Remedial Investigation / Interim Remedial Measures / Alternatives Analysis Work Plan

1050-1088 Niagara Street Site
Buffalo, New York

December 2013 0136-013-005

Prepared For:

9271 Group, LLC

Prepared By:

TurnKey Environmental Restoration, LLC

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WORK PLAN
FOR
REMEDIAL INVESTIGATION/INTERIM REMEDIAL MEASURES/ALTERNATIVES ANALYSIS

1050-1088 NIAGARA STREET SITE
BUFFALO, NEW YORK

November 2013 0136-013-005

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RI/IRM/AA WORK PLAN

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1.0 INTRODUCTION

This document presents the proposed scope of work and implementation procedures for completion of a Remedial Investigation (RI), Interim Remedial Measures (IRM), and Alternatives Analysis (AA) at the 1050-1088 Niagara Street Site (Site), located from 1050-1088 Niagara Street, Buffalo, New York (see Figures 1 and 2).

The Applicant, 9271 Group, LLC, has elected to pursue cleanup and redevelopment of the Site under the New York State Brownfield Cleanup Program (BCP) and has entered into a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC).

The RI/IRM/AAR will be completed by TurnKey Environmental Restoration, LLC (TurnKey), in association with Benchmark Environmental Engineering & Science, PLLC (Benchmark), on behalf of the Applicant. The work will be completed in accordance with NYSDEC DER-10 guidelines.

1.1 Background

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

The Site has a long history of being utilized for commercial and industrial operations (since at least 1889). The International Brewing Company and American Gelatine Corp. operated on-Site in the early 1900s. The northern portion of the Site (1088 Niagara St. parcel) included a filling station from at least the 1920s through at least 1960. Multiple gasoline tanks were identified on the northern portion of the site from at least 1925 through at least 1951. Gulf Oil Corporation and/or Hygrade Petroleum Co. were identified as on-Site operators from at least the 1920s through at least 1960. The Niagara Lithograph Company (current on-site building), a commercial printing company, was located on the 1050 Niagara Street parcel of the Site from at least 1930 through at least 1990; and Miken Companies, also a commercial printing company, was located on-Site until at least 2000.

1.2 Project Objectives

For sites entering the BCP at the point of investigation, NYSDEC requires completion of a RI/IRM/AA. The primary objectives of the RI/IRM/AA are to:

- Collect additional soil/fill, groundwater, and sub-slab vapor samples, under appropriate quality assurance/quality control criteria, to better delineate the nature and extent of contamination;
- Determine if the concentrations of constituents of concern in site soil, groundwater, and/or soil gas pose potential unacceptable risks to human health and the environment; and
- Provide the data needed to evaluate potential remedial measures and determine appropriate actions to address potential significant risks.

As part of the RI/IRM/AA, sampling data will be used to evaluate whether remedial alternatives can meet the objectives. The intended uses of these data dictate the confidence levels. Two data confidence levels will be employed in the RI: screening level data and definitive level data. In general, screening level confidence will apply to field measurements, including photoionization detector (PID) measurements, groundwater elevation measurements, and field analyses (i.e., pH, temperature, dissolved oxygen, specific conductivity, and turbidity). Definitive level confidence will apply to samples for chemical analysis. The applicability of these levels of data will be further specified in the Quality Assurance Project Plan (QAPP) in Section 5.0. Sampling and analytical acceptance and performance criteria such as precision, accuracy, representativeness, comparability, completeness, and sensitivity, are defined in the QAPP.

IRMs will be completed to immediately address known environmental impacts related to past use of the Site. An IRM will quickly mitigate risks to public health and the environment. In general, IRM activities may include: excavation of underground storage tanks (USTs) and in-ground hydraulic lift(s); excavation of petroleum and/or VOC-impacted soil/fill; implementation of a Soil/Fill Management Plan (SFMP) during intrusive activities; and off-Site disposal and/or bio-treatment of impacted soil/fill. This Work Plan includes anticipated IRM activities based on current information and may be modified, subject to NYSDEC approval, immediately after the RI fieldwork is completed.

The Volunteers intent is for the IRMs to substantially or completely constitute the final NYSDEC-approved remedy for the Site. The cleanup objectives employed during the IRM and any subsequent remedial measures, if required based on the findings of the RI, will be a Track 4 commercial cleanup utilizing 6NYCRR Part 375 Commercial Use soil cleanup objectives (SCOs); however, the applicant may choose to remediate to a higher level of cleanup (e.g., unrestricted, residential, restricted residential) during the course of remedial work. Details of anticipated IRM activities are included in Section 4.0

1.3 Project Organization and Responsibilities

The Applicant, 9271 Group, LLC, has applied to the New York State BCP, and been accepted as a non-responsible party (volunteer) per ECL§27-1405. TurnKey, in association with Benchmark, will manage the brownfield cleanup on behalf of the Applicant. The NYSDEC Division of Environmental Remediation (Region 9), in consultation with the New York State Department of Health (NYSDOH) shall monitor the remedial actions to verify that the work is performed in accordance with the Brownfield Cleanup Agreement, the approved RI/IRM/AA Work Plan, and NYSDEC DER-10 guidance (May 2010).

TurnKey personnel as well as subcontractors for this project have not been determined at this time. Once pricing is secured, subcontract agreements are in place, and a field schedule determined, resumes for the selected project team will be provided to the Department, if requested. TurnKey's Project Manager's résumé, however, has been included in Appendix A. The table below presents the planned project team.

Company	Role	Name	Contact Information
TurnKey	Project Manager	Mike Lesakowski	(716) 856-0635
TurnKey	Qualified Env. Prof.	TBD	(716) 856-0635
9271 Group, LLC	Facility Contact	Corey Stewart	(716) 854-0060
TBD	Analytical Testing	TBD	TBD
TBD	Geoprobe Drilling Services	TBD	TBD
TBD	Drilling Services	TBD	TBD
TBD	Excavation Services	TBD	TBD
TBD	DUSR	TBD	TBD

2.0 SITE DESCRIPTION

2.1 General

The Site is comprised of three adjoining parcels totaling approximate 2.7 acres, located at 1050-1088 Niagara Street, in the City of Buffalo, Erie County, New York. The Site is bound by former Albany Street and commercial property to the north, commercial property to the south, Niagara Street to the east, and railroad corridor and interstate I-190 to the west. The Site includes a single three story building and associated gravel/asphalt parking and vacant areas (see Figure 2).

2.2 Site Topography and Drainage

The Site is generally flat lying with limited topographic features. The surface of the Site is covered with buildings, asphalt, and gravel. The northwest boundary of the Site is steeply graded, likely related to the former rail lines and storage areas.

Precipitation (i.e., rain or melting snow) moves to the storm drains in the roadways via overland flow. Surface and shallow groundwater flow are likely affected by various cycles of development and filling, as well as utilities and foundations.

2.3 Geology and Hydrogeology

2.3.1 Overburden

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

2.3.2 Bedrock

Based on the bedrock geologic map of Erie County, the Site is situated over the Onondaga Formation of the Middle Devonian Series. The Onondaga Formation is comprised of a varying texture from coarse to very finely crystalline with a dark gray to tan color and chert and fossils within. The unit has an approximate thickness of 110 to 160 feet.

Structurally, the bedrock formations strike in an east-west direction and exhibit a regional dip that approximates 40 feet per mile (3 to 5 degrees) toward the south and southwest. As a result of this dip, the older Onondaga limestone outcrops or subcrops north of the Hamilton Group. An intersecting, orthogonal patter of fractures and joint sets are common throughout the bedrock strata. The surficial geomorphology of the bedrock strata was modified by period sub-aerial erosion and continental glaciation. Depth to and type of bedrock below the Site has not been determined by drilling.

2.3.3 Hydrogeology

The Site is located in the Erie-Niagara River Basin. In the Erie-Niagara Basin, the major areas of groundwater are within coarser overburden deposits and limestone and shale bedrock. Regional groundwater appears to flow west towards the Niagara River and Lake Erie. Localized on-Site groundwater flow will be confirmed during the RI.

2.4 Climate

Western New York has a cold continental climate, with moisture from Lake Erie causing increased precipitation. Average annual precipitation is reportedly 32.8 inches and snowfall is 58.8 inches. Average monthly temperatures range from 25 degrees Fahrenheit in January to 71 degrees Fahrenheit in July. The ground and lakes typically remain frozen from December to March. Winds are generally from the southwest (National Weather Service, 2013).

2.5 Population and Land Use

The City of Buffalo, encompassing 40 square miles, has a population of 276,059 (2006 US Census Bureau), a decrease of 5.7% from 2000 U.S. Census. The population density in the City is 7,206.3 people per square mile. The Site is located in Census Tract 71.02, in the area of the city zoned for commercial/residential.

The surrounding land-use is mixed use, including commercial, residential and vacant. Properties adjacent to the Site include primarily include commercial with residential properties beyond.

2.6 Utilities and Groundwater Use

The subject property has access to all major public and private utilities, including potable water (Buffalo Water Authority), sanitary and storm sewers (Buffalo Sewer Authority), electric (National Grid), and natural gas (National Fuel Gas).

Groundwater at the Site is assigned Class "GA" by 6NYCRR Part 701.15. Currently, there are no deed restrictions on the use of groundwater at the Site; however, there are no groundwater supply wells on the property. Regionally, groundwater in the area has not been developed for industrial, agriculture, or public supply purposes. Municipal potable water service is provided on-site and off-site.

2.7 Wetlands and Floodplains

There are no State or Federal wetlands or floodplains located on Site. Per the Erie County GIS On-Line Mapping System, the Niagara River is located approximately 125-feet to the west of the site, and a NYSDEC regulated freshwater wetland (BU-3) is located approximately 2.5-mile to the south of the site. Referenced floodplains are shown on Figure 3.

2.8 Previous Investigations

A summary of the investigations that have occurred at the Site are presented below. These reports are attached in Appendix B.

2.8.1 June 2012 – Phase I Environmental Site Assessment

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

- Historic operators on-Site included commercial printing from at least 1930 through at least 2000, and the American Gelatine Company and the International Brewing Company in the early 1900s
- Two historic 25,000 gallon tanks were noted in the basement of 1050 Niagara Street based on historic Sanborn maps; contents unknown.
- Potential tank vents were noted on the west side of the building on the 1050 Niagara Street parcel and potential tank fill ports were noted on the surface in the southeast portion of the 1088 Niagara Street parcel.

- Building-mounted transformers were noted along the south side of the 1050 Niagara Street building.
- 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 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.

2.8.2 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 advancement of TP-4. The USTs appear to be associated with the former services station noted in the Phase I ESA;
- In-ground hydraulic lifts were discovered on-Site;
- Field observations of apparent petroleum contamination, including elevated PID readings and petroleum odors, were observed in TP-3, TP-4 and TP-10. Apparent petroleum-stained soil was also noted in TP-4;
- Black sand (potential foundry sand) was noted in test pits TP-1 and TP-5;
- Elevated VOCs, some exceeding Commercial Use SCOs were detected;
- Several metals were detected above their respective Unrestricted Use SCOs, including arsenic, cadmium, and lead above their respective Commercial Use SCOs;
- Based on the findings of the investigation NYSDEC Spill file No. 1201545 was opened for the Site [It should be noted that the Spill file was administratively closed upon acceptance into the BCP, and further investigation and remediation of the Site will be conducted under the guidance of the BCP].

