



July 10, 2017

Mr. Maurice Moore  
Project Manager  
New York State Department of Environmental Conservation  
Division of Environmental Remediation, Region 9  
270 Michigan Avenue  
Buffalo, New York 14203-2999

Re: Silos at Elk Street Site (C915309)  
Interim Remedial Measures (IRM) Work Plan

Dear Mr. Moore:

On behalf of our client, Silos at Elk Street, LLC, Benchmark Environmental Engineering & Science, PLLC in association with TurnKey Environmental Restoration, LLC has prepared the enclosed Interim Remedial Measures (IRM) Work Plan for your review. A complete electronic copy of the Work Plan is included on the CD in Appendix C of the hard copy. In addition, one hard copy (with electronic version on CD) will be placed at the City of Buffalo Branch of the Buffalo & Erie County Public Library system for public review.

Please do not hesitate to contact me with any questions.

Sincerely,  
Benchmark Environmental Engineering & Science, PLLC  
TurnKey Environmental Restoration, LLC

A handwritten signature in blue ink, appearing to read "Bryan C. Hann".

Bryan C. Hann  
Senior Project Manager

cc: J. Young (Silos at Elk Street, LLC)  
S. Wright (Silos at Elk Street, LLC)  
T. Forbes (Benchmark)  
S. Berninger (NYSDOH)

File: 0381-017-005

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# Interim Remedial Measures Work Plan

Silos at Elk Street Site  
BCP Site No. C915309  
Buffalo, New York

July 2017

0381-017-005

Prepared For:

Silos at Elk Street, LLC



Prepared By:



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# INTERIM REMEDIAL MEASURES WORK PLAN

**SILOS AT ELK STREET  
BCP SITE NO. C915309  
BUFFALO, NEW YORK**

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July 2017

0381-017-005

Prepared for:

**Silos at Elk Street, LLC**

Prepared By:



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Science, PLLC  
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**REMEDIAL ACTION WORK PLAN**

**Silos at Elk Street Site**

**BCP Site No. C915309**

**Certification**

I, *Thomas H. Forbes, P.E.*, certify that I am currently a NYS registered Professional Engineer as defined in 6 NYCRR Part 375 and that this Interim Remedial Measures Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

\_\_\_\_\_  
**Thomas H. Forbes, P.E.**

\_\_\_\_\_  
**Date**

**License No.:** 070950-1

**Registration State:** New York

**SEAL:**

**IRM WORK PLAN**  
**Silos at Elk Street Site**  
**BCP Site No. C915309**

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## 1.0 INTRODUCTION

This document presents the proposed scope of work for completion of Interim Remedial Measures (IRM) at the Silos at Elk Street Site, located in the City of Buffalo, Erie County, New York (see Figure 1).

Benchmark Environmental Engineering and Science, PLLC, in association with TurnKey Environmental Restoration, LLC, referred to herein jointly as Benchmark TurnKey, have prepared this Interim Remedial Measures (IRM) Work Plan on behalf of Silos at Elk Street, LLC. Silos at Elk Street, LLC has elected to pursue cleanup and redevelopment of the Silos at Elk Street Site (C915309) under the New York State Brownfield Cleanup Program (BCP), and executed a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC). The BCP Site is defined as an approximate 1.9-acre parcel located in Buffalo, New York (see Figure 2).

The proposed redevelopment plan includes rehabilitation of the existing on-site silo and associated building to serve as the home office for Young & Wright Architectural along with potential for other leasable space by the end of 2017. Young & Wright's offices will be constructed to support a total of 50 employees. A critical path item toward this completion date is the subterranean storm water features and asphalt parking lot, which need to be completed by the fall of 2017 prior to the seasonal closure of the asphalt plants. Accordingly, contractor mobilization and construction work must begin in the summer of 2017. Based on this schedule, it is desirable to expedite Site preparation activities at the Site. Moreover, Phase II and Remedial Investigation activities (see Section 1.2) identified several areas of the Site where elevated concentrations of one or more parameters constitute soil/fill areas of concern (AOCs) that will need to be addressed as part of the overall site remedy, some of which exhibit hazardous waste characteristics. Remediation of these soil/fill AOCs under an IRM program will satisfy the intended goal of expediting cleanup of the impacted soil/fill and facilitating redevelopment activities.

The IRM will be completed by Benchmark TurnKey on behalf of Silos at Elk Street, LLC in general accordance with NYSDEC DER-10 guidelines (Ref. 1).

## 1.1 Site Background

The Site is an approximate 1.9-acre parcel located at 50 Elk Street in the City of Buffalo, New York (Site; see Figures 1 and 2). The Site has been vacant since the 1980s and was historically used as a malting operation with coal areas, a kiln, and grain elevators/silos since about 1899. The Site is improved with a vacant multi-story former industrial building and adjacent asphalt parking lot. Along with the abandoned structure and silos, some inactive production-related equipment and piping, including apparent natural-gas vent pipes and other presumed utility lines, remains on-site. The abandoned building is constructed of brick, metal, and concrete. The remainder of the Site is mowed vegetative cover (e.g., grass) with two twin 30-inch cottonwood trees west of the building and scrub brush along the eastern property boundary. The Site is surrounded by former industrial, commercial, vacant, and residential properties.

## 1.2 Previous Environmental History

Previous environmental investigations completed at the Site have revealed the presence of fill material containing semi-volatile organic compounds (SVOCs), primarily polycyclic aromatic hydrocarbons (PAHs), and select heavy metals. The following assessments and investigations have been completed on the Site. Figure 2 presents the sample locations from the investigations.

### *1.2.1 May 2016 – Phase I Environmental Site Assessment*

Benchmark completed a Phase I Environmental Site Assessment (ESA) at the Site in May 2016 (Ref. 2). The Phase I ESA report identified the following Recognized Environmental Conditions (RECs):

- The long history of on-site malting operations with various associated equipment, water-filled pits, and railroad tracks, along with the reasonably anticipated historic use of hazardous/regulated materials, is considered an REC due to the potential for impacts to the environment.
- The black fine ash/coal-like material with limited vegetation observed in exterior areas west and north of the building is considered an REC as the exact nature of the material is unknown.

- The Site is located in a mixed-use area with proximate current/historic industrial operations, including railroad tracks/yards.

Per ASTM E1527-13, non-scope considerations are described as ancillary observations during performance of the on-site investigation. Non-scope considerations are not considered RECs under ASTM E1527, but may represent health or environmental issues impacting the Site and/or property value. Based on the ages of the existing buildings, the potential for suspect ACMs and lead exists.

The Report recommended a Phase II Investigation to characterize the blackish materials and water-filled pits observed during the Phase I site visit. Benchmark TurnKey also recommended that asbestos, lead, and/or polychlorinated biphenyls (PCBs), if present, be properly handled as part of future site renovation/demolition activities.

### ***1.2.2 June 2016 – Limited Phase II Investigation***

Based on the findings of the Phase I ESA, Benchmark TurnKey performed a Limited Phase II Site Investigation on June 9, 2016 to assess RECs identified by the Phase I (Ref. 3). The specific RECs assessed included water-filled pits (suspected to be in contact with groundwater) in the lower areas of the building likely associated with former milling operations, and exterior areas where the presence of surficial blackish fines (potentially coal) with limited vegetation were observed in distinct locations west and north of the building. One pit water sample (PIT-1) was collected and analyzed for USEPA Target Compound List (TCL) plus NYSDEC CP-51 volatile organic compounds (VOCs) (Method 8260). Two surface soil grab samples (SS-1 and SS-2) were collected from the blackish fines area, composited (COMP-1), and analyzed for PAHs (Method 8270), RCRA metals (Method 6010/7471), and total organic carbon (TOC) (Lloyd Kahn).

No VOCs were detected in the samples collected from the water-filled pits. The black fines composite sample (COMP-1) showed elevated PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(ghi)perylene, and indeno(1,2,3-cd)pyrene) and heavy metals at concentrations above Part 375 Restricted Residential Soil Cleanup Objectives (RRSCOs). Only benzo(a)pyrene was detected at a concentration slightly above the Part 375 Commercial Soil Cleanup Objective (CSCO). The concentration of barium was 2,370 mg/kg (versus 400 mg/kg RRSCO/CSCO), cadmium was 8.5 mg/kg (versus 4.3 mg/kg RRSCO and 9.3 mg/kg CSCO), and lead was 4,970 mg/kg (versus 400 mg/kg RRSCO and 1,000 mg/kg CSCO). The

total organic carbon of the sample was 70,400 parts per million (ppm). Toxicity characteristic leaching procedure (TCLP) lead was reported at a concentration of 26.5 mg/L, which exceeds the TCLP regulatory level of 5 mg/L.

### ***1.2.3 July 2016 – Supplemental Phase II Test Pit Investigation***

Based on the results of the June 2016 Limited Phase II Investigation, Benchmark TurnKey performed a site-wide supplemental test pit investigation on July 21, 2016 (Ref. 3). NYSDEC was not present during test pitting activities. Nineteen shallow test pits (TP-1 through TP-19) were excavated equidistantly across the Site to further characterize overburden soils. Each test pit was advanced through unconsolidated soil/fill to native soils approximately 2.5 to 5 feet below ground surface (fbgs). Non-native soils were targeted and 15 soil/fill samples were submitted for total lead (Method 6010), six of which were submitted for TCLP lead analysis.

In general, the shallow overburden was characterized from grade as a vegetated lean clay with sand (suspected topsoil) above a greyish white to black anthropogenic ashy-fill unit (mostly non-plastic fines, coal fragments, orange brick, glass, ceramic fragments, etc.) underlain by a stiff lacustrine clay unit (suspected native soil). Surficial blackish fines (potentially coal) were observed in areas west and north of the building. The topsoil unit was absent in these two areas of the Site.

None of the excavated test pit spoils exhibited photoionization detector (PID) scans above background concentrations (i.e., 0.0 ppm). Olfactory evidence of impact was not identified at any test pit location; however, anthropogenic fill material was visually observed in the upper 1 to 4 feet at each location. Analytical results of test pit soil/fill samples from that general interval showed elevated lead at concentrations above the Part 375 RRSCOs at 12 of the 15 sample submitted. Total lead concentrations ranged from 45.2 mg/kg (TP-15) to 3,070 mg/kg (TP-13), with 12 samples exceeding the RRSCO (400 mg/kg) and four samples exceeding the CSCO (1,000 mg/kg). TCLP lead was analyzed at six test pit locations with concentrations ranging from 0.047 mg/L (TP-14) to 1.7 mg/L (TP-13), which are below the TCLP regulatory level of 5 mg/L.

#### ***1.2.4 April 2017 – Remedial Investigation***

Consistent with the initial findings of the Phase II Investigation, Remedial Investigation (RI) (Ref. 4) soil/fill sample results exceeded RRSCOs for certain PAHs, which are products of incomplete combustion typically found in ash, cinders and asphalt materials such as pavement; however, total PAHs (plus TICs) for these locations do not exceed the CP-51 soil guidance level of 500 mg/kg (Ref. 5). Select metals detected in soil/fill at concentrations above RRSCOs at one or more location include arsenic, cadmium, copper, chromium, lead, manganese and mercury; whereas arsenic, copper, lead, and mercury exceeded CSCOs. Lead exceeded the TCLP regulatory limit at two locations. Very minor exceedances of SVOCs (two PAHs) and inorganic compounds (all naturally occurring) were detected in groundwater at concentrations above Class GA GWQS/GVs. All other sampling parameters were below GWQS/GV or not detected.

Since VOCs were not detected in subsurface soil and groundwater above cleanup criteria, a soil vapor assessment was not warranted. A cursory interior assessment of the existing building did not reveal any potential environmental issues.

### **1.3 Constituents of Concern**

Based on previous investigations, the site-specific Constituents of Concern (COCs) include arsenic and lead.

### **1.4 Purpose and Scope**

As discussed in Section 1.0, the proposed redevelopment plan includes redevelopment of the Site as an architectural company and planned leased space(s) slated to open by year end 2017. In order to complete construction of storm water features and asphalt drive/parking areas, contractor mobilization and construction work must begin in the summer of 2017.

To expedite remedial measures on the Site, this IRM Work Plan will address the soil/fill AOCs across the Site (see Figure 2). Expedited completion of soil/fill AOC cleanup work will both satisfy NYSDEC's requirements for remediation of these AOCs and facilitate redevelopment work. The proposed scope of IRM scope of activities include:

- In-situ stabilization of lead-impacted soil/fill that is characteristically hazardous in order to render it non-hazardous prior to excavation and off-site disposal (AOC-1 and AOC-2).
- Excavation and off-site disposal of lead impacted soil/fill (AOC-3, AOC-4, and AOC-6), arsenic-impacted soil/fill (AOC-5 and test pit TP-20).
- Post-excavation sampling to confirm that Soil Cleanup Objectives (SCOs) and Site Specific Action Levels (SSALs) have been achieved, with additional excavation as needed.

The volume and extent of impacted soil/fill material was estimated in the RI/AA Report based on data and observations collected during the Phase II Investigation and RI. These estimates are provided in Section 2.4 of this IRM Work Plan.

## **1.5 Project Organization and Responsibilities**

Benchmark TurnKey personnel will oversee all AOC soil/fill on-site treatment, removal, and backfill activities on a design-build basis on behalf of Silos at Elk Street, LLC utilizing qualified and experienced professionals. Young + Wright Architecture (or their appointed alternate) will provide construction oversight of the storm water features, access road/parking areas, and site grading activities. Benchmark TurnKey will provide CAMP monitoring and general environmental oversight during all intrusive activities performed at the Site. 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 general accordance with the BCA, NYSDEC-approved IRM Work Plan, and NYSDEC DER-10 guidance (Ref. 1).

Post-excavation confirmation sampling will be performed by experienced Benchmark TurnKey personnel in the presence of and in consultation with NYSDEC personnel prior to backfilling activities. It is understood that the NYSDEC reserves the right to collect split samples of any waste, soil/fill, or groundwater samples during IRM field activities. A minimum three day notice will be provided to the Department prior to all IRM excavation, confirmation sampling, and project related meetings.

## 2.0 IRM TECHNICAL APPROACH

### 2.1 Pre-Mobilization Tasks

#### *2.1.1 Pre-Construction Meeting*

A project coordination meeting will be held with key representatives of the Project Team before the soil/fill excavation work begins. Attendees at the meeting will include, at a minimum, Silos at Elk Street representative(s), Benchmark TurnKey's Project Manager, and the remediation contractor. The designated NYSDEC Project Manager and NYSDOH representative will also be notified and invited to attend. Agenda items will include:

- Construction schedule
- Work sequencing
- Designation of responsibilities, contact personnel, and phone number
- Project documentation requirements
- Staging of equipment
- Transportation routes/Site egress
- Health and safety requirements
- Temporary controls (dust suppression, storm water management)
- Work hours
- Site security

Benchmark TurnKey will prepare meeting minutes for distribution to attendees.

#### *2.1.2 Progress Meetings*

Progress meetings will be conducted on a regular basis throughout the construction period. Progress meetings will be attended by Silos at Elk Street representative(s), Benchmark TurnKey personnel, and the remediation contractor. NYSDEC and NYSDOH will have access to all progress meetings.

#### *2.1.3 Survey and Underground Utilities Location*

The remediation contractor will contact underground facilities protection organization (Dig Safely New York, UFPO) to locate utility lines within the work area. After completion of the underground utility mark-out, a Site-wide inspection of the mark-out, as related to the

planned remedial activities will be completed to evaluate potential pathways for off-site transport.

#### ***2.1.4 Health and Safety Plan Development***

The August 2016 Health and Safety Plan (HASP), prepared for the RI in accordance with the requirements of 40 CFR 300.150 of the NCP and 29 CFR 1910.120, will be used for the IRM activities. The HASP will cover all on-site remedial activities. Benchmark TurnKey will be responsible for Site control and for the health and safety of its authorized site workers. Benchmark TurnKey's HASP is provided for informational purposes in Appendix A. The remediation contractor will be required to develop a HASP as or more stringent than Benchmark TurnKey's HASP. The HASP will be subject to revision, as necessary, based on new information that is discovered during the IRM.

Benchmark TurnKey will also be responsible for the performance of community air monitoring during intrusive activities involving subgrade disturbance as discussed in Section 3.0 of this Work Plan.

## **2.2 Mobilization and Site Preparation**

The remediation contractor's field operations at the Site will commence with mobilizing equipment and materials to the Site and erecting safety fencing and other temporary controls as described below.

#### ***2.2.1 Temporary Construction Facilities and Control***

Temporary facilities for use during the remedial work may include a construction field trailer and portable toilet(s). Temporary controls will be employed for protection against off-site migration of soil and safety hazards during construction, including safety fencing, dust suppression, and erosion control as further described below.

#### ***2.2.2 Access Controls***

Daily work areas will be identified with construction cones and/or temporary fencing. Work areas will be determined daily based on the planned remedial activities, and may be changed throughout the work day to ensure safe operations. Access control will consider Site worker and general public safety.

### ***2.2.3 Dust Suppression***

Dust suppression will be an integral component of the soil/fill excavation and re-grading activities. During excavation and re-grading work, water will be sprayed across the surface of the work area as necessary to mitigate airborne dust formation and migration and assure conformance with community air monitoring thresholds. Other dust suppression techniques that may be used to supplement the water spray include:

- Applying water on haul roads.
- Hauling materials in properly tarped containers or vehicles.
- Restricting vehicle speeds on-site.

