0.1	0.25	0.25	ND	ND	ND	ND	0.43	ND	ND
Benzo(k)fluoranthene	**0.8**	**3.9**	**1.3 R**	**5.8**	**5.6 R**	**1.3**	**6.9 R**	**6**	ND	ND	0.11 B J	ND	ND	**19**	0.14 J	0.043 J	0.14	0.098	ND	ND	ND	ND	0.098	ND	ND
Biphenyl	**--**	**--**	ND	0.34 J	ND	ND	0.25 J, R	0.2 J	ND	ND	ND	ND	ND	ND	ND	0.054 J	ND	ND	ND	ND	ND	0.16 J	ND	ND	ND
Bis(2-ethylhexyl) phthalate	**--**	**--**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.4 J	ND	ND	ND	ND	ND	ND	ND	ND	0.1 J	3.6 J	ND
Butyl benzyl phthalate	**--**	**--**	1.8 J, R	ND	0.62 J, R	ND	ND	ND	ND	ND	ND	ND	ND	1.1 J	0.51 J	ND	ND	ND	ND	ND	0.055 J	ND	ND	ND	ND
Carbazole	**--**	**--**	0.48 R	4.5	0.54 R	0.12 J	3.5 R	3.2	ND	ND	ND	ND	ND	13	ND	ND	0.03 J	0.061 J	ND	ND	ND	ND	ND	ND	ND
Chrysene	**1**	**3.9**	**2.3 R**	**13**	**11 R**	**1.8**	**16 R**	**17**	ND	ND	0.15 B J	ND	ND	**45**	0.31 J	0.11	0.23	0.36	ND	ND	0.027 J	ND	0.12	**1.3**	ND
Dibenzo(a,h)anthracene	**0.33**	**0.33**	**0.41 R**	**2.3**	**2.6 R**	**0.8**	**3.1 R**	**3**	ND	ND	0.035 B J	ND	ND	ND	ND	ND	0.076 J	0.069 J	ND	ND	ND	ND	0.072 J	ND	ND
Dibenzofuran	**7**	**59**	0.26 J, R	2.6	0.24 J, R	0.095 J	1.9 J, R	1.5	ND	ND	ND	ND	ND	4.4	ND	0.064 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	**100**	**100**	4.6 R	31	17 R	2.4	35 R	37	ND	0.21 J	0.22 B	ND	ND	85	0.63	0.13	0.34	0.7	ND	ND	0.029 J	0.05 J	0.085	2.7	ND
Fluorene	**30**	**100**	0.32 J, R	3.3	0.77 R	0.17 J	3.1 R	2.6	ND	ND	0.016 J	ND	ND	ND	0.12 J	0.022 J	0.033 J	0.04 J	ND	ND	ND	0.33	ND	0.93 J	ND
Indeno(1,2,3-cd)pyrene	**0.5**	**0.5**	**1.3 R**	**7.7**	**10 R**	**2.9**	**9.6 R**	**9.6**	ND	ND	0.092 B J	ND	ND	ND	0.13 J	0.071 J	0.21	0.21	ND	ND	ND	ND	0.29	ND	ND
Naphthalene	**12**	**100**	0.35 J, R	3	ND	0.42 J	2.6 R	1.6	ND	ND	0.1 J	0.052 J	ND	2.2 J	0.14 J	0.39	0.21	0.025 J	ND	ND	ND	0.15	ND	0.7 J	ND
Phenanthrene	**100**	**100**	3.7 R	27	5.8 R	0.78	30 R	30	ND	0.13 J	0.22 B	ND	0.17	ND	0.76	0.25	0.25	0.52	ND	ND	ND	0.71	0.044 J	3.2	ND
Phenol	**0.33**	**100**	ND	0.11 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	**100**	**100**	4 R	23	19 R	3	31 R	32	ND	0.19 J	0.22 B	ND	ND	69	0.62	0.15	0.38	0.57	ND	ND	0.025 J	0.07 J	0.095	2.3	ND
Total PAHs	--	**100**	27.102 J, R	**176.98 J**	**129.93 J, R**	28.08 J	**205.82 J, R**	**207.6 J**	ND	0.53 J	1.875 J	0.052 J	0.17 J	**404.7 J**	4.37 J	1.679 J	2.921 J	4.0408 J	ND	ND	0.116 J	1.31 J	1.995 J	15.49 J	ND
Total SVOCs	--	--	29.792 J, R	186.229 J	131.53 J, R	28.465 J	212.33 J, R	213.521 J	ND	0.53 J	1.95 J	0.052 J	0.256 J	426.9 J	5.46 J	2.837 J	3.081 J	4.1258 J	ND	ND	0.171 J	2.57 J	2.095 J	19.69 J	ND
Total Tentatively Identified Compounds (TICs)	--	--	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	6.36	3.3	3.13	1.19	2.9	2.86	40	0.97	89.1	4.98
Metals - mg/Kg																									
Aluminum	**--**	**--**	2240 R	9100	3970 R	3200	7080 R	5800	2530	7730	--	--	5400	--	9540	11100	--	12000	11700	10100	--	14500	--	--	6310
Arsenic	**13**	**16**	4.8 R	4.2	4.3 R	3.6	**19.7 R**	**17**	5.2	4.3	8.8	4.5	3.4	--	7	3.7	4.9	6.1	3.5	3.1	4.5	5.2	6.6	8.1	ND
Barium	**350**	**400**	29.3 R	84	49.3 R	44	123 R	110	29.1	75.5	133	112	100	--	139	285	170	104	81.4	69.9	108	124	135	74.6	61.3
Beryllium	**7.2**	**72**	ND	0.43 J	0.49 R	0.3 J	0.53 R	0.48 J	0.21	0.58	--	--	0.57	--	0.69	0.95	--	0.68	0.73	0.49	--	0.69	--	--	0.34
Cadmium	**2.5**	**4.3**	2.2 R	ND	0.61 R	ND	1.3 R	0.29 J	0.37	0.27	1.7	ND	0.78 J	--	2	**5**	**2.4**	**0.29**	**0.34**	**0.23**	**0.27**	**ND**	**0.82**	**27.8**	0.22
Calcium	**--**	**--**	156000 R	50000	119000 R	49000	20100 R	11000	139000	85200	--	--	21000	--	49200	30100	--	27600	4270	60700	--	20200	--	--	3740
Chromium	**30**	**180**	9.1 R	20	15.9 R	5.5	21.1 R	19	10.6	24.4	**77.3**	18.8	12	--	**282**	29.6	29.9	15.4	15	12.4	15.9	17.4	15.9	**110**	8
Cobalt	**--**	**--**	2.2 R	25	2.2 R	2	6.4 R	5.6	3.8	5.4	--	--	140	--	5.4	2	--	9.2	10.4	7.4	--	9.2	--	--	4.3
Copper	**50**	**270**	**57.2 R**	**560**	20 R	**58**	**185 R**	**230**	16.2	16.7	--	--	**87**	--	**57.7**	**57.9**	--	24.4	14.3	17.8	--	18.8	--	**--**	13.6
Iron	**--**	**--**	8620 R	16000	13100 R	7600	15400 R	17000	11700	12100	--	--	12000	--	43400	10300	--	17000	19900	13000	--	17700	--	--	10000
Lead	**63**	**400**	**123 R**	60	**67.6 R**	**71**	**390 R**	**300**	**80.4**	**188**	**1160**	19	48	--	**208**	**1010**	**359**	**71.6**	23.6	16.2	18.7	**137**	**69.1**	**865**	14.9
Magnesium	**--**	**--**	67000 R	14000	38500 R	6400	6900 R	4500	61400	24400	--	--	5200	--	9470	15200	--	12000	2930	25500	--	9920	--	--	2310
Manganese	**1600**	**2000**	618 R	400	664 R	230	461 R	440	599	777	--	--	120	--	**3000**	**2570**	--	448 B	1090 B	402 B	--	617	--	**--**	219 B
Mercury	**0.18**	**0.81**	0.036 R	**0.46**	0.056 R	**0.33**	**1.3 R**	**1.1**	0.14	**0.32**	**4**	ND	0.03 J	--	**0.28**	**0.34**	0.085	0.05	0.069	**0.63**	**0.42**	0.08	**0.22**	0.17	**0.2**
Nickel	**30**	**310**	7 R	16	7.8 R	6.8	19 R	17	10.2	14.6	--	--	48	--	**30.4**	13.4	--	19.1	12.9	15.6	--	16.6	--	--	8
Potassium	**--**	**--**	562 R	1300	542 R	290	943 R	730	923	1150	--	--	950	--	794	841	--	1470 B	1040 B	2570 B	--	2210	--	--	739 B
Selenium	**3.9**	**180**	ND	0.41 J	ND	0.42 J	ND	0.65 J	ND	ND	ND	ND	0.36 J	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	**2**	**180**	ND	0.26 J	ND	ND	ND	ND	ND	ND	ND	ND	**9**	--	1.1	**2.1**	0.81	ND	ND	ND	ND	ND	ND	**5.2**	ND
Sodium	**--**	**--**	184 R	140 J	189 R	120 J	263 R	330	208	816	--	--	220	--	323	576	--	ND	564	224	--	ND	--	--	ND
Vanadium	**--**	**--**	5.4 R	19	9.6 R	10	18.9 R	17	8.6	19.9	--	--	16	--	23	11.4	--	22.3	26.2	20.5	--	30.5	--	--	11.6
Zinc	**109**	**10000**	**471 R**	**300**	**144 R**	64	**443 R**	**450**	**109**	**120**	--	--	80	--	**323**	**935**	--	85.3	82.3	58.3	--	79.3	--	**--**	69

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. Surface Soil Samples collected in August 2014 were rejected by the data validator due to laboratory contamination. Surface Soil Samples were re-sampled in March 2016, identified as SS-2R through SS-6R.
3. Soil boring samples taken from inside existing building onsite.
4. Values per 6NYCRR Part 375 Soil Cleanup Objectives (SCOs).
5. Sample results were reported by the laboratory in ug/kg and converted to mg/kg for comparisons to SCOs

Definitions:

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

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

TABLE 6

REMAINING GROUNDWATER SAMPLE EXCEEDANCES ABOVE GWQS

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

Parameters [1]	Class GA GWQS[2]	TMW-3	MW-3	MW-4	MW-5
		5/1/17	5/8/17	5/8/17	2/12/15
Volatile Organic Compounds (VOCs) - ug/L					
1,1 Dichloroethane	**5**	ND	ND	ND	ND
1,2,4-Trimethylbenzene	**5**	ND	ND	ND	2.5
1,3,5-Trimethylbenzene	**5**	ND	ND	ND	3.4
2-Butanone (MEK)	**50**	ND	ND	ND	ND
2-Hexanone	**50**	ND	ND	ND	ND
4-Isopropyltoluene	**5**	ND	ND	ND	ND
Acetone	**50**	ND	ND	5.4 D	ND
Benzene	**1**	ND	**7.9 D**	**66 D**	**110**
Carbon disulfide	**60**	ND	ND	ND	ND
Chloroform	**7**	ND	ND	ND	ND
Cyclohexane	--	2.8 JD	70 D	33 D	150
Ethylbenzene	**5**	ND	ND	0.75 JD	ND
Isopropylbenzene	**5**	**9.8 JD**	**36 D**	**9 D**	**7.1**
Methylcyclohexane	--	5.7 JD	170 D	14 D	140
Methylene Chloride	**5**	ND	ND	ND	ND
n-Butylbenzene	**5**	ND	ND	ND	2.5
n-Proplybenzene	**5**	**13 JD**	ND	ND	**6.7**
sec-Butylbenzene	**5**	ND	ND	ND	2.7
tert-butylbenzene	**5**	ND	ND	ND	ND
Toluene	**5**	ND	ND	1.2 JD	ND
Xylene, Total	**5**	ND	ND	1 JD	2.4 J
Total VOCs	--	31.3	283.9	130.35	429.7
Tentatively Identified Compounds (TICs)- ug/L					
Butane, 2-Methyl-	--	ND	ND	2.22 NJD	ND
Benzene, cyclopropyl-	--	ND	ND	ND	ND
Benzene, 1-methyl-2-(1-methylethyl)-	--	ND	ND	ND	ND
Benzene, 1-methyl-3-(1-methylethyl)-	--	ND	ND	ND	ND
Benzene, 1-ethenyl-2-methyl-	--	ND	ND	ND	60
Benzene, 2-ethenyl-1,4-dimethyl-	--	ND	ND	ND	110
Benzene, 1,2,3-trimethyl-	--	ND	ND	ND	ND
Benzene, 1,2,3,4-tetramethyl-	--	ND	ND	ND	ND
Benzene, 1,2,4,5-tetramethyl-	--	ND	ND	ND	ND
Benzene, 1,3-dimethyl-5-(1-methylethyl)-	--	ND	ND	ND	ND
Benzene, pentamethyl-	--	ND	ND	ND	ND
Cyclopentane	--	ND	ND	ND	ND
Cyclopentane, methyl-	--	ND	ND	ND	61
Cyclopentane, 1,3-dimethyl-	--	ND	ND	ND	63
Cyclopentane, 1,2-dimethyl-, trans	--	ND	ND	ND	89
Cyclopentane, 1,5-dimethyl-	--	ND	ND	ND	64
1,4-Pentadiene, 3,3-dimethyl-	--	ND	ND	ND	ND
Isopropylcyclobutane	--	ND	ND	ND	ND
Cyclohexane, 1,3-dimethyl-,cis-	--	ND	ND	ND	54
Cyclohexane,4-methyl-	--	ND	ND	ND	ND
Cyclohexane, ethyl-	--	ND	ND	ND	ND
Cyclobutane, (1-methylethylidene)-	--	ND	ND	ND	ND
Cyclohexene, 1-methyl-	--	ND	ND	ND	ND
Cyclohexene, 3-methyl-	--	ND	ND	ND	ND
Cyclohexene, 4-methyl-	--	ND	ND	ND	ND
Methane, dibromofluoro-	--	ND	ND	ND	ND
Indan, 1-methyl-	--	ND	ND	ND	81
1H-Indene, 1-ethylidene-	--	ND	ND	ND	ND
1H-Indene, 2,3-dihydro-2,2-dimethyl-	--	ND	ND	ND	ND
Naphthalene, 1,2,3,4-tetrahydro-5,7-dime	--	ND	ND	ND	ND
Naphthalene, 2,7-dimethyl-	--	ND	ND	ND	ND
Naphthalene, 2,3-dimethyl-	--	ND	ND	ND	ND
Naphthalene, 1,6,7-trimethyl-	--	ND	ND	ND	ND
Hexane	--	ND	ND	ND	ND
Pentane, 2-methyl-	--	ND	ND	ND	86
Pentane, 3-methyl-	--	ND	ND	ND	83
Indane	--	ND	124 NJD	26 NJD	ND
Pentane	--	ND	ND	1.79 NJD	ND
Unknown Benzene	--	43.8	ND	11.92 JD	ND
Unknown Aromatic	--	48.8	62.9 JD	13.58 JD	ND
Unknown Cyclohexane	--	21.2	164 JD	ND	ND
Unknown Cycloalkane	--	ND	ND	4.06 JD	ND
Unknown	--	18.4	508.8 JD	17.01 JD	ND
Total Tentatively Identified Compounds	--	149	931	98.3	751

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per NYSDEC TOGS 1.1.1 Class GA Groundwater Quality Standards.
3. MW-5 was not sampled due to lack of water (dry).

Qualifiers:

D = Dilution required due to high concentration of target analyte above the laboratory reporting limit.
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
NJ = Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

BOLD = Result exceeds GWQS.

TABLE 6

REMAINING GROUNDWATER SAMPLE EXCEEDANCES ABOVE GWQS

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

Parameters [1]	Class GA GWQS[2]	TMW-3	MW-3	MW-4	MW-5
		5/1/17	5/8/17	5/8/17	2/12/15
Semi-volatile Organic Compounds (SVOCs) - ug/L					
2-Methylnaphthalene	**--**	--	--	--	ND
Acenaphthene	**20**	--	--	--	ND
Acenaphthylene	**--**	--	--	--	ND
Acetophenone	**--**	--	--	--	1.8 J
Anthracene	**--**	--	--	--	ND
Benzaldehyde	**--**	--	--	--	ND
Benzo(a)anthracene	**0.002**	--	--	--	ND
Benzo(a)pyrene	**ND**	--	--	--	ND
Benzo(b)fluoranthene	**0.002**	--	--	--	ND
Benzo(ghi)perylene	**--**	--	--	--	ND
Benzo(k)fluoranthene	**0.002**	--	--	--	ND
Benzoic acid	**--**	--	--	--	ND
Bis(2-ethylhexyl) phthalate	**5**	--	--	--	ND
Carbazole	**--**	--	--	--	ND
Chrysene	**0.002**	--	--	--	ND
Dibenzo(a,h)anthracene	**--**	--	--	--	ND
Dibenzofuran	**--**	--	--	--	ND
Fluoranthene	**50**	--	--	--	ND
Fluorene	**50**	--	--	--	ND
Indeno(1,2,3-cd)pyrene	**--**	--	--	--	ND
Isophorone	**50**	--	--	--	ND
Naphthalene	**10**	--	--	--	ND
Phenanthrene	**50**	--	--	--	0.56 J
Phenol	**1**	--	--	--	**8.5**
Pyrene	**50**	--	--	--	ND
Total SVOCs	**--**	--	--	--	10.86
Total Tentatively Identified Compounds	**--**	--	--	--	512.1
Tentatively Identified Compounds (TICs)- ug/L					
Benzene, propyl	**--**	--	--	--	9.5
Bezene, 4-ethyl-1,2-dimethyl-	**--**	--	--	--	26
Benzene, 1,4-diethyl-	**--**	--	--	--	11
Benzene, 1-methyl-2-(1-methylethyl)-	**--**	--	--	--	11
Benzene, (1-methylethyl)-	**--**	--	--	--	11
1-Phenyl-1-butene	**--**	--	--	--	23
Unknown (sum)	**--**	--	--	--	420.6
Total Tentatively Identified Compounds	**--**	--	--	--	512.1

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per NYSDEC TOGS 1.1.1 Class GA Groundwater Quality Standards.
3. MW-5 was not sampled due to lack of water (dry).

Qualifiers:

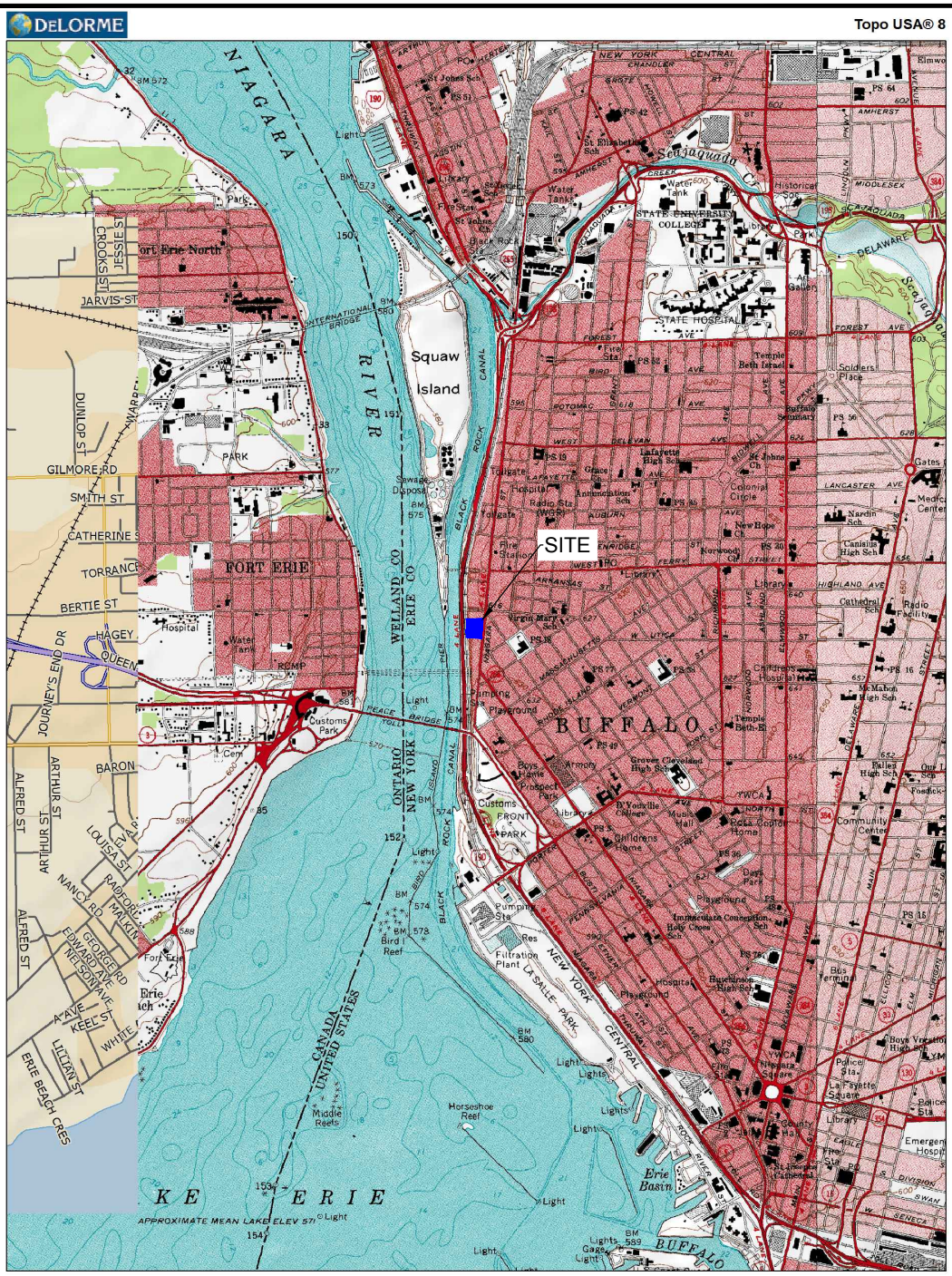
D = Dilution required due to high concentration of target analyte above the laboratory reporting limit.
ND = Parameter not detected above laboratory detection limit.
"--" = Sample not analyzed for parameter or no GWQS available for the parameter.
J = Estimated Value - Below calibration range
NJ = Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

BOLD = Result exceeds GWQS.

FIGURES

F:\CAD\TurnKey\Ellicott Development\1050-1088 Niagara St\SMP\Figure 1; Site Location and Vicinity Map.dwg

FIGURE 1



BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TURNKEY ENVIRONMENTAL RESTORATION, LLC

2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

PROJECT NO.: 0136-013-005

DATE: JULY 2017

DRAFTED BY: KRR/CCB

SITE LOCATION AND VICINITY MAP

SITE MANAGEMENT PLAN

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

PREPARED FOR

9271 GROUP, LLC

DISCLAIMER: ***PROPERTY OF BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC. & TURNKEY ENVIRONMENTAL RESTORATION, LLC*** *IMPORTANT: THIS DRAWING PRINT IS LOANED FOR MUTUAL ASSISTANCE AND AS SUCH IS SUBJECT TO RECALL AT ANY TIME. INFORMATION CONTAINED HEREON IS NOT TO BE DISCLOSED OR REPRODUCED IN ANY FORM FOR THE BENEFIT OF PARTIES OTHER THAN NECESSARY SUBCONTRACTORS & SUPPLIERS WITHOUT THE WRITTEN CONSENT OF BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC & TURNKEY ENVIRONMENTAL RESTORATION, LLC.*

DATE: JULY 2017
DRAFTED BY: CCB



FIGURE 2

SITE PLAN (AERIAL)

SITE MANAGEMENT PLAN

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

PREPARED FOR
9271 GROUP, LLC

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

JOB NO.: 0136-013-005

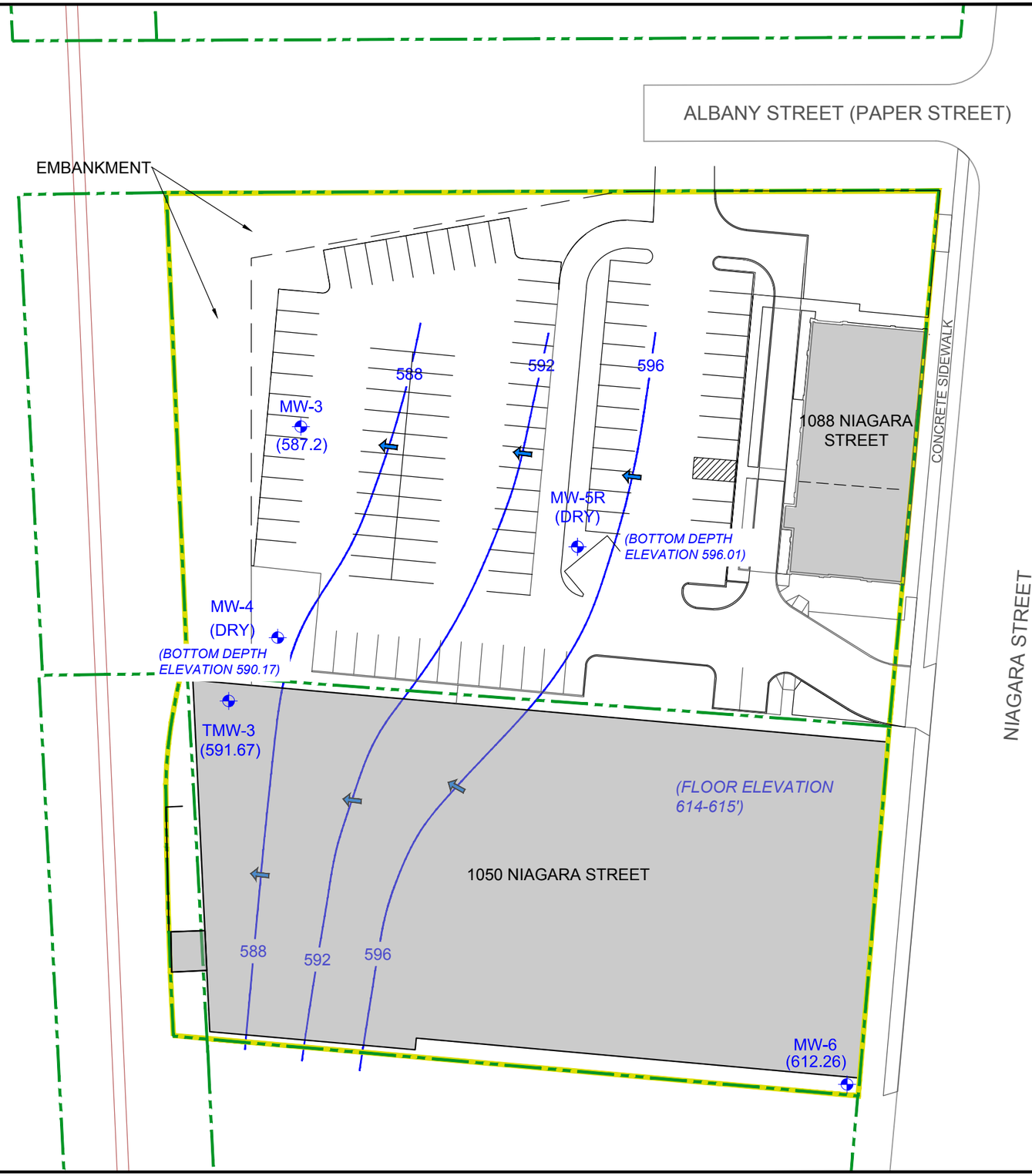
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F:\CAD\TurnKey\Ellicott Development\1050-1088 Niagara St\SMP\Figure 3; Groundwater Isopotential Map REV.dwg

LEGEND:

- BCP SITE BOUNDARY
- PARCEL BOUNDARY
- FENCE
- RAILROAD
- BUILDINGS ONSITE
- MW-1 — RI MONITORING WELL LOCATION
- 596 — GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- GROUNDWATER ELEVATION CONTOUR

NOTE: ELEVATION PER DECEMBER 21, 2017



N

50' 0' 50' 100'

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

DATE: DECEMBER 2017
DRAFTED BY: CCB

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

JOB NO.: 0136-013-005

GROUNDWATER ISOPOTENTIAL MAP

SITE MANAGEMENT PLAN
1050-1088 NIAGARA STREET SITE
BUFFALO, NEW YORK
PREPARED FOR
9271 GROUP, LLC

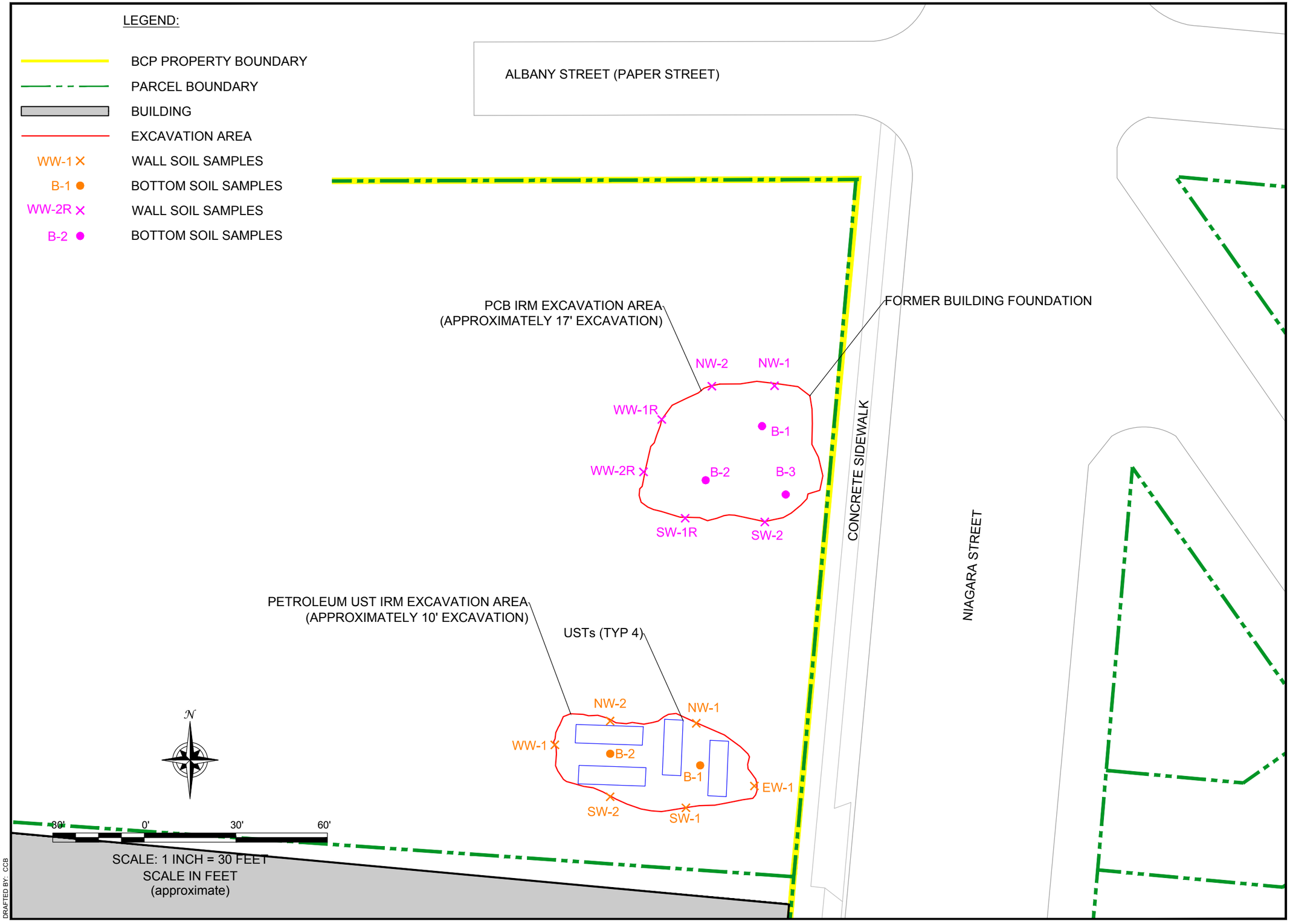
FIGURE 3

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F:\CAD\TurnKey\Ellicott Development\1050-1088 Niagara St\SMP\Figure 4- Petroleum and PCB IRM Excavation Areas.dwg, 12/20/2017 1:17:49 PM, DWG To PDF.pc3

LEGEND:

- BCP PROPERTY BOUNDARY
- PARCEL BOUNDARY
- BUILDING
- EXCAVATION AREA
- WW-1 ✕ WALL SOIL SAMPLES
- B-1 ● BOTTOM SOIL SAMPLES
- WW-2R ✕ WALL SOIL SAMPLES
- B-2 ● BOTTOM SOIL SAMPLES



DATE: DECEMBER 2017
DRAFTED BY: CCB

PETROLEUM AND PCB IRM EXCAVATION AREAS

SITE MANAGEMENT PLAN
1050 - 1088 NIAGARA STREET SITE
BCP SITE NO. C915277
BUFFALO, NEW YORK
PREPARED FOR
9271 GROUP, LLC

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

JOB NO.: 0136-013-005

FIGURE 4

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F:\CAD\TurnKey\Ellicott Development\1050-1088 Niagara St\SMP\Figure 5; Western Loading Dock IRM Excavation Areas REV.dwg, 12/21/2017 12:36:55 PM, DWG To PDF.pc3

LEGEND:

- BCP PROPERTY BOUNDARY
- PARCEL BOUNDARY
- BUILDING
- RAILROAD
- IRM SOIL/FILL REMOVED TO EXISTING CONCRETE SURFACE
- IRM SOIL/FILL EXCAVATION
- G-1× POST-EXCAVATION GRAB SAMPLE LOCATION

NOTE:
COMPOSITE B-1: G-1 & G-2
COMPOSITE B-2: G-3 & G-4

EMBANKMENT

CONCRETE SIDEWALK

1050 NIAGARA STREET

NIAGARA STREET

NEW YORK STATE THRUWAY

190

G-1
G-2
G-3 G-4

40' 0' 40' 80'

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

N

DATE: DECEMBER 2017
DRAFTED BY: CCB

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

JOB NO.: 0136-013-005

WESTERN LOADING DOCK IRM EXCAVATION AREAS

SITE MANAGEMENT PLAN
1050-1088 NIAGARA STREET SITE
BCP SITE NO. C915277
BUFFALO, NEW YORK
PREPARED FOR
9271 GROUP, LLC

FIGURE 5

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F:\CAD\TurnKey\Ellicott Development\1050-1088 Niagara St\SMP\Figure 6; Remaining Soil-Fill Above USCOs REV.dwg, 12/21/2017 2:10:42 PM, DWG To PDF.pc3

LEGEND:

- BCP SITE BOUNDARY
- PARCEL BOUNDARY
- BUILDING
- SB-1 ● SAMPLE LOCATIONS
- SB-1 ● REMAINING SAMPLE LOCATIONS ABOVE USCOs
- IRM EXCAVATION AREAS

ALBANY STREET (PAPER STREET)

CONCRETE SIDEWALK

NIAGARA STREET

NEW YORK STATE THRUWAY

EMBANKMENT

190

TP-1 TP-2 TP-3 TP-6 TP-7 TP-8 TP-9 TP-10 TP-11 TP-12 TP-13 TP-14

NS-1 NS-2 NS-3

SB-1 SB-2 SB-5 SB-6 SB-7 SB-8 SB-9 SB-10 SB-11 SB-12 SB-13 SB-14/TMW-2 SB-15/TMW-3 SB-16 SB-18 SB-19

MW-3 MW-4 SS-4/SS-4R MW-5 MW-5R SS-5/SS-5R SS-6/SS-6R MW-6

NW-1 NW-1R NW-2 NW-2R SW-1 SW-1R SW-2

B-1 B-2 B-3

G-1 G-2 G-3 G-4

N

50' 0' 50' 100'

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

DATE: DECEMBER 2017
DRAFTED BY: CCB

REMAINING SOIL/FILL ABOVE USCOS

SITE MANAGEMENT PLAN
1050-1088 NIAGARA STREET SITE
BCP SITE NO. C915277
BUFFALO, NEW YORK
PREPARED FOR
9271 GROUP, LLC

FIGURE 6

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

JOB NO.: 0136-013-005

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F:\CAD\TurnKey\Ellicott Development\1050-1088 Niagara St\SMP\Figure 7; Remaining GW Above GWQS.dwg, 12/21/2017 12:53:26 PM, DWG To PDF.pc3

LEGEND:

- BCP SITE BOUNDARY
- PARCEL BOUNDARY
- BUILDING
- REMAINING GROUNDWATER LOCATIONS ABOVE GWQS
- MW-1 RI MONITORING WELL LOCATION

NOTE

- D=DILUTION REQUIRED DUE TO HIGH CONCENTRATION OF TARGET ANALYTE ABOVE THE LABORATORY REPORTING LIMIT
- J = ESTIMATED VALUES, RESULTS LESS THEN THE SAMPLE QUANTITATION LIMIT BUT GRATER THEN ZERO
- VALUES PER NYSDEC TOGS 1.1.1 CLASS GA GROUNDWATER QUALITY STANDARDS(GWQS)

MW-5	ug/L	GWQS
Benzene	110	1
Isopropylbenzene	7.1	5
n-Proplybenzene	6.7	5
Total VOCs	429.7	--
Total TICs (VOCs)	751	--

MW-3	ug/L	GWQS
Benzene	7.9 D	1
Isopropylbenzene	36 D	5
Total VOCs	283.9	--
Total TICs (VOCs)	931	--

MW-4	ug/L	GWQS
Benzene	66 D	1
Isopropylbenzene	9 D	5
Total VOCs	130.35	--
Total TICs (VOCs)	98.3	--

TMW-3	ug/L	GWQS
Isopropylbenzene	9.8 JD	5
n-Proplybenzene	13 JD	5
Total VOCs	31.3	--
Total TICs (VOCs)	149	--

190

ALBANY STREET (PAPER STREE

CONCRETE SIDEWALK

EMBANKMENT

STATE THRUWAY

MW-3

MW-5R

MW-5

MW-4

TMW-3

MW-6

N

50' 0' 50' 100'

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

DATE: JULY 2017
DRAFTED BY: CCB

REMAINING GROUNDWATER ABOVE GWQS

SITE MANAGEMENT PLAN
1050-1088 NIAGARA STREET SITE
BUFFALO, NEW YORK
PREPARED FOR
9271 GROUP, LLC

FIGURE 7

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

JOB NO.: 0136-013-005

DISCLAIMER: *PROPERTY OF BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC. & TURNKEY ENVIRONMENTAL RESTORATION, LLC IMPORTANT: THIS DRAWING PRINT IS LOANED FOR MUTUAL ASSISTANCE AND AS SUCH IS SUBJECT TO RECALL AT ANY TIME. INFORMATION CONTAINED HEREON IS NOT TO BE DISCLOSED OR REPRODUCED IN ANY FORM FOR THE BENEFIT OF PARTIES OTHER THAN NECESSARY SUBCONTRACTORS & SUPPLIERS WITHOUT THE WRITTEN CONSENT OF BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC & TURNKEY ENVIRONMENTAL RESTORATION, LLC.*

F:\CAD\TurnKey\Ellicott Development\1050-1088 Niagara St\FER\Figure 7; Site Wide Cover System Detail.dwg, 12/20/2017 6:12:56 PM, DWG To PDF.pc3



LEGEND:

- BCP PROPERTY BOUNDARY
- PARCEL BOUNDARY
- FENCE
- RAILROAD
- BUILDING
- SOIL COVER AREA
- STONE COVER AREA
- CONCRETE AREA
- EXTERIOR CONCRETE SLAB ON GRADE AREA

NOTES:

1. TYPICAL TRANSITION FROM SOIL COVER TO HARDSCAPE - SEE BENCHMARK DETAILS - DETAIL 1
2. TYPICAL SOIL COVER TRANSITION TO BCP PROPERTY BOUNDARY - SEE BENCHMARK DETAILS - DETAIL 2
3. TYPICAL SOIL COVER - SEE BENCHMARK DETAILS - DETAIL 3
4. TYPICAL STONE COVER - SEE BENCHMARK DETAILS - DETAIL 4
5. TYPICAL SLOPE SOIL COVER TRANSITION TO BCP PROPERTY BOUNDARY - SEE BENCHMARK DETAILS - DETAIL 5
6. TYPICAL CONCRETE - CARMINA WOODS MORRIS C-101 - DETAIL 2
7. TYPICAL STANDARD DUTY ASPHALT - CARMINA WOODS MORRIS C-101 - DETAIL 4A
8. TYPICAL EXTERIOR CONCRETE SLAB ON GRADE - CARMINA WOODS MORRIS C-101 - DETAIL 4C
9. SURFACE CONCRETE REPAIR (THICKNESS NOTED) UNDERLAIN BY EXISTING CONCRETE - SEE BENCHMARK DETAILS - DETAIL 6

DATE: DECEMBER 2017
DRAFTED BY: CCB

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

JOB NO.: 0136-013-005

COVER SYETM LAYOUT

SITE MANAGEMENT PLAN
1050-1088 NIAGARA STREET
BCP SITE NO. C915277
BUFFALO, NEW YORK
PREPARED FOR
9271 GROUP, LLC

FIGURE 8

DISCLAIMER:
PROPERTY OF BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC. IMPORTANT: THIS DRAWING PRINT IS LOANED FOR MUTUAL ASSISTANCE AND AS SUCH IS SUBJECT TO RECALL AT ANY TIME. INFORMATION CONTAINED HEREON IS NOT TO BE DISCLOSED OR REPRODUCED IN ANY FORM FOR THE BENEFIT OF PARTIES OTHER THAN NECESSARY SUBCONTRACTORS & SUPPLIERS WITHOUT THE WRITTEN CONSENT OF BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC.