2.8.3 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.
- Approximately half of the floor areas of the basement and sub-basement had visible evidence of apparent oil staining; some areas contained standing oil; oil staining was also noted proximate compressors, former oil storage/hazardous waste storage areas and one utility sink in the basement;
- A floor drain with standing oil was noted in the central portion of the building.
- 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.

2.9 Primary Constituents of Potential Concern (COPCs)

Based on findings to date, the Constituents of Potential Concern (COPCs) are presented by media below:

- ***Soil:*** VOCs, SVOCs and metals
- ***Groundwater and Sub-slab Vapor:*** VOCs

3.0 REMEDIAL INVESTIGATION SCOPE OF WORK

The Remedial Investigation scope of work is focused on defining the nature and extent of contamination on-site, identifying the source of contamination, defining chemical constituent migration pathways, qualitatively assessing human health and ecological risks (if necessary), and obtaining data of sufficient quantity and quality to perform the alternatives analysis report.

Field team personnel will collect environmental samples in accordance with the rationale and protocols described in the QAPP in Section 5. USEPA and NYSDEC-approved sample collection and handling techniques will be used. Samples for chemical analysis will be analyzed in accordance with USEPA SW-846 methodology with an equivalent Category B deliverable package to meet the definitive-level data requirements. Analytical results will be evaluated by a third-party data validation expert in accordance with provisions described in the QAPP. Data submittals will be provided to the NYSDEC in accordance with the most current electronic data deliverables (EDD) protocols.

During intrusive outdoor RI activities, a Community Air Monitoring Plan (CAMP) will be followed. The CAMP is consistent with the requirements for community air monitoring at remediation sites as established by the New York State Department of Health (NYSDOH) and NYSDEC. Accordingly, it follows procedures and practices outlined under NYSDEC's DER-10 (May 2010) Appendix 1A (NYSDOH's Generic Community Air Monitoring Plan) and Appendix 1B (Fugitive Dust and Particulate Monitoring).

The investigation approach is described below. The proposed RI sample locations are presented on Figure 5 and the planned sampling and analytical program is identified on Table 1.

3.1 Interior Building Inspection and Inventory

An assessment of the basement (and/or lowest level floor) of the building will be completed to inspect for features including floor drains, trenches, and sumps to guide potential areas for investigation. Based on the findings of the interior assessment, the planned RI approach will be reviewed. Locations of the interior soil borings and subslab vapor sample locations may be adjusted, with concurrence from the Department, based on the findings of the building assessment.

3.2 Field Investigation Activities

A site investigation will be completed across the Site to further assess potential impacts related to the historic use of the Site. The site investigation will include the collection of soil, groundwater and air samples, excavation of exploratory test pits (TPs), the advancement boreholes and groundwater monitoring wells. All soil samples will be collected using dedicated stainless steel sampling tools. Representative soil, groundwater and air samples will be placed in pre-cleaned laboratory provided sample bottles/containers, cooled to 4ºC in the field (as appropriate), and transported under chain-of-custody command to a NYSDOH Environmental Laboratory Approval Program (ELAP)-certified analytical laboratory. The proposed RI sample locations are presented on Figure 5 and a summary of the Sampling and Analytical Program is included on Table 1. Investigation samples will be reported by the laboratory with equivalent NYSDEC Category B deliverables to allow for independent third-party data usability assessment.

3.2.1 Utility Clearance

Prior to any intrusive activities, Dig Safely New York (Call 811) will be contacted by the site contractor a minimum of three business days in advance of the work and informed of the intent to perform excavation work at the Site. If underground utilities are present on the property and are anticipated to interfere with intrusive activities, the Applicant and the NYSDEC will be contacted to discuss mitigating measures.

3.2.2 Surface Soil/Fill Investigation

Based on the current Site configuration, with the majority of the southern portion of the Site covered by the existing building, the surface soil samples will be collected from the northern portion of the Site and along a narrow strip of vegetation/grass located along the southern and western boundary. Five (5) surface soil samples, identified as SS-1 through SS-5, will be collected from the upper 0-2-inch soil/fill layer across the Site. Additional depth may be required to collect sufficient volume for laboratory analysis, but sample depth will not exceed six inches. Surface soil samples will be analyzed for Target Compound List (TCL) SVOCs and Target Analyte List (TAL) metals, and three (3) of the locations, including the southern boundary sample, will also be analyzed for polychlorinated biphenyls (PCBs), pesticides and herbicides. Additional samples may be collected for TCL VOCs, in accordance with DER-10, to allow for evaluation of potential on-Site reuse of surface soils.

3.2.3 Near Surface Soil/Fill Investigation

Five (5) near surface samples, identified as NS-1 through NS-5, will be collected from the upper 0-2-feet of the soil/fill layer across the Site. Near surface samples will be analyzed for TCL SVOCs and TAL metals, and three of the locations, including at least one on the west side of the building, for PCBs, pesticides and herbicides. If elevated PID readings are noted above background (e.g., 0.0 ppm) additional samples will be collected for analysis of TCL plus CP-51 List VOCs.

3.2.4 Subsurface Soil/Fill Investigation

A total of fifteen (15) additional subsurface soil/fill exploratory locations will be assessed across the site, including the advancement of eleven (11) borings, identified as SB-9 through SB-14, and MW-1 through MW-5; and four (4) test pits, identified as TP-11 through TP-14, will be advanced to characterize the subsurface soil/fill across the Site. Exterior borings, identified as MW-1 through MW-5 will be advanced to approximately 12-16 feet below ground surface (fbgs), or refusal. Interior borings, identified as SB-9 through SB-13 will be advanced to approximately 6-8 feet below the concrete slab, or refusal. Each TP will be approximately 2-3 feet in width, 8-10 feet in length, and will be advanced to an approximate depth of 12 to 15 feet below ground surface (fbgs), the extent of the excavator arm, or refusal. All soil samples will be field screened for the presence of VOCs using a field PID with a minimum IP of 10.6 eV, as a procedure for ensuring the health and safety of personnel at the Site, and to identify potential impacts in soil samples for laboratory analysis.

Upon reaching the completion depth of each SB and TP, PID and visual/olfactory results will be reviewed. The sample interval identified as the most impacted (i.e., greatest PID scan result and/or evidence of visual/olfactory impact) will be selected for analysis. If differentiable impacts are noted within a particular SB/TP, additional samples may be collected from more than one depth interval to characterize the differentiable impacts in that location. In the event that either the impacts are ubiquitous from grade to final depth or no impacts were identified, the native soils directly above water table will be selected for analysis. If the impacts are ubiquitous from grade to final depth or no impacts were identified and water is not encountered at a particular sample location, the sample interval will be selected based on the discretion of the field personnel and in consultation with the NYSDEC.

The sampling and analysis plan is detailed on Table 1. A total of nine (9) exterior SBs and TPs will be analyzed for TCL plus CP-51 List VOCs, TCL SVOCs (base-neutral extractable fraction only) and Resource Conservation and Recovery Act (RCRA) metals, and three (3) locations will also be analyzed for PCBs, pesticides and herbicides, including the western property boundary sample location. Samples will not be analyzed for VOCs in the absence of elevated PID readings above 5 ppm and/or visual/olfactory evidence of impacts. A minimum of three (3) VOC samples will be collected for characterization purposes.

A total of six (6) interior SBs will be analyzed for TCL plus CP-51 List VOCs and TCL SVOCs, and three (3) locations will also be analyzed for TAL metals and PCBs. Samples will not be analyzed for VOCs in the absence of elevated PID readings above 5 ppm and/or visual/olfactory evidence of impacts. A minimum of three (3) VOC samples will be collected for characterization purposes.

3.2.5 Groundwater Investigation

Five (5) groundwater monitoring wells will be advanced across the Site to assess groundwater flow direction and groundwater quality data. Proposed groundwater monitoring well locations are identified on Figure 5. Monitoring well installation, well development, and groundwater sample collection details are discussed in the following sections.

3.2.5.1 Monitoring Well Installation

After completion of the boring investigation, drill rig capable of advancing hollow-stem augers will be employed to install 2-inch inside diameter (ID) monitoring wells. Each well location will be advanced to approximately 14-16 fbgs, or refusal, with a target minimum of 5 feet below the first encountered groundwater. Each boring location will be advanced to approximately 20 fbgs, or refusal, with a target minimum of 5 feet below the first encountered groundwater. In the absences of groundwater contact during boring advancement within the upper 20 feet, no well will be placed. All non-dedicated drilling tools and equipment will be decontaminated between boring locations using potable tap water and a phosphate-free detergent (e.g., Alconox).

Subsequent to boring completion, a 2-inch ID diameter flush-joint Schedule 40 PVC monitoring well will be installed at the boring locations. Each well will be constructed with a minimum 5-foot flush-joint Schedule 40 PVC, 0.010-inch machine slotted well screen. Each

well screen and attached riser will be placed at the bottom of each borehole and a silica sand filter pack (size #0) will be installed from the base of the well to a maximum of 2 feet above the top of the screen. A bentonite chip seal will then be installed and allowed to hydrate sufficiently to mitigate the potential for downhole grout contamination. The newly installed monitoring wells will be completed with keyed-alike locks, a lockable J-plug, and a steel flush mounted road box.

Drill cuttings will be spread onsite unless gross contamination (i.e., visible product) is encountered, in which case they will be placed in sealed NYSDOT-approved drums and labeled for subsequent characterization and disposal, if necessary.

3.2.5.2 Well Development

After installation, but not within 24 hours, newly installed monitoring wells will be developed in accordance with TurnKey and NYSDEC protocols. Development of the monitoring wells will be accomplished with dedicated disposable polyethylene bailers via surge and purge methodology. Field parameters including pH, temperature, turbidity, dissolved oxygen, oxidation-reduction potential (ORP) and specific conductance will be measured periodically (i.e., every well volume or as necessary) during development. Field measurements will continue until they became relatively stable. Stability will be defined as variation between measurements of approximately 10 percent or less with no overall upward or downward trend in the measurements. A minimum of three well volumes will be evacuated from each monitoring well. Development water from the monitoring wells will be discharged to the ground surface in the vicinity of the monitoring well being developed. If light non-aqueous phase liquid (LNAPL), dense non-aqueous phase liquid (DNAPL), odors, or sheen are encountered during well development water will be containerized in NYSDOT-approved drums and labeled per monitoring well location. Based on the RI groundwater analytical results, it will be determined, in consultation with the Department, if the containerized development water is acceptable for surface discharge, or requires subsequent on-Site treatment and/or off-Site disposal.

3.2.5.3 Groundwater Sample Collection

Prior to sample collection, static water levels will be measured and recorded from all on-Site monitoring wells to facilitate the preparation of a Site-wide isopotential map. Following water level measurement, field personnel will purge and 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 purge and sample the well. Prior to sample collection via low-flow methodology, groundwater will be evacuated from each well at a low-flow rate (typically less than 0.1 L/min) while maintaining a generally consistent water level. Field measurements for pH, temperature, turbidity, DO, ORP, specific conductance and water level, as well as visual and olfactory field observations will be periodically recorded and monitored for stabilization. Low-flow purging will be considered complete when pH, specific conductivity, DO, ORP, and temperature stabilize and when turbidity measurements fall below 50 Nephelometric Turbidity Units (NTU), or become stable above 50 NTU regardless of volume purged. Purging via disposable bailer, if necessary, will be considered complete following the removal of three well volumes and field parameter stabilization or to dryness, whichever occurs first. In general, stability is defined as variation between field measurements of 10 percent or less and no overall upward or downward trend in the measurements. Upon stabilization of field parameters, groundwater samples will be collected and analyzed as discussed below.

