

REMEDIAL WORK PLAN
FOR
MOD-PAC CORP.
1801 ELMWOOD AVENUE
CITY OF BUFFALO, ERIE COUNTY, NEW YORK
SITE NO. C915314

Prepared by:



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Prepared on Behalf of:

MOD-PAC CORP.
1801-1807 ELMWOOD AVENUE,
BUFFALO, NEW YORK 14207

APRIL 2019

TABLE OF CONTENTS

1.0 INTRODUCTION	1
2.0 SITE CONTROL	6
3.0 SITE PREPARATION	7
4.0 EROSION AND DUST CONTROLS	8
5.0 GROUNDWATER INJECTIONS	10
6.0 CONFIRMATORY SAMPLING	10
7.0 COVER SYSTEM CONSTRUCTION	11
8.0 AIR MONITORING	13
9.0 REPORTING	14
10.0 SITE MANAGEMENT PLAN	15
11.0 SCHEDULE	16

FIGURES

FIGURE 1 SITE LOCUS PLAN
FIGURE 2 REMEDIAL INVESTIGATION LOCATIONS
FIGURE 3 RECOMMENDED REMEDIAL ALTERNATIVE 3
FIGURE 4 GROUNDWATER INJECTION LOCATIONS

APPENDICES

APPENDIX 1 COMMUNITY AIR MONITORING PLAN
APPENDIX 2 HEALTH AND SAFETY PLAN

ACRONYM LIST

AAR	ALTERNATIVE ANALYSIS REPORT
BGS	BELOW GROUND SURFACE
BCP	BROWNFIELD CLEANUP PROGRAM
CUSCO	COMMERCIAL USE SOIL CLEANUP OBJECTIVE
DCE	DICHLOROETHENE
DUSR	DATA USABILITY AND SUMMARY REPORT
IRM	INTERIM REMEDIAL MEASURES
IUSCA	INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
NYSDEC	NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
NYSDOH	NEW YORK STATE DEPARTMENT OF HEALTH
PID	PHOTO-IONIZATION DETECTOR
PPM	PARTS PER MILLION
RI	REMEDIAL INVESTIGATION
RRSCO	RESTRICTED RESIDENTIAL USE SOIL CLEANUP OBJECTIVE
SCO	SOIL CLEANUP OBJECTIVES
SVOC	SEMI-VOLATILE ORGANIC COMPOUNDS
TCE	TRICHLOROETHENE
VC	VINYL CHLORIDE
VOC	VOLATILE ORGANIC COMPOUNDS

1.0 INTRODUCTION

This Remedial Action Work Plan (RAWP) presents the proposed scope of work for completion of remedial action at the MOD-PAC CORP. facility at 1801 Elmwood Avenue located in the City of Buffalo, Erie County, New York (Site). Site location is included on Figure 1.

A Brownfield Cleanup Agreement (BCA) was executed on June 21, 2017 for the Site, identified as Site No. C915314 with New York State Department of Environmental Conservation (NYSDEC), under the Brownfield Cleanup Program (BCP). Wittman GeoSciences, PLLC (WGS) and Hazard Evaluations Inc. (HEI) completed RI activities, in accordance with an approved RI Work Plan. C&S Engineers, Inc. (C&S) and WGS have prepared this RAWP.

The MOD-PAC Site includes an approximately 500,000 square foot manufacturing facility, which produces high quality folding cartons for large companies and small businesses, as well as limited personal use products. The southern 1/3 of the property is vacant land that is overgrown and underutilized. Various debris, fill, and soil piles are present throughout the vacant area.

The southern portion of the Site is currently underutilized, underdeveloped property located in the City of Buffalo. The land has been vacant and over grown for over 25 years. Development has not occurred due to the presence of significant volumes of historical industrial fill throughout the area. The historical fill is present up to ground surface, throughout the southern portion of the Site.

This plan presents the draft Remedial Work Plan for the MOD-PAC Site (“Site”). This draft plan is based on the preliminary review of the data collected during the Remedial Investigation (“RI”) of the Site as presented in the February 2019 Draft Remedial Investigation - Alternative Analysis Report.

1.1 Site Contaminants and Impacted Media

Remedial investigation work included completion of 73 soil borings, 12 test pits, installation of 10 monitoring wells, collection of five surface soil samples and completion of soil vapor intrusion investigation within interior buildings. Sample locations are included on Figure 2. Remedial investigations identified the following site contaminant and impacted media.

1.1.1 Soil/Fill Materials

Historical industrial fill was found throughout the site at depths ranging from approximately 4 to 19 feet below grade. Fill material included foundry sand intermixed with concrete, broken brick pieces, cinders, gravel, slag, fly ash and asphalt. Additionally, miscellaneous debris was found throughout the fill material, including metal strips and pieces, buried concrete slabs and chunks, railroad siding, large brick pieces and other debris.

Forty-five (45) soil/fill samples were analyzed for semivolatile organic compounds (SVOCs) from representative soil boring and test pit locations. Thirteen (13) samples exhibited SVOCs at concentrations above Restricted Residential Use Soil Cleanup Objectives (RRUSCOs), with twelve (12) samples having at least one compound exceeding Commercial Use Soil Cleanup Objectives (CUSCOs).

- Benzo(a)anthracene was detected in three locations at concentrations ranging from 5.9 to 7.6 parts per million (ppm) exceeding CUSCO of 5.6 ppm.
- Benzo(a)pyrene was detected in 12 locations at concentrations ranging from 1.2 to 6.6 ppm, which exceeds both CUSCO of 1 ppm and Industrial Use Soil Cleanup Objective (IUSCO) of 1.1 ppm.
- Benzo(b)fluoranthene was detected in four locations at concentrations ranging from 5.6 to 8.1 ppm, exceeding CUSCO of 5.6 ppm.
- Dibenzo(a,h)anthracene was detected in four locations at concentrations ranging from 0.67 to 0.96 ppm exceeding CUSCO of 0.56 ppm

SVOCs exceeding CUSCO were identified throughout the southern portion of the Site, as well within the existing parking areas.

A total of 58 soil/fill samples were selected for Target Analyte List (TAL) metals analysis. Fifteen (15) soil samples having at least one metal exceeding CUSCO.

- Arsenic was detected at seven (7) locations at concentrations ranging from 16.5 to 109 ppm, which exceeds both CUSCO and IUSCO of 16 ppm.
- Lead was detected at two (2) locations at concentrations ranging from 1,570 to 3,310, exceeding the CUSCO of 1,000 ppm.

Metals exceeding CUSCO were identified throughout the fill material present within southern portion of the Site, as well under the building and driveway areas.

1.1.2 Groundwater

Nine (9) groundwater samples were collected in November 2017 and analyzed for volatile organic compounds (VOCs). Several VOCs, including cis-dichloroethene (DCE), trans-DCE, trichloroethene (TCE) and vinyl chloride (VC) were detected at two locations including SB113/MW2 and SB116/MW3. TCE ranged in concentration from 0.39 ppb at SB113/MW2 to 280 ppb at SB116/MW3. The presence of the TCE appears to be limited to the eastern and central portion of the Site.

Potential unsaturated source material/soil was not identified during Site investigations. However, four soil sample identified TCE at a concentrations ranging from 2.8 ppm to 21 ppm in sample collected from the eastern portion of the Site.

1.1.3 Surface Soil Investigation

Five (5) surface soil samples collected from 0 to 2 inches below ground surface, as well as areas that were anticipated to remain undeveloped in future plans. Four surface soil samples exhibited SVOCs with detections of at least one compound exceeding CUSCO, including benzo(a)anthracene, benzo(a)pyrene and benzo(b)fluoranthene. Three surface soil sample locations identified the presence of arsenic at concentrations above the CUSCO, including SS102 (0-2" – duplicate), SS104 (0-2') and SS105 (0-2"). Arsenic concentrations exceeding CUSCO ranged from 19.1 to 141 ppm.

1.1.4 Soil Vapor Intrusion

Vapor intrusion air samples were analyzed from 12 sub-slab locations, 12 ambient air locations and two outdoor location. TCE was detected in six of the sub-slab samples at concentrations ranging from 14.4 ug/m³ at SS-1 to 27,300 ug/m³ at SS-5. TCE was also detected at the indoor samples at concentrations ranging from 0.274 ug/m³ at IA-7 to 2.25 ug/m³ at IA-6.

- Based on the TCE concentration in the samples from SS-1/IA-1, SS-5/IA-5, SS-6/IA-6, SS-8/IA-8 and SS-11/IA-11, the decision matrix indicates this location/area would require mitigation.
- The indoor air sample from IA-2 detected at 2.2 ug/m³, exceeded the New York State Department of Health (NYSDOH) air guidance value (AGV) of 2 ug/m³; however, the corresponding sub-slab sample (SS-2) was non-detect. The decision matrix from the NYSDOH guidance was to identify source(s) for IA-2.
- The indoor air sample from IA-6 detected at 2.25 ug/m³, exceeded the NYSDOH AGV of 2 ug/m³; the corresponding sub-slab vapor sample identified a TCE concentration of 13,600 ug/m³. Based on these concentrations, this area would require mitigation.

1.2 Remedial Actions

Based on site data collected in the RI and the remedial alternatives evaluated in the Alternatives Analysis, the NYSDEC prepared a Decision Document that describes the remedial measures to be implemented at the Site. The actions discussed below will be implemented at the Site to complete the remedy presented in the Decision Document to successfully achieve a Track 4 Commercial Cleanup.

The proposed redevelopment plan includes construction of turf athletic fields and new parking areas in the southern portion of the site, along with new heavy-duty roadway and upgrading parking areas associated with operation of MOD-PAC CORP. The remedial action for this Site will be to Track 4 Commercial Cleanup to include remediation of identified areas to Site Specific Action Limits (SSAL) and cover system. This RAWP has been prepared to address on-Site fill soils identified throughout the southern portion of the site.

The remedial efforts are graphically presented in Figure 3, and will include the following activities:

- Community Air Monitoring will be implemented during remedial activities.
- Approximately 1,800 cy of metals-impacted soil will be excavated and disposed off-site to meet SSAL as listed below:

<u>Analyte</u>	<u>SSAL (in ppm)</u>
Metals	
Arsenic	30
Lead	1,500
Copper	270 (CUSCO)
Cadmium	9.3 (CUSCO)
Total PAHs	500

- Site grading will be completed in the southern portion of the Site to re-position industrial fill soils for either future athletic fields or vacant land.
- Engineering Controls consisting of a site-wide cover will be installed, including:
 - Asphalt in new and recently upgraded parking areas and new roadways
 - A one-foot clean cover over areas not covered with paving or building. The clean cover will include geotextile fabric and one foot of clean cover consisting of soil or gravel.
- The injection of chemical oxidants to address VOC contamination within the groundwater in the eastern portion of the Site.
- Installation of an active SSDS within required building areas to mitigate on-Site VOCs vapor intrusion concerns.
- The imposition of the following Institutional Controls:
 - Implementation of a Site Management Plan including environmental easement, an Engineering Control/Institutional Control (EC/IC) Plan, Site Monitoring Plan, Excavation Work Plan, Operation and Maintenance Plan, and site use limitations.
 - Application of City-wide groundwater use restriction.
 - Provision for the evaluation of the potential for soil vapor intrusion for any new buildings developed on the Site, including provisions for implementing actions recommended to address exposures related to soil vapor intrusion.

The selected remedy described above is protective of human health and the environment, advantageous to other remedies as evaluated, and satisfies the Remedial Action Objectives (RAOs).

1.3 Interim Remedial Measures

MOD-PAC is an operating facility, which requires routine maintenance and upkeep as would be expected in an approximate 500,000-square foot manufacturing facility. Additionally, due to condition of existing cover systems, areas of upgrade were needed throughout the MOD-PAC facility.

Several areas of concern (AOCs) including hot spot removal, sub-slab depressurization system, and groundwater injection remedial efforts will be completed under separate interim remedial measure (IRM). A brief summary of planned or completed IRMs is included below. Because these IRMs will address the specific issues identified below, the remainder of the RAWP will not include a discussion of these remedial actions.

1.3.1 Hot Spot Removal

SSALs were developed for the Site that remain protective of public health and the environment under a commercial and restricted-use scenario. The application of the assigned SSAL to the Site resulted in five areas of soil/fill materials below the proposed future cover system that will be excavated, as shown on Figure 3 and listed below:

- SB101 (0.5-3.5') – Arsenic at 36.9 ppm; lead 1,570 ppm
- TP103 (1-2.5') – Lead at 3,310 ppm
- TP104 (2-5') – Arsenic at 109 ppm

- TP108 (4-5.5') – Arsenic at 46.4 ppm; copper at 314 ppm; cadmium at 10.2 ppm
- SS102 (0-2") Duplicate – Surface soil sample – Arsenic at 141 ppm

Each of the above locations will be excavated as listed below and shown on Figure 3:

- SB101 will be initially excavated to approximately 40 feet by 40 feet by 5 feet deep, resulting in an estimated volume of 300 cubic yards.
- TP103 will be initially excavation to approximately 40 feet by 40 feet by 3 feet deep, resulting in an estimated volume of 180 cubic yards.
- TP104 will be initially excavated to approximately 40 feet by 40 feet by 5 feet deep, resulting in an estimated volume of 300 cubic yards.
- TP-108 will initially be excavated approximately 60 feet by 60 feet by 7 feet deep, resulting in an estimated volume of 950 cubic yards.
- An approximate 40 foot by 25 foot by one-foot deep excavation will be completed in the area of SS102, resulting in an additional 35 cubic yards.