APPENDIX A

ENVIRONMENTAL EASEMENT

PEGGY A. LAGREE, ACTING ERIE COUNTY CLERK
REF:

DATE:10/25/2017
TIME:12:39:06 PM
RECEIPT: 17187582 - DUPLICATE -

PARALEGAL SERVICES OF BUFFALO
ACCOUNT #: 9273

DUPLICATE RECEIPT

ITEM - 01 785
RECD: 10/25/2017 12:40:44 PM
FILE: 2017216294 BK/PG D 11320/6332
Deed Sequence: TT2017006640
9271 GROUP LLC
PEOPLE OF THE STATE OF NEW YORK (THE)

Recording Fees	90.00
TP584	10.00

Subtotal 100.00

TOTAL DUE	$100.00
PAID TOTAL	$100.00
PAID ESCROW	$100.00

REC BY: David RB
COUNTY RECORDER

D11820 6332

FILED
OCT 20 2017
ERIE COUNTY
CLERK'S OFFICE

ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36 OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

THIS INDENTURE made this 11th day of October, 2017, between Owner(s) 9271 Group, LLC, having an office at 295 Main Street, Suite 210, Buffalo, NY 14203, County of Erie, State of New York (the "Grantor"), and The People of the State of New York (the "Grantee."), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

WHEREAS, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

WHEREAS, Grantor, is the owner of real property located at the address of 1050, 1054 and 1088 Niagara Street in the City of Buffalo, County of Erie and State of New York, known and designated on the tax map of the County Clerk of Erie as tax map parcel numbers: Section 99.40 Block 6 Lot 2, Section 99.49 Block 6 Lot 2, and Section 99.41 Block 1 Lot 15, respectively, being the same as that property conveyed to Grantor by deed dated March 10, 2008 and recorded in the Erie County Clerk's Office in Liber 11143 and Page 1918. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately 2.7 +/- acres, and is hereinafter more fully described in the Land Title Survey dated February 18, 2015 prepared by KHEOPS Architecture, Engineering & Survey, DPC, which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of public health and the environment and to achieve the requirements for remediation

established for the Controlled Property until such time as this Environmental Easement is extinguished pursuant to ECL Article 71, Title 36; and

NOW THEREFORE, in consideration of the mutual covenants contained herein and the terms and conditions of Brownfield Cleanup Agreement Index Number: C915277-09-13, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement")

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements listed in the Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property, run with the land, are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property.

A. (1) The Controlled Property may be used for:

Restricted Residential as described in 6 NYCRR Part 375-1.8(g)(2)(ii), Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv)

(2) All Engineering Controls must be operated and maintained as specified in the Site Management Plan (SMP);

(3) All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP;

(4) The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Erie County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department;

(5) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;

(6) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

(7) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

(8) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;

(9) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP;

(10) Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this Environmental Easement.

B. The Controlled Property shall not be used for Residential purposes as defined in 6NYCRR 375-1.8(g)(2)(i), and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, New York 12233
Phone: (518) 402-9553

D. Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

E. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation

pursuant to Title 36 of Article 71 of the Environmental Conservation Law.

F. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

G. Grantor covenants and agrees that it shall, at such time as NYSDEC may require, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

(1) the inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3).

(2) the institutional controls and/or engineering controls employed at such site:

(i) are in-place;

(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved by the NYSDEC and that all controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such control to protect the public health and environment;

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

(4) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;

(5) the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) to the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and

(7) the information presented is accurate and complete.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to:

Site Number: C915277
Office of General Counsel
NYSDEC
625 Broadway
Albany New York 12233-5500

With a copy to:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, NY 12233

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail

and return receipt requested. The Parties may provide for other means of receiving and communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

Remainder of Page Intentionally Left Blank

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

9271 Group, LLC:

By: _____

Print Name: WILLIAM A. PALADINO

Title: MANAGER Date: 5/1/15

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF ERIE)

On the 1ST day of MAY, in the year 20 15, before me, the undersigned, personally appeared WILLIAM A. PALADINO personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

_____
Notary Public - State of New York

KATHLEEN A. LINHARDT
Notary Public, State of New York
Qualified in Erie County
My Commission Expires March 25, 2018

THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting By and Through the Department of Environmental Conservation as Designee of the Commissioner,

By: _____
Robert W. Schick, Director
Division of Environmental Remediation

Grantee's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF ALBANY)

On the 11th day of October, in the year 2017, before me, the undersigned, personally appeared Robert W. Schick, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public - State of New York

David J. Chiusano
Notary Public, State of New York
No. 01CH5032146
Qualified in Schenectady County
Commission Expires August 22, 2018

SCHEDULE "A" PROPERTY DESCRIPTION

ALL THAT TRACT OR PARCEL OF LAND situate in the City of Buffalo, County of Erie and State of New York, being part of Lot Nos. 1, 2, 3, 4 and 5 of the Stevens Survey, described as follows:

BEGINNING at the intersection of the west line of Niagara Street with the south line of Albany Street (66 feet wide); thence southerly along the west line of Niagara Street a distance of 391.72 feet to the southerly line of parcel "B" in Liber 11143 of Deeds at Page 1918; thence westerly at right angles to the westerly line of said Niagara Street a distance of 296.03 feet to the easterly right of way of lands now or formerly of the New York Central Railroad; thence northerly along said easterly right of way of the New York Central Railroad at an interior angle of 97°17'00" a distance of 86.61 feet to a point of curvature; thence northerly along a curve to the right and along said easterly right of way of the New York Central Railroad an arc distance of 70.21 feet, said curve having a radius of 256.20 feet, a chord length of 69.99 feet said chord forming an interior angle of 172°08'59"; thence easterly at an interior angle of 91°19'32" with said chord a distance of 3.55 feet and along said right of way of the New York Central Railroad; thence northerly along said easterly right of way of the New York Central Railroad a distance of 207.05 feet an interior angle of 277°05'21" to the southerly right of way of Albany Street (66' wide); thence easterly along the southerly right of way of Albany Street a distance of 332.45 feet at an interior angle of 87°26'45" to the point or place of beginning; containing 2.70 acres of land more or less.

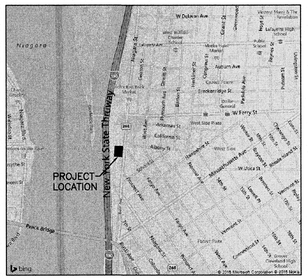
30 0 15 30 60 120 FT.

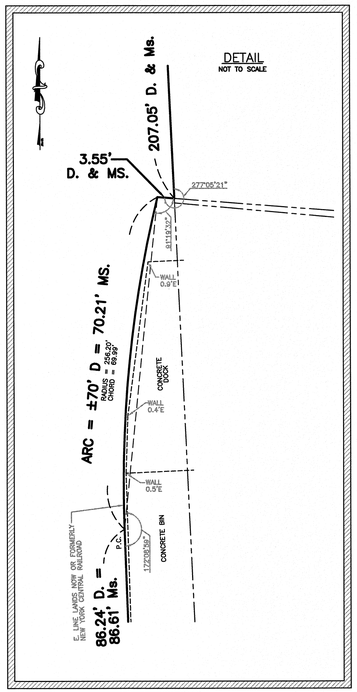
SCALE: 1" = 30'

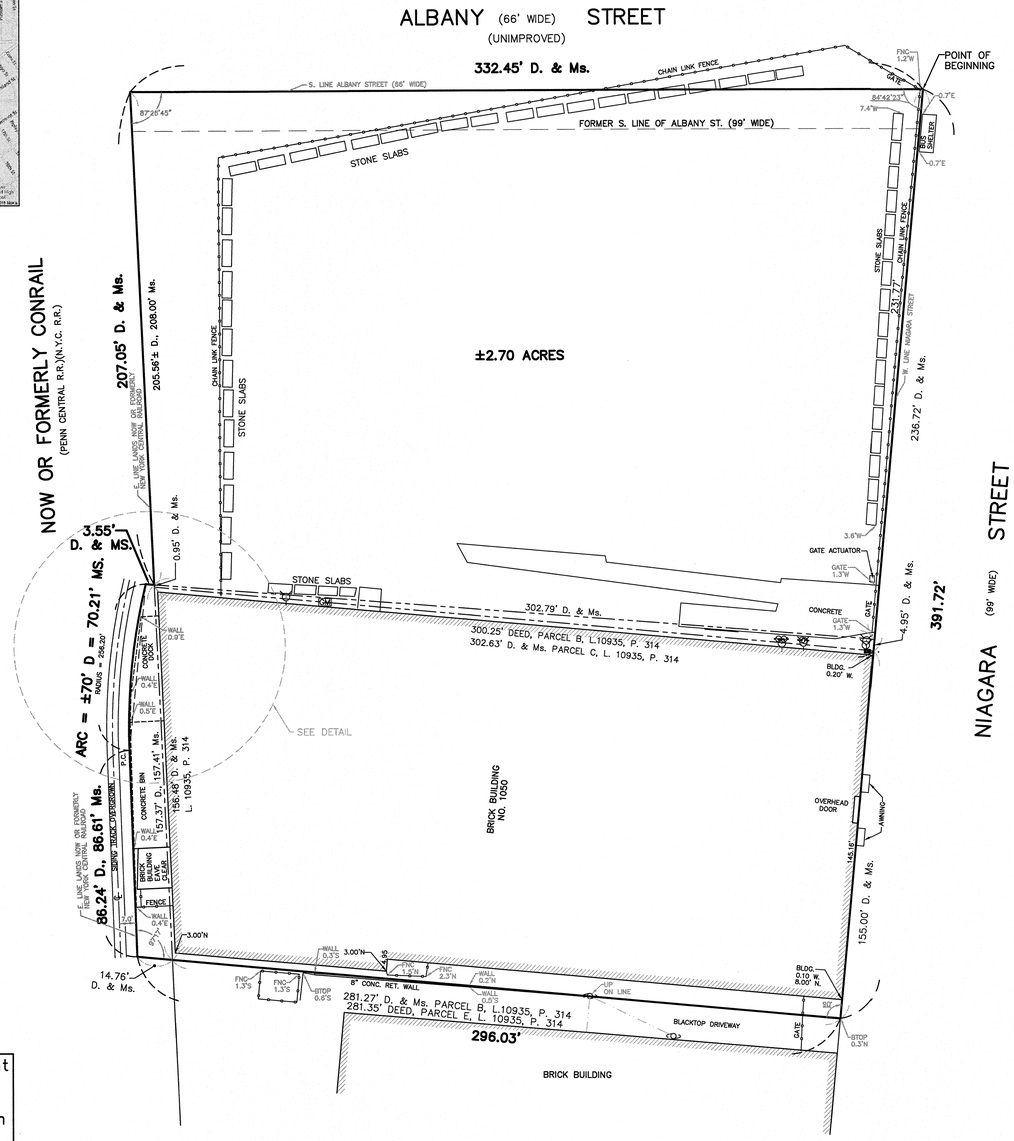
LEGEND

- ◇ = BOLLARD
- EM = ELECTRIC METER
- GM = GAS METER
- = FIRE HYDRANT
- = POWER POLE
- = WATER VALVE

LOCATION MAP







This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the New York Environmental Conservation Law.

THE ENGINEERING AND INSTITUTIONAL CONTROL for the Easement are set forth in more detail in the Site Management Plan ("SMP"). A copy of the SMP must be obtained by any party with an interest in the property. The SMP may be obtained from the New York State Department of Environmental Conservation Division of Environmental Remediation, Site Control Section, 625 Broadway, Albany, NY 12233 or at derweb@gw.dec.state.ny.us.

Environmental Easement Description
For 1050 – 1088 Niagara Street Site
BCP Site No. C915277

ALL THAT TRACT OR PARCEL OF LAND situate in the City of Buffalo, County of Erie and State of New York, being part of Lots Nos. 1, 2, 3, 4 and 5 of the Stevens Survey, described as follows:

BEGINNING at the intersection of the west line of Niagara Street with the south line of Albany Street (66 feet wide): thence southerly along the west line of Niagara Street a distance of 391.72 feet to the southerly line of of parcel "B" in Liber 11143 of Deeds at Page 1918: thence westerly at right angles to the westerly line of said Niagara Street a distance of 296.03 feet to the easterly right of way of lands now or formerly of The New York Central Railroad: thence northerly along said easterly right of way of the New York Central Railroad at an interior angle of 90°17'00" a distance of 86.61 feet to a point of curvature: thence northerly along a curve to the right and along said easterly right of way of The New York Central Railroad an arc distance of 70.21 feet, said curve having a radius of 256.20 feet, a chord length of 69.99 feet said chord forming an interior angle of172°08'59"; thence easterly at an interior angle of 91°19'32" with said chord a distance of 3.55 feet and along said right of way of The New York Central Railroad; thence northerly along said easterly right of way of The New York Central Railroad a distance of 207.05 feet at an interior angle of 277°05'21" to the southerly right of way of Albany Street (66' wide); thence easterly along the southerly right of way of Albany Street a distance of 332.45 feet at an interior angle of 87°26'45" to the point or place of beginning; containing 2.70 acres of land more or less

LEGAL DESCRIPTION

1050 Niagara Street – SBL: 99.49-6-2

ALL THAT TRACT OR PARCEL OF LAND situate in the City of Buffalo, County of Erie and State of New York, being part of Lots Nos. 3, 4, and 5 of the Stevens survey, described as follows:

COMMENCING at a point in the westerly line of Niagara Street, at a distance of 236.72 feet southerly from the intersection of the westerly line of Niagara Street with the southerly line of Albany Street, as a 66 foot street: running thence westerly at right angles to Niagara Street, 300.25 feet to the easterly line of lands of the New York Central and Hudson River Railroad: thence southerly along the said easterly line of New York Central and Hudson River Railroad, 154.46 feet: thence easterly on a line at right angles to Niagara Street, 281.27 feet to the westerly line of Niagara Street: thence northerly along the westerly line of Niagara Street, 155 feet to the place of beginning.

1054 Niagara Street – SBL: 99.49-6-10

ALL THAT TRACT OR PARCEL OF LAND situate in the City of Buffalo, County of Erie and State of New York, being part of Lot Nos. 3, 4 and 5 of the Stevens Survey, described as follows:

BEGINNING at a point at the northwesterly corner of land conveyed to The Sale Lithograph Co. by deed recorded in the Erie County Clerk's Office in Liber 7387 of Deeds page 693, distant 302.79 feet measured westwardly along the northerly line of the land conveyed as aforesaid from the westerly line of Niagara Street: said northerly line forms an angle of 89° 14' 26" with said westerly line of Niagara Street as measured from the south toward the west. Extending from said beginning point, the following five courses and distances: (1) Southwardly along the westerly line of the land conveyed as aforesaid to The Sale Lithograph Co., 157.37 feet to the southwesterly corner of said land; distant 281.35 feet measured westwardly along the southerly line of said land from said westerly line of Niagara Street and at right angles thereto: thence the following four courses and distances by remaining land of Penn Central Transportation Company: (2) Westwardly along the prolongation of said southerly line of the land conveyed as aforesaid to The Sale Lithograph Co., 14.76 feet to a point, distant 7 feet eastwardly at right angles from the center line of a side track of railroad of said transportation company, following two courses and distances, being parallel with said center line of a side track: (3) Northwardly forming an interior angle of 97° 17' with the last described course, 86.24 feet to a point of curve; (4) Northwardly on a curve to the right having a radius of 256.20 feet, an arc distance of 70 feet more or less to a point in the prolongation westwardly of said northerly line of the land conveyed as aforesaid to The Sale Lithograph Co. and (5) Eastwardly along said last mentioned prolongated line, 3.55 feet to the place of beginning.

1088 Niagara Street – SBL: 99.41-1-15

ALL THAT TRACT OR PARCEL OF LAND, situate in the City of Buffalo, County of Erie and State of New York being part of Lots Nos. 1, 2 and 3 of the Stevens Survey, described as follows:

BEGINNING at the intersection of the west line of Niagara Street with the south line of Albany Street (66 feet wide); thence southerly along the west line of Niagara Street, 231.77 feet to the northeast corner of land conveyed by Hygrade Petroleum to John McWilliams Reed by deed recorded in the Erie County Clerk's Office in Liber 2344 of Deeds page 437; thence westerly along the north line of land so conveyed and making an angle of 89° 14' 26" in the southwest quadrant with the west line of Niagara Street, 302.79 feet to the east right of way line of the New York Central Railroad at the northwest corner of land so conveyed to John McWilliams Reed; thence northerly along the east right of way line of New York Central Railroad, 207.05 feet to its intersection with the south line of Albany Street (66 feet wide); thence easterly along the south line of Albany Street, 332.45 feet to the point or place of beginning.

CERTIFICATION

TO:

We hereby certify that this Survey was prepared in accordance with the current standards adopted by the New York State Professional Land Surveyors Association and the Bar Association of Erie County, New York.

DATED: March 4, 2015

DOUGLAS R. HAGER
PROFESSIONAL LAND SURVEYOR N.Y.S.P.L.S. NO. 050204

BY	DESCRIPTION	DATE

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KHEOPS ARCHITECTURE, ENGINEERING & SURVEY, DPC
ALL RIGHTS RESERVED
UNAUTHORIZED DUPLICATION IS A VIOLATION OF APPLICABLE LAWS
NOTICE:
UNAUTHORIZED ALTERATION OR ADDITION TO ANY SURVEY, DRAWING, REPORT, SPECIFICATION OR DESIGN DOCUMENT IS A VIOLATION OF SECTION 7209 OF THE NEW YORK STATE EDUCATION LAW.
THESE PLANS ARE NOT SUITABLE FOR MACHINE GUIDANCE USE OR PURPOSES

STATE OF NEW YORK DOUGLAS RAYMOND HAGER No. 050204 LICENSED LAND SURVEYOR

Field Date: 2/16/15
Office Date: Jan. 1, 2002
Job No. 15N139
Book: 391
Page: 60
Map: 59710-DEC
File Name: 1088 DEC EASEMENT
Designed by: JMP
Drawn by: JMP
Checked by: DRH
Dwg Scale: Horiz: 1"=30' Vert: N/A

KHEOPS
ARCHITECTURE, ENGINEERING & SURVEY, DPC
300 Pearl Street, Suite 100
Buffalo, New York 14202
P. 716.848.8739
www.kheopsdpc.com

NEW YORK STATE D.E.C. EASEMENT MAP
1050, 1054 & 1088 NIAGRA STREET
CITY OF BUFALO, ERIE COUNTY, NEW YORK STATE
PART OF LOTS 1-5 OF THE STEVENS SURVEY
SBL: 99.49-6-2, 99.49-6-10, 99.41-1-15

MAP NUMBER:
59710-DEC
Sheet 1 of 1

File: N:\2015\15N139 - 1088 NIAGARA DEC EASEMENT MAP\4 - Technical Data\CADD Drawings\1088 NIAGARA DEC EASEMENT.dwg, Last saved: 3/4/2015, Plot Date: 3/4/2015, By: PIETROWSKI JASON M.

APPENDIX B

EXCAVATION WORK PLAN

BROWNFIELD CLEANUP PROGRAM
SITE MANAGEMENT PLAN

APPENDIX B
EXCAVATION WORK PLAN

1050-1088 NIAGARA STREET SITE
NYSDEC SITE NUMBER: C915277
BUFFALO, NEW YORK

August 2017 0136-013-005

Prepared for:

9271 Group, LLC
295 Main Street, Suite 210
Buffalo, New York

Prepared By:

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

In Association With:

TurnKey Environmental Restoration, LLC
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(716)856-0635

SITE MANAGEMENT PLAN
APPENDIX B: EXCAVATION PLAN
1050-1088 NIAGARA STREET SITE

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B-1: NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination, the site owner or their representative will notify the NYSDEC. Table 1 includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information.

Table 1: Notifications*

Name	Contact Information
NYSDEC Project Manager Mr. Eugene Melnyk, P.E.	716-851-7220 Eugene.melnyk@dec.ny.gov
NYSDEC Regional HW Engineer Mr. Chad Staniszewski, P.E.	716-851-7220 Chad.staniszewski@dec.ny.gov
NYSDEC Site Control Ms. Kelly Lewandowski, P.E.	518-402-9543 Kelly.lewandowski@dec.ny.gov

* Note: Notifications are subject to change and will be updated as necessary.

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent of excavation, plans/drawings for site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated and any work that may impact an engineering control;
- A summary of environmental conditions anticipated to be encountered in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work;
- A summary of the applicable components of this EWP;
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120;
- A copy of the contractor's health and safety plan (HASP), in electronic format, if it differs from the HASP provided in Appendix F of this SMP;
- Identification of disposal facilities for potential waste streams; and

- Identification of sources of any anticipated backfill, along with all required chemical testing results.

B-2: SOIL SCREENING METHODS

Visual, olfactory and instrument-based (e.g. photoionization detector) soil screening will be performed by a qualified environmental professional during all excavations into known or potentially contaminated material (remaining contamination). Soil screening will be performed when invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the COC.

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal and material that requires testing to determine if the material can be reused on-site as soil beneath a cover or if the material can be used as cover soil. Further discussion of off-site disposal of materials and on-site reuse is provided below.

B-3: SOIL STAGING METHODS

Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters and other discharge points.

Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by the NYSDEC.

B-4: MATERIALS EXCAVATION AND LOAD-OUT

A qualified environmental professional or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material.

The owner of the property and remedial party (if applicable) and its contractors are responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the site.

Loaded vehicles leaving the site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).

A truck wash will be operated on-site, as appropriate. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the site until the activities performed under this section are complete Truck wash waters will be collected and disposed of off-site in an appropriate manner.

Locations where vehicles enter or exit the site shall be inspected daily for evidence of off-site soil tracking.

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the site are clean of dirt and other materials derived from the site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials.

B-5: MATERIALS TRANSPORT OFF-SITE

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

Truck transport routes shall be selected to involve the shortest commute through residential neighborhoods as feasible. All trucks loaded with site materials will exit the vicinity of the site using only these approved truck routes. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport.

Trucks will be prohibited from stopping and idling in the neighborhood outside the project site.

Egress points for truck and equipment transport from the site will be kept clean of dirt and other materials during site remediation and development.

Queuing of trucks will be performed on-site in order to minimize off-site disturbance. Off-site queuing will be prohibited.

B-6: MATERIALS DISPOSAL OFF-SITE

All material excavated and removed from the site will be treated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of material from this site is proposed for unregulated off-site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. Unregulated off-site management of materials from this site will not occur without formal NYSDEC approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C/D recycling facility, etc. Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet Unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

B-7: MATERIALS REUSE ON-SITE

'Reuse on-site' means reuse on-site of material that originates at the site and which does not leave the Site during the excavation. The criteria under which soil/fill originating on-Site may be used on-Site are presented below.

- **Excavated, Non-Impacted On-Site Soil/Fill:** Non-impacted soil/fill (i.e., soil/fill that does not exhibit visible or olfactory evidence of contamination, and is not grossly contaminated (as described in Part 375), and does not exhibit PID readings

that exceed 10 parts per million (ppm) that is excavated from the Site may be used on-Site as backfill beneath the cover system without special handling. The qualified environmental professional will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material does not remain on-Site.

- **Excavated, Potentially Impacted On-Site Soil/Fill:** Potentially impacted soil/fill (i.e., soils that exhibit field visual and/or olfactory indications of contamination), or with elevated PID readings (above 10 ppm) may not be used on-Site unless tested and determined to meet the chemical criteria for Restricted Residential Use SCOs per 6NYCRR Part 375. Potentially impacted material will be segregated, as described above, and sampled to determine acceptance for reuse. The material reuse analysis will be discussed with the Department, and may include those constituents identified in 6NYCRR Part 375 for VOCs, SVOCs, metals, PCBs, pesticides and herbicides, in accordance with applicable USEPA SW846 analytical methodology.

The analytical results will be compared to NYSDEC's current Restricted Residential Use SCOs. If concentrations are below RRSCOs, the soil/fill can be reused on-Site. If the concentrations are elevated above RRSCOs, the results shall be shared with the NYSDEC and approval obtained prior to their specified reuse on-Site. It should be noted the NYSDEC may require highly-impacted materials to be transported off-Site and disposed of at a permitted landfill facility in accordance with all applicable local, state, and federal regulations. Staging and stockpiling management of materials should be conducted as described in the sections above.

The qualified environmental professional will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material does not remain on-site. Contaminated on-site material, including historic fill and contaminated soil, that is acceptable for reuse on-site will be placed below the demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines. No grossly-impacted materials shall be reused onsite; such materials must be disposed of offsite in accordance with applicable local, state, and federal regulations.

Any demolition material proposed for reuse on-site will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-site will not be performed without prior NYSDEC approval. Organic matter (wood,

roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the site will not be reused on-site.

B-8: FLUIDS MANAGEMENT

All liquids to be removed from the site, including but not limited to, excavation dewatering, decontamination waters and groundwater monitoring well purge and development waters, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge, and development fluids will not be recharged back to the land surface or subsurface of the site, and will be managed off-site, unless prior approval is obtained from NYSDEC.

Discharge of water generated during large-scale construction activities to surface waters (i.e. a local pond, stream, or river) will be performed under a SPDES permit.

B-9: COVER SYSTEM RESTORATION

After the completion of soil removal and any other invasive activities the cover system will be restored in a manner that complies with the decision document. The existing cover system is comprised of a minimum of 24 inches of clean soil, asphalt pavement, concrete covered sidewalks and concrete building. The demarcation layer, consisting of orange snow fencing material or black geotextile will be placed to provide a visual reference to the top of the remaining contamination zone, the zone that requires adherence to special conditions for disturbance of remaining contaminated soils defined in this SMP. If the type of cover system changes from that which exists prior to the excavation (i.e., a soil cover is replaced by asphalt), this will constitute a modification of the cover element of the remedy and the upper surface of the remaining contamination. A figure showing the modified surface will be included in the subsequent Periodic Review Report and in an updated SMP.

B-10: BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP prior to receipt at the site. A Request to Import/Reuse Fill or Soil form, which can be found at **http://www.dec.ny.gov/regulations/67386.html**, will be prepared and submitted to the NYSDEC project manager allowing a minimum of 5 business days for review.

Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the site.

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d).

The criteria under which off-site material may be used as backfill are presented below.

- **Off-Site Soil/Fill:** Off-Site soil/fill may be used as backfill provided that it originates from known sources having no evidence of disposal or releases of hazardous substances; hazardous, toxic or radioactive wastes; or petroleum, and is tested and meet all of the criteria in accordance with Appendix 5 of DER-10. In addition, no off-Site materials meeting the definition of a solid waste as defined in 6 NYCRR, Part 360-1.2(a) shall be used as backfill.
- **Other Off-Site Material:** Material other than soil may be imported as backfill, without chemical testing, provided it contains less than 10% (by weight) material that would pass through a size 80 sieve: 1) Rock or stone, consisting of virgin material from a permitted mine or quarry; 2) Recycled concrete, brick, or asphalt from a NYSDEC-registered or permitted C&D debris processing facility (as specified in Section 360-16.1 of 6 NYCRR Part 360) that conforms to Section 304 of the New York State Department of Transportation Standard Specifications Construction and Materials Volume 1 (2002). As stated in Section 360-16.4(b)(2), the facility may only accept recognizable, uncontaminated, non-pulverized C&D debris or C&D debris from other authorized C&D processing facilities. According to Section 360-16.2(c), "uncontaminated" means C&D debris that is not mixed or commingled with other solid waste at the point of generation, processing, or disposal, and that is not contaminated with spills of a petroleum product, hazardous waste, or industrial waste.

Off-Site borrow soils shall be tested to assure conformance with the criteria identified above. If an off-Site soil/fill borrow source is of unknown origin or originates from a commercial or urban site, then a tiered approach based on the volume of impacted soil/fill being excavated will be used to determine the frequency of characterization sampling in accordance with DER-10, Section 5.4 and Table 5.4(3)10.

Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this site, will not be imported onto the site without prior approval by NYSDEC. Solid waste will not be imported onto the site.

Trucks entering the site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

B-11: STORMWATER POLLUTION PREVENTION

Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by the NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

B-12: EXCAVATION CONTINGENCY PLAN

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition.

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs), unless the site history and previous sampling results

provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the Periodic Review Report.

B-13: COMMUNITY AIR MONITORING PLAN

The Community Air Monitoring Plan (CAMP) will follow the guidance provided in the New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan found in Appendix 1A of NYSDEC's DER-10 *Technical Guidance for Site Investigation and Remediation*. The CAMP for this Site is included as Appendix E of this SMP. The CAMP will be implemented for all intrusive activities performed at the site. The upwind and downwind monitoring locations required in the generic CAMP will be determined based on the prevailing wind direction at the start of work. Air sampling locations will be adjusted on a daily or more frequent basis based on actual wind directions and work locations. VOC monitoring will be performed using a PID or other equipment that is capable of calculating 15-minute running average concentrations. All air monitoring equipment will be calibrated at least daily. The 15-minute average concentration will be compared to the levels specified below.

Alternatively, the upwind monitoring location may be removed, as long as the background contribution is considered to be 0.0 ppm.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

B-14: ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors off-site. Specific odor control methods to be used on a routine basis will include limiting exposed face of the excavation area, reduction in work hours and/or specific work activities (e.g. load out of material), proof rolling excavation, and application of odor control agents (e.g. spray-foam). If nuisance odors are identified at the site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work

will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the remedial party's Remediation Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-site disposal; (e) use of chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

B-15: DUST CONTROL PLAN

A dust suppression plan that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

B-16: OTHER NUISANCES

A plan for rodent control will be developed and utilized by the contractor prior to and during site clearing and site grubbing, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

APPENDIX C

RESPONSIBILITIES OF OWNER & REMEDIAL PARTY

C-1: RESPONSIBILITIES

The owner and remedial party, and the associated responsibilities for implementing the Site Management Plan ("SMP") for the 1050-1088 Niagara Street Site (the "Site"), number C915277, is:

9271 Group, LLC
295 Main Street, Suite 210
Buffalo, New York 14203

Nothing on this page shall supersede the provisions of an Environmental Easement, Consent Order, Consent Decree, agreement, or other legally binding document that affects rights and obligations relating to the site.

Future site owners and responsible parties (RPs) and their successors and assigns are required to carry out the activities set forth above.

APPENDIX D

LIST OF SITE CONTACTS

APPENDIX D – LIST OF SITE CONTACTS

Name	Phone/Email Address
Site Owner and Remedial Party: 9271 Group, LLC	716-854-0060 contactus@ellicottdevelopment.com
Qualified Environmental Professional: Benchmark Environmental Engineering & Science, PLLC	716-856-0599 admin@benchmarkturnkey.com
Remedial Party Legal Counsel: Slater Law	716-865-6760
NYSDEC Region 9 DER – Closed Sites	716-851-7220
NYSDEC Site Control Section Chief	518-402-9553
NYSDOH	518- 402-7860 bei@health.ny.gov

APPENDIX E

MONITORING WELL BORING
&
CONSTRUCTION LOGS

EMPIRE GEO SERVICES, INC.
A SUBSIDIARY OF SJB SERVICES, INC.

March 18, 2015
Project No. BE-15-038

Ellicott Development
295 Main Street, Suite 210
Buffalo, New York
14203

Attn. Mr. David M. Hall, Planning and Development Coordinator

Re: Geotechnical Engineering Report for
Proposed Building
1088 Niagara Street
Buffalo, New York

Dear Mr. Hall:

Empire Geo-Services, Inc. is pleased to submit two copies of the enclosed Geotechnical Engineering Report to Ellicott Development for the above referenced project. A pdf file copy of the report has also been e-mailed to you for your use and distribution as appropriate.

Please contact me should you have any questions or wish to discuss this report. Thank you for considering Empire for this work and we look forward to working with you on this project, through its completion.

Sincerely,

EMPIRE GEO-SERVICES, INC.

Thomas R. Seider, P.E.
Geotechnical Engineer

Enc.: Geotechnical Engineering Report (2 copies)

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Geotechnical Engineering Report
for
Proposed Building
1088 Niagara Street
Buffalo, New York

Prepared For:

Ellicott Development
295 Main Street, Suite 210
Buffalo, New York
14203

Prepared By:

Empire Geo-Services, Inc.
5167 South Park Avenue
Hamburg, New York
14075



3/18/15

Project No.: BE-15-038
March 2015

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1.00 INTRODUCTION

1.10 GENERAL

This report presents the results of a subsurface exploration program and geotechnical engineering evaluation, completed by Empire Geo-Services, Inc. (Empire), for the proposed building planned at 1088 Niagara Street, within the City of Buffalo, New York. Ellicott Development retained Empire to complete this work, which was done in general accordance with our February 19, 2015 proposal.

SJB Services, Inc. (SJB), Empire's affiliated drilling company, completed the subsurface exploration program, which consisted of nine test borings. On this basis, Empire prepared this report, which summarizes the subsurface conditions encountered, and presents geotechnical recommendations for design and construction of the proposed project.

1.20 SITE DESCRIPTION

The project site is located along the west side of Niagara Street, at its intersection with Fargo Avenue, within the City of Buffalo, New York. The approximate site location is shown on Figure 1 and has an address of 1088 Niagara Street. An existing two story masonry building is located to the south of the site, at 1050 Niagara Street.

The 1088 Niagara Street site has about 237 feet of frontage along Niagara Street, is about 300 feet deep along the south property line, and about 333 feet deep along the north property line. The site is bound by an unimproved Albany Street to the north and a Conrail railroad track to the west, beyond which is the Niagara Section of the New York State Thruway (I-190). The site is mostly open, with a few trees and brush along the perimeter. Based on the topographic survey prepared by Kheops Architecture, Engineering & Survey, DPC, some concrete pavement is located within the south portion of the site. In addition, a series of stone slabs are located along the perimeter of the site.

Based on the topographic mapping, the ground surface slopes downward towards the northwest, with surface elevations ranging from about 619 feet to 613 feet. At the west end of the site, the ground surface slopes off steeply about 20 to 30 feet, down to the adjacent railroad tracks and highway. Similarly, the unimproved Albany Street slopes downward steeply towards the west. Additional details about the current site conditions are shown on Figure 2.

1.30 PROJECT DESCRIPTION

Based on the information provided by Ellicott Development, and Studio T3 Engineering, PLLC (Structural Engineer for the project), the development will include the construction of an approximate 51 feet wide by 111 feet long, two story building, constructed along Niagara Street, at the approximate location shown on Figure 2. The ground level floor will be utilized for retail space and a restaurant. Apartments are planned for the second floor.

The building will have a structural steel frame, with a majority of the loads carried by the columns. Exterior column loads will range from about 13 kips to 35 kips. Interior column loads will range from about 30 kips to 80 kips. The ground level floor is planned as a slab-on-grade, constructed near the current site grades. Asphalt pavement parking areas are planned behind the new building, and along the south side of the site, with access to the site provided from Niagara Street and Albany Street. The west portion of the site will be developed at a later date.

2.00 SUBSURFACE EXPLORATIONS

The subsurface exploration program consisted of 9 test borings, designated as B-1 through B-9, completed by SJB between February 27th and March 4th, 2015. The test boring locations were established in the field by SJB using tape measurements referenced to existing site features. The approximate test boring locations are shown on Figure 2. Laser level survey techniques were utilized to determine the ground surface elevations at the test borings, using the rim of an underground electric manhole within Niagara Street as a benchmark. The approximate benchmark location is shown on Figure 2 and has an estimated elevation of 619.5 feet.

The test borings were completed using a Central Mine Equipment (CME) model 550X, all terrain tire mounted drill rig. Hollow stem auger drilling and split spoon sampling techniques were used to advance the test borings through the overburden soils. Split spoon samples and Standard Penetration Tests (SPTs) were taken continuously from the ground surface to a depth of at least 12 feet, and then in intervals of 5 feet or less for the remaining depth of the test borings. Within several of the test borings, split spoon soil sampling and SPTs were taken continuously throughout the full depth of the test borings. The split spoon samples and SPTs were completed in general accordance with *ASTM D1586 – "Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils"*.

Test borings B-1, B-3, B-5, B-8, and B-9 were advanced through the overburden soils to the top of apparent bedrock, as identified by auger refusal conditions, which was encountered at depths ranging from 30.8 feet to 40.0 feet. The remaining test borings were advanced to depths ranging from 10 feet to 24 feet. Following auger refusal within test borings B-3 and B-5, five feet of the bedrock was cored. The rock coring was completed in general accordance with *ASTM D 2113 – "Standard Practice for Rock core Drilling and Sampling of Rock for Site Investigation"*.

A Geologist from SJB prepared the test boring logs based on visual observations of the recovered soil and bedrock samples and a review of the driller's field notes. The soil samples were described based on a visual/manual estimation of the grain size distribution, along with characteristics such as color, relative density, consistency, moisture, etc. The recovered rock core samples were also described, including characteristics such as color, rock type, hardness, weathering, bedding thickness, core recovery and rock quality designation (RQD). The test boring logs are presented in Appendix A, along with general information and a key of terms and symbols used to prepare the logs.

3.00 LABORATORY TESTING PROGRAM

Two soil samples that visually contained organics, were tested in our geotechnical testing laboratory for organic content in accordance with *ASTM D 2974 – "Standard Test Method for Moisture, Ash, and Organic Matter of Peat and other Organic Soils"*. The laboratory test data are presented in Appendix B and are summarized in Section 4.20 of this report. This testing was completed to assist with evaluating the impacts of organics on the possible use of Geopier foundations (rammed aggregate piers) at the site.

4.00 SUBSURFACE CONDITIONS

4.10 GENERAL SOIL STRATIGRAPHY

Fill soils were encountered at the surface of each test boring, which typically extended to the top of bedrock at a depth of about 30 to 40 feet. Indigenous soils were encountered only within test borings B-6 and B-8, beginning at depths of about 4 feet and 8 feet, respectively. Limestone bedrock was encountered at elevations ranging from about 575 feet to 585 feet. A general groundwater condition appears to exist near the top of bedrock. Shallower zones of perched or trapped groundwater also appear to exist within the fill soils. The soil stratigraphy

encountered and the groundwater conditions observed are described in more detail in the following sections and on the test boring logs in Appendix A.

During the soil classification procedure completed at our office, an apparent petroleum odor was noted from several of the deeper soil samples collected from test borings B-8 and B-9, and one soil sample from test boring B-4. These observations are noted on the test boring log included in Appendix A, and are an indication of potential environmental concern. However, no analytical laboratory testing was completed to evaluate for contamination.

4.20 FILL SOILS

Fill soils were encountered at the surface of each test boring and generally extended to the top of bedrock. Exceptions include test borings B-6 and B-8, where the fill soils only extended to a depth of about 4 feet and 8 feet, respectively. The near surface fill soils (i.e. within the upper 2 to 4 feet), generally consisted of granular type materials, including a mixture of stone, gravels and sands, slag, and brick fragments.

Beneath the surficial fill soils, a zone of clay and silty clay fill soils was typically encountered, which extended to a depth of about 20 feet. The clay fill soils generally contained a limited amount of obvious fill indicators, such as brick and concrete fragments. Within test borings B-2, B-3, B-4, and B-5, a zone of granular fill soils (i.e. gravel and sands), about 2 feet to 9 feet thick, was encountered within the stratum of clay fill soils. The Standard Penetration Test (SPT) "N" values obtained within the upper 20 feet of fill typically ranged from 5 to 17, indicating the cohesive soils have a "medium", "stiff", and "very stiff" consistency, while the non-cohesive fill soils have a "loose" to "firm" relative density.

Beneath the zone of clay fill soils, at a depth of about 20 feet, the remaining fill soils consisted predominately of gravels and sands with varying amounts of brick and concrete fragments. Several of the collected samples consisted mostly of brick fragments or crushed stone. The SPT "N" values obtained within the deeper, granular fill soils, ranged from 4 to "refusal" (i.e. more than 50 blows required to advance the sample spoon six inches or less), indicating the deeper, granular type fill soils, have a "loose" to "very compact" relative density. However, the higher SPT "N" values and the "refusal" conditions could have resulted from encountering larger pieces of concrete fill, bricks, or other hard fill conditions, and may not be indicative of the actual relative density of the fill matrix.

In all cases, the variable SPT "N" values obtained within the fill soils are an indication that the fill soils were installed, at least partially, in an uncontrolled manner. The nature and consistency / relative density of the fill soils should be expected to vary away from and between the test boring locations.

Organics were observed within several of the collected soil samples, at various locations and depths, and are noted on the test boring logs in Appendix A. Two of these samples were tested for organic content. The 4 to 6 feet deep sample from test boring B-1 had an organic content of 2.6 percent. The 20 to 22 feet deep sample from test boring B-3 has an organic content of 5.0 percent.

4.30 INDIGENOUS SOILS

Beneath the fill layer at test borings B-6 and B-8, indigenous silty clay soils were encountered for the remaining depth of the test borings. Test boring B-6 was terminated at a depth of 10 feet. Test boring B-8 was advanced to the top of bedrock at a depth of 30.8 feet. The silty clay soils are classified as a CL group soil using the Unified Soil Classification System (USCS). The SPT "N" values obtained within the indigenous soils ranged from 8 to 27, indicating the indigenous clay soils have a "stiff" to "very stiff" consistency.

4.40 BEDROCK

Test borings B-1, B-3, B-5, B-8, and B-9 were advanced through the overburden soils, to the top of apparent bedrock, as identified by auger refusal conditions. Following auger refusal within test borings B-3 and B-5, five feet of the bedrock was cored. The depths where auger refusal (AR), or rock coring (C) was completed, and the corresponding elevations are summarized in the following table.

Approximate Depth and Elevation of Top of Bedrock

Test Boring	Approximate Ground Surface Elevation (feet)	Depth/Elevation of Top of Bedrock (feet)
B-1	617.6	40.0 / 577.6 (AR)
B-3	616.3	40.0 / 576.3 (C)
B-5	615.8	39.0 / 576.8 (C)
B-8	614.1	30.0 / 583.3 (AR)
B-9	613.7	39.5 / 574.2 (AR)

The bedrock recovered from test borings B-3 and B-5 consisted of gray, medium hard, sound, thinly bedded to bedded, Limestone, with occasional chert nodules. The bedrock core recoveries were 80% and 83%. The rock quality designation (RQD) values were 60% and 68%, indicating the recovered rock core has a "fair" rock mass quality.

4.50 GROUNDWATER CONDITIONS

Based on the information summarized below, a general groundwater condition is expected near the top of bedrock. Some shallower zones of perched or trapped groundwater also appear to exist within some of the fill soils. Installation of groundwater observation wells would be necessary to better define the groundwater conditions at the site.

