Remedial Investigation/Interim Remedial Measures Work Plan

125 Main Street Site
Buffalo, New York

February 2012 0105-012-001

Prepared For:

Harbor District Associates, LLC.

Prepared By:

TurnKey Environmental Restoration, LLC

2558 Hamburg Turnpike, Suite 300, Buffalo, New York 14218 | phone: (716) 856-0635 | fax: (716) 856-0583

REMEDIAL INVESTIGATION/INTERIM REMEDIAL MEASURES WORK PLAN

125 MAIN STREET SITE
BUFFALO, NEW YORK

February 2012 0105-012-001

Prepared for:

Harbor District Associates, LLC
570 Delaware Avenue
Buffalo, New York 14202

RI/IRM WORK PLAN

125 Main Street Site
Buffalo, New York

Table of Contents

Table of Contents

Table of Contents

RI/IRM WORK PLAN
125 Main Street Site
Buffalo, New York

Table of Contents

LIST OF TABLES

LIST OF FIGURES

Table of Contents

LIST OF APPENDICES

1.0 INTRODUCTION

This document presents the proposed scope of work and implementation procedures for completion of a Remedial Investigation (RI) and Interim Remedial Measures (IRM) at the 125 Main Street Site (Site), located at 125 Main Street, Buffalo, New York (see Figures 1 and 2).

The Applicant, Harbor District Associates, LLC (HDA) acting as a Volunteer, has elected to pursue cleanup and redevelopment of the Site under the New York Brownfield Cleanup Program (BCP) and submitted a BCP application in February 2012. HDA desires to execute a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC).

The RI/IRM will be completed by TurnKey Environmental Restoration, LLC (TurnKey), in association with Benchmark Environmental Engineering & Science, PLLC (Benchmark), on behalf of HDA. The work will be completed in general accordance with NYSDEC DER-10 guidelines (Ref. 1).

1.1 Background

The Site is an approximately 2.185-acre parcel located in the historic canal district of the City of Buffalo, Erie County, New York (see Figures 1 and 2). The parcel is currently improved with one vacant eight story commercial office building and one small maintenance garage in the northeast corner of the property. The Site is bound by Interstate 190 to the north, Scott Street to the south, Washington Street and Buffalo News building to the east, and Main Street to the west.

The Site was historically utilized for various commercial and industrial purposes since at least the early 1800s, including commercial storefronts, restaurants, hotel, the Lehigh Valley Railroad Passenger Station, contractor's yard, junk yard, former Quay Street, A. Krauss Hide and Wool Warehouse, Forbush and Brown Boot and Shoe manufacturing company, tin shop, paint shop, Patent medicine manufacturer, wire works, and the former Hamburg Canal. The Site was utilized as the General William J Donovan State Office Building from approximately 1961 through 2008 and is currently vacant.

A 2007 Phase I Environmental Site Assessment Report (dated May 2007) and subsequent Phase II Environmental Site Assessment Report (dated November 2007), were completed on the former General William J Donovan State Office Building (i.e., 125 Main

Street) by URS Corporation (see Appendix B). The Phase II investigation revealed evidence of subsurface contamination, including elevated levels of semi-volatile organic compounds (SVOCs), particularly polycyclic aromatic hydrocarbon (PAHs) exceeding NYSDEC Part 375 Commercial soil cleanup objectives (SCOs). The volatile organic compound (VOC) acetone was detected in excess of technical and operational guidance series (TOGS) water quality standards on the north end of the Site. Three underground storage tanks (USTs) were removed from the Site in 2008.

In fall 2011, additional subsurface data collected by Benchmark revealed elevated concentrations of PAHs and metals above NYSDEC Part 375 Commercial SCOs Site-wide (see Appendix B). Details of the previous investigations are presented in Section 2.8 below.

1.2 Project Objectives

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

- Collect additional soil/fill and groundwater samples, under appropriate quality assurance/quality control criteria, to better delineate the nature and extent of contamination;
- Collect sufficient data to evaluate the actual and potential threats to the public health and the environment; and,
- Collect the data necessary to evaluate the remedial action alternatives.

As part of the RI/IRM process, 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 PID measurements, groundwater elevation measurements, and field analyses (i.e., pH, temperature, 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.

As part of the RI, an IRM will be completed to address known environmental impacts related to past use of the Site. An IRM will quickly mitigate risks to public health and the environment. The planned IRM includes excavation and off-Site disposal of impacted soil in the north and northeast areas of the Site. This Work Plan includes planned IRM activities based on current information and may be modified, subject to NYSDEC approval, immediately after the RI fieldwork is completed.

The Applicant's intent is for the IRMs to substantially constitute the final NYSDEC-approved remedy for the Site. The cleanup objectives employed will be 6NYCRR Part 375 Commercial Soil Cleanup Objectives (SCOs). Details of anticipated IRM activities are included in Section 4.0

1.3 Project Organization and Responsibilities

The Applicant, Harbor District Associates, LLC, has applied to the New York State BCP as a 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), will monitor the remedial actions to verify that the work is performed in accordance with the governing Brownfield Cleanup Agreement, the approved RI/IRM Work Plan, and NYSDEC DER-10 guidance (May 2010).

TurnKey personnel and key 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	Field Personnel	TBD	(716) 856-0635
HDA	Facility Contact	Mike DePriest	(716) 878-9404
TBD	Analytical Testing	TBD	TBD
TBD	Geoprobe Drilling Services	TBD	TBD
TBD	Drilling Services	TBD	TBD
TBD	Excavation Services	TBD	TBD
TBD	Data Usability Summary Report	TBD	TBD

2.0 SITE DESCRIPTION

2.1 General

The Site is an approximately 2.185-acre parcel located in the historic canal district of the City of Buffalo, Erie County, New York. The Site is bound by Interstate 190 to the north, Scott Street to the south, Washington Street and adjacent Buffalo News building to the east, and Main Street to the west. The parcel is currently improved with one eight story vacant commercial office building and one small maintenance garage in the northeast corner of the property (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. 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 impacted by various cycles of development and filling, as well as utility lines 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 (Ref. 2) describes the general soil type at the Site as Urban Land (Ud). This is indicative of the level to gently sloping land in which 80 percent or more of the soil surface is covered by asphalt, concrete, buildings, or other impervious structures (USDA, 1978) 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 further 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 approximated thickness of 110 to 160

feet. A previous investigation from 2007 describes the bedrock as being encountered at a depth of 51 feet below ground surface (fbgs) and described as limestone (see Appendix B).

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. Based on the previous investigation, Site groundwater was typically found to be 16-18 fbgs and assumed to flow in a western direction towards Lake Erie. Localized on-Site groundwater flow will be further investigated 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 40.5 inches and snowfall is 93.6 inches (Ref. 3) to the northern part of the watershed with over 150 inches per year falling on the southern portion of the watershed. Average monthly temperatures range from 24.5 degrees Fahrenheit in January to 70.8 degrees Fahrenheit in July (Ref. 3). The ground and lakes typically remain frozen from December to March. Winds are generally from the southwest (240 degrees) with a mean velocity of 10 miles per hour (Buffalo Airport, 1999).

2.5 Population and Land Use

The City of Buffalo, encompassing 40.38 square miles, has a population of 261,310 (2010 US Census Bureau). The Site is located within Census Tract 13.01 in the City of Buffalo, an area zoned for commercial property use.

The Site is located in a historic industrial and commercial area of the City of Buffalo. The land use surrounding the Site is a mixed commercial, residential and recreational area. Residential areas surrounding the site are located approximately 0.15-miles to the west, and 0.5-miles to the east.

2.6 Utilities and Groundwater Use

The subject property has access to all major public and private utilities, including potable water, sanitary and storm sewers (City of Buffalo), 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 known 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 the Site. Per the Erie County GIS On-Line Mapping System, the Site is located approximately 800-ft east of the Buffalo River and 0.75-miles east of the Lake Erie, A NYSDEC regulated freshwater wetland (BU-3) is located approximately 0.4-mile to the southwest of the site.

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 May 2007 – Phase I Environmental Site Assessment Report of the General William J. Donovan Building

URS Corporation. (URS) conducted an Environmental Site Assessment of the subject property, and the findings are summarized below:

- Miscellaneous hazardous materials observed at the subject property include paints, water treatment chemicals (e.g. aquacides, acids, etc.), solvents, coolants, compressor oil, diesel fuel, and gasoline.
- Mercury-containing gauges were reported to be observed on site.
- Suspect asbestos-containing materials (ACM) observed at the subject property included: vinyl asbestos floor tiles, floor tile mastic, cove base molding, cove base molding mastic, spray on ceiling fire proofing, thermal insulation on boilers and pipes, window glazing, window caulking, built-up roofing, and flashing.
- PCB-containing fluorescent light ballasts may still be present on Site.
- Two active underground storage tanks (USTs) containing petroleum products associated with the Site. One inactive UST is known to be on Site.

- Based on the age of site development (1961), there may be lead-based paint (LBP) on surfaces at the subject property.
- One off-site property, The Buffalo News, located upgradient of the subject property and is listed in the Leaking Tanks (LTANKS), historic leaking tanks (HIST LTANK), spills (SPILLS), and historic spills (HIST SPILLS) databases. With potential for migrated onto the subject property.
- The former Hamburg Canal, which runs through the current south parking lot, was filled between 1899 and 1925. The source and nature of the fill material is not known.

Although not specifically identified in the URS Phase I ESA, historic Sanborn maps from 1889 to 1951 show former on-Site operations including: Wire works (weaving and painting), paint shop, tin shop, junk yard/storage, contractor's yard, medicine manufacturing, a bit brace factory (including machine shop) and a boot and shoe manufacturer.

2.8.2 November 2007 – Phase II Environmental Site Assessment Report of the General William J. Donovan State Office Building

URS Corporation. (URS) conducted an Environmental Site Investigation of the subject property, including 22 soil borings, soil sampling for VOCs, SVOCs, PCBs and/or metals, and groundwater sampling from three existing monitoring wells. The findings are summarized below:

- Certain PAHs were found to exceed NYSDEC Part 375 Commercial SCOs.
- Acetone detected in groundwater exceeded TOGS water quality standards.