All reasonable attempts will be made to keep visible and/or fugitive dust to a minimum and adhere to particulate emissions limits identified in the Community Air Monitoring Plan (Section 3.0).

### ***2.2.4 Odor Control Plan***

The odor control plan during the IRM is capable of controlling emissions of nuisance odors off-site. Specific odor control methods to be used on a routine basis are described below. If nuisance odors are identified at the Site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the property owner's Remediation Engineer, and any measures that are implemented will be documented.

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

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close

proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

### ***2.2.5 Storm Water Management***

The surface of the Site is grass covered and relatively flat, therefore precipitation would be expected to temporarily accumulate in small depression areas of the Site prior to infiltration. Therefore, storm water runoff is not expected to pose a significant soil particulate or contaminant transport pathway during IRM activities. During the soil/fill removal work, Benchmark TurnKey will undertake specific measures to assure proper management of storm water and preclude migration of contaminants to other areas of the Site. These will include:

- Direct loading of trucks where feasible to avoid staging of impacted soil/fill.
- Use of poly sheeting for lay-down if staging of impacted soil/fill is necessary.
- Re-grading of excavations with adjacent soil/fill upon completion, if needed to mitigate storm water buildup.

## **2.3 IRM Activities**

### ***2.3.1 NYSDEC Oversight & Approvals***

The NYSDEC will be notified at least 3 business days in advance of any planned IRM activity. Waste characterization sampling (Section 2.3.2), in-situ soil/fill stabilization (Section 2.3.3), excavation (Section 2.3.4), post-excavation confirmatory sampling (Section 2.3.5), and backfilling/site grading activities (Section 2.3.6) will be performed in the presence of and in consultation with a NYSDEC representative. Confirmation sample analytical results will be provided to NYSDEC for review upon receipt from the laboratory. It is understood that the Department may, at any time, perform split sampling of environmental media (e.g., soil/fill, groundwater, waste, etc.) during the IRM. NYSDEC-approval will be obtained prior to re-locating clean material (i.e., soil and fill, excluding fill containing deleterious materials).

### ***2.3.2 Waste Characterization***

Waste characterization samples will be collected in accordance with the disposal and/or recycling facilities requirements. Pre-characterization of the soil/fill will allow for direct

loading and off-site transportation at the time of soil/fill removal. Based on the results of the waste characterization sampling, impacted soil/fill will be managed according to all federal, state, and local waste disposal regulations.

### ***2.3.3 In-Situ Soil/Fill Stabilization***

Benchmark TurnKey has performed bench-scale treatability tests using soil/fill from AOC-1 and AOC-2, which indicated that blending 10% Portland cement by weight will stabilize lead to below leachable (hazardous) levels. The optimal amount of amendment will be mixed into the AOC-1 and AOC-2 soil/fill using the excavator bucket and water will be added if necessary. After 24 hours, one representative soil/fill sample will be collected from each AOC for TCLP lead analyses. If analytical results are below 5 mg/L, the AOCs will be excavated as described in Section 2.3.4.

### ***2.3.4 Remedial Excavation Activities***

Prior to soil/fill excavation work, the underground utilities locating service will be contacted to locate and mark any underground utilities in the vicinity (see Section 2.1.4). If active utilities are present, care will be taken to maintain appropriate set-backs or stabilize the utilities as necessary to allow soil/fill removal to proceed. The only known utilities traversing the Site is the National Fuel gas line which runs along the eastern boundary (parallel to the property boundary and railroad tracks) and above ground electric (see Figure 2); neither of which will directly affect the IRM work presented in this Work Plan.

Planned IRM excavation work will be directed by an experienced Benchmark TurnKey professional and will involve excavation of the following AOCs from the Commercial and Restricted-Residential Use Areas of the Site to the approximate horizontal and vertical limits identified below (see Figure 2). Goals of the IRM activities will be to:

- Stabilize and remove all AOCs exhibiting hazardous waste characteristics for lead.
- Remove all AOCs inside the limits of the restricted commercial portion of the Site to meet proposed SSALs, specifically: lead to below the ISCO of 3,900 mg/kg, arsenic to below 28 mg/kg, and manganese to below the ISCO of 10,000 mg/kg.

- Remove all AOCs inside the limits of the restricted residential portion of the Site to meet proposed SSALs, specifically: lead to below the CSCO of 1,000 mg/kg and arsenic to below 28 mg/kg.

### **Commercial Use Excavation Areas:**

#### *Lead-Impacted (Hazardous) Soil/Fill:*

- **AOC-1:** Samples collected from test pits TP-30A and TP-31A were determined to be characteristically hazardous for lead through TCLP analyses. The area to be treated in-situ is estimated at 60 feet long by 15 feet wide by 2 feet deep, for an in-place volume of approximately 67 cubic yards. Once the soil/fill is rendered non-hazardous through TCLP testing, the soil/fill will be excavated and disposed off-site.
- **AOC-2:** A sample of the Black Sand between test pits TP-24 and TP-25 was determined to be characteristically hazardous for lead through TCLP analysis. The area to be treated in-situ is estimated at 15 feet long by 15 feet wide by 0.5 feet deep, for an in-place volume of approximately 4 cubic yards. Once the soil/fill is rendered non-hazardous through TCLP testing, the soil/fill will be excavated and disposed off-site.

#### *Lead-Impacted (Non-Hazardous) Soil/Fill:*

- **AOC-3:** The area surrounding test pit TP-24A, with a total lead concentration (5,900 mg/kg) above the Part 375 Industrial Soil Cleanup Objective (ISCO), covers an estimated 400 square feet to a depth of 3 fbgs, for an in-place volume of approximately 44 cubic yards.
- **AOC-4:** The area surrounding test pit TP-29, with a total lead concentration (35,000 mg/kg, 0-1 fbgs) above the ISCO, covers an estimated 600 square feet to an assumed depth of 3 fbgs, for an in-place volume of approximately 67 cubic yards.

#### *Arsenic-Impacted Soil/Fill:*

- **AOC-5:** The area surrounding soil boring SB-2, with a total arsenic concentration (38 mg/kg) above the SSAL (28 mg/kg), covers an estimated 400 square feet to a depth of 1 fbgs, for an in-place volume of approximately 15 cubic yards.

*Manganese-Impacted Soil/Fill:*

- **SB-6 Area:** Soil boring SB-6 (0-1 fbg interval) had a manganese concentration above the ISCO of 10,000 mg/kg. Although the manganese is not considered a COC, the soil/fill surrounding this boring will be voluntarily excavated and disposed off-site. Approximately 4 cubic yards are estimated.

**Restricted-Residential Use Excavation Area**

*Lead-Impacted (Non-Hazardous) Soil/Fill:*

- **AOC-6:** The area surrounding test pit TP-21, with a total lead concentration (1,500 mg/kg) above the CSCCO, covers an estimated 400 square feet to a depth of 1 fbg, for an in-place volume of approximately 15 cubic yards.
- **TP-20 Area:** Test pit TP-20 (1-2 fbg interval) had an arsenic concentration equal to the SSAL of 28 mg/kg. Although the arsenic SSAL was not exceeded, the soil/fill surrounding this test pit will be voluntarily excavated and disposed off-site. Approximately 7.5 cubic yards are estimated.

The in-place quantity of Commercial Use and Restricted-Residential Use impacted soil/fill to be excavated is estimated at 241.5 cubic yards (est. 365 tons); final volumes will be determined through post-excavation confirmatory sampling. As with any remedial excavation, actual site conditions (e.g., visual, olfactory, PID measurements, and/or confirmatory sample analytical results) will dictate final excavation limits, which may exceed pre-IRM delineations (and quantities). Final excavation limits will be surveyed with a handheld Trimble GeoXH GPS unit and average excavation depths will be manually measured in the field. Horizontal limits and locations of final remedial excavations will be presented on the Site Map in the Final Engineering Report (FER) (see Section 4.3).

Care will be taken to minimize dust/odor formation during in-place treatment, excavation, and loading (see Sections 2.2.3 and 2.2.4). The excavation equipment will have sufficient boom length to allow for placement of soil/fill directly into the truck bed if ground surface conditions are conducive to truck traffic (e.g. dry and firm). Side dumping (i.e., with a front-end loader) will only be permitted if ground conditions are not conducive to truck traffic and fugitive dust and odors can be consistently controlled within the Community Air Monitoring Plan action limits.

### ***2.3.5 Post-Excavation Confirmatory Sampling***

Post-excavation confirmation samples will be collected from the remedial excavation areas. 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. Confirmatory samples will be analyzed by a NYSDOH ELAP-certified analytical laboratory for total and leachable lead (AOCs 1-2), total lead (AOCs 1-4 and AOC-6), arsenic (AOC-5 and test pit TP-20 area), and manganese (SB-6 area) in accordance with latest USEPA SW-846 Methodology. An equivalent Category B deliverables package will be furnished with the data to allow data evaluation and preparation of a Data Usability Summary Report (DUSR) by an independent, third party data validation expert. Expedited turnaround times may be requested for the analytical results to minimize the time that the excavation(s) remains open.

Lateral remedial excavation will continue until: the CSCOs or SSALs in the Restricted-Residential Use portion of the Site and/or the ISCOs or SSALs in the Commercial Use portion of the Site are met; a physical barrier (which may include the property boundary, underground utilities, subgrade piping, and/or concrete structures such as building foundations and/or sidewalks that are not planned for removal) are encountered; or the NYSDEC agrees that no further delineation (or excavation) is required or feasible. The vertical extent of each remedial excavation will be the target depths identified in Section 2.3.4 as long as they satisfy the designated Use-required SCO/SSAL requirements previously stated or groundwater, whichever is encountered first.

The laboratory analysis may be modified to include actual field conditions in consultation between the Benchmark TurnKey Project Manager and the NYSDEC. Excavation material showing evidence of impact (e.g., visual/olfactory, elevated PID, staining, stressed vegetation, etc.) beyond the excavation limits identified in Section 2.3.4, may be, upon consultation and consensus between the Benchmark TurnKey Project Manager and the Department, analyzed for an agreed upon list of parameters (beyond the previously mentioned COCs) depending the nature of the observed impact (e.g., oily stained areas will be analyzed for TCL VOCs, TCL SVOCs [base-neutrals and acid extractables], and PCBs).

### ***2.3.6 Backfill***

Backfilling is not expected to be required as the planned IRM excavations are generally shallow (i.e., less than two feet deep) and redevelopment activities (storm water controls,

parking area construction) will generate excess cut materials that will be beneficially reused to fill in IRM excavations. In the event backfill from offsite sources is required, import testing will be performed and NYSDEC approval of the import source/volume will be requested per DER-10.

### ***2.3.7 Groundwater Management***

Observations made during the RI indicate that groundwater is present at a depth of approximately 4.5 to 9 feet below ground surface (576.0 to 573.5 feet above mean seal level, respectively). If groundwater is encountered during remedial excavation, it will be removed and managed on-site in accordance with Buffalo Sewer Authority (BSA) regulations and in consultation with the NYSDEC. In general, groundwater removed from excavations will be stored/settled in a portable storage tank and, if deemed necessary, sampled to determine if additional pretreatment measures are necessary prior to discharge. Benchmark TurnKey or the Site owner will coordinate with the BSA to obtain any necessary temporary sewer discharge permits.

### ***2.3.8 Off-Site Transportation and Disposal of Non-Hazardous Soil/Fill***

The transportation and disposal of impacted soil/fill will be based on the waste characterization sampling completed prior to the start of the remedial excavation activities. Disposal approvals will be obtained from the off-site facilities prior to transport. Each load will be appropriately manifested. Non-hazardous soil/fill will be transported off-site via dump trailers or trucks for disposal at a NYSDEC-permitted commercial solid waste disposal facility by licensed haulers. Disposal documents (i.e., manifests and scale receipts) will be provided in the FER (see Section 4.3).

### 3.0 COMMUNITY AIR MONITORING

Real-time community air monitoring will be performed by Benchmark TurnKey during all intrusive IRM activities, including impacted soil/fill excavation, backfilling, and grading activities. A Community Air Monitoring Plan (CAMP) is included with Benchmark TurnKey's HASP. Particulate and vapor monitoring will be performed at a distance of approximately 100 feet downwind of the work area during these intrusive activities. In addition, no visible dust will be allowed beyond Site boundaries. The CAMP is consistent with the requirements for community air monitoring at remediation sites as established by the NYSDOH and NYSDEC. Accordingly, it follows procedures and practices outlined under DER-10 (Ref. 1) Appendix 1A (NYSDOH's Generic Community Air Monitoring Plan) and Appendix 1B (Fugitive Dust and Particulate Monitoring). In addition, an odor control plan that will be implemented during intrusive activities is described in Section 2.2.4.

## 4.0 DOCUMENTATION & REPORTING

Benchmark TurnKey will be on-site during excavation, backfilling, and Site grading to document IRM activities. Such documentation will include, at minimum, reports of construction activities, community air monitoring results, post-excavation sampling, and progress photographs/sketches.

### 4.1 Construction Monitoring Reporting

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

- Weather and Site conditions.
- 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.
- Approximate sampling locations (sketches) or GPS (Trimble) coordinates and sample designations for pre-excavation characterization.
- Excavation locations and depths being excavated.

The completed reports will be available on-site and submitted to the NYSDEC as part of the FER (see Section 4.3). The NYSDEC will be promptly notified of problems requiring modifications to this IRM Work Plan prior to proceeding or completing the construction item. If necessary, any deviations from this Work Plan will be explained/described in the FER.

Problem identification and corrective measures reports will be completed whenever major field problems are encountered and corrective measures are necessary. The NYSDEC will be promptly notified of problems requiring modifications to this Work Plan prior to proceeding or completion of the construction item. Problems or corrective measures will be explained/described in the FER.

Photo documentation of IRM activities will be prepared by Benchmark TurnKey throughout the duration of the project as necessary to convey typical work activities and

whenever changed conditions or special circumstances arise. Project photos will be provided in digital format in the FER.

## **4.2 Progress Reports**

Upon NYSDEC request, Benchmark TurnKey will prepare and submit weekly or monthly progress reports (depending on the duration of IRM activities) that include:

- Activities performed during reporting period.
- Results of tests or other pertinent data.
- Work scheduled for the upcoming reporting period.
- Other actions/information pertinent to the project.
- Percentage of completion, delays encountered or anticipated that may affect the schedule, and a description of efforts made to mitigate those delays or anticipated delays.

Progress reports may be informal (i.e., via email update) or a more formal weekly or monthly summary report.

## **4.3 Final Engineering Report**

A Final Engineering Report (FER) will be prepared at the conclusion of all remedial activities. The FER will include the following information and documentation, consistent with the NYSDEC's DER-10 Technical Guidance for Site Remediation:

- A certification by a licensed NYS Professional Engineer in accordance with Section 1.5 of DER-10
- Background and Site description.
- A Site or area planimetric map showing the parcel(s) remediated, including significant site features.
- Description of engineering and institutional controls employed as part of the remedy.
- Text describing the IRM activities performed. This will include an evaluation of the IRM activities against the Remedial Action Objectives for soil/fill removal.

- Site map showing the lateral limits of any excavations, including end-point sample locations.
- The mass of soil/fill excavated per scale receipts from the off-site disposal facility.
- Copies of daily inspection reports and, if applicable, problem identification and corrective measure reports.
- Documentation of imported materials and materials disposed off-site.
- Tabular summaries of unit quantities including volume of soil excavated, disposition of excavated soil, and volume/type/source of backfill and cover system material.
- A pre- and post-cover system placement topographic survey and associated calculation of materials placed (assuming a Track 4 cleanup approach is approved).
- Copies of daily inspection reports and, if applicable, problem identification and corrective measure reports.
- Photo documentation of remedial activities.
- A description of any problems encountered, deviations from the IRM Work Plan, and associated corrective measures taken; and other pertinent information necessary to document that the IRM activities were carried out in accordance with this Work Plan.
- Analytical data packages and DUSRs of post-excavation verification data by a qualified, independent data validation expert.

#### **4.4 Citizen Participation Fact Sheets**

NYSDEC will coordinate and lead community relations throughout the course of the project with support from Benchmark TurnKey as requested. A CP Plan (Ref. 6) has been prepared by Benchmark TurnKey and approved by NYSDEC. A copy of the CP Plan has been placed in the Buffalo and Erie County Public Library (Downtown Branch), the designated project document repository. The NYSDEC, with input from Benchmark TurnKey and Silos at Elk Street, LLC, will issue project fact sheets to keep the public informed of remedial activities, as required.

#### **4.5 Electronic Copy of IRM Work Plan**

Appendix C includes an electronic version of this IRM Work Plan.