Sample collection methods that will be implemented during the RI 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) or to dryness. Measurements for pH, temperature, specific conductance, dissolved oxygen and turbidity are recorded following removal of

each well volume. The well is purged until the readings for indicator parameters stabilize or the well is purged to dryness.

Prior to, and immediately following collection of groundwater samples, field measurements for pH, specific conductance, temperature, dissolved oxygen, turbidity and water level, as well as visual and olfactory field observations will be recorded. 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.

3.2.5.4 Groundwater Sample Analyses

A total of five (5) groundwater samples will be collected and analyzed for TCL plus CP-51 List VOCs, TCL SVOCs, TAL Metals, PCBs, pesticides and herbicides in accordance with USEPA SW 846 methodology with equivalent NYSDEC Category B deliverables to allow for independent third-party data usability assessment. In the event groundwater sample turbidity levels exceed 50 NTUs, an additional groundwater sample will be collected and field filtered (or filtered in the laboratory) for TAL Dissolved Metals analysis.

3.2.6 Subslab Vapor Assessment

To evaluate the potential vapor intrusion into the existing building, four (4) subslab vapor (SV) samples, two (2) interior ambient air samples, and one outdoor ambient air (i.e., background) sample will be collected. One duplicate SV sample will be collected for each day of SV sampling. The sampling will be completed in general conformance with the New York State Department of Health (NYSDOH) Soil Vapor Intrusion Guidance (October 2006) and TurnKey's *Ambient Air/Subslab Vapor Sampling* Field Operating Procedure (FOP 004.3 - see Appendix F). Soil vapor samples will be collected and sent to a NYSDOH-approved laboratory for analysis of USEPA TCL VOCs and SVOCs in accordance with USEPA Method TO-15.

3.2.6.1 Subslab Vapor Pre-Sample Assessment

Prior to initiation of SV sampling, a pre-sampling inspection will be performed prior to each sampling event to identify and minimize conditions that may interfere with the proposed testing. The inspection will evaluate the type of structure, floor layout, airflows and

physical conditions of the building. This information, along with information on sources of potential indoor air contamination, will be identified on a building inventory form.

3.2.6.2 Subslab Vapor Sample Collection

At each SV sampling location, TurnKey personnel will drill a hole through the concrete slab using a hand-held hammer drill. Temporary subslab vapor probes and tubing will utilized for the sample collection. Holes in the concrete slab will be filled and sealed after completion of the sampling event. Sub-slab vapor samples will be collected in the following manner:

- After installation of the probes, one to three volumes (i.e., the volume of the sample probe and tube) will be purged prior to collecting the samples to ensure samples collected are representative;
- The subslab vapor probes will be sealed to the surface with permagum grout, melted beeswax, putty, or other non-VOC containing and non-shrinking products for temporary installation;
- Flow rates for both purging and collecting will not exceed 0.2 liters per minute to minimize outdoor air infiltration during sampling;
- Subslab vapor sample canisters will be equipped with an eight-hour regulator to allow the sample to be collected over an approximate eight-hour period; and,
- Samples will be collected, using conventional sampling methods, in an appropriate container — one which meets the requirements of the sampling and analytical methods (e.g., low flow rate; Summa® canisters if analyzed by EPA Method TO-15), and is certified clean by the laboratory.

Concurrent with the subslab samples, indoor ambient air and outdoor air samples will be collected. Indoor ambient air samples will be collected adjacent to each sub-slab vapor location based upon accessibility within the building. One outdoor, field located air sample will also be collected from a ground level location upwind of the facility, as determined on the day of sub-slab vapor sampling field activities. Indoor and outdoor air sample canisters will also be equipped with an eight-hour regulator to allow the sample to be collected over the same approximate eight-hour period as the subslab vapor samples.

Each canister, with an initial pressure of approximately 50 millitorr (compared to 760 torr of pressure in the atmosphere at sea level), will be fitted with a sampling valve that uses a critical orifice and mass flow controller to regulate the air flow into the canister for the selected sampling period. The mass flow controller will maintain a relative constant air flow rate throughout the sampling period. All Summa canister valves will remain closed until the sample holes are complete and all of the canisters are in their respective positions. The valves will then be opened for the designated collection period.

3.2.6.3 Sub-slab Vapor Sample Analysis

Soil vapor samples will be collected in Summa® canisters, and once filled will be transported under chain-of-custody command to a NYSDOH-approved laboratory for analysis of USEPA TCL VOCs in accordance with USEPA Method TO-15. Field documentation of sub-slab vapor investigation sampling activities will be consistent with the NYSDOH guidance.

3.3 Field Specific Quality Assurance/Quality Control Sampling

In addition to the soil/fill, groundwater and sub-slab vapor samples described above, field-specific quality assurance/quality control (QA/QC) samples will be collected and analyzed to ensure the reliability of the generated data as described in the QAPP (see Section 5.0) and to support the required third-party data usability assessment effort. Site-specific QA/QC samples will include matrix spikes, matrix spike duplicates, blind duplicates, and trip blanks.

3.4 Decontamination and Investigation-Derived Waste Management

Every attempt will be made to utilize dedicated sampling equipment during the RI, however if non-dedicated equipment is required and/or used, the equipment will be decontaminated, at a minimum, with a non-phosphate detergent (i.e., Alconox®) and potable water mixture, rinsed with distilled water, and air-dried before each use in accordance with TurnKey's field operating procedures presented in Appendix F. All decontaminated sampling equipment will be kept in a clean environment prior to sample collection. Heavy equipment, such as an excavator (if used) and drilling tools, will be decontaminated by the subcontractor, as necessary.

RI generated drilling spoils, groundwater, or decontamination rinse water not exhibiting gross contamination (i.e., visible product, odor, sheen, etc.) will be either returned to the borehole from which it was removed (soil/fill) or discharged to the ground surface (groundwater and rinse water). Investigative-Derived Waste (IDW) or those materials exhibiting gross contamination will be placed in sealed NYSDOT-approved drums and labeled for subsequent characterization and disposal. All generated IDW drums will be labeled alpha-numerically with regard to contents, origin, and date of generation using a paint stick marker on two sides and the top of each drum. Characterization analytical results of containerized IDW material will be used to determine if spoils can be returned to the ground surface, utilized on-Site, or require treatment and/or off-Site disposal. Drums will be securely staged on-site pending characterization analyses and remedial measures assessment. Field personnel will coordinate the on-site handling and temporary storage of IDW drums, including transportation, characterization sampling, and offsite disposal arrangements, as necessary.

Discarded personal protective equipment (PPE) (i.e., latex gloves, Tyvek, paper towels, etc.) and disposable sampling equipment (i.e., bailers or stainless steel spoons) will be placed in sealed plastic garbage bags and disposed of as municipal solid waste.

3.5 Site Mapping

A Site map will be developed during the field investigation. All sample points and relevant Site features will be located on the map. TurnKey will employ a Trimble GeoXT handheld GPS unit to identify the locations of all soil borings and newly installed wells relative to State planar grid coordinates. Monitoring well elevations will be measured by TurnKey's surveyor. An isopotential map showing the general direction of groundwater flow will be prepared based on water level measurements relative to USGS vertical datum. Maps will be provided with the RI report.

4.0 INTERIM REMEDIAL MEASURES

9271 Group, LLC submitted a draft interim remedial measures (IRM) work plan (May 2013) with the BCP application to address remedial measures related to NYS Spill No. 1201545. The draft IRM work plan was specific to IRMs planned for the discovered USTs in the TP-4 area (see Figure 6). This section of the work plan has been prepared to replace the previously submitted draft IRM work plan, incorporating the Department's comments, and completing the proposed IRMs under the BCP.

This section of the Work Plan includes anticipated IRM activities based on current information and may be modified, subject to NYSDEC approval, after the RI fieldwork is completed (see Figure 6). The IRM may address some or all of the following Site conditions as more fully defined in the RI:

- Removal of USTs and hydraulic lifts;
- Excavation of petroleum impacted soil/fill;
- Removal of PAH impacted soils in the vicinity of SB-3;
- Collection of post-excavation confirmatory samples, and,
- Implementation of a SFMP during remedial and redevelopment activities.

The IRMs are intended to constitute the NYSDEC-approved final remedy for the Site along with the filing of an environmental easement detailing the Institutional and Engineering Controls (IC/EC), and compliance with the post-remedial requirements of the Site Management Plan (SMP).

4.1 Utility Clearance

Prior to any intrusive activities, Dig Safely New York (Call 811) will be contacted by the site contractor a minimum of three business days in advance of the work and informed of the intent to perform excavation work at the Site. If underground utilities are present on the property and are anticipated to interfere with intrusive activities, the Applicant and the NYSDEC will be contacted to discuss mitigating measures.

4.2 Waste Characterization

Waste characterization samples will be collected in accordance with the disposal and/or recycling facilities requirements. Pre-characterization of the soil will allow for direct loading and off-site transportation at the time of the impacted soil removal. Based on the results of the waste characterization sampling, impacted soil will be managed according to all federal, state and local waste disposal regulations.

4.3 UST and Residual Contents Removal

Prior to excavation of the USTs, the tops of the tanks will be fully exposed using an excavator. Upon completion of uncovering the tanks will be opened and inspected to determine proper handling of any residual contents.

If residual contents are discovered, a properly licensed vacuum truck operator will be employed to remove the contents of the tanks and clean the interior of the tanks. All tanks contents and residual cleaning materials will be properly characterized and disposed of off-site at a licensed disposal facility.

Once tank contents are removed, USTs will be removed from the ground, cleaned of residual soil and transported off-site for disposal as scrap. Any appurtenant piping attached to the USTs will be removed during tank excavation.

4.4 Hydraulic Lift Removal

The hydraulic lift and reservoir will be excavated and staged on plastic sheeting to allow for the removal and cleaning of any residual contents by the vacuum truck operator, as described above. After removal of any contents, the hydraulic lift and reservoir will be cleared of residual soil and transported off-site for scrap.

4.5 Removal of Petroleum Impacted Soils (TP-4 Excavation Area)

Immediately following removal of UST and hydraulic lifts, impacted soil/fill or other grossly contaminated media, as defined in 6 NYCRR Part 375-1.2(u), located beneath and immediately adjacent to the USTs and hydraulic lifts will be excavated and transported off-site for disposal and/or biotreatment.

A PID and visual/olfactory observations will be used to screen soil/fill materials and assist in verifying removal of impacted soil/fill. All excavation work will be directed by an

experienced TurnKey professional to remove impacted material. Lateral and vertical excavation will continue, as described above, until suspected source area soils and visually impacted soil/fill is removed, Part 375 Commercial Use SCOs are met, excavation has reached the property line, or NYSDEC agrees that no further excavation is required. Based on the findings of the RI and field observations, an evaluation to clean up the BCP Site to a less restrictive level (i.e., Restricted Residential, Residential, or Unrestricted SCOs) may be conducted.

4.6 Removal of PAH Impacted Soils (West Excavation Area)

Based on the previous investigation results, shallow soil/fill in the vicinity of SB-3 (i.e., west excavation area) exceeds CSCOs and total PAHs above 500 mg/Kg. A summary of the analytical results from the previous investigations is provided in Appendix C.