Water level measurements were made at the completion of overburden drilling and rock coring. Within the shallower test borings (i.e. B-2, B-4, B-6, and B-7), which were completed to depths of 10 feet to 24 feet, no free standing water was encountered at the completion of the test borings. Test boring B-1 was advanced to a depth of 30 feet on February 27th, 2015. The augers were left in the ground over the weekend. On Monday morning, no free standing water had accumulated within the test boring.

Within the remaining test borings, which were advanced to the top of bedrock, free standing water was encountered within test borings B-3, B-8 and B-9 at depths of about 38 feet, 30 feet, and 35 feet, respectively. These depths are about 2 feet to 5 feet above the top of bedrock.

Several soil samples collected from the test borings, at various depths and locations, and as shallow as 2 to 4 feet, were described as "moist to wet" or "wet". These conditions are indicators of perched or trapped groundwater conditions. Perched groundwater conditions are more common within looser or more granular type soils that overlie a more compact or less permeable soil. Perched groundwater conditions can be more prevalent following heavy or extended periods of precipitation and during seasonally wet periods. It should be expected that both perched and permanent groundwater conditions could vary with location and with changes in soil conditions, precipitation and seasonal conditions.

5.00 GEOTECHNICAL CONSIDERATIONS AND RECOMMENDATIONS

5.10 GENERAL

The following general considerations and recommendations are provided to assist with planning for the design and construction of the proposed building. More detailed recommendations are presented in the subsequent sections of this report.

5.10.1 Spread Foundation Support

Settlement beneath spread foundations constructed within the existing fill soils can be variable, potentially excessive, and is difficult to predict. Any organic type soils can also undergo some decomposition with time, resulting in settlement. In addition, the Building Code of New York State is restrictive to placing spread footings over uncontrolled fill soils. Therefore, the use of a conventional spread foundation system would typically not be considered a viable option to support the proposed building, and a deep foundation system end bearing on the Limestone bedrock would be used. Ellicott Development, however, would still like to consider options for using spread foundations bearing within the fill soils.

Ellicott Development owns the 1050 Niagara Street building, adjacent to the south property line of the project site, and has design drawings that indicate the building is supported on spread foundations. This building has a full basement, about 12 feet below the ground surface. At this depth, and proximity to the project site where 40 feet of fill soils were identified, it appears the 1050 Niagara Street building, which is reported to be in good condition, would be bearing within the fill soils.

Based on the relatively lightly loaded condition of the proposed steel framed building, consideration could be given to constructing spread foundations on a geo-grid reinforced Structural Fill layer, which is placed and compacted over the fill soils. The Structural Fill layer will: provide for a more uniform and stable subgrade surface for constructing the foundations; reduce the foundation stresses acting on the fill soils; and will help “bridge” and reduce potential bearing grade subsidence, should some differential settlement occur within the fill soils. Ellicott Development, however, must be willing to accept the potential settlement risks associated with this approach.

5.10.2 Deep Foundation Support

Limestone bedrock, in the area of the proposed building, was encountered at a depth of about 40 feet, or approximate elevation 576 feet to 578 feet. Deep foundation options that could be considered for use at the site include: driven piles; drilled piers; micro-piles; and auger-cast piles; bearing on or within the Limestone bedrock.

We completed a preliminary evaluation for using compacted stone columns (i.e. Geopiers), that improve the condition of the fill soils, which could then allow for the use of conventional spread foundations. However, based on our discussions with a specialty foundation consultant / contractor, the stone columns would have to extend completely through the fill soils, to the top of bedrock. In addition, due to the organics encountered within the fill soils, the use of a cement / aggregate mixture could become necessary to prevent long term bulging of the stone columns. This would essentially result in a lower capacity drilled pier. Based on these conditions, the use of compacted stone columns does not appear to be a viable option for this site.

Sample spoon refusal conditions were occasionally encountered within the fill soils, and the fill soils often contained concrete fragments and bricks. In addition, the site is known to have been previously developed with numerous structures, and it is possible that former foundations or floor slabs remain. These conditions could cause some difficulties with the installation of driven piles, drilled piers, and auger-cast piles. These conditions should be anticipated by the Contractor and appropriate contingencies planned for, including pre-drilling or pre-excavation at the foundation locations. Micro-piles are typically installed using an air rotary down hole hammer and continuous steel casing, which would allow the micro-piles to be advanced through most concrete obstructions.

5.10.3 Slab-on-Grade Floor Construction

For a slab-on-grade floor constructed near the current site grades, it is common practice recommend that the existing fill soils be removed and replaced with a properly controlled and compacted engineered fill layer beneath the slab-on-grade areas. However, due to the thickness of the fill soils, this is not a technically or economically feasible option. Accordingly, the use of a structural floor slab, supported by the deep foundation system, should be considered for use at the site.

An alternative option would include constructing the floor slab over the fill soils, provided some additional Subbase Stone, along with a heavy duty stabilization geotextile is used beneath the slab-on-grade construction. This will provide for a stiffer subgrade and reduce some of the differential settlement effects, if it were to occur. There are some uncertainties with this approach, such as the potential for some long-term differential settlement, resulting from unidentified zones of unsuitable fill soils.

If the Owner is willing accept these risks, then we would recommend the following be implemented as minimum requirements for constructing the slab-on-grade over the existing fill soils.

- After excavation to the proposed subgrades, the existing fill subgrades should be thoroughly compacted and proof rolled, evaluated, and prepared in accordance with our recommendations provided in Section 5.110.7.
- Any existing structures (i.e. existing buried foundation walls), should be removed an additional depth of about 24 inches below the bottom of the proposed undercut in order to effectively proof roll the subgrades and remove rigid locations from beneath the proposed slab-on-grade floor.
- Any deleterious materials, such as organics, very soft soils, debris, etc., which are present within the fill soils at the bottom of the subgrade excavation, should be further undercut, removed, and replaced with additional Subbase Stone.
- A suitable stabilization/separation geotextile, such as Mirafi 600X or suitable equivalent, should be placed over the final exposed fill soil subgrades, prior to placing the first lift of the Subbase Stone.
- A minimum 15 inch thick layer of compacted Subbase Stone should be used beneath the floor slab. Recommendations for the Subbase Stone are provided in Appendix C.
- Additional floor slab reinforcing should be considered to help reduce differential settlement effects on the floor slab, should it occur.

5.10.4 Seismic Site Conditions

Based on the subsurface conditions encountered in the test borings, the project site can be classified as Seismic Site Class “D” in accordance with Table 1613.5.2 of the Building Code of New York State (December 2010). Therefore, seismic design may be based on this seismic site classification.

5.20 SPREAD FOUNDATIONS CONSTRUCTED OVER FILL SOILS

As described in Section 5.10.1, consideration could be given to supporting the proposed building using spread foundations bearing within the fill soils, provided Ellicott Development is willing to accept the potential settlement risks associated with this approach.

Where spread foundations are used, Empire recommends the foundations be constructed over a minimum 2 to 4 feet thick layer of geo-grid reinforced Structural Fill, which replaces a portion of the existing fill directly beneath the spread foundations. The recommended thicknesses are based on the column loads, as summarized in the following table.

Minimum Recommended Geo-Grid Reinforced Structural Fill Thickness Beneath Spread Foundations

Foundation Location	Approximate Column Loads (kips)	Recommended Engineered Fill Thickness Beneath Footings (feet)
Exterior Columns at north and south walls and southeast stairs	13 to 21	2.0
Exterior Columns at west and east walls and central stairs	30 to 37	3.0
Interior Columns	63 to 80	4.0
Wall Footings	unknown	1.5

Following excavation to the proposed undercut subgrades, the existing fill subgrades should be thoroughly compacted with a minimum 300 pound vibratory plate tamper, or other suitable means such as a plate tamper attachment on an excavator. The compaction should be observed by a representative of Empire at the time of construction, to determine if any further undercutting and additional Structural Fill is warranted. Any highly deleterious materials, such as organics, very soft or wet soils, highly voided debris, etc., which are present within the fill soils at the bottom of the undercut subgrade excavation, should be further undercut, removed, and replaced with additional Structural Fill material.

A suitable stabilization/separation geotextile, such as Mirafi 600X, should be placed between the existing fill subgrades and overlying layer of compacted Structural Fill. A layer of geo-grid reinforcement, should be placed above the geotextile, and above each successive one foot thick layer of Structural Fill. We recommend the geo-grid consist of TriAx TX160, manufactured by Tensar International Corporation.

The Structural Fill placed beneath the spread foundations should be placed beyond the foundation limits a horizontal distance equal to at least 0.5 times the thickness of the Structural Fill layer beneath the foundation. Excavations, therefore, will need to be planned and sized accordingly. Recommendations for Structural Fill material along with its placement and compaction are presented below.

Flowable backfill material is not recommended for use beneath the footings. The compaction of the Structural Fill should help to densify the fill soils beneath the footings and adjacent to the sides of the Structural Fill.

It is recommended that continuous footings be at least 2.0 feet in width and column/individual footings should be at least 3.0 feet in width. Exterior foundations should be embedded a minimum of 4.0 feet below finished grades for frost protection. Interior foundations within should be embedded a minimum of 2.5 feet below finished interior floor grades to develop adequate bearing capacity.

Spread foundations constructed on the minimum recommended Engineered Fill thicknesses, summarized above, can be sized based on a maximum net allowable bearing pressure of 2,000 pounds per square foot (psf). If the fill soils were naturally placed indigenous soils, we would expect the settlement beneath the foundations to be less than one inch. However, due to the unknowns associated with constructing spread foundations over the fill soils, there is a potential for settlements in excess of one inch to occur.

5.30 DRIVEN PILE FOUNDATIONS

5.30.1 General

The Limestone bedrock, encountered about 40 feet below the existing ground surface, should provide a suitable bearing stratum for supporting the building using end bearing piles driven to bedrock refusal. The piles should be equipped with a driving shoe to limit potential damage when driving into the top of bedrock. Due to

the variable nature of the fill soils, and the potential to encounter obstructions, pre-drilling could become necessary in some cases.

5.30.2 Driven Pile Design Criteria

A steel pile, driven to absolute refusal at the top of the Limestone bedrock, may be designed for an allowable axial capacity equal to 35% of the pile yield strength or 17.5 kips per square inch (ksi), whichever is less, times the cross sectional area of the pile. During installation, the pile stresses should not exceed 85% of the pile yield stress.

Piles driven to absolute refusal at the top of the Limestone bedrock and in accordance with our recommendations should undergo insignificant total settlement. Piles should be spaced a minimum of 3 pile widths apart, or three feet, whichever is greater. At this spacing, no group reduction factor is considered necessary. All exterior pile caps and grade beams should be embedded a minimum of 4 feet for frost protection.

At least 3 random piles, of each type, should be dynamically tested to confirm the driving criteria and to evaluate that the pile capacity has been obtained with an adequate factor of safety (i.e. Factor of Safety of 2.0 or greater).

5.30.3 Axial Compressive Capacity of Driven H-Piles

Based on the above design criteria, an HP12 x 53 section (Grade 50 steel), with a cross sectional area of 15.5 in^2, would provide an allowable axial compressive capacity of about 135 tons per pile. The piles should be driven and tested for an ultimate capacity of 270 tons, using a Factor of Safety of 2.0, as required by the Building Code of New York State.

Other H-pile sections could also be used to obtain a different allowable axial capacity, using the same criteria outlined above. The following table summarizes the allowable axial compressive capacity and required ultimate test capacity for three pile sections based on the above design criteria. These capacities assume the use of Grade 50 Steel.

H-Pile Allowable Compressive and Ultimate Test Capacities			
Pile Section	**Cross Sectional Area**	**Allowable Axial Compressive Capacity**	**Required Ultimate Test Capacity**
HP 10 x 42	12.4 in^2	108 tons	216 tons
HP 12 x 53	15.5 in^2	135 tons	270 tons
HP 12 x 74	21.8 in^2	190 tons	380 tons

5.30.4 Axial Compressive Capacity of Driven Pipe Piles

Pipe piles could also be considered for use at the site. Pipe piles can be designed using the same criteria used for H-piles. Pipe piles should have a minimum wall thickness of at least 0.313 inches and may be driven open ended or with a closed end, as determined appropriate by the pile driving contractor. If a closed end pipe pile is used, a flat steel plate, at least 0.50 inches thick, should be welded to the pile to form the closed end. Following driving and acceptance, the annulus of the pipe pile should be filled with concrete having a 28-day compressive strength (f'c) of 3,000 psi or greater.

The following table summarizes the allowable axial compressive capacity and required ultimate test capacity for three pipe pile sections based on the above design criteria. These capacities assume the use of Grade 50 Steel. Other pipe pile sections could also be used, based on current product availability, to obtain different allowable axial capacities, provided the same design criteria outlined above is used.

Pipe Pile Allowable Compressive and Ultimate Test Capacities			
Pile Section	**Cross Sectional Area**	**Allowable Axial Compressive Capacity**	**Required Ultimate Test Capacity**
8.625" O.D. Pipe Pile (0.313" wall thickness)	8.17	71 tons	142 tons
12.75" O.D. Pipe Pile (0.375" wall thickness)	14.58	127 tons	254 tons
14.00" O.D. Pipe Pile (0.500" wall thickness)	21.21	185 tons	370 tons

5.40 MICRO-PILE FOUNDATIONS

Micro-pile foundations are generally designed and installed by a Specialty Contractor qualified and experienced in such construction methods. Therefore, it is general practice for the Structural Engineer to develop a performance specification for the micro-pile and then have the Contractor provide a suitable pile design, which considers the logistics of the installation and the subsurface conditions. The diameter of the effective grout column, depth of effective embedment, steel reinforcing, and cement grout strength can be varied by the Specialty Contractor based on the structural design requirements as well as considering the sizes and economics of permanent casing pipe available on the market.

The Post Tensioning Institute (PTI) - "Recommendations for Prestressed Rock and Soil Anchors" and the Federal Highway Administration (FHWA) – “Micro-pile Design and Construction Reference Manual (FHWA-NHI-05-039)” can be referenced with regard to providing design criteria and installation recommendations for micro-piles.

Micro-pile foundations are typically 6 to 12 inches in diameter and should be drilled and grouted into suitable Limestone bedrock to develop their compressive axial capacities. The micro-pile foundation installation should consist of a permanent steel casing from the top of the micro-pile to the top of the Limestone bedrock. We recommend the steel casing pipe consist of Grade 50 steel, be at least 6 inches in diameter, and have a minimum wall thickness of 0.313 inches.

An allowable side shear resistance (bond strength) of 75 pounds per square inch (psi), developed between the concrete micro-pile and the Limestone bedrock socket can be used for design. A concrete/grout with a minimum compressive strength of 4,000 psi should be used. Micro-piles should have a minimum effective bond length of at least 5 feet in the competent Limestone bedrock. The effective compression bond length can be the entire length of the rock socket into the competent bedrock.

Based on the above criteria, a micro-pile with an 8 inch diameter rock socket and 10 feet of effective bond length in the competent bedrock would be expected to develop an allowable compressive capacity of around 113 tons per pile. We recommend that at least one micro-pile of each design type be load tested to twice the allowable design capacity to verify the design assumptions will be met.

Micro-pile spacing should be at least 30-inches or 3 pile diameters, center to center, whichever is greater. Plumbness of the micro-pile should be maintained within 1% of the total length. Micro-pile foundations should undergo insignificant total settlement when designed and constructed in accordance with our recommendations. All exterior pile caps and grade beams should be embedded a minimum of 4 feet for frost protection.

5.50 DRILLED PIER FOUNDATIONS

As discussed above, drilled pier foundations (i.e. drilled, cast in-place caisson foundations) can be used to support the proposed building. Drilled piers bearing on the Limestone bedrock should be seated a nominal 3 inches into the bedrock (i.e. extend to caisson auger refusal) and be monitored by a representative of Empire to insure that the piers are bearing on the competent, sound, bedrock surface. The anticipated depth to bedrock is summarized in Section 4.40.

Drilled pier foundations, bearing on sound Limestone bedrock can be sized for an allowable end bearing pressure of 30 tons per square foot. A minimum pier diameter of 30-inches is recommended. Drilled piers should be spaced no closer than 3 pier diameters, center to center.

Drilled piers constructed at the above bearing grades in accordance with the above design conditions and in accordance with our recommendations should undergo insignificant total settlement. All exterior grade beams (pier caps) should be embedded a minimum of 4 feet below the finished grades for frost protection.

5.60 AUGER-CAST PILES

Auger-cast piles are similar to a drilled pier, but are typically of a smaller diameter, and have a different construction methodology. Auger-cast piles are constructed by initially advancing a hollow stem, continuous flight auger, to the top of bedrock. Grout is then pumped into the augers, as the augers are being removed from the ground. After the grout is installed to the surface and the augers have been removed, a rebar cage can be installed into the upper portion of the auger-cast pile.

We recommend the auger-cast piles extend to and bear directly on the Limestone bedrock. Similar to drilled piers, the auger-cast piles should be seated a nominal 3 inches into the bedrock (i.e. extend to auger refusal) and be monitored by a representative of Empire to insure that the piers are bearing on the competent, sound, bedrock surface. Auger-cast piles should be spaced a minimum of 3 auger-

cast pile widths apart, or three feet, whichever is greater. At this spacing, no group reduction factor is considered necessary.

Auger-cast pile foundations, bearing on sound Limestone bedrock can be sized for an allowable end bearing pressure of 30 tons per square foot. A minimum pier diameter of 16-inches is recommended. We recommend that at least one auger-cast pile of each design type be load tested to twice the allowable design capacity to verify the design assumptions will be met.

Auger-cast piles constructed end bearing on the Limestone bedrock, in accordance with the above design conditions and our recommendations, should undergo insignificant total settlement. All exterior grade beams (pier caps) should be embedded a minimum of 4 feet below the finished grades for frost protection.

5.70 SLAB-ON-GRADE FLOOR

As discussed in Section 5.10.3, it is recommended that a minimum of 15 inches of Subbase Stone be placed beneath the slab-on-grade floor. A suitable stabilization/separation geotextile, such as Mirafi 600X or suitable equivalent, should be placed over the final exposed fill subgrades, prior to placing the first lift of Subbase Stone.

The slab-on-grade floor construction can proceed following the subgrade preparation, compaction, and proof-rolling, as outlined in Section 5.110.7. Subgrade proof-rolling and inspection, should also be performed just prior to the Subbase Stone layer placement.

Floor slabs constructed as a slab-on-grade may be designed using a modulus of subgrade reaction of 150 pounds per cubic inch at the top of the Subbase Stone layer. It is understood that the finished floor grade will be established above the surrounding exterior grades. Therefore, the use of a moisture barrier does not appear warranted, unless otherwise recommended by the finished flooring manufacturer.

It is recommended that the slab-on-grade be constructed such that it floats on the subbase and subgrades and is not structurally connected to, or resting directly on, perimeter walls or column footings in order to limit differential settlement effects. The use of additional reinforcing within the slab-on-grade floor should be considered to help limit differential settlement effects on the floor slab, should it occur.

5.80 SEISMIC DESIGN CONSIDERATIONS

Based on the subsurface conditions encountered, the upper 100 feet of the site should be classified as Seismic Site Class "D" in accordance with Table 1613.5.2 of the Building Code of New York State (December 2010). Therefore, seismic design may be based on this seismic site classification.

The spectral response accelerations in the project area were obtained by Empire using the United States Geological Survey (USGS) web site application (https://geohazards.usgs.gov/secure/designmaps/us/). The accelerations are based on the 2009 NEHRP Recommended Seismic Provisions, which makes use of the 2008 USGS seismic hazard data. The acceleration values obtained from this application were then adjusted, as recommended by the USGS, to obtain the 2% probability in 50 years mapping accelerations, as presented in the NYS Building Code.

Using the site address, the calculated spectral response acceleration for Site Class "B" soils is 0.216g for the short period (0.2 second) response (S_S) and 0.050g for the one second response (S_1). For design purposes, these spectral response accelerations must be adjusted for the Seismic Site Class "D" soil profile determined for the project site.

Accordingly, the adjusted spectral response accelerations for Site Class "D" are as follows:

- Short Period Response (S_{MS}) - 0.346g
- 1 Second Period Response (S_{M1}) - 0.120g

The corresponding five percent damped design spectral response accelerations (S_{DS} and S_{D1}) are as follows:

- S_{DS} - 0.231g
- S_{D1} - 0.080g

5.90 PROTECTION OF EXISTING STRUCTURES

The project will include earthwork excavations and heavy equipment operations near the existing roadways, buildings and underground utilities. Existing building foundations, foundation walls, and underground utilities should be protected during excavation and construction of the new adjacent foundations. The location and

depth of all existing foundations, foundation walls and utilities should be determined and plans should be prepared to protect these structures, as appropriate

In all cases, the excavations must be adequately sloped back and/or properly supported (i.e. sheeted, shored, braced, shielded etc.) in accordance with OSHA requirements as a minimum. We note that the explorations are widely spaced and that soil conditions may vary between test borings. Therefore, the contractor must confirm the OSHA soil classification and excavation requirements at the time of construction based on soil conditions present. The contractor shall be solely responsible for all excavation safety.

5.100 PAVEMENT DESIGN

Pavement design recommendations are provided for a Commercial Duty Asphalt Concrete Pavement for general automobile/SUV parking and occasional light delivery truck traffic. The pavement section recommended is based on the assumption that the subgrades will be prepared as outlined in Section 5.110.7. A stabilization/separation geotextile is recommended beneath the subbase course of the pavement section.

Commercial Duty Asphalt Concrete Pavement:

- 1.5 inches - Top Course
- 2.5 inches - Binder Course
- 12 to 15 inches - Subbase Course*
- Geotextile
- Prepared Subgrade

*It is recommended the subbase course thickness be increased to 15 inches in entrance and drive aisles, which will be subject to more frequent traffic loads. Also, it may be necessary to increase the subbase thickness in some areas to improve subgrade conditions and to promote drainage to underdrains, etc, as discussed below.

Materials for the above pavement structure components should consist of the following:

A. Asphalt Concrete Top Course - NYSDOT Standard Specifications, Item No. 403.198202 - Hot Mix Asphalt, Type 7 Top Course.

B. Asphalt Concrete Binder Course - NYSDOT Standard Specifications, Item No. 403.138902 - Hot Mix Asphalt, Type 3 Binder Course.

C. Subbase Course – NYSDOT Standard Specifications, Item No. 304.12 - Type 2 Subbase.

D. Geotextile - Woven polypropylene stabilization/separation geotextile (i.e., Mirafi 500X or approved suitable equivalent).

Accumulation of water on pavement subgrades should be minimized by grading the subgrade to a slope of at least 2 percent. Under-drains or adjacent drainage swales are recommended to drain pavement subgrades and the subbase layer to help limit the potential for frost action and improve pavement performance and design life.

5.110 SITE PREPARATION AND CONSTRUCTION

5.110.1 Construction Dewatering

Permanent groundwater conditions are not expected to be encountered. However, construction dewatering will be required for surface water control and for excavations, which encounter perched groundwater conditions. Surface water should be diverted away from open excavations and prevented from accumulating on exposed subgrades. The exposed soil subgrades will be susceptible to strength degradation in the presence of excess moisture. Dewatering should be implemented in conjunction with excavation work such that the work proceeds in the dry. It is anticipated that diversion berms, proper site grading, and sump and pump methods of dewatering should generally be sufficient to control surface water and perched groundwater conditions.

5.110.2 Driven Pile Construction and Testing

The piles should be driven to absolute refusal, into the Limestone bedrock, using a pile hammer having a suitable energy rating. The pile driving criteria should be confirmed by the contractor through the use of the wave equation, based on the actual pile, pile hammer and cushions that will be used, to determine the final driving criteria and that adequate stresses can be developed in the pile to confirm its capacity through dynamic testing and to determine that the pile will not be overstressed during driving. Pile stresses should not exceed 85% of the pile yield stress. Plumbness of the piles should be maintained within 1% of the total length. Any misaligned or damage piles should be replaced.

Absolute refusal should be defined as when about 5 blows have been recorded for less than ¼ inch of pile penetration and the pile reaches the anticipated bedrock elevation. At least 3 random piles should be dynamically tested in accordance with

ASTM D 4945 – "Standard Test Method for High Strain Dynamic Testing of Piles" to confirm the driving criteria and to evaluate that the pile capacity has been obtained with an adequate factor of safety (i.e. Factor of Safety of 2.0 or greater). A qualified individual should observe all pile driving and should prepare an individual pile driving report for each pile installed.

5.110.3 Micro-Pile Foundation Construction and Testing

The micro-pile foundations should be designed and installed by a Specialty Contractor qualified and experienced in such construction methods. The micro-piles should be installed in accordance with NYSDOT Special Specifications 551.99400017 or 551.99410017. Plumbness of the micro-pile should be maintained within 1% of the total length. A qualified individual should observe all micro-pile installations and prepare a report summarizing the installation process.

We recommend that at least 1 micro-pile of each design type be load tested to twice the allowable design capacity to verify the design assumptions will be met. Compressive load testing should be in accordance with *ASTM D 1143 – "Standard Test Method for Individual Piles Under Static Axial Compressive Load"*.

5.110.4 Drilled Pier Foundation Construction

It is possible that the drilled pier foundation construction will encounter some perched groundwater in the fill soils. A general groundwater condition is expected about 5 feet above the top of bedrock. Therefore, dewatering of drilled pier excavations should be implemented as necessary in order to properly construct the pier structure in the dry.

Alternatively, procedures for constructing the drilled piers below groundwater can also be implemented. However, there is less control during construction in-the-wet, and therefore, there may be greater risk associated with this construction procedure. If this method is used, the hole must be stabilized with a proper drilling slurry and the concrete must be placed in a manner that displaces the slurry/water from the hole, such as using a tremie. It is recommended that drilled piers which are constructed in-the-wet be constructed only by contractors qualified and experienced in such construction methods. In both cases installation of temporary casing during drilling may be necessary to prevent the sloughing of potentially wet or loose soils into the excavation, particularly with the presence of ground water conditions.

Initially, the excavation should extend to the proposed bedrock bearing grade. Loose bedrock should be removed from the bearing surface. The final bearing surface

should be level or near level. Plumbness of the pier should be maintained within 1% of the total length. Casing removal during concrete placement should proceed in a manner that prevents or reduces to the extent possible, surrounding soil and water from protruding into the space that will be occupied by concrete. In all cases, the drilled pier construction should be monitored by qualified geotechnical personnel.

5.110.5 Auger-Cast Pile Foundation Construction and Testing

The auger-cast pile foundations should be installed by a Specialty Contractor qualified and experienced in such construction methods. Plumbness of the auger-cast piles should be maintained within 1% of the total length. A qualified individual should observe all auger-cast pile installations and prepare a report summarizing the installation process.

We recommend that at least one auger-cast pile of each design type be load tested to twice the allowable design capacity to verify the design assumptions will be met. Compressive load testing should be in accordance with *ASTM D 1143 – "Standard Test Method for Individual Piles Under Static Axial Compressive Load"*.

5.110.6 Excavation and Backfilling

Excavations for grade beam and pile cap construction, as well as other structure excavations, should be performed using a method, which reduces disturbance to the subgrade soils. If any soils containing organics, voided demolition debris/rubble, or otherwise deleterious soil material are encountered, they should be removed and replaced with compacted Structural Fill or Suitable Granular Fill, as recommended in Appendix C.

Subgrades for grade beam, pile cap and structure construction should be protected from precipitation and surface water. Water should not be allowed to accumulate on the soil subgrades and the subgrades should not be allowed to freeze, either prior to or after construction of foundations. If subgrades are not protected and degrade, they must be undercut/removed accordingly.

Grade beam and pile cap excavations should be backfilled as soon as possible and prior to construction of the superstructure. It is recommended that excavations within the building area and adjacent sidewalk and street areas be backfilled with a properly compacted Structural Fill or Suitable Granular Fill material, as recommended in Appendix C.

5.110.7 Subgrade Preparation for Slab-On-Grade and Pavement Construction

Following any required excavation to the proposed subgrade elevation, the exposed subgrades should be thoroughly compacted and proof-rolled. The compaction and proof-rolling should be performed prior to any fill placement, using a smooth drum roller weighing at least 10 tons. The roller should be operated in the vibratory mode for compacting the soil subgrades and in the static mode for the proof rolling.

The compaction should include at least four passes over the exposed subgrades with the roller in vibratory mode. The proof rolling should include at least two passes over the exposed subgrades with the roller in static mode. The subgrade compaction and proof-rolling should be done under the guidance of, and observed/evaluated by a representative of Empire. Any areas, which appear wet, soft, unstable or otherwise exhibit unsuitable materials or conditions, should be further undercut and stabilized. Over excavation, which may be required as the result of the subgrade inspection and/or proof-rolling, should be performed based on guidance provided by Empire. Resulting over-excavations should be backfilled with Structural Fill as described in Appendix C.

The Subbase Stone placement can proceed following preparation and acceptance of the existing fill soil subgrades. A separation/stabilization geotextile (i.e. Mirafi 600X or suitable equivalent), should be placed over the undercut subgrade surface prior to placing the Subbase Stone.

The Subbase Stone should be placed to a stable condition and should not “pump”, “rut” or show signs of movement or significant deflection (i.e. unstable conditions) as it is being constructed. Any unsuitable conditions should be undercut and removed. The subgrades should also be properly graded, drained and protected from moisture and frost. Placement of Subbase Stone over wet, soft, snow covered or frozen subgrades is not acceptable.

It is recommended that utility trenches located within slab on grade areas be backfilled with controlled Structural Fill. During construction, the contractor should take precautions to limit construction traffic over the subgrades for slab-on-grade construction. Any subgrades, which become damaged, rutted or unstable should be undercut and repaired as necessary prior to placement of the overlying fill courses.

5.110.8 Pavement Construction

Placement of the pavement subbase stone can proceed, following proper subgrade preparation, proof-rolling and subgrade filling as described in Section 5.110.7. Installation of adjacent geotextile panels should have minimum overlap of 12 to 18 inches. The subbase stone should be placed and compacted in accordance with the recommendations presented in Appendix C for Structural Fill.

6.00 CONCLUDING REMARKS

This report was prepared to assist in planning the design and construction of the proposed building planned at 1088 Niagara Street, within the City of Buffalo, New York. The report has been prepared for the exclusive use of Ellicott Development, Studio T3 Engineering, PLLC, and other members of the design team, for specific application to this site and this project only.

The recommendations were prepared based on Empire Geo-Services, Inc.'s understanding of the proposed project, as described herein, and through the application of generally accepted soils and foundation engineering practices. No warranties, expressed or implied are made by the conclusions, opinions, recommendations or services provided.

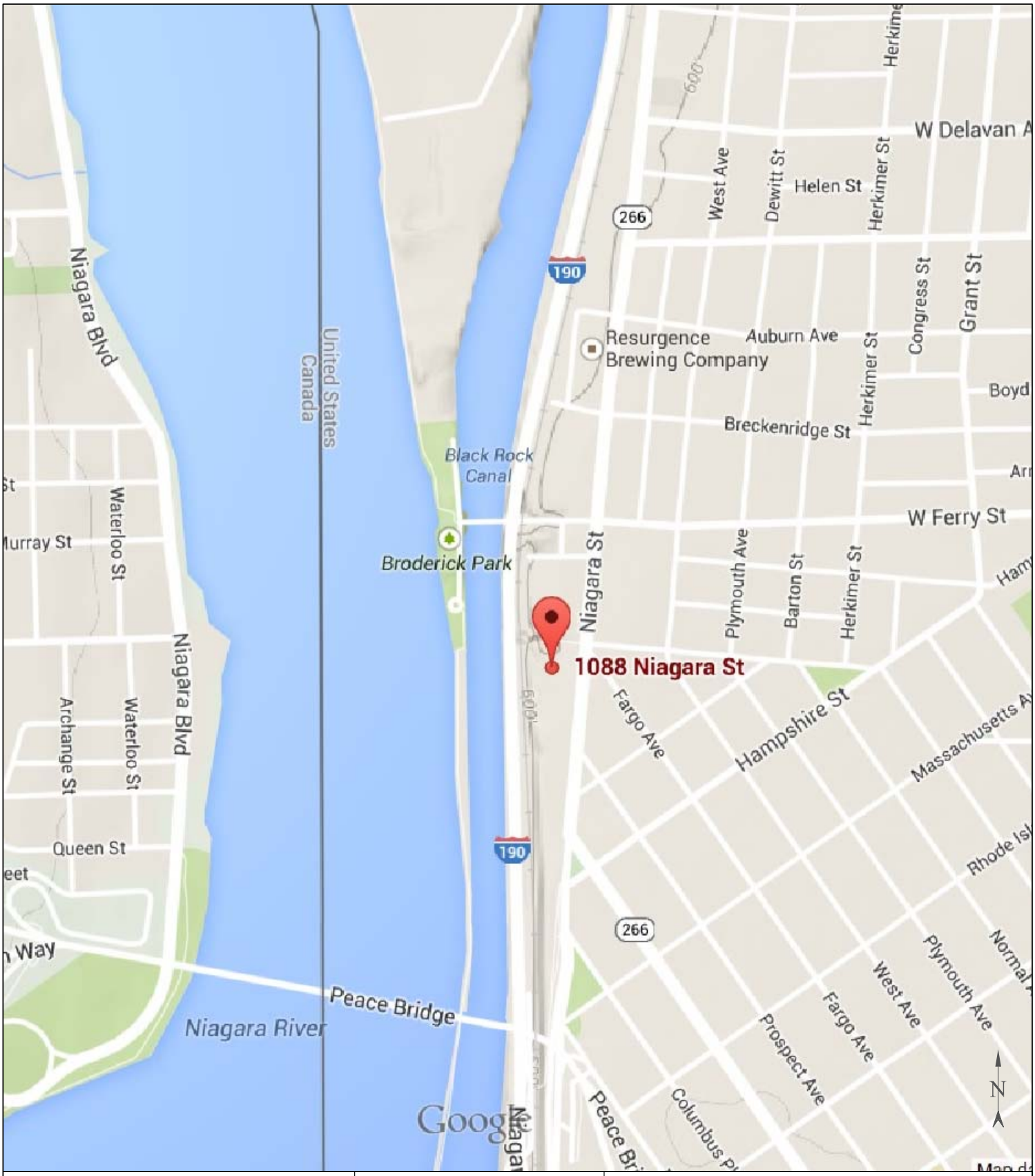
Empire Geo-Services, Inc. should be informed of any changes to the planned construction so that it may be determined if any changes to the recommendations presented in this report are necessary. Empire Geo-Services, Inc. should also review final plans and specifications to verify that the recommendations were properly interpreted and implemented. Important information regarding the use and interpretation of this report is presented in Appendix D.

Respectfully Submitted:

EMPIRE GEO-SERVICES, INC.

Thomas R. Seider, P.E.
Senior Geotechnical Engineer

FIGURES



LEGEND:

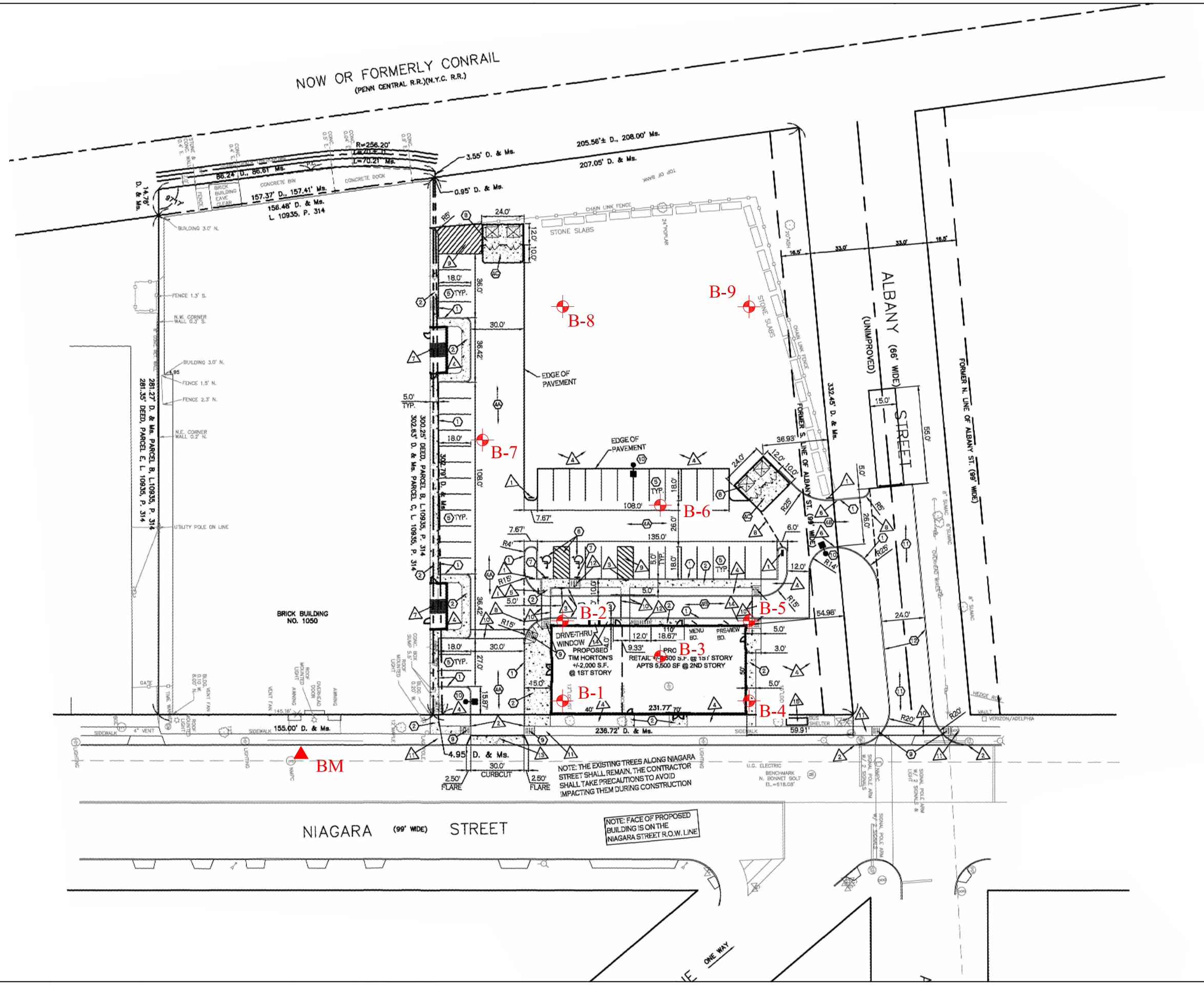
*FIGURE DERIVED FROM GOOGLE MAPS

EMPIRE GEO SERVICES INC
a subsidiary of SJB Services, Inc.

PROPOSED BUILDING
1088 NIAGARA ST.
BUFFALO, NEW YORK

SITE LOCATION PLAN

DWG. BY: MJP	APPROX. SCALE: NTS	DATE: 3/11/15
CHKD BY: TRS	PROJ NO.: BE-15-038	FIGURE NO: 1



EMPIRE GEO SERVICES INC
a subsidiary of SJB Services, Inc.

SUBSURFACE EXPLORATION PLAN

PROPOSED BUILDING
1088 NIAGARA ST.
BUFFALO, NEW YORK

MODIFIED BY: MJP	CHKD BY: TRS
SCALE: NTS	FIGURE NO: 2
DATE: 03/12/15	PROJ NO.: BE-15-038

LEGEND:

B-1 — INDICATES APPROXIMATE LOCATION AND DESIGNATION OF TEST BORING.

BM ▲ — INDICATES APPROXIMATE BENCHMARK LOCATION. RIM OF ELECTRICAL MANHOLE. ESTIMATED ELEVATION = 619.5 FEET BY SJB SERVICES.

NOTE:

SUBSURFACE EXPLORATION PLAN DEVELOPED FROM CARMINA, WOOD, MORRIS - SITE PLAN 2/17/15

APPENDIX A

SUBSURFACE EXPLORATION LOGS

GENERAL INFORMATION & KEY TO SUBSURFACE LOGS

The Subsurface Logs attached to this report present the observations and mechanical data collected by the driller at the site, supplemented by classification of the material removed from the borings as determined through visual identification by technicians in the laboratory. It is cautioned that the materials removed from the borings represent only a fraction of the total volume of the deposits at the site and may not necessarily be representative of the subsurface condition between adjacent borings or between the sampled intervals. The data presented of the Subsurface Logs together with the recovered samples provide a basis for evaluating the character of the subsurface conditions relative to the project. The evaluation must consider all the recorded details and their procedures to more accurately evaluate the subsurface conditions. Any evaluation of the contents of this report and recovered samples must be performed by qualified professionals. The following information defines some of the procedures and terms used of the Subsurface Logs to describe the conditions encountered, consistent with the numbered identifiers shown on the Key opposite this page.