2.8.3 December 2008 – UST Closure Report, Donovan State Office Building UST Closure Project

Lender Consulting Services conducted an UST Closure on the subject property, and the findings are summarized below:

- One diesel fuel Day Tank for emergency generator was removed.
- One (1) 1,000 gallon diesel fuel UST removed.
- One (1) 4,000 gallon gasoline UST removed.
- One (1) 30,000 gallon #6 fuel oil UST removed.

2.8.4 November 2011 – Supplemental Phase II Subsurface Investigation

Benchmark conducted a Supplemental Phase II Subsurface Investigation of the subject property, and the findings are summarized below:

- Certain SVOCs were found to exceed NYDEC Part 375 Commercial SCOs.
- Barium and arsenic were found in concentrations exceeding NYSDEC Part 375 Commercial SCOs.
- Chromium, Lead, and Mercury were found in concentrations exceeding Unrestricted 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:*** SVOCs and Metals
- ***Groundwater:*** 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.

During intrusive RI/IRM 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 within the NYSDEC's DER-10 (May 2010) Appendix 1A (NYSDOH's Generic Community Air Monitoring Plan) and Appendix 1B (Fugitive Dust and Particulate Monitoring).

3.1 Field Investigation Activities

Extensive soil sampling has been completed on-Site to date. However, additional data is required to fully characterize the Site in the context of the BCP. Therefore, the planned RI activities are intended to supplement the previous soil and groundwater sampling by completing additional test pits, soil borings and groundwater monitoring wells for purposes of further assessing contaminants in soil and groundwater.

The soil/fill investigation will include the advancement and characterization of seven test pits, designated TP-1 through TP-7 and seven soil borings that will be converted to monitoring wells, designated BCP MW-1 through BCP MW-7 as shown on Figure 3. The sampling plan provided as Table 1 includes analysis of VOCs, SVOCs, metals, PCBs, pesticides and herbicides to assess whether other potential contaminants exist within on-Site

soil/fill at concentrations of concern. The rationale for the sample locations and planned analytical program is provided as Table 1A.

3.1.1 Test Pit Excavations

Excavation of seven test pits, designated TP-1 through TP-7, as shown on Figure 3 will allow for visual/olfactory/PID assessment of shallow (i.e., up to 6 feet below ground surface (fbgs)) subsurface conditions and to obtain subsurface soil/fill samples for chemical characterization. Test pits will be pre-located to allow for clearance of sub-grade infrastructure and utilities.

Test pit locations TP-1, TP-2 and TP-3 will be completed in the area of the former Hamburg Drain and sampled for full suite analyses (i.e., Target Compound List (TCL) VOCs, TCL SVOCs, Target Analyte List (TAL) metals, TCL PCBs, TCL herbicides and TCL pesticides) in the shallow soil/fill (i.e., up to 6 fbgs). Deeper soil/fill in this area of the Site was extensively sampled for VOCs, SVOCs and metals during previous investigations; additional characterization samples from deeper intervals will be collected for PCBs, pesticides and herbicides for Site characterization purposes during soil boring installation (see Section 3.1.2 below).

Soil/fill in the area north and east of the Site building is planned for excavation up to 11 fbgs and off-Site disposal during the planned IRM (see Section 4 below). Therefore, test pit locations TP-4, -5, -6 and -7 will be utilized as exploratory test pits for Site additional characterization purposes and will be sampled for waste characterization/disposal purposes. Although the waste characterization/disposal sampling parameters will be somewhat dictated by the contracted commercial solid waste disposal/treatment facility, such parameters typically include TCL VOCs, TCL SVOCs, TAL metals, TCL PCBs/pesticides/herbicides, toxicity characteristic leaching procedure (TCLP) VOCs, TCLP SVOCs, TCLP metals, ignitability, corrosivity and reactivity. Soil/fill samples from deeper soil/fill (i.e., 11-15 fbgs) in the northern and eastern areas of the Site will be collected for full suite analyses for Site characterization purposes during soil boring installation (see Section 3.1.2 below).

In general, test pits will be excavated using a mini-excavator from ground surface to approximately 6-8 fbgs. Test pit walls and excavated soil/fill will be examined by qualified TurnKey personnel and classified in accordance with the Unified Soil Classification System (USCS). Excavated soil/fill and the test pit atmosphere will be field screened for the

presence of VOCs using a field PID as a procedure for ensuring the health and safety of personnel at the Site and to identify potentially impacted soil/fill samples for laboratory analysis. The methodology for field soil/fill screening using a PID is discussed below and in the QAPP section. Field measurements and observations will be documented in the project notebook by the TurnKey field scientist.

Soil/fill samples will be collected for analysis of USEPA TCL VOCs, TCL SVOCs, TAL metals, TCL PCBs, TCL herbicides and TCL pesticides for Site characterization purposes as described above. However, no VOC samples will be analyzed in the absence of elevated PID reading (i.e., sustained readings greater than 5 ppm).

Soil/fill samples will be collected from the center of the excavator bucket using dedicated stainless steel sampling tools. Representative soil/fill samples will be placed in pre-cleaned laboratory supplied sample bottles, cooled to 4ºC in the field, and transported under chain-of-custody command to a New York State Department of Health (NYSDOH) ELAP-certified analytical laboratory. Please refer to Table 1 for a summary of the soil/fill sampling and analysis plan. The rationale for the sample locations and planned analytical program is provided as Table 1A. Figure 3 shows the test pit and soil boring locations.

3.1.2 Soil Borings

In addition to the test pits, the soil/fill investigation will include completion of seven soil borings (which will be converted to groundwater monitoring wells) designated as BCP MW-1 through BCP MW-7, in the locations shown on Figure 3. BCP MW-1, -2 and -3 located in the southern portion of the Site will be sampled for full suite analyses in the shallow soil/fill (i.e. up to 6 fbgs). Deeper soil/fill in the southern portion of the Site was extensively sampled for VOCs, SVOCs and metals during previous investigations; therefore, samples collected from BCP MW-1, -2 and -3 in the selected interval from 6-15 fbgs will be sampled for PCBs, pesticides and herbicides for Site characterization purposes. Sample locations BCP MW-4, -5 and -6 will be sampled in the 11-15 fbgs interval as the upper approximate 11 feet is planned to be removed during the IRM (see Section 4). Sample location BCP MW-7 will be sampled for full suite analyses from an interval greater than 8 fbgs as the shallow soil/fill was previously sampled.

Soil/fill samples will be collected using dedicated stainless steel sampling tools. Representative soil/fill samples will be placed in pre-cleaned laboratory provided sample bottles, cooled to 4ºC in the field, and transported under chain-of-custody command to a

NYSDOH ELAP-certified analytical laboratory. Soil/fill samples will be submitted for TCL VOCs, TCL SVOCs, TAL Metals, PCBs, pesticides and herbicides. However, no VOC samples will be analyzed in the absence of elevated PID reading (i.e., sustained readings greater than 5 ppm). Please refer to Table 1 for a summary of the soil/fill sampling and analysis plan. The rationale for the sample locations and planned analytical program is provided as Table 1A. Figure 3 shows the test pit and soil boring locations.

3.1.3 Groundwater Investigation

Seven (7) of the planned soil boring locations will be converted into groundwater monitoring wells, as shown on Figure 3. The monitoring wells will provide groundwater flow direction and groundwater quality data. Monitoring well installation, well development, and groundwater sample collection details are discussed in the following sections.

3.1.3.1 Monitoring Well Installation

After completion of the soil borings advancement, seven (7) boring locations will be converted into groundwater monitoring wells. A direct-push drill rig capable of advancing hollow-stem augers will be employed to install 2-inch inside diameter (ID) monitoring wells. Each boring location will be advanced to approximately 20 to 24 fbgs, or refusal, with a target minimum of 5 feet below the first encountered groundwater. 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.

3.1.3.2 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 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 containerized and sampled for constituents of concern. Upon analytical approval, development water will either be passed through a mobile granular-carbon treatment vessel, and discharged to the ground or, if necessary, disposed.

3.1.3.3 Groundwater Sample Collection

Prior to sample collection, static water levels will be measured and recorded from all on-Site monitoring wells. Following water level measurement, TurnKey personnel will purge and sample monitoring wells using either a peristaltic pump with dedicated pump tubing following low-flow/minimal drawdown purge and sample collection procedures; or using a dedicated polyethylene bailer. Prior to sample collection, groundwater will be evacuated from each well at a low-flow rate (typically less than 0.1 L/min). Field measurements for pH, temperature, turbidity, dissolved oxygen, specific conductance and water level, as well as visual and olfactory field observations, will be periodically recorded and monitored for stabilization. Purging will be considered complete when pH, specific conductivity, dissolved oxygen and temperature stabilize and when turbidity measurements fall below 50 Nephelometric Turbidity Units (NTU), or become stable above 50 NTU. 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 may be implemented during the RI include:

- **Peristaltic Pump with Dedicated Pump Tubing**

  Wells less than 20 fbgs will be purged and sampled using a peristaltic pump and dedicated pump tubing following low-flow (minimal drawdown) purge and sample collection procedure, as described above. However, the pump will not

require decontamination because all components are dedicated to each monitoring well. In addition, groundwater samples collected for VOC analysis will not be sampled directly through the peristaltic pump due to potential degassing (i.e., loss of VOCs) of the groundwater sample. Instead, prior to collection of VOC samples, the pump will be turned off and the pressure on the flexible walled tubing within the pump head will be maintained in order to prevent water within the collection tubing from escaping. The tubing will be removed from the well and coiled to prevent any contact with the ground surface. Upon removal of the tubing and prior to re-activating the pump, the pump flow direction will be reversed. Upon pump re-activation, the pumping rate will be slowly increased; positively displacing groundwater within the tubing allowing it to flow, without disturbance and degassing, into the appropriate VOC sample vials.

- **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 the designated laboratory for analysis.