The shallow excavation will be completed to approximately two (2) feet below grade, or refusal (e.g., former concrete loading dock). A PID and visual/olfactory observations will be used to screen soil/fill materials and assist in verifying removal of impacted soil/fill. All excavation work will be directed by an experienced TurnKey professional to remove impacted material. Lateral and vertical excavation will continue until impacted soil/fill is removed, Part 375 Commercial Use SCOs are met, excavation has reached the property line and/or building, or NYSDEC agrees that no further excavation is required.

4.7 Excavation Confirmation Sampling

Post excavation confirmatory composite samples will be collected from the excavated areas. Sample locations from excavated areas will include samples from excavation sidewalls and bottom. A minimum of one sample per 30 linear feet of sidewall and one sample for each 900 square feet of excavation bottom will be collected in accordance with DER-10.

Samples from the excavations will be analyzed for TCL plus CP-51 List VOCs and SVOCs in the TP-4 area; and TCL SVOCs in the West Excavation Area, in accordance with USEPA Methodology with an equivalent Category B deliverables package to facilitate data evaluation by a third-party validation expert. Expedited turnaround times may be requested for the analytical results to minimize the time that the excavation(s) remains open.

Additional analytical parameters may be analyzed from post-excavation confirmatory samples, based on the results of the RI and consultation with the Department.

4.8 Groundwater Management

Water removed from excavations and surface water run-in to excavations during the impacted soil removal will be handled on-site prior to discharge to the municipal sewer. In general, water removed from excavations will be stored/settled in a portable 21,000-gallon storage tank, and if deemed necessary, will be pumped through a bag or cartridge filter prior to treatment using granular activated carbon (GAC). Following completion of excavation work, settled solids remaining in the tank and spent filter bags will be disposed of off-site.

If the accumulated waters required treatment, the spent GAC will be characterized and regenerated off-site, or disposed at a permitted disposal facility in accordance with applicable federal and state regulations. The storage tank will be decontaminated via pressure washing. TurnKey or the Site owner will coordinate with the City of Buffalo to obtain any necessary temporary sewer discharge permits.

4.9 Excavation Backfill

Following NYSDEC concurrence that the remedial excavation is complete, the excavation will be backfilled with approved backfill material. Prior to backfilling, a demarcation layer (e.g., orange plastic snow fencing) will be placed on top of the remaining in-place soil/fill and the clean approved backfill material.

The backfill material will be placed into the excavations and compacted with the excavator/backhoe bucket in 2-foot lifts to match the existing grade of the Site and minimize settling. Alternatively, the applicant's redevelopment plans may require that select backfill be placed in accordance with certain geotechnical requirements (e.g., 95% of a standard Proctor test). Specific details regarding acceptable backfill materials, test requirements and handling is presented in the Soil-Fill Management Plan, included in Appendix E. Table 2 includes the chemical criteria for import of backfill material to the Site. Backfill material will comply with DER-10 guidance.

4.10 Cover System

During the planned remedial work, certain areas of the Site will be excavated and the impacted materials transported off-site for proper disposal as discussed above. However, the planned IRM excavations will not remove all soil/fill exceeding Part 375 CSCOs. Therefore, with the planned commercial use of the Site, a cover system will be installed as an engineering control as part of the overall remedy to protect human health and the environment. A cover system will be comprised of:

- A minimum of 12 inches of clean imported backfill, in areas of the Site not covered by impermeable cover components (e.g., asphalt, concrete, building). In vegetated and/or landscaped areas, the uppermost approximate three inches will be comprised of soil capable of sustaining vegetative growth. Any imported material to be used in the soil cover system will meet the backfill criteria (Table 2).

- A demarcation layer that will be placed between in-place soil/fill and imported clean cover material in areas outside of the IRM excavation footprint (as described above, demarcation fabric will be placed in the IRM excavations prior to backfill with clean material), and where hardscape surfaces are not present. The demarcation material will be comprised of a plastic mesh, or similar material.

5.0 QUALITY ASSURANCE PROJECT PLAN

A Quality Assurance Project Plan (QAPP) has been prepared in support of the RI/IRM activities. The QAPP dictates implementation of the investigation tasks delineated in this Work Plan. A Sampling and Analysis Plan (SAP) identifying methods for sample collection, decontamination, handling, and shipping, is provided as below.

The QAPP will assure the accuracy and precision of data collection during the Site characterization and data interpretation periods. 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).

5.1 Scope of the QAPP

This QAPP was prepared to provide quality assurance (QA) guidelines to be implemented during the RI/IRM activities. 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 historical record that documents the investigation in terms of the methods used, calibration standards and frequencies planned, and auditing planned.
- 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.

- 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.

5.2 QAPP 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), the drilling 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.

5.2.1 NYSDEC and NYSDOH

It is the responsibility of the New York State Department of Environmental Conservation (NYSDEC), in conjunction with the New York State Department of Health, to review the RI/IRM Work Plan and supporting 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.

5.2.2 Volunteer

9271 Group, LLC ("Volunteer") will be responsible for complying with the QA requirements as specified herein and for monitoring and controlling the quality of the Brownfield cleanup construction either directly or through their designated environmental consultant and/or legal counsel. The Applicants will also have the authority to select Remedial Action Contractor(s) to assist them in fulfilling these responsibilities. The designated Project Manager is responsible for implementing the project, and has the authority to commit the resources necessary to meet project objectives and requirements.

5.2.3 TurnKey Environmental Restoration, LLC

TurnKey Environmental Restoration, LLC (TurnKey) is the prime consultant on this project and is responsible for the performance of all services required to implement each phase of the RI/IRM Work Plan, including, but not limited to, field operations, laboratory testing, data management, data analysis and reporting. Any one member of TurnKey's staff may fill more than one of the identified project positions (e.g., field team leader and site safety and health officer). The various quality assurances, field, laboratory and management responsibilities of key project personnel are defined below.

- *TurnKey Project Manager (PM):* *Michael Lesakowski*

  The TurnKey PM has the responsibility for ensuring that the project meets the Work Plan objectives. The PM will report directly to the Applicant Project Coordinator and 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.

- *TurnKey FTL/SSHO:* *Nathan Munley*

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 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.

For this project the FTL will also serve as the Site Safety and Health Officer (SSHO). As such, he is responsible for implementing the procedures and required components of the Site Health and Safety Plan (HASP), determining levels of protection needed during field tasks, controlling site entry/exit, briefing the field team and subcontractors on site-specific health and safety issues, and all other responsibilities as identified in the HASP.

5.3 Quality Assurance (QA) Responsibilities

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 TurnKey policies, and NYSDEC requirements. The QA Officer has sufficient authority to stop work on the investigation as deemed necessary in the event of serious QA issues.

- *Project QA Officer:* *Lori E. Riker*

  Specific function 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

5.4 Field Responsibilities

TurnKey field staff for this project is drawn from a pool of qualified resources. The Project Manager will use staff to gather and analyze data, and to prepare various task reports and support materials. All of the designated technical team members are experienced professionals who possess the degree of specialization and technical competence required to effectively and efficiently perform the required work.

5.5 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, decision rules, comparability and level of quality control effort conformance for sample analysis and data management by TestAmerica under EPA analytical methods.

5.6 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 (see Table 1).

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.

5.7 Sampling and Analysis Plan

Methods and protocol to be used to collect environmental samples (i.e., soil, groundwater, and sub-slab vapor) for this investigation are described in the TurnKey Field Operating Procedures (FOPs), summarized on Table 4 and presented in Appendix F.

The number and types of environmental samples to be collected is summarized on Table 1. Sample parameter lists, holding times and sample container requirements are summarized on Table 3. The sampling program and related site activities are discussed below. To the extent allowed by existing physical conditions at the facility, sample collection efforts will adhere to the specific methods presented herein. If alternative sampling locations or procedures are implemented in response to facility specific constraints, each will be selected on the basis of meeting data objectives. Such alternatives will be approved by NYSDEC before implementation and subsequently documented for inclusion in the project file.

5.7.1 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. The following section and FOPs for Sampling, Labeling, Storage, and Shipment, located in Appendix F, describe procedures for

maintaining sample custody from the time samples are collected to the time they are received by the analytical laboratory.

5.7.2 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.

5.7.3 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.

5.7.4 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).

5.8 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.

5.8.1 Field Instrument Calibration

Quantitative field data to be obtained during groundwater sampling include pH, turbidity, specific conductance, temperature, 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).

FOPs located in Appendix F describe the field instruments used to monitor for these parameters and the calibration methods, standards, and frequency requirements for each instrument. Calibration results will be recorded on the appropriate field forms and in the Project Field Book.

5.9 Analytical Procedures

Samples collected during this investigation field sampling activities will be analyzed by a NYSDOH-approved laboratory.

5.9.1 Field Analytical Procedures

Field procedures for collecting and preserving groundwater and soil samples are described in FOPs located in Appendix F. A summary of the FOPs is presented on Table 4.

5.10 Data Usability Evaluation

Data usability evaluation procedures shall be performed for both field and laboratory operations as described below.

5.10.1 Procedures Used to Evaluate Field Data Usability

Procedures to validate field data for this project will be facilitated by adherence to the FOPs identified in Appendix F. 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.

5.10.2 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.

6.0 INVESTIGATION SUPPORT DOCUMENTS

6.1 Health and Safety Protocols

TurnKey Environmental Restoration has prepared a Site-Specific Health and Safety Plan (HASP) for use by our employees in accordance with 40 CFR 300.150 of the NCP and 29 CFR 1910.120. The HASP, provided in Appendix C, includes the following site-specific information:

- A hazard assessment.
- Training requirements.
- Definition of exclusion, contaminant reduction, and other work zones.
- Monitoring procedures for site operations.
- Safety procedures.
- Personal protective clothing and equipment requirements for various field operations.
- Disposal and decontamination procedures.

The HASP also includes a contingency plan that addresses potential site-specific emergencies, and a Community Air Monitoring Plan that describes required particulate and vapor monitoring to protect the neighboring community during intrusive site investigation and remediation activities.

Health and safety activities will be monitored throughout the field investigation and IRM. A member of the field team will be designated to serve as the on-site Health and Safety Officer throughout the field program. This person will report directly to the Project Manager and the Corporate Health and Safety Coordinator. The HASP will be subject to revision as necessary, based on new information that is discovered during the field investigation and/or remedial activities.

6.1.1 Community Air Monitoring

Real-time community air monitoring will be performed during IRM activities at the Site. A CAMP is included within TurnKey's HASP (see HASP Appendix C). Particulate and VOC monitoring will be performed along the downwind perimeter of the work area during subgrade excavation, grading and soil/fill handling activities in accordance with this plan. The CAMP is consistent with the requirements for community air monitoring at

remediation sites as established by the New York State Department of Health (NYSDOH) and NYSDEC. Accordingly, it follows procedures and practices outlined under NYSDEC's DER-10 (May 2010) Appendix 1A (NYSDOH's Generic Community Air Monitoring Plan) and Appendix 1B (Fugitive Dust and Particulate Monitoring).

6.2 Soil/Fill Management Plan (SFMP)

The purpose of the Soil/Fill Management Plan (SFMP) is to protect both the environment and human health during redevelopment and post-development maintenance activities of the Site, subsequent to completion of Brownfield cleanup activities. The SFMP will be modified/expanded as appropriate based on the results of the RI. The SFMP is included in Appendix E.

While an assessment of surface and subsurface soil/fill and groundwater at the Site will be performed during the RI, subsurface information is never 100 percent complete or accurate, especially on a large Site with a long and diverse manufacturing history. As such, it is not unreasonable to anticipate the possibility that some quantity of subsurface soil/fill contamination may be encountered after completion of the Brownfield cleanup. In particular, soil/fill contamination may be encountered during post-development activities such as utility maintenance.