1. **The figures in the Depth column define the scale of the Subsurface Log.**
2. **The Samples column shows, graphically, the depth range from which a sample was recovered. See Table I for descriptions of the symbols used to represent the various types of samples.**
3. **The Sample No. is used for identification on sample containers and/or Laboratory Test Reports.**
4. **Blows on Sampler – shows the results of the "Penetration Test", recording the number of blows required to drive a split spoon sampler into the soil. The number of blows required for each six inches is recorded. The first 6 inches of penetration is considered a seating drive. The number of blows required for the second and third 6 inches of penetration is termed the penetration resistance, N.**
5. **Blows on Casing – Shows the number of blows required to advance the casing a distance of 12 inches. The casing size, hammer weight, and length of drop are noted at the bottom of the Subsurface Log. If the casing is advanced by means other than driving, the method of advancement will be indicated in the Notes column or under the Method of Investigation at the bottom of the Subsurface Log. Alternatively, sample recovery may be shown in this column or other data consistent with the column heading.**
6. **All recovered soil samples are reviewed in the laboratory by an engineering technician, geologist, or geotechnical engineer, unless noted otherwise. Visual descriptions are made on the basis of a combination of the driller's field descriptions and noted observations together with the sample as received in the laboratory. The method of visual classification is based primarily on the Unified Soil Classification System (ASTM D 2487) with regard to the particle size and plasticity (See Table No. II), and the Unified Soil Classification System group symbols for the soil types are sometimes included with the soil classification. Additionally, the relative portion, by weight, of two or more soil types is described for granular soils in accordance with "Suggested Methods of Test for Identification of Soils" by D.M. Burmister, ASTM Special Technical Publication 479, June 1970. (See Table No. III). Description of the relative soil density or consistency is based upon the penetration records as defined in Table No. IV. The description of the soil moisture is based upon the relative wetness of the soil as recovered and is described as dry, moist, wet, and saturated. Water introduced into the boring either naturally or during drilling may have affected the moisture condition of the recovered sample. Special terms are used as required to describe soil deposition in greater detail; several such terms are listed in Table V. When sampling gravelly soils with a standard two inch diameter split spoon, the true percentage of gravel is often not recovered due to the relatively small sampler diameter. The presence of boulders and large gravel is sometimes, but not necessarily, detected by an evaluation of the casing and sampler blows or through the "action" of the drill rig as reported by the driller.**
7. **Rock description is based on review of the recovered rock core and the driller's notes. Frequently used rock classification terms are included in Table VI.**
8. **The stratification lines represent the approximate boundary between soil types and the transition may be gradual. Solid stratification lines delineate apparent changes in soil type, based upon review of recovered soil samples and the driller's notes. Dashed lines convey a lesser degree of certainty with respect to either a change in soil type or where such change may occur.**
9. **Miscellaneous observations and procedures noted by the driller are shown in this column, including water level observations. It is important to realize the reliability of the water level observations depends upon the soil type (water does not readily stabilize in a hole through fine grained soils), and that any drill water used to advance the boring may have influenced the observations. The ground water level will fluctuate seasonally, typically. One or more perched or trapped water levels may exist in the ground seasonally. All the available readings should be evaluated. If definite conclusions cannot be made, it is often prudent to examine the conditions more thoroughly through test pit excavations or groundwater observation wells.**
10. **The length of core run is defined as the length of penetration of the core barrel. Core recovery is the length of core recovered divided by the core run. The RQD (Rock Quality Designation) is the total length of pieces of NX core exceeding 4 inches divided by the core run. The size core barrel used is also noted in the Method of Investigation at the bottom of the Subsurface Log.**

DATE

STARTED _____

FINISHED _____

SHEET _____ OF _____

SJB SERVICES, INC.
SUBSURFACE LOG

PROJ. No. _____

HOLE No. _____

SURF. ELEV. _____

G.W. DEPTH _____

PROJECT _____ LOCATION _____

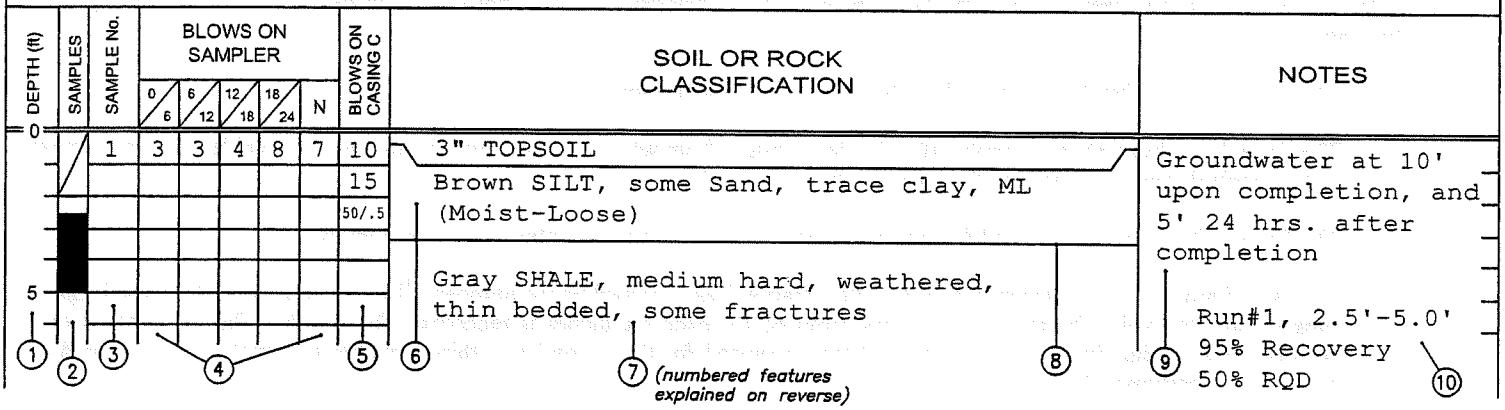


TABLE I

- Split Spoon Sample
- Shelby Tube Sample
- Geoprobe Macro-Core
- Auger or Test Pit Sample
- Rock Core

TABLE II

Identification of soil type is made on basis of an estimate of particle sizes, and in the case of fine grained soils also on basis of plasticity.

Soil Type	Soil Particle Size	
Boulder	>12"	Coarse Grained (Granular)
Cobble	3" - 12"	
Gravel - Coarse	3" - 3/4"	
- Fine	3/4" - #4	
Sand - Coarse	#4 - #10	
- Medium	#10 - #40	
- Fine	#40 - #200	
Silt - Non Plastic (Granular)	<#200	Fine Grained
Clay - Plastic (Cohesive)		

TABLE III

The following terms are used in classifying soils consisting of mixtures of two or more soil types. The estimate is based on weight of total sample.

Term	Percent of Total Sample
"and"	35 - 50
"some"	20 - 35
"little"	10 - 20
"trace"	less than 10

(When sampling gravelly soils with a standard split spoon, the true percentage of gravel is often not recovered due to the relatively small sampler diameter.)

TABLE IV

The relative compactness or consistency is described in accordance with the following terms:

Granular Soils		Cohesive Soils	
Term	Blows per Foot, N	Term	Blows per Foot, N
Loose	0 - 4	Very Soft	0 - 2
Loose	4 - 10	Soft	2 - 4
Firm	10 - 30	Medium	4 - 8
Compact	30 - 50	Stiff	8 - 15
Very Compact	>50	Very Stiff	15 - 30
		Hard	>30

(Large particles in the soils will often significantly influence the blows per foot recorded during the penetration test)

TABLE V

Varved	Horizontal uniform layers or seams of soil(s).
Layer	Soil deposit more than 6" thick.
Seam	Soil deposit less than 6" thick.
Parting	Soil deposit less than 1/8" thick.
Laminated	Irregular, horizontal and angled seams and partings of soil(s).

TABLE VI

Rock Classification Term		Meaning
Hardness	- Soft	Scratched by fingernail
	- Medium Hard	Scratched easily by penknife
	- Hard	Scratched with difficulty by penknife
	- Very Hard	Cannot be scratched by penknife
Weathering	- Very Weathered	Judged from the relative amounts of disintegration, iron staining, core recovery, clay seams, etc.
	- Weathered	
	- Sound	

Rock Classification Term		Meaning	
Bedding	- Laminated	(<1")	Natural breaks in Rock Layers
	- Thin Bedded	(1" - 4")	
	- Bedded	(4" - 12")	
	- Thick Bedded	(12" - 36")	
	- Massive	(>36")	

(Fracturing refers to natural breaks in the rock oriented at some angle to the rock layers)

DATE
START 2/27/2015
FINISH 3/2/2015
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-1
SURF. ELEV 617.6'
G.W. DEPTH See Notes

PROJECT: PROPOSED BUILDING
PROJ. NO.: BE-15-038
LOCATION: 1088 NIAGARA STREET
BUFFALO, NY

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	16	15			Gray Crushed STONE (moist-wet, FILL)	
		14	22		29		
	2	24	14			Gray SLAG (moist, FILL)	
		6	5		20		
5	3	4	5			Brown Silty CLAY, little f-c Gravel (moist, FILL)	Organics present within Sample #3
		7	14		12		
	4	7	7			Contains f-c Sand and f-c Gravel seam	
		10	7		17		
	5	3	4			Contains tr.gravel	
10		7	8		11		
	6	39	34			Contains some Concrete fragments	
		43	47		77		
15							
	7	12	4				No Recovery Sample #7
		1	2		5		
20							
	8	5	4			Brown Gray f-c GRAVEL, little Sand, tr.clay,	
		4	12		8	tr.brick fragments (moist, FILL)	
	9	15	23				
		50/0.4			REF		REF = Sample Spoon Refusal
25	10	1	1				
		3	4		4		
	11	5	4				No Recovery Sample #10 and #12
		3	4		7		
	12	5	3				
30		3	6		6		
	13	1	2			Brick fragments, little Clay, tr.sand (moist-wet, FILL)	
		2	3		4		
	14	2	2				
		2	4		4		
35	15	15	10			Gray-Brown f-c GRAVEL, little Sand, tr.clay,	
		5	7		15	tr.concrete fragments (wet, FILL)	
	16	7	2				
		38	50/0.3		40		
	17	10	11				
40		16	50/0.3		27	Contains Gray Limestone Rock fragments	

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: J. FRIDMAN

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 2/27/2015
FINISH 3/2/2015
SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-1
SURF. ELEV 617.6'
G.W. DEPTH See Notes

PROJECT: PROPOSED BUILDING
PROJ. NO.: BE-15-038
LOCATION: 1088 NIAGARA STREET
BUFFALO, NY

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	50/0.0				REF	Boring Complete with Auger Refusal at 40.0' and Sample Spoon Refusal at 40.0'	No Free Standing Water encountered on 3/2/15 at 0800, with Augers at 30' No Free Standing Water encountered at Boring Completion
45							
50							
55							
60							
65							
70							
75							
80							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: J. FRIDMAN

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 3/2/2015
FINISH 3/2/2015
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-2
SURF. ELEV 617.6'
G.W. DEPTH See Notes

PROJECT: PROPOSED BUILDING
PROJ. NO.: BE-15-038
LOCATION: 1088 NIAGARA STREET
BUFFALO, NY

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	16	21			Gray f-c SAND and Slag (moist, FILL)	
		23	28		44		
	2	10	7			Brown Silty CLAY, tr.gravel (moist, FILL)	
		6	6		13		
5	3	4	5				
		5	6		10		
	4	3	4				
		4	4		8		
	5	3	4				
10		5	3		9		
	6	3	8			Contains some Gravel	
		4	2		12		
	7	9	4			Brown-Gray f-c GRAVEL, tr.clay (moist-wet, FILL)	Organics present within Sample #7
		3	3		7		
15	8	5	4			Brown Silty CLAY, tr.sand, tr.gravel (moist, FILL)	
		3	3		7		
	9	4	3			Contains some Gravel	
		4	3		7		
	10	8	5			Black f-c SAND, tr.clay, tr.gravel (moist, FILL)	
20		6	5		11		
	11	12	8				
		7	9		15		
	12	9	7			Light Gray-Brown Silty CLAY, some f-c Sand, some	
		10	50/0.4		17	f-c Gravel (moist, FILL)	
25							
						Boring Complete at 24.0'	No Free Standing Water encountered at Boring Completion
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: J. FRIDMAN

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 3/3/2015
FINISH 3/4/2015
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-3
SURF. ELEV 616.3'
G.W. DEPTH See Notes

PROJECT: PROPOSED BUILDING
PROJ. NO.: BE-15-038
LOCATION: 1088 NIAGARA STREET
BUFFALO, NY

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	15	10			Black f-c SAND and Gray, f-c GRAVEL (moist, FILL)	
		9	8		19		
	2	5	6			Brown Silty CLAY, tr.gravel (moist, FILL)	
		6	8		12		
5	3	3	3				
		3	4		6		
	4	3	3				
		4	12		7		
	5	3	5			Black f-c SAND, tr.gravel (moist, FILL)	
10		6	6		11		
	6	5	5			Brown Silty CLAY, tr.sand, tr.concrete fragments	
		4	4		9	(moist, FILL)	
	7	4	4			Contains some Rock fragments	
		5	4		9		
15	8	10	8			(mosit-wet)	
		5	5		13		
20							
	9	11	50/0.4		REF	Brown and Black f-c SAND and f-c Gravel, tr.concrete fragments (moist, FILL)	REF = Sample Spoon Refusal
25							
	10	10	50/0.1		REF	Gray Crushed STONE (moist-wet, FILL)	
30							
	11	5	5				No Recovery Sample #11
		2	2		7		
35							
	12	3	3			Brown-Black Silty CLAY, some Sand, some	Organics present within
		3	2		6	Brick fragments (moist, FILL)	Sample #12
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: J. FRIDMAN

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 3/3/2015
FINISH 3/4/2015
SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-3
SURF. ELEV 616.3'
G.W. DEPTH See Notes

PROJECT: PROPOSED BUILDING
PROJ. NO.: BE-15-038
LOCATION: 1088 NIAGARA STREET
BUFFALO, NY

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
45						Gray LIMESTONE Rock, medium hard, sound, thinly bedded to bedded	NQ '2' Size Rock Core RUN #1: 40.0' - 45.0' REC = 83% RQD = 60%
50						Boring Compelte at 45.0'	Free Standing Water recorded at 37.8' prior to Coring Free Standing Water recorded at 38.0' after Coring
55							
60							
65							
70							
75							
80							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: J. FRIDMAN

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 3/2/2015
FINISH 3/2/2015
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-4
SURF. ELEV 616.2'
G.W. DEPTH See Notes

PROJECT: PROPOSED BUILDING
PROJ. NO.: BE-15-038
LOCATION: 1088 NIAGARA STREET
BUFFALO, NY

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	12	8			Black-Brown f-c GRAVEL, little f-c Sand, tr.clay	
		4	5		12	(moist, FILL)	
	2	6	6			Brown Silty CLAY, tr.gravel, tr.sand (moist, FILL)	
		8	9		14		
5	3	6	4				
		8	8		12		
	4	10	50/0.3		REF		REF = Sample Spoon Refusal
	5	11	7			Gray-Brown f-c GRAVEL, some f-c Sand	
10		5	17		12	(moist, FILL)	
	6	4	3				No Recovery Sample #6
		5	7		8		
	7	8	50/0.4		REF	Dark Brown GRAVEL and Brick fragments, tr.clay, tr.sand (moist, FILL)	
15	8	13	7			Brown Silty CLAY, tr.gravel (moist, FILL)	
		12	17		19		
	9	23	11			Dark Brown GRAVEL and Brick fragments, tr.clay,	
		6	5		17	tr.sand (moist, FILL)	Slight petrolem odor
	10	10	7			Black f-c GRAVEL and f-c Sand, little Concrete	noted from Sample #10
20		9	13		16	fragments (moist, FILL)	
	11	8	31			Gray f-c GRAVEL and f-c Sand, tr.clay (moist, FILL)	
		15	17		46		No Recovery Sample #12
	12	31	50/0.3		REF		
25						Boring Complete with Sample Spoon Refusal at 22.8'	No Free Standing Water encountered at Boring Completion
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: J. FRIDMAN

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 3/2/2015
FINISH 3/3/2015
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-5
SURF. ELEV 615.8'
G.W. DEPTH See Notes

PROJECT: PROPOSED BUILDING
PROJ. NO.: BE-15-038
LOCATION: 1088 NIAGARA STREET
BUFFALO, NY

DEPTH FT.		SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N		SOIL OR ROCK CLASSIFICATION	NOTES
		1	28	26				Brown-Gray Silty CLAY, some f-c Gravel, some f-c	
			23	6		49		Sand (moist, FILL)	
		2	6	8				Brown Silty CLAY, tr.sand, tr.gravel (moist, FILL)	
			9	8		17			
5		3	3	3					
			6	9		9			
		4	11	12					
			18	15		30		Black f-c SAND and f-c Gravel, tr.brick fragments	
		5	11	12				(moist, FILL)	
10			13	17		25		Gray f-c GRAVEL, some f-c Sand (moist, FILL)	
		6	7	7				Contains tr.brick fragments	
			10	12		17			
		7	24	11					
			10	10		21			
15		8	4	4				Brown-Gray f-c GRAVEL, little f-c Sand, little Clay	
			3	4		7		(moist, FILL)	
		9	6	7				Brown Silty CLAY, little Brick fragments, tr.gravel	
			11	23		18		(moist, FILL)	
		10	11	27				Red Brick fragments (moist, FILL)	
20			18	15		45			Organics present
		11	3	5				Black f-c SAND and f-c Gravel, tr.clay (moist, FILL)	within Sample #11
			4	5		9			
		12	11	20					
			23	50/0.4		43			
25		13	5	4				Dark Gray-Black f-c GRAVEL and f-c Sand	
			2	3		6		(moist, FILL)	
		14	10	3					Organics present
			3	3		6			within Sample #14
		15	2	2				Dark Brown Silty CLAY, tr.gravel, tr.sand	
30			3	4		5		(moist, FILL)	
		16	2	3				Gray f-c SAND, little f-c Gravel, tr.clay	
			23	11		26		(moist, FILL)	
		17	10	3					
			4	4		7			
35		18	11	17				Black f-c SAND, tr.gravel, tr.clay (moist, FILL)	
			16	16		33			REF = Sample Spoon
		19	6	8				Gray-Black f-c GRAVEL, some f-c Sand, tr.clay	Refusal
			10	14		18		(moist, FILL)	Organics present
		20	24	50/0.1		REF		Gray f-c SAND and Rock fragments	within Sample #19
40									NQ '2' Size Rock Core

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: J. FRIDMAN

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 3/2/2015
FINISH 3/3/2015
SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-5
SURF. ELEV 615.8'
G.W. DEPTH See Notes

PROJECT: PROPOSED BUILDING
PROJ. NO.: BE-15-038
LOCATION: 1088 NIAGARA STREET
BUFFALO, NY

DEPTH FT.		SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N		SOIL OR ROCK CLASSIFICATION	NOTES
								Gray and Black LIMESTONE Rock, medium hard, sound, thinly bedded to bedded, occasional chert nodules	RUN #1: 39.0' - 44.0' REC = 80% RQD = 68%
45								Boring Compelte at 44.0'	No Free Standing Water encountered prior to Coring Free Standing Water recorded at 37.0' after Coring
50									
55									
60									
65									
70									
75									
80									

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: J. FRIDMAN

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 3/2/2015
FINISH 3/2/2015
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-6
SURF. ELEV 616.5'
G.W. DEPTH See Notes

PROJECT: PROPOSED BUILDING
PROJ. NO.: BE-15-038
LOCATION: 1088 NIAGARA STREET
BUFFALO, NY

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	17	50/0.1		REF	Brown Silty CLAY, tr.gravel (moist, FILL)	Organics present within Sample #1
						Gray Crushed STONE (moist, FILL)	
	2	23	17			Gray SLAG and Brick fragments (moist, FILL)	
		15	8		32		REF = Sample Spoon Refusal
5	3	3	5			Brown Silty CLAY (moist, stiff, CL)	
		6	7		11		
	4	5	5			Contins tr.gravel	
		6	8		11		
	5	7	6				
10		5	5		11		
						Boring Complete at 10.0'	No Free Standing Water encountered at Boring Completion
15							
20							
25							
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: J. FRIDMAN

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 3/2/2015
FINISH 3/2/2015
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-7
SURF. ELEV 615.9'
G.W. DEPTH See Notes

PROJECT: PROPOSED BUILDING
PROJ. NO.: BE-15-038
LOCATION: 1088 NIAGARA STREET
BUFFALO, NY

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	41	38			Black f-c SAND and f-c Gravel, tr.brick fragments	
		27	8		65		
	2	6	6			Brown Silty CLAY, little f-c Sand, tr.gravel	
		7	4		13	(moist, FILL)	
5	3	3	2			Contains tr.sand	
		5	5		7		
	4	5	7			Black-Brown Silty CLAY, little f-c Gravel (wet, FILL)	
		10	13		17		
	5	12	13				
10		12	10		25		
						Boring Complete at 10.0'	No Free Standing Water encountered at Boring Completion
15							
20							
25							
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: J. FRIDMAN

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 2/27/2015
FINISH 2/27/2015
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-8
SURF. ELEV 614.1'
G.W. DEPTH See Notes

PROJECT: PROPOSED BUILDING
PROJ. NO.: BE-15-038
LOCATION: 1088 NIAGARA STREET
BUFFALO, NY

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	11	23			Brown f-c SAND, some Silt, tr.gravel (moist, FILL)	
		17	18		40		
	2	5	10			Brown-Black Silty CLAY, little Gravel (moist, FILL)	
		7	8		17		
5	3	4	6			Black f-c SAND, some f-c Gravel (moist, FILL)	
		4	3		10		
	4	3	2			(wet)	
		3	2		5		
	5	3	3			Dark Brown Silty CLAY, tr.gravel	
10		3	4		6	(moist-wet, medium, CL)	
	6	3	4				
		4	7		8	(moist)	
15							
	7	5	6			(stiff)	
		8	11		14		
20							
	8	5	7			(v.stiff)	
		12	14		19		REF = Sample Spoon Refusal
25							Slight petroleum odor noted from Sample #8
	9	7	11				
		16	22		27		Moderate petroleum odor noted from Sample #9
							Strong petroleum odor noted from Sample #10
30							
	10	50/0.4			REF	Gray LIMESTONE Rock fragments	
						Boring Complete with Sample Spoon Refusal at 30.4' and Auger Refusal at 30.8'	Free Standing Water recorded at 30' at Boring Completion
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: J. FRIDMAN

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 2/27/2015
FINISH 2/27/2015
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-9
SURF. ELEV 613.7'
G.W. DEPTH See Notes

PROJECT: PROPOSED BUILDING
PROJ. NO.: BE-15-038
LOCATION: 1088 NIAGARA STREET
BUFFALO, NY

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	8	9			Brown Silty CLAY, some f-c Gravel, tr.f-c Sand	Organics present within
		10	11		19	(moist, FILL)	Sample #1
	2	5	4			(moist, wet)	
		3	4		7		
5	3	3	4			(wet)	
		4	4		8		
	4	4	3			Contains "and" f-c Gravel	
		3	3		6		
	5	5	8			(moist)	
10		6	10		14		
	6	5	3			Contains tr.brick fragments	
		3	3		6		
15							
	7	4	4			(wet)	
		4	6		8		
20							
	8	6	7			Black f-c SAND, tr.gravel (moist, FILL)	
		10	11		17		
	9	7	11				
		11	10		22		
25	10	6	8				
		12	16		20		
	11	16	22				
		24	18		46		
	12	16	10			Brown-Gray Silty CLAY, tr.gravel (wet, FILL)	Moderate petroleum odor
30		7	4		17	Contains some Gravel/Brick fragments	#15
	13	7	6				Strong petroleum odor
		12	14		18		#16
	14	10	9			Black f-c SAND and f-c Gravel/Brick fragments,	
		6	4		15	tr.clay (moist-wet, FILL)	Organics present within
35	15	4	5			Brown-Gray Silty CLAY, litlte f-c Gravel (moist, FILL)	Sample #16
		5	10		10		
	16	6	9			Contains little Limestone Rock fragments	Free Standing Water
		14	15		23		recorded at 35' at
							Boring Completion
40						Boring Complete with Auger Refusal at 39.5'	

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: J. FRIDMAN

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

APPENDIX B

LABORATORY TEST RESULTS

Western New York Office
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Proposed Building, 1088 Niagara Street**

CLIENT: **Ellicott Development**

DATE: **March 18, 2015**

PROJECT NO.: BE-15-038
REPORT NO.: LTR-1

SAMPLE INFORMATION:
Sample No. 15-288 through 15-289 were collected by a SJB Drill Crew & received at SJB Services, Inc. on March 11, 2015. Samples are described as split spoon recovery samples from various boring at the project site. Samples were chosen for testing by Mr. Tom Seider, representing Empire-Geo Services, Inc.

ASTM D-2974: Moisture, Ash, and Organic Matter of Peat and Other Organic Soils

Sample Number	Sample Description	Moisture Content	Ash Content	Organic Content
15-288	B-1, S-3: 4' – 6'	17.7 %	97.6 %	2.4 %
15-289	B-5, S-4: 20' – 22'	16.0 %	95.0 %	5.0 %

SJB Services, Inc.

Paul Gregorczyk
Laboratory Manager

APPENDIX C

FILL MATERIAL AND EARTHWORK RECOMMENDATIONS

APPENDIX C

FILL MATERIAL AND EARTHWORK RECOMMENDATIONS

I. Material Recommendations

A. Structural Fill

Structural Fill should consist of a crusher run quarried Limestone or Dolostone, free of clay, organics and friable or deleterious particles. As a minimum, the crusher stone should meet the requirements of New York State Department of Transportation, Standard Specifications, Item 304.12 – Type 2 Subbase, with the following gradation requirements.

Sieve Size Distribution	Percent Finer by Weight
2 inch	100
¼ inch	25-60
No. 40	5-40
No. 200	0-10

B. Subbase Stone

The subbase stone course placed as the aggregate course beneath slab-on-grade and pavement construction should conform to the same material requirements as Structural Fill, stated above.

C. Suitable Granular Fill

Suitable soil material, well graded from coarse to fine and classified as GW, GP, GM, SW, SP and SM soils using the Unified Soil Classification System (ASTM D-2487) and having no more than 85 percent by weight material passing the No. 4 sieve, no more than 20 percent by weight material passing the No. 200 sieve and which is generally free of particles greater than 6 inches, will be acceptable as Suitable Granular Fill. It should also be free of topsoil, asphalt, concrete rubble, wood, debris, clay and other deleterious materials. Suitable Granular Fill can be used as foundation backfill and as subgrade fill to raise site grades beneath slab-on-grade and pavement construction.

Material meeting the requirements of New York State Department of Transportation, Standard Specifications, Item 203.07 – Select Granular Fill or Item 203.20 Select Granular Subgrade is acceptable for use as Suitable Granular Fill.

II. Placement and Compaction Requirements

All controlled fill placed beneath foundations, slab-on-grade and pavement construction, and beneath utilities should be compacted to a minimum of 95 percent of the maximum dry density as measured by the modified Proctor test (ASTM D1557). Fill placed in non-loaded landscape areas can be compacted to a minimum of 90 percent of the maximum dry density (ASTM D1557).

Placement of fill should not exceed a maximum loose lift thickness of 6 to 9 inches with the exception of the Subbase Stone course directly beneath slab on grade and pavement construction, which can be placed in a single lift not exceeding 15 inches. In addition the first lift of Engineered Fill placed to backfill undercut excavations may also be placed in a single lift not exceeding 15 inches. All succeeding lifts, however, should not exceed a maximum loose lift thickness of 6 to 9 inches. The loose lift thicknesses recommended above should be reduced, as necessary, in conjunction with the type of compaction equipment used, so that the required density is attained.

Engineered fill should have a moisture content within two percent of the optimum moisture content at the time of its compaction and compaction testing. Subgrades should be properly drained and protected from moisture and frost. Placement of fill on frozen or snow covered subgrades is not acceptable. It is recommended that all fill placement and compaction be monitored and tested on a full time basis by a representative of Empire Geo-Services, Inc.

III. Quality Assurance Testing

The following minimum laboratory and field quality assurance testing frequencies are recommended to confirm fill material quality and post placement and compaction conditions. These minimum frequencies are based on generally uniform material properties and placement conditions. Should material properties vary or conditions at the time of placement vary (i.e. moisture content, placement and compaction, procedures or equipment, etc.) Then additional testing is recommended. Additional testing, which may be necessary, should be determined by qualified geotechnical personnel, based on evaluation of the actual fill material and construction conditions.

A. Laboratory Testing of Material Properties

- Moisture content (ASTM D-2216) - 1 test per 4,000 cubic yards or no less than 2 tests per each material type.
- Grain Size Analysis (ASTM D-422) - 1 test per 4,000 cubic yards or no less than 2 tests per each material type.
- Liquid and Plastic Limits (ASTM D-4318) 1 test per 4,000 cubic yards or no less than 2 tests per each material type. Liquid and Plastic Limit testing is necessary only if appropriate, based on material composition (i.e. clayey or silty soils).

- Modified Proctor Moisture Density Relationship (ASTM D-1557) 1 test per 4,000 cubic yards or no less than 1 test per each material type. A maximum/minimum density relationship (ASTM D-4253 and ASTM D-4254) may be an appropriate substitute for ASTM D-1557 depending on material gradation.

B. Field In-Place Moisture/Density Testing (ASTM D-3017 and ASTM D-2922)

- Backfilling along trenches and foundation walls - 1 test per 100 lineal feet per lift.
- Backfilling Isolated Excavations (i.e. column foundations, manholes, etc.) 1 test per lift.
- Filling in open areas for slab-on-grade and pavement construction - 1 test per 10,000 square feet per lift.

APPENDIX D

GEOTECHNICAL REPORT LIMITATIONS

GEOTECHNICAL REPORT LIMITATIONS

Empire Geo-Services, Inc. (Empire) has endeavored to meet the generally accepted standard of care for the services completed, and in doing so is obliged to advise the geotechnical report user of our report limitations. Empire believes that providing information about the report preparation and limitations is essential to help the user reduce geotechnical-related delays, cost over-runs, and other problems that can develop during the design and construction process. Empire would be pleased to answer any questions regarding the following limitations and use of our report to assist the user in assessing risks and planning for site development and construction.

PROJECT SPECIFIC FACTORS: The conclusions and recommendations provided in our geotechnical report were prepared based on project specific factors described in the report, such as size, loading, and intended use of structures; general configuration of structures, roadways, and parking lots; existing and proposed site grading; and any other pertinent project information. Changes to the project details may alter the factors considered in development of the report conclusions and recommendations. *Accordingly, Empire cannot accept responsibility for problems which may develop if we are not consulted regarding any changes to the project specific factors that were assumed during the report preparation.*

SUBSURFACE CONDITIONS: The site exploration investigated subsurface conditions only at discrete test locations. Empire has used judgement to infer subsurface conditions between the discrete test locations, and on this basis the conclusions and recommendations in our geotechnical report were developed. It should be understood that the overall subsurface conditions inferred by Empire may vary from those revealed during construction, and these variations may impact on the assumptions made in developing the report conclusions and recommendations. *For this reason, Empire should be retained during construction to confirm that conditions are as expected, and to refine our conclusions and recommendations in the event that conditions are encountered that were not disclosed during the site exploration program.*

USE OF GEOTECHNICAL REPORT: Unless indicated otherwise, our geotechnical report has been prepared for the use of our client for specific application to the site and project conditions described in the report. *Without consulting with Empire, our geotechnical report should not be applied by any party to other sites or for any uses other than those originally intended.*

CHANGES IN SITE CONDITIONS: Surface and subsurface conditions are subject to change at a project site subsequent to preparation of the geotechnical report. Changes may include, but are not limited to, floods, earthquakes, groundwater fluctuations, and construction activities at the site and/or adjoining properties. *Empire should be informed of any such changes to determine if additional investigative and/or evaluation work is warranted.*

MISINTERPRETATION OF REPORT: The conclusions and recommendations contained in our geotechnical report are subject to misinterpretation. *To limit this possibility, Empire should review project plans and specifications relative to geotechnical issues to confirm that the recommendations contained in our report have been properly interpreted and applied.*

Subsurface exploration logs and other report data are also subject to misinterpretation by others if they are separated from the geotechnical report. This often occurs when copies of logs are given to contractors during the bid preparation process. *To minimize the potential for misinterpretation, the subsurface logs should not be separated from our geotechnical report and the use of excerpted or incomplete portions of the report should be avoided.*

OTHER LIMITATIONS: Geotechnical engineering is less exact than other design disciplines, as it is based partly on judgement and opinion. For this reason, our geotechnical report may include clauses that identify the limits of Empire's responsibility, or that may describe other limitations specific to a project. These clauses are intended to help all parties recognize their responsibilities and to assist them in assessing risks and decision making. Empire would be pleased to discuss these clauses and to answer any questions that may arise.

TEST PIT EXCAVATION LOG

Project No: 0136-013-005

Project: 1050 Niagara St, Remdial Investigation

Client: 9271 Group, LLC.

Site Location: Buffalo NY

Test Pit I.D.: TP-11

Logged By: TAB

Checked By:

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

SUBSURFACE PROFILE

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

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

Length: 19.0
Width: 2.0
Depth: 13.5

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

TEST PIT EXCAVATION LOG

Project No: 0136-013-005

Project: 1050 Niagara St, Remdial Investigation

Client: 9271 Group, LLC.

Site Location: Buffalo NY

Test Pit I.D.: TP-12

Logged By: TAB

Checked By:

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

SUBSURFACE PROFILE

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

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

Length: 20.0
Width: 2.5
Depth: 16.0

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

TEST PIT EXCAVATION LOG

Project No: 0136-013-005

Project: 1050 Niagara St, Remdial Investigation

Client: 9271 Group, LLC.

Site Location: Buffalo NY

Test Pit I.D.: TP-13

Logged By: TAB

Checked By:

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

SUBSURFACE PROFILE

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

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

Length: 25.0
Width: 4.0
Depth: 15.5

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

TEST PIT EXCAVATION LOG

Project No: 0136-013-005

Project: 1050 Niagara St, Remdial Investigation

Client: 9271 Group, LLC.

Site Location: Buffalo NY

Test Pit I.D.: TP-14

Logged By: TAB

Checked By:

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

SUBSURFACE PROFILE

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

PID VOCs ppm: 0 25 50 75 100

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

Length: 21
Width: 2.0
Depth: 15.0

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

Project No: 0136-013-005

Borehole Number: MW-1

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.: B-1

Client: 9271 Group, LLC

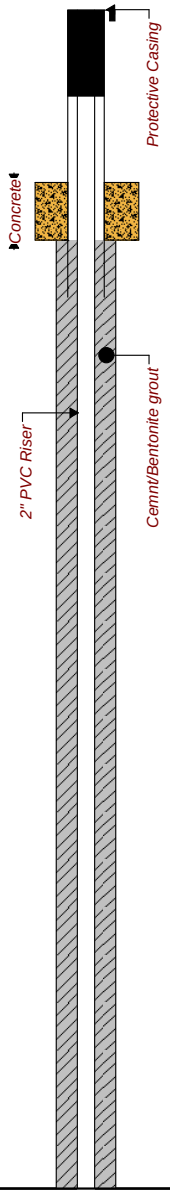
Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

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2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

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



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

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

Sheet: 1 of 2

Project No: 0136-013-005

Borehole Number: MW-1

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.: B-1

Client: 9271 Group, LLC

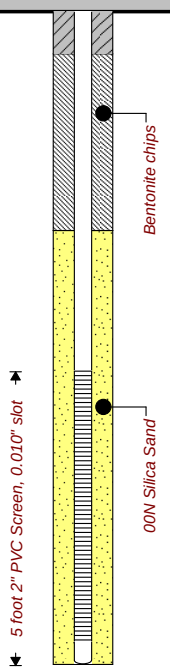
Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

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(716) 856-0635

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



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

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

Sheet: 2 of 2

Project No: 0136-013-005

Borehole Number: MW-3

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.:

Client: 9271 Group, LLC

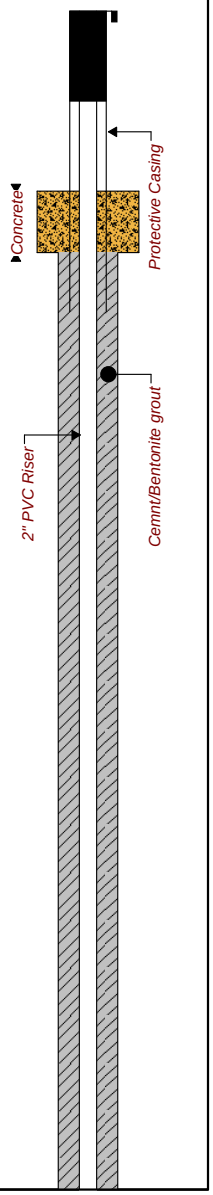
Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

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



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

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

Sheet: 1 of 2

Project No: 0136-013-005

Borehole Number: MW-3

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.:

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

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

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

Bentonite chips
First water, 29.0 fbgs.
5 foot 2" PVC Screen, 0.010" slot
00N Silica Sand

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

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

Sheet: 2 of 2

Project No: 0136-013-005

Borehole Number: MW-4

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.:

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

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

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

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

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

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

Project No: 0136-013-005

Borehole Number: MW-4

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.:

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

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

Bentonite chips

First water 26.0 fbgs.

5 foot 2" PVC Screen, 0.010" slot

00N Silica Sand

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

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

Sheet: 2 of 2

Project No: 0136-013-005

Borehole Number: MW-5

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.:

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

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

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

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

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

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

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: MW-6

Project: 1050 - 1088 Niagara Street Site

A.K.A.:

Client: 9271 Group, LLC

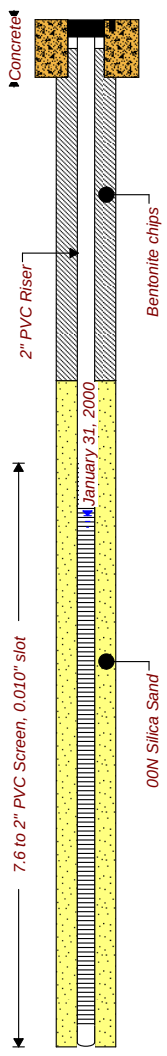
Logged By: TAB

Site Location: Buffalo NY

Checked By:

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2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
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SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 / 12.5 / 25)	Lab Sample	Well Completion Details or Remarks
0.0	0.0	Ground Surface							
	0.0	***Silt with Sand*** Black, moist, mostly non-plastic fines, some fine sand, medium dense, organic debris (roots, leaf litter), medium dense, loose when disturbed.					0.0		
	-0.5 0.5	***Lean Clay with Fill*** Reddish brown moist, mostly, low plasticiy fines, little fine sand, orange brick fragments and cinders, stiff, massive, medium toughness, medium dry strength.	C1		1.8		0.0	Sample Location	
	-4.0 4.0	***Sandy Lean Clay*** Reddish brown, moist, mostly low plasticity fines, little fine sand, trace coarse sand, trace sub rounded fine gravels, hard, massive, medium toughness, medium dry stregth.	C2		3.9		0.0		
5.0							0.0		
	-8.0 8.0	As above.	C3		3.9		0.0		
10.0							0.0		
	-12.0 12.0	As above, wet at 14.0 fbgs.	C4		0.2		0.0		
15.0			C5		1.0		0.0		
	-16.0 16.0	***Silty Sand*** Reddish brown, wet, mostly fine sand, little non-plastic fines, dense, loose when desturbed, rapid dilatancy.					0.0		
	-18.0 18.0	As above, refusal at 18.2 fbgs.	C6		0.1		0.0		
		End of Borehole							
20.0									



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

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

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: SB-9

Project: 1050 - 1088 Niagara Street Remdial Investigation

A.K.A.:

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By:

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

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

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

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

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: SB-10

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.:

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

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

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

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

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

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: SB-11

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.:

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

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

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

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

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

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: SB-12

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.: TMW-1

Client: 9271 Group, LLC

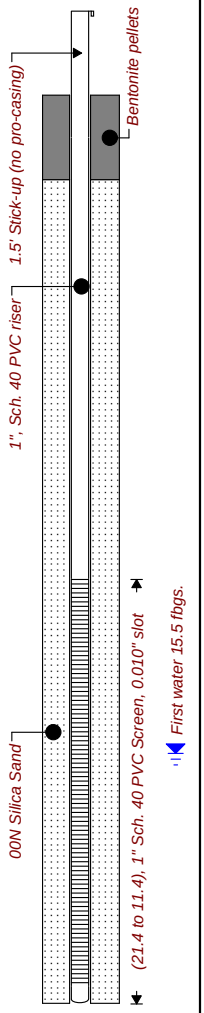
Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

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

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm	Lab Sample	Well Completion Details or Remarks
0.0	0.0	Ground Surface					0 250 500		
	0.0	***Concrete*** Concrete							
3.0	-4.0	***Sandy Lean Clay with Fill*** Reddish brown, moist, mostly low plasticity fines, little fine sand, few fine gravel angular, medium toughness, medium dry strength, stiff, massive.	C1		3.3		0.0 0.0		
	4.0	***Lean Clay with Sand*** Reddish brown, moist, mostly low plasticity fines, little fine sand, medium toughness, medium dry strength, stiff massive	C2		3.6		0.0 0.0		
8.0	-8.0 8.0	As above, petroleum like odor.	C3		3.2		206 90.6		
13.0	-12.0 12.0	As above, hard.	C4		3.5		212	Sample Location.	
	-15.0 15.0	***Poorly Graded Gravel with Silt and Sand*** Black/grey, wet, mostly fine gravel, some fine sand, few non-plastic fines, rapid dilatency, petroleum-like odor.							
18.0	-16.0 16.0	As above.	C5		1.5		60.2 75.3		
	-20.0 20.0	As above, with with coarse sand.	C6		1.3		55.9		
23.0		***Lean Clay With Sand*** Reddish brown/brown, mostly medium plasticity fines, little fine sand, trace coarse sand (black angular), soft, slight petroleum-like odor. Macro-core refusal at 21.4 fbgs. End of Borehole							



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

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

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: SB-13

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.:

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By:

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

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

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

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

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: SB-14

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.: TMW-2

Client: 9271 Group, LLC

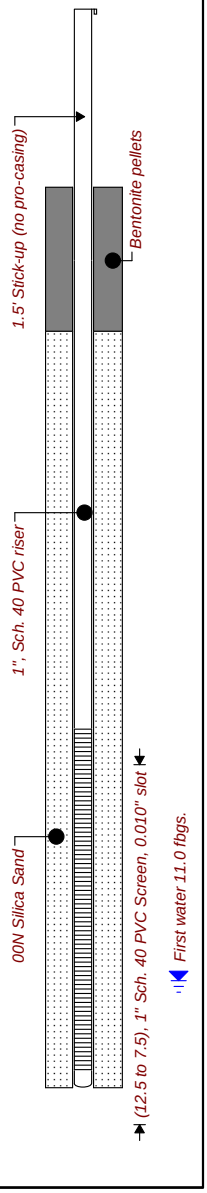
Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

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2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

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



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

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

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: SB-15

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.: TMW-3

Client: 9271 Group, LLC

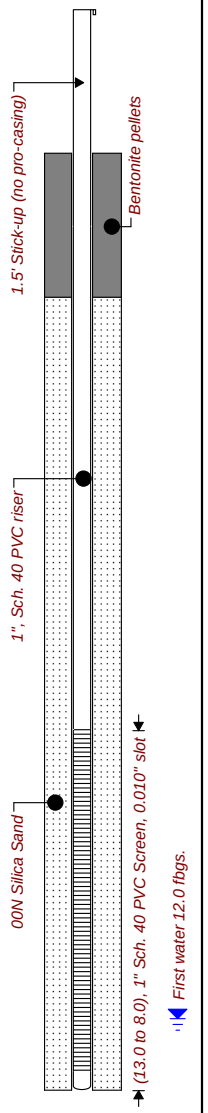
Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

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2558 Hamburg Turnpike, Suite 300
Buffalo, NY 14218
(716) 856-0635

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



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

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

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: SB-16

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.:

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

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

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

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

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

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: SB-17

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.: Former MW-1

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

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

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

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

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

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: SB-18

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.: Former MW-2

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

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

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

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

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

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: SB-19

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.: Former MW-5

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By: BCH

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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 / 1000 / 2000)	Lab Sample	Well Completion Details or Remarks
0.0	0.0	Ground Surface							
	0.0 / -0.5	***Concrete*** Concrete					0.0		
	0.5	***Sandy Lean Clay with Fill*** Grey/black, moist, mostly medium plasticity fines, some fine sand, stiff, massive medium toughness, medium dry strength, slight petroleum like odor, concete and orange brick fragments.	C1		2.0		3.3	Sample Location	
	-4.0 / 4.0	***Sandy Lean Clay*** Reddish brown, moist, mostly low plasticity fines, little fine sand, trace coarse sand, trace sub rounded fine gravels, hard, massive, medium toughness, medium dry stregth, petroleum like odor.	C2		3.3		17.4		
5.0							390		
	-8.0 / 8.0	As above.	C3		4.1		551		
10.0							1117	Sample Location (VOCs)	
							654		
	-12.0 / 12.0	As above.	C4		2.0		413		
							399		
	-14.0 / 14.0	As above.	C5		1.6		627		
15.0							10.5		
	-16.0 / 16.0	As above.	C6		1.0		22.5		
	-18.0 / 18.0	***Poorly Graded Sand*** Grey, wet, mostly medium sand, few fine gravel, trace non-plastic fines, rapid dilatency, slight petroleum like odor.	C7		1.8		107		
	-19.0 / 19.0		C8		1.0		27.1		
	-19.5 / 19.5	As above, equipment refusal at 19.5 fbgs.					17.7		
20.0		End of Borehole					10.7		

First water 18.0 fbgs.