## 5.0 PROJECT SCHEDULE

Soil/fill AOC removal, backfilling, off-site disposal, and Site grading activities will be initiated immediately upon approval of this Work Plan, and are tentatively scheduled to begin mid-July 2017.. It is anticipated that the IRM excavation activities will be completed within approximately 3 to 4 weeks of initiation barring significant weather delays. The NYSDEC Project Manager will be notified seven days in advance of all field activities. The anticipated project schedule for BCP major milestones include:

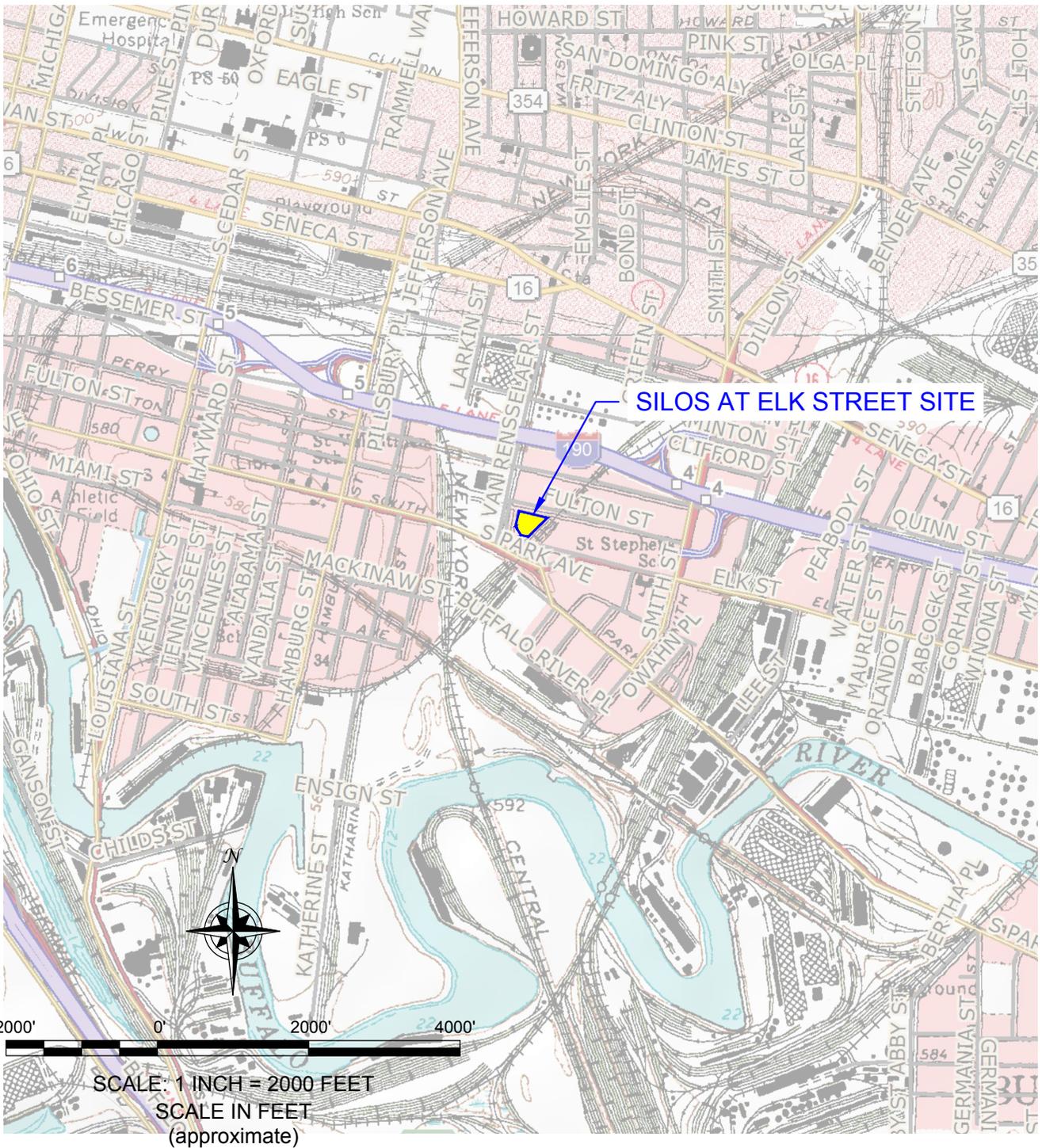
- *June 1, 2017* – Submit Draft Environmental Easement
- *July 7, 2017* – Submit draft IRM Work Plan
- *July 14, 2017* – Receive NYSDEC Approval of IRM Work Plan begin 45-day public comment period
- *July/ August 2017* – Perform Remedial Work
- *August 1, 2017* – Submit Draft Site Management Plan (SMP)
- *August 28, 2017* – End of 45 day public comment period for IRM
- *October 1, 2017* – Submit Draft FER
- *October 15, 2017* – Final Environmental Easement filed with Erie County
- *November 15, 2017* – Submit Final SMP and FER
- *December 15, 2017* – Receive Certificate of Completion (COC)

## 6.0 REFERENCES

1. New York State Department of Environmental Conservation. *DER-10; Technical Guidance for Site Investigation and Remediation*. May 3, 2010.
2. Benchmark Environmental Engineering and Science, PLLC. *Phase I Environmental Site Assessment ASTM E1527-13 for 50 Elk Street, Buffalo, New York*. August 2016.
3. Benchmark Environmental Engineering and Science, PLLC. *Limited Phase II Environmental Site Investigation & Supplemental Test Pit Investigation, 50 Elk Street, Buffalo, New York*. August 5, 2016.
4. Benchmark Environmental Engineering and Science, PLLC. *Remedial Investigation/Alternatives Analysis Report, Silos at Elk Street Site, BCP Site No. C915309, Buffalo, New York*. April 2017.
5. New York State Department of Environmental Conservation. *Policy CP-51; Soil Cleanup Guidance*. October 21, 2010.
6. Benchmark Environmental Engineering and Science, PLLC. *Citizen Participation Plan for Silos at Elk Street Site, BCP Site No. C915309, Buffalo, New York*. March 2017.

# FIGURES

FIGURE 1



F:\CAD\Benchmark\Young and Wright Architectural\Silos at Elk Street\Figure 1 - IRM Work Plan\Figure 1 - Site Location & Vicinity Map.dwg

**BENCHMARK**  
ENVIRONMENTAL  
ENGINEERING  
SCIENCE, PLLC

**TURNKEY**  
ENVIRONMENTAL  
RESTORATION, LLC

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

**SITE LOCATION & VICINITY MAP**  
IRM WORK PLAN

SILOS AT ELK STREET SITE  
BUFFALO, NEW YORK  
PREPARED FOR  
SILOS AT ELK STREET, LLC

PROJECT NO.: 0381-017-005  
DATE: JULY 2017  
DRAFTED BY: BCH

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# APPENDIX A

HEALTH & SAFETY PLAN  
&  
COMMUNITY AIR MONITORING PLAN  
  
(AUGUST 2016)

# Health and Safety Plan for Remedial Investigation Activities

Silos Elk Street Site  
Buffalo, New York

August 2016

0381-016-002

Prepared for:

Silos at Elk Street, LLC



Prepared By:



---

**SITE HEALTH AND SAFETY PLAN**  
**for**  
**BROWNFIELD CLEANUP PROGRAM**  
**RI ACTIVITIES**

**SILOS AT ELK STREET SITE**  
**BCP SITE NO. (TBD)**  
**BUFFALO, NEW YORK**

---

August 2016

0381-016-002

Prepared for:

**SILOS AT ELK STREET, LLC**

Prepared By:



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2558 Hamburg Turnpike, Suite 300  
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In Association With:



TurnKey Environmental Restoration, LLC  
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(716)856-0635

# HEALTH & SAFETY PLAN FOR RI ACTIVITIES

Silos at Elk Street Site  
BCP Site No. (TBD)  
Buffalo, New York

## Table of Contents

### ACKNOWLEDGEMENT

**Plan Reviewed by (initial):**

Corporate Health and Safety Director: \_\_\_\_\_ Thomas H. Forbes

Project Manager: \_\_\_\_\_ Bryan C. Hann

Designated Site Safety and Health Officer: \_\_\_\_\_ Bryan C. Hann

**Acknowledgement:**

I acknowledge that I have reviewed the information contained in this site-specific Health and Safety Plan, and understand the hazards associated with performance of the field activities described herein. I agree to comply with the requirements of this plan.

NAME (PRINT)	SIGNATURE	DATE
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

# HEALTH & SAFETY PLAN FOR RI ACTIVITIES

Silos at Elk Street Site  
BCP Site No. (TBD)  
Buffalo, New York

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# HEALTH & SAFETY PLAN FOR RI ACTIVITIES

## Silos at Elk Street Site BCP Site No. (TBD) Buffalo, New York

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# HEALTH & SAFETY PLAN FOR RI ACTIVITIES

Silos at Elk Street Site  
BCP Site No. (TBD)  
Buffalo, New York

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## 1.0 INTRODUCTION

### 1.1 General

In accordance with OSHA requirements contained in 29 CFR 1910.120, this Health and Safety Plan (HASP) describes the specific health and safety practices and procedures to be employed by Benchmark Environmental Engineering & Science, PLLC and TurnKey Environmental Restoration, LLC employees (referred to jointly hereafter as “Benchmark TurnKey”) during Remedial Investigation (RI) activities at the Silos at Elk Street Site located in the City of Buffalo, New York. This HASP presents procedures for Benchmark TurnKey employees who will be involved with RI field activities; it does not cover the activities of other contractors, subcontractors or other individuals on the Site. These firms will be required to develop and enforce their own HASPs as discussed in Section 2.0. Benchmark TurnKey accepts no responsibility for the health and safety of contractor, subcontractor, or other personnel.

This HASP presents information on known Site health and safety hazards using available historical information, and identifies the equipment, materials, and procedures that will be used to eliminate or control these hazards. Environmental monitoring will be performed during the course of field activities to provide real-time data for on-going assessment of potential hazards.

### 1.2 Background

The Site is comprised of an approximate 1.9 acre parcel located on 50 Elk Street in the City of Buffalo, New York (see Figures 1 and 2). The Site was historically used industrially as a malting operation with some inactive process-related equipment and piping, including apparent natural-gas vent pipes and other presumed utility lines, remaining on-Site. The exact nature of all equipment and piping is unknown. The Site is currently vacant with one abandoned structure. The Site is located in a highly developed residential, commercial, and industrial area of the City of Buffalo (see Figures 1 and 2). Currently, the Site is bound by Fulton Street to the north, Elk Street to the west and south, and a former rail spur and vacant land to the east (see Figure 2). Beyond the streets, the Site is bounded by mixed-use to the north and south (residential, commercial, and industrial), residential to the east, and vacant industrial to the west.

### 1.3 Known and Suspected Environmental Conditions

Benchmark completed a Phase I Environmental Site Assessment (ESA) on the subject property in May 2016 (Ref. 1). The Phase I ESA report identified the following Recognized Environmental Conditions (RECs):

- The long history of on-Site malting operations with various associated equipment, water-filled pits, and railroad tracks, along with the reasonably anticipated historic use of hazardous/regulated materials, is considered a REC due to the potential for impacts to the environment.
- The black fine ash/coal-like material with limited vegetation observed in exterior areas west and north of the building is considered a REC as the exact nature of the material is unknown.
- The Site is located in a mixed-use area with proximate current/historic industrial operations, including railroad tracks/yards.

Per ASTM E1527-13, non-scope considerations are described as ancillary observations during performance of the on-site investigation. Non-scope considerations are not considered RECs under ASTM E1527, but may represent health or environmental issues impacting the Site and/or property value. Based on the ages of the existing buildings, Benchmark identified the potential for suspect ACMs and lead exists.

Benchmark completed a Limited Phase II Investigation on the subject property in June 2016, and the findings are presented below:

- Water-filled pits were non-detect for volatile organic compounds (VOCs)
- Elevated PAHs and heavy metals exceeding Part 375 Industrial Soil Cleanup Objectives (ISCOs)
- Surficial blackish fines (potentially coal) with limited vegetation were observed and sampled in distinct locations west and north of the building
- The blackish fines composite sample contained a lead concentration of 4,970 ppm and also total organic carbon was 70,400 ppm
- Toxicity Characteristic Leaching Procedure (TCLP) lead analysis of the blackish fines composite sample reported a concentration of 26.5 mg/L exceeding the TCLP regulatory level of 5 mg/L

Benchmark conducted a supplemental Test Pit Investigation on the subject property in July 2016, and the findings are summarized below:

- Shallow overburden material across the Site was characterized from grade as a vegetated lean clay with sand (suspected topsoil) above a greyish white to black anthropogenic ashy-fill unit (mostly non-plastic fines, coal fragments, orange brick, glass, ceramic fragments, etc.) underlain by a stiff lacustrine clay unit (suspected native soil)
- Total lead concentrations ranged from 45.2 mg/kg (TP-15) to 3,070 mg/kg (TP-13) compared to the Part 375 Commercial Soil Cleanup Objective (CSCO) of 63 mg/kg
- TCLP lead was analyzed at six test pit locations with concentrations ranging from 0.047 mg/L (TP-14) to 1.7 mg/L (TP-13), which are below the TCLP regulatory level of 5 mg/L

The RI will be performed in support of the BCP to determine the nature and extent of impacts from known and suspected environmental conditions on this parcel.

#### 1.4 Parameters of Interest

Based on the previous investigations, primary constituents of potential concern (COPCs) in soil at the Site include:

- **Inorganic Compound** – The inorganic COPCs potentially present at elevated concentrations are metals, including: arsenic, barium, cadmium, chromium, lead, and mercury.
- **Semi-Volatile Organic Compounds (SVOCs)** – SVOCs present at elevated concentrations include the Polycyclic Aromatic Hydrocarbons (PAHs) acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(ghi)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, fluorene, ideno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene. Although PAHs are commonly found in urban soil environments, they are present at the Site at concentrations that are significantly elevated compared to typical “background” levels.

## 1.5 Overview of RI Activities

Benchmark TurnKey personnel will be on-site to observe and perform RI activities. The field activities to be completed as part of the RI are described below. Planned RI activities are more fully described in the RI Work Plan for the Site.

### Remedial Investigation Activities

1. **Surface/Subsurface Soil Sampling:** Benchmark TurnKey personnel plan to: complete ten soil borings to collect subsurface soil samples; and, collect five surface soil samples.
2. **Monitoring Well Installation/Development and Sampling:** Benchmark TurnKey will observe the installation of on-Site groundwater monitoring wells; develop the wells, and collect groundwater samples for the purpose of determining the nature and extent of potential COPC impacts.

## 2.0 ORGANIZATIONAL STRUCTURE

This section of the HASP describes the lines of authority, responsibility, and communication as they pertain to health and safety functions at the Site. The purpose of this Section is to identify the personnel who impact the development and implementation of the HASP and to describe their roles and responsibilities. This section also identifies other contractors and subcontractors involved in work operations and establishes the lines of communications among them for health and safety matters. The organizational structure described in this section is consistent with the requirements of 29 CFR 1910.120(b)(2). This section will be reviewed by the Project Manager and updated as necessary to reflect the current organizational structure at this Site.

All Benchmark TurnKey personnel on the Site must comply with the minimum requirements of this HASP. The specific responsibilities and authority of management, safety, and health, and other personnel on this Site are detailed in the following paragraphs.

### 2.1 Corporate Health and Safety Director

The Benchmark TurnKey Corporate Health and Safety Director is ***Mr. Thomas H. Forbes***. The Corporate Health and Safety Director is responsible for developing and implementing the Health and Safety program and policies for Benchmark Environmental Engineering & Science, PLLC and TurnKey Environmental Restoration, LLC, and consulting with corporate management to ensure adequate resources are available to properly implement these programs and policies. The Corporate Health and Safety Director coordinates Benchmark TurnKey's Health and Safety training and medical monitoring programs and assists project management and field staff in developing site-specific health and safety plans.

### 2.2 Project Manager

The Project Manager for this Site is ***Mr. Bryan C. Hann***. The Project Manager has the responsibility and authority to direct all Benchmark TurnKey work operations at the Site. The Project Manager coordinates safety and health functions with the Site Safety and Health Officer, and bears ultimate responsibility for proper implementation of this HASP. He may delegate authority to expedite and facilitate any application of the program, including modifications to the overall project approach as necessary to circumvent unsafe work conditions. Specific duties of the Project Manager include:

- Preparing and coordinating the Site work plan.
- Providing Benchmark TurnKey workers with work assignments and overseeing their performance.
- Coordinating health and safety efforts with the Site Safety and Health Officer (SSHO).
- Reviewing the emergency response coordination plan to assure its effectiveness.
- Serving as the primary liaison with Site contractors and the property owner.

### 2.3 Site Safety and Health Officer

The Site Safety and Health Officer (SSHO) for this Site is **Mr. Bryan C. Hann**. The qualified alternate SSHO is **Mr. Thomas A. Behrendt**. The SSHO reports to the Project Manager. The SSHO is on-site or readily accessible to the Site during all work operations and has the authority to halt Site work if unsafe conditions are detected. The specific responsibilities of the SSHO are:

- Managing the safety and health functions for Benchmark TurnKey personnel on the Site.
- Serving as the point of contact for safety and health matters.
- Ensuring that Benchmark TurnKey field personnel working on the Site have received proper training (per 29 CFR Part 1910.120(e)), that they have obtained medical clearance to wear respiratory protection (per 29 CFR Part 1910.134), and that they are properly trained in the selection, use and maintenance of personal protective equipment, including qualitative respirator fit testing.
- Performing or overseeing Site monitoring as required by the HASP.
- Assisting in the preparation and review of the HASP.
- Maintaining site-specific safety and health records as described in this HASP.
- Coordinating with the Project Manager, Site Workers, and Contractor's SSHO as necessary for safety and health efforts.

## 2.4 Site Workers

Site workers are responsible for: complying with this HASP or a more stringent HASP, if appropriate (i.e., Contractor and Subcontractor's HASP); using proper personal protective equipment (PPE); reporting unsafe acts and conditions to the SSHO; and following the safety and health instructions of the Project Manager and SSHO.