The identified excavation areas are anticipated to generate approximately 1,800 cy of soil for off-site disposal. Following initial excavation, confirmatory soil samples will be collected from each excavation area, including one bottom and four sidewall samples, which will be analyzed for target analyte list (TAL) metals. Should SSALs not be accomplished, further soil excavation will be completed, as needed.

Hot Spot Removal activities were completed as an Interim Remedial Measure (IRM) in accordance with NYSDEC approved work plan¹, dated March 21, 2019, and approved by NYSDEC on March 28, 2019.

1.3.2 Subslab Depressurization System

Due to detection of TCE and decision matrix recommending mitigation, three areas of the MOD-PAC CORP. facility, as shown in Figure 3, were identified to have concentrations of TCE requiring mitigation. A work plan² for installation of sub-slab depressurization system was designed by Matrix Environmental Technologies, Inc. and approved by NYSDEC on February 13, 2019. SSDS installation is planned for May 2019.

¹ Interim Remedial Measure Work Plan for Hot Spot Removal, Brownfield Cleanup Program for MOD-PAC CORP. SITE, 1801 Elmwood Avenue, Buffalo, New York 14207, BCP # C915314; prepared for MOD-PAC CORP., by C&S Engineers, Inc. and Wittman GeoSciences, PLLC.

² Work Plan for Sub-Slab depressurization Systems, prepared for MOD-PAC CORP. by Matrix Environmental Technologies, Inc., dated January 25, 2019.

2.0 SITE CONTROL

Site control is an important aspect of this remedial program. To safeguard the health and safety of site workers and the general public, access to all remedial work areas will be restricted. Where appropriate, perimeter fencing will be installed to control access to work areas such as remedial excavations and active construction areas.

3.0 SITE PREPARATION

Site preparation activities will include the following:

3.1 Asphalt Removal

The Site contains areas of asphalt that is in poor condition. To prepare these areas for the remedial cover system, the asphalt will be removed and either broken into small pieces for re-use on-site or hauled off-site to a location permitted to receive such material. The gravel sub-base present beneath the asphalt will also be removed. The potential reuse of these materials includes filling in low-lying areas that will be covered or as sub-base and fill for future roadways, driveways and parking lot construction as part of the redevelopment. If off-site disposal is planned, C&S will provide the NYSDEC with written identification of the intended recipient prior to removal from the Site.

3.2 Well Decommissioning

The monitoring wells that are present at the Site will be decommissioned in accordance with the NYSDEC's CP-43: Groundwater Monitoring Well Decommissioning Policy, dated November 3, 2009. The proposed method to decommission the monitoring wells will be via grouting in-place followed by casing pulling.

3.3 Site Grading

The Site currently contains piles of fill, and the Site will be graded to create a surface onto which the site cover will be placed. The grading will be accomplished with bulldozers or other similar equipment. Community air monitoring will be conducted during grading activities, and, as discussed in Section 3.0, care will be taken to minimize dust generation.

3.4 Stormwater

Because the remedial efforts will employ best management practices at the Site perimeter and prevent infiltration into storm water structures, stormwater runoff is not expected to pose a significant soil particulate or contaminant transport pathway. However, contingent plans will be created to address stormwater, if any, at the Site. During the project, the Remediation Contractor will undertake specific measures for proper management of stormwater and to preclude migration of contaminants to surface waters or other areas of the Site. These will include:

- Direct loading of trucks where feasible to avoid staging of impacted soil/fill.
- Use of polyethylene sheeting for staging and covering of impacted soil/fill as necessary.
- Grading of excavations and soil cuts to prevent storm water from migrating off-site.

Additionally, contingency plans will be prepared to address stormwater issues that may arise during the project. These contingency plans include the potential for pumping the excavation water using temporary sumps or a vacuum truck into steel holding tanks. Stored water will either be shipped for off-site treatment at a licensed treatment facility or will be characterized and treated, if necessary, on-site and discharged to the sanitary sewer under a Buffalo Sewer Authority permit. The Remediation Contractor will be responsible for obtaining the required permits and operating the treatment system, and C&S will provide copies of the permits to the NYSDEC.

4.0 EROSION AND DUST CONTROLS

As part of the remedial actions to be performed at the Site, measures will be needed to limit erosion and dust generation. Erosion control and dust suppression techniques will be employed as necessary to limit erosion and fugitive dust generated in disturbed areas during remediation and redevelopment activities. Such techniques may be employed even if the community air monitoring results indicate that particulate levels are below action levels. Techniques may include but are not limited to:

- Using silt fencing, hay bales, and/or mulching
- Applying water on haul roads
- Wetting equipment and excavation surfaces
- Hauling materials in properly tarped or watertight containers
- Limiting vehicle speed on the Site
- Limiting the size of excavations
- Covering excavated areas and materials following excavation

The efficacy of the dust suppression measures will be evaluated based on the results of the air monitoring that will be conducted under the Site-Specific Community Air Monitoring Plan provided in **Appendix 1**.

5.0 GROUNDWATER INJECTIONS

TCE was detected in groundwater samples in the eastern portion of the Site, ranging in concentration up to 280 ppb at SB116/MW3. The presence of the TCE in groundwater appears to be limited to this portion of the Site. Potential unsaturated source material/soil was not identified during site investigation. However, four soil sample identified TCE at a concentrations ranging from 2.8 ppm to 21 ppm in samples collected from the eastern portion of the Site.

To reduce concentrations in the area of MW3, a chemical oxidant will be injected into the groundwater. The goal of the ISCO injections for the onsite area is to reduce the groundwater TCE concentrations until the targeted remedial goals or asymptotic levels are reached. The approximate ISCO injection area is shown on Figure 4.

Prior to full-scale injection, a pilot test will be conducted using the In-Situ Chemical Oxidation (“ISCO”)® treatment product PersulfOx®. The number and locations of the injection point and the amount of ISCO material used will be based on the pilot study.

The full-scale injections will be completed using a direct-push technology drill rig to advance the injection tool to depths of approximately 10 feet below grade. Once the terminal depth is reached, the material will be mixed with clean water and injected under pressure. The tool will be slowly raised to inject the mixture throughout the boring from 10 feet to 5 feet below grade.

Pre- and post-treatment groundwater sampling will be completed in monitoring wells MW3, MW11, MW12, and MW13. The pre-treatment sampling will occur approximately two to four weeks before the injection event, and the post-treatment sampling will occur six to eight weeks after treatment. The samples will be analyzed for part 375 VOCs.

6.0 CONFIRMATORY SAMPLING

The IRM Work Plans describe the confirmatory sampling required as part of those discrete remedial actions relating to soil removal. Due to the nature of the remedial action described in this RAWP, no additional confirmatory soil samples are planned. However, as discussed in Section 5, groundwater samples will be collected after remedial injections take place.

7.0 COVER SYSTEM CONSTRUCTION

A site cover will be required to allow for commercial use of the site in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where a soil cover is to be used it will be a minimum of one foot of soil placed over a demarcation layer, with the upper six inches of soil of sufficient quality to maintain a vegetative layer. Soil cover material, including any fill material brought to the site, will meet the SCOs for cover material for the use of the site as set forth in 6 NYCRR Part 375-6.7(d). Substitution of other materials and components may be allowed where such components already exist or are a component of the tangible property to be placed as part of site redevelopment. Such components may include, but are not necessarily limited to: pavement, concrete, paved surface parking areas, sidewalks, building foundations, building slabs, and artificial turf athletic field. Figures CS1-1, CS102, and CS103 show the locations of the various components of the cover system.

7.1 Backfill

If low-lying areas exist on-site and additional fill is necessary to bring the Site’s surface to grade, clean fill will be transported to the Site from an off-site source. All off-site clean soil for backfill, soil cover or topsoil will meet the 6NYCRR Part 375- 6.7(d) requirements, and will be obtained from known sources that do not show evidence of disposal or release of hazardous substances or wastes. The backfill source will be required to provide backup analytical data to demonstrate acceptability prior to acceptance and delivery to the Site, and will be subject to NYSDEC approval.

For each source of soil/fill that is imported to the Site, one of the following will be completed prior to importing the material to the Site.

- a. Documentation will be provided to NYSDEC as to the source of the material and the consistency of the material in accordance with the exemption for no chemical testing listed in DER-10 Section 5.4(e)(5); **OR**
- b. Chemical testing will be completed in accordance with the following table:

Recommended Number of Soil Samples for Soil Imported To or Exported From a Site			
Contaminant	VOCs	SVOCs, Inorganics & PCBs/Pesticides	
Soil Quantity (cubic yards)	Discrete Samples	Composite	Discrete Samples/Composite
0-50	1	1	3-5 discrete samples from different locations in the fill being provided will comprise a composite sample for analysis
50-100	2	1	
100-200	3	1	
200-300	4	1	
300-400	4	2	
400-500	5	2	
500-800	6	2	
800-1000	7	2	
1000	Add an additional 2 VOC and 1 composite for each additional 1000 Cubic yards or consult with DER		

Taken from DER-10 - Table 5.4(e)10

In the event that laboratory analytical testing is conducted, the results for each new source of fill must meet the values provided in Appendix 5 of DER-10 (provided as Appendix C in this Work

Plan) for Commercial Use and must receive approval by the NYSDEC.

7.2 Demarcation Layer

The cover system across the existing vegetated areas will contain a layer of a demarcation layer over the existing ground surface (after grading) to delineate the interface between the clean cover and the underlying fill. The demarcation layer will allow identification, segregation and proper handling of contaminated soil/fill that may be excavated during any intrusive work at the Site for redevelopment in the future. The demarcation layer may consist of geotextile, brightly colored netting or snow fence, or other suitable material.

7.3 Cover System

The Site will consist of the following four types of cover materials as shown on Figures CS101, CS012, and CS103 to prevent exposure and be protective of human health:

- Soil cover
- Crushed stone
- Asphalt
- Concrete

Figures CS501, CS502, and CS503 show the details of each type of cover system.

As with the backfill, all cover material imported to the Site will meet the 6NYCRR Part 375-6.7(d) requirements, and will be obtained from known sources that do not show evidence of disposal or release of hazardous substances or wastes. The backfill source will be required to provide backup analytical data to demonstrate acceptability prior to acceptance and delivery to the Site, and will be subject to NYSDEC approval.

8.0 AIR MONITORING

When fill material is being excavated or moved at the Site, the Community Air Monitoring Plan (CAMP) included in **Appendix 1** will be implemented at this Site by C&S Engineers.

9.0 REPORTING

C&S will be on-site during the remedial actions described above. Field notes will be recorded during the remedial work and become part of the project file. The field summaries will include the following information for the remedial activities:

- Date
- Meteorological conditions (temperature, wind, precipitation)
- Site conditions (e.g., dry, damp, dusty, etc.)
- Identification of staff members and other personnel (e.g., agency or site owner) present on-site
- Description of field activities
- Location(s) where work is performed
- Samples collected
- Problems encountered and corrective actions taken
- Records of field measurements or descriptions recorded
- Notice of modifications to the scope of work
- Other pertinent observations

Photographic documentation of the remedial action activities will also be completed.

Project accomplishments will be summarized in monthly progress reports that will be submitted to NYSDEC on a monthly basis as part of the BCA requirements.

C&S will also prepare a Construction Completion Report (CCR) for submission to the NYSDEC at the completion of the remedial action activities. The CCR will be prepared consistent with the requirements of Section 5.8 of DER-10 and include:

- Text describing the soil/fill excavating, backfilling, grading, and cover construction activities.
- A description of problems encountered, deviations from the Remedial Action Work Plan, and associated corrective measures taken; and other pertinent information necessary to document that the remedial action activities were carried out in accordance with this RAWP.
- A Site or area map showing the extent of soil excavation.
- A survey map of the pre- and post-clean soil cover system grades.
- The soil disposal documentation of the excavated soil from the off-site disposal facility.
- Copies of daily field reports and, if applicable, problem identification and corrective measure reports.
- A certification by a licensed NYS Professional Engineer in accordance with Section 1.5 of DER-10.

10.0 SITE MANAGEMENT PLAN

A Site Management Plan (SMP) will be prepared in accordance with DER-10 after the completion of the field work. The SMP will include the activities listed below that are necessary for the proper and effective management of the institutional controls and to monitor the effectiveness of the implemented remedy.