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

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

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: B-1

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.: MW-1

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By:

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2558 Hamburg Turnpike, Suite 300
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SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 / 25 / 50)	Lab Sample	Well Completion Details or Remarks
-3.0									
	0.0	Ground Surface							
	0.0	Augered to 8.0 fbgs, for soil descriptions see MW-1 borehole log.							
2.0									
7.0									
	-8.0								
	8.0	***Lean Clay with Fill*** Brown, moist, mostly, low plasticiy fines, some fine sand, orange brick fragments, hard, massive, medium toughness, medium dry strength, slight petroleum odor.	S1	37	0.9		26.2	Sample Location	
	-10.0								
	10.0	***Limestone*** Grey, moist, limestone fragments.	S2	64	1.2		1.5		
	-10.5								
	10.5	***Poorly Graded Sand with Fill*** Brown, mostly fine sand, few fine gravels (red sandstone), trace non-plastic fines, medium dense, loose when disturbed.							
12.0	-12.0								
	12.0	***Limestone*** As 10.0 to 10.5 above.	S3	13	1.2		0.4		
	-12.5								
	12.5	***Lean Clay with Fill*** As 8.0 to 10.0 above, stiff. As above, with limestone fragments, Black fine sand.	S4	15	1.1		0.1		
	-14.0								
	14.0								
	-16.0								
	16.0	***Fill*** Slag and Orange brick, loose.	S5	8	0.5		0.2 / 0.0		
17.0									

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

Drilled By: Earth Diemensions, Inc.
Drill Rig Type: Diedrich D120
Drill Method: Hollow Stem Auger.
Comments:
Drill Date(s): 1/29/15

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

Sheet: 1 of 2

Project No: 0136-013-005

Borehole Number: B-1

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.: MW-1

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By:

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

SUBSURFACE PROFILE			SAMPLE						
Depth (fbgs)	Elev. /Depth	Description (ASTM D2488: Visual-Manual Procedure)	Sample No.	SPT N-Value	Recovery (ft)	Symbol	PID VOCs ppm (0 / 25 / 50)	Lab Sample	Well Completion Details or Remarks
	-18.0 / 18.0	As above, dark grey black, medium dense.					0.2		
			S6	15	1.2		0.0		
	-20.0 / 20.0	As above.					0.0		
			S7	14	0.2		0.0		
22.0	-22.0 / 22.0	***Poorly Graded Sand With Silt and Fill*** Brown, moist, moistly fine sand, trace non-plastic fines, trace fine gravel angular (limestone), loose.							
	-22.5 / 22.5		S8	9	1.3		0.0		
	-24.0 / 24.0	***Sandy Lean Clay with Fill*** Reddish brown, moist, mostly medium plastic fines, little fine sand, few fine gravel (sub-rounded), stiff, massive, medium toughness, medium dry strength.							
			S9	14	0.9		0.0		
	-25.5 / 25.5	As above.							
	-26.0 / 26.0	***Poorly Graded Gravel with Sand*** Grey/brown, moist, mostly fine gravel, some fine sand, trace non-plastic fines, medium dense, loose when disturbed.							
27.0			S10	100 / 4	0.3		0.0		
		As above, very dense.					0.0		
	-28.0 / 28.0	As above.							
			S11	100 / 4	0.1				
		Auger refusal at 28.4 fbgs. End of Borehole							
32.0									
37.0									

Well Completion Details: *5 foot 2" PVC Screen, 0.010" slot*; *00N Silica Sand*

Drilled By: Earth Diemensions, Inc.
Drill Rig Type: Diedrich D120
Drill Method: Hollow Stem Auger.
Comments:
Drill Date(s): 1/29/15

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

Sheet: 2 of 2

Project No: 0136-013-005

Borehole Number: B-2

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.:

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By:

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

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

Drilled By: Earth Diemensions, Inc.
Drill Rig Type: Diedrich D120
Drill Method: Hollow Stem Auger.
Comments:
Drill Date(s): 1/30/15

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

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: B-3

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.:

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By:

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

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

Drilled By: Earth Diemensions, Inc.
Drill Rig Type: Diedrich D120
Drill Method: Hollow Stem Auger.
Comments:
Drill Date(s): 1/30/15

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

Sheet: 1 of 1

Project No: 0136-013-005

Borehole Number: B-4

Project: 1050 - 1088 Niagara Street Remedial Investigation

A.K.A.: MW-5

Client: 9271 Group, LLC

Logged By: TAB

Site Location: Buffalo NY

Checked By:

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

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

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

Drilled By: Earth Diemensions, Inc.
Drill Rig Type: Diedrich D120
Drill Method: Hollow Stem Auger.
Comments:
Drill Date(s): 1/30/15

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

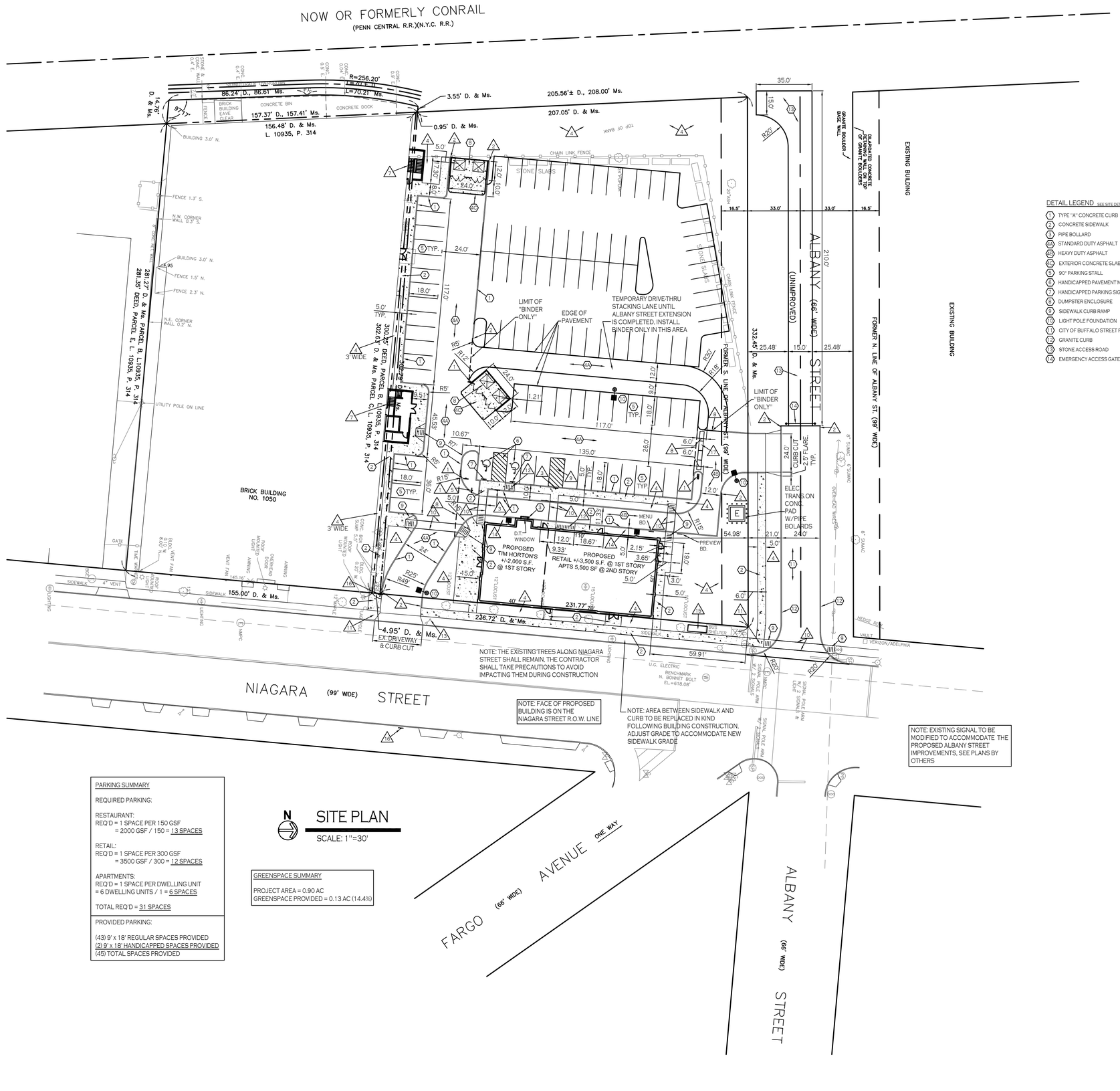
Sheet: 1 of 1

APPENDIX F

CONSTRUCTION DRAWINGS AND DETAILS

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SITE PLAN

SCALE: 1"=30'

PARKING SUMMARY

REQUIRED PARKING:

RESTAURANT:
REQ'D = 1 SPACE PER 150 GSF
= 2000 GSF / 150 = 13 SPACES

RETAIL:
REQ'D = 1 SPACE PER 300 GSF
= 3500 GSF / 300 = 12 SPACES

APARTMENTS:
REQ'D = 1 SPACE PER DWELLING UNIT
= 6 DWELLING UNITS / 1 = 6 SPACES

TOTAL REQ'D = 31 SPACES

PROVIDED PARKING:

(43) 9' x 18' REGULAR SPACES PROVIDED
(2) 9' x 18' HANDICAPPED SPACES PROVIDED
(45) TOTAL SPACES PROVIDED

GREENSPACE SUMMARY

PROJECT AREA = 0.90 AC
GREENSPACE PROVIDED = 0.13 AC (14.4%)

DETAIL LEGEND SEE SITE DETAIL SHEET

1. TYPE "A" CONCRETE CURB
2. CONCRETE SIDEWALK
3. PIPE BOLLARD
4A. STANDARD DUTY ASPHALT
4B. HEAVY DUTY ASPHALT
5. EXTERIOR CONCRETE SLAB ON GRADE
6. 90° PARKING STALL
7. HANDICAPPED PAVEMENT MARKINGS
8. HANDICAPPED PARKING SIGN
9. DUMPSTER ENCLOSURE
10. SIDEWALK CURB RAMP
11. LIGHT POLE FOUNDATION
12. CITY OF BUFFALO STREET PAVEMENT SECTION
13. GRANITE CURB
14. STONE ACCESS ROAD
15. EMERGENCY ACCESS GATE

NOTE LEGEND

A. DRIVE-THRU DIRECTIONAL SIGN
1. RUNOUT CURB IN 2' OR MATCH EXISTING CURB
2. INSTALL "NO PARKING" SIGN, M.U.T.C.D. SIGN NO. R7-1C
3. LANDSCAPED AREA - SEE LANDSCAPE PLAN, IF NO PLANTINGS, INSTALL TOPSOIL & SEED
4. INSTALL "DO NOT ENTER" SIGN, M.U.T.C.D. SIGN NO. R5-1C
5. TRANSITION FROM CONCRETE TO GRANITE CURB AT END OF RADIUS
6. EXTERIOR STAIRS, SEE PLANS BY OTHERS
7. LIMIT OF HEAVY DUTY ASPHALT PAVEMENT
8. 4" WIDE YELLOW PAVEMENT STRIPES @ 45° AND 2' O.C., INFILL AREA AS SHOWN
9. 6" WIDE WHITE PAVEMENT STRIPE AT 5' SPACING (CROSSWALK)
10. REPLACE ADDITIONAL SIDEWALK AS REQ'D TO ACCOMMODATE CONSTRUCTION. SLOPE 1:20 MAX.
11. SLOPE SIDEWALK @ 1:12 MAX., PROVIDE COARSE BROOM FINISH ON SLOPED PORTION W/ TACTILE WARNING FIELD
12. EXISTING LIGHT POLE TO REMAIN, CONTRACTOR TO PROTECT DURING CONSTRUCTION
13. INSTALL LANDSCAPE STONE ON FILTER FABRIC BETWEEN CURB AND BUILDING
14. RELOCATED BUS SHELTER BY OTHERS
15. INSTALL "NO LEFT TURN" SIGN, M.U.T.C.D. SIGN NO. R3-2C
16. TEMPORARY DRIVE-THRU LANE BARRICADE/PLANTER

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS. CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

30' 30 0 30 60Ft.

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P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date
1	Rev. Foorpint/Doors per Architect	5/12/15
2	Permit Set	5/18/15
3	Revised per DPW letter dated 6/29/15 Revised Albany Street	7/30/15
4	Revised Niagara Street Driveway	6/8/16
5	Revised 1050 Niagara St Entrances	6/10/16
6	Revised Albany Street Extention	7/8/16

PROJECT NAME:
New Construction
Mixed Use Building
1088 Niagara Street
City of Buffalo, New York

Issued for Construction: xx.xx.xx
Municipality Submission: 2/18/15
Drawn by: C. Wood
Scale: As Noted

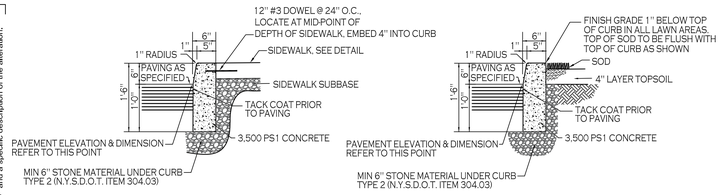
DRAWING NAME:
Site Plan

DRAWING NO.
C-100

Project no.: 15.001

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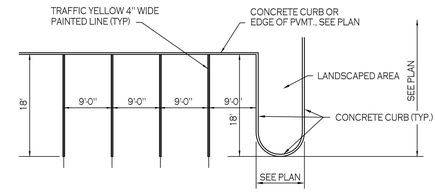
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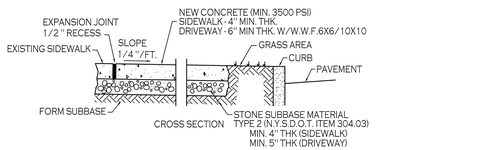
ABUTTING SIDEWALK **ABUTTING LANDSCAPE/GRASS**

NOTE: CONTROL JOINTS TO BE 2" DEEP AT 15'-0" O.C. - SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 7020700

TYPE "A" CONCRETE CURB - 1

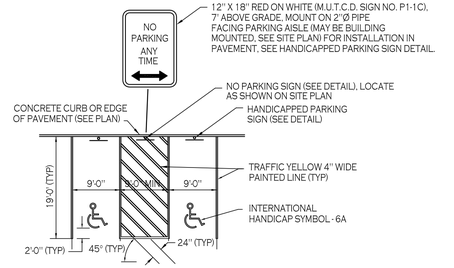


90° PARKING STALL LAYOUT - 5

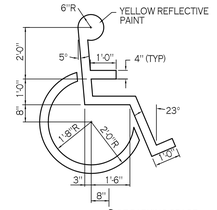


NOTES:
1. CONTROL JOINTS TO BE AT 5'-0" O.C., BOTHWAYS WHERE APPLICABLE. SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 7020700.
2. CONCRETE SIDEWALK AND DRIVEWAY MATERIAL SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 501 AND CONSTRUCTION METHODS SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 608-3.
3. SUBBASE GRADE SHALL FOLLOW THE PROPOSED GRADE OF THE SIDEWALK AND SLOPE AWAY FROM BUILDING WHERE APPLICABLE. PROVIDE CONTINUOUS STONE PATH TO CURB UNDERDRAIN WHERE PROVIDED.
4. FULL DEPTH EXPANSION JOINTS SHALL BE INSTALLED EVERY 20' O.C., BOTHWAYS WHERE APPLICABLE. SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 7020700.
5. SEE CURB DETAIL FOR DOWLING REQUIREMENTS WHERE ABUTTING CURB
6. INSTALL 6" LONG #3 DOWELS @ 12" O.C. WHERE SIDEWALK ABUTS A BUILDING WALL. AT AN ENTRANCE, THICKEN SIDEWALK TO 6" AT BUILDING WALL AND INSTALL DOWEL CENTERED IN THE 6" DEPTH. DOWELS AND THICKENING OF SIDEWALK SHALL EXTEND 18" EITHER SIDE OF ENTRANCE.
7. INSTALL ½" PREMOLDED EXPANSION JOINT WITH BACKER ROD & SEALANT WHERE SIDEWALK ABUTS BUILDING OR OTHER STRUCTURE

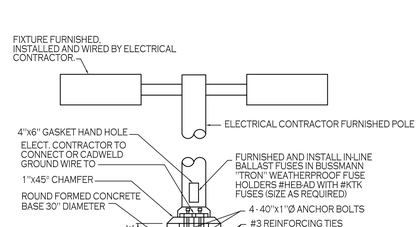
CONCRETE SIDEWALK - 2



HANDICAPPED PAVEMENT MARKINGS & SIGNAGE - 6

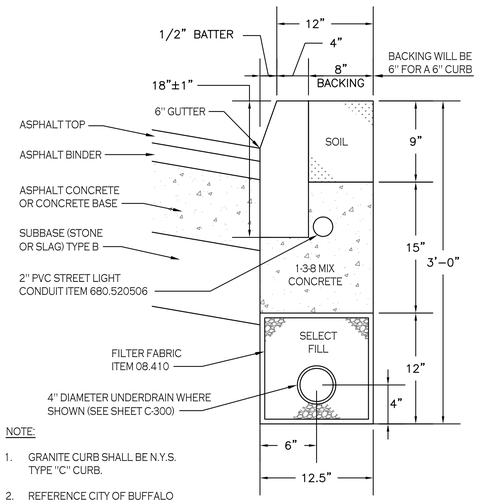


INTERNATIONAL HANDICAP SYMBOL - 6A



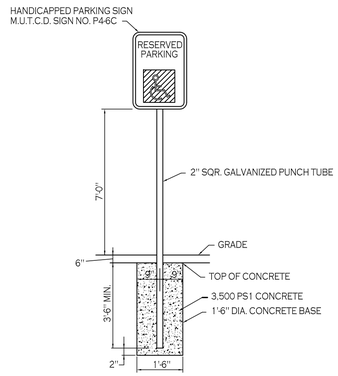
NOTES:
1. FOR LOCATIONS OF FOUNDATIONS SEE SITE PLAN
2. FOR LIGHT FIXTURE ORDERING INFORMATION SEE SITE LIGHTING PLAN
3. LIGHT POLE BASE EXPOSURE ABOVE GRADE SHALL BE:
   IN CURBED ISLANDS: 6" ABOVE TOP OF CURB ELEVATION
   IN PAVEMENT: 3' ABOVE GRADE
   IN NON-CURBED GRASS AREAS: 6" ABOVE GRADE

LIGHT POLE FOUNDATION - 10



NOTE:
1. GRANITE CURB SHALL BE N.Y.S. TYPE "C" CURB.
2. REFERENCE CITY OF BUFFALO DEPARTMENT OF PUBLIC WORKS DIVISION OF ENGINEERING SS-1.

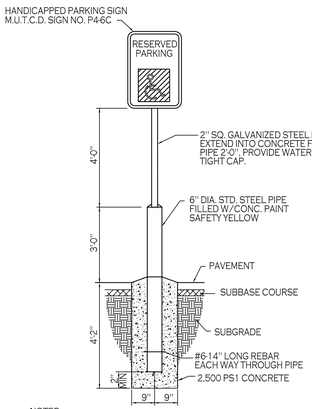
GRANITE CURB - 12
N.T.S



NOTES:
1. HANDICAPPED PARKING SIGN SHALL CONFORM WITH CURRENT STATE AND LOCAL CODES AND REGULATIONS.

HANDICAP PARKING SIGNS - 7

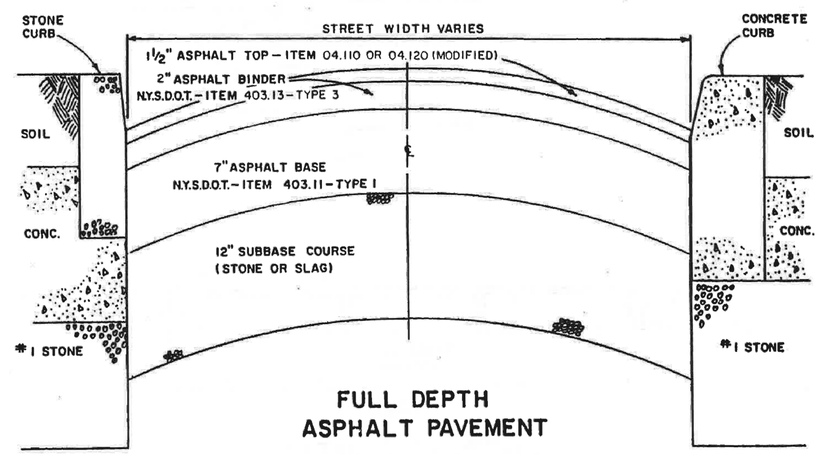
INSTALLED IN GRASS/LANDSCAPED AREA



NOTES:
1. HANDICAPPED PARKING SIGN SHALL CONFORM WITH CURRENT STATE AND LOCAL CODES AND REGULATIONS.

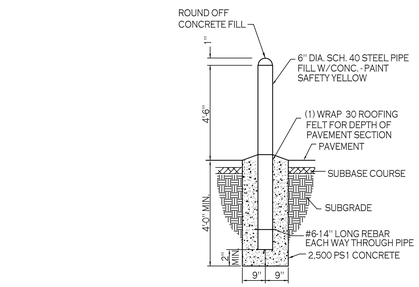
HANDICAPPED PARKING SIGN - 7

INSTALLED IN PAVEMENT

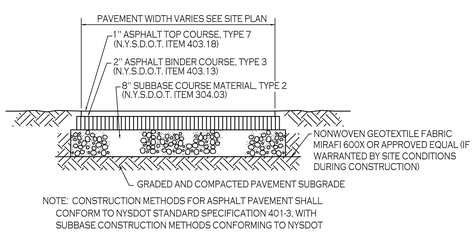


FULL DEPTH ASPHALT PAVEMENT

CITY OF BUFFALO STREET PAVEMENT SECTION - 11

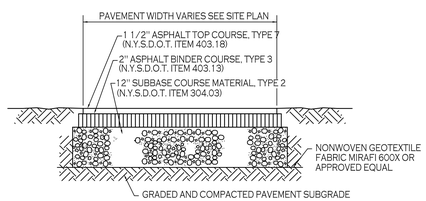


PIPE BOLLARD - 3



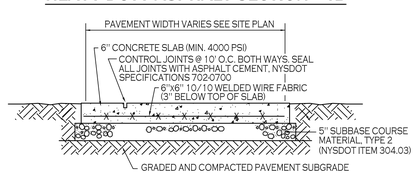
NOTE: CONSTRUCTION METHODS FOR ASPHALT PAVEMENT SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 401-3, WITH SUBBASE CONSTRUCTION METHODS CONFORMING TO NYSDOT STANDARD SPECIFICATION 304-3.

STANDARD DUTY ASPHALT SECTION - 4A



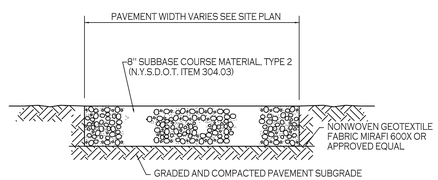
NOTE: CONSTRUCTION METHODS FOR ASPHALT PAVEMENT SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 401-3, WITH SUBBASE CONSTRUCTION METHODS CONFORMING TO NYSDOT STANDARD SPECIFICATION 304-3. SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 502-3.

HEAVY DUTY ASPHALT SECTION - 4B

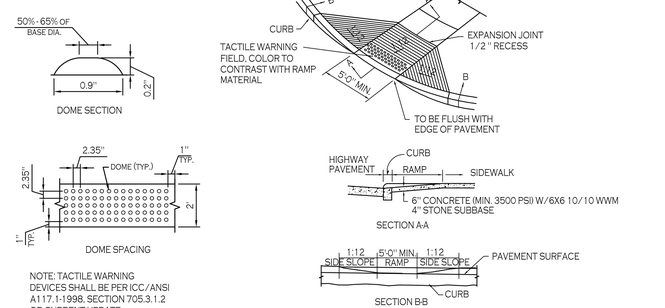


NOTE: CONCRETE PAVEMENT MATERIAL SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 501 AND CONSTRUCTION METHODS SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 502-3.

EXTERIOR CONCRETE SLAB-ON-GRADE SECTION - 4C



STONE ACCESS ROAD SECTION



SIDEWALK CURB RAMP - 9

Carmina Wood Morris DPC
487 Main Street Suite 600
Buffalo, New York 14203
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F 716.842.0263

REVISIONS:

No.	Description	Date
1	Revised curb and sidewalk details	3/3/15
2	Permit Set	5/18/15
3	Revised per DPW letter dated 6/29/15	7/30/15

PROJECT NAME:
New Construction
Mixed Use Building
1088 Niagara Street
City of Buffalo, New York

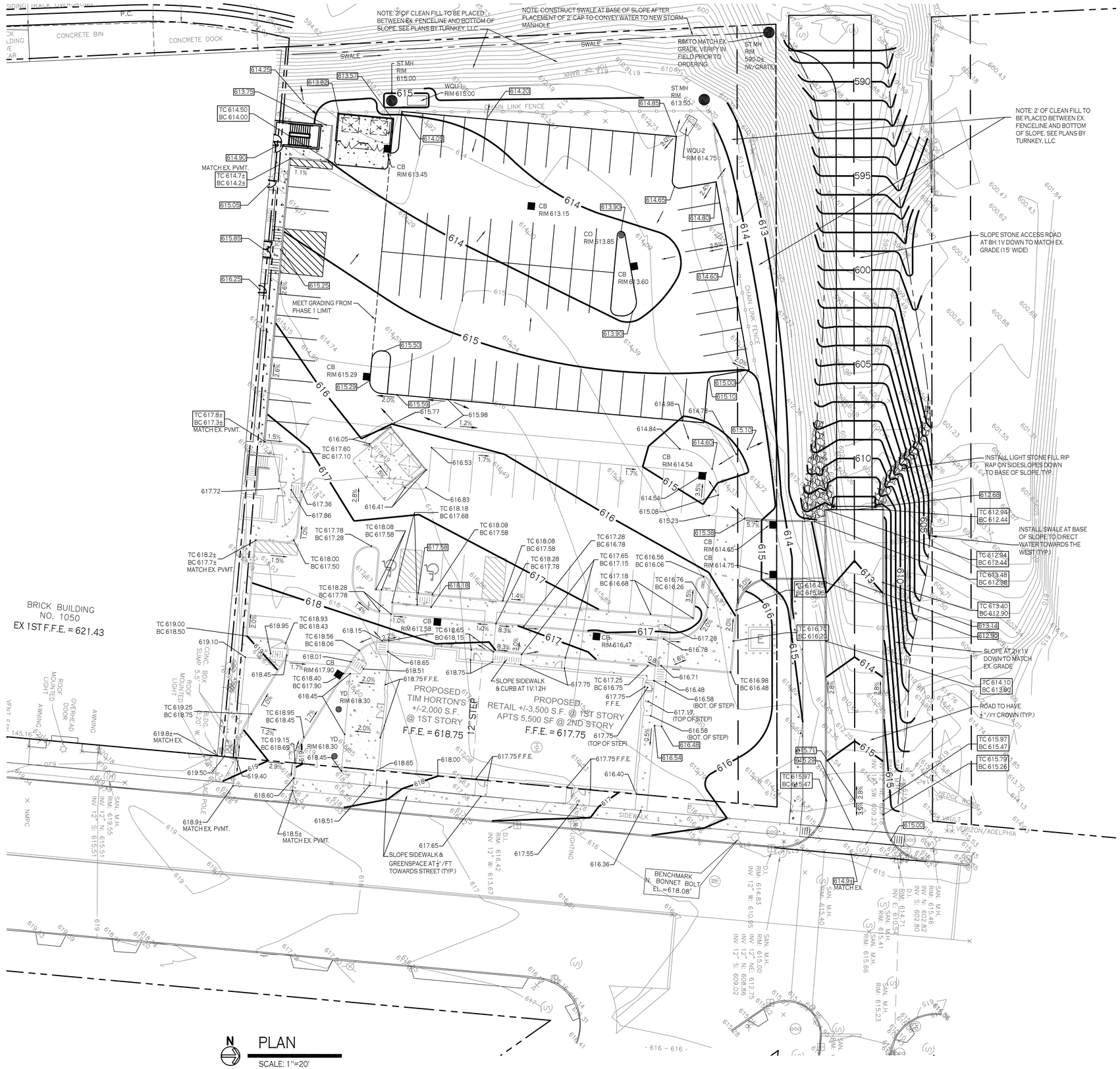
Issued for Construction: xx.xx.xx
Municipality Submission: 2/24/15
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:
Site Details

DRAWING NO.
C-101
Project no.: 15.001

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N

PLAN

SCALE: 1"=20'

GRADING LEGEND

PROPOSED CONTOUR	618
PROPOSED SPOT ELEVATION	618.00
PROPOSED TOP OF CURB/ BOTTOM OF CURB	TC 618.00 BC 617.50
EXISTING SPOT ELEVATION	615.23
PAVEMENT/GROUND SLOPE	
FINISHED FLOOR ELEVATION	F.F.E.

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

20' 20 0 20 40Ft.

Carmina Wood Morris DPC
487 Main Street Suite 600
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date
1	Rev. Treatment Structure	2/23/15
2	Rev. F.P./Doors per Architect & WQU	5/12/15
3	Permit Set	5/18/15
4	Added riprap on west end of Albany St Added Swale along West Line per BSA	6/16/15
5	Revised per DPW letter dated 6/29/15. Added Swale along West Line per BSA	7/30/15
6	Revised Bldg FFE, S.W., & Pvmt grades	8/12/15
7	Revised Niagara Street Driveway	12/15/15
8	Revised 1050 Niagara St Entrances	6/8/16
9	Revised Albany Street Extention	6/8/16
10	Rear Parking Lot Addition	6/8/16
11		9/14/16

PROJECT NAME:

New Construction

Mixed Use Building

1088 Niagara Street
City of Buffalo, New York

Issued for Construction: xx.xx.xx
Municipality Submission: 2/18/15
Drawn by: C. Wood
Scale: As Noted

DRAWING NAME:

Grading Plan

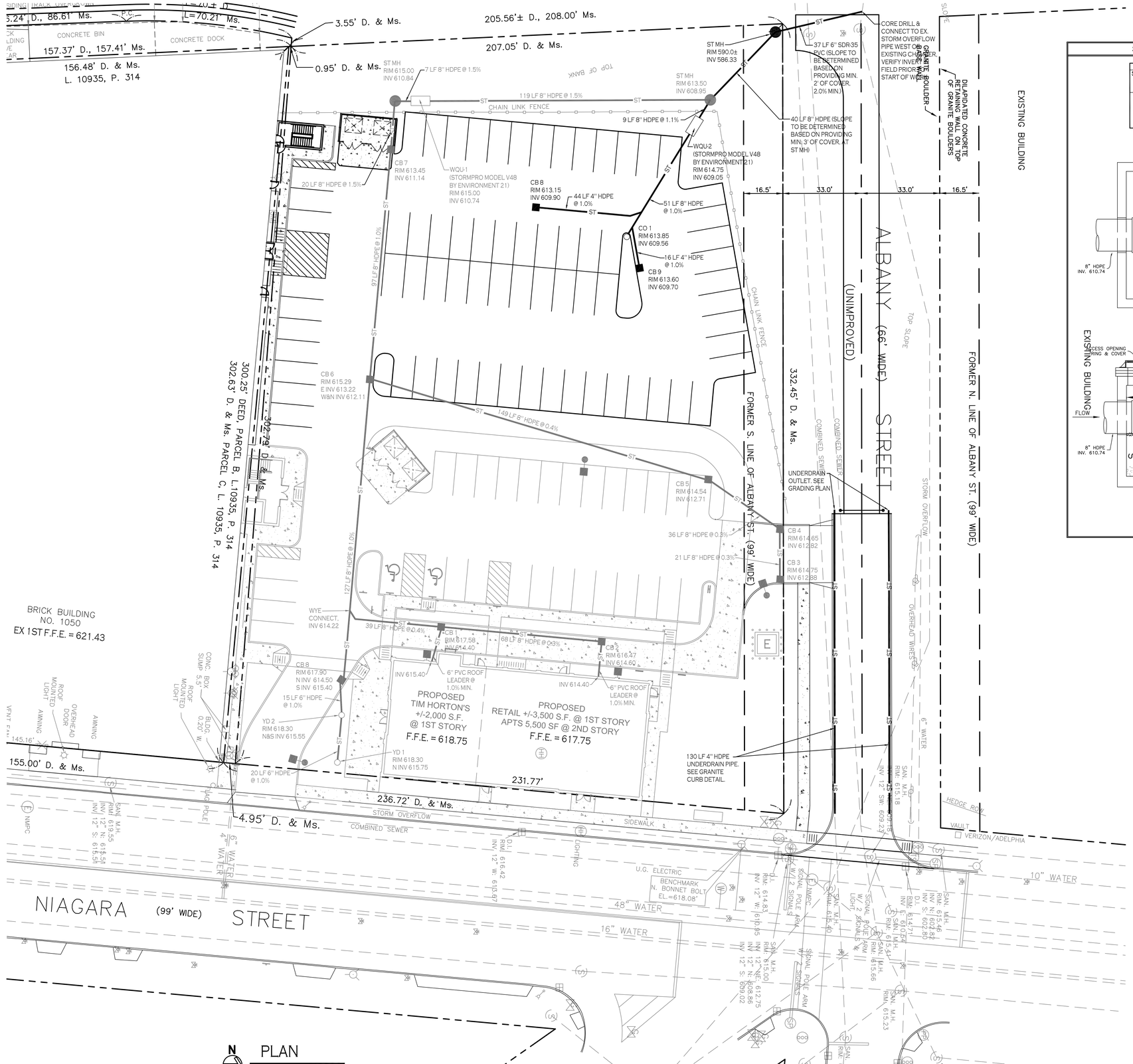
DRAWING NO.

C-200

Project no.: 15.001

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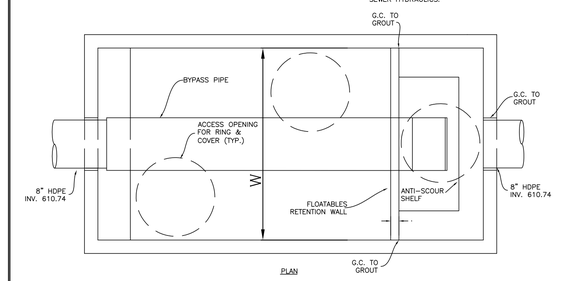


STORMPRO V WATER QUALITY TREATMENT SYSTEM

DATE: 09/04/2014
DWG. NO.: Detail - STORMPRO V

STORMPRO SIZING TABLE				
STORMPRO MODEL #	W (ft.)	L (ft.)	S (ft.)	NJDEP MTFR (cfs)
V48	4	8	2.5+	1.29
V510	5	10	2.5+	2.02
V612	6	12	3.0+	2.91
V816	8	16	4.0+	5.17
V1020	10	20	5.0+	8.08

NOTES:
1. MAXIMUM OPERATING LOSS APPROXIMATELY 0.5 FT.
2. DESIGN SPECIFICATIONS CONFORM TO LATEST A.S.T.M. C478
3. DESIGN LOADING: AASHTO HS20-44 SPEC. FOR PRECAST REINFORCED CONCRETE MANHOLE SECTIONS.
4. DESIGN OF FLOATABLES RETENTION WALL BASED ON ENVIRONMENT 21 ANALYSIS OF SITE-SPECIFIC STORM SEWER HYDRAULICS.



PROPRIETARY INFORMATION: PATENTS PENDING - ALL RIGHTS TO ENVIRONMENT 21, LLC.

NOTE: CONTRACTOR TO PROVIDE A SITE SPECIFIC SHOP DRAWING FOR REVIEW BY THE ENGINEER PRIOR TO ORDERING THE STRUCTURE

NOTE: BOUNDARY AND TOPOGRAPHIC INFORMATION PROVIDED BY OTHERS, CARMINA WOOD MORRIS, D.P.C. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

20' 20 0 20 40Ft.

Carmina Wood Morris DPC
487 Main Street Suite 600
Buffalo, New York 14203
P 716.842.3165
F 716.842.0263

REVISIONS:

No.	Description	Date
1	Rev. Treatment Structure	2/23/15
2	Rev. per BSA Comments	5/5/15
3	Rev. WQU Location	5/12/15
4	Permit Set	5/18/15
5	Revised per DPW letter dated 6/29/15, M'G W/ PLANNING & BSA LETTER DATED 7/9/15	7/30/15
6	Revised Niagara Street Driveway	6/8/16
7	Revised Albany Street Extention	7/8/16
8	Rear Parking Lot Addition	9/14/16

PROJECT NAME:
New Construction
Mixed Use Building
1088 Niagara Street
City of Buffalo, New York

Issued for Construction: xx.xx.xx
Municipality Submission: 2/18/15
Drawn by: C. Wood
Scale: As Noted

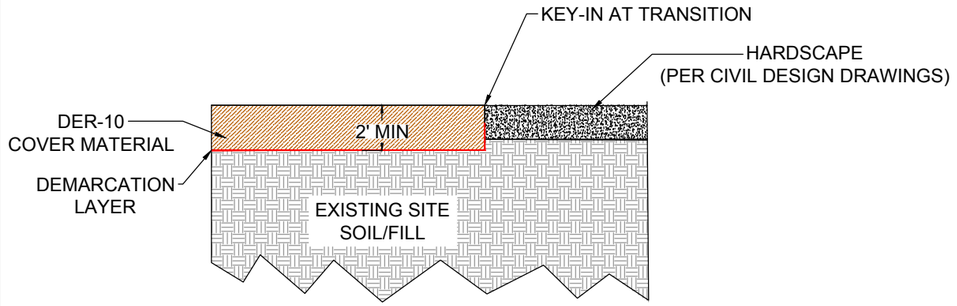
DRAWING NAME:
Storm Drainage Plan

DRAWING NO.
C-300

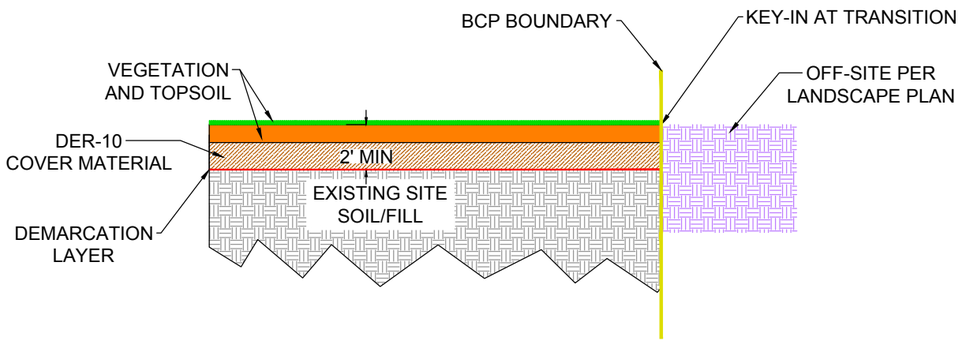
Project no.: 15.001

F:\CAD\TurnKey\Ellicott Development\1050-1088 Niagara St\SMP\Figure 8, Cover System Detail.dwg

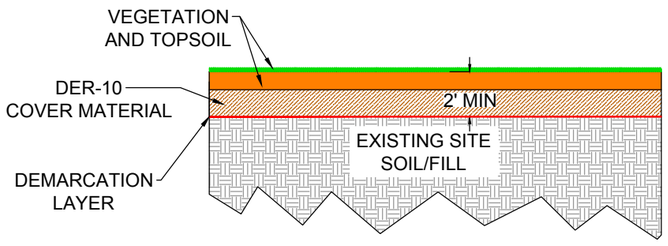
DETAIL 1 - HARDSCAPE TO SOFTSCAPE TRANSITION



DETAIL 2 - COVER SYSTEM TIE-IN TO SITE BOUNDARY



DETAIL 3 - SOIL COVER

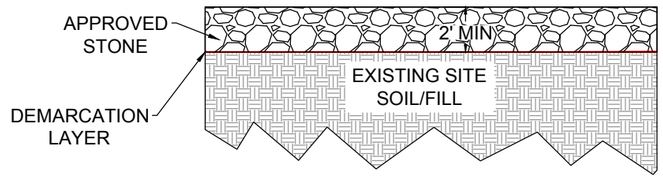


NOTES:

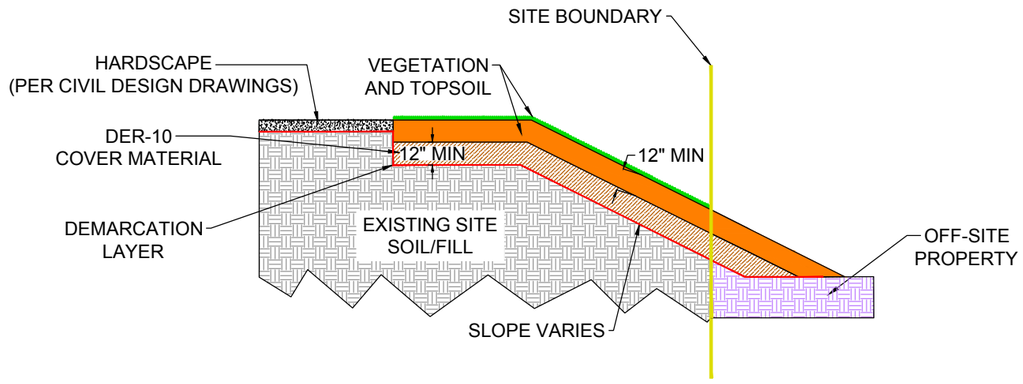
1. TRANSITION FROM SOFTSCAPE TO HARDSCAPE AND/OR BCP BOUNDARY REQUIRES KEYING-IN TO PROVIDE A MINIMUM 2' DER-10 COVER MATERIAL AT TRANSITION POINT.