Compliance with the SFMP is required to properly manage subsurface soil contamination. The SFMP was developed and incorporated into this Work Plan with the express purpose of addressing unknown subsurface contamination if and when encountered. The SFMP also facilitates the transfer of responsibilities with property ownership, which is why the SFMP is a separate, standalone document.

This SFMP provides protocols for the proper handling of Site soil/fill during development activities, including:

- Excavation, grading, sampling and handling of site soils.
- Acceptability of soils/fill from off-site sources for backfill or subgrade fill.
- Erosion and dust control measures.
- Access controls.
- Health and safety procedures for subsurface construction work and the protection of the surrounding community.

6.3 Citizen Participation Activities

NYSDEC will coordinate and lead community relations throughout the course of the project. TurnKey will support NYSDEC's community relations activities, as necessary. A Citizen Participation Plan will be prepared by TurnKey and submitted to NYSDEC under separate cover. The Citizen Participation Plan will follow NYSDEC's Citizen Participation Plans template for Brownfield Cleanup Program sites entering the BCP at the point of site investigation.

7.0 REPORTING AND SCHEDULE

Upon completion of the RI and IRM fieldwork, a comprehensive RI/AAR/IRM report will be completed summarizing the RI and IRM tasks completed as described below.

7.1 Remedial Investigation Reporting

The RI section of the RI/IRM/AA report will include the following information and documentation, consistent with the NYSDEC's DER-10 Technical Guidance for Site Investigation and Remediation (May 2010).

- Introduction and background;
- A description of the site and the investigation areas;
- A description of the field procedures and methods used during the RI;
- A discussion of the nature and rationale for any significant variances from the scope of work described in this RI Work Plan;
- The data obtained during the RI and historical data considered by TurnKey to be of useable quality. This will include geochemical data, field measurements, etc;
- Comparative criteria that may be used to calculate cleanup levels during the alternatives analysis report (AAR) process, such as NYSDEC Soil Cleanup Objectives and other pertinent regulatory standards or criteria;
- A discussion of contaminant fate and transport. This will provide a description of the hydrologic parameters of the Site, and an evaluation of the lateral and vertical movement of groundwater;
- Conclusions regarding the extent and character of environmental impact in the media being investigated;
- The conclusions of the qualitative human health and environmental risk assessments, including any recommendations for more detailed assessments, if applicable; and
- Supporting materials for RI data. These will include boring logs, monitoring well construction diagrams, laboratory analytical reports, and similar information.

In addition, TurnKey will require third-party data review by a qualified, independent data validation expert. Specifically, a Data Usability Summary Report (DUSR) will be prepared, with appropriate data qualifiers added to the results. The DUSR will follow NYSDEC format per the NYSDEC's September 1997 DUSR guidelines and May 2010 DER-10 guidance. The DUSR and any necessary qualifications to the data will be appended to the RI report.

7.2 IRM Reporting

TurnKey environmental professional will be on-site to document IRM activities. Such documentation will include, at minimum, daily reports of IRM activities, community air monitoring results, photographs and corrective measures report, if necessary.

A summary of the IRM activities will be included in the RI/IRM/AA report submitted to the NYSDEC, with full details of the IRM activities included in the Final Engineering Report. At a minimum, the IRM section of the report will include:

- A Site or area planimetric map showing the parcel(s) remediated;
- A map showing the lateral limits of excavation;
- Summaries of unit quantities, including: volume of soil/fill excavated; disposition of excavated soil/fill and collected ground/surface water; volume/type/source of backfill; and volume of ground/surface water pumped and treated;
- Planimetric map showing location of all verification and other sampling locations with sample identification labels/codes;
- Tabular comparison of verification and other sample analytical results to SCOs. An explanation shall be provided for all results exceeding acceptance criteria; and
- Text describing that the excavation activities were performed in accordance with this Work Plan.

7.3 Alternatives Analysis Report

An alternatives analysis report (AAR) is typically developed to provide a forum for evaluating and selecting a recommended remedial approach, in accordance with DER-10. However, the planned IRM may effectively remove contaminants from the Site. If additional

contamination is discovered during RI site characterization activities, the AAR may need to evaluate additional remedial measures beyond the IRM activities. If the IRM effectively removes site contaminants, the AAR will evaluate the IRM as the final remedy.

A list of remedial action objectives will be developed based on findings of the RI and IRM and the requirement for the selected remedial measures to be protective of human health and the environment under the proposed future use scenario. Proposed soil cleanup objectives (SCOs) for the property will also be presented based on the proposed future use of the Site. SCOs will be based on published standards, criteria, and guidance (SCGs) and other NYSDEC and NYSDOH-accepted values.

Based on the remedial action objectives and SCOs, volumes and areas of media potentially requiring additional remediation will be calculated. General response actions will then be delineated to address each of the site problem areas. These response actions will form the foundation for the development and screening of applicable remedial alternatives against the following criteria as described in 6NYCRR 375-1.8(f) and DER-10-4.2:

- Overall Protection of Human Health and the Environment
- Compliance with Standards, Criteria, & Guidance (SCGs)
- Long-term Effectiveness & Permanence
- Reduction of Toxicity, Mobility, or Volume
- Short-term Effectiveness
- Implementability
- Cost Effectiveness
- Land Use

In addition, the criteria of community acceptance will be considered based on public comments on the AAR and proposed remedial action. Following the screening of alternatives, a comparative analysis will be performed against the above criteria. The comparative analysis will allow for better understanding of the relative advantages and disadvantages of each of the alternatives, and will facilitate identification of a recommended remedial approach.

8.0 PROJECT SCHEDULE

A tentative project schedule for the major tasks to be performed in support of the RI/ IRM/AA is presented as Figure 7.

9.0 REFERENCES

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

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

3. National Oceanic & Atmospheric Administration (NOAA) Satellites and Information. Data Tables through 2013.

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

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

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

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

8. U.S. Environmental Protection Agency, Region II. *CERCLA Quality Assurance Manual, Revision I.* October 1989.

9. U.S. Environmental Protection Agency, *Methods for Chemical Analysis of Water and Wastes*, EPA 600/4-70-020. 1983b.

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

11. U.S. Environmental Protection Agency. National Functional Guidelines for Inorganic Data Review (EPA-540/R-94-013), 1994b.

TABLES

TABLE 1

SAMPLING AND ANALYSIS PLAN

RI-IRM-AA WORK PLAN

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

Matrix	Investigation Location		Estimated Number of Samples	Full List VOCs [1]	SVOCs (BN only)	TCL SVOCs	RCRA Metals	TAL Metals	PCBs	Pesticide/ Herbicides
Soil/Fill	SS-1	Surface	1			1		1	1	1
	SS-2		1			1		1	1	1
	SS-3		1			1		1	1	1
	SS-4		1			1		1		
	SS-5		1			1		1		
	NS-1	Near Surface	1			1		1	1	1
	NS-2		1			1		1	1	1
	NS-3		1			1		1	1	1
	NS-4		1			1		1		
	NS-5		1			1		1		
	TP-11	Subsurface	1	1	1		1		1	1
	TP-12		1	1	1		1		1	1
	TP-13		1	1	1		1		1	1
	TP-14		1	1	1		1			
	MW-1		1	1	1		1			
	MW-2		1	1	1		1			
	MW-3		1	1	1		1			
	MW-4		1	1	1		1			
	MW-5		1	1	1		1			
	SB-9		1	1		1				
	SB-10		1	1		1				
	SB-11		1	1		1				
	SB-12		1	1		1				
	SB-13		1	1		1				
	SB-14		1	1		1				
SV	SV-1	Subsurface Vapor	1	1						
	SV-2		1	1						
	SV-3		1	1						
	SV-4		1	1						
	Ambient-1	Ambient Air	1	1						
	Ambient-2		1	1						
	Outdoor Air Sample	Ouitdoor Air	1	1						
QA/QC	Surface Soil	MS	1	1		1		1	1	1
		MSD	1	1		1		1	1	1
		Blind Dup	1	1		1		1	1	1
	Subsurface Soil	MS	1	1		1		1	1	1
		MSD	1	1		1		1	1	1
		Blind Dup	1	1		1		1	1	1
	SV	Blind Dup	1	1						
			39	**29**	**9**	**22**	**9**	**16**	**15**	**15**
Groundwater	MW-1	Groundwater	1	1		1		1	1	1
	MW-2		1	1		1		1	1	1
	MW-3		1	1		1		1	1	1
	MW-4		1	1		1		1	1	1
	MW-5		1	1		1		1	1	1
QA/QC	Groundwater	MS	1	1		1		1	1	1
		MSD	1	1		1		1	1	1
		Blind Dup	1	1		1		1	1	1
	Submersible Pump	Equipment Blank	1	1		1		1	1	1
			9	**9**	**0**	**9**	**0**	**9**	**9**	**9**

Notes:

1. Full List VOCs = TCL plus CP-51 VOCs via Method 8260.
2. All locations shall be sampled and archived by the laboratory for potential analysis / reanalysis.
3. GW field parameters including: pH, specific conductance, temperature, DO, ORP, and turbidity will be collected and recorded.

Acronyms:

VOCs = volatile organic compounds
SVOCs = semi-volatile organic compounds
TCL = Target Compound List
TAL = Target Analyte List
BN = Base Neutrals
PCBs = Polychlorinated Biphenyls
RCRA = Resource Conservation and Recovery Act

TABLE 2

CRITERIA FOR USE OF OFF-SITE SOIL

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

Parameter	Allowable Concentration for Use of Off-Site Soil
Volatile Organic Compounds (mg/kg)	
1,1,1-Trichloroethane	0.68
1,1-Dichloroethane	0.27
1,1-Dichloroethene	0.33
1,2-Dichlorobenzene	1.1
1,2-Dichloroethane	0.02
1,2-Dichloroethene(cis)	0.25
1,2-Dichloroethene(trans)	0.19
1,3-Dichlorobenzene	2.4
1,4-Dichlorobenzene	1.8
1,4-Dioxane	0.1
Acetone	0.05
Benzene	0.06
Butylbenzene	12
Carbon tetrachloride	0.76
Chlorobenzene	1.1
Chloroform	0.37
Ethylbenzene	1
Hexachlorobenzene	3.2
Methyl ethyl ketone	0.12
Methyl tert-butyl ether	0.93
Methylene chloride	0.05
Propylbenzene-n	3.9
Sec-Butylbenzene	11
Tert-Butylbenzene	5.9
Tetrachloroethene	1.3
Toluene	0.7
Trichloroethene	0.47

TABLE 2

CRITERIA FOR USE OF OFF-SITE SOIL

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

Parameter	Allowable Concentration for Use of Off-Site Soil
Volatile Organic Compounds (mg/kg)	
Trimethylbenzene-1,2,4	3.6
Trimethylbenzene-1,3,5	8.4
Vinyl chloride	0.02
Xylene (mixed)	1.6
Semi-Volatile Organic Compounds (mg/kg)	
Acenaphthene	98
Acenaphthylene	107
Anthracene	500
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1.7
Benzo(g,h,i)perylene	500
Benzo(k)fluoranthene	1.7
Chrysene	1
Dibenz(a,h)anthracene	0.56
Fluoranthene	500
Fluorene	386
Indeno(1,2,3-cd)pyrene	5.6
m-Cresol(s)	0.33
Naphthalene	12
o-Cresol(s)	0.33
p-Cresol(s)	0.33
Pentachlorophenol	0.8
Phenanthrene	500
Phenol	0.33
Pyrene	500

TABLE 2

CRITERIA FOR USE OF OFF-SITE SOIL

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

Parameter	Allowable Concentration for Use of Off-Site Soil
Metals (mg/kg)	
Arsenic	16
Barium	400
Beryllium	47
Cadmium	7.5
Chromium, Hexavalent[1]	19
Chromium, Trivalent[1]	1500
Copper	270
Cyanide	27
Lead	450
Manganese	2000
Mercury (total)	0.73
Nickel	130
Selenium	4
Silver	8.3
Zinc	2480
PCBs/Pesticides (mg/kg)	
2,4,5-TP Acid (Silvex)	3.8
4,4'-DDE	17
4,4'-DDT	47
4,4'-DDD	14
Aldrin	0.19
Alpha-BHC	0.02
Beta-BHC	0.09
Chlordane (alpha)	2.9
Delta-BHC	0.25
Dibenzofuran	210
Dieldrin	0.1
Endosulfan I	102
Endosulfan II	102

TABLE 2

CRITERIA FOR USE OF OFF-SITE SOIL

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

Parameter	Allowable Concentration for Use of Off-Site Soil
PCBs/Pesticides (mg/kg)	
Endosulfan sulfate	200
Endrin	0.06
Heptachlor	0.38
Lindane	0.1
Polychlorinated biphenyls	1

Notes:

1. The SCO for Hexavalent or Trivalent Chromium is considered to be met if the analysis for the total species of this contaminant is below the specific SCO for Hexavalent Chromium.