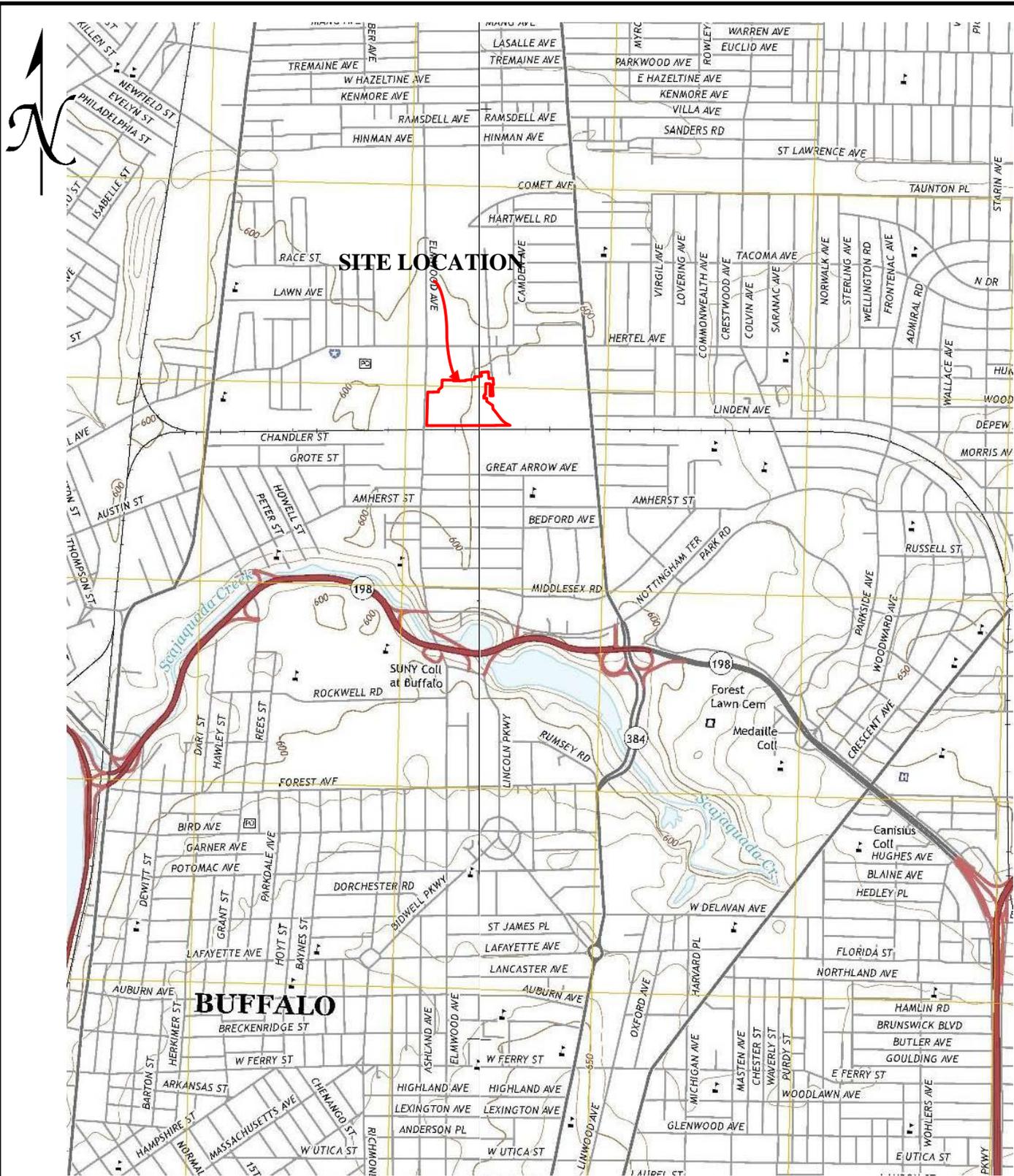
- Institutional and engineering control (IEC): Restrictions on site access and use will be described in detail in the IEC plan along with steps necessary for its implementation and periodic certification.
- Inspection: Regular inspections will be necessary to document that the remedy, including the cover system, remains in place and is effective in preventing human exposure to site contaminants.
- Operation & Maintenance (O&M): The O&M plan will include procedures for routine maintenance requirements to minimize damage to or failure of the implemented remedy.
- Corrective Measures: Procedures for corrective measures such as repairs to/or erosion of the soil cover or damages to the asphalt/concrete surfaces will be described.
- Reporting: The results of all inspections, corrective actions and monitoring will be reported in the Periodic Review Report (PRR) for the Site.

11.0 SCHEDULE

The following schedule is proposed for the implementation of the remedial action and follow up reporting requirements.

- Submittal of Remedial Work Plan: April 2019
- Remedial Implementation: May through September 2019
- Submittal of CCR: September 2019
- Submittal of Draft Site Management Plan: May 2019
- Submittal of Final Engineering Report: October 2019

FIGURES



WITTMAN GEOSCIENCES		
SITE LOCUS PLAN		
1801 ELMWOOD AVENUE BUFFALO, NEW YORK		
DRAWN BY: MMW	SCALE: NOT TO SCALE	PROJECT: 18-103
CHECKED BY: MMW	DATE: 08/2018	FIGURE NO: 1

Base map adapted from USGS topographic maps Buffalo NE and NW, New York quadrangle, dated 2016

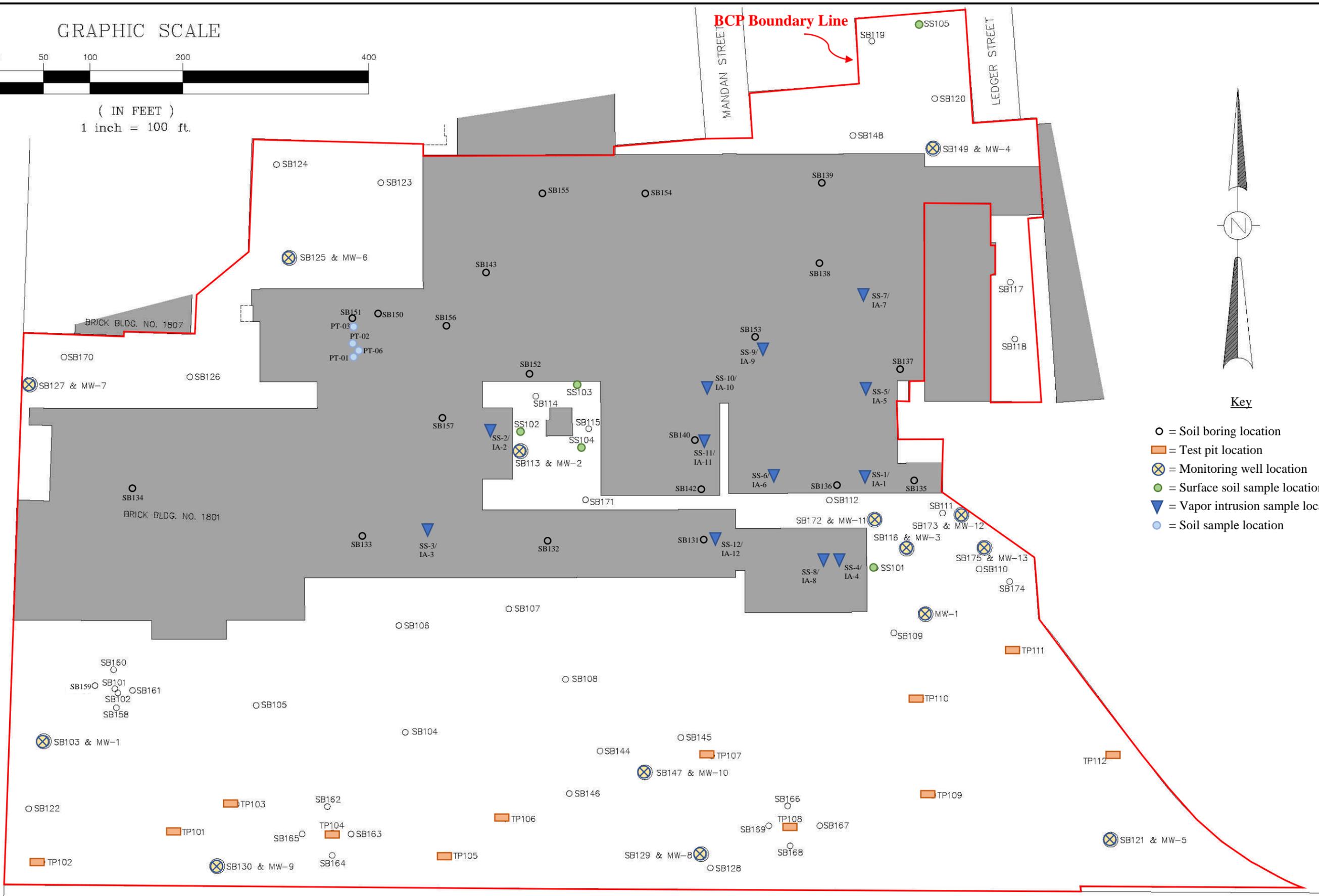
GRAPHIC SCALE



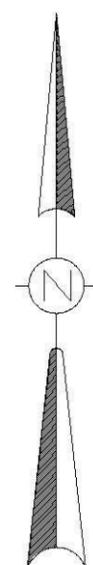
(IN FEET)
1 inch = 100 ft.

ELMWOOD AVENUE (FORMERLY MACPHERSON STREET)

ELMWOOD AVENUE (FORMERLY MACPHERSON STREET)



BCP Boundary Line



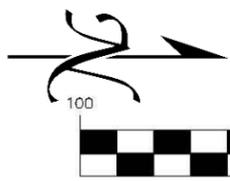
Key

- = Soil boring location
- = Test pit location
- ⊗ = Monitoring well location
- = Surface soil sample location
- ▼ = Vapor intrusion sample location
- = Soil sample location

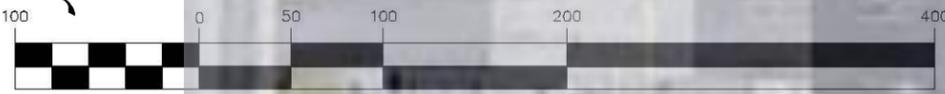
CONRAIL (FORMERLY NEW YORK CENTRAL RAILROAD)

WITTMAN GEOSCIENCES, PLLC	Remedial Investigation Locations	DRAWN BY: MMW	SCALE: 1" = 100'	PROJECT: 18-103
	1801 Elmwood, Buffalo, NY	CHECKED BY: MMW	DATE: 03/2019	FIGURE NO: 2

Exterior Investigation locations located by McIntosh & McIntosh; Interior locations measured in the field.



GRAPHIC SCALE



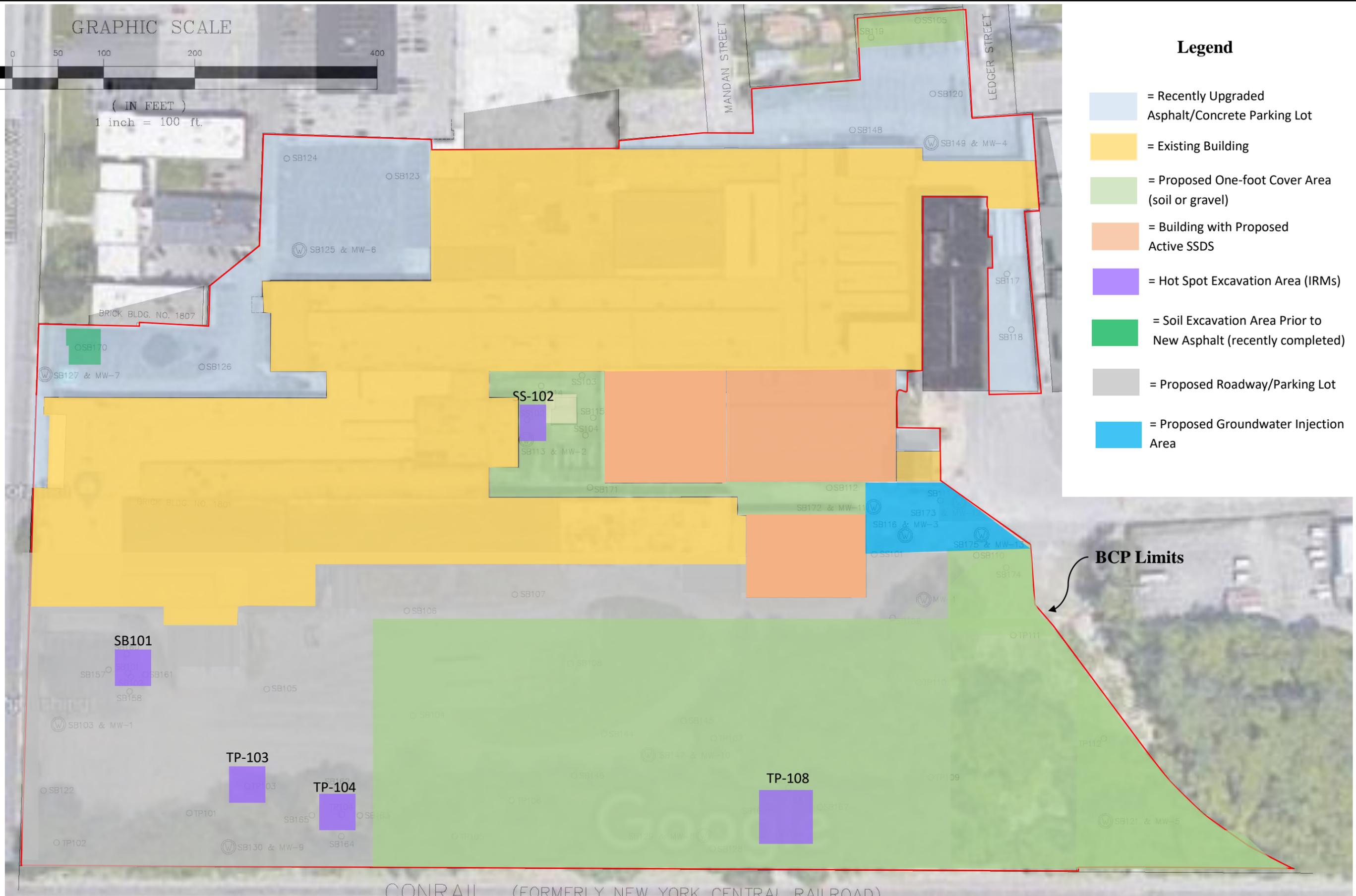
(IN FEET)
1 inch = 100 ft.