2. ALL COVER MATERIAL MUST BE DEMONSTRATED TO MEET IMPORT CRITERIA FOR RESTRICTED RESIDENTIAL USE PER APPENDIX 5 OF THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) APPENDIX 5 OF DER-10 TECHNICAL GUIDANCE FOR SITE INVESTIGATION AND REMEDIATION, MAY 2010. SOIL SAMPLING TO BE PERFORMED BY QUALIFIED ENVIRONMENTAL PROFESSIONAL (QEP) PER DER-10 AND ANALYZED BY A NEW YORK STATE DEPARTMENT OF HEALTH ELAP-CERTIFIED ENVIRONMENTAL TESTING LABORATORY. AN IMPORT REQUEST MUST BE PREPARED AND APPROVED BY THE NYSDEC BROWNFIELD CLEAN-UP PROGRAM (BCP) PROJECT MANAGER PRIOR TO IMPORT OF COVER MATERIAL TO THE SITE.

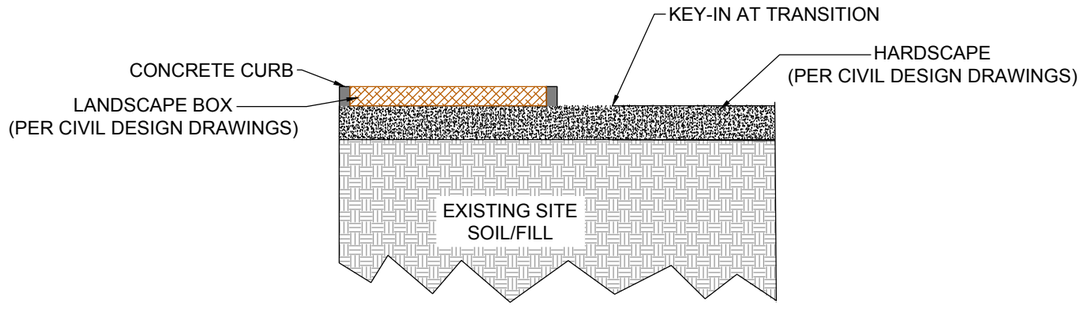
DETAIL 4 - STONE COVER



DETAIL 5 - COVER SYSTEM TIE-IN TO SITE BOUNDARY



DETAIL 6 - LANDSCAPE ABOVE HARDSCAPE TRANSITION



3. DEMARCATION LAYER SHALL BE COMPRISED OF NON-BIODEGRADABLE FABRIC NETTING OR PLASTIC FENCING.

DATE: JULY 2017
DRAFTED BY: CCB

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

JOB NO.: 0136-013-005

BCP COVER SYSTEM TRANSITION DETAILS

SITE MANAGEMENT PLAN
1050 - 1088 NIAGARA STREET SITE
BUFFALO, NEW YORK
PREPARED FOR
9271 GROUP, LLC

BM DETAILS

DISCLAIMER: *PROPERTY OF BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC. & TURNKEY ENVIRONMENTAL RESTORATION, LLC. IMPORTANT: THIS DRAWING PRINT IS LOANED FOR MUTUAL ASSISTANCE AND AS SUCH IS SUBJECT TO RECALL AT ANY TIME. INFORMATION CONTAINED HEREON IS NOT TO BE DISCLOSED OR REPRODUCED IN ANY FORM FOR THE BENEFIT OF PARTIES OTHER THAN NECESSARY SUBCONTRACTORS & SUPPLIERS WITHOUT THE WRITTEN CONSENT OF BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC & TURNKEY ENVIRONMENTAL RESTORATION, LLC.*

APPENDIX G

HEALTH & SAFETY PLAN (HASP)

SITE HEALTH AND SAFETY PLAN
for
BROWNFIELD CLEANUP PROGRAM
POST REMEDIAL ACTIVITIES

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

August 2017 0136-013-005

Prepared for:

9271 Group, LLC

1050-1088 NIAGARA STREET SITE
HEALTH AND SAFETY PLAN FOR POST REMEDIAL ACTIVITIES

ACKNOWLEDGEMENT

Plan Reviewed by (initial):

Corporate Health and Safety Director: Thomas H. Forbes, P.E.

Project Manager: Michael Lesakowski

Designated Site Safety and Health Officer: Rick L. Dubisz

Acknowledgement:
I acknowledge that I have reviewed the information contained in this site-specific Health and Safety Plan, and understand the hazards associated with performance of the field activities described herein. I agree to comply with the requirements of this plan.

NAME (PRINT)	SIGNATURE	DATE

TURNKEY

1050-1088 NIAGARA STREET SITE
HEALTH AND SAFETY PLAN FOR POST REMEDIAL ACTIVITIES

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HEALTH AND SAFETY PLAN FOR POST REMEDIAL ACTIVITIES

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1050-1088 NIAGARA STREET SITE
HEALTH AND SAFETY PLAN FOR POST REMEDIAL ACTIVITIES

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1.0 INTRODUCTION

1.1 General

In accordance with OSHA requirements contained in 29 CFR 1910.120, this Health and Safety Plan (HASP) describes the specific health and safety practices and procedures to be employed by Benchmark Environmental Engineering & Science, PLLC and TurnKey Environmental Restoration, LLC employees (referred to jointly hereafter as "Benchmark-TurnKey") during Brownfield Cleanup Program (BCP) redevelopment activities at the 1050-1088 Niagara Street Site (Site) located in the City of Buffalo, Erie County, New York (see Figure 1). This HASP presents procedures for Benchmark-TurnKey employees who will be involved with remedial field activities; it does not cover the activities of other contractors, subcontractors or other individuals on the Site. These firms will be required to develop and enforce their own HASPs as discussed in Section 2.0. Benchmark-TurnKey accepts no responsibility for the health and safety of contractor, subcontractor or other personnel.

This HASP presents information on known Site health and safety hazards using available historical information, and identifies the equipment, materials and procedures that will be used to eliminate or control these hazards. Environmental monitoring will be performed during the course of field activities to provide real-time data for on-going assessment of potential hazards.

1.2 Background

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

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

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

1.3 Known and Suspected Environmental Conditions

Benchmark-TurnKey completed a Remedial Investigation (RI) of the 1050-1088 Niagara Street Site. The RI, in addition, to previous investigations, identified contamination at the Site requiring remediation in order to satisfy the requirements for Restricted Residential Track 4 cleanup. Remedial action activities were carried out to address contamination on-site.

- Four (4) USTs and associated petroleum contaminated soil/fill were properly removed from the Site. All remaining on-Site soil/fill in the vicinity of the TP-4 UST excavation is below restricted residential soil cleanup objectives (RRSCOs).
- PCB contaminated soil/fill was excavated and removed from the site. All remaining on-Site soil/fill in the vicinity of the SB-17 PCB excavation is below restricted residential soil cleanup objectives (RRSCOs).
- SVOC and metals contaminated soil/fill was excavated and removed from the site. All remaining on-Site soil/fill in the vicinity of the western loading dock is below restricted residential soil cleanup objectives (RRSCOs).
- Remaining contamination in on-site subsurface soil/fill beneath the cover system is primarily limited to low level SVOCs and metals associated with the soil/fill from 6-16 fbgs.

1.4 Parameters of Interest

Based on the previous investigations, constituents of potential concern (COPCs) in soil and, potentially groundwater, at the Site include:

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

Groundwater: petroleum-related VOCs (including TICs)

1.5 BCP Activities

BCP remedial activities were completed between 2015 and 2017. The work involved:

- Excavation, cleaning, and removal of four (4) approximately 1,000 gallon steel USTs and associated petroleum impacted soil to meet the Part 375 Restricted-Residential Use SCOs.
- Removal and off-site disposal of PCB impacted soil in the vicinity of SB-17 to meet the Part 375 Restricted-Residential Use SCOs.
- Removal and off-site disposal of SVOC and metal impacted soil in the vicinity of the western loading dock to meet the Part 375 Restricted-Residential Use SCOs.
- Installation of a soil vapor extraction system (SVE) to address nuisance petroleum contamination in soil/fill and groundwater.
- Placement of a cover system over the Site in all areas exceeding applicable SCOs.

Benchmark-TurnKey personnel will be on-site to observe post remedial activities involving soil/fill disturbance. Activities of this nature that are reasonably expected to occur during the post-remedial period are described below.

- **Subgrade Utility Installation or Repair –** Installation or repair of new subgrade utilities (gas, electric, telecom, etc.) may be required to service existing or new buildings.

- **Subgrade Foundation Construction –** It may be necessary or desirable to construct a new structure (e.g., shed or other support building) on the property, in which case subgrade soil/fill would be encountered for foundation work.

- **Cover System –** It may be necessary to remove or repair a portion of the cover system (asphalt pavement, soil cover, etc.). Subgrade soil/fill may be exposed as part of that effort.

2.0 ORGANIZATIONAL STRUCTURE

This section of the HASP describes the lines of authority, responsibility and communication as they pertain to health and safety functions at the Site. The purpose of this chapter is to identify the personnel who impact the development and implementation of the HASP and to describe their roles and responsibilities. This chapter also identifies other contractors and subcontractors involved in work operations and establish the lines of communications among them for health and safety matters. The organizational structure described in this chapter is consistent with the requirements of 29 CFR 1910.120(b)(2). This section will be reviewed by the Project Manager and updated as necessary to reflect the current organizational structure at this Site.

2.1 Roles and Responsibilities

All Benchmark-Turnkey personnel on the Site must comply with the minimum requirements of this HASP. The specific responsibilities and authority of management, safety and health, and other personnel on this Site are detailed in the following paragraphs.

2.1.1 Corporate Health and Safety Director

The Benchmark-TurnKey Corporate Health and Safety Director is ***Mr. Thomas H. Forbes, P.E.*** The Corporate Health and Safety Director responsible for developing and implementing the Health and Safety program and policies for Benchmark Environmental Engineering & Science, PLLC and TurnKey Environmental Restoration, LLC, and consulting with corporate management to ensure adequate resources are available to properly implement these programs and policies. The Corporate Health and Safety Director coordinates Benchmark-TurnKey's Health and Safety training and medical monitoring programs and assists project management and field staff in developing site-specific health and safety plans.

2.1.2 Project Manager

The Project Manager for this Site is ***Mr. Thomas H. Forbes, P.E.*** The Project Manager has the responsibility and authority to direct all Benchmark-TurnKey work operations at the Site. The Project Manager coordinates safety and health functions with the Site Safety and Health Officer, and bears ultimate responsibility for proper implementation

of this HASP. He may delegate authority to expedite and facilitate any application of the program, including modifications to the overall project approach as necessary to circumvent unsafe work conditions. Specific duties of the Project Manager include:

- Preparing and coordinating the Site work plan.
- Providing Benchmark-TurnKey workers with work assignments and overseeing their performance.
- Coordinating health and safety efforts with the Site Safety and Health Officer (SSHO).
- Reviewing the emergency response coordination plan to assure its effectiveness.
- Serving as the primary liaison with Site contractors and the property owner.

2.1.3 Site Safety and Health Officer

The Site Safety and Health Officer (SSHO) for this Site is ***Mr. Nathan Munley***. The qualified alternate SSHO is ***Mr. Lori Riker.*** The SSHO reports to the Project Manager. The SSHO is on-site or readily accessible to the Site during all work operations and has the authority to halt Site work if unsafe conditions are detected. The specific responsibilities of the SSHO are:

- Managing the safety and health functions for Benchmark-TurnKey personnel on the Site.
- Serving as the point of contact for safety and health matters.
- Ensuring that Benchmark-TurnKey field personnel working on the Site have received proper training (per 29 CFR Part 1910.120(e)), that they have obtained medical clearance to wear respiratory protection (per 29 CFR Part 1910.134), and that they are properly trained in the selection, use and maintenance of personal protective equipment, including qualitative respirator fit testing.
- Performing or overseeing Site monitoring as required by the HASP.
- Assisting in the preparation and review of the HASP.

- Maintaining site-specific safety and health records as described in this HASP.
- Coordinating with the Project Manager, Site Workers, and Contractor's SSHO as necessary for safety and health efforts.

2.1.4 Site Workers

Site workers are responsible for: complying with this HASP or a more stringent HASP, if appropriate (i.e., Contractor and Subcontractor's HASP); using proper PPE; reporting unsafe acts and conditions to the SSHO; and following the safety and health instructions of the Project Manager and SSHO.

2.1.5 Other Site Personnel

Other Site personnel who will have health and safety responsibilities will include the Drilling Contractor, who will be responsible for developing, implementing and enforcing a Health and Safety Plan equally stringent or more stringent than Benchmark-TurnKey's HASP. Benchmark-TurnKey assumes no responsibility for the health and safety of anyone outside its direct employ. Each Contractor's HASP shall cover all non-Benchmark/TurnKey Site personnel. Each Contractor shall assign a SSHO who will coordinate with Benchmark-TurnKey's SSHO as necessary to ensure effective lines of communication and consistency between contingency plans.

In addition to Benchmark-TurnKey and Contractor personnel, other individuals who may have responsibilities in the work zone include subcontractors and governmental agencies performing Site inspection work (i.e., the New York State Department of Environmental Conservation). The Contractor shall be responsible for ensuring that these individuals have received OSHA-required training (29 CFR 1910.120(e)), including initial, refresher and site-specific training, and shall be responsible for the safety and health of these individuals while they are on-Site.

3.0 HAZARD EVALUATION

Due to the presence of certain contaminants at the Site, the possibility exists that workers will be exposed to hazardous substances during field activities. The principal points of exposure would be through direct contact with and incidental ingestion of soil, and through the inhalation of contaminated particles or vapors. Other points of exposure may include direct contact with groundwater. In addition, the use of drilling and/or medium to large-sized construction equipment (e.g., excavator) will also present conditions for potential physical injury to workers. Further, since work will be performed outdoors, the potential exists for heat/cold stress to impact workers, especially those wearing protective equipment and clothing. Adherence to the medical evaluations, worker training relative to chemical hazards, safe work practices, proper personal protection, environmental monitoring, establishment work zones and Site control, appropriate decontamination procedures and contingency planning outlined herein will reduce the potential for chemical exposures and physical injuries.

3.1 Chemical Hazards

As discussed in Section 1.3, historical activities have potentially resulted in impacts to Site soils and groundwater. Table 1 lists exposure limits for airborne concentrations of the COPCs identified in Section 1.4 of this HASP. Brief descriptions of the toxicology of the prevalent COPCs and related health and safety guidance and criteria are provided below.

- **1,2,4-Trimethylbenzene (CAS #95-63-6)** is a common gasoline additive. Acute exposure predominantly results in skin irritation and inhalation causes chemical pneumonitis. Symptoms include headache, dizziness, fatigue, muscular weakness, drowsiness.

- **1,3,5-Trimethylbenzene (CAS #108-67-8)** is a colorless, odorless flammable liquid. The substance is irritating to the eyes , the skin and the respiratory tract . If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis. The substance may cause effects on the central nervous system.

- **Isopropylbenzene (CAS #98-82-8)** is a colorless, gasoline-like odor flammable liquid. Acute exposure typically results in irritation of the eyes, mucous membranes and upper respiratory tract. Can be absorbed through the skin. Possible central nervous system depressant. Symptoms may include irritation,

dizziness, nausea, lack of coordination and narcosis.

- **N-Propylbenzene (CAS #103-65-1)** is a colorless to pale yellow flammable liquid. Inhalation or contact may irritate or burn skin and eyes. In case fire, smoke-vapor may produce irritating, corrosive and/or toxic gases. Vapors may cause dizziness or suffocation.

- **Ethylbenzene (CAS #100-41-4)** is a component of automobile gasoline. Over-exposure may cause kidney, skin liver and/or respiratory disease. Signs of exposure may include dermatitis, irritation of the eyes and mucus membranes, headache. Narcosis and coma may result in more severe cases.

- **Xylenes (o, m, and p) (CAS #95-47-6, 108-38-3, and 106-42-3)** are colorless, flammable liquids present in paint thinners and fuels. Acute exposure may cause central nervous system depression, resulting in headache, dizziness, fatigue, muscular weakness, drowsiness, and coordination loss. Repeated exposures may also cause removal of lipids from the skin, producing dry, fissured dermatitis. Exposure of high concentrations of vapor may cause eye irritation and damage, as well as irritation of the mucus membranes.

- **Polycyclic Aromatic Hydrocarbons (PAHs)** are formed as a result of the pyrolysis and incomplete combustion of organic matter such as fossil fuel. PAH aerosols formed during the combustion process disperse throughout the atmosphere, resulting in the deposition of PAH condensate in soil, water and on vegetation. In addition, several products formed from petroleum processing operations (e.g., roofing materials and asphalt) also contain elevated levels of PAHs. Hence, these compounds are widely dispersed in the environment. PAHs are characterized by a molecular structure containing three or more fused, unsaturated carbon rings. Seven of the PAHs are classified by USEPA as probable human carcinogens (USEPA Class B2). These are: benzo(a)pyrene; benzo(a)anthracene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenzo(a,h)anthracene; and indeno(1,2,3-cd)pyrene. The primary route of exposure to PAHs is through incidental ingestion and inhalation of contaminated particulates. PAHs are characterized by an organic odor, and exist as oily liquids in pure form. Acute exposure symptoms may include acne-type blemishes in areas of the skin exposed to sunlight.

- **Arsenic (CAS #7440-38-2)** is a naturally occurring element and is usually found combined with one or more elements, such as oxygen or sulfur. Inhalation is a more important exposure route than ingestion. First phase exposure symptoms include nausea, vomiting, diarrhea and pain in the stomach. Prolonged contact is corrosive to the skin and mucus membranes. Arsenic is considered a Group A

human carcinogen by the USEPA. Exposure via inhalation is associated with an increased risk of lung cancer. Exposure via the oral route is associated with an increased risk of skin cancer.

- **Barium (CAS #7440-39-3)** is a silver white metal, produced by the reduction of barium oxide. Local effects and symptoms of exposure to barium compounds, such as the hydroxide or carbonate, may include irritation of the eyes, throat, nose and skin. Systemic effects from ingestion include increased muscle contractility, reduction of heart rate/potential arrest, intestinal peristalsis, vascular constriction, and bladder contraction.

- **Cadmium** is a natural element and is usually combined with one or more elements, such as oxygen, chloride, or sulfur. Breathing high levels of cadmium severely damages the lungs and can cause death. Ingestion of high levels of cadmium severely irritates the stomach, leading to vomiting and diarrhea. Long term exposure to lower levels of cadmium leads to a buildup of this substance in the kidneys and possible kidney disease. Other potential long term effects are lung damage and fragile bones. Cadmium is suspected to be a human carcinogen.

- **Chromium (CAS #7440-47-3)** is used in the production of stainless steel, chrome plated metals, and batteries. Two forms of chromium, hexavalent (CR+6) and trivalent (CR+3) are toxic. Hexavalent chromium is an irritant and corrosive to the skin and mucus membranes. Chromium is a potential occupational carcinogen. Acute exposures to dust may cause coughing, wheezing, headaches, pain and fever.

- **Lead (CAS #7439-92-1)** can affect almost every organ and system in our bodies. The most sensitive is the central nervous system, particularly in children. Lead also damages kidneys and the immune system. The effects are the same whether it is breathed or swallowed. Lead may decrease reaction time, cause weakness in fingers, wrists, or ankles, and possibly affect memory. Lead may cause anemia.

- **Mercury (CAS #7439-97-6)** is used in industrial applications for the production of caustic and chlorine, and in electrical control equipment and apparatus. Overexposure to mercury may cause coughing, chest pains, bronchitis, pneumonia, indecision, headaches, fatigue, and salivation. Mercury is a skin and eye irritant.

With respect to the anticipated BCP redevelopment activities discussed in Section 1.5, possible routes of exposure to the above-mentioned contaminants are presented in Table 2.

The use of proper respiratory equipment, as outlined in Section 7.0 of this HASP, will minimize the potential for exposure to airborne contamination. Exposure to contaminants through dermal and other routes will also be minimized through the use of protective clothing (Section 7.0), safe work practices (Section 6.0), and proper decontamination procedures (Section 12.0).

3.2 Physical Hazards

Redevelopment activities at the 1050-1088 Niagara Street Site may present the following physical hazards:

- The potential for physical injury during heavy construction equipment use, such as backhoes, excavators and drilling equipment.
- The potential for heat/cold stress to employees during the summer/winter months (see Section 10.0).
- The potential for slip and fall injuries due to rough, uneven terrain and/or open excavations.

These hazards represent only some of the possible means of injury that may be present during redevelopment activities at the Site. Since it is impossible to list all potential sources of injury, it shall be the responsibility of each individual to exercise proper care and caution during all phases of the work.

4.0 TRAINING

4.1 Site Workers

All personnel performing BCP related activities at the Site (such as, but not limited to, equipment operators, general laborers, and drillers) and who may be exposed to hazardous substances, health hazards, or safety hazards and their supervisors/managers responsible for the Site shall receive training in accordance with 29 CFR 1910.120(e) before they are permitted to engage in operations in the exclusion zone or contaminant reduction zone. This training includes an initial 40-hour Hazardous Waste Site Worker Protection Course, an 8-hour Annual Refresher Course subsequent to the initial 40-hour training, and 3 days of actual field experience under the direct supervision of a trained, experienced supervisor. Additional site-specific training shall also be provided by the SSHO prior to the start of field activities. A description of topics to be covered by this training is provided below.

4.1.1 Initial and Refresher Training

Initial and refresher training is conducted by a qualified instructor as specified under OSHA 29 CFR 1910.120(e)(5), and is specifically designed to meet the requirements of OSHA 29 CFR 1910.120(e)(3) and 1910.120(e)(8). The training covers, as a minimum, the following topics:

- OSHA HAZWOPER regulations.
- Site safety and hazard recognition, including chemical and physical hazards.
- Medical monitoring requirements.
- Air monitoring, permissible exposure limits, and respiratory protection level classifications.
- Appropriate use of personal protective equipment (PPE), including chemical compatibility and respiratory equipment selection and use.
- Work practices to minimize risk.

- Work zones and Site control.
- Safe use of engineering controls and equipment.
- Decontamination procedures.
- Emergency response and escape.
- Confined space entry procedures.
- Heat and cold stress monitoring.
- Elements of a Health and Safety Plan.
- Spill containment.

Initial training also incorporates workshops for PPE and respiratory equipment use (Levels A, B and C), and respirator fit testing. Records and certification received from the course instructor documenting each employee's successful completion of the training identified above are maintained on file at Benchmark-TurnKey's Buffalo, NY office. Contractors and Subcontractors are required to provide similar documentation of training for all their personnel who will be involved in on-site work activities.

Any employee who has not been certified as having received health and safety training in conformance with 29 CFR 1910.120(e) is prohibited from working in the exclusion and contamination reduction zones, or to engage in any on-site work activities that may involve exposure to hazardous substances or wastes.

4.1.2 Site Training

Site workers are given a copy of the HASP and provided a site-specific briefing prior to the commencement of work to ensure that employees are familiar with the HASP and the information and requirements it contains. The Site briefing shall be provided by the SSHO prior to initiating field activities and shall include:

- Names of personnel and alternates responsible for Site safety and health.
- Safety, health and other hazards present on the Site.

- The site lay-out including work zones and places of refuge.
- The emergency communications system and emergency evacuation procedures.
- Use of PPE.
- Work practices by which the employee can minimize risks from hazards.
- Safe use of engineering controls and equipment on the site.
- Medical surveillance, including recognition of symptoms and signs of over-exposure as described in Chapter 5 of this HASP.
- Decontamination procedures as detailed in Chapter 12 of this HASP.
- The emergency response plan as detailed in Chapter 15 of this HASP.
- Confined space entry procedures, if required, as detailed in Chapter 13 of this HASP.
- The spill containment program as detailed in Chapter 9 of this HASP.
- Site control as detailed in Chapter 11 of this HASP.

Supplemental health and safety briefings will also be conducted by the SSHO on an as-needed basis during the course of the work. Supplemental briefings are provided as necessary to notify employees of any changes to this HASP as a result of information gathered during ongoing Site characterization and analysis. Conditions for which the SSHO may schedule additional briefings include, but are not limited to: a change in Site conditions (e.g., based on monitoring results); changes in the work schedule/plan; newly discovered hazards; and safety incidents occurring during Site work.

4.2 Supervisor Training

On-site safety and health personnel who are directly responsible for or who supervise the safety and health of workers engaged in hazardous waste operations (i.e., SSHO) shall receive, in addition to the appropriate level of worker training described in Section 4.1,

above, 8 additional hours of specialized supervisory training, in compliance with 29 CFR 1910.120(e)(4).

4.3 Emergency Response Training

Emergency response training is addressed in Attachment A of this HASP, Emergency Response Plan.

4.4 Site Visitors

Each Contractor's SSHO will provide a site-specific briefing to all Site visitors and other non-Benchmark/TurnKey personnel who enter the Site beyond the Site entry point. The site-specific briefing will provide information about Site hazards, the Site layout including work zones and places of refuge, the emergency communications system and emergency evacuation procedures, and other pertinent safety and health requirements as appropriate.

Site visitors will not be permitted to enter the exclusion zone or contaminant reduction zones unless they have received the level of training required for Site workers as described in Section 4.1.

5.0 MEDICAL MONITORING

Medical monitoring examinations are provided to Benchmark-TurnKey employees as stipulated under 29 CFR Part 1910.120(f). These exams include initial employment, annual and employment termination physicals for all Benchmark-TurnKey employees involved in hazardous waste site field operations. Post-exposure examinations are also provided for employees who may have been injured, received a health impairment, or developed signs or symptoms of over-exposure to hazardous substances or were accidentally exposed to substances at concentrations above the permissible exposure limits without necessary personal protective equipment. Such exams are performed as soon as possible following development of symptoms or the known exposure event.

Medical evaluations are performed by Health Works, an occupational health care provider under contract with Benchmark-TurnKey. Health Works is located in Seneca Square Plaza, 1900 Ridge Road, West Seneca, New York 14224. The facility can be reached at (716) 823-5050 to schedule routine appointments or post-exposure examinations.

Medical evaluations are conducted according to the Benchmark-TurnKey Medical Monitoring Program and include an evaluation of the workers' ability to use respiratory protective equipment. The examinations include:

- Occupational/medical history review.
- Physical exam, including vital sign measurement.
- Spirometry testing.
- Eyesight testing.
- Audio testing (minimum baseline and exit, annual for employees routinely exposed to greater than 85db).
- EKG (for employees >40 yrs age or as medical conditions dictate).
- Chest X-ray (baseline and exit, and every 5 years).
- Blood biochemistry (including blood count, white cell differential count, serum multiplastic screening).
- Medical certification of physical requirements (i.e., sight, musculoskeletal,

cardiovascular) for safe job performance and to wear respiratory protection equipment.

The purpose of the medical evaluation is to determine an employee's fitness for duty on hazardous waste sites; and to establish baseline medical data.

In conformance with OSHA regulations, Benchmark-TurnKey will maintain and preserve medical records for a period of 30 years following termination of employment. Employees are provided a copy of the physician's post-exam report, and have access to their medical records and analyses.

6.0 SAFE WORK PRACTICES

All Benchmark-TurnKey employees shall conform to the following safe work practices during all on-site work activities conducted within the exclusion and contamination reduction zones:

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth contact is strictly prohibited.

- The hands and face must be thoroughly washed upon leaving the work area and prior to engaging in any activity indicated above.

- Respiratory protective equipment and clothing must be worn by all personnel entering the Site as required by the HASP or as modified by the Site safety officer. Excessive facial hair (i.e., beards, long mustaches or sideburns) that interferes with the satisfactory respirator-to-face seal is prohibited.

- Contact with surfaces/materials either suspected or known to be contaminated will be avoided to minimize the potential for transfer to personnel, cross contamination and need for decontamination.

- Medicine and alcohol can synergize the effects of exposure to toxic chemicals. Due to possible contraindications, use of prescribed drugs should be reviewed with the Benchmark-TurnKey occupational physician. Alcoholic beverage and illegal drug intake are strictly forbidden during the workday.

- All personnel shall be familiar with standard operating safety procedures and additional instructions contained in this Health and Safety Plan.

- On-site personnel shall use the "buddy" system. No one may work alone (i.e., out of earshot or visual contact with other workers) in the exclusion zone.

- Personnel and equipment in the contaminated area shall be minimized, consistent with effective Site operations.

- All employees have the obligation to immediately report and if possible, correct unsafe work conditions.

- Use of contact lenses on-site will not be permitted. Spectacle kits for insertion into full-face respirators will be provided for Benchmark-TurnKey employees, as requested and required.

The recommended specific safety practices for working around the contractor's equipment (e.g., backhoes, bulldozers, excavators, drill rigs etc.) are as follows:

- Although the Contractor and subcontractors are responsible for their equipment and safe operation of the Site, Benchmark-TurnKey personnel are also responsible for their own safety.

- Subsurface work will not be initiated without first clearing underground utility services.

- Heavy equipment should not be operated within 20 feet of overhead wires. This distance may be increased if windy conditions are anticipated or if lines carry high voltage. The Site should also be sufficiently clear to ensure the project staff can move around the heavy machinery safely.

- Care should be taken to avoid overhead wires when moving heavy-equipment from location to location.

- Hard hats, safety boots and safety glasses should be worn at all times in the vicinity of heavy equipment. Hearing protection is also recommended.

- The work Site should be kept neat. This will prevent personnel from tripping and will allow for fast emergency exit from the Site.

- Proper lighting must be provided when working at night.

- Construction activities should be discontinued during an electrical storm or severe weather conditions.

- The presence of combustible gases should be checked before igniting any open flame.

- Personnel shall stand upwind of any construction operation when not immediately involved in sampling/logging/observing activities.

- Personnel will not approach the edge of an unsecured trench/excavation closer than 2 feet.

7.0 PERSONAL PROTECTIVE EQUIPMENT

7.1 Equipment Selection

Personal protective equipment (PPE) will be donned when work activities may result in exposure to physical or chemical hazards beyond acceptable limits, and when such exposure can be mitigated through appropriate PPE. The selection of PPE will be based on an evaluation of the performance characteristics of the PPE relative to the requirements and limitations of the Site, the task-specific conditions and duration, and the hazards and potential hazards identified at the Site.

Equipment designed to protect the body against contact with known or suspect chemical hazards are grouped into four categories according to the degree of protection afforded. These categories designated A through D consistent with United States Environmental Protection Agency (USEPA) Level of Protection designation, are:

- **Level A:** Should be selected when the highest level of respiratory, skin and eye protection is needed.

- **Level B:** Should be selected when the highest level of respiratory protection is needed, but a lesser level of skin protection is required. Level B protection is the minimum level recommended on initial Site entries until the hazards have been further defined by on-site studies. Level B (or Level A) is also necessary for oxygen-deficient atmospheres.

- **Level C:** Should be selected when the types of airborne substances are known, the concentrations have been measured and the criteria for using air-purifying respirators are met. In atmospheres where no airborne contaminants are present, Level C provides dermal protection only.

- **Level D:** Should not be worn on any Site with elevated respiratory or skin hazards. This is generally a work uniform providing minimal protection.

OSHA requires the use of certain PPE under conditions where an immediate danger to life and health (IDLH) may be present. Specifically, OSHA 29 CFR 1910.120(g)(3)(iii) requires use of a positive pressure self-contained breathing apparatus, or positive pressure air-line respirator equipped with an escape air supply when chemical exposure levels present a substantial possibility of immediate serious injury, illness or death, or impair the ability to

escape. Similarly, OSHA 29 CFR 1910.120(g)(3)(iv) requires donning totally-encapsulating chemical protective suits (with a protection level equivalent to Level A protection) in conditions where skin absorption of a hazardous substance may result in a substantial possibility of immediate serious illness, injury or death, or impair the ability to escape.

In situations where the types of chemicals, concentrations, and possibilities of contact are unknown, the appropriate level of protection must be selected based on professional experience and judgment until the hazards can be further characterized. The individual components of clothing and equipment must be assembled into a full protective ensemble to protect the worker from site-specific hazards, while at the same time minimizing hazards and drawbacks of the personal protective gear itself. Ensemble components are detailed below for levels A/B, C, and D protection.

7.2 Protection Ensembles

7.2.1 Level A/B Protection Ensemble

Level A/B ensembles include similar respiratory protection, however Level A provides a higher degree of dermal protection than Level B. Use of Level A over Level B is determined by: comparing the concentrations of identified substances in the air with skin toxicity data, and assessing the effect of the substance (by its measured air concentrations or splash potential) on the small area of the head and neck unprotected by Level B clothing.

The recommended PPE for level A/B is:

- Pressure-demand, full-face piece self-contained breathing apparatus (MSHA/-NIOSH approved) or pressure-demand supplied-air respirator with escape self-contained breathing apparatus (SCBA).
- Chemical-resistant clothing. For Level A, clothing consists of totally-encapsulating chemical resistant suit. Level B incorporates hooded one-or two-piece chemical splash suit.
- Inner and outer chemical resistant gloves.
- Chemical-resistant safety boots/shoes.
- Hardhat.

7.2.2 Level C Protection Ensemble

Level C protection is distinguished from Level B by the equipment used to protect the respiratory system, assuming the same type of chemical-resistant clothing is used. The main selection criterion for Level C is that conditions permit wearing an air-purifying device. The device (when required) must be an air-purifying respirator (MSHA/NIOSH approved) equipped with filter cartridges. Cartridges must be able to remove the substances encountered. Respiratory protection will be used only with proper fitting, training and the approval of a qualified individual. In addition, an air-purifying respirator can be used only if: oxygen content of the atmosphere is at least 19.5% in volume; substances are identified and concentrations measured; substances have adequate warning properties; the individual passes a qualitative fit-test for the mask; and an appropriate cartridge/canister is used, and its service limit concentration is not exceeded.

Recommended PPE for Level C conditions includes:

- Full-face piece, air-purifying respirator equipped with MSHA and NIOSH approved organic vapor/acid gas/dust/mist combination cartridges or as designated by the SSHO.
- Chemical-resistant clothing (hooded, one or two-piece chemical splash suit or disposable chemical-resistant one-piece suit).
- Inner and outer chemical-resistant gloves.
- Chemical-resistant safety boots/shoes.
- Hardhat.

An air-monitoring program is part of all response operations when atmospheric contamination is known or suspected. It is particularly important that the air be monitored thoroughly when personnel are wearing air-purifying respirators. Continual surveillance using direct-reading instruments is needed to detect any changes in air quality necessitating a higher level of respiratory protection.

7.2.3 Level D Protection Ensemble

As indicated above, Level D protection is primarily a work uniform. It can be worn in areas where only boots can be contaminated, where there are no inhalable toxic substances

and where the atmospheric contains at least 19.5% oxygen.

Recommended PPE for Level D includes:

- Coveralls.
- Safety boots/shoes.
- Safety glasses or chemical splash goggles.
- Hardhat.
- Optional gloves; escape mask; face shield.

7.2.4 Recommended Level of Protection for Site Tasks

Based upon current information regarding both the contaminants suspected to be present at the Site and the various tasks that are included in the remedial activities, the minimum required levels of protection for these tasks shall be as identified in Table 3.

8.0 EXPOSURE MONITORING

8.1 General

Based on the results of historic sample analysis and the nature of the redevelopment activities at the Site, the possibility exist that organic vapors and/or particulates may be released to the air during intrusive activities that penetrate the cover system that was installed as part of the BCP remedial work. Ambient breathing zone concentrations may at times, exceed the permissible exposure limits (PELs) established by OSHA for the individual compounds (see Table 1), in which case respiratory protection will be required. Respiratory and dermal protection may be modified (upgraded or downgraded) by the SSHO based upon real-time field monitoring data.

8.1.1 On-Site Work Zone Monitoring

Benchmark-TurnKey personnel will conduct routine, real-time air monitoring during all intrusive construction phases such as excavation, backfilling, drilling, etc. The work area will be monitored at regular intervals using a photo-ionization detector (PID), combustible gas meter and a particulate meter. Observed values will be recorded and maintained as part of the permanent field record.

Additional air monitoring measurements may be made by Benchmark-TurnKey personnel to verify field conditions during subcontractor oversight activities. Monitoring instruments will be protected from surface contamination during use. Additional monitoring instruments may be added if the situations or conditions change. Monitoring instruments will be calibrated in accordance with manufacturer's instructions before use.

8.1.2 Off-Site Community Air Monitoring

In addition to on-site monitoring within the work zone(s), monitoring at the down-wind portion of the Site perimeter will be conducted. This will provide a real-time method for determination of vapor and/or particulate releases to the surrounding community as a result of ground intrusive investigation work.

Ground intrusive activities are defined in the Generic Community Air Monitoring Plan and attached as Attachment C. Ground intrusive activities that involve the penetration

of the cover system include soil/waste excavation and handling, test pitting or trenching, and the removal of building foundations and basement floors.

Continuous monitoring is required for ground intrusive activities and periodic monitoring is required for non-intrusive activities. Periodic monitoring consists of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring while bailing a well, and taking a reading prior to leaving a sampling location. This may be upgraded to continuous if the sampling location is in close proximity to individuals not involved in the Site activity (i.e., on a curb of a busy street). The action levels below will be used during periodic monitoring.

8.2 Monitoring Action Levels

8.2.1 On-Site Work Zone Action Levels

The PID, or other appropriate instrument(s), will be used by Benchmark-TurnKey personnel to monitor organic vapor concentrations as specified in this HASP. Combustible gas will be monitored with the "combustible gas" option on the combustible gas meter or other appropriate instrument(s). In addition, fugitive dust/particulate concentrations will be monitored during major soil intrusion (viz., well/boring installation) using a real-time particulate monitor as specified in this plan. In the absence of such monitoring, appropriate respiratory protection for particulates shall be donned. Sustained readings obtained in the breathing zone may be interpreted (with regard to other Site conditions) as follows for Benchmark-TurnKey personnel:

- Total atmospheric concentrations of unidentified vapors or gases ranging from 0 to 1 ppm above background on the PID) - Continue operations under Level D (see Appendix A).

- Total atmospheric concentrations of unidentified vapors or gases yielding sustained readings from >1 ppm to 5 ppm above background on the PID (vapors not suspected of containing high levels of chemicals toxic to the skin) - Continue operations under Level C.

- Total atmospheric concentrations of unidentified vapors or gases yielding sustained readings of >5 ppm to 50 ppm above background on the PID - Continue operations under Level B, re-evaluate and alter (if possible) construction

methods to achieve lower vapor concentrations.

- Total atmospheric concentrations of unidentified vapors or gases above 50 ppm on the PID - Discontinue operations and exit the work zone immediately.

The particulate monitor will be used to monitor respirable dust concentrations during all intrusive activities and during handling of Site soil/fill. Action levels based on the instrument readings shall be as follows:

- Less than 50 mg/m^3 - Continue field operations.
- 50-150 mg/m^3 - Don dust/particulate mask or equivalent
- Greater than 150 mg/m^3 - Don dust/particulate mask or equivalent. Initiate engineering controls to reduce respirable dust concentration (viz., wetting of excavated soils or tools at discretion of Site Health and Safety Officer).

Readings from the field equipment will be recorded and documented on the appropriate Project Field Forms. All instruments will be calibrated before use on a daily basis and the procedure will be documented on the appropriate Project Field Forms.

8.2.2 Community Air Monitoring Action Levels

In addition to the action levels prescribed in Section 8.2.1 for Benchmark-TurnKey personnel on-site, the following criteria shall also be adhered to for the protection of downwind receptors consistent with NYSDOH requirements (Attachment C):

- **ORGANIC VAPOR PERIMETER MONITORING:**
  - If the sustained ambient air concentration of organic vapors at the downwind perimeter of the exclusion zone exceeds 5 ppm above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the sustained organic vapor decreases below 5 ppm over background, work activities can resume with continued monitoring.
  - If the sustained ambient air concentration of organic vapors at the downwind perimeter of the exclusion zone are greater than 5 ppm over background but less than 25 ppm for the 15-minute average, activities can resume provided

that: the organic vapor level 200 feet downwind of the working site or half the distance to the nearest off-site residential or commercial structure, whichever is less, but in no case less than 20 feet, is below 5 ppm over background; and more frequent intervals of monitoring, as directed by the Site Health and Safety Officer, are conducted.