TABLE 3

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

TABLE 4

SUMMARY OF FIELD OPERATING PROCEDURES

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

TurnKey FOP No.	Procedure
001.1	Abandonment of Borehole Procedures
004.3	Ambient Air/Subslab Vapor Sample Collection Procedure
007.0	Calibration and Maintenance of Portable Dissolved Oxygen Meter
008.0	Calibration and Maintenance of Portable Field pH/Eh Meter
009.0	Calibration and Maintenance of Portable Field Turbidity Meter
011.0	Calibration and Maintenance of Portable Photoionization Detector
012.0	Calibration and Maintenance of Portable Specific Conductance Meter
015.0	Documentation Requirements for Drilling and Well Installation
017.0	Drill Site Selection Procedure
018.0	Drilling and Excavation Equipment Decontamination Procedures
021.0	Establishing Horizontal and Vertical Control
022.0	Groundwater Level Measurement
024.0	Groundwater Sample Collection Procedures
026.1	Hollow Stem Auger (HSA) Drilling Procedures
031.1	Low Flow (Minimal Drawdown) Groundwater Purging & Sampling Procedure
032.1	Management of Investigation-Derived Waste (IDW)
033.0	Monitoring Well Construction for Hollow Stem Auger Boreholes
036.0	Monitoring Well Development Procedures
046.0	Sample Labeling, Storage and Shipment Procedures
047.0	Screening of Soil Samples for Organic Vapors During Drilling Activities
054.0	Soil Description Procedures Using The USCS
063.2	Surface and Subsurface Soil Sampling Procedures
065.1	Test Pit Excavation & Logging Procedures
073.1	Real-Time Air Monitoring During Intrusive Activities
076.0	"Before Going Into the Field" Procedure
078.0	Geoprobe Drilling Procedure
084.0	Calibration and Maintenance of Portable Particulate Meter

TABLE 5

SUMMARY OF PREVIOUS INVESTIGATION ANALYTICAL RESULTS

1050-1088 NIAGARA STREET

BUFFALO, NEW YORK

Parameter [1]	Unrestricted Use SCOs[2]	Commercial Use SCOs[3]	Sample Location (Depth)												
			TP-1 (7-9)	TP-3 (4-5)	TP-4 (3-5)	TP-5 (7-9)	TP-10 (9-11)	SB-1 (0.5-1)	SB-2 (0.5-1)	SB-3 (0-0.5)	SB-4 (0-0.5)	SB-5 (0.5-1) [5]	SB-6 (0.5-1)	SB-7 (0.5-1)	SB-8 (0.5-1)
			5/16/2012					7/15/2013							
Volatile Organic Compounds (VOCs) - mg/Kg [3]															
2-Butanone (MEK) [5]	--	--	--	0.026 J	ND	--	0.006 J	--	--	--	--	--	--	--	--
Acetone	**0.05**	**500**	--	0.17	ND	--	0.042	--	--	--	--	--	--	--	--
Ethylbenzene	**1**	**390**	--	ND	**23**	--	ND	--	--	--	--	--	--	--	--
Cyclohexane	--	--	--	0.27	19	--	ND	--	--	--	--	--	--	--	--
Isopropylbenzene (Cumene)	**2.3**	**2.3**	--	0.25	**9.6**	--	ND	--	--	--	--	--	--	--	--
n-Butylbenzene	**12**	**500**	--	ND	7.7	--	ND	--	--	--	--	--	--	--	--
n-Propylbenzene	**3.9**	**500**	--	0.38	**130**	--	ND	--	--	--	--	--	--	--	--
sec-Butylbenzene	**11**	**500**	--	ND	3.3	--	ND	--	--	--	--	--	--	--	--
tert-Butylbenzene	**5.9**	**500**	--	0.019 J	ND	--	ND	--	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	**3.6**	**190**	--	0.7 B	**85**	--	0.0012 J	--	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	**8.4**	**190**	--	ND	**35**	--	ND	--	--	--	--	--	--	--	--
p-Isopropyltoluene	**10**	**10**	--	ND	7.2	--	ND	--	--	--	--	--	--	--	--
Total Xylene	**0.26**	**500**	--	0.091 B	**100**	--	0.003 J	--	--	--	--	--	--	--	--
Methylcyclohexane	--	--	--	0.55	120	--	ND	--	--	--	--	--	--	--	--
Semi-Volatile Organic Compounds (SVOCs) - mg/Kg [3]															
1,2-Dichlorobenzene	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.069 J	ND
1,3-Dichlorobenzene	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.08 J	ND
2-Methylnaphthalene	--	--	ND	ND	ND	ND	ND	ND	ND	25	5.9	1.3 J	ND	ND	ND
Acenaphthylene	**100**	**500**	0.01 J	ND	ND	ND	ND	ND	ND	ND	6.2	1.2 J	ND	ND	ND
Acenaphthene	**20**	**500**	0.025 J	ND	ND	ND	ND	ND	ND	**39**	7	7.3	ND	0.096 J	ND
Anthracene	**100**	**500**	0.047 J	ND	ND	0.11 J	ND	ND	ND	60	18	15	ND	0.18	ND
Benzo(a)anthracene	**1**	**5.6**	0.17 BJ	ND	ND	0.61 BJ	ND	ND	ND	**130**	**46**	**40**	ND	0.59	ND
Benzzo(a)pyrene	**1**	**1**	0.18 BJ	ND	ND	0.58 BJ	ND	ND	ND	**120**	**39**	**40**	ND	0.4	ND
Benzo(b)fluoranthene	**1**	**5.6**	0.2 B	ND	ND	0.72 BJ	ND	ND	ND	**120**	**36**	**55**	ND	0.65	ND
Benzo(k)fluoranthene	**0.8**	**56**	0.08 BJ	ND	ND	0.32 BJ	ND	ND	ND	**110**	**33**	**19**	ND	0.22	ND
Benzo(g,h,i)perylene	**100**	**500**	0.11 BJ	ND	ND	0.4 BJ	ND	ND	ND	67	21	26	ND	0.3	ND
Benzoic acid	--	--	ND	ND	ND	ND	ND	5.2 J	ND	ND	ND	ND	ND	ND	ND
Biphenyl	--	--	ND	ND	ND	ND	ND	ND	ND	5.1 J	ND	ND	ND	ND	ND
Bis(2-ethylhexyl)pht	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.4 J	ND	ND	ND
Butyl benzyl phthalate	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1 J	ND	ND	ND
Carbazole	--	--	ND	ND	ND	ND	ND	ND	ND	41	10	13	ND	0.13 J	ND
Chrysene	**1**	**56**	0.15 BJ	ND	ND	0.6 BJ	ND	ND	ND	**120**	**44**	**45**	ND	0.63	ND
Dibenzo(a,h)anthracene	**0.33**	**0.56**	0.035 J	ND	ND	ND	ND	ND	ND	**12**	**6.6**	ND	ND	0.1 J	ND
Dibenzofuran	--	--	ND	ND	ND	ND	ND	ND	ND	38	7.9	4.4	ND	ND	ND
Diethyl phthalate	--	--	ND	ND	ND	ND	ND	ND	0.086 J	ND	ND	ND	ND	ND	ND
Fluoranthene	**100**	**500**	0.22 B	ND	ND	0.96 BJ	ND	ND	ND	**300**	97	85	ND	1.4	ND
Fluorene	**30**	**500**	0.016 J	ND	ND	ND	ND	ND	ND	**43**	9	ND	ND	0.08 J	ND
Indeno(1,2,3-cd)pyrene	**0.5**	**5.6**	0.092 J B	ND	ND	0.31 BJ	ND	ND	ND	**85**	**24**	ND	ND	0.25	ND
Naphthalene	**12**	**500**	0.1 J	0.0052 J	4.4 J	ND	ND	ND	ND	**51**	**15**	2.2 J	ND	ND	ND
Phenanthrene	**100**	**500**	0.22 B	ND	ND	0.66 BJ	ND	ND	0.17	**300**	67	ND	0.072 J	1.2	ND
Pyrene	**100**	**500**	0.22 B	ND	ND	1 BJ	ND	ND	ND	**210**	84	69	ND	1	ND
Metals - mg/Kg															
Aluminum	--	--	--	--	--	--	--	2000	5400	4300	4500	--	--	10000	--
Antimony	--	--	--	--	--	--	--	ND	2 J	5.8	9.4	--	--	ND	--
Arsenic	**13**	**16**	8.8	4.5	4.3	5.9	5.1	3.2	3.4	**42**	**86**	--	--	5.9	--
Barium	**350**	**400**	133	112	117	**375**	76.7	83	100	220	240	--	--	61	--
Beryllium	**7.2**	**590**	--	--	--	--	--	0.18 J	0.57	0.57	0.45 J	--	--	0.41 J	--
Cadmium	**2.5**	**9.3**	1.7	ND	0.33	**6**	0.25	0.34 J	0.78 J	**3.4**	**15**	--	--	0.52 J	--
Calcium	--	--	--	--	--	--	--	12000	21000	6200	23000	--	--	73000	--
Chromium	**30**	**1500**	**77.3**	18.8	14.4	**67.6**	15.3	4	12	**57**	**44**	--	--	13	--
Cobalt	--	--	--	--	--	--	--	62	140	18	8.6	--	--	21	--
Copper	**50**	**270**	--	--	--	--	--	29	**87**	**660**	**320**	--	--	36	--
Iron	--	--	--	--	--	--	--	9300	12000	100000	41000	--	--	15000	--
Lead	**63**	**1000**	**1160**	19	1.3	**292**	14	16	48	**670**	**550**	--	--	36	--
Magnesium	--	--	--	--	--	--	--	2700	5200	790	2000	--	--	31000	--
Manganese	**1600**	**10000**	--	--	--	--	--	47	120	530	380	--	--	460	--
Mercury	**0.18**	**2.8**	**4**	ND	0.083	**0.35**	ND	ND	0.03 J	**0.99**	**2.2**	--	--	ND	--
Nickel	**30**	**310**	--	--	--	--	--	13	48	30	28	--	--	19	--
Potassium	--	--	--	--	--	--	--	380	950	320	540	--	--	1400	--
Selenium	**3.9**	**1500**	ND	ND	ND	ND	ND	1.2 J	0.36 J	2.1	**6.2**	--	--	0.35 J	--
Silver	**2**	**1500**	ND	ND	ND	0.73	ND	1.6	**9**	**11**	**8**	--	--	0.32 J	--
Sodium	--	--	--	--	--	--	--	150 J	220	140 J	320 J	--	--	190 J	--
Vandium	--	--	--	--	--	--	--	8.3	16	11	15	--	--	20	--
Zinc	**109**	**10000**	--	--	--	--	--	39	80	**410**	**670**	--	--	68	--

Notes:

1. Only those parameters detected at a minimum of one sample location are presented in this table; all other compounds were reported as non-detect.
2. Values per 6NYCRR Part 375.6.8 (a) Soil Cleanup Objectives - Unrestricted (December 2006)
3. Values per 6NYCRR Part 375.6.8 (b) Soil Cleanup Objectives - Commercial (December 2006).
4. Sample results were reported by the laboratory in ug/kg and converted to mg/Kg for comparison to SCOs.
5. Sample SB-5 was aslo analyzed for polychlorinated biphenyls (PCBs), which were reported as non-detect.