Legend

- = Recently Upgraded Asphalt/Concrete Parking Lot
- = Existing Building
- = Proposed One-foot Cover Area (soil or gravel)
- = Building with Proposed Active SSDS
- = Hot Spot Excavation Area (IRMs)
- = Soil Excavation Area Prior to New Asphalt (recently completed)
- = Proposed Roadway/Parking Lot
- = Proposed Groundwater Injection Area

ELMWOOD AVENUE (FORMERLY MACPHERSON STREET)

ELMWOOD AVENUE (FORMERLY MACPHERSON STREET)



CONRAIL (FORMERLY NEW YORK CENTRAL RAILROAD)

WITTMAN GEOSCIENCES, PLLC	Recommended Remedial Alternative 3	DRAWN BY: MMW	SCALE: 1" = 100'	PROJECT: 18-103
	1801 Elmwood, Buffalo, NY	CHECKED BY: MMW	DATE: 03/2019	FIGURE NO: 3

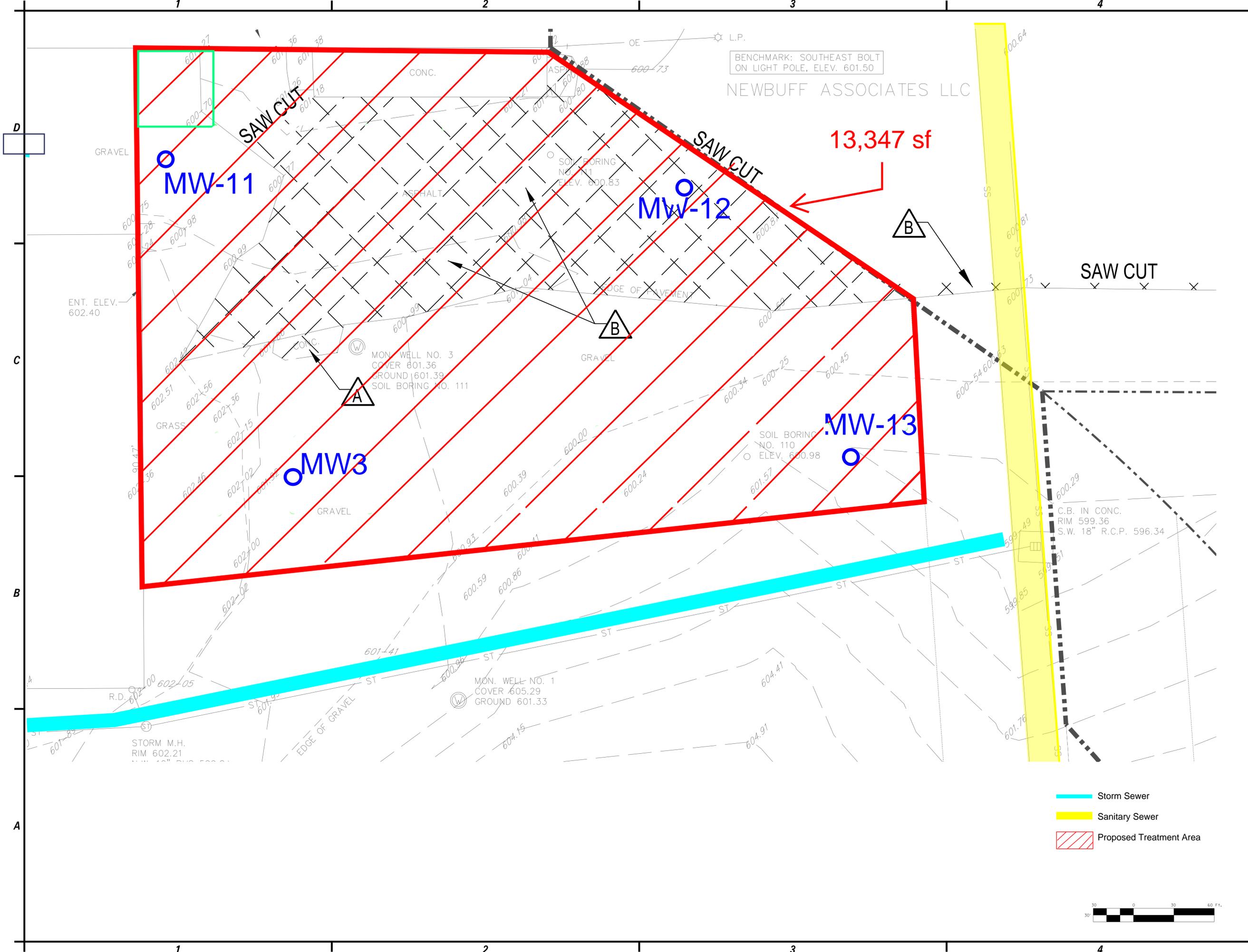
PRELIMINARY
 NOT FOR CONSTRUCTION

MOD PAC BCP
 NARDIN ACADEMY ATHLETIC FIELD
 IMPROVEMENTS
 1801 ELMWOOD AVENUE BUFFALO, NY

MARK	DATE	DESCRIPTION
REVISIONS		
PROJECT NO:	S93.001.003	
DATE:	03-27-19	
SCALE:	AS SHOWN	
DRAWN BY:	JMH	
DESIGNED BY:	VO	
CHECKED BY:	VO	

NO ALTERATION PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK EDUCATION LAW

PROPOSED GROUNDWATER INJECTIONS
 Figure 4



Storm Sewer
 Sanitary Sewer
 Proposed Treatment Area



APPENDIX A
Community Air Monitoring Plan

Community Air Monitoring Plan

for

**MOD-PAC CORP. SITE
1801 Elmwood Avenue
Buffalo, Erie County, New York**

Site No. C915314

April 2019

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.

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.

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, such as isobutylene. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

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

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

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

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

Particulate Monitoring, Response Levels, and Actions

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

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m³) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m³ above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m³ above the upwind level, work must be

stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m³ 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.

Fugitive Dust and Particulate Monitoring

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

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

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

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

- (a) Objects to be measured: Dust, mists or aerosols;
- (b) Measurement Ranges: 0.001 to 400 mg/m³ (1 to 400,000 :ug/m³);
- (c) Precision (2-sigma) at constant temperature: +/- 10 :g/m³ for one second averaging; and +/- 1.5 g/m³ for sixty second averaging;
- (d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
- (e) Resolution: 0.1% of reading or 1g/m³, whichever is larger;
- (f) Particle Size Range of Maximum Response: 0.1-10;
- (g) Total Number of Data Points in Memory: 10,000;
- (h) Logged Data: Each data point with average concentration, time/date and data point number;
- (i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
- (j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;

- (k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
- (l) Operating Temperature: -10 to 50°C (14 to 122°F); and
- (m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

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

5. The action level will be established at 150 ug/m³ (15 minutes average). While conservative, this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m³, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m³ above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m³ continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM-10 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.

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

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

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

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

APPENDIX B
Health and Safety Plan

**Health and Safety Plan for
Brownfield Site
Remedial Measures**

**Mod-Pac Corp. Site
1801 Elmwood Avenue
Buffalo, NY 14207**

Site ID # C915314

Prepared by



C&S Engineers, Inc.
141 Elm Street, Suite 100
Buffalo, New York 14203

April 2019

TABLE OF CONTENTS

	<i>page</i>
Section 1 – General Information	1
Section 2 - Health And Safety Personnel.....	2
2.0 Health and Safety Personnel Designations	2
2.1 Project Manager (PM).....	2
2.2 Health and Safety Manager.....	2
2.3 Health and Safety Officer (HSO).....	3
2.4 Emergency Coordinator	4
2.5 Site Workers.....	4
Section 3 - Pertinent Site Information	5
3.1 Site Location and General History.....	5
Section 5 - Training	7
5.1 Site-specific Training.....	7
5.2 Safety Briefings	7
Section 6 - Zones	7
6.1 Exclusion Zone	7
6.2 Contamination Reduction Zone	8
6.3 Remediation Zone.....	8
6.4 Support Zone.....	9
Section 7 - Personal Protective Equipment.....	9
7.1 General.....	9
7.2 Personal Protective Equipment – Site Specific.....	11
Section 8 - Monitoring Procedures	11
8.1 Monitoring During Site Operations	11
8.1.1 Drilling Operations (Monitoring Well Installation and Subsurface Borings) and Test Pit Excavations	Error! Bookmark not defined.
8.1.2 Interim Remedial Measures	Error! Bookmark not defined.
8.2 Action Levels	11
8.3 Personal Monitoring Procedures.....	12
Section 9 - Communications.....	12
Section 10 - Safety Considerations For Site Operations.....	12
10.1 General.....	12
10.2 Field Operations.....	13
10.2.1 Intrusive Operations.....	13
10.2.2 Excavations and Excavation Trenching.....	13
Section 11 - Decontamination Procedures	14
Section 12 – Disposal Procedures	15
Section 13 - Emergency Response Procedures	15
13.1 Emergency Coordinator	15
13.2 Evacuation.....	16
13.3 Potential or Actual Fire or Explosion	16
13.4 Environmental Incident (spread or release of contamination).....	16
13.5 Personnel Injury	16

Health and Safety Plan

13.6 Personnel Exposure.....17
13.7 Adverse Weather Conditions17
13.8 Incident Investigation and Reporting.....17
Section 14 - Community Relations 17
14.1 Community Health and Safety Plan.....17
 14.1.1 Community Health and Safety Monitoring.....17
 14.1.2 Community Air Monitoring Plan.....18
Section 15 - Authorizations 18

FIGURES

- Figure 1 Site Location
- Figure 2 Site Aerial Photo

ATTACHMENTS

- Attachment A – Map and Directions to Hospital

APPENDICES

- Appendix A – Excavation/Trenching Guideline
- Appendix B – Guidance on Incident Investigation and Reporting



SECTION 1 – GENERAL INFORMATION

The Health and Safety Plan (HASP) described in this document will address health and safety considerations for all those activities that personnel employed by C&S Engineers, Inc., may be engaged in during site investigation and remediation work at the Mod-Pac Corp. Site located at 1801 Elmwood Avenue in Buffalo, Erie County, New York (Site). Figure 1 shows the approximate location of the Site. This HASP will be implemented by the Health and Safety Officer (HSO) during site work.

Compliance with this HASP is required of all C&S personnel who enter this Site. The content of the HASP may change or undergo revision based upon additional information made available to the health, safety, and training (H&S) committee, monitoring results or changes in the technical scope of work. Any changes proposed must be reviewed by the H&S committee.

This document will address health and safety considerations for all those activities that personnel employed by C&S Engineers, Inc., may be engaged in during site investigation and remediation work. Every contractor is expected to prepare and implement their own site-specific health and safety plan. This document may be used as a general outline to inform the creation of other health and safety plans for this NYSDEC Brownfield site.

Responsibilities

Project Manager.....	Daniel Riker Phone: (716) 847-1630 Cell: (716) 572-5312
Site Health and Safety Officer.....	Cody Martin Phone: (716) 847-1630 Cell: (716) 864-3752
Emergency Coordinator.....	Daniel Riker Phone: (716) 847-1630 Cell: (716) 572-5312
Health and Safety Manager.....	Daniel Riker Phone: (716) 847-1630 Cell: (716) 572-5312

Emergency Phone Numbers

Emergency Medical Service.....	911
<u>Police</u> : Buffalo Police Department (NYPD)	911
<u>Hospital</u> : Buffalo General Hospital.....	(716) 859-5600
<u>Fire</u> : Buffalo Fire Department.....	911
National Response Center	(800) 424-8802
Poison Control Center	(800) 222-1222
Center for Disease Control.....	(800) 311-3435
NYSDEC Region 9 (Buffalo, New York)	(716) 851-7220
C&S Engineers.....	(716) 847-1630
Site Superintendent	TBD
Project Field Office Trailer	(716) 847-1630

SECTION 2 - HEALTH AND SAFETY PERSONNEL

2.0 Health and Safety Personnel Designations

The following information briefly describes the health and safety designations and general responsibilities for this Site.

2.1 Project Manager (PM)

The PM is responsible for the overall project including the implementation of the HASP. Specifically, this includes allocating adequate manpower, equipment, and time resources to conduct Site activities safely.

2.2 Health and Safety Manager

- ◆ Has the overall responsibility for coordinating and reporting all health and safety activities and the health and safety of Site Workers.
- ◆ Must have completed, at a minimum, the OSHA 30-Hour Construction Safety Training, and either the 24-Hour training course for the Occasional Hazardous Waste Site Worker or the 40-Hour training course for the Hazardous Waste Operations Worker that meets OSHA 29 CFR 1910.

- ◆ Must have completed the 8-Hour Site supervisor/manager's course for supervisors and managers having responsibilities for hazardous waste Site operations and management.
- ◆ Directs and coordinates health and safety monitoring activities.
- ◆ Ensures that field teams utilize proper personal protective equipment (PPE).
- ◆ Conducts initial on-site specific training prior to Site Workers commencing work.
- ◆ Conducts and documents daily and periodic safety briefings.
- ◆ Ensures that field team members comply with this HASP.
- ◆ Immediately notifies the Construction Manager (CM) Project Manager and Superintendent of all accident/incidents.
- ◆ Determines upgrading or downgrading of PPE based on Site conditions and/or real time monitoring results.
- ◆ Ensures that monitoring instruments are calibrated daily or as the manufacturer's instructions determine.
- ◆ Reports to the CM Project Manager and Superintendent to provide summaries of field operations and progress.
- ◆ Submits and maintains all documentation required in this HASP and any other pertinent health and safety documentation.

2.3 Health and Safety Officer (HSO)

- ◆ Must be designated to the Health and Safety Manager by each Subcontractor as a Competent Person having, at a minimum, the OSHA 30-Hour Construction Safety Training
- ◆ Must schedule and attend a Pre-Construction Safety Meeting with the Health and Safety Manager to discuss the Subcontractor Safety Requirements and must attend the Weekly Subcontractor Coordination Meeting.