3.1.3.4 Groundwater Sample Analyses

The seven (7) groundwater samples will be collected and analyzed for TCL VOCs, TCL SVOCs, TAL Metals, pesticides, herbicides, and PCBs in accordance with USEPA SW-846 methodology with equivalent NYSDEC Category B deliverables to allow for independent third-party data usability assessment.

3.1.3.5 Groundwater Flow Evaluation

Groundwater elevation data will be collected during the RI. Two rounds of water level data from within the newly installed monitoring wells will be collected, and used to develop an on-Site groundwater isopotential map. A table which describes the well construction and water level will be prepared.

3.1.4 Soil Vapor Assessment

If initial RI subsurface soil and groundwater data indicates that VOCs may cause a soil vapor concern, TurnKey will discuss with NYSDEC whether a soil vapor assessment is necessary in the vicinity of the building.

3.1.5 Field Specific Quality Assurance/Quality Control Sampling

In addition to the soil/fill, and groundwater 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.

3.2 Investigation-Derived Waste Management

During installation of the monitoring wells, excess soil cuttings will be containerized (e.g. 55-gallon drums), and sampled to determine if they can be utilized on-Site or require treatment or off-Site disposal. Development water from the monitoring wells will be containerized and sampled for constituents of concern. Upon analytical approval, development water will either be passed through a mobile granular-carbon treatment vessel, and discharged to the ground or, if necessary, disposed.

Drums will be labeled with regard to contents, origin, and date of generation using a paint stick marker on two sides and the top of each drum. The drums will be staged on-site pending analyses and remedial measures assessment.

3.3 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. Site maps will be provided with the RI report.

4.0 INTERIM REMEDIAL MEASURES

Following completion of the RI, an IRM will be completed to address environmental concerns and to expedite the remedial and overall project schedule. This Work Plan includes planned IRM activities based on current information and may be modified, subject to NYSDEC approval, after the RI fieldwork is completed. The planned IRM includes the following tasks:

- Excavation and off-Site disposal or treatment of known impacted soil north and east of the existing building; and,
- Implementation of a Soil/Fill Management Plan (SFMP) during remedial and redevelopment activities.

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 Site Preparation

Prior to implementing IRM activities appropriate permits and approvals (e.g., demolition permit, landfill disposal approvals) will be secured prior to work activities.

4.3 Waste Characterization

Waste characterization samples will be collected and analyzed prior to initiating excavation work. Composite waste characterization samples will be collected from soil/fill from sample locations TP-4 through TP-7 in the planned IRM excavation Areas #1 and #2 (see Figure 4). Pre-characterization of the soil/fill will allow for direct loading and off-site transportation at the time removal.

Waste characterization samples will be analyzed based on the requirements of the contracted commercial solid waste landfill (to be determined), but typically include TCL VOCs, TCL SVOCs, Resource Conservation and Recovery Act (RCRA) metals, PCBs,

pesticides, herbicides, TCLP VOCs, TCLP SVOCs, TCLP metals, ignitability, corrosivity and reactivity. Based on the results of the waste characterization sampling, impacted soil will be managed according to all federal, state and local waste disposal regulations.

4.4 Removal of Impacted Soils

Impacted soil/fill or other grossly contaminated media, as defined in 6 NYCRR Part 375-1.2(u), located north and east of the existing building will be excavated and transported off-site for disposal. Area 1 will be excavated to approximately 11 fbgs in the area shown. Area 2 will be excavated starting at approximately 1 fbgs in the southern excavation limit down to approximately 11 fbgs in the northern excavation limit. If grossly impacted materials are encountered at the planned excavation depths, those materials will also be removed during excavation activities.

All excavation work will be directed by an experienced TurnKey professional to remove impacted material. Lateral and vertical excavation will continue to property boundaries in the north and northeast area of the Site as shown on Figure 4, until the planned depths are achieved, grossly impacted soil/fill is removed, Part 375 Commercial SCOs are met, and/or NYSDEC agrees that no further excavation is required.

4.5 Excavation Confirmation Sampling

Post excavation confirmatory samples will be collected in accordance with DER-10 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. If a less frequent sampling protocol is considered, the number of samples and parameter list will be discussed with NYSDEC prior to sampling.

Based on current data, confirmatory samples will be collected for polycyclic aromatic hydrocarbons (PAHs) and Resource Conservation and Recovery Act (RCRA) metals. Based on the results of the RI, additional confirmatory sampling parameters may be required if contaminants identified during the RI include other contaminants that exceed Part 375 Commercial SCOs.

Samples will be analyzed in accordance with USEPA SW-846 Methodology with an equivalent Category B deliverables package to facilitate data evaluation by a third-party

validation expert. Expedited turnaround times will be requested for the analytical results to minimize the time that the excavation(s) remains open.

4.6 Groundwater Management/Treatment

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 20,000-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 (TCLP VOC testing) 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.

4.7 Excavation Backfill

The areas of excavation shown in Figure 4 will be developed with a subgrade parking structure. Therefore, backfill will be limited to structural fill that may be required beneath the parking structure concrete slabs.

The excavation will be backfilled with NYSDEC approved backfill material that will be tested (if required) in accordance with DER-10. The backfill material will be placed into the excavation and compacted in accordance with the site-specific construction requirements. 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 in accordance with Appendix 5 of DER-10 (May 2010).

5.0 QUALITY ASSURANCE PROJECT PLAN

A 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 125 Main Street Site include: the NYSDEC, NYSDOH, Harbor District Associates (Applicant), TurnKey Environmental Restoration, LLC (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 NYSDEC, in conjunction with NYSDOH, 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 Applicant

Harbor District Associates ("Applicant") 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 Applicant 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 Harbor District Associates 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: *Bryan Hann*

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 the analytical laboratory 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

The selection and rationale for the RI/IRM sampling program is discussed in the RI/IRM Work Plan. Methods and protocol to be used to collect environmental samples (i.e., soil and groundwater) for this investigation are described in the TurnKey Field Operating Procedures (FOPs) 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, dissolved oxygen and depth to groundwater. Quantitative water level measurements will be obtained with an electronic sounder or steel tape, which require no calibration. Quantitative field data to be obtained during soil sampling include screening for the presence of volatile organic constituents using a photoionization detector (PID).

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 an independent NYSDOH ELAP certified 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 with TurnKey's HASP. 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 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 included in Appendix E has been modified to be generally consistent with the NYSDEC Site Management Plan (SMP) Excavation Work Plan (EWP) template.

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. As such, it is not unreasonable to anticipate the possibility that some quantity of subsurface soil/fill contamination may be encountered during or after completion of the Brownfield cleanup/redevelopment. In particular, soil/fill contamination may be encountered during development activities such as utility installation or Site construction work.

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. 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 Remedial Investigation/Interim Remedial Measures/Alternatives Analysis Report (RI/IRM/AAR) 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/AAR 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

A TurnKey scientist or engineer will be on-site on a full-time basis to document IRM activities. Such documentation will include, at minimum, daily reports of IRM activities, community air monitoring results, photographs and fieldwork sketches.

7.2.1 Construction Monitoring

Standard daily reporting procedures will include preparation of a daily report and, when appropriate, problem identification and corrective measures reports. Appendix D contains sample project documentation forms. Information that may be included on the daily report form includes:

- Processes and locations of construction under way;
- Equipment and personnel working in the area, including subcontractors;
- Number and type of truckloads of soil/fill removed from the site;
- A description of off-site materials received;
- Approximate verification sampling locations (sketches) and sample designations.

The NYSDEC will be promptly notified of problems requiring modifications to this Work Plan prior to proceeding or completion of the construction item. Photo documentation of the IRM activities will be prepared by TurnKey throughout the duration of the project as necessary to convey typical work activities and whenever changed conditions or special circumstances arise.

7.2.2 IRM Documentation

A summary of the IRM construction will be included in the RI/IRM/AAR 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 area(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, treated and discharged/disposed;
- 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. 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, along with a Site Management Plan including Environmental Easement, 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 (if any) 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 375-1.10:

- 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
- Implement ability
- Cost

In addition, the criteria of community acceptance will be considered based on public comments on the 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 through submittal of the RI/IRM/AAR report is presented as Figure 5.

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 2000.

4. URS Corporation. *Phase I Environmental Site Assessment Report of the General William J. Donovan State Office Building, 125 Main Street, Buffalo, New York*. May 2007

5. URS Corporation. *Phase II Environmental Site Assessment Report of the General William J. Donovan State Office Building, 125 Main Street, Buffalo, New York*. November 2007

6. Lender Consulting Services. *UST Closure Report, Donovan State Office Building UST Closure Project. 125 Main Street Site, Buffalo, New York*. December 2008

7. Benchmark Environmental Engineering & Science, PLLC. *Supplemental Phase II Site Investigation Report, William J. Donovan Building [125 Main Street Site], Buffalo, New York*. November 2011.

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

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

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

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

12. 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 WORK PLAN

125 MAIN STREET SITE

BUFFALO, NEW YORK

Matrix	Parameter	No. Samples	Estimated Number of QC Samples				Total
			Trip Blank[2]	Matrix Spike[3]	MS Duplicate[3]	Blind Duplicate[3]	
Remedial Investigation[1]							
Subsurface Soil/Fill	TCL VOCs	10		1	1	1	13
	TCL SVOCs	10		1	1	1	13
	TAL Metals	10		1	1	1	13
	PCBs	13		1	1	1	16
	Pesticides	13		1	1	1	16
	Herbicides	13		1	1	1	16
Groundwater	TCL VOCs	8	1	1	1	1	12
	TCL SVOCs	8		1	1	1	11
	TAL Metals	8		1	1	1	11
	PCBs	8		1	1	1	11
	Pesticides	8		1	1	1	11
	Herbicides	8		1	1	1	11
	Field Parameters: DO, pH, Turbidity, Conductance, Temperature	8					8
Interim Remedial Measures[1]							
Post-Excavation Samples	PAHs	TBD					TBD
	RCRA Metals	TBD					TBD
Waste Characterization Sampling							
Soil Characterization Sampling	TCLP VOCs	TBD					TBD
	TCLP SVOCs	TBD					TBD
	TCLP Metals	TBD					TBD
	TCL VOCs	TBD					TBD
	TCL SVOCs	TBD					TBD
	TAL Metals	TBD					TBD
	Total PCBs/ Pest. / Herb.	TBD					TBD
	Hazardous Characterisitcs						
	Ignitability	TBD					TBD
	Reactivity	TBD					TBD
	Corrosivity	TBD					TBD

Notes:

1. Analyses will be performed via USEPA SW-846 methodology w/ equivalent Category B deliverables package.
2. Trip blanks will be submitted to the laboratory each day aqueous volatile organic samples are collected.
3. Blind duplicate and MS/MSD samples will be collected at a frequency of 1 per 20 samples collected.
4. Dedicated sampling equipment will be used for groundwater and soil/fill sample collection; therefore, an equipment blank is not required.