## 2.5 Other Site Personnel

Other Site personnel who will have health and safety responsibilities will include the Drilling Contractor, who will be responsible for developing, implementing and enforcing a Health and Safety Plan equally stringent or more stringent than Benchmark TurnKey's HASP. Benchmark TurnKey assumes no responsibility for the health and safety of anyone outside its direct employ. Each Contractor's HASP shall cover all non-Benchmark TurnKey Site personnel. Each Contractor shall assign a SSHO who will coordinate with Benchmark TurnKey's SSHO as necessary to ensure effective lines of communication and consistency between contingency plans.

In addition to Benchmark TurnKey and Contractor personnel, other individuals who may have responsibilities in the work zone include subcontractors and governmental agencies performing Site inspection work (i.e., the New York State Department of Environmental Conservation or NYSDEC). The Contractor shall be responsible for ensuring that these individuals have received OSHA-required training (29 CFR 1910.120(e)), including initial, refresher and site-specific training, and shall be responsible for the safety and health of these individuals while they are on-site.

### 3.0 HAZARD EVALUATION

Due to the presence of certain contaminants at the Site, the possibility exists that workers will be exposed to hazardous substances during field activities. The principal points of exposure would be through direct contact with and incidental ingestion of soil, and through the inhalation of contaminated particles or vapors. Other points of exposure may include direct contact with groundwater. In addition, the use of drilling and/or medium to large-sized construction equipment (e.g., excavator) will also present conditions for potential physical injury to workers. Further, since work will be performed outdoors, the potential exists for heat/cold stress to impact workers, especially those wearing protective equipment and clothing. Adherence to the medical evaluations, worker training relative to chemical hazards, safe work practices, proper personal protection, environmental monitoring, establishment work zones and Site control, appropriate decontamination procedures and contingency planning outlined herein will reduce the potential for chemical exposures and physical injuries.

#### 3.1 Chemical Hazards

As discussed in Section 1.3, historic activities have potentially resulted in impacts to Site soils and groundwater. Soil and groundwater may be impacted by SVOCs (PAHs) and/or inorganic compounds. Table 1 lists exposure limits for airborne concentrations of the COPCs identified in Section 1.4 of this HASP. Brief descriptions of the toxicology of the prevalent COPCs and related health and safety guidance and criteria are provided below.

- **Polycyclic Aromatic Hydrocarbons (PAHs)** are formed as a result of the pyrolysis and incomplete combustion of organic matter such as fossil fuel. PAH aerosols formed during the combustion process disperse throughout the atmosphere, resulting in the deposition of PAH condensate in soil, water and on vegetation. In addition, several products formed from petroleum processing operations (e.g., roofing materials and asphalt) also contain elevated levels of PAHs. Hence, these compounds are widely dispersed in the environment. PAHs are characterized by a molecular structure containing three or more fused, unsaturated carbon rings. Seven of the PAHs are classified by USEPA as probable human carcinogens (USEPA Class B2). These are: benzo(a)pyrene; benzo(a)anthracene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenzo(a,h)anthracene; and indeno(1,2,3-cd)pyrene. The primary route of exposure to PAHs is through incidental ingestion and inhalation of contaminated particulates. PAHs are characterized by an organic odor, and exist as oily liquids in pure form. Acute

exposure symptoms may include acne-type blemishes in areas of the skin exposed to sunlight.

- **Arsenic (CAS #7440-38-2)** is a naturally occurring element and is usually found combined with one or more elements, such as oxygen or sulfur. Inhalation is a more important exposure route than ingestion. First phase exposure symptoms include nausea, vomiting, diarrhea and pain in the stomach. Prolonged contact is corrosive to the skin and mucus membranes. Arsenic is considered a Group A human carcinogen by the USEPA. Exposure via inhalation is associated with an increased risk of lung cancer. Exposure via the oral route is associated with an increased risk of skin cancer.
- **Barium (CAS #7440-39-3)** a naturally occurring alkaline earth metal that appears silver-yellow when exposed to air. Barium sulfate and barium carbonate are often found in nature and sometimes found naturally in drinking water and food. Other compounds, such as barium chloride, barium nitrate, and barium hydroxide, are manufactured from barium sulfate. Barium sulfate is used in drilling muds and to make paints, bricks, tiles, glass, and rubber. Barium carbonate, barium chloride, and barium hydroxide, are used to make ceramics, insect and rat poisons, and additives for oils and fuels; in the treatment of boiler water; in the production of barium greases; as a component in sealants, paper manufacturing, and sugar refining; in animal and vegetable oil refining. Ingestion of barium may result in: vomiting, abdominal cramps, diarrhea, difficulties in breathing, increased, or decreased blood pressure, numbness around the face, and muscle weakness.
- **Cadmium (CAS #7440-43-9)** is a natural element and is usually combined with one or more elements, such as oxygen, chloride, or sulfur. Breathing high levels of cadmium severely damages the lungs and can cause death. Ingestion of high levels of cadmium severely irritates the stomach, leading to vomiting and diarrhea. Long term exposure to lower levels of cadmium leads to a buildup of this substance in the kidneys and possible kidney disease. Other potential long term effects are lung damage and fragile bones. Cadmium is suspected to be a human carcinogen.
- **Chromium (CAS #7440-47-3)** is used in the production of stainless steel, chrome plated metals, and batteries. Two forms of chromium, hexavalent (CR+6) and trivalent (CR+3) are toxic. Hexavalent chromium is an irritant and corrosive to the skin and mucus membranes. Chromium is a potential occupational carcinogen. Acute exposures to dust may cause coughing, wheezing, headaches, pain and fever.
- **Lead (CAS #7439-92-1)** can affect almost every organ and system in our bodies. The most sensitive is the central nervous system, particularly in children. Lead also damages kidneys and the immune system. The effects are the same whether it is

breathed or swallowed. Lead may decrease reaction time, cause weakness in fingers, wrists, or ankles, and possibly affect memory. Lead may cause anemia.

- **Mercury (CAS #7439-97-6)** is used in industrial applications for the production of caustic and chlorine, and in electrical control equipment and apparatus. Over-exposure to mercury may cause coughing, chest pains, bronchitis, pneumonia, indecision, headaches, fatigue, and salivation. Mercury is a skin and eye irritant.

With respect to the anticipated RI activities discussed in Section 1.5, possible routes of exposure to the above-mentioned contaminants are presented in Table 2. The use of proper respiratory equipment, as outlined in Section 7.0 of this HASP, will minimize the potential for exposure to airborne contamination. Exposure to contaminants through dermal and other routes will also be minimized through the use of safe work practices (Section 6.0), protective clothing (Section 7.0), and proper decontamination procedures (Section 12.0).

### 3.2 Physical Hazards

RI field activities at the Silos at Elk Street Site may present the following physical hazards:

- The potential for physical injury during heavy construction equipment use, such as backhoes, excavators, and drilling equipment.
- The potential for heat/cold stress to employees during the summer/winter months (see Section 10.0).
- The potential for slip, trip, and fall injuries due to rough, uneven terrain and/or open excavations.

These hazards represent only some of the possible means of injury that may be present during RI operations and sampling activities at the Site. Since it is impossible to list all potential sources of injury, it shall be the responsibility of each individual to exercise proper care and caution during all phases of the work.

## 4.0 TRAINING

### 4.1 Site Workers

All personnel performing RI activities at the Site (such as, but not limited to, equipment operators, general laborers, and drillers) and who may be exposed to hazardous substances, health hazards, or safety hazards and their supervisors/managers responsible for the Site shall receive training in accordance with 29 CFR 1910.120(e) before they are permitted to engage in operations in the exclusion zone or contaminant reduction zone. This training includes an initial 40-hour Hazardous Waste Site Worker Protection Course, an 8-hour Annual Refresher Course subsequent to the initial 40-hour training, and 3 days of actual field experience under the direct supervision of a trained, experienced supervisor. Additional site-specific training shall also be provided by the SSHO prior to the start of field activities. A description of topics to be covered by this training is provided below.

#### *4.1.1 Initial and Refresher Training*

Initial and refresher training is conducted by a qualified instructor as specified under OSHA 29 CFR 1910.120(e)(5), and is specifically designed to meet the requirements of OSHA 29 CFR 1910.120(e)(3) and 1910.120(e)(8). The training covers, as a minimum, the following topics:

- OSHA HAZWOPER regulations.
- Site safety and hazard recognition, including chemical and physical hazards.
- Medical monitoring requirements.
- Air monitoring, permissible exposure limits, and respiratory protection level classifications.
- Appropriate use of personal protective equipment (PPE), including chemical compatibility and respiratory equipment selection and use.
- Work practices to minimize risk.
- Work zones and Site control.
- Safe use of engineering controls and equipment.

- Decontamination procedures.
- Emergency response and escape.
- Confined space entry procedures.
- Heat and cold stress monitoring.
- Elements of a Health and Safety Plan.
- Spill containment.

Initial training also incorporates workshops for PPE and respiratory equipment use (Levels A, B and C), and respirator fit testing. Records and certification received from the course instructor documenting each employee's successful completion of the training identified above are maintained on file at Benchmark TurnKey's Buffalo, NY office. Contractors and Subcontractors are required to provide similar documentation of training for all their personnel who will be involved in on-site work activities.

Any employee who has not been certified as having received health and safety training in conformance with 29 CFR 1910.120(e) is prohibited from working in the exclusion and contamination reduction zones, or to engage in any on-site work activities that may involve exposure to hazardous substances or wastes.

#### ***4.1.2 Site Training***

Site workers are given a copy of the HASP and provided a site-specific briefing prior to the commencement of work to ensure that employees are familiar with the HASP and the information and requirements it contains. The Site briefing shall be provided by the SSHO prior to initiating field activities and shall include (at a minimum):

- Names of personnel and alternates responsible for Site safety and health (Section 2.0).
- Physical, chemical, and other potential hazards present on the Site (Section 3.0).
- Documentation of appropriate training (Section 4.0)
- Medical surveillance (Section 5.0).

- Work practices by which the employee can minimize risks from hazards including the safe use of engineering controls and equipment on the site (Section 6.0).
- Use of PPE (Section 7.0).
- On-site exposure monitoring in the work zone and off-site community air monitoring (Section 8.0).
- The spill containment program as detailed in Section 9.0 of this HASP.
- Monitoring and recognition of symptoms and signs of over-exposure (heat or cold) (Section 10.0).
- Site control as detailed in Section 11.0 of this HASP.
- Decontamination procedures as detailed in Section 12.0 of this HASP.
- Confined space entry procedures, if required, as detailed in Section 13.0 of this HASP.
- Fire prevention and protection (Section 14.0).
- The site layout including work zones and places of refuge, the emergency communications system, and emergency evacuation procedures of the Emergency Response Plan (Section 15.0).

Supplemental health and safety briefings will also be conducted by the SSHO on an as-needed basis during the course of the work. Supplemental briefings are provided as necessary to notify employees of any changes to this HASP as a result of information gathered during ongoing Site characterization and analysis. Conditions for which the SSHO may schedule additional briefings include, but are not limited to: a change in Site conditions (e.g., based on monitoring results); changes in the work schedule/plan; newly discovered hazards; and safety incidents occurring during Site work.

## 4.2 Supervisor Training

On-site safety and health personnel who are directly responsible for or who supervise the safety and health of workers engaged in hazardous waste operations (i.e., SSHO) shall receive, in addition to the appropriate level of worker training described in Section 4.1, above,

8 additional hours of specialized supervisory training, in compliance with 29 CFR 1910.120(e)(4).

### **4.3 Emergency Response Training**

Emergency response training is addressed in Appendix A of this HASP, Emergency Response Plan.

### **4.4 Site Visitors**

Each Contractor's SSHO will provide a site-specific briefing to all Site visitors and other non-Benchmark TurnKey personnel who enter the Site beyond the Site entry point. The site-specific briefing will provide information about Site hazards, the Site layout including work zones and places of refuge, the emergency communications system and emergency evacuation procedures, and other pertinent safety and health requirements as appropriate.

Site visitors will not be permitted to enter the exclusion zone or contaminant reduction zones unless they have received the level of training required for Site workers as described in Section 4.1.

## 5.0 MEDICAL MONITORING

Medical monitoring examinations are provided to Benchmark TurnKey employees as stipulated under 29 CFR Part 1910.120(f). These exams include initial employment, annual and employment termination physicals for all Benchmark TurnKey employees involved in hazardous waste site field operations. Post-exposure examinations are also provided for employees who may have been injured, received a health impairment, or developed signs or symptoms of over-exposure to hazardous substances, or were accidentally exposed to substances at concentrations above the permissible exposure limits without necessary personal protective equipment. Such exams are performed as soon as possible following development of symptoms or the known exposure event.

Medical evaluations are performed by Health Works WNY, an occupational health care provider under contract with Benchmark TurnKey. Health Works WNY's local facility is located at 1900 Ridge Road, West Seneca, New York 14224. The facility can be reached at (716) 712-0670 to schedule routine appointments or post-exposure examinations.

Medical evaluations are conducted according to the Benchmark TurnKey Medical Monitoring Program and include an evaluation of the workers' ability to use respiratory protective equipment. The examinations include:

- Occupational/medical history review.
- Physical exam, including vital sign measurement.
- Spirometry testing.
- Eyesight testing.
- Audio testing (minimum baseline and exit, annual for employees routinely exposed to greater than 85db).
- EKG (for employees >40 years of age or as medical conditions dictate).
- Chest X-ray (baseline and exit, and every 5 years).
- Blood biochemistry (including blood count, white cell differential count, serum multiplastic screening).

- Medical certification of physical requirements (i.e., sight, musculoskeletal, cardiovascular) for safe job performance and to wear respiratory protection equipment.

The purpose of the medical evaluation is to determine an employee's fitness for duty on hazardous waste sites; and to establish baseline medical data.

In conformance with OSHA regulations, Benchmark TurnKey will maintain and preserve medical records for a period of 30 years following termination of employment. Employees are provided a copy of the physician's post-exam report, and have access to their medical records and analyses.

## 6.0 SAFE WORK PRACTICES

All Benchmark TurnKey employees shall conform to the following safe work practices during all on-site work activities conducted within the exclusion and contamination reduction zones:

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth contact is strictly prohibited.
- The hands and face must be thoroughly washed upon leaving the work area and prior to engaging in any activity indicated above.
- Respiratory protective equipment and clothing must be worn by all personnel entering the Site as required by the HASP or as modified by the Site safety officer. Excessive facial hair (i.e., beards, long mustaches, or sideburns) that interferes with the satisfactory respirator-to-face seal is prohibited.
- Contact with surfaces/materials either suspected or known to be contaminated will be avoided to minimize the potential for transfer to personnel, cross contamination and need for decontamination.
- Medicine and alcohol can synergize the effects of exposure to toxic chemicals. Due to possible contraindications, use of prescribed drugs should be reviewed with the Benchmark TurnKey occupational physician. Alcoholic beverage and illegal drug intake are strictly forbidden during the workday.
- All personnel shall be familiar with standard operating safety procedures and additional instructions contained in this HASP.
- On-site personnel shall use the “buddy” system. No one may work alone (i.e., out of earshot or visual contact with other workers) in the exclusion zone.
- Personnel and equipment in the contaminated area shall be minimized, consistent with effective Site operations.
- All employees have the obligation to immediately report and if possible, correct unsafe work conditions.
- Use of contact lenses on-site will not be permitted. Spectacle kits for insertion into full-face respirators will be provided for Benchmark TurnKey employees, as requested and required.

The recommended specific safety practices for working around the contractor's equipment (e.g., backhoes, bulldozers, excavators, drill rigs etc.) are as follows:

- Although the Contractor and subcontractors are responsible for their equipment and safe operation of the Site, Benchmark TurnKey personnel are also responsible for their own safety.
- Subsurface work will not be initiated without first clearing underground utility services.
- Heavy equipment should not be operated within 20 feet of overhead wires. This distance may be increased if windy conditions are anticipated or if lines carry high voltage. The Site should also be sufficiently clear to ensure the project staff can move around the heavy machinery safely.
- Care should be taken to avoid overhead electric lines when moving heavy-equipment from location to location.
- Hard hats, safety boots, and safety glasses should be worn at all times in the vicinity of heavy equipment. Hearing protection is also recommended.
- The work Site should be kept neat. This will prevent personnel from tripping and will allow for fast emergency exit from the Site.
- Proper lighting must be provided when working at night.
- Construction activities should be discontinued during an electrical storm or severe weather conditions.
- The presence of combustible gases should be checked before igniting any open flame.
- Personnel shall stand upwind of any construction operation when not immediately involved in sampling/logging/observing activities.
- Personnel will not approach the edge of an unsecured trench/excavation closer than 2 feet.

## 7.0 PERSONAL PROTECTIVE EQUIPMENT

### 7.1 Equipment Selection

Personal protective equipment (PPE) will be donned when work activities may result in exposure to physical or chemical hazards beyond acceptable limits, and when such exposure can be mitigated through appropriate PPE. The selection of PPE will be based on an evaluation of the performance characteristics of the PPE relative to the requirements and limitations of the Site, the task-specific conditions and duration, and the hazards and potential hazards identified at the Site.