- ◆ Responsible for ensuring that their lower tier contractors comply with project safety requirements.
- ◆ Must make frequent and regular inspections of their work areas and activities and ensure hazards that are under their control are corrected immediately and all other hazards are reported to the Construction Manager's Project Manager and Health and Safety Manager.
- ◆ Must report all work related injuries, regardless of severity, to the Construction Manager's Project Manager and the Health and Safety Manager within 24 hours after they occur.

2.4 Emergency Coordinator

- ◆ The Emergency Coordinator or his on-site designee will, in coordination with Campus Square, LLC., implement the emergency response procedures whenever conditions at the Site warrant such action.
- ◆ The Emergency Coordinator or his on-site designee will be responsible for assuring the evacuation, emergency treatment, emergency transport of C&S personnel as necessary, and notification of emergency response units (refer to phone listing in the beginning of this HASP) and the appropriate management staff.

2.5 Site Workers

- ◆ Report any unsafe or potentially hazardous conditions to the Health and Safety Manager.
- ◆ Maintain knowledge of the information, instructions, and emergency response actions contained in the HASP.
- ◆ Comply with rules, regulations, and procedures as set forth in this HASP, including any revisions that are instituted.
- ◆ Prevent unauthorized personnel from entering work Site.

SECTION 3 - PERTINENT SITE INFORMATION

3.1 Site Location and General History

The Mod-Pac corp. Site is located at 1801 Elmwood Avenue, Buffalo, Erie County, New York. The Site encompasses approximately 20.03 acres. The Site lies in the northern portion of the City of Buffalo in an industrial area. Further information concerning the Site is presented below. Figure 1 presents the Site's location.

Site Description

The Site is bounded to the south by railroad tracks and to the west by Elmwood Avenue. Commercial and residential properties are located immediately to the north. Industrial occupants and the recently constructed Nardin Academy Athletic Center are located to the east. The Site is located within an urban area, utilized for industrial, commercial, and residential purposes.

The MOD-PAC Site includes an approximately 500,000 square foot manufacturing facility, which produces high quality folding cartons for large companies and small businesses, as well as limited personal use products. The southern 1/3 of the property is vacant land that is overgrown and underutilized. Various debris, fill, and soil piles are present throughout the vacant area.

Site History and Suspect Recognized Environmental Conditions

The entire Site was originally developed in the early 1900s by American Radiator and utilized as such until the 1970s. Since that time, the existing buildings have been utilized for various manufacturing purposes including warehousing, and box and product packaging. MOD-PAC has occupied a portion of the building since the 1950s and has been expanded since that time and currently occupies the entire facility. A railroad spur has historically traversed the Site, extending into the facility's courtyard. The southern portion of the Site was originally occupied by American Radiator until the 1950s, at which time the buildings were demolished. The southern area has remained vacant and unused since that time, currently identified as gravel parking and overgrown vegetation.

Hazard Evaluations Inc. completed a limited Phase II investigation in October 2015 to determine if environmental factors may impact the ability to develop the southern portion of the property.

The work included completion of 17 soil boring, 18 test pits and collection of soil and groundwater samples. An additional investigation was completed in December 2016 to assess if historical industrial fill and impacts were present throughout the Site limits. Additionally, NYSDEC Spill #9505712 was listed for the Site due to oil/water found near railroad siding in courtyard area. Four underground storage tanks (USTs) were identified, one of which removed and three closed in place. Confirmatory sample results identified residual impacts and the spill was given an “inactive” status. Twenty-six (26) additional soil borings, two hand augers, as well as additional analysis of soil and groundwater samples was completed. A final report was not created for the Phase II work.

Based on the investigation completed in October 2015 and December 2016, the primary contaminants of concern in the soil consist of semi-volatile organic compounds (SVOCs) including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene; and metals including arsenic copper, and lead. Groundwater impacts include limited chlorinated solvents including trichloroethene (TCE), cis-1,2-dichloroethent (DCE) and vinyl chloride (VC).

The contamination at the Site is primarily due to fill which varies from 2 to 16 feet below ground surface. SVOCs (PAHs) and metals were encountered in the soil samples collected from the southern, underutilized portion of the Site at concentrations exceeding Restricted Residential as well as Commercial soil cleanup objectives. The soils located in the western, eastern and northern portion of the Site currently occupied by the MOD-PAC facility also contained SVOCs (PAHs) and metals in the soil samples at concentrations exceeding commercial soil cleanup objectives (CSCO). No evidence of petroleum impact was identified in soil or groundwater samples collected in courtyard area near closed-in-place USTs.

TCE and its associated degradation products were found in the groundwater samples collected from to location in the central areas of the Site, slightly exceeding groundwater standards (GS) of typically 5 ppb, with a maximum concentration of TCE of 16 ppb; DEC of 32 ppb and VC of 42 ppb. Chlorinated solvents were not detected in estimated downgradient groundwater sample locations.

SECTION 5 - TRAINING

5.1 Site-specific Training

Training will be provided that specifically addresses the activities, procedures, monitoring, and equipment for the Site operations prior to going on site. Training will include familiarization with Site and facility layout, known and potential hazards, and emergency services at the Site, and details all provisions contained within this HASP. This training will also allow Site Workers to clarify anything they do not understand and to reinforce their responsibilities regarding safety and operations for their particular activity.

5.2 Safety Briefings

C&S project personnel will be given briefings by the HSO on a daily or as needed basis to further assist Site Workers in conducting their activities safely. Pertinent information will be provided when new operations are to be conducted. Changes in work practices must be implemented due to new information made available, or if Site or environmental conditions change. Briefings will also be given to facilitate conformance with prescribed safety practices. When conformance with these practices is not occurring or if deficiencies are identified during safety audits, the project manager will be notified.

SECTION 6 - ZONES

Four types of Site activity zones are identified for the Brownfield investigation activities, including the Exclusion Zone, Contamination Reduction Zone, Remediation Zone and the Support Zone. Prior to commencement of field work a further definition of where these zones will be set up will be established.

6.1 Exclusion Zone

The area where the unexpected condition is discovered would be considered the Exclusion Zone (EZ). All excavation and handling of contaminated materials generated as a result of the discovery of an unexpected condition would take place within the EZ. This zone will be clearly delineated by hay bales, jersey barriers, and/or similar methods. Safety tape may be used as secondary delineation within the EZ. The zone delineation markings may be opened in areas for varying lengths of time to accommodate equipment operation or specific construction activities. The Site

Safety Manager/Director may establish more than one EZ where different levels of protection may be employed or where different hazards exist. Site Workers will not be allowed in the EZ without:

- ◆ A buddy (co-worker);
- ◆ Appropriate PPE in accordance with OSHA regulations;
- ◆ Medical authorization; and
- ◆ Training certification in accordance with 29 CFR 1910.120.

6.2 Contamination Reduction Zone

A Contamination Reduction Zone (CRZ) will be established between the EZ and the property limits. The CRZ contains the Contamination Reduction Corridor (CRC) and provides an area for decontamination of Site equipment. The CRZ will be used for general Site entry and egress, in addition to access for heavy equipment and emergency support services. Site Workers will not be allowed in the CRZ without:

- ◆ A buddy (co-worker);
- ◆ Appropriate PPE in accordance with OSHA regulations;
- ◆ Medical authorization; and
- ◆ Training certification in accordance with 29 CFR 1910.120.

In addition, the CRZ will include a Site Worker Cleaning Area that will include a field wash station for Site Workers, equipment, and PPE to allow Site Workers to wash their hands, arms, neck, and face after exiting areas of grossly contaminated soil or hazardous materials. All Site Workers will be required to pass through the Site Worker Cleaning Area and wash their hands and remove any loose fill and soils from their clothing and boots prior to exiting the CRZ.

6.3 Remediation Zone

A Remediated Zone (RZ) will be established in portions of the Site where the remediation has been completed and only general construction work will be performed. Setup of the RZ will consist

of implementing several measures designed to reduce the risk of workers' exposure and prevent non-trained workers from entering the non-remediated zone. Non-trained workers will work only in areas where the potential for exposure has been minimized by removal of all hazardous materials. The remediated zone will then be separated from the non-remediated zone by installing and maintaining temporary plywood or other construction fences along the boundary between the two zones. If potentially impacted material is uncovered in the RZ, all non-trained workers will be removed and the Site Safety Manager/Director will assess the potential risks. If, at any other time, the risk of exposure increases while non-trained workers are present in the RZ, the non-trained workers will be removed. At all times, when non-trained workers are present in the RZ, air monitoring for the presence of VOCs will be conducted in the RZ, as well as at the fence line of the non-remediated zone.

6.4 Support Zone

The Support Zone (SZ) will be an uncontaminated area that will be the field support area for the Site operations. The SZ will contain the temporary project trailers and provide for field team communications and staging for emergency response. Appropriate sanitary facilities and safety equipment will be located in this zone. Potentially contaminated equipment or materials are not allowed in this zone. The only exception will be appropriately packaged/decontaminated and labeled samples. Meteorological conditions will be observed and noted from this zone, as well as those factors pertinent to heat and cold.

SECTION 7 - PERSONAL PROTECTIVE EQUIPMENT

7.1 General

The level of protection to be worn by field personnel will be defined and controlled by the HSO. Depending upon the type and levels of material present or anticipated at the site, varying degrees of protective equipment will be needed. If the possible hazards are unknown, a reasonable level of protection will be taken until sampling and monitoring results can ascertain potential risks. The levels of protection listed below are based on USEPA Guidelines. A list of the appropriate clothing for each level is also provided.

Level A protection must be worn when a reasonable determination has been made that the highest available level of respiratory, skin, eye, and mucous membrane protection is needed. It should be

noted that while Level A provides maximum available protection, it does not protect against all possible hazards. Consideration of the heat stress that can arise from wearing Level A protection should also enter into the decision making process. Level A protection includes:

- ◆ Open circuit, pressure-demand self-contained breathing apparatus (SCBA)
- ◆ Totally encapsulated chemical resistant suit
- ◆ Gloves, inner (surgical type)
- ◆ Gloves, outer, chemical protective
- ◆ Boots, chemical protective

Level B protection must be used when the highest level of respiratory protection is needed, but hazardous material exposure to the few unprotected areas of the body (e.g., the back of the neck) is unlikely. Level B protection includes:

- ◆ Open circuit, pressure-demand SCBA or pressure airline with escape air bottle
- ◆ Chemical protective clothing: Overalls and long sleeved jacket; disposal chemical resistant coveralls; coveralls; one or two piece chemical splash suit with hood
- ◆ Gloves, inner (surgical type)
- ◆ Gloves, outer, chemical protective
- ◆ Boots, chemical protective

Level C must be used when the required level of respiratory protection is known, or reasonably assumed to be, not greater than the level of protection afforded by air purifying respirators; and hazardous materials exposure to the few unprotected areas of the body (e.g., the back of the neck) is unlikely. Level C protection includes:

- ◆ Full or half face air-purifying respirator
- ◆ Chemical protective clothing: Overalls and long-sleeve jacket; disposable chemical resistant coveralls; coveralls; one or two piece chemical splash suit
- ◆ Gloves, inner (surgical type)
- ◆ Gloves, outer, chemical protective
- ◆ Boots, chemical protective

Level D is the basic work uniform. It cannot be worn on any site where respiratory or skin hazards exist. Level D protection includes:

- ◆ Safety boots/shoes
- ◆ Safety glasses
- ◆ Hard hat with optional face shield

Note that the use of SCBA and airline equipment is contingent upon the user receiving special training in the proper use and maintenance of such equipment.

7.2 Personal Protective Equipment – Site Specific

Level D with some modification will be required when working in the work zone on this Site. In addition to the basic work uniform specified by Level D protection, Nitrile gloves will be required when contact with soil or ground water is likely. Hearing protection will be worn when power equipment is used to perform subsurface investigation work. An upgrade to a higher level (Level C) of protection may occur if determined necessary by the HSO.

SECTION 8 - MONITORING PROCEDURES

8.1 Monitoring During Site Operations

All Site environmental monitoring should be accompanied by periodic meteorological monitoring of appropriate climatic conditions.

Monitoring will be performed by the HSO or other C&S observer during the conduct of work. A photoionization detector (PID) equipped with a 10.0 eV lamp will be utilized to monitor for the presence of volatile organic vapors within the breathing zone. Drill cuttings, excavation spoils, or other material generated during the remedial activities will also be monitored by use of the PID. The PID will be field checked for calibration accuracy three times per day (morning, lunch, and end of day).

8.2 Action Levels

If readings on the PID exceed 10 ppm for more than fifteen minutes consecutively, then personal protective equipment should be upgraded to Level C. The air purifying respirator used with Level C protective equipment must be equipped with organic vapor cartridges. If readings on the explosive gas meter are within a range of 10%-25% of the LEL then continuous monitoring will be implemented. Readings above 25% of the LEL indicate the potential for an explosive condition. Sources of ignition should be removed and the Site should be evacuated.

8.3 Personal Monitoring Procedures

Personal monitoring shall be performed as a contingency measure in the event that VOC concentrations are consistently above the 10 ppm action level as detected by the PID. If the concentration of VOCs is above this action level, then amendments to the HASP must be made before work can continue at the Site.

SECTION 9 - COMMUNICATIONS

A phone will be located on Site to be utilized by personnel conducting investigation and IRM efforts. Cell phones will be the primary means of communicating with emergency support services/facilities.