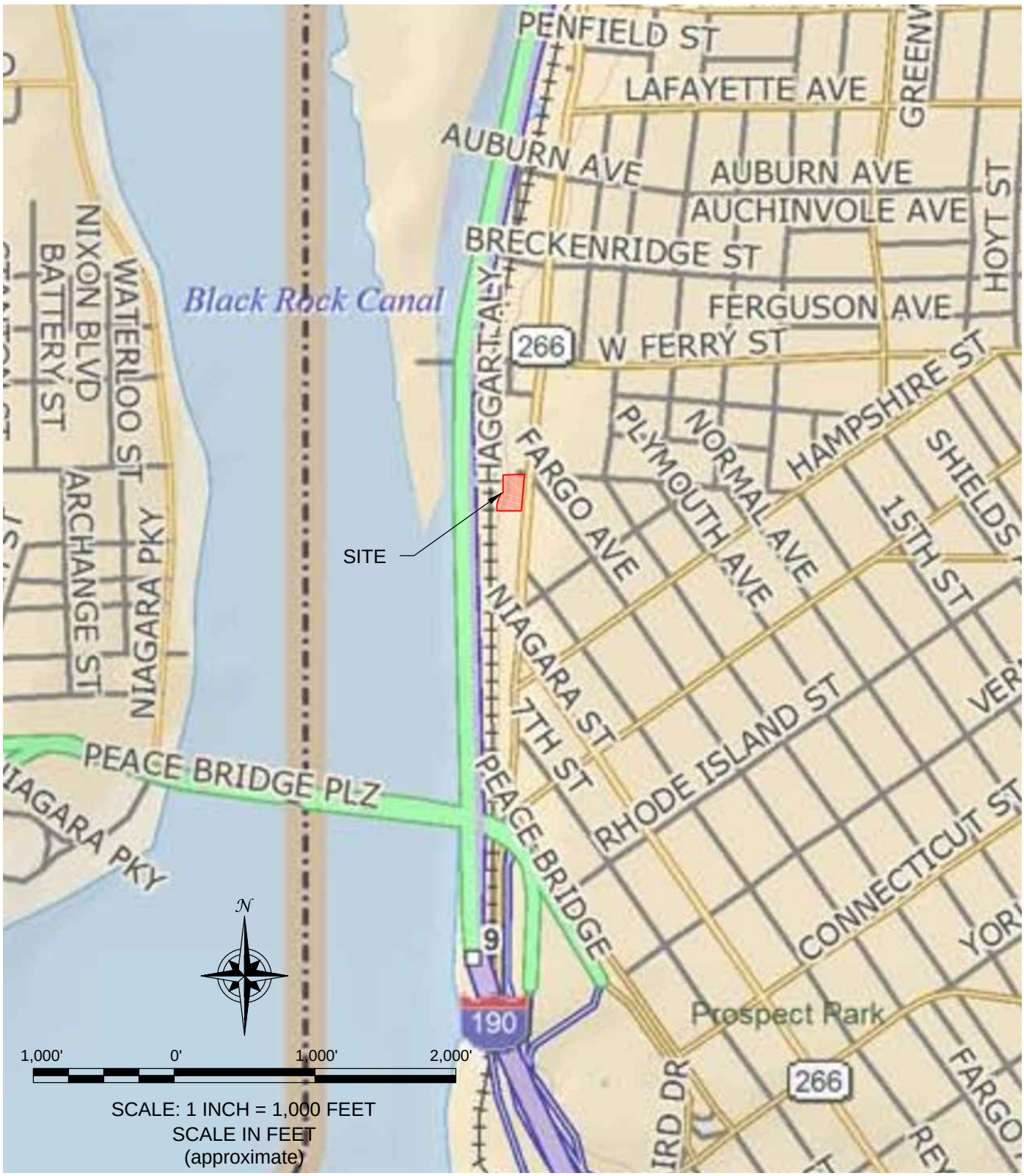
Definitions:

ND = Parameter not detected above laboratory detection limit.
NA = Parameter not Analysed.
"--" = No SCO available.
J = Estimated value; result is less than the sample quantitation limit but greater than zero.
B = Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
* = Indicates the spike or duplicate analysis is not within the quality control limits.
D = Analyte was detected after laboratory dilution.

BOLD = Exceeds NYSDEC Unrestricted Use SCOs.
BOLD = Exceeds NYSDEC Commercial Use SCOs.

FIGURES

FIGURE 1



TurnKey Environmental Restoration, LLC

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

PROJECT NO.: 0136-013-005

DATE: NOVEMBER 2013

DRAFTED BY: JGT

SITE LOCATION AND VICINITY MAP

RI-IRM-AA WORK PLAN

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

PREPARED FOR

9271 GROUP, LLC

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FIGURE 2

SITE PLAN (AERIAL)

RI-IRM-AA WORK PLAN

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

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TURNKEY ENVIRONMENTAL RESTORATION, LLC

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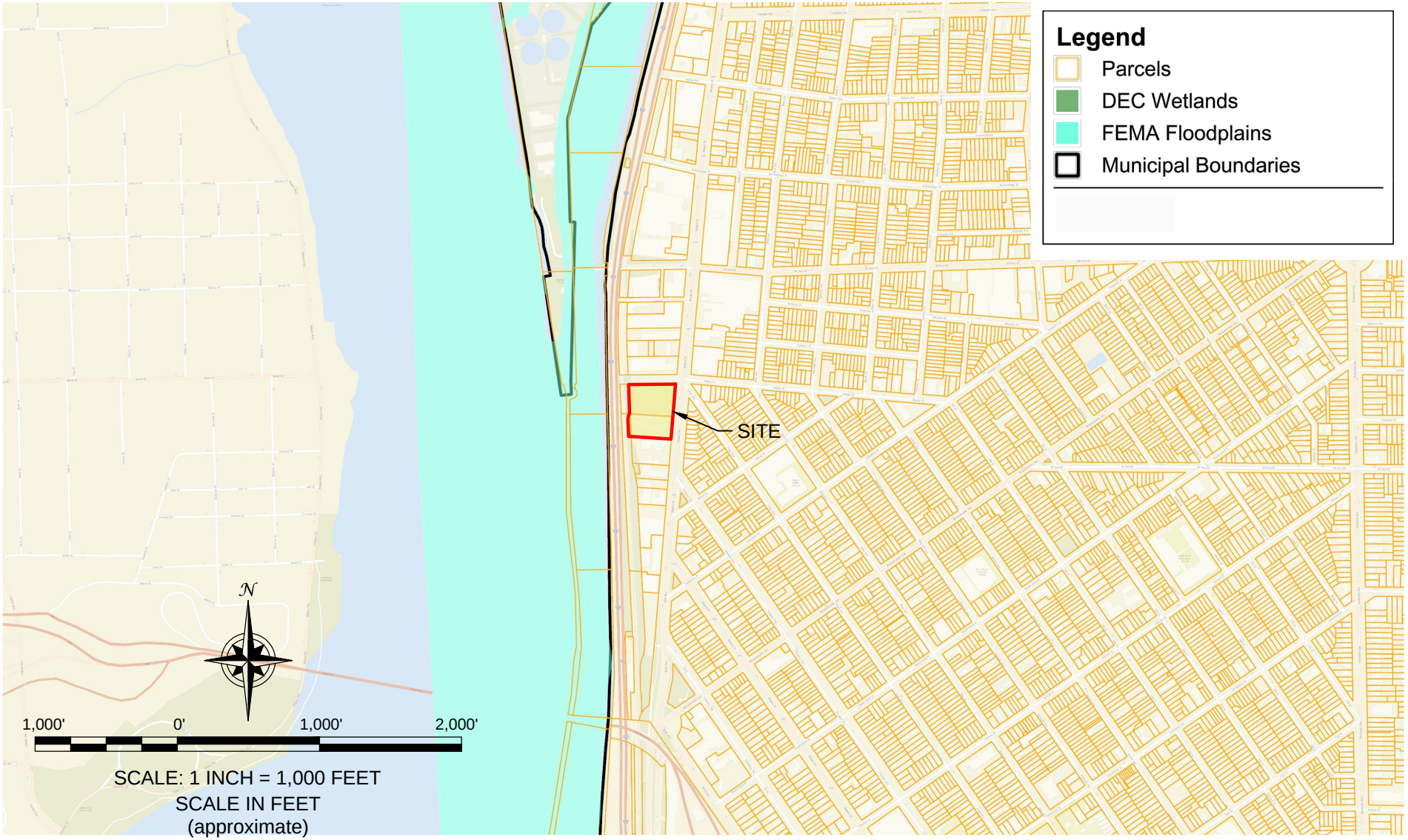

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REGIONAL FLOODPLAINS MAP

RI-IRM-AA WORK PLAN

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

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FIGURE 3

ALBANY STREET

ALBANY STREET

NIAGARA STREET

NIAGARA RIVER

190

190

STEEP GRADE

TP-1

TP-5

TP-8

TP-6

TP-9

TP-7

TP-2

TP-4 AREA

USTs

IN-GROUND LIFT

TP-10

TP-3

SB-3

SB-8

HAZARDOUS WASTE STORAGE

SB-1

OIL COMPRESSOR AREA

SUB-BASEMENT

SB-6

FLOOR DRAIN

SB-4

SB-7

SB-2

HAZARDOUS WASTE STORAGE

SB-5

BUILDING MOUNTED TRANSFORMERS

N

50' 0' 50' 100'

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

LEGEND:

- BCP SITE BOUNDARY
- PARCEL BOUNDARY
- FENCE
- HIGHWAY (190)
- CURRENT RAILROAD
- BUILDINGS ONSITE
- BUILDINGS OFFSITE
- OIL STAINING (OBSERVED JULY 2013)
- TP-1 TEST PIT (MAY 2012)
- SB-1 SOIL BORING (JULY 2013)