TBD = to be determined

TABLE 1A

SAMPLING LOCATION AND ANALYSIS RATIONALE

RI / IRM WORK PLAN

125 MAIN STREET SITE

BUFFALO, NEW YORK

Location	Parameter List	Rationale
Soil Borings		
BCP MW-1	Full Suite[1] - Shallow < 6' PCBs/ Pest/Herbs - 6-15'	- Characterization of shallow soil/fill - VOCs/SVOCs/metals previously analyzed in deeper intervals
BCP MW-2		
BCP MW-3		
BCP MW-4	Full Suite - Deep 11-15'	- Characterization of soil/fill >11' - Soil/fill to 11' planned for removal during IRM
BCP MW-5		
BCP MW-6		
BCP MW-7	Full Suite - Deep 8'+	Soil/fill <8' previously sampled
Test Pits		
TP-1	Full Suite - Shallow <6'	- Characterization of shallow soil/fill former Hamburg Drain - VOCs/SVOCs/metals previously analyzed in deeper intervals
TP-2		
TP-3		
TP-4	Waste Characterization- 0 to 11'	- Waste characterization of shallow soil/fill planned for removal - Exploratory test pits for Site Characterization
TP-5		
TP-6		
TP-7		
Groundwater		
MW-1 (If Useable)	Full Suite	Site-wide groundwater assessment
BCP MW-1		
BCP MW-2		
BCP MW-3		
BCP MW-4		
BCP MW-5		
BCP MW-6		
BCP MW-7		

Notes:

1) Full suite = TCL VOCs, TCL SVOCs, TAL metals, TCL PCBs, TCL Pesticides, TCL Herbicides.

TABLE 2

RI/IRM/AAR WORK PLAN

CRITERIA FOR IMPORTED SOIL-FILL

125 MAIN STREET SITE

BUFFALO, NEW YORK

Parameter	Allowable Concentration of Imported Soil/Fill- Commercial Use
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	1.2
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

RI/IRM/AAR WORK PLAN

CRITERIA FOR IMPORTED SOIL-FILL

125 MAIN STREET SITE

BUFFALO, NEW YORK

Parameter	Allowable Concentration of Imported Soil/Fill-Commercial Use
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

RI/IRM/AAR WORK PLAN

CRITERIA FOR IMPORTED SOIL-FILL

125 MAIN STREET SITE

BUFFALO, NEW YORK

Parameter	Allowable Concentration of Imported Soil/Fill-Commercial Use
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

TABLE 2

RI/IRM/AAR WORK PLAN

CRITERIA FOR IMPORTED SOIL-FILL

125 MAIN STREET SITE

BUFFALO, NEW YORK

Parameter	Allowable Concentration of Imported Soil/Fill-Commercial Use
PCBs/Pesticides (mg/Kg)	
Endosulfan II	102
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.
2. Values per Appendix 5 of DER-10 (May 2010)

TABLE 3

SAMPLE CONTAINER, VOLUME, PRESERVATION & HOLDING TIME REQUIREMENTS

125 Main 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/Fill	TCL 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 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
	Pesticides	8081A	amber glass	1000 ml	Cool to 2-4 °C	7 days
	Herbicides	8151A	amber glass	1000 ml	Cool to 2-4 °C	7 days

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

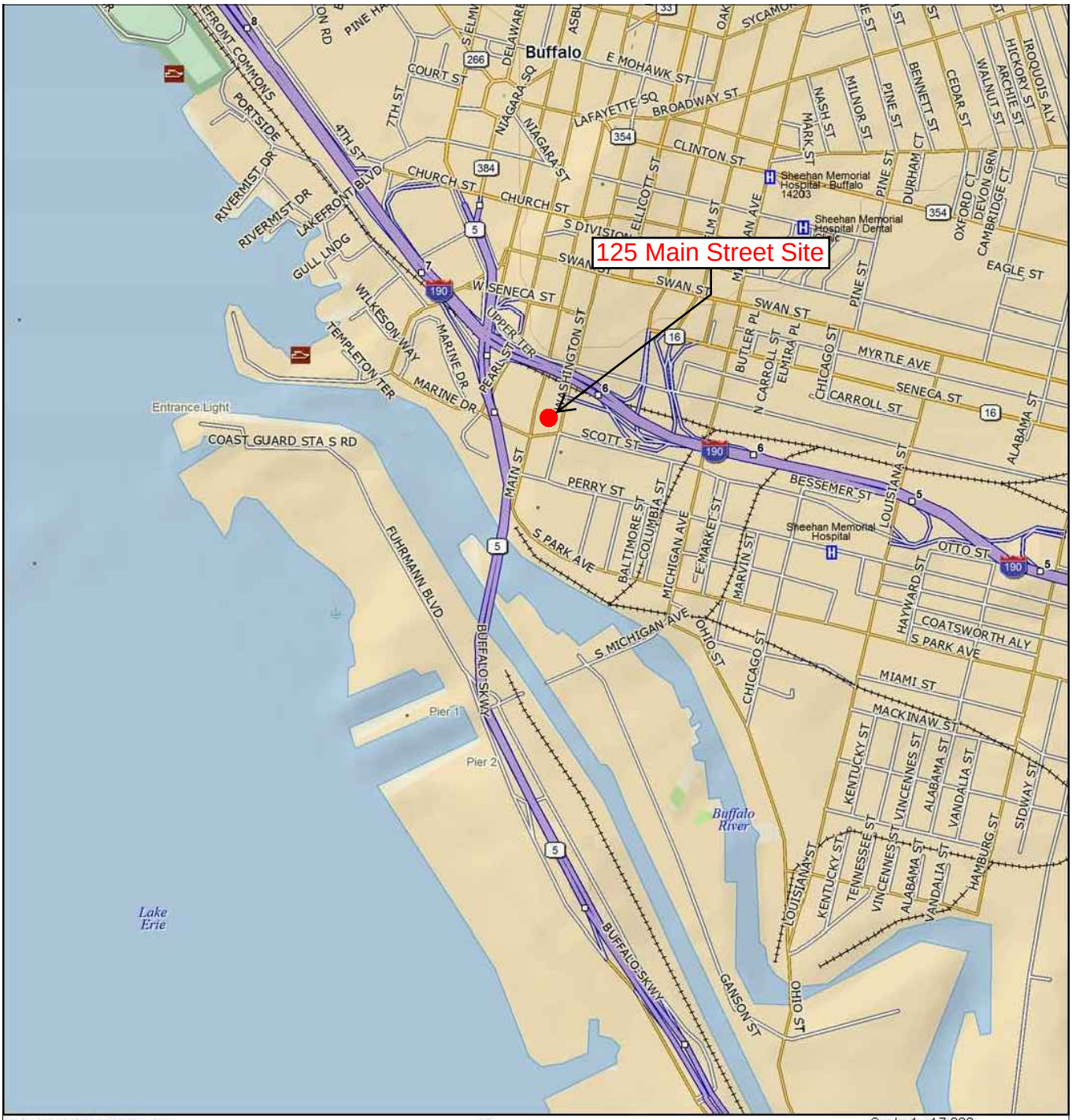
125 Main Street Site

Buffalo, New York

TurnKey FOP No.	Procedure
001.1	Abandonment of Borehole Procedures
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
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

FIGURES

FIGURE 1



TurnKey Environmental Restoration, LLC

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

PROJECT NO.: 0105-012-001

DATE: FEBRUARY 2012

DRAFTED BY: JGT

SITE LOCATION AND VICINITY MAP

RI/IRM WORK PLAN

125 MAIN STREET SITE

BUFFALO, NEW YORK

PREPARED FOR

HARBOR DISTRICT ASSOCIATES, LLC.

Base Image per Bing Maps

Parcel Boundary per GIS (Approximate)

Not to Scale

N

SITE PLAN (AERIAL)

RI/IRM WORK PLAN

125 MAIN STREET SITE

BUFFALO, NEW YORK

PREPARED FOR

HARBOR DISTRICT ASSOCIATES, LLC.