SECTION 10 - SAFETY CONSIDERATIONS FOR SITE OPERATIONS

10.1 General

Standard safe work practices that will be followed include:

- ◆ Do not climb over/under drums, or other obstacles.
- ◆ Do not enter the work zone alone.
- ◆ Practice contamination avoidance, on and off-site.
- ◆ Plan activities ahead of time, use caution when conducting concurrently running activities.
- ◆ No eating, drinking, chewing or smoking is permitted in work zones.
- ◆ Due to the unknown nature of waste placement at the Site, extreme caution should be practiced during excavation activities.
- ◆ Apply immediate first aid to any and all cuts, scratches, abrasions, etc.
- ◆ Be alert to your own physical condition. Watch your buddy for signs of fatigue, exposure, etc.
- ◆ A work/rest regimen will be initiated when ambient temperatures and protective clothing create a potential heat stress situation.
- ◆ No work will be conducted without adequate natural light or without appropriate supervision.
- ◆ Task safety briefings will be held prior to onset of task work.
- ◆ Ignition of flammable liquids within or through improvised heating devices (barrels, etc.) or space heaters is forbidden.

- ◆ Entry into areas of spaces where toxic or explosive concentrations of gases or dust may exist without proper equipment is prohibited.
- ◆ Any injury or unusual health effect must be reported to the Site health and safety officer.
- ◆ Prevent splashing or spilling of potentially contaminated materials.
- ◆ Use of contact lenses is prohibited while on site.
- ◆ Beards and other facial hair that would impair the effectiveness of respiratory protection are prohibited if respiratory protection is necessary.
- ◆ Field crew members should be familiar with the physical characteristics of investigations, including:
 - ◆ Wind direction in relation to potential sources
 - ◆ Accessibility to co-workers, equipment, and vehicles
 - ◆ Communication
 - ◆ Hot zones (areas of known or suspected contamination)
 - ◆ Site access
 - ◆ Nearest water sources
- ◆ The number of personnel and equipment in potentially contaminated areas should be minimized consistent with site operations.

10.2 Field Operations

10.2.1 Intrusive Operations

The HSO or designee will be present on-site during all intrusive work, e.g., drilling operations, excavations, trenching, and will provide monitoring to oversee that appropriate levels of protection and safety procedures are utilized by C&S Engineers, Inc., personnel. The use of salamanders or other equipment with an open flame is prohibited and the use of protective clothing, especially hard hats and boots, will be required during drilling or other heavy equipment operations.

10.2.2 Excavations and Excavation Trenching

Guidance relating to safe work practices for C&S employees regarding excavations and excavating/trenching operation is presented in Appendix A of this HASP.

SECTION 11 - DECONTAMINATION PROCEDURES

Decontamination involves physically removing contaminants and/or converting them chemically into innocuous substances. Only general guidance can be given on methods and techniques for decontamination. Decontamination procedures are designed to:

- ◆ Remove contaminant(s).
- ◆ Avoid spreading the contamination from the work zone.
- ◆ Avoid exposing unprotected personnel outside of the work zone to contaminants.

Contamination avoidance is the first and best method for preventing spread of contamination from a hazardous site. Each person involved in site operations must practice the basic methods of contamination avoidance listed below. Additional precautions may be required in the HASP.

- ◆ Know the limitations of all protective equipment being used.
- ◆ Do not enter a contaminated area unless it is necessary to carry out a specific objective.
- ◆ When in a contaminated area, avoid touching anything unnecessarily.
- ◆ Walk around pools of liquids, discolored areas, or any area that shows evidence of possible contamination.
- ◆ Walk upwind of contamination, if possible.
- ◆ Do not sit or lean against anything in a contaminated area. If you must kneel (e.g., to take samples), use a plastic ground sheet.
- ◆ If at all possible, do not set sampling equipment directly on contaminated areas. Place equipment on a protective cover such as a ground cloth.
- ◆ Use the proper tools necessary to safely conduct the work.

Specific methods that may reduce the chance of contamination are:

- ◆ Use of remote sampling techniques.
- ◆ Opening containers by non-manual means.
- ◆ Bagging monitoring instruments.
- ◆ Use of drum grapplers.
- ◆ Watering down dusty areas.

Equipment which will need to be decontaminated includes tools, monitoring equipment, and personal protective equipment. Items to be decontaminated will be brushed off, rinsed, and

dropped into a plastic container supplied for that purpose. They will then be washed with a detergent solution and rinsed with clean water. Monitoring instruments may be wrapped in plastic bags prior to entering the field in order to reduce the potential for contamination. Instrumentation that is contaminated during field operations will be carefully wiped down. Heavy equipment, if utilized for operations where it may be contaminated, will have prescribed decontamination procedures to prevent contaminant materials from potentially leaving the Site. On-site contractors, such as drillers or backhoe operators, will be responsible for decontaminating all construction equipment prior to demobilization.

SECTION 12 – DISPOSAL PROCEDURES

All discarded materials, waste materials, or other objects shall be handled in such a way as to reduce or eliminate the potential for spreading contamination, creating a sanitary hazard, or causing litter to be left on-site. All potentially contaminated materials, e.g., clothing, gloves, etc., will be bagged or drummed as necessary and segregated for proper disposal. All contaminated waste materials shall be disposed of as required by the provisions included in the contract and consistent with regulatory provisions. All non-contaminated materials shall be collected and bagged for appropriate disposal. Investigation derived waste will be managed consistent with the work plan for this Site and DER-10 Technical Guidance for Site Investigation and Remediation dated May 2010.

SECTION 13 - EMERGENCY RESPONSE PROCEDURES

As a result of the hazards at the Site, and the conditions under which operations are conducted, there is the possibility of emergency situations. This section establishes procedures for the implementation of an emergency plan.

13.1 Emergency Coordinator

Emergency Coordinator: Daniel Riker Work Phone: (716) 847-1630

The Emergency Coordinator or his on-site designee will, in concert with Campus Square LLC, implement the emergency response procedures whenever conditions at the Site warrant such action. The Emergency Coordinator or his on-site designee will be responsible for assuring the evacuation, emergency treatment, emergency transport of C&S personnel as necessary, and

notification of emergency response units (refer to phone listing in the beginning of this HASP) and the appropriate management staff.

13.2 Evacuation

In the event of an emergency situation, such as fire, explosion, significant release of toxic gases, etc., all personnel will evacuate and assemble in a designated assembly area. The Emergency Coordinator or his on-site designee will have authority to contact outside services as required. Under no circumstances will incoming personnel or visitors be allowed to proceed into the area once the emergency signal has been given. The Emergency Coordinator or his on-site designee must see that access for emergency equipment is provided and that all ignition sources have been shut down once the emergency situation is established. Once the safety of all personnel is established, the Fire Department and other emergency response groups will be notified by telephone of the emergency.

13.3 Potential or Actual Fire or Explosion

Immediately evacuate the Site and notify local fire and police departments, and other appropriate emergency response groups, if LEL values are above 25% in the work zone or if an actual fire or explosion has taken place.

13.4 Environmental Incident (spread or release of contamination)

Control or stop the spread of contamination if possible. Notify the Emergency Coordinator and the Project Manager. Other appropriate response groups will be notified as appropriate.

13.5 Personnel Injury

Emergency first aid shall be applied on-site as necessary. Then, decontaminate (en route if necessary) and transport the individual to nearest medical facility if needed. The ambulance/rescue squad shall be contacted for transport as necessary in an emergency. The directions to the hospital are shown in Section 1 of this HASP and a map is shown in Attachment A.

13.6 Personnel Exposure

- ◆ *Skin Contact:* Use copious amounts of soap and water. Wash/rinse affected area thoroughly, and then provide appropriate medical attention. Eyes should be thoroughly rinsed with water for at least 15 minutes.
- ◆ *Inhalation:* Move to fresh air and/or, if necessary, decontaminate and transport to emergency medical facility.
- ◆ *Ingestion:* Decontaminate and transport to emergency medical facility.
- ◆ *Puncture Wound/Laceration:* Decontaminate, if possible, and transport to emergency medical facility.

13.7 Adverse Weather Conditions

In the event of adverse weather conditions, the HSO will determine if work can continue without sacrificing the health and safety of field workers.

13.8 Incident Investigation and Reporting

In the event of an incident, procedures discussed in the Medical Emergency/Incident Response Protocol, presented in Appendix B of this HASP, shall be followed.

SECTION 14 - COMMUNITY RELATIONS

14.1 Community Health and Safety Plan

14.1.1 Community Health and Safety Monitoring

As part of the site work, three general types of efforts are scheduled, including, non-intrusive reconnaissance tasks, sampling or monitoring tasks (monitoring point sampling), and intrusive tasks (test trenching, subsurface borings, monitoring well installation). During completion of general reconnaissance and sampling or monitoring tasks, potential for health and safety risks to off-site landowners or the local community are not anticipated.

During completion of intrusive efforts at or adjacent to the Site, health and safety monitoring efforts will be concentrated on the area or areas in which intrusive efforts are being completed. Since the air pathway is the most available and likely avenue for the release of potential contaminants to the atmosphere at or near the Site, in addition to limiting public or community

access to the areas in which intrusive efforts are completed, health and safety measures will primarily consist of monitoring the air pathway for worker exposure.

14.1.2 Community Air Monitoring Plan

Efforts will be taken to complete field work in a manner which will minimize the creation of airborne dust or particulates. Under dry conditions, work areas may be wetted to control dust. During periods of extreme wind, intrusive field work may be halted until such time as the potential for creating airborne dust or particulate matter as a result of investigation activities is limited. Periodic monitoring following the guidelines of the site's Community Air Monitoring Plan (see Appendix C of the IRM) will be implemented during all non-intrusive Site investigation activities, including surface soil and sediment sampling, and collection of groundwater samples from groundwater monitoring wells.

During completion of Site investigation, a community air monitoring plan meeting the requirements of the site's Community Air Monitoring Plan (see Appendix C of the IRM) will be implemented for the duration of intrusive activities. These additional air monitoring activities will include establishment of background conditions, continuous monitoring for volatile organic compounds and/or particulates at the downwind work area (exclusion zone) perimeter, recording of monitoring data, and institution and documentation of Response Levels and appropriate actions in accordance with NYSDOH guidance.

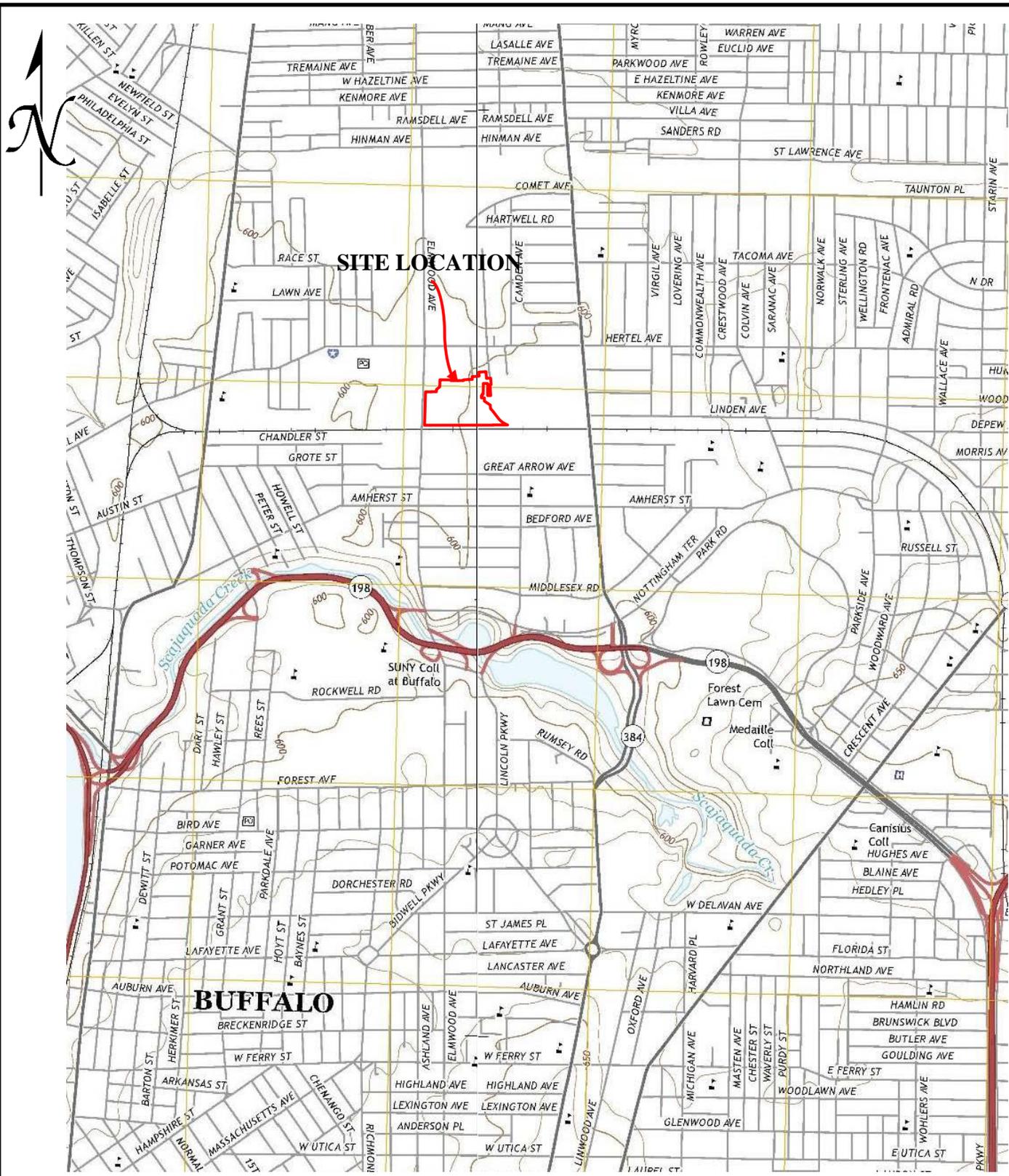
SECTION 15 - AUTHORIZATIONS

Personnel authorized to enter the Site while operations are being conducted must be approved by the HSO. Authorization will involve completion of appropriate training courses, medical examination requirements, and review and sign-off of this HASP. No C&S personnel should enter the work zone alone. Each site visitor should check in with the HSO or Project Manager prior to entering the work zones.