- If the sustained organic vapor level is above 25 ppm at the perimeter of the exclusion zone for the 15-minute average, the Site Health and Safety Officer must be notified and work activities shut down. The Site Health and Safety Officer will determine when re-entry of the exclusion zone is possible and will implement downwind air monitoring to ensure vapor emissions do not impact the nearest off-site residential or commercial structure at levels exceeding those specified in the ***Organic Vapor Contingency Monitoring Plan*** below. All readings will be recorded and will be available for New York State Department of Environmental Conservation (DEC) and Department of Health (DOH) personnel to review.

o **ORGANIC VAPOR CONTINGENCY MONITORING PLAN:**

- If the sustained organic vapor level is greater than 5 ppm over background 200 feet downwind from the work area or half the distance to the nearest off-site residential or commercial property, whichever is less, all work activities must be halted.

- If, following the cessation of the work activities or as the result of an emergency, sustained organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest off-site residential or commercial property from the work area, then the air quality must be monitored within 20 feet of the perimeter of the nearest off-site residential or commercial structure (20-foot zone).

- If efforts to abate the emission source are unsuccessful and if sustained organic vapor levels approach or exceed 5 ppm above background within the 20-foot zone for more than 30 minutes, or are sustained at levels greater than 10 ppm above background for longer than one minute, then the ***Major Vapor Emission Response Plan*** (see below) will automatically be placed into effect.

o **MAJOR VAPOR EMISSION RESPONSE PLAN:**

Upon activation, the following activities will be undertaken:

1. All Emergency Response Contacts as listed in this Health and Safety Plan and the Emergency Response Plan (Attachment A) will be advised.

2. The local police authorities will immediately be contacted by the Site Health and Safety Officer and advised of the situation.

3. Frequent air monitoring will be conducted at 30-minute intervals within the 20-foot zone. If two sustained successive readings below action levels are measured, air monitoring may be halted or modified by the Site Health and Safety Officer.

The following personnel are to be notified in the listed sequence in the event that a Major Vapor Emission Plan is activated:

Responsible Person	Contact	Phone Number
SSHO	Police	911
SSHO	State Emergency Response Hotline	(800) 457-7362

Additional emergency numbers are listed in the Emergency Response Plan included as Attachment A.

- **EXPLOSIVE VAPORS:**
  - Sustained atmospheric concentrations of greater than 10% LEL in the work area - Initiate combustible gas monitoring at the downwind portion of the Site perimeter.
  - Sustained atmospheric concentrations of greater than 10% LEL at the downwind Site perimeter – Halt work and contact local Fire Department.

- **AIRBORNE PARTICULATE COMMUNITY AIR MONITORING**

Respirable (PM-10) particulate monitoring will be performed on a continuous basis at the upwind and downwind perimeter of the exclusion zone. The monitoring will be performed using real-time monitoring equipment capable of measuring PM-10 and integrating over a period of 15-minutes for comparison to the airborne particulate action levels. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In

addition, fugitive dust migration will be visually assessed during all work activities. All readings will be recorded and will be available for NYSDEC and NYSDOH review. Readings will be interpreted as follows:

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (ug/m^3) greater than the background (upwind perimeter) reading for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression provided that the downwind PM-10 particulate levels do not exceed 150 ug/m^3 above the upwind level and that visible dust is not migrating from the work area.

- If, after implementation of dust suppression techniques downwind PM-10 levels are greater than 150 ug/m^3 above the upwind level, work activities must be stopped and dust suppression controls re-evaluated. Work can resume provided that supplemental dust suppression measures and/or other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 ug/m^3 of the upwind level and in preventing visible dust migration.

Pertinent emergency response information including the telephone number of the Fire Department is included in the Emergency Response Plan (Attachment A).

9.0 SPILL RELEASE/RESPONSE

This chapter of the HASP describes the potential for and procedures related to spills or releases of known or suspected petroleum and/or hazardous substances on the Site. The purpose of this Section of the HASP is to plan appropriate response, control, counter-measures and reporting, consistent with OSHA requirements in 29 CFR 1910.120(b)(4)(ii)(J) and (j)(1)(viii). The spill containment program addresses the following elements:

- Potential hazardous material spills and available controls.
- Initial notification and evaluation.
- Spill response.
- Post-spill evaluation.

9.1 Potential Spills and Available Controls

An evaluation was conducted to determine the potential for hazardous material and oil/petroleum spills at this Site. For the purpose of this evaluation, hazardous materials posing a significant spill potential are considered to be:

- CERCLA Hazardous Substances as identified in 40 CFR Part 302, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).

- Extremely Hazardous Substances as identified in 40 CFR Part 355, Appendix A, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).

- Hazardous Chemicals as defined under Section 311(e) of the Emergency Planning and Community Right-To-Know Act of 1986, where such chemicals are present or will be stored in excess of 10,000 lbs.

- Toxic Chemicals as defined in 40 CFR Part 372, where such chemicals are present or will be stored in excess of 10,000 lbs.

- Chemicals regulated under 6NYCRR Part 597, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).

Oil/petroleum products are considered to pose a significant spill potential whenever the following situations occur:

- The potential for a "harmful quantity" of oil (including petroleum and non-petroleum-based fuels and lubricants) to reach navigable waters of the U.S. exists (40 CFR Part 112.4). Harmful quantities are considered by USEPA to be volumes that could form a visible sheen on the water or violate applicable water quality standards.

- The potential for any amount of petroleum to reach any waters of NY State, including groundwater, exists. Petroleum, as defined by NY State in 6NYCRR Part 612, is a petroleum-based heat source, energy source, or engine lubricant/maintenance fluid.

- The potential for any release, to soil or water, of petroleum from a bulk storage facility regulated under 6NYCRR Part 612. A regulated petroleum storage facility is defined by NY State as a site having stationary tank(s) and intra-facility piping, fixtures and related equipment with an aggregate storage volume of 1,100 gallons or greater.

The evaluation indicates that, based on Site history and decommissioning records, a hazardous material spill and/or a petroleum product spill is not likely to occur during redevelopment efforts.

9.2 Initial Spill Notification and Evaluation

Any worker who discovers a hazardous substance or oil/petroleum spill will immediately notify the Project Manager and SSHO. The worker will, to the best of his/her ability, report the material involved, the location of the spill, the estimated quantity of material spilled, the direction/flow of the spill material, related fire/explosion incidents, if any, and any associated injuries. The Emergency Response Plan presented in Attachment A of this HASP will immediately be implemented if an emergency release has occurred.

Following initial report of a spill, the Project Manager will make an evaluation as to whether the release exceeds RQ levels. If an RQ level is exceeded, the Project Manager will notify the Site owner and NYSDEC at 1-800-457-7362 within 2 hours of spill discovery. The Project Manager will also determine what additional agencies (e.g., USEPA) are to be contacted regarding the release, and will follow-up with written reports as required by the applicable regulations.

9.3 Spill Response

For all spill situations, the following general response guidelines will apply:

- Only those personnel involved in overseeing or performing containment operations will be allowed within the spill area. If necessary, the area will be roped, ribboned, or otherwise blocked off to prevent unauthorized access.
- Appropriate PPE, as specified by the SSHO, will be donned before entering the spill area.
- Ignition points will be extinguished/removed if fire or explosion hazards exist.
- Surrounding reactive materials will be removed.
- Drains or drainage in the spill area will be blocked to prevent inflow of spilled materials or applied materials.

For minor spills, the Contractor will maintain a Spill Control and Containment Kit in the Field Office or other readily accessible storage location. The kit will consist of, at a minimum, a 50 lb. bag of "speedy dry" granular absorbent material, absorbent pads, shovels, empty 5-gallon pails and an empty open-top 55-gallon drum. Spilled materials will be absorbed, and shoveled into a 55-gallon drum for proper disposal (NYSDEC approval will be secured for on-site treatment of the impacted soils/absorbent materials, if applicable). Impacted soils will be hand-excavated to the point that no visible signs of contamination remains, and will be drummed with the absorbent.

In the event of a major release or a release that threatens surface water, a spill response contractor will be called to the Site. The response contractor may use heavy equipment (e.g., excavator, backhoe, etc.) to berm the soils surrounding the spill Site or create diversion trenching to mitigate overland migration or release to navigable waters. Where feasible, pumps will be used to transfer free liquid to storage containers. Spill control/cleanup contractors in the Western New York area that may be contacted for assistance include:

- The Environmental Service Group of NY, Inc.: (716) 695-6720
- Environmental Products and Services, Inc.: (716) 447-4700
- Op-Tech: (716) 873-7680

9.4 Post-Spill Evaluation

If a reportable quantity of hazardous material or oil/petroleum is spilled as determined by the Project Manager, a written report will be prepared as indicated in Section 9.2. The report will identify the root cause of the spill, type and amount of material released, date/time of release, response actions, agencies notified and/or involved in cleanup, and procedures to be implemented to avoid repeat incidents. In addition, all re-useable spill cleanup and containment materials will be decontaminated, and spill kit supplies/disposable items will be replenished.

10.0 HEAT/COLD STRESS MONITORING

Since some of the work activities at the Site will be scheduled for both the summer and winter months, measures will be taken to minimize heat/cold stress to Benchmark-TurnKey employees. The Site Safety and Health Officer and/or his or her designee will be responsible for monitoring Benchmark-TurnKey field personnel for symptoms of heat/cold stress.

10.1 Heat Stress Monitoring

Personal protective equipment may place an employee at risk of developing heat stress, a common and potentially serious illnesses often encountered at construction, landfill, waste disposal, industrial or other unsheltered sites. The potential for heat stress is dependent on a number of factors, including environmental conditions, clothing, workload, physical conditioning and age. Personal protective equipment may severely reduce the body's normal ability to maintain temperature equilibrium (via evaporation and convection), and require increased energy expenditure due to its bulk and weight.

Proper training and preventive measures will mitigate the potential for serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat related illness. To avoid heat stress, the following steps should be taken:

- Adjust work schedules.
- Modify work/rest schedules according to monitoring requirements.
- Mandate work slowdowns as needed.
- Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided.
- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.
- Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat (i.e., eight fluid ounces must be ingested for approximately every 1 lb of weight lost). The normal thirst

mechanism is not sensitive enough to ensure that enough water will be consumed to replace lost perspiration. When heavy sweating occurs, workers should be encouraged to drink more.

- Train workers to recognize the symptoms of heat related illness.

Heat-Related Illness - Symptoms:

- Heat rash may result from continuous exposure to heat or humid air.

- Heat cramps are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include: muscle spasms; pain in the hands, feet and abdomen.

- Heat exhaustion occurs from increased stress on various body organs including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Signs and symptoms include: pale, cool, moist skin; heavy sweating; dizziness; nausea; fainting.

- Heat stroke is the most serious form of heat stress. Temperature regulation fails and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury and death occur. Competent medical help must be obtained. Signs and symptoms are: red, hot, usually dry skin; lack of or reduced perspiration; nausea; dizziness and confusion; strong, rapid pulse; coma.

The monitoring of personnel wearing protective clothing should commence when the ambient temperature is 70 degrees Fahrenheit or above. For monitoring the body's recuperative ability to excess heat, one or more of the following techniques should be used as a screening mechanism.

- Heart rate may be measured by the radial pulse for 30 seconds as early as possible in the resting period. The rate at the beginning of the rest period should not exceed 100 beats per minute. If the rate is higher, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest periods stay the same, if the pulse rate is 100 beats per minute at the beginning of the nest rest period, the following work cycle should be further shortened by 33%.

- Body temperature may be measured orally with a clinical thermometer as early as possible in the resting period. Oral temperature at the beginning of the rest period

should not exceed 99.6 degrees Fahrenheit. If it does, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest period remains the same. However, if the oral temperature exceeds 99.6 degrees Fahrenheit at the beginning of the next period, the work cycle may be further shortened by 33%. Oral temperature should be measured at the end of the rest period to make sure that it has dropped below 99.6 degrees Fahrenheit. No Benchmark-TurnKey employee will be permitted to continue wearing semi-permeable or impermeable garments when his/her oral temperature exceeds 100.6 degrees Fahrenheit.

10.2 Cold Stress Monitoring

Exposure to cold conditions may result in frostbite or hypothermia, each of which progresses in stages as shown below.

- **Frostbite** occurs when body tissue (usually on the extremities) begins to freeze. The three states of frostbite are:

    1) **Frost nip** - This is the first stage of the freezing process. It is characterized by a whitened area of skin, along with a slight burning or painful sensation. Treatment consists of removing the victim from the cold conditions, removal of boots and gloves, soaking the injured part in warm water (102 to 108 degrees Fahrenheit) and drinking a warm beverage. Do not rub skin to generate friction/ heat.

    2) **Superficial Frostbite** - This is the second stage of the freezing process. It is characterized by a whitish gray area of tissue, which will be firm to the touch but will yield little pain. The treatment is identical for Frost nip.

    3) **Deep Frostbite** - In this final stage of the freezing process the affected tissue will be cold, numb and hard and will yield little to no pain. Treatment is identical to that for Frost nip.

- **Hypothermia** is a serious cold stress condition occurring when the body loses heat at a rate faster than it is produced. If untreated, hypothermia may be fatal. The stages of hypothermia may not be clearly defined or visible at first, but generally include:

    1) Shivering
    2) Apathy (i.e., a change to an indifferent or uncaring mood)

3) Unconsciousness
4) Bodily freezing

Employees exhibiting signs of hypothermia should be treated by medical professionals. Steps that can be taken while awaiting help include:

1) Remove the victim from the cold environment and remove wet or frozen clothing. (Do this carefully as frostbite may have started.)

2) Perform active re-warming with hot liquids for drinking (Note: do not give the victim any liquid containing alcohol or caffeine) and a warm water bath (102 to 108 degrees Fahrenheit).

3) Perform passive re-warming with a blanket or jacket wrapped around the victim.

In any potential cold stress situation, it is the responsibility of the Site Health and Safety Officer to encourage the following:

- Education of workers to recognize the symptoms of frostbite and hypothermia.
- Workers should dress warmly, with more layers of thin clothing as opposed to one thick layer.
- Personnel should remain active and keep moving.
- Personnel should be allowed to take shelter in a heated area, as necessary.
- Personnel should drink warm liquids (no caffeine or alcohol if hypothermia has set in).
- For monitoring the body's recuperation from excess cold, oral temperature recordings should occur:
  - At the Site Safety Technicians discretion when suspicion is based on changes in a worker's performance or mental status.
  - At a workers request.
  - As a screening measure, two times per shift, under unusually hazardous conditions (e.g., wind chill less than 20 degrees Fahrenheit or wind chill

less than 30 degrees Fahrenheit with precipitation).

- As a screening measure, whenever anyone worker on-site develops hypothermia.

Any person developing moderate hypothermia (a core body temperature of 92 degrees Fahrenheit) will not be allowed to return to work for 48 hours without the recommendation of a qualified medical doctor.

11.0 WORK ZONES AND SITE CONTROL

Work zones around the areas designated for BCP related activities will be established on a daily basis and communicated to all employees and other Site users by the SSHO. It shall be each Contractor's Site Safety and Health Officer's responsibility to ensure that all Site workers are aware of the work zone boundaries and to enforce proper procedures in each area. The zones will include:

- Exclusion Zone ("Hot Zone") - The area where contaminated materials may be exposed, excavated or handled and all areas where contaminated equipment or personnel may travel. Flagging tape will delineate the zone. All personnel entering the Exclusion Zone must wear the prescribed level of personal protective equipment identified in Section 7.

- Contamination Reduction Zone - The zone where decontamination of personnel and equipment takes place. Any potentially contaminated clothing, equipment and samples must remain in the Contamination Reduction Zone until decontaminated.

- Support Zone - The part of the site that is considered non-contaminated or "clean." Support equipment will be located in this zone, and personnel may wear normal work clothes within this zone.

In the absence of other task-specific work zone boundaries established by the SSHO, the following boundaries will apply to all investigation and construction activities involving disruption or handling of Site soils or groundwater:

- Exclusion Zone: 50 foot radius from the outer limit of the sampling/construction activity.

- Contaminant Reduction Zone: 100 foot radius from the outer limit of the sampling/construction activity.

- Support Zone: Areas outside the Contaminant Reduction Zone.

Access of non-essential personnel to the Exclusion and Contamination Reduction Zones will be strictly controlled by the SSHO. Only personnel who are essential to the

completion of the task will be allowed access to these areas and only if they are wearing the prescribed level of protection. Entrance of all personnel must be approved by the SSHO.

The SSHO will maintain a Health and Safety Logbook containing the names of Benchmark-TurnKey workers and their level of protection. The zone boundaries may be changed by the SSHO as environmental conditions warrant, and to respond to the necessary changes in work locations on-site.

12.0 DECONTAMINATION

12.1 Decontamination for Benchmark-TurnKey Employees

The degree of decontamination required is a function of a particular task and the environment within which it occurs. The following decontamination procedure will remain flexible, thereby allowing the decontamination crew to respond appropriately to the changing environmental conditions that may arise at the Site. All Benchmark-TurnKey personnel on-site shall follow the procedure below, or the Contractor's procedure (if applicable), whichever is more stringent.

Station 1 - Equipment Drop: Deposit visibly contaminated (if any) re-useable equipment used in the contamination reduction and exclusion zones (tools, containers, monitoring instruments, radios, clipboards, etc.) on plastic sheeting.

Station 2 - Boots and Gloves Wash and Rinse: Scrub outer boots and outer gloves. Deposit tape and gloves in waste disposal container.

Station 3 - Tape, Outer Boot and Glove Removal: Remove tape, outer boots and gloves. Deposit tape and gloves in waste disposal container.

Station 4 - Canister or Mask Change: If worker leaves exclusive zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot cover donned, and worker returns to duty.

Station 5 - Outer Garment/Face Piece Removal: Protective suit removed and deposited in separate container provided by Contractor. Face piece or goggles are removed if used. Avoid touching face with fingers. Face piece and/or goggles deposited on plastic sheet. Hard hat removed and placed on plastic sheet.

Station 6 - Inner Glove Removal: Inner gloves are the last personal protective equipment to be removed. Avoid touching the outside of the gloves with bare fingers. Dispose of these gloves in waste disposal container.

Following PPE removal, personnel shall wash hands, face and forearms with absorbent wipes. If field activities proceed for duration of 6 consecutive months or longer, shower facilities will be provided for worker use in accordance with OSHA 29 CFR 1910.120(n).

12.2 Decontamination for Medical Emergencies

In the event of a minor, non-life threatening injury, personnel should follow the decontamination procedures as defined, and then administer first-aid.

In the event of a major injury or other serious medical concern (e.g., heat stroke), immediate first-aid is to be administered and the victim transported to the hospital in lieu of further decontamination efforts unless exposure to a Site contaminant would be considered "Immediately Dangerous to Life or Health."

12.3 Decontamination of Field Equipment

The Contractor in accordance with his approved Health and Safety Plan in the Contamination Reduction Zone will conduct decontamination of heavy equipment. As a minimum, this will include manually removing heavy soil contamination, followed by steam cleaning on an impermeable pad.

Benchmark-TurnKey personnel will conduct decontamination of all tools used for sample collection purposes. It is expected that all tools will be constructed of nonporous, nonabsorbent materials (i.e., metal), which will aid in the decontamination effort. Any tool or part of a tool made of porous, absorbent material (i.e., wood) will be placed into suitable containers and prepared for disposal.

Decontamination of bailers, split-spoons, spatula knives, and other tools used for environmental sampling and examination shall be as follows:

- Disassemble the equipment
- Water wash to remove all visible foreign matter.
- Wash with detergent.
- Rinse all parts with distilled-deionized water.
- Allow to air dry.
- Wrap all parts in aluminum foil or polyethylene.

13.0 CONFINED SPACE ENTRY

OSHA 29 CFR 1910.146 identifies a confined space as a space that is large enough and so configured that an employee can physically enter and do assigned work, has limited or restricted means for entry and exit, and is not intended for continuous employee occupancy. Confined spaces include, but are not limited to, trenches, storage tanks, process vessels, pits, sewers, tunnels, underground utility vaults, pipelines, sumps, wells, and excavations.

Confined space entry by Benchmark-TurnKey employees is not anticipated to be necessary to complete the BCP activities identified in Section 2.0. In the event that the scope of work changes or confined space entry appears necessary, the Project Manager will be consulted to determine if feasible engineering alternatives to confined space entry can be implemented. If confined space entry by Benchmark-TurnKey employees cannot be avoided through reasonable engineering measures, task-specific confined space entry procedures will be developed and a confined-space entry permit will be issued through Benchmark-TurnKey's corporate Health and Safety Director. Benchmark-TurnKey employees shall not enter a confined space without these procedures and permits in place.

14.0 FIRE PREVENTION AND PROTECTION

14.1 General Approach

Recommended practices and standards of the National Fire Protection Association (NFPA) and other applicable regulations will be followed in the development and application of Project Fire Protection Programs. When required by regulatory authorities, the project management will prepare and submit a Fire Protection Plan for the approval of the contracting officers, authorized representative or other designated official. Essential considerations for the Fire Protection Plan will include:

- Proper Site preparation and safe storage of combustible and flammable materials.
- Availability of coordination with private and public fire authorities.
- Adequate job-site fire protection and inspections for fire prevention.
- Adequate indoctrination and training of employees.

14.2 Equipment and Requirements

Fire extinguishers will be provided by each Contractor and are required on all heavy equipment and in each field trailer. Fire extinguishers will be inspected, serviced, and maintained in accordance with the manufacturer's instructions. As a minimum, all extinguishers shall be checked monthly and weighed semi-annually, and recharged if necessary. Recharge or replacement shall be mandatory immediately after each use.

14.3 Flammable and Combustible Substances

All storage, handling or use of flammable and combustible substances will be under the supervision of qualified persons. All tanks, containers and pumping equipment, whether portable or stationary, used for the storage and handling of flammable and combustible liquids, will meet the recommendations of the National Fire Protection Association.

14.4 Hot Work

If the scope of work necessitates welding or blowtorch operation, the hot work permit presented in Attachment B will be completed by the SSHO and reviewed/issued by the Project Manager.

15.0 EMERGENCY INFORMATION

In accordance with OSHA 29 CFR Part 1910, an Emergency Response Plan is attached to this HASP as Attachment A. The hospital route map is presented within Attachment A as Figure 1.

16.0 REFERENCES

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

TABLES

TABLE 1

TOXICITY DATA FOR CONSTITUENTS OF POTENTIAL CONCERN

1050-1088 Niagara Street Site

Buffalo, New York

Parameter	Synonyms	CAS No.	Code	Concentration Limits [1]		
				PEL	TLV	IDLH
Volatile Organic Compounds (VOCs): ppm						
1,2,4-Trimethylbenzene	Pseudocumene	95-63-6	*none*	25	25	--
1,3,5-Trimethylbenzene	Mesitylene	108-67-8	*none*	25	25	--
Ethylbenzene	Ethylbenzol, Phenylethane	100-41-4	*none*	100	100	800
Isopropylbenzene	Cumene	98-82-8	*none*	50	50	900
n-Propylbenzene	Isocumene	103-65-1	*none*	50	50	--
Xylene, Total	o-, m-, p-isomers	1330-20-7	*none*	100	100	900
Semi-volatile Organic Compounds (SVOCs) [2] : ppm						
Anthracene	*none*	120-12-7	*none*	--	--	--
Benzo(a)anthracene	*none*	56-55-3	*none*	--	--	--
Benzo(a)pyrene	*none*	50-32-8	*none*	--	--	--
Benzo(b)fluoranthene	*none*	205-99-2	*none*	--	--	--
Benzo(k)fluoranthene	*none*	207-08-9	*none*	--	--	--
Chrysene	*none*	218 01 9	*none*	--	--	--
Dibenzo(a,h)anthracene	*none*	53-70-3	*none*	--	--	--
Fluoranthene	*none*	206-44-0	*none*	--	--	--
Fluorene	*none*	86-73-7	*none*	--	--	--
Indeno(1,2,3-cd)pyrene	*none*	193-39-5	*none*	--	--	--
Naphthalene	Naphthalin, Tar camphor, White tar	91-20-3	*none*	10	10	250
Phenanthrene	*none*	85-01-8	*none*	--	--	--
Pyrene	*none*	129-00-0	*none*	--	--	--
Inorganic Compounds: mg/m [2]						
Arsenic	*none*	7440-38-2	*Ca*	0.01	0.01	5
Barium	*none*	7440-39-3	*none*	0.5	0.5	50
Cadmium	*none*	7440-43-9	*Ca*	0.005	0.01	9
Chromium	*none*	7440-47-3	*none*	1	0.5	250
Copper	*none*	7440-50-8	*none*	0.1	0.2	200
Lead	*none*	7439-92-1	*none*	0.05	0.15	100
Mercury	*none*	7439-97-6	C-0.1	0.1	0.05	10
Selenium	*none*	7782-49-2	*none*	0.2	0.2	1
Silver	*none*	7440-28-0	*none*	0.01	0.1	10
Zinc	*none*	7440-66-6	*none*	--	--	--

Notes:

1. Concentration limits as reported by NIOSH Pocket Guide to Chemical Hazards, February 2004 (NIOSH Publication No. 97-140, fourth printing with chages and updates.
2. " -- " = concentration limit not available; exposure should be minimized to the extent feasible through appropriate engineering controls & PPE.

Explanation:

Ca = NIOSH considers constituent to be a potential occupational carcinogen.
C-## = Ceiling Level equals the maximum exposure concentration allowable during the work day.
IDLH = Immediately Dangerous to Life or Health.
ND indicates that an IDLH has not as yet been determined.
TLV = Threshold Limit Value, established by American Conference of Industrial Hygienists (ACGIH), equals the maximum exposure concentration allowable for 8 hours/day @ 40 ho
TLVs are the amounts of chemicals in the air that almost all healthy adult workers are predicted to be able to tolerate without adverse effects. There are three types.
TLV-TWA (TLV-Time-Weighted Average) which is averaged over the normal eight-hour day/forty-hour work week. (Most TLVs.)
TLV-C or Ceiling limits are the concentration that should not be exceeded during any part of the working exposure.
Unless the initials "STEL" or "C" appear in the Code column, the TLV value should be considered to be the eight-hour TLV-TWA.
PEL = Permissible Exposure Limit, established by OSHA, equals the maximium exposure conconcentration allowable for 8 hours per day @ 40 hours per week

TABLE 2

POTENTIAL ROUTES OF EXPOSURE TO THE CONSTITUENTS OF POTENTIAL CONCERN

1050-1088 Niagara Street Site
Buffalo, New York

Activity [1]	Direct Contact with Soil/Fill	Inhalation of Vapors or Dust	Direct Contact with Groundwater
Post Remedial Tasks			
1. Surface and Subsurface Soil Excavation	x	x	x
2. Monitoring Well Sampling			x
3. Soil Vapor Extraction System Operation and Maintenance	x	x	

Notes:
1. Activity as described in Section 1.5 of the Health and Safety Plan.

TABLE 3

REQUIRED LEVELS OF PROTECTION
FOR IRM TASKS

1050-1088 Niagara Street Site
Buffalo, New York

Activity	Respiratory Protection [1]	Clothing	Gloves [2]	Boots [2, 3]	Other Required PPE/Modifications [2, 4]
Interim Remedial Measures Tasks					
1. Surface and Subsurface Soil Excavation	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS
2. Monitoring Well Sampling	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	SGSS
3. Soil Vapor Extraction System Operation and Maintenance	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	L/N	outer: L inner: STSS	HH SGSS

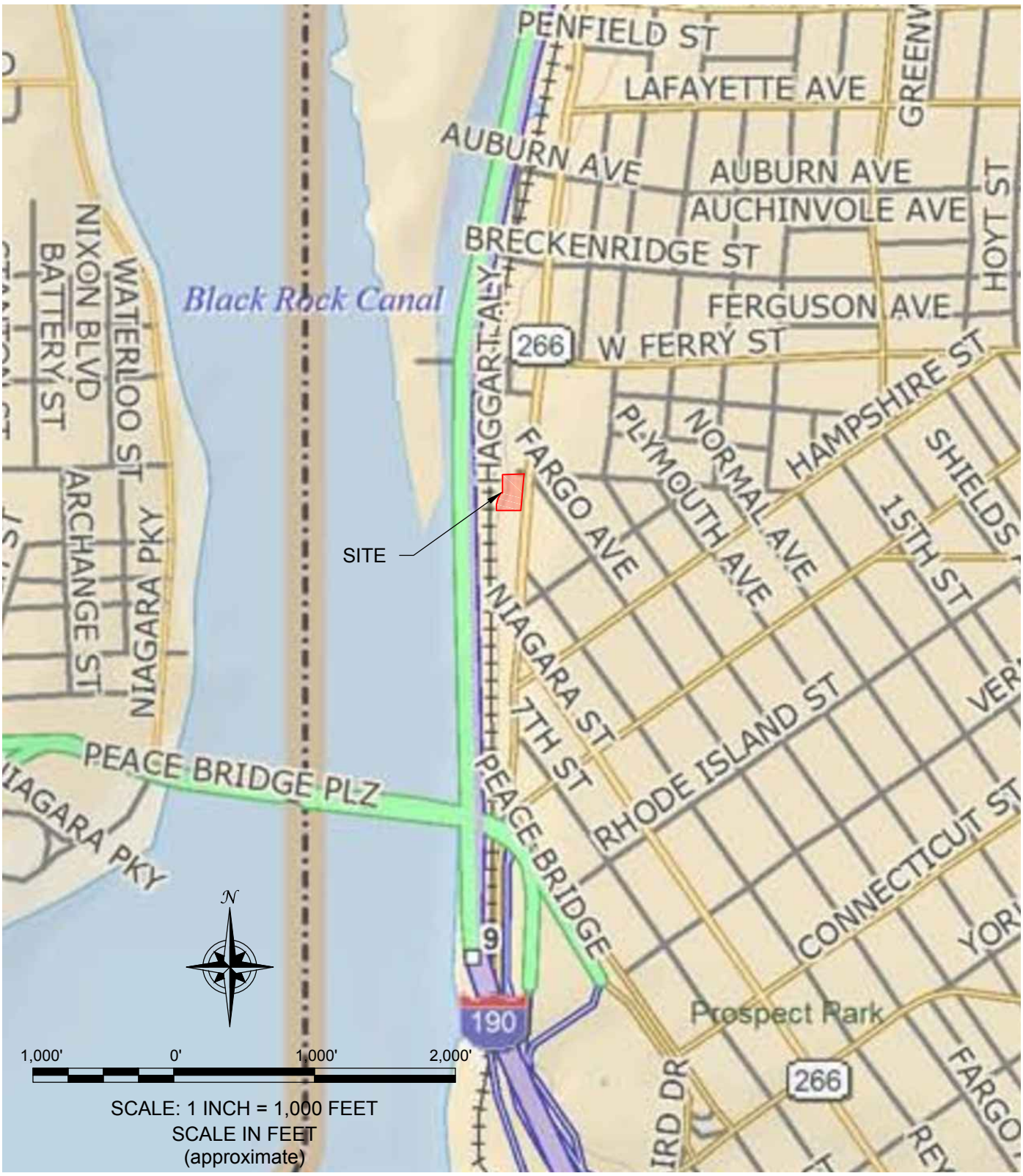
Notes:

1. Respiratory equipment shall conform to guidelines presented in Section 7.0 of this HASP. The Level C requirement is an air-purifying respirator equiped with organic compound/acid gas/dust cartridge.
2. HH = hardhat; L= Latex; L/N = latex inner glove, nitrile outer glove; N = Nitrile; S = Saranex; SG = safety glasses; SGSS = safety glasses with sideshields; STSS = steel toe safety shoes.
3. Latex outer boot (or approved overboot) required whenever contact with contaminated materials may occur. SSHO may downgrade to STSS (steel-toed safety shoes) if contact will be limited to cover/replacement soils.
4. Dust masks shall be donned as directed by the SSHO (site safety and health officer) or site safety technician whenever potentially contaminated airborne particulates (i.e., dust) are present in significant amounts in the breathing zone. Goggles may be substituted with safety glasses w/side-shields whenever contact with contaminated liquids is not anticipated.

FIGURES

F:\CAD\TurnKey\Ellicott Development\1050-1088 Niagara St\Remedial Action Work Plan\HASP\Figure 1; Site Location and Vicinity Map.dwg

FIGURE 1



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

TurnKey Environmental Restoration, LLC

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

PROJECT NO.: 0136-013-005

DATE: AUGUST 2017

DRAFTED BY: JGT/CCB

SITE LOCATION AND VICINITY MAP

HEALTH AND SAFETY PLAN

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

PREPARED FOR

9271 GROUP, LLC

F:\CAD\TurnKey\Ellicott Development\1050-1088 Niagara St\Remedial Action Work Plan\HASP\Figure 2; Site Plan.dwg

DATE: AUGUST 2017
DRAFTED BY: CCB



FIGURE 2

SITE PLAN (AERIAL)

HEALTH AND SAFETY PLAN

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

PREPARED FOR

9271 GROUP, LLC

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

TURNKEY ENVIRONMENTAL RESTORATION, LLC

2558 HAMBURG TURNPIKE, SUITE 300, BUFFALO, NY 14218, (716) 856-0599

JOB NO.: 0136-013-005

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ATTACHMENT A

EMERGENCY RESPONSE PLAN

EMERGENCY RESPONSE PLAN
for
BROWNFIELD CLEANUP PROGRAM
POST REMEDIAL ACTIVITIES

1050-1088 NIAGARA STREET SITE
BUFFALO, NEW YORK

August 2017 0136-013-005

Prepared for:

9271 GROUP, LLC

1050-1088 NIAGARA STREET SITE
HEALTH AND SAFETY PLAN FOR POST REMEDIAL ACTIVITIES
APPENDIX A: EMERGENCY RESPONSE PLAN

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Figure 1 Hospital Route Map

1.0 GENERAL

This report presents the site-specific Emergency Response Plan (ERP) referenced in the Site Health and Safety Plan (HASP) prepared for post remedial activities at the 1050-1088 Niagara Street Site in Buffalo, New York. This appendix of the HASP describes potential emergencies that may occur at the Site; procedures for responding to those emergencies; roles and responsibilities during emergency response; and training all workers must receive in order to follow emergency procedures. This ERP also describes the provisions this Site has made to coordinate its emergency response planning with other contractors on-site and with off-site emergency response organizations.

This ERP is consistent with the requirements of 29 CFR 1910.120(l) and provides the following site-specific information:

- Pre-emergency planning.
- Personnel roles, lines of authority, and communication.
- Emergency recognition and prevention.
- Safe distances and places of refuge.
- Evacuation routes and procedures.
- Decontamination procedures.
- Emergency medical treatment and first aid.
- Emergency alerting and response procedures.
- Critique of response and follow-up.
- Emergency personal protective equipment (PPE) and equipment.

2.0 PRE-EMERGENCY PLANNING

This Site has been evaluated for potential emergency occurrences, based on site hazards, the required work tasks, the site topography, and prevailing weather conditions. The results of that evaluation indicate the potential for the following site emergencies to occur at the locations indicated.

Type of Emergency:

1. Medical, due to physical injury

Source of Emergency:

1. Slip/trip/fall

Location of Source:

1. Non-specific

3.0 ON-SITE EMERGENCY RESPONSE EQUIPMENT

Emergency procedures may require specialized equipment to facilitate worker rescue, contamination control and reduction, or post-emergency clean up. Emergency response equipment available on the Site is listed below. The equipment inventory and storage locations are based on the potential emergencies described above. This equipment inventory is designed to meet on-site emergency response needs and any specialized equipment needs that off-site responders might require because of the hazards at this Site but not ordinarily stocked.

Any additional personal protective equipment (PPE) required and stocked for emergency response is also listed in below. During an emergency, the Emergency Response Coordinator (ERC) is responsible for specifying the level of PPE required for emergency response. At a minimum, PPE used by emergency responders will comply with Section 7.0, Personal Protective Equipment, of this HASP. Emergency response equipment is inspected at regular intervals and maintained in good working order. The equipment inventory is replenished as necessary to maintain response capabilities.

Emergency Equipment	Quantity	Location
First Aid Kit	1	Site Vehicle
Chemical Fire Extinguisher	2 (minimum)	All heavy equipment and Site Vehicle

Emergency PPE	Quantity	Location
Full-face respirator	1 for each worker	Site Vehicle
Chemical-resistant suits	4 (minimum)	Site Vehicle

4.0 EMERGENCY PLANNING MAPS

An area-specific map of the Site will be developed on a daily basis during performance of field activities. The map will be marked to identify critical on-site emergency planning information, including: emergency evacuation routes, a place of refuge, an assembly point, and the locations of key site emergency equipment. Site zone boundaries will be shown to alert responders to known areas of contamination. There are no major topographical features, however the direction of prevailing winds/weather conditions that could affect emergency response planning are also marked on the map. The map will be posted at site-designated place of refuge and inside the TurnKey personnel field vehicle.

5.0 EMERGENCY CONTACTS

The following identifies the emergency contacts for this ERP.

Emergency Telephone Numbers:

Project Manager: ***Michael Lesakowski***
Work: (716) 856-0599
Mobile: (716) 818-3954

Corporate Health and Safety Director: ***Thomas H. Forbes***
Work: (716) 856-0599
Mobile: (716) 864-1730

Site Safety and Health Officer (SSHO): ***Bryan C. Hann***
Work: (716) 856-0635
Mobile: (716) 870-1165

Alternate SSHO: ***Nathan Munley***
Work: (716) 856-0635
Mobile: (716) 289-1072

BUFFALO GENERAL HOSPITAL (ER):	(716) 748-2103
FIRE:	911
AMBULANCE:	911
BUFFALO POLICE:	911
STATE EMERGENCY RESPONSE HOTLINE:	(800) 457-7362
NATIONAL RESPONSE HOTLINE:	(800) 424-8802
NYSDOH:	(716) 847-4385
NYSDEC:	(716) 851-7220
NYSDEC 24-HOUR SPILL HOTLINE:	(800) 457-7252

The Site location is:

1050-1088 Niagara Street
Buffalo, New York 14213
Site Phone Number: (Insert Cell Phone or Field Trailer): _____

6.0 EMERGENCY ALERTING & EVACUATION

Internal emergency communication systems are used to alert workers to danger, convey safety information, and maintain site control. Any effective system can be employed. Two-way radio headsets or field telephones are often used when work teams are far from the command post. Hand signals and air-horn blasts are also commonly used. Every system must have a backup. It shall be the responsibility of each contractor's Site Health and Safety Officer to ensure all personnel entering the site understand an adequate method of internal communication. Unless all personnel are otherwise informed, the following signals shall be used.

1) Emergency signals by portable air horn, siren, or whistle: two short blasts, personal injury; continuous blast, emergency requiring site excavation.

2) Visual signals: hand gripping throat, out of air/cannot breathe; hands on top of head, need assistance; thumbs up, affirmative/ everything is OK; thumbs down, no/negative; grip partner's wrist or waist, leave area immediately.

If evacuation notice is given, site workers leave the worksite with their respective buddies, if possible, by way of the nearest exit. Emergency decontamination procedures detailed in Section 12.0 of the HASP are followed to the extent practical without compromising the safety and health of site personnel. The evacuation routes and assembly area will be determined by conditions at the time of the evacuation based on wind direction, the location of the hazard source, and other factors as determined by rehearsals and inputs from emergency response organizations. Wind direction indicators are located so that workers can determine a safe up wind or cross wind evacuation route and assembly area if not informed by the emergency response coordinator at the time the evacuation alarm sounds. Since work conditions and work zones within the site may be changing on daily basis, it shall be the responsibility of the construction Site Health and Safety Officer to review evacuation routes and procedures as necessary and to inform all Benchmark-TurnKey workers of any changes.

Personnel exiting the site will gather at a designated assembly point. To determine that everyone has successfully exited the site, personnel will be accounted for at the assembly

site. If any worker cannot be accounted for, notification is given to the SSHO (***Rick Dubisz*** or ***Nathan Munley***) so that appropriate action can be initiated. Contractors and subcontractors on this site have coordinated their emergency response plans to ensure that these plans are compatible and that source(s) of potential emergencies are recognized, alarm systems are clearly understood, and evacuation routes are accessible to all personnel relying upon them.

7.0 EXTREME WEATHER CONDITIONS

In the event of adverse weather conditions, the Site Safety and Health Officer in conjunction with the Contractor's SSHO will determine if engineering operations can continue without sacrificing the health and safety of site personnel. Items to be considered prior to determining if work should continue include but are not limited to:

- Potential for heat/cold stress.
- Weather-related construction hazards (e.g., flooding or wet conditions producing undermining of structures or sheeting, high wind threats, etc).
- Limited visibility.
- Potential for electrical storms.
- Limited site access/egress (e.g., due to heavy snow)

8.0 EMERGENCY MEDICAL TREATMENT & FIRST AID

Personnel Exposure:

The following general guidelines will be employed in instances where health impacts threaten to occur acute exposure is realized:

- Skin Contact: Use copious amounts of soap and water. Wash/rinse affected area for at least 15 minutes. Decontaminate and provide medical attention. Eyewash stations will be provided on site. If necessary, transport to Buffalo General Hospital.

- Inhalation: Move to fresh air and, if necessary, transport to Hospital.

- Ingestion: Decontaminate and transport to Hospital.

Personal Injury:

Minor first-aid will be applied on-site as deemed necessary. In the event of a life threatening injury, the individual should be transported to Hospital via ambulance. The Site Health and Safety Officer will supply available chemical specific information to appropriate medical personnel as requested.

First aid kits will conform to Red Cross and other applicable good health standards, and shall consist of a weatherproof container with individually sealed packages for each type of item. First aid kits will be fully equipped before being sent out on each job and will be checked weekly by the SSHO to ensure that the expended items are replaced.