FIGURE 2

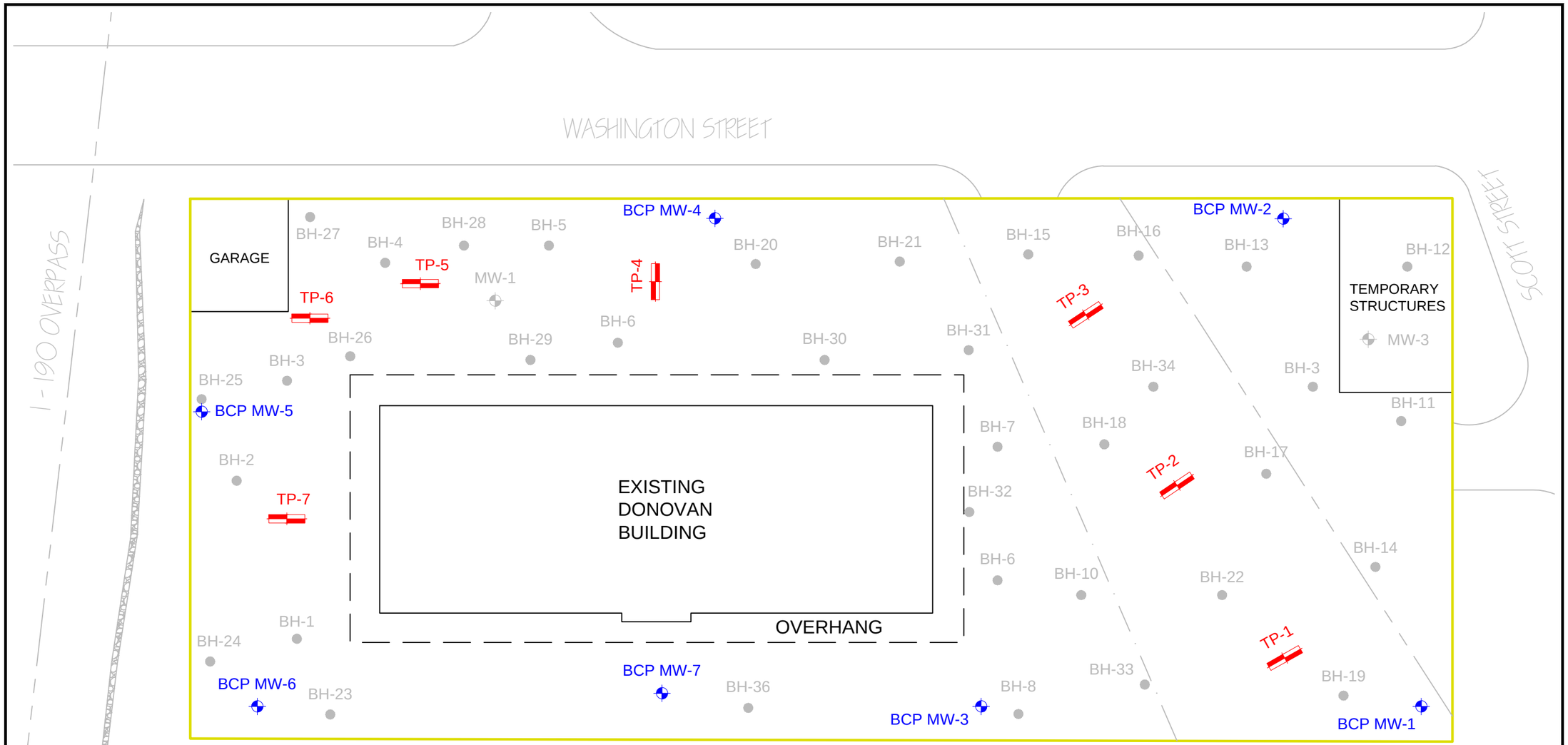
TurnKey Environmental Restoration, LLC

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

PROJECT NO.: 0105-012-001

DATE: FEBRUARY 2012

DRAFTED BY: JGT



LEGEND

- PROPERTY BOUNDARY
- EXISTING STRUCTURES
- FORMER HAMBURG DRAIN AREA
- STONE RETAINING WALL
- BH-1 — HISTORIC SOIL BORING LOCATIONS
- MW-1 — EXISTING MONITORING WELL LOCATIONS
- BCP MW-1 — PLANNED MONITORING WELL LOCATIONS
- TP-1 — PLANNED TEST PIT LOCATIONS

40' 0' 40' 80'

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

N

DATE: FEBRUARY 2012
DRAFTED BY: JGT

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

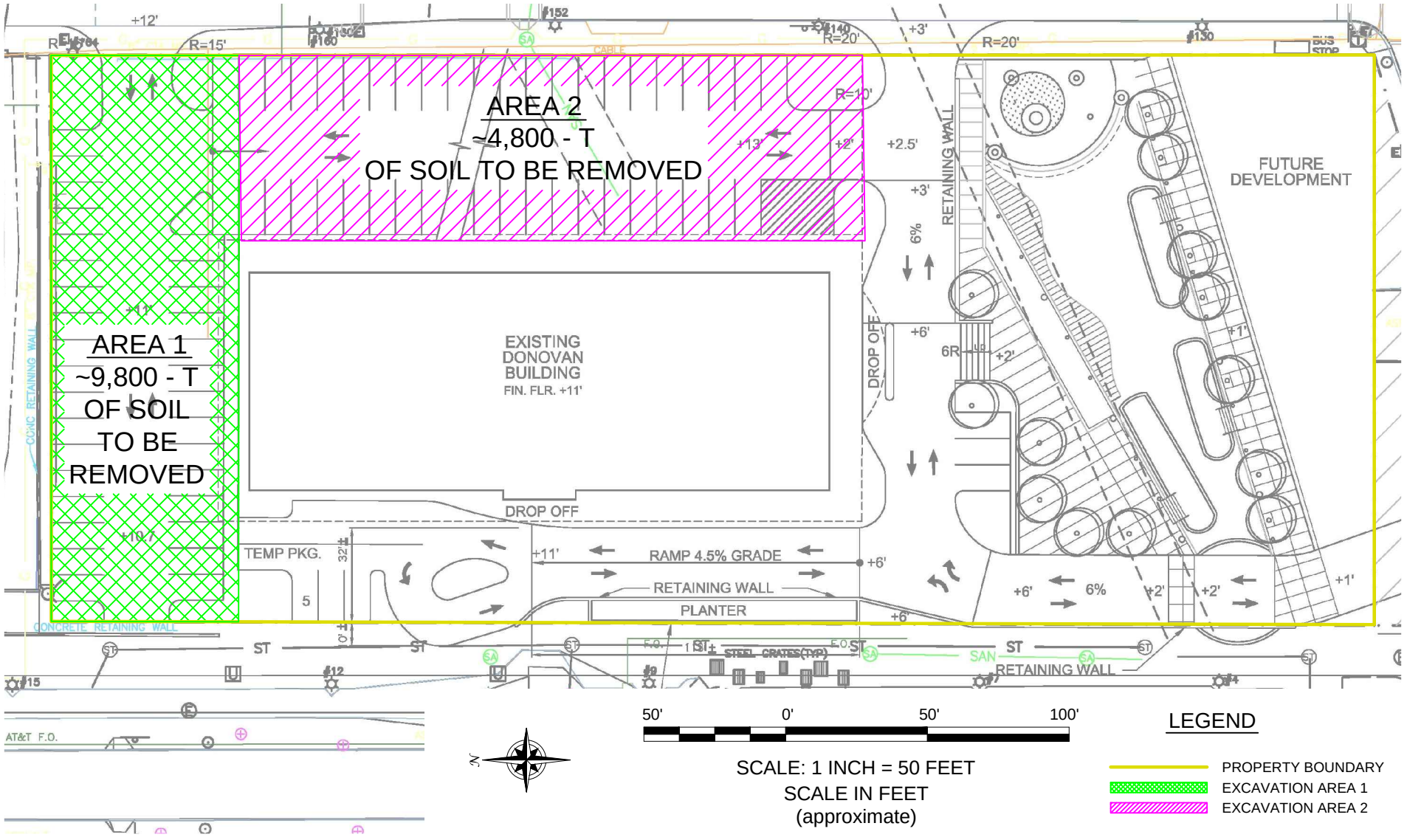
TURNKEY ENVIRONMENTAL RESTORATION, LLC

JOB NO.: 0105-012-001

REMEDIAL INVESTIGATION SAMPLE LOCATIONS

RI/IRM WORK PLAN
125 MAIN STREET SITE
BUFFALO, NEW YORK
PREPARED FOR
HARBOR DISTRICT ASSOCIATES, LLC

FIGURE 3



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

PROJECT NO.: 0105-012-001

DATE: FEBRUARY 2012

DRAFTED BY: JGT

PROPOSED INTERIM REMEDIAL MEASURES

RI/IEM WORK PLAN

125 MAIN STREET

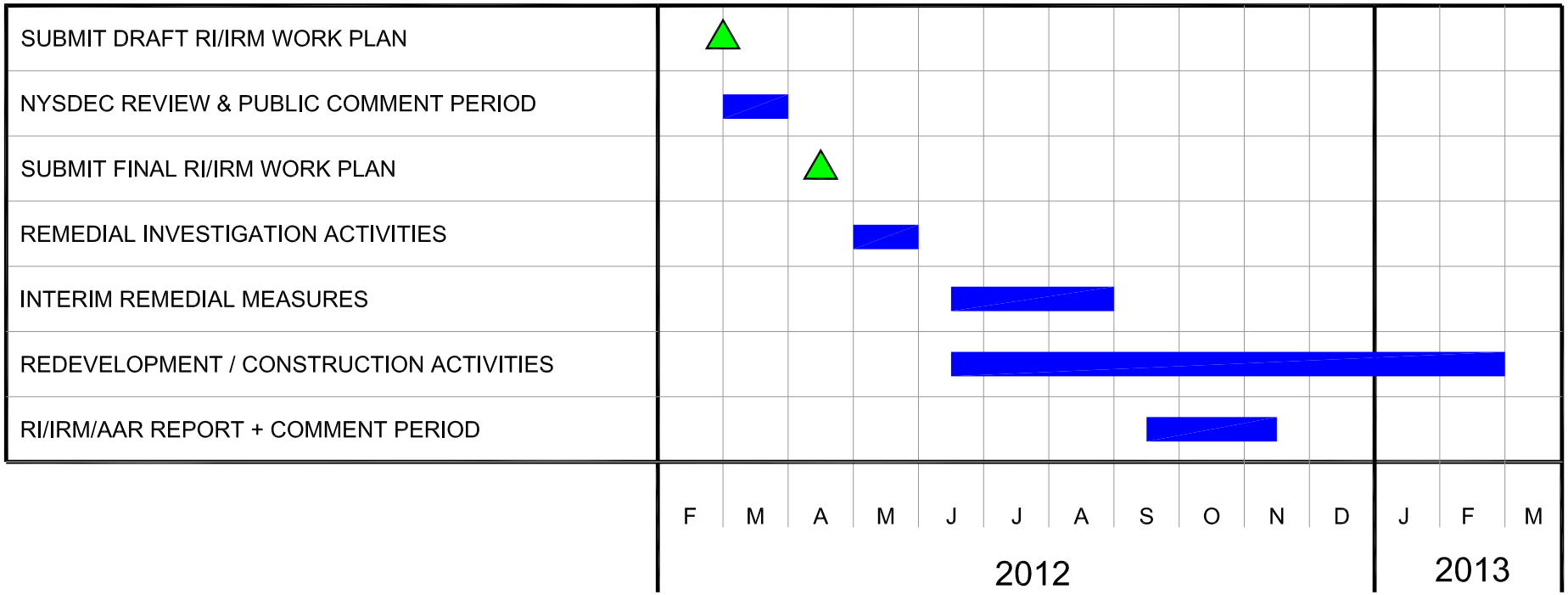
BUFFALO, NEW YORK

PREPARED FOR

HARBOR DISTRICT ASSOCIATES, LLC

FIGURE 4

PROJECT TASKS:



TurnKey Environmental Restoration, LLC

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

PROJECT NO.: 0105-012-001

DATE: FEBRUARY 2012

DRAFTED BY: JGT

PROJECT SCHEDULE

RI/IRM WORK PLAN

125 MAIN STREET SITE

BUFFALO, NEW YORK

PREPARED FOR

HARBOR DISTRICT ASSOCIATES, LLC.