FIGURE 1

SITE LOCATION MAP





SITE LOCATION

BUFFALO
BRECKENRIDGE ST

WITTMAN GEOSCIENCES		
SITE LOCUS PLAN		
1801 ELMWOOD AVENUE BUFFALO, NEW YORK		
DRAWN BY: MMW	SCALE: NOT TO SCALE	PROJECT: 18-103
CHECKED BY: MMW	DATE: 08/2018	FIGURE NO: 1

Base map adapted from USGS topographic maps Buffalo NE and NW, New York quadrangle, dated 2016

FIGURE 2

SITE MAP



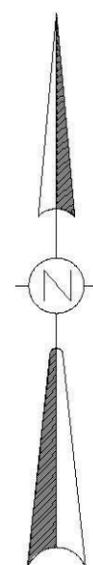
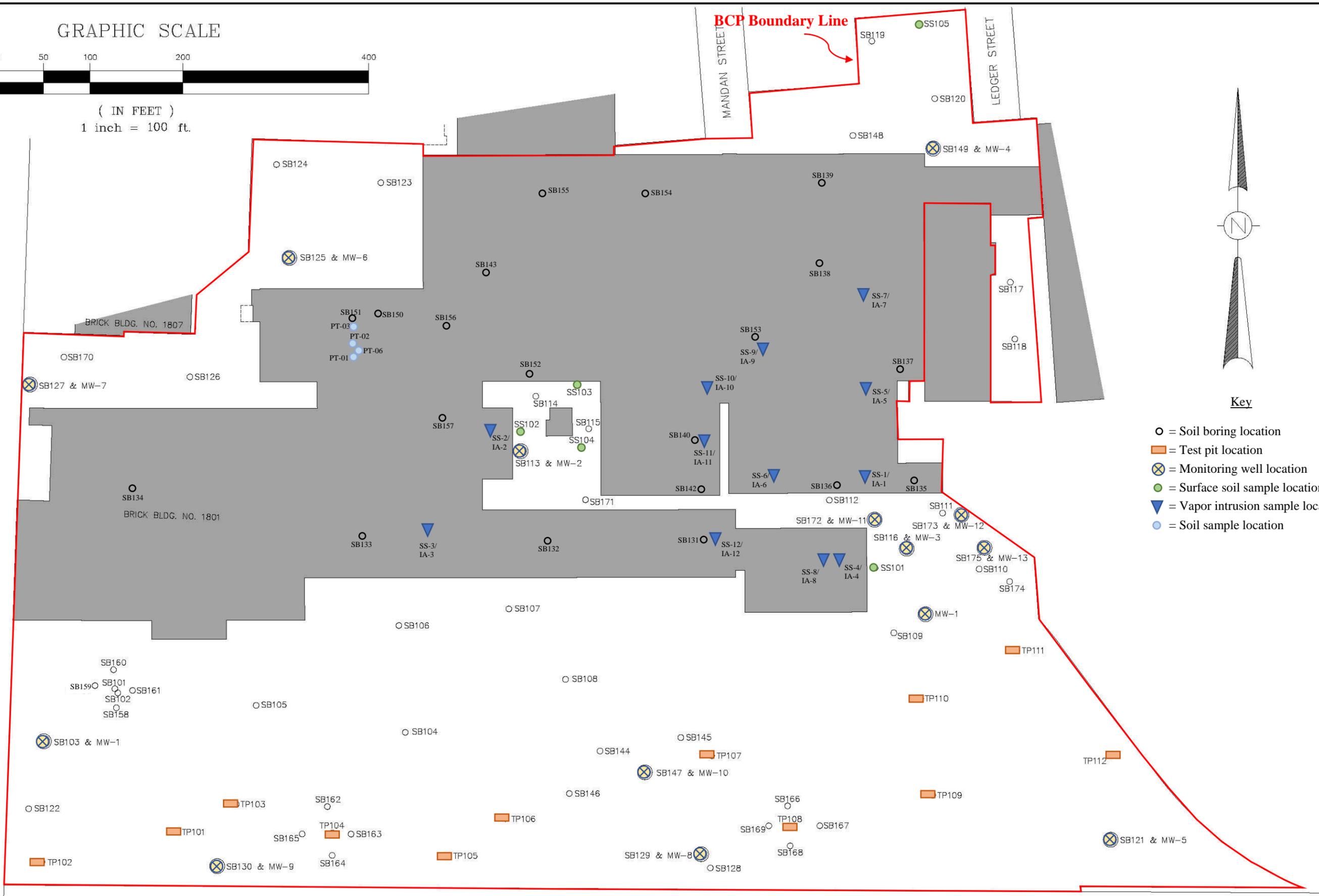
GRAPHIC SCALE



(IN FEET)
1 inch = 100 ft.

ELMWOOD AVENUE (FORMERLY MACPHERSON STREET)

BCP Boundary Line



Key

- = Soil boring location
- = Test pit location
- ⊗ = Monitoring well location
- = Surface soil sample location
- ▼ = Vapor intrusion sample location
- = Soil sample location

CONRAIL (FORMERLY NEW YORK CENTRAL RAILROAD)

WITTMAN GEOSCIENCES, PLLC

Remedial Investigation Locations

DRAWN BY: MMW

SCALE: 1" = 100'

PROJECT: 18-103

1801 Elmwood, Buffalo, NY

CHECKED BY: MMW

DATE: 03/2019

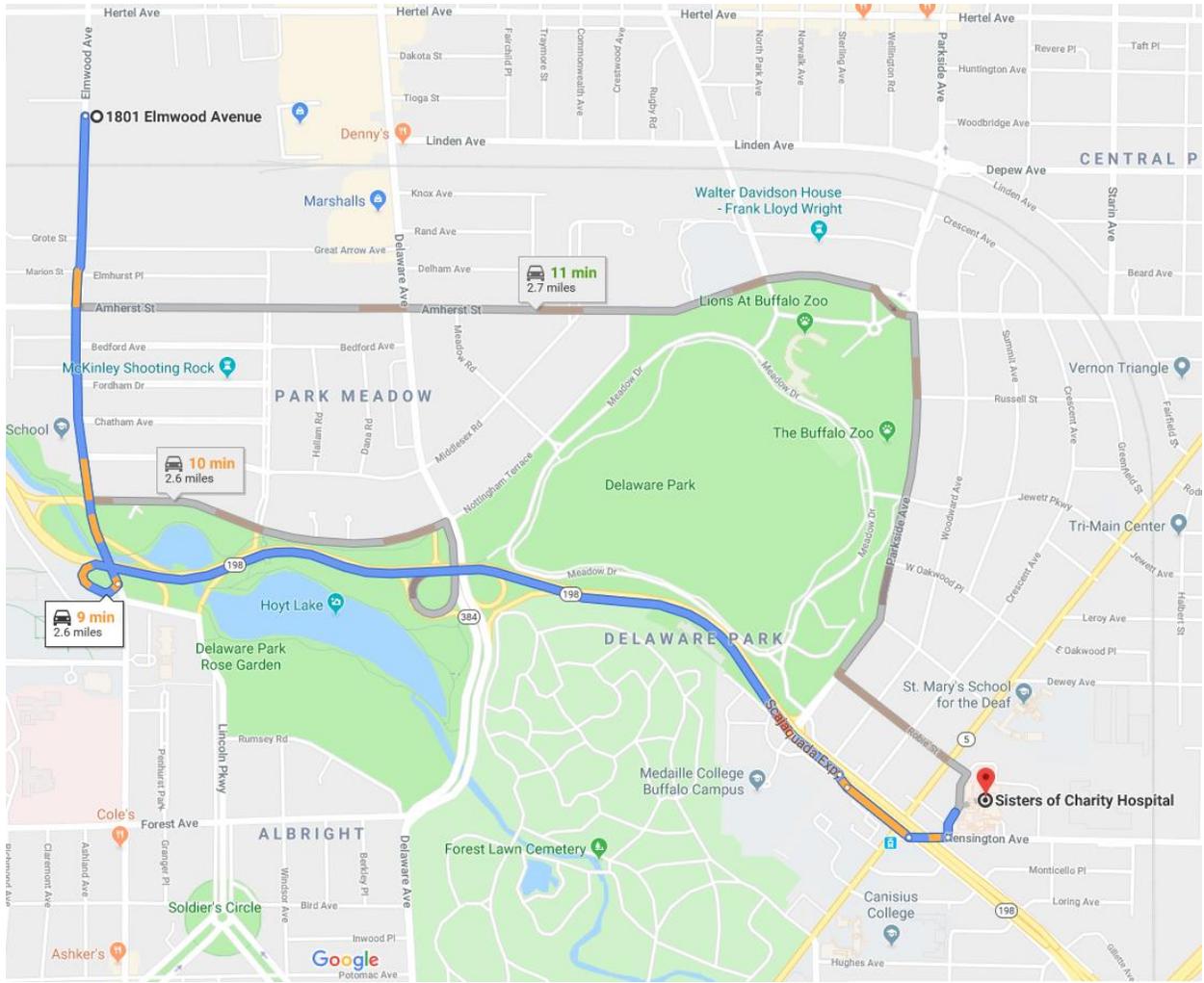
FIGURE NO: 2

Exterior Investigation locations located by McIntosh & McIntosh; Interior locations measured in the field.

ATTACHMENT A

MAP TO HOSPITAL





Appendix A

EXCAVATION/TRENCHING GUIDELINE



**C&S ENGINEERS, INC. HEALTH & SAFETY GUIDELINE #14
EXCAVATION/TRENCHING OPERATIONS**

TABLE OF CONTENTS

1.0	PURPOSE	1
2.0	SCOPE	1
3.0	DEFINITION	1
4.0	RESPONSIBILITY	1
5.0	GUIDELINES	1
5.1	Hazards Associated With Excavation/Trenching.....	1
5.2	Procedures Prior to Excavation	2
5.3	Procedures For Doing The Excavation	2
5.4	Entering the Excavation	3
6.0	REFERENCES	3
7.0	ATTACHMENTS	3

C&S ENGINEERS, INC.
EXCAVATION/TRENCHING OPERATIONS

1.0 PURPOSE

To establish safe operating procedures for excavation/trenching operations at C&S work sites.

2.0 SCOPE

Applies to all C&S activity where excavation or trenching operations take place.

3.0 DEFINITIONS

Excavation — Any manmade cavity or depression in the earth's surface, including its sides, walls, or faces, formed by earth removal and producing unsupported earth conditions by reasons of the excavation.

Trench — A narrow excavation made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench is not greater than 15 feet.

4.0 RESPONSIBILITY EMPLOYEES

Employees — All employees must understand and follow the procedures outlined in this guideline during all excavation and trenching operations.

Health and Safety Coordinator/Officer (HSC/HSO) - The HSC/HSO is responsible for ensuring that these procedures are implemented at each work site.

5.0 GUIDELINES

5.1 Hazards Associated With Excavation/Trenching

The principal hazards associated with excavation/trenching are:

- Suffocation, crushing, or other injury from falling material.
- Damage/failure of installed underground services and consequent hazards.
- Tripping, slipping, or falling.
- Possibility of explosive, flammable, toxic, or oxygen-deficient atmosphere in excavation.

5.2 Procedures Prior to Excavation

1. Underground Utilities

- Determine the presence and location of any underground chemical or utility pipes, electrical, telephone, or instrument wire or cables.
- If the local DigSafely NY is unable to locate private/domestic or plant utilities, then an independent utility locating service must be contacted and mobilized to the site.
- Identify the location of underground services by stakes, markers or paint.
- Arrange to de-energize or isolate underground services during excavation. If not possible, or if location is not definite, method of excavation shall be established to minimize hazards by such means as:
 - a) Use of hand tools in area of underground services.
 - b) Insulating personnel and equipment from possible electrical contact.
 - c) Use of tools or equipment that will reduce possibility of damage to underground services and hazard to worker.

2. Identify Excavation Area — Areas to be excavated shall be identified and segregated by means of barricades, ropes, and/or signs to prevent access of unauthorized personnel and equipment. Suitable means shall be provided to make barriers visible at all times.
3. Surface Water Provide means of diverting surface water from excavation.
4. Shoring/Bracing — Shoring or bracing that may be required for installed equipment adjacent to the excavation shall be designed by a competent person.
5. Structural Ramps — Structural ramps that are used solely by employees as a means of access to or egress from the excavation shall be designed by a competent person.

5.3 Procedures For Doing The Excavation

1. **Determine the need for shoring/sloping** — the type of soil will establish the need for shoring, slope of the excavation, support systems, and equipment to be used. The soil condition may change as the excavation proceeds. Appendices A, B, C, D, E, and F of the OSHA Excavation Regulation, 29 CFR 1926 Subpart P, are to be used in defining shoring and sloping requirements.
2. **Mobile equipment** — For safe use of mobile industrial equipment in or near the excavation, the load carrying capacity of soil shall be established and suitable protection against collapse of soil provided by the use of mats, barricades, restricting the location of equipment, or shoring.
3. Excavated material (spoil) shall be stored at least two (2) feet from the edge of the excavation.
4. All trench (vertical sides) excavations greater than five (5) feet deep shall be shored.