Equipment designed to protect the body against contact with known or suspect chemical hazards are grouped into four categories according to the degree of protection afforded. These categories, designated A through D consistent with United States Environmental Protection Agency (USEPA) Level of Protection designation, are:

- **Level A:** Should be selected when the highest level of respiratory, skin and eye protection is needed.
- **Level B:** Should be selected when the highest level of respiratory protection is needed, but a lesser level of skin protection is required. Level B protection is the minimum level recommended on initial Site entries until the hazards have been further defined by on-site studies. Level B (or Level A) is also necessary for oxygen-deficient atmospheres.
- **Level C:** Should be selected when the types of airborne substances are known, the concentrations have been measured, and the criteria for using air-purifying respirators are met. In atmospheres where no airborne contaminants are present, Level C provides dermal protection only.
- **Level D:** Should not be worn on any Site with elevated respiratory or skin hazards. This is generally a work uniform providing minimal protection.

OSHA requires the use of certain PPE under conditions where an immediate danger to life and health (IDLH) may be present. Specifically, OSHA 29 CFR 1910.120(g)(3)(iii) requires use of a positive pressure self-contained breathing apparatus, or positive pressure air-line respirator equipped with an escape air supply when chemical exposure levels present a substantial possibility of immediate serious injury, illness or death, or impair the ability to

escape. Similarly, OSHA 29 CFR 1910.120(g)(3)(iv) requires donning totally-encapsulating chemical protective suits (with a protection level equivalent to Level A protection) in conditions where skin absorption of a hazardous substance may result in a substantial possibility of immediate serious illness, injury or death, or impair the ability to escape.

In situations where the types of chemicals, concentrations, and possibilities of contact are unknown, the appropriate level of protection must be selected based on professional experience and judgment until the hazards can be further characterized. The individual components of clothing and equipment must be assembled into a full protective ensemble to protect the worker from site-specific hazards, while at the same time minimizing hazards and drawbacks of the personal protective gear itself. Ensemble components are detailed below for levels A/B, C, and D protection.

## 7.2 Protection Ensembles

### *7.2.1 Level A/B Protection Ensemble*

Level A/B ensembles include similar respiratory protection, however Level A provides a higher degree of dermal protection than Level B. Use of Level A over Level B is determined by: comparing the concentrations of identified substances in the air with skin toxicity data, and assessing the effect of the substance (by its measured air concentrations or splash potential) on the small area of the head and neck unprotected by Level B clothing.

The recommended PPE for level A/B is:

- Pressure-demand, full-face piece self-contained breathing apparatus (MSHA/-NIOSH approved) or pressure-demand supplied-air respirator with escape self-contained breathing apparatus (SCBA).
- Chemical-resistant clothing. For Level A, clothing consists of totally-encapsulating chemical resistant suit. Level B incorporates hooded one-or two-piece chemical splash suit.
- Inner and outer chemical resistant gloves.
- Chemical-resistant safety boots/shoes.
- Hardhat.

### ***7.2.2 Level C Protection Ensemble***

Level C protection is distinguished from Level B by the equipment used to protect the respiratory system, assuming the same type of chemical-resistant clothing is used. The main selection criterion for Level C is that conditions permit wearing an air-purifying device. The device (when required) must be an air-purifying respirator (MSHA/NIOSH approved) equipped with filter cartridges. Cartridges must be able to remove the substances encountered. Respiratory protection will be used only with proper fitting, training, and the approval of a qualified individual. In addition, an air-purifying respirator can be used only if: oxygen content of the atmosphere is at least 19.5% in volume; substances are identified and concentrations measured; substances have adequate warning properties; the individual passes a qualitative fit-test for the mask; and an appropriate cartridge/canister is used, and its service limit concentration is not exceeded.

Recommended PPE for Level C conditions includes:

- Full-face piece, air-purifying respirator equipped with Mine Safety and Health Administration (MSHA) and National Institute for Occupational Safety and Health (NIOSH) approved organic vapor/acid gas/dust/mist combination cartridges or as designated by the SSFO.
- Chemical-resistant clothing (hooded, one or two-piece chemical splash suit or disposable chemical-resistant one-piece suit).
- Inner and outer chemical-resistant gloves.
- Chemical-resistant safety boots/shoes.
- Hardhat.

An air-monitoring program is part of all response operations when atmospheric contamination is known or suspected. It is particularly important that the air be monitored thoroughly when personnel are wearing air-purifying respirators. Continual surveillance using direct-reading instruments is needed to detect any changes in air quality necessitating a higher level of respiratory protection.

### ***7.2.3 Level D Protection Ensemble***

As indicated above, Level D protection is primarily a work uniform. It can be worn in

areas where only boots can be contaminated, where there are no inhalable toxic substances and where the atmospheric contains at least 19.5% oxygen.

Recommended PPE for Level D includes:

- Coveralls.
- Safety boots/shoes.
- Safety glasses or chemical splash goggles.
- Hardhat.
- Optional gloves; escape mask; face shield.

#### ***7.2.4 Recommended Level of Protection for Site Tasks***

Based upon current information regarding both the contaminants suspected to be present at the Site and the various tasks that are included in the remedial activities, the minimum required levels of protection for these tasks shall be as identified in Table 3.

## 8.0 EXPOSURE MONITORING

### 8.1 General

Based on the results of historic sample analysis and the nature of the proposed work activities at the Site, the possibility exists that organic vapors and/or particulates may be released to the air during intrusive construction activities. Ambient breathing zone concentrations may at times, exceed the permissible exposure limits (PELs) established by OSHA for the individual compounds (see Table 1), in which case respiratory protection will be required. Respiratory and dermal protection may be modified (upgraded or downgraded) by the SSHO based upon real-time field monitoring data.

#### *8.1.1 On-Site Work Zone Monitoring*

Benchmark TurnKey personnel will conduct routine, real-time air monitoring during all intrusive construction phases such as excavation, backfilling, drilling, etc. The work area will be monitored at regular intervals using a PID, combustible gas meter, and/or a particulate meter. Observed values will be recorded and maintained as part of the permanent field record.

Additional air monitoring measurements may be made by Benchmark TurnKey personnel to verify field conditions during subcontractor oversight activities. Monitoring instruments will be protected from surface contamination during use. Additional monitoring instruments may be added if the situations or conditions change. Monitoring instruments will be calibrated in accordance with manufacturer's instructions before use.

#### *8.1.2 Off-Site Community Air Monitoring*

In addition to on-site monitoring within the work zone(s), monitoring at the downwind portion of the Site perimeter will be conducted. This will provide a real-time method for determination of vapor and/or particulate releases to the surrounding community as a result of ground intrusive investigation work.

Ground intrusive activities are defined by NYSDOH Appendix 1A Generic Community Air Monitoring Plan (Ref. 2) and attached as Appendix B. Ground intrusive activities include soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells. Non-intrusive activities include the collection of soil and sediment samples or the collection of groundwater samples from existing wells. Continuous monitoring is required for ground intrusive activities and periodic monitoring is

required for non-intrusive activities. Periodic monitoring consists of taking a reading upon arrival at a sample location, monitoring while opening a well J-plug or overturning soil, monitoring while bailing a well, and taking a reading prior to leaving a sampling location. This may be upgraded to continuous if the sampling location is in close proximity to individuals not involved in the Site activity (i.e., on a curb of a busy street). The action levels below will be used during periodic monitoring.

## 8.2 Monitoring Action Levels

### 8.2.1 On-Site Work Zone Action Levels

A PID, or other appropriate instrument(s), will be used by Benchmark TurnKey personnel to monitor organic vapor concentrations as specified in this HASP. If necessary, combustible gas will be monitored with a combustible gas meter or other appropriate instrument(s). In addition, fugitive dust/particulate concentrations will be monitored during major soil intrusion (viz., well/boring installation) using a real-time particulate monitor as specified in this plan. In the absence of such monitoring, appropriate respiratory protection for particulates shall be donned. Sustained readings obtained in the breathing zone may be interpreted (with regard to other Site conditions) as follows for Benchmark TurnKey personnel:

- Total atmospheric concentrations of unidentified vapors or gases ranging from 0 to 1 ppm above background on the PID) - Continue operations under Level D (see Section 7.2).
- Total atmospheric concentrations of unidentified vapors or gases yielding sustained readings from >1 ppm to 5 ppm above background on the PID (vapors not suspected of containing high levels of chemicals toxic to the skin) - Continue operations under Level C (see Section 7.2).
- Total atmospheric concentrations of unidentified vapors or gases yielding sustained readings of >5 ppm to 50 ppm above background on the PID - Continue operations under Level B (see Section 7.2), re-evaluate and alter (if possible) construction methods to achieve lower vapor concentrations.
- Total atmospheric concentrations of unidentified vapors or gases above 50 ppm on the PID - Discontinue operations and exit the work zone immediately.

If deemed necessary by the SSHO, an explosimeter will be used to monitor levels of both combustible gases and oxygen during RI activities. Action levels based on the instrument readings shall be as follows:

- Lower Explosive Limit (LEL):
  - **Less than 10% LEL** - Continue engineering operations with caution.
  - **10-25% LEL** - Continuous monitoring with extreme caution, determine source/cause of elevated reading.
  - **Greater than 25% LEL** - Explosion hazard, evaluate source and leave the Work Zone.
  
- Percent Oxygen:
  - **19.5% - 21% oxygen** - proceed with extreme caution; attempt to determine potential source of oxygen displacement.
  - **Less than 19.5% oxygen** - leave work zone immediately.
  - **21-25% oxygen** - Continue engineering operations with caution.
  - **Greater than 25% oxygen** - Fire hazard potential, leave Work Zone immediately.

A particulate monitor will be used to monitor respirable dust concentrations during all intrusive activities and during handling of Site soil/fill. Action levels based on the instrument readings shall be as follows:

- **Less than 50 mg/m<sup>3</sup>** – Continue field operations.
- **50-150 mg/m<sup>3</sup>** – Don dust/particulate mask or equivalent
- **Greater than 150 mg/m<sup>3</sup>** – Don dust/particulate mask or equivalent. Initiate engineering controls to reduce respirable dust concentration (viz., wetting of excavated soils or tools at discretion of Site Health and Safety Officer).

Field readings with the PID, combustible gas meter, and particulate monitor will be recorded and documented on the appropriate Project Field Forms or collected using the

logging feature included with each instrument. All instruments will be calibrated before use in accordance with the manufacturers recommendations on a daily basis (at a minimum) and the calibration results will be documented on the appropriate Project Field Forms.

### ***8.2.2 Community Air Monitoring Action Levels***

In addition to the action levels prescribed in Section 8.2.1 for on-site Benchmark TurnKey personnel, the following criteria shall also be adhered to for the protection of downwind receptors consistent with NYSDOH requirements (Appendix B):

- **ORGANIC VAPOR PERIMETER MONITORING:**
  - 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.
  - 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.
  - If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.
  - All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.
- **SPECIAL REQUIREMENTS FOR WORK WITHIN 20 FEET OF POTENTIALLY EXPOSED INDIVIDUALS OR STRUCTURES**
  - When work areas are within 20 feet of potentially exposed populations or occupied structures, the continuous monitoring locations for VOCs and

particulates must reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby structures. The use of engineering controls such as vapor/dust barriers, temporary negative-pressure enclosures, or special ventilation devices should be considered to prevent exposures related to the work activities and to control dust and odors. Consideration should be given to implementing the planned activities when potentially exposed populations are at a minimum, such as during weekends or evening hours in non-residential settings.

- If total VOC concentrations opposite the walls of occupied structures or next to intake vents exceed 1 ppm, monitoring should occur within the occupied structure (s). Background readings in the occupied spaces must be taken prior to commencement of the planned work. Any unusual background readings should be discussed with NYSDOH prior to commencement of the work.
- If total particulate concentrations opposite the walls of occupied structures or next to intake vents exceed 150 mcg/m<sup>3</sup>, work activities should be suspended until controls are implemented and are successful in reducing the total particulate concentration to 150 mcg/m<sup>3</sup> or less at the monitoring point.
- Depending upon the nature of contamination and remedial activities, other parameters (e.g., explosivity, oxygen, hydrogen sulfide, carbon monoxide) may also need to be monitored. Response levels and actions should be pre-determined, as necessary, for each site.

If following the cessation of work and efforts to abate the emission source are unsuccessful, and if sustained organic vapor levels exceed 25 ppm above background within the 20-foot zone for more than 30 minutes, then the **Major Vapor Emission Response Plan** (see Section 8.2.3) will automatically be placed into effect.

▪ **EXPLOSIVE VAPORS:**

- Sustained atmospheric concentrations of greater than 10% LEL in the work area - Initiate combustible gas monitoring at the downwind portion of the Site perimeter.
- Sustained atmospheric concentrations of greater than 10% LEL at the downwind Site perimeter – Halt work and contact local Fire Department.

▪ **AIRBORNE PARTICULATE COMMUNITY AIR MONITORING**

- Respirable (PM-10) particulate monitoring will be performed on a continuous basis at the upwind and downwind perimeter of the exclusion zone. The monitoring will be performed using real-time monitoring equipment capable of measuring PM-10 and integrating over a period of 15-minutes for comparison to the airborne particulate action levels. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities. All readings will be recorded and will be available for NYSDEC and NYSDOH review. Readings will be interpreted as follows:
  - If the downwind PM-10 particulate level is 100 micrograms per cubic meter ( $\text{ug}/\text{m}^3$ ) greater than the background (upwind perimeter) reading for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression provided that the downwind PM-10 particulate levels do not exceed  $150 \text{ ug}/\text{m}^3$  above the upwind level and that visible dust is not migrating from the work area.
  - If, after implementation of dust suppression techniques downwind PM-10 levels are greater than  $150 \text{ ug}/\text{m}^3$  above the upwind level, work activities must be stopped and dust suppression controls re-evaluated. Work can resume provided that supplemental dust suppression measures and/or other controls are successful in reducing the downwind PM-10 particulate concentration to within  $150 \text{ ug}/\text{m}^3$  of the upwind level and in preventing visible dust migration.

Pertinent emergency response information including the telephone number of the Fire Department is included in the Emergency Response Plan (Appendix A).

***8.2.3 Major Vapor Emission Response Plan***

As previously stated, if following the cessation of work and efforts to abate the emission source are unsuccessful, and if sustained organic vapor levels exceed 25 ppm above background within the 20-foot zone for more than 30 minutes, then the **Major Vapor Emission Response (MVER) Plan** will automatically be placed into effect.

Upon activation of the MVER Plan, the following activities will be undertaken:

1. All Emergency Response Contacts as listed in this Health and Safety Plan and the Emergency Response Plan will be advised (see Appendix A).
2. The local police authorities will immediately be contacted by the Site Health and Safety Officer and advised of the situation.
3. The SSHO will determine if site workers can safely undertake source abatement measures. Abatement measures may include covering the source area with clean fill or plastic sheeting, or consolidating contaminated materials to minimize surface area. The SSHO will adjust worker personal protective equipment as necessary to protect workers from over-exposure to organic vapors.

The following personnel are to be notified in the listed sequence in the event that a Major Vapor Emission Plan is activated:

Responsible Person	Contact	Phone Number
SSHO	Police	911
SSHO	NYSDEC Emergency Response Hotline	(800) 457-7362

Additional emergency numbers are listed in the Emergency Response Plan included as Appendix A.

## 9.0 SPILL RELEASE/RESPONSE

This Section of the HASP describes the potential for and procedures related to spills or releases of known or suspected petroleum and/or hazardous substances on the Site. The purpose of this Section is to plan appropriate response, control, counter-measures, and reporting consistent with OSHA requirements in 29 CFR 1910.120(b)(4)(ii)(J) and (j)(1)(viii). The spill containment program addresses the following elements:

- Potential hazardous material spills and available controls.
- Initial notification and evaluation.
- Spill response.
- Post-spill evaluation.

### 9.1 Potential Spills and Available Controls

An evaluation was conducted to determine the potential for hazardous material and oil/petroleum spills at this Site. For the purpose of this evaluation, hazardous materials posing a significant spill potential are considered to be:

- CERCLA Hazardous Substances as identified in 40 CFR Part 302, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).
- Extremely Hazardous Substances as identified in 40 CFR Part 355, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).
- Hazardous Chemicals as defined under Section 311(e) of the Emergency Planning and Community Right-To-Know Act of 1986, where such chemicals are present or will be stored in excess of 10,000 pounds.
- Toxic Chemicals as defined in 40 CFR Part 372, where such chemicals are present or will be stored in excess of 10,000 pounds.
- Chemicals regulated under 6NYCRR Part 597, where such materials pose the potential for release in excess of their corresponding Reportable Quantity (RQ).

Oil/petroleum products are considered to pose a significant spill potential whenever the following situations occur:

- The potential for a “harmful quantity” of oil (including petroleum and non-petroleum-based fuels and lubricants) to reach navigable waters of the U.S. exists (40 CFR Part 112.4). Harmful quantities are considered by USEPA to be volumes that could form a visible sheen on the water or violate applicable water quality standards.
- The potential for any amount of petroleum to reach any waters of NY State, including groundwater, exists. Petroleum, as defined by NY State in 6NYCRR Part 612, is a petroleum-based heat source, energy source, or engine lubricant/maintenance fluid.
- The potential for any release, to soil or water, of petroleum from a bulk storage facility regulated under 6NYCRR Part 612. A regulated petroleum storage facility is defined by NY State as a site having stationary tank(s) and intra-facility piping, fixtures and related equipment with an aggregate storage volume of 1,100 gallons or greater.