FIGURE 5

APPENDIX A

RESUMES

APPENDIX B

PREVIOUS INVESTIGATION

(PROVIDED ELECTRONICALLY)

APPENDIX C

SITE-SPECIFIC HEALTH AND SAFETY PLAN

APPENDIX D

PROJECT DOCUMENTATION FORMS

APPENDIX E

SOIL-FILL MANAGEMENT PLAN

SOIL/FILL MANAGEMENT PLAN
for

125 MAIN STREET SITE
BUFFALO, NEW YORK

February 2012 0105-012-001

Prepared for:

Harbor District Associates, LLC
570 Delaware Avenue
Buffalo, New York 14202

SOIL/FILL MANAGEMENT PLAN

125 Main Street Site

Table of Contents

SOIL/FILL MANAGEMENT PLAN
125 Main Street Site

Table of Contents

LIST OF TABLES

LIST OF FIGURES

APPENDICES

1.0 INTRODUCTION

1.1 Background and History

The Site is an approximately 2.185-acre parcel located in the historic canal district of the City of Buffalo, Erie County, New York (see Figures 1 and 2). The parcel is currently improved with one vacant eight story commercial office building and one small maintenance garage in the northeast corner of the property. The Site is bound by Interstate 190 to the north, Scott Street to the south, Washington Street and Buffalo News building to the east, and Main Street to the west.

The Site was historically utilized for various commercial and industrial purposes since at least the early 1800s, including commercial storefronts, restaurants, hotel, the Lehigh Valley Railroad Passenger Station, contractor's yard, junk yard, former Quay Street, A. Krauss Hide and Wool Warehouse, Forbush and Brown Boot and Shoe manufacturing company, tin shop, paint shop, Patent medicine manufacturer, wire works, and the former Hamburg Canal. The Site was utilized as the General William J Donovan State Office Building from approximately 1961 through 2008 and is currently vacant.

A 2007 Phase I Environmental Site Assessment Report (dated May 2007) and subsequent Phase II Environmental Site Assessment Report (dated November 2007), were completed on the former General William J Donovan State Office Building (i.e., 125 Main Street) by URS Corporation. The Phase II investigation revealed evidence of subsurface contamination, including elevated levels of semi-volatile organic compounds (SVOCs), particularly polycyclic aromatic hydrocarbon (PAHs) exceeding NYSDEC Part 375 Commercial soil cleanup objectives (SCOs). The volatile organic compound (VOC) acetone was detected in excess of technical and operational guidance series (TOGS) water quality standards on the north end of the Site. Three underground storage tanks (USTs) were removed from the Site in 2008.

In fall 2011, additional subsurface data collected by Benchmark revealed elevated concentrations of PAHs and metals above NYSDEC Part 375 Commercial SCOs Site-wide. Details of the previous investigations are presented in Section 2.8 below.

1.2 Previous Environmental Investigations

A summary of the investigations that have occurred at the Site are presented below.

1.2.1 May 2007 – Phase I Environmental Site Assessment Report of the General William J. Donovan Building

URS Corporation (URS) conducted an Environmental Site Assessment of the subject property, and the findings are summarized below:

- Miscellaneous hazardous materials observed at the subject property include paints, water treatment chemicals (e.g. aquacides, acids, etc.), solvents, coolants, compressor oil, diesel fuel, and gasoline.
- Mercury-containing gauges were reported to be observed on site.
- Suspect asbestos-containing materials (ACM) observed at the subject property included: vinyl asbestos floor tiles, floor tile mastic, cove base molding, cove base molding mastic, spray on ceiling fire proofing, thermal insulation on boilers and pipes, window glazing, window caulking, built-up roofing, and flashing.
- PCB-containing fluorescent light ballasts may still be present on Site.
- Two active underground storage tanks (USTs) containing petroleum products associated with the Site. One inactive UST is known to be on Site.
- Based on the age of site development (1961), there may be lead-based paint (LBP) on surfaces at the subject property.
- One off-site property, The Buffalo News, located upgradient of the subject property and is listed in the Leaking Tanks (LTANKS), historic leaking tanks (HIST LTANK), spills (SPILLS), and historic spills (HIST SPILLS) databases. With potential for migrated onto the subject property.
- The former Hamburg Canal, which runs through the current south parking lot, was filled between 1899 and 1925. The source and nature of the fill material is not known.

Although not specifically identified in the URS Phase I ESA, historic Sanborn maps from 1889 to 1951 show former on-Site operations including: Wire works (weaving and painting),

paint shop, tin shop, junk yard/storage, contractor's yard, medicine manufacturing, a bit brace factory (including machine shop) and a boot and shoe manufacturer.

1.2.2 November 2007 – Phase II Environmental Site Assessment Report of the General William J. Donovan State Office Building

URS Corporation. (URS) conducted an Environmental Site Assessment of the subject property, and the findings are summarized below:

- Semi-volatile organic compounds (SVOCs), primarily polycyclic aromatic hydrocarbons (PAHs) were found to exceed NYSDEC Part 375 commercial soil cleanup objectives (SCOs).
- Acetone detected in groundwater exceeded technical and operational guidance series (TOGS) water quality standards.

1.2.3 December 2008 – UST Closure Report, Donovan State Office Building UST Closure Project

Lender Consulting Services conducted an UST Closure on the subject property, and the findings are summarized below:

- One diesel fuel Day Tank for emergency generator was removed.
- One (1) 1,000 gallon diesel fuel UST removed.
- One (1) 4,000 gallon gasoline UST removed.
- One (1) 30,000 gallon #6 fuel oil UST removed.

1.2.4 November 2011 – Supplemental Phase II Subsurface Investigation

Benchmark Environmental Engineering and Science, PLLC (Benchmark) conducted a Supplementary Phase II Subsurface Investigation of the subject property, and the findings are summarized below:

- SVOCs were found to exceed NYDEC Part 375 Commercial SCOs.

- Barium and Arsenic was found in concentrations exceeding NYSDEC Part 375 Commercial SCOs.
- Chromium, Lead, and Mercury were found in concentrations exceeding Unrestricted SCOs.

The site is listed on the NYSDEC Petroleum Bulk Storage Record under the names NYS Office of General Services and General William J. Donovan State Office Building (PBS No. 9-387495 & 9-387746) respectively. The Site is said to have contained at least four (4) underground storage tanks (USTs). The Site is also listed on the NYSDEC Spills Database including at least 7 spill events between 1987 and 2008.

1.3 Purpose and Scope

The purpose of this Soil/Fill Management Plan (SFMP) is to protect both the environment and human health during redevelopment of the Site and subsequent to completion of Brownfield Cleanup activities. While assessments 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. As such, it is not unreasonable to anticipate the possibility that some quantity of impacted subsurface soil/fill may be encountered during or following completion of the IRM and Brownfield cleanup and redevelopment activities. In particular, soil/fill impacts may be encountered during development activities such as infrastructure construction (i.e., roads, waterline, sewers, electric, cable, etc.) or foundation excavation and site grading. The SFMP will be modified/ expanded as appropriate based on the results of the RI and IRM.

Compliance with this SFMP is required to properly manage any impacted subsurface soil/fill encountered during redevelopment activities at the Site. This SFMP was developed with the express purpose of addressing unknown subsurface impacts if and when encountered. The SFMP also facilitates the transfer of responsibilities with property ownership.

This SFMP provides protocols for development and post-development activities. Items discussed herein include:

- Excavation, grading, sampling and handling of Site soils.
- Acceptability of soil/fill from off-site sources for backfill or sub-grade fill.

- Erosion and dust control measures.
- Fencing and other access controls.
- Health and safety procedures for subsurface construction work and the protection of the surrounding community.
- Acceptability and placement of final cover.
- Property Use Limitations/Environmental Easement.

1.4 Soil/Fill Management Program Responsibility

The property owner(s) or responsible entity will be responsible for all monitoring, implementation, and reporting requirements of this Plan. The property owner(s) will not perform, contract, nor permit their employees, agents, or assigns to perform any excavations or disturbance of Site soils, except as delineated in this Plan. The property owner(s) or responsible entity will be responsible for proper notification and reporting to regulatory agencies (i.e., NYSDEC Region 9, Division of Environmental Remediation and New York State Department of Health (NYSDOH) prior to and following construction activities. The NYSDEC may provide periodic construction oversight and monitoring during construction activities to verify that the requirements of this SFMP are adhered to.