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PREVIOUS INVESTIGATION SAMPLE LOCATIONS

RI-IRM-AA WORK PLAN
1050-1088 NIAGARA STREET SITE
BUFFALO, NEW YORK
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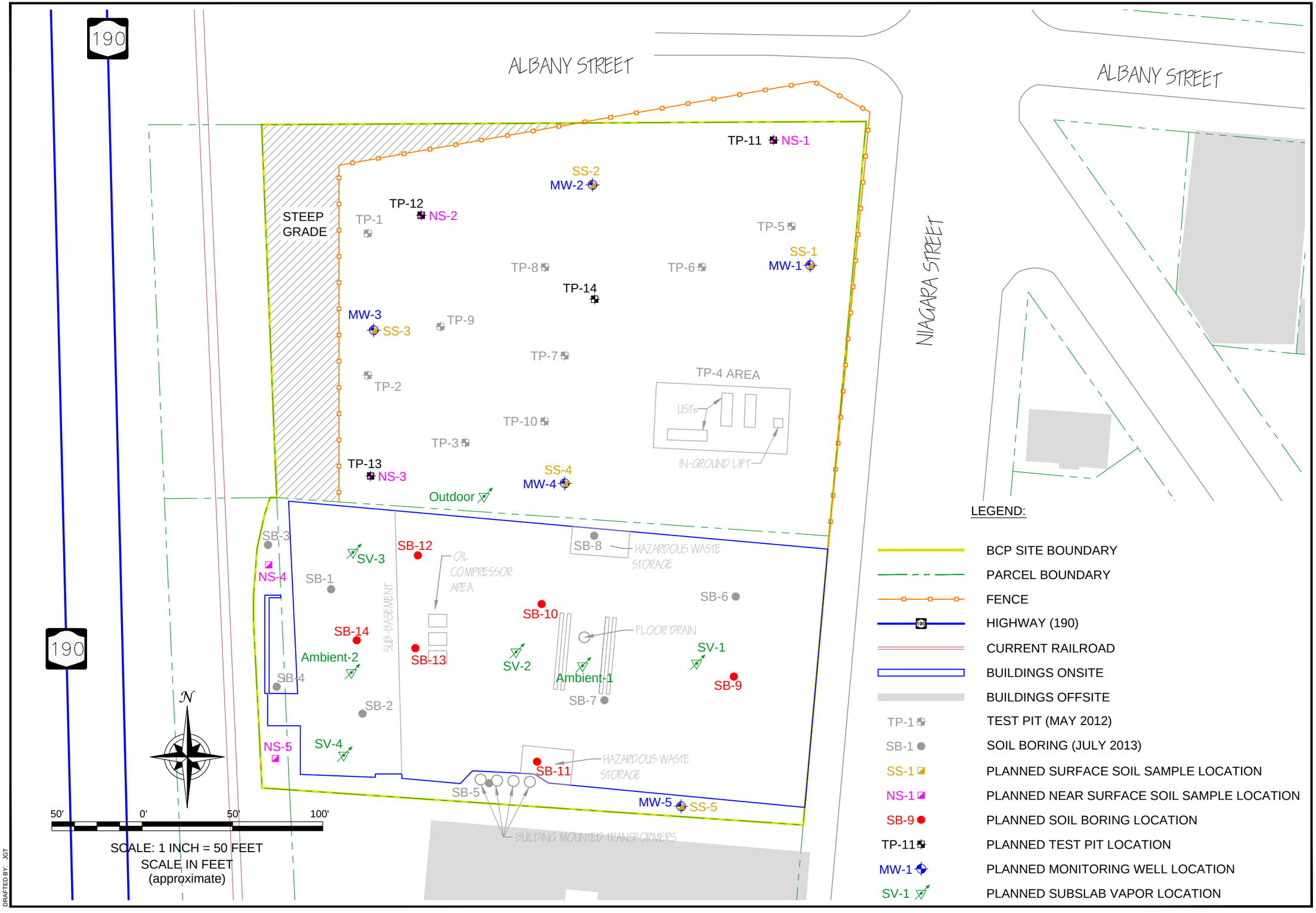
FIGURE 4



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PROPOSED RI SAMPLE LOCATIONS

RI-IRM-AA WORK PLAN
1050-1088 NIAGARA STREET SITE
BUFFALO, NEW YORK
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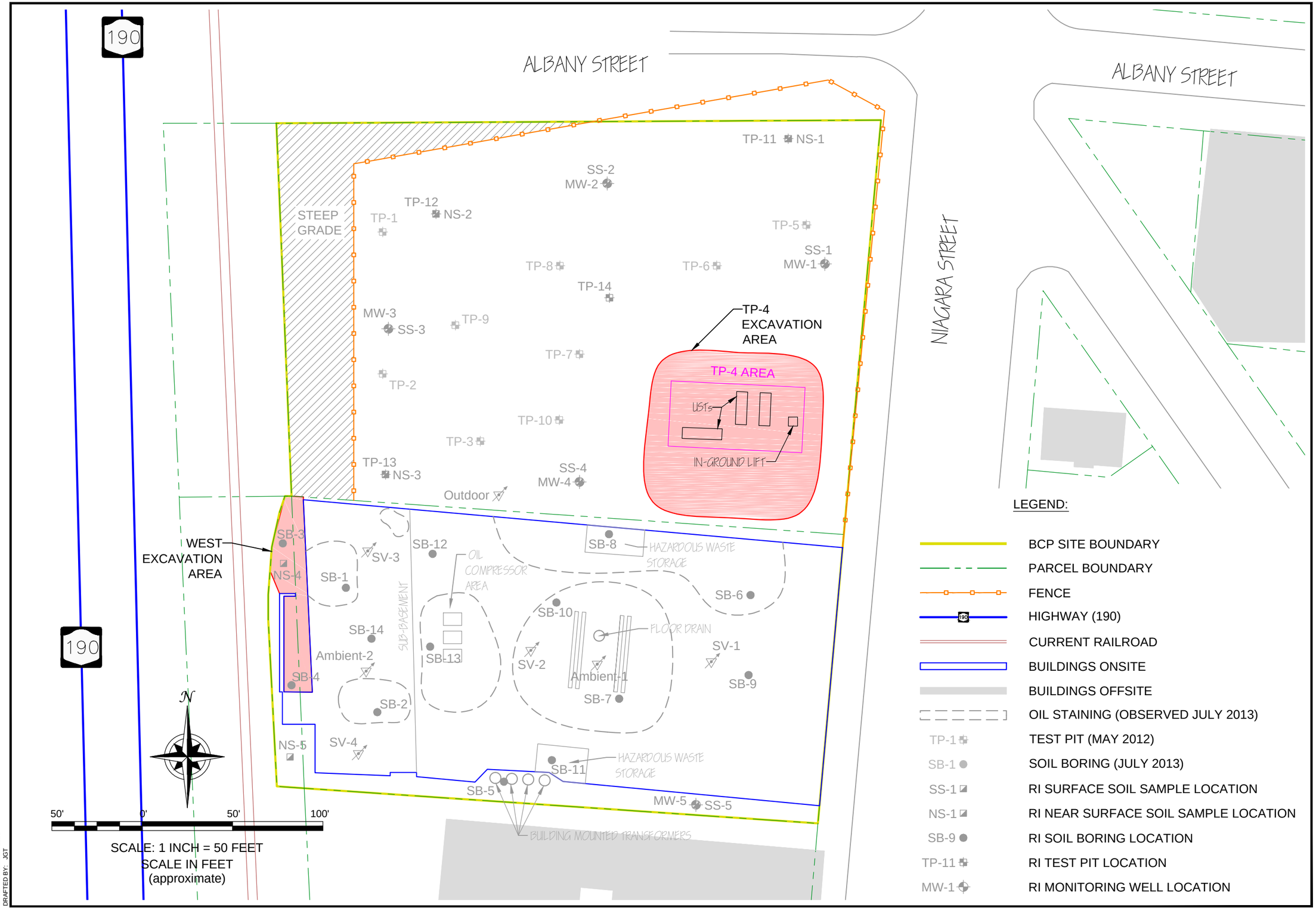
FIGURE 5



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PROPOSED IRM ACTIVITIES

RI-IRM-AA WORK PLAN
1050-1088 NIAGARA STREET SITE
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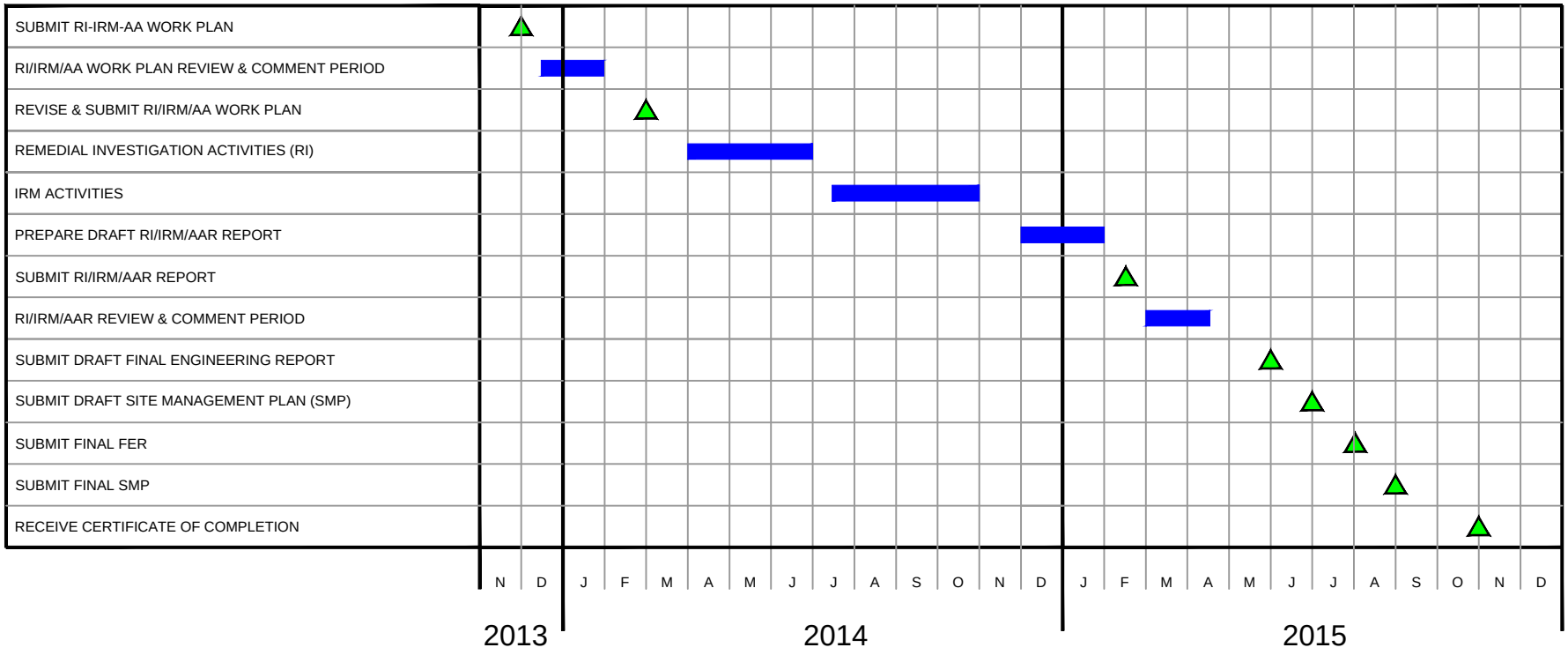
FIGURE 6

PROJECT TASKS:



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PROJECT SCHEDULE

RI-IRM-AA WORK PLAN

1050-1088 NIAGARA STREET SITE

BUFFALO, NEW YORK

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FIGURE 7