The evaluation indicates that, based on Site history and decommissioning records, a hazardous material spill and/or a petroleum product spill is not likely to occur during RI efforts.

## 9.2 Initial Spill Notification and Evaluation

Any worker who discovers a hazardous substance or oil/petroleum spill will immediately notify the Project Manager and SSHO. The worker will, to the best of his/her ability, report the material involved, the location of the spill, the estimated quantity of material spilled, the direction/flow of the spill material, related fire/explosion incidents, if any, and any associated injuries. The Emergency Response Plan presented in Appendix A of this HASP will immediately be implemented if an emergency release has occurred.

Following initial report of a spill, the Project Manager will make an evaluation as to whether the release exceeds RQ levels. **If an RQ level is exceeded, the Project Manager will notify the Site owner and NYSDEC at 1-800-457-7362 within 2 hours of spill discovery.** The Project Manager will also determine what additional agencies (e.g., USEPA)

are to be contacted regarding the release, and will follow-up with written reports as required by the applicable regulations.

### 9.3 Spill Response

For all spill situations, the following general response guidelines will apply:

- Only those personnel involved in overseeing or performing containment operations will be allowed within the spill area. If necessary, the area will be roped, ribboned, or otherwise cordoned off to prevent unauthorized access.
- Appropriate PPE, as specified by the SSHO, will be donned before entering the spill area.
- Ignition points will be extinguished/removed if fire or explosion hazards exist.
- Surrounding reactive materials will be removed.
- Drains or drainage in the spill area will be blocked to prevent inflow of spilled materials or applied materials.

For minor spills, the Contractor will maintain a Spill Control and Containment Kit in the Field Office or other readily accessible storage location. The kit will consist of, at a minimum, a 50 lb. bag of “speedy dry” granular absorbent material, absorbent pads, shovels, empty 5-gallon pails and an empty open-top 55-gallon drum. Spilled materials will be absorbed, and shoveled into a 55-gallon drum for proper disposal (NYSDEC approval will be secured for on-site treatment of the impacted soils/absorbent materials, if applicable). Impacted soils will be hand-excavated to the point that no visible signs of contamination remains, and will be drummed with the absorbent.

In the event of a major release or a release that threatens surface water, a spill response contractor will be called to the Site. The response contractor may use heavy equipment (e.g., excavator, backhoe, etc.) to berm the soils surrounding the spill Site or create diversion trenching to mitigate overland migration or release to navigable waters. Where feasible, pumps will be used to transfer free liquid to storage containers. Spill control/cleanup contractors in the Western New York area that may be contacted for assistance include:

- **The Environmental Service Group of NY, Inc.**  
Nick Halliday  
177 Wales Avenue, Tonawanda, NY 14150  
(716) 695-6720
  
- **Environmental Products and Services of Vermont, Inc.**  
Brian Ripley  
4429 Walden Avenue, Lancaster, NY 14086  
(716) 597-0001
  
- **Op-Tech Environmental Services, Inc.**  
401 Creekside Drive, Suite 3, Amherst, NY 14228  
(716) 525-1962  
24-Hour Emergency (800) 899-4672

#### 9.4 Post-Spill Evaluation

If a reportable quantity of hazardous material or oil/petroleum is spilled as determined by the Project Manager, a written report will be prepared as indicated in Section 9.2. The report will identify the root cause of the spill, type and amount of material released, date/time of release, response actions, agencies notified and/or involved in cleanup, and procedures to be implemented to avoid repeat incidents. In addition, all re-useable spill cleanup and containment materials will be decontaminated, and spill kit supplies/disposable items will be replenished.

## 10.0 HEAT/COLD STRESS MONITORING

Since some of the work activities at the Site may be scheduled for both the summer and winter months, measures will be taken to minimize heat/cold stress to Benchmark TurnKey employees. The SSHO and/or his or her designee will be responsible for monitoring Benchmark TurnKey field personnel for symptoms of heat/cold stress.

### 10.1 Heat Stress Monitoring

PPE may place an employee at risk of developing heat stress, a common and potentially serious illnesses often encountered at construction, landfill, waste disposal, industrial or other unsheltered sites. The potential for heat stress is dependent on a number of factors, including environmental conditions, clothing, workload, physical conditioning, and age. PPE may severely reduce the body's normal ability to maintain temperature equilibrium (via evaporation and convection), and require increased energy expenditure due to its bulk and weight.

Proper training and preventive measures will mitigate the potential for serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat related illness. To avoid heat stress, the following steps should be taken:

- Adjust work schedules.
- Modify work/rest schedules according to monitoring requirements.
- Mandate work slowdowns as needed.
- Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided.
- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.
- Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat (i.e., eight fluid ounces must be ingested for approximately every 1 lb of weight lost). The normal thirst mechanism is not sensitive enough to ensure that enough water will be consumed to replace lost perspiration. When heavy sweating occurs, workers should be encouraged to drink more.

- Train workers to recognize the symptoms of heat related illness.

Heat-related illness will typically produce the following symptoms:

- **Heat rash** may result from continuous exposure to heat or humid air.
- **Heat cramps** are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include: muscle spasms; pain in the hands, feet, and abdomen.
- **Heat exhaustion** occurs from increased stress on various body organs including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Signs and symptoms include: pale, cool, moist skin; heavy sweating; dizziness; nausea; fainting.
- **Heat stroke** is the most serious form of heat stress. Temperature regulation fails and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury and death occur. Competent medical help must be obtained. Signs and symptoms are: red, hot, usually dry skin; lack of or reduced perspiration; nausea; dizziness and confusion; strong, rapid pulse; coma.

The monitoring of personnel wearing protective clothing should commence when the ambient temperature is 70 degrees Fahrenheit or above. For monitoring the body's recuperative ability to excess heat, one or more of the following techniques should be used as a screening mechanism.

- Heart rate may be measured by the radial pulse for 30 seconds as early as possible in the resting period. The rate at the beginning of the rest period should not exceed 100 beats per minute. If the rate is higher, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest periods stay the same. If the pulse rate is 100 beats per minute at the beginning of the next rest period, the following work cycle should be further shortened by 33%.
- Body temperature may be measured orally with a clinical thermometer as early as possible in the resting period. Oral temperature at the beginning of the rest period should not exceed 99.6 degrees Fahrenheit. If it does, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest period remains the same. However, if the oral temperature exceeds 99.6 degrees Fahrenheit at the beginning of the next period, the work cycle may be further shortened by 33%.

Oral temperature should be measured at the end of the rest period to make sure that it has dropped below 99.6 degrees Fahrenheit. No Benchmark TurnKey employee will be permitted to continue wearing semi-permeable or impermeable garments when his/her oral temperature exceeds 100.6 degrees Fahrenheit.

## 10.2 Cold Stress Monitoring

Exposure to cold conditions may result in frostbite or hypothermia, each of which progresses in stages as shown below.

- **Frostbite** occurs when body tissue (usually on the extremities) begins to freeze. The three states of frostbite are:
  - 1) **Frost nip** - This is the first stage of the freezing process. It is characterized by a whitened area of skin, along with a slight burning or painful sensation. Treatment consists of removing the victim from the cold conditions, removal of boots and gloves, soaking the injured part in warm water (102 to 108 degrees Fahrenheit), and drinking a warm beverage. Do not rub skin to generate friction/ heat.
  - 2) **Superficial Frostbite** - This is the second stage of the freezing process. It is characterized by a whitish gray area of tissue, which will be firm to the touch but will yield little pain. The treatment is identical for Frost nip.
  - 3) **Deep Frostbite** - In this final stage of the freezing process the affected tissue will be cold, numb and hard and will yield little to no pain. Treatment is identical to that for Frost nip.
- **Hypothermia** is a serious cold stress condition occurring when the body loses heat at a rate faster than it is produced. If untreated, hypothermia may be fatal. The stages of hypothermia may not be clearly defined or visible at first, but generally include:
  - 1) Shivering
  - 2) Apathy (i.e., a change to an indifferent or uncaring mood)
  - 3) Unconsciousness
  - 4) Bodily freezing

Employees exhibiting signs of hypothermia should be treated by medical professionals. Steps that can be taken while awaiting help include:

- 1) Remove the victim from the cold environment and remove wet or frozen clothing. (Do this carefully as frostbite may have started.)
- 2) Perform active re-warming with hot liquids for drinking (Note: do not give the victim any liquid containing alcohol or caffeine) and a warm water bath (102 to 108 degrees Fahrenheit).
- 3) Perform passive re-warming with a blanket or jacket wrapped around the victim.

In any potential cold stress situation, it is the responsibility of the SSHO to encourage the following:

- Education of workers to recognize the symptoms of frostbite and hypothermia.
- Workers should dress warmly, with more layers of thin clothing as opposed to one thick layer.
- Personnel should remain active and keep moving.
- Personnel should be allowed to take shelter in heated areas, as necessary.
- Personnel should drink warm liquids (no caffeine or alcohol if hypothermia has set in).
- For monitoring the body's recuperation from excess cold, oral temperature recordings should occur:
  - At the Site Safety Technicians discretion when suspicion is based on changes in a worker's performance or mental status.
  - At a workers request.
  - As a screening measure, two times per shift, under unusually hazardous conditions (e.g., wind chill less than 20 degrees Fahrenheit or wind chill less than 30 degrees Fahrenheit with precipitation).

- As a screening measure, whenever anyone worker on-site develops hypothermia.

Any person developing moderate hypothermia (a core body temperature of 92 degrees Fahrenheit) will not be allowed to return to work for 48 hours without the recommendation of a qualified medical doctor.

## 11.0 WORK ZONES & SITE CONTROL

Work zones around the areas designated for construction activities will be established on a daily basis and communicated to all employees and other Site users by the SSHO. It shall be each Contractor's SSHO's responsibility to ensure that all Site workers are aware of the work zone boundaries and to enforce proper procedures in each area. The zones will include:

- **Exclusion Zone (“Hot Zone”)** – The area where contaminated materials may be exposed, excavated, or handled and all areas where contaminated equipment or personnel may travel. The zone will be delineated by flagging tape. All personnel entering the Exclusion Zone must wear the prescribed level of personal protective equipment identified in Section 7.
- **Contamination Reduction Zone** – The zone where decontamination of personnel and equipment takes place. Any potentially contaminated clothing, equipment, and samples must remain in the Contamination Reduction Zone until decontaminated.
- **Support Zone** – The part of the site that is considered non-contaminated or “clean.” Support equipment will be located in this zone, and personnel may wear normal work clothes within this zone.

In the absence of other task-specific work zone boundaries established by the SSHO, the following boundaries will apply to all investigation and construction activities involving disruption or handling of Site soils or groundwater:

- Exclusion Zone: 50 foot radius from the outer limit of the sampling/construction activity.
- Contaminant Reduction Zone: 100 foot radius from the outer limit of the sampling/construction activity.
- Support Zone: Areas outside the Contaminant Reduction Zone.

Access of non-essential personnel to the Exclusion and Contamination Reduction Zones will be strictly controlled by the SSHO. Only personnel who are essential to the completion of the task will be allowed access to these areas and only if they are wearing the prescribed level of protection. Entrance of all personnel must be approved by the SSHO.

The SSHO will maintain a Health and Safety Logbook containing the names of Benchmark TurnKey workers and their level of protection. The zone boundaries may be changed by the SSHO as environmental conditions warrant, and to respond to the necessary changes in work locations on-site.

## 12.0 DECONTAMINATION

### 12.1 Decontamination for Benchmark TurnKey Employees

The degree of decontamination required is a function of a particular task and the environment within which it occurs. The following decontamination procedure will remain flexible, thereby allowing the decontamination crew to respond appropriately to the changing environmental conditions that may arise at the Site. All Benchmark TurnKey personnel on-site shall follow the procedure below, or the Contractor's procedure (if applicable), whichever is more stringent.

**Station 1 – Equipment Drop:** Deposit visibly contaminated (if any) re-useable equipment used in the contamination reduction and exclusion zones (tools, containers, monitoring instruments, radios, clipboards, etc.) on plastic sheeting.

**Station 2 – Boots and Gloves Wash and Rinse:** Scrub outer boots and outer gloves. Deposit tape and gloves in waste disposal container.

**Station 3 – Tape, Outer Boot, and Glove Removal:** Remove tape, outer boots, and gloves. Deposit tape and gloves in waste disposal container.

**Station 4 – Canister or Mask Change:** If worker leaves exclusive zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot cover donned, and worker returns to duty.

**Station 5 – Outer Garment/Face Piece Removal:** Protective suit removed and deposited in separate container provided by Contractor. Face piece or goggles are removed if used. Avoid touching face with fingers. Face piece and/or goggles deposited on plastic sheet. Hard hat removed and placed on plastic sheet.

**Station 6 – Inner Glove Removal:** Inner gloves are the last personal protective equipment to be removed. Avoid touching the outside of the gloves with bare fingers. Dispose of these gloves in waste disposal container.

Following PPE removal, personnel shall wash hands, face, and forearms with absorbent wipes. If field activities proceed for a duration of 6 consecutive months or longer,

shower facilities will be provided for worker use in accordance with OSHA 29 CFR 1910.120(n).

## 12.2 Decontamination for Medical Emergencies

In the event of a minor, non-life threatening injury, personnel should follow the decontamination procedures as defined, and then administer first-aid.

In the event of a major injury or other serious medical concern (e.g., heat stroke), immediate first-aid is to be administered and the victim transported to the hospital in lieu of further decontamination efforts unless exposure to a Site contaminant would be considered “Immediately Dangerous to Life or Health.”

## 12.3 Decontamination of Field Equipment

Decontamination of heavy equipment will be conducted by the Contractor in accordance with their approved HASP in the Contamination Reduction Zone. As a minimum, this will include manually removing heavy soil contamination, followed by high-pressure steam cleaning on an impermeable pad.

Decontamination of all non-dedicated tools used for sample collection purposes will be conducted by Benchmark TurnKey personnel. It is expected that all non-dedicated tools will be constructed of nonporous, nonabsorbent materials (i.e., metal), which will aid in the decontamination effort. Any tool or part of a tool made of porous, absorbent material (i.e., wood) will be placed into suitable containers and prepared for disposal.

Decontamination of non-disposable PVC bailers, split-spoons, spatula knives, and other tools used for environmental sampling and examination shall be as follows:

- Disassemble the equipment
- Water wash to remove all visible foreign matter.
- Wash with a non-phosphate detergent (i.e., Alconox®).
- Rinse all parts with distilled-deionized water.
- Allow to air dry.
- Wrap all parts in aluminum foil or polyethylene.

### 13.0 CONFINED SPACE ENTRY

OSHA 29 CFR 1910.146 identifies a confined space as a space that is large enough and so configured that an employee can physically enter and do assigned work, has limited or restricted means for entry and exit, and is not intended for continuous employee occupancy. Confined spaces include, but are not limited to, trenches, test pits, storage tanks, process vessels, pits, sewers, tunnels, underground utility vaults, pipelines, sumps, wells, and excavations.

Confined space entry by Benchmark TurnKey employees is not anticipated to be necessary to complete the RI activities identified in the RI Work Plan. In the event that the scope of work changes or confined space entry appears necessary, the Project Manager will be consulted to determine if feasible engineering alternatives to confined space entry can be implemented. If confined space entry by Benchmark TurnKey employees cannot be avoided through reasonable engineering measures, task-specific confined space entry procedures will be developed and a confined-space entry permit will be issued through Benchmark TurnKey's corporate Health and Safety Director. **Benchmark TurnKey employees shall never enter a confined space without these procedures and permits in place.**

## 14.0 FIRE PREVENTION & PROTECTION

### 14.1 General Approach

Recommended practices and standards of the National Fire Protection Association (NFPA) and other applicable regulations will be followed in the development and application of Project Fire Protection Programs. When required by regulatory authorities, the project management will prepare and submit a Fire Protection Plan for the approval of the contracting officers, authorized representative or other designated official. Essential considerations for the Fire Protection Plan will include:

- Proper Site preparation and safe storage of combustible and flammable materials.
- Availability of coordination with private and public fire authorities.
- Adequate job-site fire protection and inspections for fire prevention.
- Adequate indoctrination and training of employees.

### 14.2 Equipment and Requirements

Fire extinguishers will be provided by each Contractor and are required on all heavy equipment and in each field trailer. Fire extinguishers will be inspected, serviced, and maintained in accordance with the manufacturer's instructions. At a minimum, all fire extinguishers shall be checked monthly and weighed semi-annually, and recharged if necessary. Recharge or replacement shall be mandatory immediately after each use.

### 14.3 Flammable and Combustible Substances

All storage, handling, or use of flammable and combustible substances will be under the supervision of qualified persons. All tanks, containers and pumping equipment, whether portable or stationary, used for the storage and handling of flammable and combustible liquids, will meet the recommendations of the NFPA.

### 14.4 Hot Work

If the scope of work necessitates welding or blowtorch operation, the hot work permit presented in Appendix C will be completed by the SSHO and reviewed/issued by the Project Manager.

## 15.0 EMERGENCY INFORMATION

In accordance with OSHA 29 CFR Part 1910, an Emergency Response Plan (ERP) is attached to this HASP as Appendix A. The ERP describes potential emergencies that may occur at the Site; procedures for responding to those emergencies; roles and responsibilities during emergency response; and training all workers must receive in order to follow emergency procedures. The ERP also describes the provisions the Site has made to coordinate its emergency response planning with other contractors on-site and with off-site emergency response organizations.