2.0 SOIL/FILL MANAGEMENT

2.1 Excavation and Handling of On-Site Soil/Fill

An environmental professional with experience in environmental site investigations and the New York State Brownfield Cleanup Program will inspect soil/fill excavations or disturbances (e.g., when using heavy equipment to disturb more than 10 cubic yards) on behalf of the subject property owner. The soil/fill will be inspected for staining or discoloration, and will be field screened for the presence of volatile organic compounds (VOCs) with a photoionization detector (PID). The PID detector will be calibrated as per the manufacturer's requirements. Sampling and analyses to verify excavation limits and analysis for disposal purposes will be in accordance with the protocols delineated in Section 2.3.

Excavation of impacted soil/fill will continue horizontally until visually impacted materials are removed to the satisfaction of the environmental professional and the NYSDEC representative, but will not extend beyond the Site boundaries. All excavation work will be directed by an experienced engineer or scientist to remove all visually-impacted material.

Impacted material will either be direct loaded, placed in roll-off containers or be stockpiled on plastic sheeting in an area away from the primary work activities and then sampled to determine whether it is subject to special disposal/reuse requirements[1]. The length of time soil can be stockpiled should be limited to 90 days due to potential hazardous waste storage requirement concerns.

Sampling and analyses to verify excavation limits and analysis for disposal purposes will be in accordance with the protocols identified in Section 2.3.

[1] The presence of subsurface construction and demolition debris, such as brick, concrete, wood, miscellaneous metal products, etc. does not necessitate stockpiling in accordance with this SFMP.

2.2 Backfill Material

2.2.1 Use Criteria

Material used to backfill excavations or to increase site grades or elevations may be comprised of on-Site soil/fill and demolition material including brick and concrete, or off-Site soil/fill. Backfill materials used on-Site must meet the following criteria:

- Excavated on-Site soil/fill with no evidence of visible or olfactory evidence of contamination that has been tested to meet the criteria on Table 1, in accordance with DER-10, Table 5.4(e)4;
- On-Site demolition material proposed for reuse on-site will be sampled and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-site will not be performed without prior NYSDEC approval.
- Off-site soil will originate from known sources having no evidence of disposal or releases of hazardous substances, hazardous, toxic or radioactive wastes, or petroleum, which has been tested in accordance with DER10, 5.4(e)10, or at a reduced frequency if agreeable to the Department;
- All off-site sources of soil/fill to be used as backfill must be tested in accordance with the Sampling and Analytical Protocol (Section 2.3), and found to contain concentrations less than criteria listed in Table 1 – Criteria for Use of Off-Site Soil; and,
- No materials meeting the definitions of a solid waste as defined in 6NYCRR, Part 360-1.2(a), and/or grossly contaminated as defined in 6 NYCRR Part 375-1.2(u), shall be used as backfill.

2.2.2 On-Site Source Sampling Requirements

If on-Site soil is to be used as a source of backfill, then it must be tested to meet the criteria identified on Table 1. In association with the results of the RI, a minimum of one sample will be collected for each 250 cubic yards (CY) up to 1,000 CY of material to be reused. If more than 1,000 CY of on-Site material and all samples of the first 1,000 CY meet

the criteria listed in Table 1, the sample collection may be reduced to one sample for each additional 1,000 CY of on-Site source backfill.

Discrete grab samples will be collected for VOC analysis. For all other analyses, a minimum of three grab samples will be collected per composite sample. Approximately equal aliquots of the grab samples will be composited in the field using a stainless steel trowel and bowl. The trowel and bowl shall be decontaminated with a non-phosphate detergent (i.e., Alconox®) and potable water wash solution followed by a distilled water rinse between sampling locations. The soil/fill samples will be analyzed in accordance with USEPA SW-846 Methodology by a NYSDOH ELAP-certified laboratory.

2.2.3 Borrow Source Sampling Requirements

If an off-site soil/fill borrow source is of unknown origin or originates from a commercial, industrial or urban site, then it must be tested to meet the criteria identified on Table 1, in accordance with DER-10, 5.4(e)10. A tiered approach based on the volume of borrow source material imported will be used to determine the frequency of characterization sampling. A minimum of one sample will be collected for each 250 CY up to 1,000 CY of material excavated. If more than 1,000 CY of borrow source material from the same general vicinity is utilized and all samples of the first 1,000 CY meet the criteria listed in Table 1, the sample collection frequency may be reduced to one sample for each additional 1,000 CY of borrow source material from the same general vicinity, up to 5,000 CY. For borrow sources greater than 5,000 CY, sampling frequency may be reduced to one sample per 5,000 CY, provided all earlier samples met Table 1 criteria.

If an off-site soil/fill borrow source is of known origin, NYSDEC would be involved in the decision as to whether the source is in fact known and acceptable for use and whether sampling of the source is required.

Grab samples will be collected for VOC analysis. For all other analyses, a minimum of three grab samples will be collected per composite sample. Approximately equal aliquots of the grab samples will be composited in the field using a stainless steel trowel and bowl. The trowel and bowl shall be decontaminated with a non-phosphate detergent (i.e., Alconox®) and potable water wash solution followed by a distilled water rinse between sampling locations. The soil/fill samples will be analyzed in accordance with USEPA SW-846 Methodology by a NYSDOH ELAP-certified laboratory.

2.3 Soil/Fill Sampling and Analysis Protocol

Excavated soil/fill that is designated for off-site disposal or treatment shall be sampled in accordance with the requirements of the off-site commercial solid waste disposal or treatment facility and the appropriate regulatory authorities. In addition, the resulting excavation following removal of impacted soil/fill will require verification sampling and analysis to determine the limits of impact. Both characterization and verification sampling and analysis are discussed in the following sections.

2.3.1 Impacted Soil/Fill Characterization

The following procedure represents a suggested method for determining requirements for impacted soil/fill designated for off-site disposal, recycling, and/or biotreatment. The sampling procedures, frequency and parameter list must be coordinated with the off-site solid disposal or treatment facility prior to undertaking characterization work. Excavated soil/fill should be separately stockpiled from any on-Site excavated material which may be re-used.

The samples will be analyzed by a NYSDOH ELAP-certified laboratory for Toxicity Characteristic Leaching Procedure (TCLP) method to determine the appropriate off-site disposal/treatment method. Parameters to be analyzed for by TCLP protocol (i.e. VOCs, SVOCs, metals, etc.) will be determined by the potential off-site disposal or treatment facility. If TCLP hazardous waste characteristic values are exceeded, the soil/fill will be disposed of in a permitted hazardous waste disposal facility, or treated to render the material non-hazardous. If TCLP analytical results are below hazardous waste characteristic values, the soil/fill will be disposed or treated off-site in a permitted commercial solid waste landfill or treatment facility.

2.3.2 Verification Sampling

Verification sampling will be performed on the excavation sidewalls and bottom of the excavation after lateral and vertical excavation limits have been achieved and visibly impacted soil/fill has been removed. In general, one sidewall sample will be collected for each 30 linear feet of excavation sidewall and one sample will be collected from the bottom of the excavation for each 900 square feet of excavation bottom. The samples will be collected by retrieving a discrete sample from across the excavation face. The backhoe

bucket will be used to assist in sample collection and avoid the need for confined space entry. Verification sampling analytical protocols will be determined based on the areas of concern as follows:

- Gasoline tank areas: TCL plus STARS List VOCs
- Diesel and/or fuel oil tank areas: TCL plus STARS List VOCs, STARS List SVOCs
- Former transformer areas (if any): TCL PCBs
- Other impacted areas (if any): TCL VOCs, TCL SVOCs, TAL metals, TCL PCBs (or additional parameters as appropriate based on RI data)

A Category B (level IV) deliverables package will be requested to facilitate data evaluation by a third-party validation expert.

2.4 Fluids Management

All liquids to be removed from the site, including excavation dewatering, will be handled, transported and disposed or discharged in accordance with applicable local, State, and Federal regulations.

Development water from monitoring wells will be containerized and sampled for constituents of concern. Based on the analytical results, development water will either be passed through a mobile granular-carbon treatment vessel, and discharged to the ground or, if necessary, disposed.

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 20,000-gallon storage tank, and if deemed necessary, will be pumped through a bag or cartridge filter prior to treatment using granular activated carbon (GAC). TurnKey or the Site owner will coordinate with the City of Buffalo to obtain any necessary temporary sewer discharge permits.

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

3.0 COMMUNITY AIR MONITORING PLAN

The New York State Department of Health's Generic Community Air Monitoring Plan requires monitoring for volatile organic compounds and particulates. As detailed in Appendix A, the following criteria shall also be adhered to for the protection of the nearby community.

3.1 Dust Controls

Particulate monitoring will be performed at the Site during subgrade excavation, grading, and handling activities in accordance with the NYSDEC's DER-10 (May 2010) Appendix 1A (NYSDOH's Generic Community Air Monitoring Plan) and Appendix 1B (Fugitive Dust and Particulate Monitoring).

Dust suppression techniques will be employed as necessary to mitigate fugitive dust from non-vegetated or disturbed soil/fill during intrusive activities.

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

- Dust suppression will be achieved through the use of an on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Hauling materials in properly tarped containers or vehicles.
- Covering or proof-rolling excavated areas and materials after excavation activity ceases.
- Reducing the excavation size and/or number of excavations.

4.0 REFERENCES

1. URS Corporation. *Phase I Environmental Site Assessment Report of the General William J. Donovan State Office Building, 125 Main Street, Buffalo, New York*. May 2007.
2. URS Corporation. *Phase II Environmental Site Assessment Report of the General William J. Donovan State Office Building, 125 Main Street, Buffalo, New York*. November 2007.
3. Lender Consulting Services. *UST Closure Report, Donovan State Office Building UST Closure Project. 125 Main Street Site, Buffalo, New York*. December 2008.
4. Benchmark Environmental Engineering & Science, PLLC. *Supplemental Phase II Site Investigation Report, William J. Donovan Building [125 Main Street Site], Buffalo, New York*. November 2011.