Directions to Buffalo General Hospital (see Figure 1):

The following directions describe the best route from the Site to Buffalo General Hospital:

- Travel south along Niagara Street
- Turn left on Porter Avenue
- Continue straight on Porter Avenue at round-about – turns into North Street
- Turn right onto Main Street
- Turn left onto High Street
- Hospital on the left (100 High Street)
  (2.4 miles)

9.0 EMERGENCY RESPONSE CRITIQUE & RECORD KEEPING

Following an emergency, the SSHO and Project Manager shall review the effectiveness of this Emergency Response Plan (ERP) in addressing notification, control and evacuation requirements. Updates and modifications to this ERP shall be made accordingly. It shall be the responsibility of each contractor to establish and assure adequate records of the following:

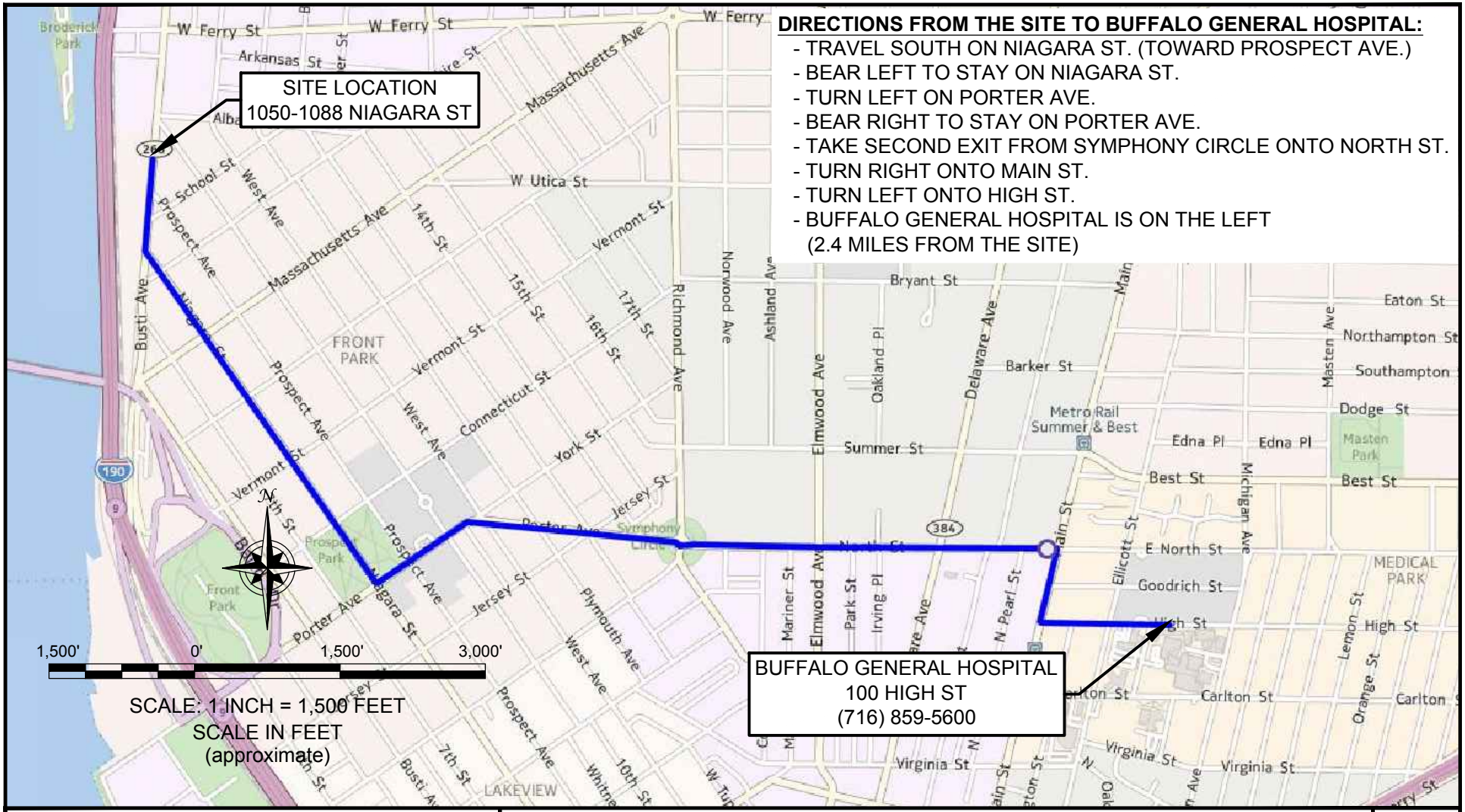
- Occupational injuries and illnesses.
- Accident investigations.
- Reports to insurance carrier or State compensation agencies.
- Reports required by the client.
- Records and reports required by local, state, federal and/or international agencies.
- Property or equipment damage.
- Third party injury or damage claims.
- Environmental testing logs.
- Explosive and hazardous substances inventories and records.
- Records of inspections and citations.
- Safety training.

10.0 EMERGENCY RESPONSE TRAINING

All persons who enter the worksite, including visitors, shall receive a site-specific briefing about anticipated emergency situations and the emergency procedures by the SSHO. Where this site relies on off-site organizations for emergency response, the training of personnel in those off-site organizations has been evaluated and is deemed adequate for response to this site.

FIGURES

F:\CAD\TurnKey\Ellicott Development\1050-1088 Niagara St\Remedial Action Work Plan\HASP\ERP\Figure 1; Hospital Route Map (ERP).dwg



DIRECTIONS FROM THE SITE TO BUFFALO GENERAL HOSPITAL:

- TRAVEL SOUTH ON NIAGARA ST. (TOWARD PROSPECT AVE.)
- BEAR LEFT TO STAY ON NIAGARA ST.
- TURN LEFT ON PORTER AVE.
- BEAR RIGHT TO STAY ON PORTER AVE.
- TAKE SECOND EXIT FROM SYMPHONY CIRCLE ONTO NORTH ST.
- TURN RIGHT ONTO MAIN ST.
- TURN LEFT ONTO HIGH ST.
- BUFFALO GENERAL HOSPITAL IS ON THE LEFT (2.4 MILES FROM THE SITE)

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

PROJECT NO.: 0136-013-005

DATE: AUGUST 2017

DRAFTED BY: JCT/CCB

HOSPITAL ROUTE MAP

EMERGENCY RESPONSE PLAN

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

PREPARED FOR

9271 GROUP, LLC

FIGURE 1

DISCLAIMER:
PROPERTY OF TURNKEY ENV. REST., LLC. IMPORTANT: THIS DRAWING PRINT IS LOANED FOR MUTUAL ASSISTANCE AND AS SUCH IS SUBJECT TO RECALL AT ANY TIME. INFORMATION CONTAINED HEREON IS NOT TO BE DISCLOSED OR REPRODUCED IN ANY FORM FOR THE BENEFIT OF PARTIES OTHER THAN NECESSARY SUBCONTRACTORS & SUPPLIERS WITHOUT THE WRITTEN CONSENT OF TURNKEY ENV. REST., LLC.

ATTACHMENT B

HOT WORK PERMIT FORM

HOT WORK PERMIT

PART 1 - INFORMATION

Issue Date:	
Date Work to be Performed: Start:	Finish (permit terminated):
Performed By:	
Work Area:	
Object to be Worked On:	

PART 2 - APPROVAL

(for 1, 2 or 3: mark Yes, No or NA)*

Will working be on or in:	Finish (permit terminated):	
1. Metal partition, wall, ceiling covered by combustible material?	yes	no
2. Pipes, in contact with combustible material?	yes	no
3. Explosive area?	yes	no

* = If any of these conditions exist (marked "yes"), a permit will not be issued without being reviewed and approved by Thomas H. Forbes (Corporate Health and Safety Director). Required Signature below.

PART 3 - REQUIRED CONDITIONS**

(Check all conditions that must be met)

	PROTECTIVE ACTION		PROTECTIVE EQUIPMENT
	Specific Risk Assessment Required		Goggles/visor/welding screen
	Fire or spark barrier		Apron/fireproof clothing
	Cover hot surfaces		Welding gloves/gauntlets/other:
	Move movable fire hazards, specifically		Wellintons/Knee pads
	Erect screen on barrier		Ear protection: Ear muffs/Ear plugs
	Restrict Access		B.A.: SCBA/Long Breather
	Wet the ground		Respirator: Type:
	Ensure adequate ventilation		Cartridge:
	Provide adequate supports		Local Exhaust Ventilation
	Cover exposed drain/floor or wall cracks		Extinguisher/Fire blanket
	Fire watch (must remain on duty during duration of permit)		Personal flammable gas monitor
	Issue additional permit(s):		

Other precautions:

** Permit will not be issued until these conditions are met.

SIGNATURES

Orginating Employee:	Date:
Project Manager:	Date:
Part 2 Approval:	Date:

ATTACHMENT C

NYSDOH GENERIC COMMUNITY AIR MONITORING PLAN

Appendix C1
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. “Periodic” monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

Appendix C2
Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;
(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
(f) Particle Size Range of Maximum Response: 0.1-10;
(g) Total Number of Data Points in Memory: 10,000;
(h) Logged Data: Each data point with average concentration, time/date and data point number
(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
(l) Operating Temperature: -10 to 50^{o} C (14 to 122^{o} F);
(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

APPENDIX H

QUALITY ASSURANCE PROJECT PLAN (QAPP)

QUALITY ASSURANCE PROJECT PLAN
For BCP ACTIVITIES

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

August 2017 0136-013-005

Prepared for:

9271 Group, LLC

QUALITY ASSURANCE PROJECT PLAN (QAPP)
1050-1088 NIAGARA STREET SITE

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QUALITY ASSURANCE PROJECT PLAN (QAPP)
1050-1088 NIAGARA STREET SITE

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1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) is an appendix to the Site Management Plan (SMP), which is required as an element of the remedial program at the 1050-1088 Niagara Street Site (hereinafter referred to as the "Site") under the New York State (NYS) Brownfield Cleanup Program (BCP), administered by New York State Department of Environmental Conservation (NYSDEC). The site was remediated in accordance with Brownfield Cleanup Agreement (BCA) Index# C915277-09-13, which was executed in November 2011.

1.1 Site Location and Description

The Site consists of three (3) adjoining parcels totaling 2.7 acres, located in the City of Buffalo, Erie County, New York and are identified on the Erie County Tax Map as:

- **1050 Niagara Street, S.B.L. #99.49-6-2, 1.08 acres**
- **1054 Niagara Street, S.B.L. #99.49-6-10, 0.05 acres**
- **1088 Niagara Street, S.B.L. #99.49-1-15, 1.59 acres**

The site bounded by Albany Street (paper street) to the north with commercial use properties beyond; commercial use properties to the south; Niagara Street to the east with residential and commercial properties beyond; and utility, rail line, and NYS Thruway (I-190) to the west, with the Black Rock Canal (Niagara River) beyond. The boundaries of the site are more fully described in the Environmental Easement.

1.2 Site Environmental History

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

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

1.3 Scope of the QAPP

This QAPP was prepared to provide quality assurance (QA) guidelines to be implemented post-remedial activities. The QAPP will assure the accuracy and precision of data collection during post-remedial Site characterization and data interpretation. The QAPP identifies procedures for sample collection to mitigate the potential for cross-contamination, as well as analytical requirements necessary to allow for independent data validation. The QAPP has been prepared in accordance with USEPA's Requirements for Quality Assurance Project Plans for Environmental Data Operations; the EPA Region II CERCLA Quality Assurance Manual, and NYSDEC's DER-10 Technical Guidance for Site Investigation and Remediation (May 2010).This document may be modified for subsequent phases of investigative work, as necessary.

The QAPP provides:

- A means to communicate to the persons executing the various activities exactly what is to be done, by whom, and when;
- A culmination to the planning process that ensures that the program includes provisions for obtaining quality data (e.g., suitable methods of field operations);
- A document that can be used by the Project Manager's and QA Officer to assess if the activities planned are being implemented and their importance for accomplishing the goal of quality data;
- A plan to document and track project data and results; and,
- Detailed descriptions of the data documentation materials and procedures, project files, and tabular and graphical reports.

The QAPP is primarily concerned with the quality assurance and quality control aspects of the procedures involved in the collection, preservation, packaging, and

transportation of samples; field testing; record keeping; data management; chain-of-custody procedures; laboratory analyses; and other necessary matters to assure that the investigation activities, once completed, will yield data whose integrity can be defended.

QA refers to the conduct of all planned and systematic actions necessary to perform satisfactorily all task-specific activities and to provide information and data confidence as a result of such activities. The QA for task-specific activities includes the development of procedures, auditing, monitoring and surveillance of the performance.

QC refers to the activity performed to determine if the work activities conform to the requirements. This includes activities such as inspections of the work activities in the field (e.g., verification that the items and materials installed conform to applicable codes and design specifications). QA is an overview monitoring of the performance of QC activities through audits rather than first time inspections.

2.0 PROJECT ORGANIZATION AND RESPONSIBILITY

The principal organizations involved in verifying achievement of data collection goals for the 1050-1088 Niagara Street Site include: the New York State Department of Environmental Conservation (NYSDEC), New York State Department of Health (NYSDOH), 9271 Group, LLC (Volunteer), TurnKey Environmental Restoration, LLC (Volunteer's Consultant), subcontractor(s), the independent environmental laboratory, and the independent third party data validator. Roles, responsibilities, and required qualifications of these organizations are discussed in the following subsections. Resumes are included in Appendix A.

2.1 NYSDEC and NYSDOH

It is the responsibility of the NYSDEC, in conjunction with the New York State Department of Health (NYSDOH), to review the project documents for completeness and conformance with the site-specific cleanup objectives and to make a decision to accept or reject these documents based on this review. The NYSDEC also has the responsibility and authority to review and approve all QA documentation collected during brownfield cleanup construction and to confirm that the QA Plan was followed.

2.2 Property Owner

9271 Group, LLC (Owner), or holder of the certificate of completion (COC) will be responsible for complying with the QA requirements as specified herein and for monitoring and controlling the quality of the Brownfield cleanup activities either directly or through their designated environmental consultant and/or legal counsel. The Owner will also have the authority to select Contractor(s) to assist them in fulfilling these responsibilities. The Owner is responsible for implementing the project, and has the authority to commit the resources necessary to meet project objectives and requirements.

2.3 Project Manager

The Project Manager has the responsibility for ensuring that the project meets the overall project objectives, reports directly to the Owner, coordinates with the

NYSDEC/NYSDOH Project Coordinators, and is responsible for technical and project oversight. The PM will:

- Define project objectives and develop a detailed work plan schedule.
- Establish project policy and procedures to address the specific needs of the project as a whole, as well as the objectives of each task.
- Acquire and apply technical and corporate resources as needed to assure performance within budget and schedule constraints.
- Develop and meet ongoing project and/or task staffing requirements, including mechanisms to review and evaluate each task product.
- Review the work performed on each task to assure its quality, responsiveness, and timeliness.
- Review and analyze overall task performance with respect to planned requirements and authorizations.
- Review and approve all deliverables before their submission to NYSDEC.
- Develop and meet ongoing project and/or task staffing requirements, including mechanisms to review and evaluate each task product.
- Ultimately be responsible for the preparation and quality of interim and final reports.
- Represent the project team at meetings.

2.4 Field Team Leader:

The Field Team Leader (FTL) has the responsibility for implementation of specific project tasks identified at the Site, and is responsible for the supervision of project field personnel, subconsultants, and subcontractors. The FTL reports directly to the Project Manager. The FTL will:

- Define daily develop work activities.
- Orient field staff concerning the project's special considerations.
- Monitor and direct subcontractor personnel.
- Review the work performed on each task to ensure its quality, responsiveness, and timeliness.

- Assure that field activities, including sample collection and handling, are carried out in accordance with this QAPP.

2.5 Quality Assurance (QA) Officer

The QA Officer will have direct access to corporate executive staff as necessary, to resolve any QA dispute, and is responsible for auditing the implementation of the QA program in conformance with the demands of specific investigations and policies, and NYSDEC requirements. Specific functions and duties include:

- Performing QA audits on various phases of the field operations.
- Reviewing and approving QA plans and procedures.
- Providing QA technical assistance to project staff.
- Reporting on the adequacy, status, and effectiveness of the QA program on a regular basis to the Project Manager for technical operations.
- Responsible for assuring third party data review of all sample results from the analytical laboratory.

2.6 Laboratory Responsibilities

Any environmental laboratory used for sample analysis for this Site must be an independent, NYSDOH Environmental Laboratory Approval Program (ELAP)-certified facility approved to perform the analyses prescribed herein.

- *Laboratory Director:*

  The Laboratory Director is a technical advisor and is responsible for summarizing and reporting overall unit performance. Responsibilities of the Laboratory Director include:

  - Provide technical, operational, and administrative leadership.
  - Allocation and management of personnel and equipment resources.
  - Quality performance of the facility.

- Certification and accreditation activities.
- Blind and reference sample analysis.

- *Quality Assurance Manager (QA Manager):*

  The QA Manager has the overall responsibility for data after it leaves the laboratory. The QA Manager will be independent of the laboratory but will communicate data issues through the Laboratory Director. In addition, the QA Manager will:

  - Oversee laboratory QA.
  - Oversee QA/QC documentation.
  - Conduct detailed data review.
  - Determine whether to implement laboratory corrective actions, if required.
  - Define appropriate laboratory QA procedures.
  - Prepare laboratory SOPs.

3.0 QUALITY ASSURANCE OBJECTIVES FOR MEASUREMENT DATA

The overall objectives and criteria for assuring quality for this effort are discussed below. This QAPP addresses how the acquisition and handling of samples and the review and reporting of data will be documented. The objectives of this QAPP are to address the following:

- The procedures to be used to collect, preserve, package, and transport groundwater samples.
- Field data collection.
- Record keeping.
- Data management.
- Chain-of-custody procedures.
- Precision, accuracy, completeness, representativeness, for sample analysis and data management under EPA analytical methods.

3.1 Level of QC Effort for Sample Parameters

Field blank, method blank, trip blank, field duplicate, laboratory duplicate, laboratory control, standard reference materials (SRM) and matrix spike samples will be analyzed to assess the quality of the data resulting from the field sampling and analytical programs. QC samples are discussed below.

- Field and trip blanks consisting of distilled water will be submitted to the analytical laboratories to provide the means to assess the quality of the data resulting from the field-sampling program. Field (equipment) blank samples are analyzed to check for procedural chemical constituents at the facility that may cause sample contamination. Trip blanks are used to assess the potential for contamination of samples due to contaminant migration during sample shipment and storage.
- Method blank samples are generated within the laboratory and used to assess contamination resulting from laboratory procedures.

- Duplicate samples are analyzed to check for sampling and analytical reproducibility.

- MS/MSD and MS/Duplicate samples provide information about the effect of the sample matrix on the digestion and measurement methodology. Depending on site-specific circumstances, one MS/MSD or MS/Duplicate should be collected for every 20 or fewer investigative samples to be analyzed for organic and inorganic chemicals of a given matrix.

The general level of QC effort will be one field (blind) duplicate and one field blank (when non-dedicated equipment is used) for every 20 or fewer investigative samples of a given matrix. Additional sample volume will also be provided to the laboratory to allow one site-specific MS/MSD or MS/Duplicate for every 20 or fewer investigative samples of a given matrix. One trip blank consisting of distilled, deionized water will be included along with each sample delivery group of aqueous VOC samples.

4.0 SAMPLE CUSTODY PROCEDURES

Sample custody is controlled and maintained through the chain-of-custody procedures. Chain of custody is the means by which the possession and handling of samples will be tracked from the source (field) to their final disposition, the laboratory. A sample is considered to be in a person's custody if it is in the person's possession or it is in the person's view after being in his or her possession or it was in that person's possession and that person has locked it in a vehicle or room. Sample containers will be cleaned and preserved at the laboratory before shipment to the Site.

4.1 Field Custody Procedures

Sample custody is controlled and maintained through the chain-of-custody procedures. Chain of custody is the means by which the possession and handling of samples will be tracked from the source (field) to their final disposition, the laboratory. A sample is considered to be in a person's custody if it is in the person's possession or it is in the person's view after being in his or her possession or it was in that person's possession and that person has locked it in a vehicle or room. Sample containers will be cleaned and preserved at the laboratory before shipment to the Site.

4.1.1 Sample Storage

Samples are stored in secure limited-access areas. Walk-in coolers or refrigerators are maintained at 4°C, ± 2°C, or as required by the applicable regulatory program. The temperatures of all refrigerated storage areas are monitored and recorded a minimum of once per day. Deviations of temperature from the applicable range require corrective action, including moving samples to another storage location if necessary. Sample parameter lists, holding times and sample container requirements are summarized on Table 1.

4.1.2 Sample Custody

Sample custody is defined by this document as when any of the following occur:

- It is in someone's actual possession.
- It is in someone's view after being in his or her physical possession.

- It was in someone's possession and then locked, sealed, or secured in a manner that prevents unsuspected tampering.

- It is placed in a designated and secured area.

Samples are removed from storage areas by the sample custodian or analysts and transported to secure laboratory areas for analysis. Access to the laboratory and sample storage areas is restricted to laboratory personnel and escorted visitors only; all areas of the laboratory are therefore considered secure. If required by the applicable regulatory program, internal chain-of-custody is documented in a log by the person moving the samples between laboratory and storage areas.

Laboratory documentation used to establish COC and sample identification may include the following:

- Field COC forms or other paperwork that arrives with the sample.

- The laboratory COC.

- Sample labels or tags are attached to each sample container.

- Sample custody seals.

- Sample preparation logs (i.e., extraction and digestion information) recorded in hardbound laboratory books that are filled out in legible handwriting, and signed and dated by the chemist.

- Sample analysis logs (e.g., metals, GC/MS, etc.) information recorded in hardbound laboratory books that are filled out in legible handwriting, and signed and dated by the chemist.

- Sample storage log (same as the laboratory COC).

- Sample disposition log, which documents sample disposal by a contracted waste disposal company.

4.1.3 Sample Tracking

All samples are maintained in the appropriate coolers prior to and after analysis. The analysts remove and return their samples as needed. Samples that require internal COC are relinquished to the analysts by the sample custodians. The analyst and sample custodian must sign the original COC relinquishing custody of the samples from the sample custodian to the analyst. When the samples are returned, the analyst will sign the original COC returning sample custody to the sample custodian. Sample extracts are relinquished to the instrumentation analysts by the preparatory analysts. Each preparation department tracks internal COC through their logbooks/spreadsheets.

Any change in the sample during the time of custody will be noted on the COC (e.g., sample breakage or depletion).

5.0 CALIBRATION PROCEDURES AND FREQUENCY

This section describes the calibration procedures and the frequency at which these procedures will be performed for both field and laboratory instruments.

5.1 Field Instrument Calibration

Quantitative field data to be obtained during groundwater sampling include pH, turbidity, specific conductance, temperature, dissolved oxygen and depth to groundwater. Quantitative water level measurements will be obtained with an electronic sounder or steel tape, which require no calibration. Quantitative field data to be obtained during soil sampling include screening for the presence of volatile organic constituents using a photoionization detector (PID).

5.2 Preventative Maintenance

Each piece of field equipment is checked according to its routine maintenance schedule and before field activities begin. Field equipment that may be used at the Site includes:

- Photoionization detector (PID)
- Water quality meters (includes pH, turbidity, temperature, Eh, and specific conductance)
- Electric water level indicator

Field personnel will report all equipment maintenance and/or replacement needs to the Project QA Officer and will record the information on the daily field record.

6.0 DATA VALIDATION AND REPORTING

All data generated through field activities, or by the laboratory operation shall be reduced and validated (as required in the SMP) before reported.

6.1 Data Usability Evaluation

If requested by the NYSDEC, data evaluation will be performed by a third party data validator using the most current methods and quality control criteria from the USEPA's Contract Laboratory Program (CLP) *National Functional Guidelines for Organic Data Review*, and Contract Laboratory Program*, National Functional Guidelines for Inorganic Data Review.*

6.1.1 Procedures Used to Evaluate Field Data Usability

The performance of all field activities, calibration checks on all field instruments at the beginning of each day of use, manual checks of field calculations, checking for transcription errors and review of field log books is the responsibility of the Field Team Leader.

6.1.2 Procedures Used to Evaluate Laboratory Data Usability

Data evaluation will be performed by the third party data validator using the most current methods and quality control criteria from the USEPA's Contract Laboratory Program (CLP) *National Functional Guidelines for Organic Data Review*, and Contract Laboratory Program*, National Functional Guidelines for Inorganic Data Review.* The data review guidance will be used only to the extent that it is applicable to the SW-846 methods; SW-846 methodologies will be followed primarily and given preference over CLP when differences occur. Also, results of blanks, surrogate spikes, MS/MSDs, and laboratory control samples will be reviewed/evaluated by the data validator. All sample analytical data for each sample matrix shall be evaluated. The third party data validation expert will also evaluate the overall completeness of the data package. Completeness checks will be administered on all data to determine whether deliverables specified in this QAPP are present. The reviewer will determine whether all required items are present and request copies of missing deliverables.

6.2 Data Reporting

6.2.1 Field Data Reporting

All field documents will be accounted for when they are completed. Accountable documents include items such as field notebooks, sample logs, field data records, photographs, data packages, computer disks, and reports.

6.2.2 Laboratory Data Reporting

Analytical data will be summarized in tabular format with such information as sample identification, sample matrix description, parameters analyzed and their corresponding detected concentrations, and the detection limit. Analytical results will be incorporated into reports as data tables, maps showing sampling locations and analytical results, and supporting text.

7.0 CORRECTIVE ACTION

Corrective action is the process of identifying, recommending, approving, and implementing measures to counter unacceptable procedures or out of quality control performance that can affect data quality. Corrective action can occur during field activities, laboratory analyses, data validation, and data assessment. All corrective action proposed and implemented should be documented in the regular quality assurance reports to management. Corrective action should be implemented only after approval by the Project Manager, or his/her designee. If immediate corrective action is required, approvals secured by telephone from the Project Manager should be documented in an additional memorandum.

7.1 Field Corrective Action

If errors in field procedures are discovered during the observation or review of field activities by the Project QA Officer or his/her designee, corrective action will be initiated. Nonconformance to the QA/QC requirements of the field operating procedures will be identified by field audits or immediately by project staff who know or suspect that a procedure is not being performed in accordance with the requirements. The Project QA Officer or his designee will be informed immediately upon discovery of all deficiencies. Timely action will be taken if corrective action is necessary.

Corrective action in the field may be needed when the sample network is changed (i.e., more/less samples, sampling locations other than those specified in the Work Plan, etc.) or when sampling procedures and/or field analytical procedures require modification due to unexpected conditions. In general, the Project Manager and QA Officer may identify the need for corrective action. The Project Manager will approve the corrective measure that will be implemented by the field team. It will be the responsibility of the Project Manager to ensure that corrective action has been implemented.

If the corrective action will supplement the existing sampling using existing and approved procedures in the QAPP, corrective action approved by the Project Manager will be documented. If the corrective actions result in less samples (or analytical fractions), alternate locations, etc., which may result in non-achievement of project QA objectives, it will be necessary that all levels of project management, including the NYSDEC Project Coordinator, concur with the proposed action.

Corrective actions will be implemented and documented in the project field record book. No staff member will initiate corrective action without prior communication of findings through the proper channels. If corrective actions are insufficient, work may be stopped by the NYSDEC Project Coordinator.

If at any time a corrective action issue is identified which directly impacts project data quality objectives, the NYSDEC Project Coordinator will be notified immediately.

7.2 Laboratory Corrective Action

Corrective actions may be initiated if the quality assurance goals are not achieved. The initial step in a corrective action is to instruct the analytical laboratory to examine its procedures to assess whether analytical or computational errors caused the anomalous result. If no error in laboratory procedures or sample collection and handling procedures can be identified, then the Project Manager will assess whether reanalysis or resampling is required or whether any protocol should be modified for future sampling events.

7.3 Data Validation & Assessment Corrective Action

The need for corrective action may be identified during the data validation or assessment processes. Potential types of corrective action may include resampling by the field team, or reinjection/reanalysis of samples by the laboratory.

These actions are dependent upon the ability to mobilize the field team, whether the data to be collected is necessary to meet the QA objectives (e.g., the holding time for samples is not exceeded, etc.). If the data validator identifies a corrective action situation, the Project Manager will be responsible for approving the corrective action implementation. All required corrective actions will be documented by the laboratory Quality Assurance Coordinator.

TABLES

TABLE 1

SAMPLE CONTAINER, VOLUME, PRESERVATION &
HOLDING TIME REQUIREMENTS

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

Matrix	Parameter [1]	Method [1]	Container Type	Minimum Volume	Preservation (Cool to 2-4 °C for all samples)	Holding Time from Sample Date
Soil/Sediment	TCL + STARS VOCs	8260B	WMG	16 oz.	Cool to 2-4 °C, Zero Headspace	14 days
	TCL SVOCs	8270C	WMG	16 oz.	Cool to 2-4 °C	14 days extrac./40 days
	TAL Metals	6010B	WMG	4 oz.	Cool to 2-4 °C	6 months/Hg 28 days
	Pesticides	8081	WMG	8oz	Cool to 2-4 °C	14 days extrac./40 days
	Herbicides	8151	WMG	8oz	Cool to 2-4 °C	14 days extrac./40 days
	PCBs	8082	WMG	4 oz.	Cool to 2-4 °C	14 days extrac./40 days
Groundwater	TCL + STARS VOCs	8260B	glass vial	3 - 4 oz.	HCl to pH<2, Zero Headspace, Cool to 2-4 °C	14 days
	TCL SVOCs	8270C	amber glass	1000 ml	Cool to 2-4 °C	7 days extrac/40 days
	TAL Metals	6010B	plastic	600 ml	HNO_3 to pH<2, Cool to 2-4 °C	6 months/Hg 28 days
	PCBs	8082	amber glass	1000 ml	Cool to 2-4 °C	7 days extrac/40 days
Air/Soil Vapor	TCL VOCs	TO-15	Summa Cannister	6 liters	None	Analyze within 14 days of sample date of collection

References:
1. Test Methods for Evaluating Solid Wastes, USEPA SW-846, Update III, 1991.

Notes:
1. EPA-approved methods published in Reference 1 above may be used. The list of analytes, laboratory method and the method detection limit for each parameter are included in Tables 1 and 2 of the QAPP.

Acronyms:
VOCs = Volatile Organic Compounds
SVOCs = Semi-Volatile Organic Compounds
TCL = Target Compound List
TAL = Target Analyte List
WMG = Wide Mouth Glass

APPENDIX I

SITE MANAGEMENT FORMS

New York State Department of Environmental Conservation
Division of Environmental Remediation, 11th Floor
625 Broadway, Albany, New York 12233-7011
Phone: (518) 402-9553 **Fax:** (518) 402-9577
Website: www.dec.ny.gov

45-Day Reminder Notice: Site Management Periodic Review

,

September 29, 2009
Site Name:
Site No.:
Site Address:
, NY

Dear :

This is a reminder that as part of the last phase of a site's remedial program (i.e., "Site Management" (SM)), a progress report for your site is to be submitted by you, the site owner or Remedial Party, to the New York State Department of Environmental Conservation (Department) by . This report, now referred to as the Periodic Review Report (PRR) documents the implementation of and compliance with the Site Management requirements for this site. SM is a concept defined in regulation (6 NYCRR 375-1.2(at)). A suggested outline for the PRR is enclosed. If the site is comprised of multiple properties or parcels, then you as the owner or Remedial Party must arrange to submit one PRR for all parcels that comprise the site.

Depending on the age of the remedial program for your site, the document(s) governing SM for your site will be different. Previously, SM requirements were contained in separate documents with specific titles (e.g., Operation, Maintenance, and Monitoring Plan or Soil Management Plan) and are now being incorporated into one comprehensive "Site Management Plan" (SMP). A SMP may contain one or all of the following elements as applicable to the site; a plan to maintain institutional and/or engineering controls ("IC/EC Plan"), a plan for monitoring the performance and effectiveness of the selected remedy ("Monitoring Plan"), and/or a plan for the operation and maintenance of the selected remedy ("O&M Plan"). Additionally, the requirements for SM are normally stated in the decision document (e.g., Record of Decision) and/or the legal agreement directing the remediation of the site (e.g., order on consent, voluntary agreement, etc.).

When you submit the PRR (by the due date above), please sign and include the enclosed forms documenting that all SM requirements are being met. If there is some reason you cannot certify that all SM requirements are being met, you should indicate this and include a statement of explanation in the PRR with a schedule for addressing the problem(s). The Periodic Review process will not be considered complete until all necessary corrective measures are completed and any required controls are certified. Instructions for completing the certifications are enclosed.

Enclosures

ec: , Project Manager
, Bureau Director
Hazardous Waste Remediation Engineer, Region
Gary Litwin, DOH

cc:

Enclosure
Periodic Review Report (PRR) General Guidance

I. Introduction: (½-page or less)

A. Provide a brief summary of site, nature and extent of contamination, and remedial history.

B. Effectiveness of the Remedial Program - Provide overall conclusions regarding;
   1. progress made during the reporting period toward meeting the remedial objectives for the site
   2. the ultimate ability of the remedial program to achieve the remedial objectives for the site.

C. Compliance
   1. Identify any areas of non-compliance regarding the major elements of the Site Management Plan (SMP, i.e., the Institutional/Engineering Control (IC/EC) Plan, the Monitoring Plan, and the Operation & Maintenance (O&M) Plan).
   2. Propose steps to be taken and a schedule to correct any areas of non-compliance.

D. Recommendations
   1. recommend whether any changes to the SMP are needed
   2. recommend any changes to the frequency for submittal of PRRs (increase, decrease)
   3. recommend whether the requirements for discontinuing site management have been met.

II. Site Overview (one page or less)

A. Describe the site location, boundaries (figure), significant features, surrounding area, and the nature and extent of contamination prior to site remediation.

B. Describe the chronology of the main features of the remedial program for the site, the components of the selected remedy, cleanup goals, site closure criteria, and any significant changes to the selected remedy and site that have been made since remedy selection.

III. Evaluate Remedy Performance, Effectiveness, and Protectiveness

A. Using tables, graphs, charts and bulleted text to the extent practicable, describe the effectiveness of the remedy in achieving the remedial goals for the site. Base findings, recommendations, and conclusions on objective data. Evaluations should be presented simply and concisely.

IV. IC/EC Plan Compliance Report (if applicable)

A. IC/EC Requirements and Compliance
   1. Describe each control, its objective, and how performance of the control is evaluated.
   2. Summarize the status of each goal (whether it is fully in place and its effectiveness).
   3. Corrective Measures: describe steps proposed to address any deficiencies in ICECs.
   4. Conclusions and recommendations for changes.

B. IC/EC Certification
   1. The certification must be complete (even if there are IC/EC deficiencies), and certified by the appropriate party as set forth in a Department-approved certification form(s).

V. **Monitoring Plan Compliance Report (if applicable)**

A. Components of the Monitoring Plan (tabular presentations preferred) - Describe the requirements of the monitoring plan by media (i.e., soil, groundwater, sediment, etc.) and by any remedial technologies being used at the site.

B. Summary of Monitoring Completed During Reporting Period - Describe the monitoring tasks actually completed during this PRR reporting period. Tables and/or figures should be used to show all data.

C. Comparisons with Remedial Objectives - Compare the results of all monitoring with the remedial objectives for the site. Include trend analyses where possible.

D. Monitoring Deficiencies - Describe any ways in which monitoring did not fully comply with the monitoring plan.

E. Conclusions and Recommendations for Changes - Provide overall conclusions regarding the monitoring completed and the resulting evaluations regarding remedial effectiveness.

VI. **Operation & Maintenance (O&M) Plan Compliance Report (if applicable)**

A. Components of O&M Plan - Describe the requirements of the O&M plan including required activities, frequencies, recordkeeping, etc.

B. Summary of O&M Completed During Reporting Period - Describe the O&M tasks actually completed during this PRR reporting period.

C. Evaluation of Remedial Systems - Based upon the results of the O&M activities completed, evaluated the ability of each component of the remedy subject to O&M requirements to perform as designed/expected.

D. O&M Deficiencies - Identify any deficiencies in complying with the O&M plan during this PRR reporting period.

E. Conclusions and Recommendations for Improvements - Provide an overall conclusion regarding O&M for the site and identify problems, their severity, and any suggested improvements requiring changes in the O&M Plan.

VII. **Overall PRR Conclusions and Recommendations**

A. Compliance with SMP - For each component of the SMP (i.e., IC/EC, monitoring, O&M), summarize;

1. whether all requirements of each plan were met during the reporting period
2. any requirements not met such as new completed exposure pathways resulting in unacceptable risk
3. proposed plans and a schedule for coming into full compliance.

B. Performance and Effectiveness of the Remedy - Based upon your evaluation of the components of the SMP, form conclusions about the performance of each component and the ability of the remedy to achieve the remedial objectives for the site.

C. Future PRR Submittals

1. Recommend, with supporting justification, whether the frequency of the submittal of PRRs should be changed (either increased or decreased).
2. If the requirements for site closure have been achieved, contact the Department's Project Manager for the site to determine what, if any, additional documentation is needed to support a decision to discontinue site management.

VIII. **Additional Guidance**

A. Additional guidance regarding the preparation and submittal of an acceptable PRR can be obtained from the Department's Project Manager for the site.

WHERE to mail the signed Certification Form by :

New York State Department of Environmental Conservation

Attn: , Project Manager

Please note that extra postage may be required.

Enclosure 1

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Site Management Periodic Review Report Notice
Institutional and Engineering Controls Certification Form

Site Details **Box 1**

Site No.

Site Name

Site Address: Zip Code:
City/Town:
County:
Allowable Use(s) (if applicable, does not address local zoning):
Site Acreage:
Owner:
, , NY

Reporting Period: to

Verification of Site Details **Box 2**

	YES	NO
1. Is the information in Box 1 correct?	☐	☐
If NO, are changes handwritten above or included on a separate sheet?	☐	
2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?	☐	☐
If YES, is documentation or evidence that documentation has been previously submitted included with this certification?	☐	
3. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	☐	☐
If YES, is documentation (or evidence that documentation has been previously submitted) included with this certification?	☐	
4. If use of the site is restricted, is the current use of the site consistent with those restrictions?	☐	☐
If NO, is an explanation included with this certification?	☐	
5. For non-significant-threat Brownfield Cleanup Program Sites subject to ECL 27-1415.7(c), has any new information revealed that assumptions made in the Qualitative Exposure Assessment regarding offsite contamination are no longer valid?	☐	☐
If YES, is the new information or evidence that new information has been previously submitted included with this Certification?	☐	
6. For non-significant-threat Brownfield Cleanup Program Sites subject to ECL 27-1415.7(c), are the assumptions in the Qualitative Exposure Assessment still valid (must be certified every five years)?	☐	☐
If NO, are changes in the assessment included with this certification?	☐	

SITE NO. Box 3

Description of Institutional Controls

Box 4

Description of Engineering Controls

Box 5

Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

   a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

   b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and compete.

YES	NO
☐	☐

2. If this site has an IC/EC Plan (or equivalent as required in the Decision Document), for each Institutional or Engineering control listed in Boxes 3 and/or 4, I certify by checking "YES" below that all of the following statements are true:

   (a) the Institutional Control and/or Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

   (b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

   (c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control;

   (d) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and

   (e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

YES	NO
☐	☐

3. If this site has an Operation and Maintenance (O&M) Plan (or equivalent as required in the Decision Document);

   I certify by checking "YES" below that the O&M Plan Requirements (or equivalent as required in the Decision Document) are being met.

YES	NO
☐	☐

4. If this site has a Monitoring Plan (or equivalent as required in the remedy selection document);

   I certify by checking "YES" below that the requirements of the Monitoring Plan (or equivalent as required in the Decision Document) is being met.

YES	NO
☐	☐

IC CERTIFICATIONS
SITE NO.

Box 6

SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE

I certify that all information and statements in Boxes 2 and/or 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I _____ at _____,
print name print business address

am certifying as _____(Owner or Remedial Party)

for the Site named in the Site Details Section of this form.

_____ _____
Signature of Owner or Remedial Party Rendering Certification Date

IC/EC CERTIFICATIONS

Box 7

QUALIFIED ENVIRONMENTAL PROFESSIONAL (QEP) SIGNATURE

I certify that all information in Boxes 4 and 5 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I _____ at _____,
print name print business address

am certifying as a Qualified Environmental Professional for the _____

(Owner or Remedial Party) for the Site named in the Site Details Section of this form.

_____ _____ _____
Signature of Qualified Environmental Professional, for the Owner or Remedial Party, Rendering Certification Stamp (if Required) Date

Enclosure 2

Certification Instructions

I. Verification of Site Details (Box 1 and Box 2):

Answer the six questions in the Verification of Site Details Section. Questions 5 and 6 only refer to sites in the Brownfield Cleanup Program. The Owner and/or Qualified Environmental Professional (QEP) may include handwritten changes and/or other supporting documentation, as necessary.

II. Certification of Institutional / Engineering Controls (Boxes 3, 4, and 5)

1. Review the listed IC/ECs, confirming that all existing controls are listed, and that all existing controls are still applicable. If there is a control that is no longer applicable the Owner / Remedial Party is to petition the Department requesting approval to remove the control.

2. In Box 5, complete certifications for all Plan components, as applicable, by checking the corresponding checkbox.

3. If you cannot certify "YES" for each Control and/or certify the other SM Plan components that are applicable, continue to complete the remainder of this **Certification** form. Attach supporting documentation that explains why the **Certification** cannot be rendered, as well as a statement of proposed corrective measures, and an associated schedule for completing the corrective measures. Note that this **Certification** form must be submitted even if an IC or EC cannot be certified; however, the certification process will not be considered complete until corrective action is completed.

   If the Department concurs with the explanation, the proposed corrective measures, and the proposed schedule, a letter authorizing the implementation of those corrective measures will be issued by the Department's Project Manager. Once the corrective measures are complete, a new Periodic Review Report (with IC/EC Certification) is to be submitted within 45 days to the Department. If the Department has any questions or concerns regarding the PRR and/or completion of the IC/EC Certification, the Project Manager will contact you.

III. IC/EC Certification by Signature (Box 6 and Box 7):

If you certified "YES" for each Control, please complete and sign the IC/EC Certifications page. Where the only control is an Institutional Control on the use of the property the certification statement in Box 6 shall be completed and may be made by the property owner. Where the site has Institutional and Engineering Controls, the certification statement in Box 7 must be completed by a Professional Engineer or Qualified Environmental Professional (see table below).

Table 1. Signature Requirements for Control Certification Page

Type of Control	Example of IC/EC	Required Signatures
EC which does not include a treatment system or engineered caps.	Fence, Clean Soil Cover, Individual House Water Treatment System, Vapor Mitigation System	A site or property owner or remedial party, and a QEP. (P.E. license not required)
EC that includes treatment system or an engineered cap.	Pump & Treat System providing hydraulic control of a plume, Part 360 Cap.	A site or property owner or remedial party, and a QEP with a P.E. license.