The hospital route map is presented within Appendix A as Figure 1.

## 16.0 REFERENCES

1. Benchmark Environmental Engineering and Science, PLLC. *Phase I Environmental Site Assessment ASTM E1527-13 for 50 Elk Street, Buffalo, New York*. August 2016.
2. New York State Department of Health. *Generic Community Air Monitoring Plan, Appendix 1A, NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation*. May 2010.

# TABLES



TABLE 1

TOXICITY DATA FOR COPCs

Remedial Investigation Work Plan - HASP  
Silos at Elk Street Site  
Buffalo, New York

Parameter	Synonyms	CAS No.	Code	Concentration Limits <sup>1</sup>		
				PEL	TLV	IDLH
<b>Semi-volatile Organic Compounds (SVOCs) : ppm</b>						
Acenaphthene	none	83-32-9	none	--	--	--
Anthracene	none	120-12-7	none	--	--	--
Benzo(a)anthracene	none	56-55-3	none	--	--	--
Benzo(a)pyrene	none	50-32-8	none	--	--	--
Benzo(b)fluoranthene	none	205-99-2	none	--	--	--
Benzo(ghi)perylene						
Benzo(k)fluoranthene	none	207-08-9	none	--	--	--
Chrysene	none	218-01-9	none	--	--	--
Fluoranthene	none	206-44-0	none	--	--	--
Fluorene	none	86-73-7	none	--	--	--
Indeno(1,2,3-cd)pyrene	none	193-39-5	none	--	--	--
Naphthalene	Naphthalin, Tar camphor, White tar	91-20-3	C	10	10	250
Phenanthrene	none	85-01-8	none	--	--	--
Pyrene	none	129-00-0	none	--	--	--
<b>Inorganic Compounds: mg/m<sup>3</sup></b>						
Arsenic	none	7440-38-2	Ca	0.01	0.01	5
Barium	none	7440-39-3	none	--	0.5	--
Cadmium	none	7440-43-9	none	0.005	0.01	9
Chromium	none	7440-47-3	none	1	0.5	250
Lead	none	7439-92-1	none	0.05	0.15	100
Mercury	none	7439-97-6	C-0.1	0.1	0.05	10

Notes:

1. Concentration limits as reported by NIOSH Pocket Guide to Chemical Hazards, February 2004 (NIOSH Publication No. 97-140, fourth printing with changes and updates).
2. "--" = concentration limit not available; exposure should be minimized to the extent feasible through appropriate engineering controls & PPE.

Explanation:

Ca = NIOSH considers constituent to be a potential occupational carcinogen.

C-## = Ceiling Level equals the maximum exposure concentration allowable during the work day.

IDLH = Immediately Dangerous to Life or Health.

ND indicates that an IDLH has not as yet been determined.

TLV = Threshold Limit Value, established by American Conference of Industrial Hygienists (ACGIH), equals the maximum exposure concentration allowable for 8 hours/day @ 40 hours/week.

- TLVs are the amounts of chemicals in the air that almost all healthy adult workers are predicted to be able to tolerate without adverse effects. There are three types.
- TLV-TWA (TLV-Time-Weighted Average) which is averaged over the normal eight-hour day/forty-hour work week. (Most TLVs.)
- TLV-STEL or Short Term Exposure Limits are 15 minute exposures that should not be exceeded for even an instant. It is not a stand alone value but is accompanied by the TLV-TWA. It indicates a higher exposure that can be tolerated for a short time without adverse effect as long as the total time weighted average is not exceeded.
- TLV-C or Ceiling limits are the concentration that should not be exceeded during any part of the working exposure.
- Unless the initials "STEL" or "C" appear in the Code column, the TLV value should be considered to be the eight-hour TLV-TWA.

PEL = Permissible Exposure Limit, established by OSHA, equals the maximum exposure concentration allowable for 8 hours per day @ 40 hours per week



**TABLE 2**

**POTENTIAL ROUTES OF EXPOSURE FOR THE COPCs**

**Remedial Investigation Work Plan - HASP  
Silos at Elk Street Site  
Buffalo, New York**

Activity <sup>1</sup>	Direct Contact with Soil/Fill	Inhalation of Vapors or Dust	Direct Contact with Groundwater
<b>Remedial Investigation Tasks</b>			
Surface Soil Sampling	x	x	
Subsurface Soil Sampling	x	x	
Monitoring Well Installation/Development and Sampling	x	x	x

Notes:

1. Activity as described in Section 1.5 of the Health and Safety Plan.



**TABLE 3**

**REQUIRED LEVELS OF PROTECTION FOR RI ACTIVITIES**

**Remedial Investigation Work Plan - HASP  
Silos at Elk Street Site  
Buffalo, New York**

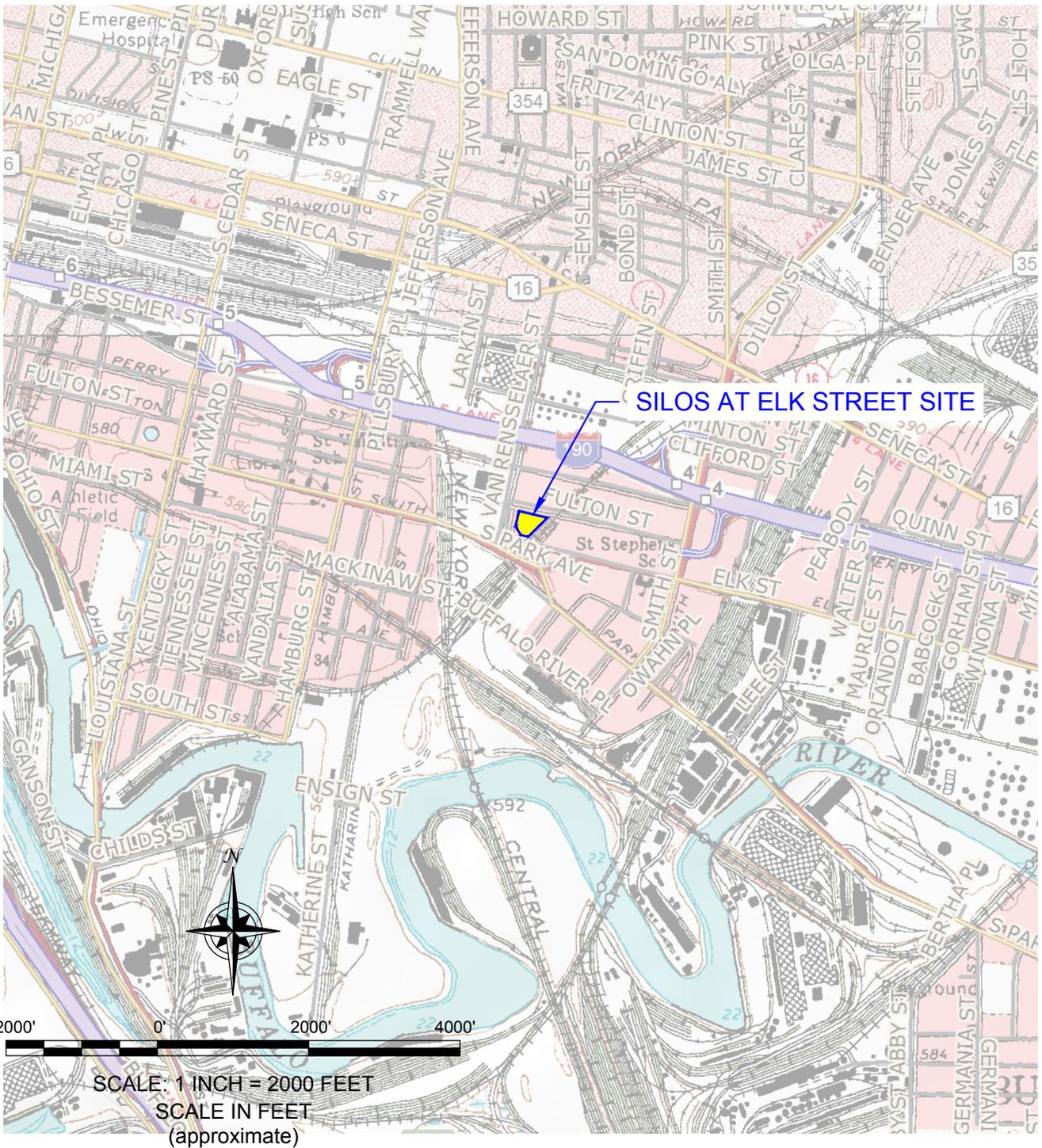
Activity	Respiratory Protection <sup>1</sup>	Clothing	Gloves <sup>2</sup>	Boots <sup>2, 3</sup>	Other Required PPE/Modifications <sup>2, 4</sup>
<b>Remedial Investigation Tasks</b>					
Surface Soil Sampling	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	N	outer: none inner: STSS	HH SGSS
Subsurface Soil Sampling	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	N	outer: none inner: STSS	HH SGSS
Monitoring Well Installation/Development and Sampling	Level D (upgrade to Level C if necessary)	Work Uniform or Tyvek	N	outer: none inner: STSS	SGSS

Notes:

1. Respiratory equipment shall conform to guidelines presented in Section 7.0 of this HASP. The Level C requirement is an air-purifying respirator equipped with organic compound/acid gas/dust cartridge.
2. HH = hardhat; N/N = nitrile inner glove, nitrile outer glove; N = Nitrile glove only; SGSS = safety glasses with sideshields; STSS = steel toe safety shoes.
3. Latex outer boot (or approved overboot) required whenever contact with contaminated materials may occur. SSHO may downgrade to STSS (steel-toed safety shoes) if contact will be limited to cover/replacement soils.
4. Dust masks shall be donned as directed by the SSHO (site safety and health officer) or site safety technician whenever potentially contaminated airborne particulates (i.e., dust) are present in significant amounts in the breathing zone. Goggles may be substituted with safety glasses w/side-shields whenever contact with contaminated liquids is not anticipated.

# FIGURES

FIGURE 1



F:\CAD\Benchmark\Young and Wright\Architectural\50 Elk Street\03 - RI Work Plan\Appendix F - HASP\Figure 1, Site Location & Vicinity Map.dwg



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

PROJECT NO.: 0381-016-002

DATE: AUGUST 2016

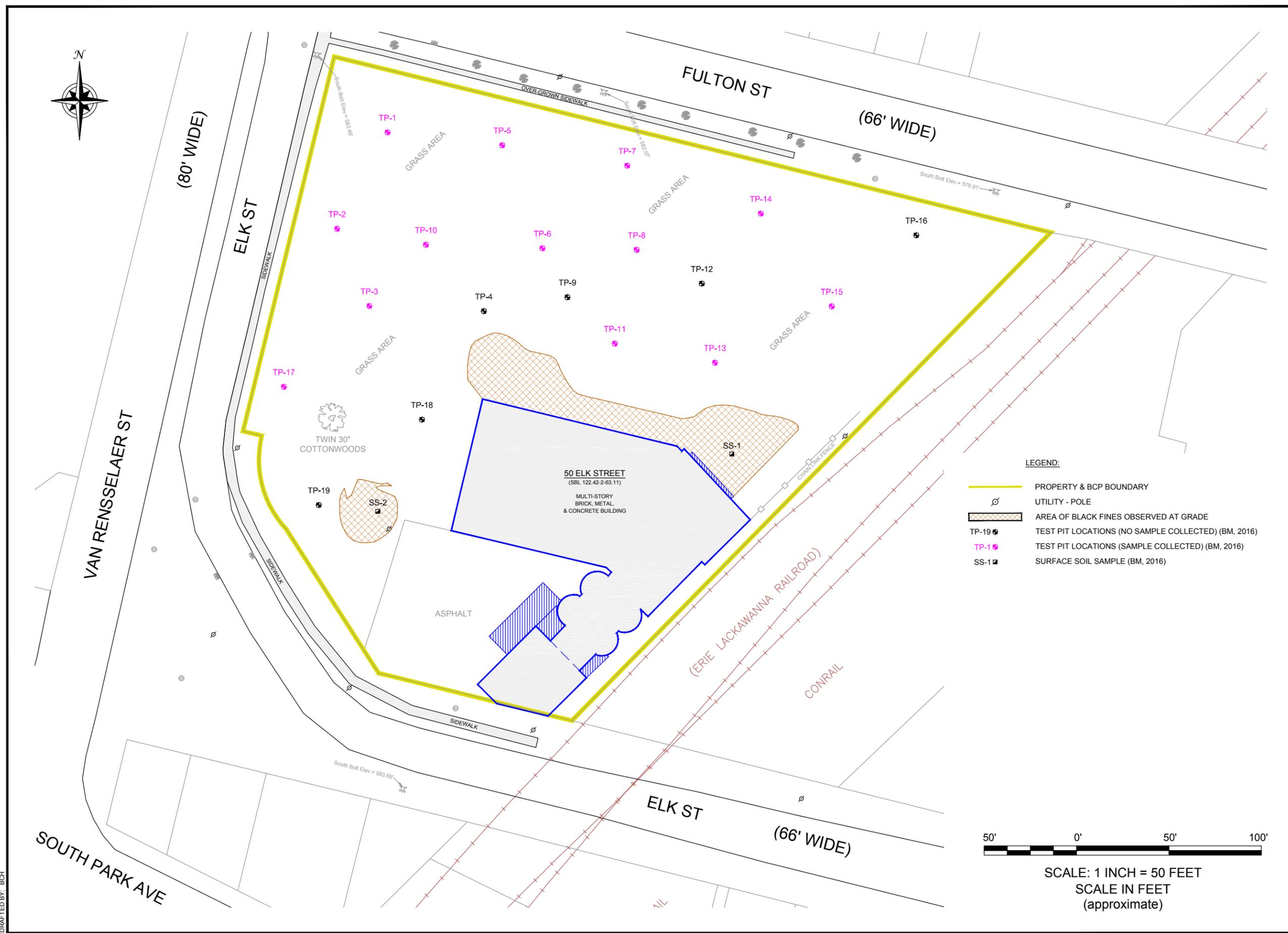
DRAFTED BY: BCH

## SITE LOCATION & VICINITY MAP

HEALTH AND SAFETY PLAN

SILOS AT ELK STREET  
 BUFFALO, NEW YORK  
 PREPARED FOR  
 SILOS AT ELK STREET, LLC

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- LEGEND:**
- PROPERTY & BCP BOUNDARY
  - + UTILITY - POLE
  - AREA OF BLACK FINES OBSERVED AT GRADE
  - + TP-19 TEST PIT LOCATIONS (NO SAMPLE COLLECTED) (BM, 2016)
  - \* TP-1 TEST PIT LOCATIONS (SAMPLE COLLECTED) (BM, 2016)
  - SS-1 SURFACE SOIL SAMPLE (BM, 2016)

50' 0' 50' 100'

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

**TURNKEY**  
ENVIRONMENTAL  
RESTORATION, LLC

**BENCHMARK**  
ENVIRONMENTAL  
ENGINEERING &  
SCIENCE, PLLC

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

**SITE PLAN**  
HEALTH AND SAFETY PLAN

SILOS AT ELK STREET SITE  
BUFFALO, NEW YORK  
PREPARED FOR  
SILOS AT ELK STREET, LLC

**FIGURE 2**

JOB NO.: 0381-016-002

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# APPENDIX A

## EMERGENCY RESPONSE PLAN

# Emergency Response Plan for Remedial Investigation Activities

Silos at Elk Street Site  
Buffalo, New York

August 2016

0381-016-002

Prepared for:

Silos at Elk Street, LLC



Prepared By:



**EMERGENCY RESPONSE PLAN**  
**for**  
**BROWNFIELD CLEANUP PROGRAM**  
**RI ACTIVITIES**

**SILOS AT ELK STREET SITE**  
**BCP SITE NO. (TBD)**  
**BUFFALO, NEW YORK**

---

August 2016

0381-016-002

Prepared for:

**SILOS AT ELK STREET, LLC**

Prepared By:



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

In Association With:



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

## APPENDIX A: EMERGENCY RESPONSE PLAN

Silos at Elk Street Site

BCP Site No. C915268

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Figure 1      Hospital Route Map

## 1.0 GENERAL

This report presents the site-specific Emergency Response Plan (ERP) referenced in the Site Health and Safety Plan (HASP) prepared for Remedial Investigation (RI) activities at the Silos at Elk Street Site in Buffalo, New York. This appendix of the HASP describes potential emergencies that may occur at the Site; procedures for responding to those emergencies; roles and responsibilities during emergency response; and training all workers must receive in order to follow emergency procedures. This ERP also describes the provisions this Site has made to coordinate its emergency response planning with other contractors on-site and with off-site emergency response organizations.

This ERP is consistent with the requirements of 29 CFR 1910.120(l) and provides the following site-specific information:

- Pre-emergency planning.
- Personnel roles, lines of authority, and communication.
- Emergency recognition and prevention.
- Safe distances and places of refuge.
- Evacuation routes and procedures.
- Decontamination procedures.
- Emergency medical treatment and first aid.
- Emergency alerting and response procedures.
- Critique of response and follow-up.
- Emergency personal protective equipment (PPE) and equipment.

## 2.0 PRE-EMERGENCY PLANNING

This Site has been evaluated for potential emergency occurrences, based on site hazards, the required work tasks, the site topography, and prevailing weather conditions. The results of that evaluation indicate the potential for the following site emergencies to occur at the locations indicated.