TABLES

TABLE 1

RI / IRM Work Plan - SFMP

Criteria for Imported Soil-Fill

125 Main Street Site

Buffalo, New York

Parameter	Allowable Concentration of Imported Soil/Fill for Residential Cleanup	Allowable Concentration of Imported Soil/Fill for Commercial Cleanup
Volatile Organic Compounds (mg/kg)		
1,1,1-Trichloroethane	0.68	0.68
1,1-Dichloroethane	0.27	0.27
1,1-Dichloroethene	0.33	0.33
1,2-Dichlorobenzene	1.1	1.1
1,2-Dichloroethane	0.02	0.01
1,2-Dichloroethene(cis)	0.25	0.25
1,2-Dichloroethene(trans)	0.19	0.19
1,3-Dichlorobenzene	2.4	2.4
1,4-Dichlorobenzene	1.8	1.8
1,4-Dioxane	0.1	0.15
Acetone	0.05	0.05
Benzene	0.06	0.06
Butylbenzene	12	12
Carbon tetrachloride	0.76	0.76
Chlorobenzene	1.1	1.1
Chloroform	0.37	0.37
Ethylbenzene	1	1
Hexachlorobenzene	0.33	3.2
Methyl ethyl ketone	0.12	0.12
Methyl tert-butyl ether	0.93	0.93
Methylene chloride	0.05	0.05
Propylbenzene-n	3.9	3.9
Sec-Butylbenzene	11	11
Tert-Butylbenzene	5.9	5.9
Tetrachloroethene	1.3	1.3
Toluene	0.7	0.7
Trichloroethene	0.47	0.47

TABLE 1

RI / IRM Work Plan - SFMP

Criteria for Imported Soil-Fill

125 Main Street Site

Buffalo, New York

Parameter	Allowable Concentration of Imported Soil/Fill for Residential Cleanup	Allowable Concentration of Imported Soil/Fill for Commercial Cleanup
Volatile Organic Compounds (mg/kg)		
Trimethylbenzene-1,2,4	3.6	3.6
Trimethylbenzene-1,3,5	8.4	8.4
Vinyl chloride	0.02	0.02
Xylene (mixed)	1.6	1.6
Semi-Volatile Organic Compounds (mg/kg)		
Acenaphthene	98	98
Acenaphthylene	100	107
Anthracene	100	500
Benzo(a)anthracene	1	1
Benzo(a)pyrene	1	1
Benzo(b)fluoranthene	1	1.7
Benzo(g,h,i)perylene	100	500
Benzo(k)fluoranthene	1	1.7
Chrysene	1	1
Dibenz(a,h)anthracene	0.33	0.56
Fluoranthene	100	500
Fluorene	100	386
Indeno(1,2,3-cd)pyrene	0.5	5.6
m-Cresol(s)	0.33	0.33
Naphthalene	12	12
o-Cresol(s)	0.33	0.33
p-Cresol(s)	0.33	0.33
Pentachlorophenol	0.8	0.8
Phenanthrene	100	500
Phenol	0.33	0.33
Pyrene	100	500

TABLE 1

RI / IRM Work Plan - SFMP

Criteria for Imported Soil-Fill

125 Main Street Site

Buffalo, New York

Parameter	Allowable Concentration of Imported Soil/Fill for Residential Cleanup	Allowable Concentration of Imported Soil/Fill for Commercial Cleanup
Metals (mg/kg)		
Arsenic	16	16
Barium	350	400
Beryllium	14	47
Cadmium	2.5	7.5
Chromium, Hexavalent[1]	19	19
Chromium, Trivalent[1]	36	1500
Copper	270	270
Cyanide	27	27
Lead	400	450
Manganese	2000	2000
Mercury (total)	0.73	0.73
Nickel	130	130
Selenium	4	4
Silver	8.3	8.3
Zinc	2200	2480
PCBs/Pesticides (mg/kg)		
2,4,5-TP Acid (Silvex)	3.8	3.8
4,4'-DDE	1.8	17
4,4'-DDT	1.7	47
4,4'-DDD	2.6	14
Aldrin	0.019	0.19
Alpha-BHC	0.02	0.02
Beta-BHC	0.072	0.09
Chlordane (alpha)	0.91	2.9
Delta-BHC	0.25	0.25
Dibenzofuran	14	210
Dieldrin	0.039	0.1
Endosulfan I	4.8	102

TABLE 1

RI / IRM Work Plan - SFMP

Criteria for Imported Soil-Fill

125 Main Street Site

Buffalo, New York

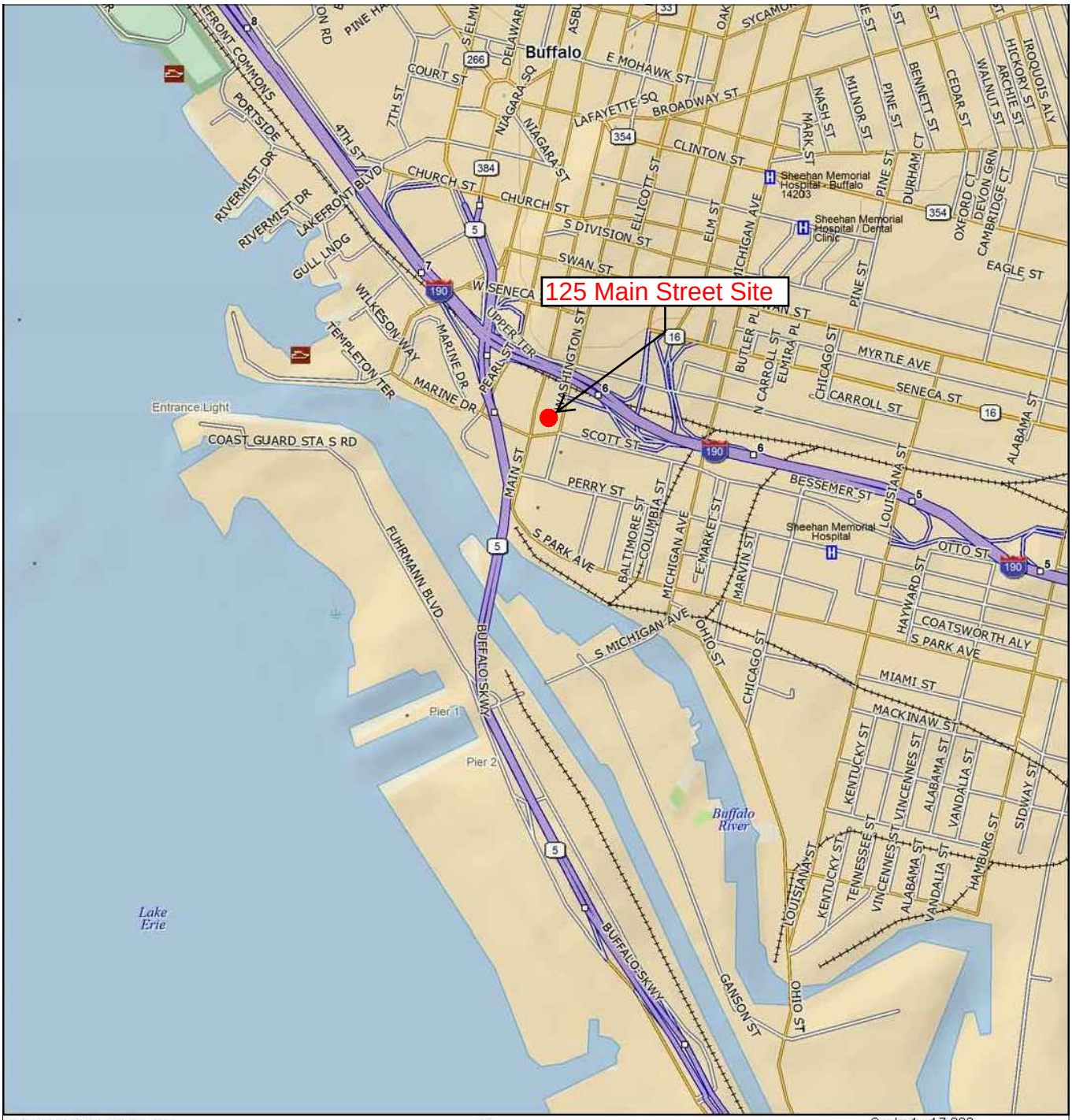
Parameter	Allowable Concentration of Imported Soil/Fill for Residential Cleanup	Allowable Concentration of Imported Soil/Fill for Commercial Cleanup
PCBs/Pesticides (mg/kg)		
Endosulfan II	4.8	102
Endosulfan sulfate	4.8	200
Endrin	0.06	0.06
Heptachlor	0.38	0.38
Lindane	0.1	0.1
Polychlorinated biphenyls	1	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.
2. Values per DER-10 Appenidx 5 for Residential and Commercial Use.

FIGURES

FIGURE 1



TurnKey Environmental Restoration, LLC

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

PROJECT NO.: 0105-012-001

DATE: FEBRUARY 2012

DRAFTED BY: JGT

SITE LOCATION AND VICINITY MAP

125 MAIN STREET SITE

BUFFALO, NEW YORK

PREPARED FOR

HARBOR DISTRICT ASSOCIATES, LLC.

Base Image per Bing Maps

Parcel Boundary per GIS (Approximate)

Not to Scale

N

SITE PLAN (AERIAL)

125 MAIN STREET SITE

BUFFALO, NEW YORK

PREPARED FOR

HARBOR DISTRICT ASSOCIATES, LLC.

FIGURE 2

TurnKey Environmental Restoration, LLC

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

PROJECT NO.: 0105-012-001

DATE: FEBRUARY 2012

DRAFTED BY: JGT

APPENDIX A

NYSDOH
GENERIC COMMUNITY AIR MONITORING PLAN
&
FUGITIVE DUST

Appendix A1
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. “Periodic” monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

Appendix A2
Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;
(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
(f) Particle Size Range of Maximum Response: 0.1-10;
(g) Total Number of Data Points in Memory: 10,000;
(h) Logged Data: Each data point with average concentration, time/date and data point number
(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
(l) Operating Temperature: -10 to 50^{o} C (14 to 122^{o} F);
(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

APPENDIX F

FIELD OPERATING PROCEDURES

(PROVIDED ELECTRONICALLY)

APPENDIX G

ELECTRONIC COPY OF WORK PLAN