### Type of Emergency:

1. Medical, due to physical injury
2. Fire

### Source of Emergency:

1. Slip/trip/fall
2. Fire

### Location of Source:

1. Non-specific

### 3.0 ON-SITE EMERGENCY RESPONSE EQUIPMENT

Emergency procedures may require specialized equipment to facilitate worker rescue, contamination control and reduction, or post-emergency clean up. Emergency response equipment available on the Site is listed below. The equipment inventory and storage locations are based on the potential emergencies described above. This equipment inventory is designed to meet on-site emergency response needs and any specialized equipment needs that off-site responders might require because of the hazards at this Site but not ordinarily stocked.

Any additional personal protective equipment (PPE) required and stocked for emergency response is also listed below. During an emergency, the Emergency Response Coordinator (ERC) is responsible for specifying the level of PPE required for emergency response. At a minimum, PPE used by emergency responders will comply with Section 7.0: *Personal Protective Equipment* of this HASP. Emergency response equipment is inspected at regular intervals and maintained in good working order. The equipment inventory is replenished as necessary to maintain response capabilities.

Emergency Equipment	Quantity	Location
First Aid Kit	1	Site Vehicle
Chemical Fire Extinguisher	2 (minimum)	All heavy equipment and Site Vehicle

Emergency PPE	Quantity	Location
Full-face respirator	1 for each worker	Site Vehicle
Chemical-resistant suits	4 (minimum)	Site Vehicle

#### 4.0 EMERGENCY PLANNING MAPS

An area-specific map of the Site will be developed on a daily basis during performance of field activities. The map will be marked to identify critical on-site emergency planning information, including: emergency evacuation routes, a place of refuge, an assembly point, and the locations of key site emergency equipment. Site zone boundaries will be shown to alert responders to known areas of contamination. There are no major topographical features, however the direction of prevailing winds/weather conditions that could affect emergency response planning are also marked on the map. The map will be posted at site-designated place of refuge and/or inside the Benchmark TurnKey personnel field vehicle.

## 5.0 EMERGENCY CONTACTS

The following identifies the emergency contacts for this ERP.

### Emergency Telephone Numbers:

**Project Manager: *Bryan C. Hann***

Work: (716) 856-0599

Mobile: (716) 870-1165

**Corporate Health and Safety Director: *Thomas H. Forbes***

Work: (716) 856-0599

Mobile: (716) 864-1730

**Site Safety and Health Officer (SSHO): *Bryan C. Hann***

Work: (716) 856-0599

Mobile: (716) 870-1165

**Alternate SSHO: *Thomas A. Behrendt***

Work: (716) 856-0635

Mobile: (716) 818-8358

<b>MERCY HOSPITAL of BUFFALO (ER):</b>	(716) 826-7000
<b>FIRE:</b>	911
<b>AMBULANCE:</b>	911
<b>BUFFALO POLICE:</b>	911
<b>STATE EMERGENCY RESPONSE HOTLINE:</b>	(800) 457-7362
<b>NATIONAL RESPONSE HOTLINE:</b>	(800) 424-8802
<b>NYSDOH:</b>	(518) 402-7860
<b>NYSDEC:</b>	(716) 851-7220
<b>NYSDEC 24-HOUR SPILL HOTLINE:</b>	(800) 457-7252

### The Site location is:

Silos at Elk Street Site

50 Elk Street

Buffalo, New York 14210

Site Phone Number: (Insert Cell or Field Trailer Phone): \_\_\_\_\_

## 6.0 EMERGENCY ALERTING & EVACUATION

Internal emergency communication systems are used to alert workers to danger, convey safety information, and maintain site control. Any effective system can be employed. Two-way radio headsets or field telephones are often used when work teams are far from the command post. Hand signals and air-horn blasts are also commonly used. Every system must have a backup. It shall be the responsibility of each contractor's SSHO to ensure an adequate method of internal communication is understood by all personnel entering the site. Unless all personnel are otherwise informed, the following signals shall be used.

- 1) Emergency signals by portable air horn, siren, or whistle: two short blasts, personal injury; continuous blast, emergency requiring site excavation.
- 2) Visual signals: hand gripping throat, out of air/cannot breathe; hands on top of head, need assistance; thumbs up, affirmative/ everything is OK; thumbs down, no/negative; grip partner's wrist or waist, leave area immediately.

If evacuation notice is given, site workers leave the worksite with their respective buddies, if possible, by way of the nearest exit. Emergency decontamination procedures detailed in Section 12.0 of the HASP are followed to the extent practical without compromising the safety and health of site personnel. The evacuation routes and assembly area will be determined by conditions at the time of the evacuation based on wind direction, the location of the hazard source, and other factors as determined by rehearsals and inputs from emergency response organizations. Wind direction indicators are located so that workers can determine a safe up wind or cross wind evacuation route and assembly area if not informed by the emergency response coordinator at the time the evacuation alarm sounds. Since work conditions and work zones within the site may be changing on daily basis, it shall be the responsibility of the construction SSHO to review evacuation routes and procedures as necessary and to inform all Benchmark TurnKey workers of any changes.

Personnel exiting the site will gather at a designated assembly point. To determine that everyone has successfully exited the site, personnel will be accounted for at the assembly site. If any worker cannot be accounted for, notification is given to the SSHO (*Bryan Hann* or *Thomas Behrendt*) so that appropriate action can be initiated. Contractors and

subcontractors on this site have coordinated their emergency response plans to ensure that these plans are compatible and that source(s) of potential emergencies are recognized, alarm systems are clearly understood, and evacuation routes are accessible to all personnel relying upon them.

## 7.0 EXTREME WEATHER CONDITIONS

In the event of adverse weather conditions, the SSHO in conjunction with the Contractor's SSHO will determine if engineering operations can continue without sacrificing the health and safety of site personnel. Items to be considered prior to determining if work should continue include but are not limited to:

- Potential for heat/cold stress.
- Weather-related construction hazards (e.g., flooding or wet conditions producing undermining of structures or sheeting, high wind threats, etc.).
- Limited visibility.
- Potential for electrical storms.
- Limited site access/egress (e.g., due to heavy snow)

## 8.0 EMERGENCY MEDICAL TREATMENT & FIRST AID

### Personnel Exposure:

The following general guidelines will be employed in instances where health impacts threaten to occur or acute exposure is realized:

- Skin Contact: Use copious amounts of soap and water. Wash/rinse affected area for at least 15 minutes. Decontaminate and provide medical attention. Eyewash stations will be provided on site. If necessary, transport to Mercy Hospital.
- Inhalation: Move to fresh air and, if necessary, transport to Mercy Hospital.
- Ingestion: Decontaminate and transport to Mercy Hospital.

### Personal Injury:

Minor first-aid will be applied on-site as deemed necessary. In the event of a life threatening injury, the individual should be transported to Mercy Hospital via ambulance. The Site Health and Safety Officer will supply available chemical specific information to appropriate medical personnel as requested.

First aid kits will conform to Red Cross and other applicable good health standards, and shall consist of a weatherproof container with individually sealed packages for each type of item. First aid kits will be fully equipped before being sent out on each job and will be checked weekly by the SSHO to ensure that the expended items are replaced.

### Directions to Mercy Hospital (see Figure 1):

The following directions describe the best route from the Site to Mercy Hospital (approximately 2.8 miles or 9 minutes):

- Travel north along Elk Street,
- Turn left onto Van Rensselaer Street
- Turn left onto South Park Avenue
- Follow South Park to Abbott Road
- **Mercy Hospital ER** is at corner of Lorraine Avenue, Abbott Road, and Cazenovia Street – 565 Abbott Road

## 9.0 EMERGENCY RESPONSE CRITIQUE & RECORD KEEPING

Following an emergency, the SSHO and Project Manager shall review the effectiveness of this Emergency Response Plan (ERP) in addressing notification, control, and evacuation requirements. Updates and modifications to this ERP shall be made accordingly. It shall be the responsibility of each contractor to establish and assure adequate records of the following:

- Occupational injuries and illnesses.
- Accident investigations.
- Reports to insurance carrier or State compensation agencies.
- Reports required by the client.
- Records and reports required by local, state, federal, and/or international agencies.
- Property or equipment damage.
- Third party injury or damage claims.
- Environmental testing logs.
- Explosive and hazardous substances inventories and records.
- Records of inspections and citations.
- Safety training.

## 10.0 EMERGENCY RESPONSE TRAINING

All persons who enter the worksite, including visitors, shall receive a site-specific briefing about anticipated emergency situations and the emergency procedures by the SSHO. Where this site relies on off-site organizations for emergency response, the training of personnel in those off-site organizations has been evaluated and is deemed adequate for response to this site.

# FIGURES

F:\CAD\Benchmark\Young and Wright Architectural\50 Elk Street\03 - RI Work Plan\Appendix F, HASP\Figure 1, Hospital Route Map.dwg

### 50 Elk Street

Buffalo, NY 14210

- > Take Van Rensselaer St to South Park Ave  
40 s (0.1 mi)
- > Follow South Park Ave and Abbott Rd to Lorraine Ave  
8 min (2.6 mi)
- > Continue on Lorraine Ave. Drive to Mercy St  
1 min (0.2 mi)

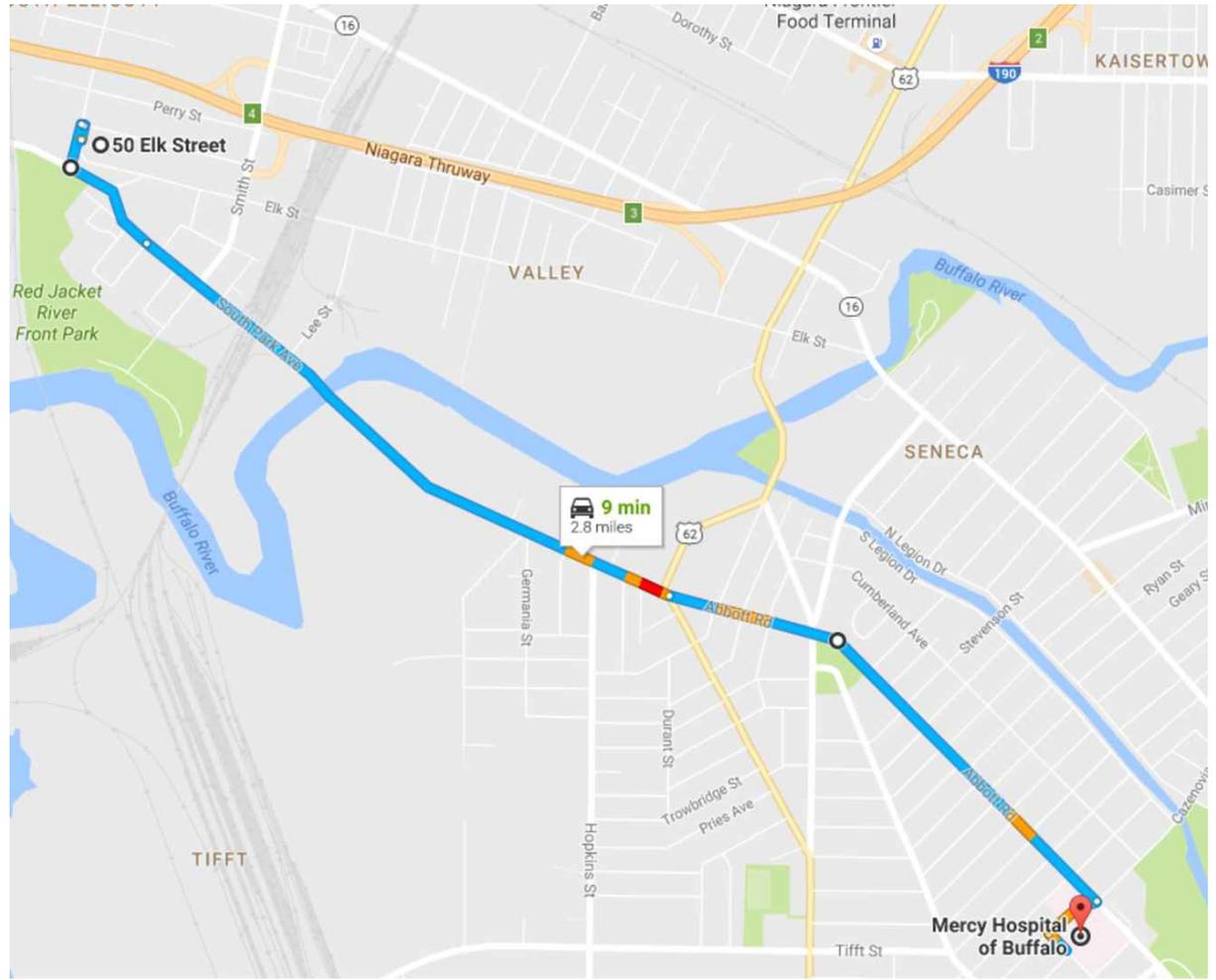
### Mercy Hospital of Buffalo

565 Abbott Road, Buffalo, NY 14220

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs and notices regarding your route.



SCALE: 1 INCH = 2000 FEET  
SCALE IN FEET  
(approximate)



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

PROJECT NO.: 0381-016-002

DATE: AUGUST 2016

DRAFTED BY: BCH

## HOSPITAL ROUTE MAP HASP - EMERGENCY RESPONSE PLAN

SILOS AT ELK STREET SITE  
BUFFALO, NEW YORK

PREPARED FOR  
SILOS AT ELK STREET, LLC

FIGURE 1

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# APPENDIX B

## NYSDOH GENERIC COMMUNITY AIR MONITORING PLAN

**Appendix 1A**  
**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 ( $\text{mcg}/\text{m}^3$ ) 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  $150 \text{ mcg}/\text{m}^3$  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  $150 \text{ mcg}/\text{m}^3$  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  $150 \text{ mcg}/\text{m}^3$  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 1B 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/m<sup>3</sup> (1 to 400,000 :ug/m<sup>3</sup>);
  - (c) Precision (2-sigma) at constant temperature: +/- 10 :g/m<sup>3</sup> for one second averaging; and +/- 1.5 g/m<sup>3</sup> 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/m<sup>3</sup>, 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° C (14 to 122° 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/m<sup>3</sup> (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/m<sup>3</sup>, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m<sup>3</sup> 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/m<sup>3</sup> 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 PM<sub>10</sub> 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/m<sup>3</sup> 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 C

## HOT WORK PERMIT FORM

<b>PART 1 - INFORMATION</b>	
Issue Date:	
Date Work to be Performed: Start:	Finish (permit terminated):
Performed By:	
Work Area:	
Object to be Worked On:	
<b>PART 2 - APPROVAL</b>	
(for 1, 2 or 3: mark Yes, No or NA)*	
Will working be on or in:	Finish (permit terminated):
1. Metal partition, wall, ceiling covered by combustible material?	yes no
2. Pipes, in contact with combustible material?	yes no
3. Explosive area?	yes no
* = If any of these conditions exist (marked "yes"), a permit will not be issued without being reviewed and approved by Thomas H. Forbes (Corporate Health and Safety Director). Required Signature below.	
<b>PART 3 - REQUIRED CONDITIONS**</b>	
(Check all conditions that must be met)	
PROTECTIVE ACTION	PROTECTIVE EQUIPMENT
Specific Risk Assessment Required	Goggles/visor/welding screen
Fire or spark barrier	Apron/fireproof clothing
Cover hot surfaces	Welding gloves/gauntlets/other:
Move movable fire hazards, specifically	Wellintons/Knee pads
Erect screen on barrier	Ear protection: Ear muffs/Ear plugs
Restrict Access	B.A.: SCBA/Long Breather
Wet the ground	Respirator: Type:
Ensure adequate ventilation	Cartridge:
Provide adequate supports	Local Exhaust Ventilation
Cover exposed drain/floor or wall cracks	Extinguisher/Fire blanket
Fire watch (must remain on duty during duration of permit)	Personal flammable gas monitor
Issue additional permit(s):	
Other precautions:	
** Permit will not be issued until these conditions are met.	
<b>SIGNATURES</b>	
Originating Employee:	Date:
Project Manager:	Date:
Part 2 Approval:	Date:

# APPENDIX B

## PROJECT DOCUMENTATION FORMS





# INSPECTOR'S DAILY REPORT

**(CONTINUED)**

Page  of

CONTRACTOR:	JOB NO.:
CLIENT:	DATE:

**MEETINGS HELD & RESULTS:**

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CONTRACTOR'S WORK FORCE AND EQUIPMENT								
DESCRIPTION	H	#	DESCRIPTION	H	#	DESCRIPTION	H	#
Field Engineer						Front Loader Ton		
Superintendent						Bulldozer		
Laborer-Foreman						DJ Dump Truck		
Laborer						Water Truck		
Operating Engineer			Equipment			Backhoe		
Carpenter			Generators			Excavator		
Ironworker			Welding Equipment			Pad foot roller		
Concrete Finisher			Roller					
			Paving Equipment					
			Air Compressor					

**REMARKS:**

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**REFERENCES TO OTHER FORMS:**

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**SAMPLES COLLECTED:**

Sample Number: \_\_\_\_\_

Approx. Location of Stockpile: \_\_\_\_\_

No. of Stockpile \_\_\_\_\_

Date of Collection: \_\_\_\_\_

Weather: \_\_\_\_\_

Field Observations: \_\_\_\_\_



# APPENDIX C

ELECTRONIC COPY

(PROVIDED ELECTRONICALLY)