5. The excavation shall be inspected daily for changes in conditions, including the presence of ground water, change in soil condition, or effects of weather such as rain or freeze. A safe means of continuing the work shall be established based on changes in condition. Typically test trench excavations made as part of an environmental subsurface investigation are made and backfilled the same day.
6. Appropriate monitoring for gas, toxic, or flammable materials will be conducted to establish the need for respiratory equipment, ventilation, or other measures required to continue the excavation safely.
7. Adequate means of dewatering the excavation shall be provided by the contractor as required.
8. A signal person shall be provided to direct powered equipment if working in the excavation with other personnel.
9. A signal person shall be provided when backfilling excavations to direct powered equipment working in the excavation with other personnel.
10. Warning vests will be worn when employees are exposed to public vehicular traffic.
11. Employees shall stand away from vehicles being loaded or unloaded, and shall not be permitted underneath loads handled by lifting or dragging equipment.
12. Emergency rescue equipment, such as breathing apparatus, a safety harness and line, or a basket stretcher, shall be readily available if hazardous atmospheric conditions exist or may be expected to develop. The specifics will be determined by the HSC/HSM.
13. Walkways or bridges with standard guardrail shall be provided where employees or equipment are required or permitted to cross over excavations.

5.4 Entering the Excavation

No C&S Engineers, Inc., employee shall enter an excavation which fails to meet the requirements of Section 5.3 of this guideline.

6.0 REFERENCES

29 CFR 1926, Subpart P - Excavations

7.0 ATTACHMENTS

29 CFR 1926 Subpart P - Appendices A, B, F



[Regulations \(Standards - 29 CFR\) - Table of Contents](#)

● Part Number:	1926
● Part Title:	Safety and Health Regulations for Construction
● Subpart:	P
● Subpart Title:	Excavations
● Standard Number:	1926 Subpart P App A
● Title:	Soil Classification

(a) Scope and application - (1) Scope. This appendix describes a method of classifying soil and rock deposits based on site and environmental conditions, and on the structure and composition of the earth deposits. The appendix contains definitions, sets for requirements, and describes acceptable visual and manual tests for use in classifying soils.

(2) Application. This appendix applies when a sloping or benching system is designed in accordance with the requirements set for 1926.652(b)(2) as a method of protection for employees from cave-ins. This appendix also applies when timber shoring for excavations designed as a method of protection from cave-ins in accordance with appendix C to subpart P of part 1926, and when aluminum shoring is designed in accordance with appendix D. This Appendix also applies if other protective systems are designed and selected from data prepared in accordance with the requirements set forth in 1926.652(c), and the use of the data is predicated on the soil classification system set forth in this appendix.

(b) Definitions. The definitions and examples given below are based on, in whole or in part, the following; American Society for Testing and Materials (ASTM) Standards D653-85 and D2488; The Unified Soils Classification System; The U.S. Department of Agriculture (USDA) Textural Classification Scheme; and The National Bureau of Standards Report BSS-121.

"Cemented soil" means a soil in which the particles are held together by a chemical agent, such as calcium carbonate, such that a hand-size sample cannot be crushed into powder or individual soil particles by finger pressure.

"Cohesive soil" means clay (fine grained soil), or soil with a high clay content, which has cohesive strength. Cohesive soil does not crumble, can be excavated with vertical sideslopes, and is plastic when moist. Cohesive soil is hard to break up when dry, and exhibits significant cohesion when submerged. Cohesive soils include clayey silt, sandy clay, silty clay, clay and organic clay.

"Dry soil" means soil that does not exhibit visible signs of moisture content.

"Fissured" means a soil material that has a tendency to break along definite planes of fracture with little resistance, or a material that exhibits open cracks, such as tension cracks, in an exposed surface.

"Granular soil" means gravel, sand, or silt (coarse grained soil) with little or no clay content. Granular soil has no cohesive strength. Some moist granular soils exhibit apparent cohesion. Granular soil cannot be molded when moist and crumbles easily when dry.

"Layered system" means two or more distinctly different soil or rock types arranged in layers. Micaceous seams or weakened planes in rock or shale are considered layered.

"Moist soil" means a condition in which a soil looks and feels damp. Moist cohesive soil can easily be shaped into a ball and rolled into small diameter threads before crumbling. Moist granular soil that contains some cohesive material will exhibit signs of cohesion between particles.

"Plastic" means a property of a soil which allows the soil to be

deformed or molded without cracking, or appreciable volume change.

"Saturated soil" means a soil in which the voids are filled with water. Saturation does not require flow. Saturation, or near saturation, is necessary for the proper use of instruments such as a pocket penetrometer or shear vane.

"Soil classification system" means, for the purpose of this subpart, a method of categorizing soil and rock deposits in a hierarchy of Stable Rock, Type A, Type B, and Type C, in decreasing order of stability. The categories are determined based on an analysis of the properties and performance characteristics of the deposits and the characteristics of the deposits and the environmental conditions of exposure.

"Stable rock" means natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed.

"Submerged soil" means soil which is underwater or is free seeping.

"Type A" means cohesive soils with an unconfined, compressive strength of 1.5 ton per square foot (tsf) (144 kPa) or greater. Examples of cohesive soils are: clay, silty clay, sandy clay, clay loam and, in some cases, silty clay loam and sandy clay loam. Cemented soils such as caliche and hardpan are also considered Type A. However, no soil is Type A if:

- (i) The soil is fissured; or
- (ii) The soil is subject to vibration from heavy traffic, pile driving, or similar effects; or
- (iii) The soil has been previously disturbed; or
- (iv) The soil is part of a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or greater; or
- (v) The material is subject to other factors that would require it to be classified as a less stable material.

"Type B" means:

- (i) Cohesive soil with an unconfined compressive strength greater than 0.5 tsf (48 kPa) but less than 1.5 tsf (144 kPa); or
- (ii) Granular cohesionless soils including: angular gravel (similar to crushed rock), silt, silt loam, sandy loam and, in some cases, silty clay loam and sandy clay loam.
- (iii) Previously disturbed soils except those which would otherwise be classed as Type C soil.
- (iv) Soil that meets the unconfined compressive strength or cementation requirements for Type A, but is fissured or subject to vibration; or
- (v) Dry rock that is not stable; or
- (vi) Material that is part of a sloped, layered system where the layers dip into the excavation on a slope less steep than four horizontal to one vertical (4H:1V), but only if the material would otherwise be classified as Type B.

"Type C" means:

- (i) Cohesive soil with an unconfined compressive strength of 0.5 tsf (48 kPa) or less; or
- (ii) Granular soils including gravel, sand, and loamy sand; or
- (iii) Submerged soil or soil from which water is freely seeping; or
- (iv) Submerged rock that is not stable, or
- (v) Material in a sloped, layered system where the layers dip into the excavation or a slope of four horizontal to one vertical (4H:1V) or steeper.

"Unconfined compressive strength" means the load per unit area at which a soil will fail in compression. It can be determined by laboratory testing, or estimated in the field using a pocket penetrometer, by thumb penetration tests, and other methods.

"Wet soil" means soil that contains significantly more moisture than moist soil, but in such a range of values that cohesive material will slump or begin to flow when vibrated. Granular material that would exhibit cohesive properties when moist will lose those cohesive properties when wet.

(c) Requirements - (1) Classification of soil and rock deposits. Each soil and rock deposit shall be classified by a competent person as Rock, Type A, Type B, or Type C in accordance with the definitions set forth in paragraph (b) of this appendix.

(2) Basis of classification. The classification of the deposits shall be made based on the results of at least one visual and at least one laboratory analysis. Such analyses shall be conducted by a competent person using tests described in paragraph (d) below, or in other recognized methods of soil classification and testing such as those adopted by the American Society for Testing Materials, or the U.S. Department of Agriculture textural classification system.

(3) Visual and manual analyses. The visual and manual analyses, such as those noted as being acceptable in paragraph (d) of this appendix, shall be designed and conducted to provide sufficient quantitative and qualitative information as may be necessary to identify properties, factors, and conditions affecting the classification of the deposits.

(4) Layered systems. In a layered system, the system shall be classified in accordance with its weakest layer. However, each layer shall be classified individually where a more stable layer lies under a less stable layer.

(5) Reclassification. If, after classifying a deposit, the properties, factors, or conditions affecting its classification change in any way, the deposit shall be reclassified as necessary to reflect the changed circumstances.

(d) Acceptable visual and manual tests. - (1) Visual tests. Visual analysis is conducted to determine qualitative information regarding an excavation site in general, the soil adjacent to the excavation, the soil forming the sides of the open excavation, and the soil taken from excavated material.

(i) Observe samples of soil that are excavated and soil in the sides of the excavation. Estimate the range of particle sizes and the amounts of the particle sizes. Soil that is primarily composed of fine-grained material is cohesive material. Soil composed of coarse-grained sand or gravel is granular material.

(ii) Observe soil as it is excavated. Soil that remains in clumps when excavated is cohesive. Soil that breaks up easily and does not form clumps is granular.

(iii) Observe the side of the opened excavation and the surface area adjacent to the excavation. Crack-like openings such as tensile cracks could indicate fissured material. If chunks of soil spall off a vertical side, the soil could be fissured. Small spalls are evidence of moisture in the ground and are indications of potentially hazardous situations.

(iv) Observe the area adjacent to the excavation and the excavation itself for evidence of existing utility and other underground structures and to identify previously disturbed soil.

(v) Observe the opened side of the excavation to identify layered systems. Examine layered systems to identify if the layers slope away from the excavation. Estimate the degree of slope of the layers.

(vi) Observe the area adjacent to the excavation and the sides of the opened excavation for evidence of surface water, water seepage, or the location of the level of the water table.

(vii) Observe the area adjacent to the excavation and the area within the excavation for sources of vibration that may affect the stability of the excavation face.

(2) Manual tests. Manual analysis of soil samples is conducted to determine quantitative as well as qualitative properties of soil and to provide more information in order to classify soil properly.

(i) Plasticity. Mold a moist or wet sample of soil into a ball and attempt to roll it into threads as thin as 1/8-inch in diameter. Cohesive material can be successfully rolled into threads without crumbling. For example, if at least a two inch (50 mm) length of 1/8-inch diameter thread can be held on one end without tearing, the soil is cohesive.

(ii) Dry strength. If the soil is dry and crumbles on its own or with moderate pressure into individual grains or fine powder, it is granular (a combination of gravel, sand, or silt). If the soil is dry and falls into clumps which break up into smaller clumps, but the smaller clumps can only be broken up with difficulty, it may be clay in any combination with gravel, sand or silt. If the dry soil breaks into clumps which break up into small clumps and which can only be broken with difficulty, and there is no visual indication the soil is fissured, the soil is considered unfissured.

(iii) Thumb penetration. The thumb penetration test can be used to estimate the unconfined compressive strength of cohesive soil. This test is based on the thumb penetration test described in American Society for Testing and Materials (ASTM) Standard designation "Standard Recommended Practice for Description of Soils (Visual - Manual Procedure)." Type A soils with an unconfined compressive strength of 1.5 tsf can be readily indented by the thumb; however, they can be penetrated by the thumb only with very great effort. Type B soils with an unconfined compressive strength of 0.5 tsf can be easily penetrated several inches by the thumb, and can be molded by finger pressure. This test should be conducted on an undisturbed soil sample, such as a large clump of spoil, as soon as practical after excavation to keep to a minimum the effects of exposure to drying influences. If the excavation is later exposed to wetting influences (e.g., flooding), the classification of the soil must be changed accordingly.

(iv) Other strength tests. Estimates of unconfined compressive strength of soils can also be obtained by use of a pocket penetrometer using a hand-operated shearvane.

(v) Drying test. The basic purpose of the drying test is to differentiate between cohesive material with fissures, unfissured cohesive material, and granular material. The procedure for the drying test involves drying a sample of soil that is approximately one inch thick (2.5 to six inches (15.24 cm) in diameter until it is thoroughly dry:

(A) If the sample develops cracks as it dries, significant fissures are indicated.

(B) Samples that dry without cracking are to be broken by hand. If considerable force is necessary to break a sample, the soil has a high cohesive material content. The soil can be classified as an unfissured cohesive material and the unconfined compressive strength determined.

(C) If a sample breaks easily by hand, it is either a fissured cohesive material or a granular material. To distinguish between the two, pulverize the dried clumps of the sample by hand or by stepping on them. If the clumps do not pulverize easily, the material is cohesive. If they pulverize easily into very small fragments, the material is granular.

 [Next Standard \(1926 Subpart P App B\)](#)

 [Regulations \(Standards - 29 CFR\) - Table of Contents](#)

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[Regulations \(Standards - 29 CFR\) - Table of Contents](#)

● Part Number:	1926
● Part Title:	Safety and Health Regulations for Construction
● Subpart:	P
● Subpart Title:	Excavations
● Standard Number:	1926 Subpart P App B
● Title:	Sloping and Benching

(a) **Scope and application.** This appendix contains specifications for sloping and benching when used as methods of protecting working in excavations from cave-ins. The requirements of this appendix apply when the design of sloping and benching protective is to be performed in accordance with the requirements set forth in § 1926.652(b)(2).

(b) **Definitions.**

Actual slope means the slope to which an excavation face is excavated.

Distress means that the soil is in a condition where a cave-in is imminent or is likely to occur. Distress is evidenced by such phenomena as the development of fissures in the face of or adjacent to an open excavation; the subsidence of the edge of an excavation; the slumping of material from the face or the bulging or heaving of material from the bottom of an excavation; the spalling of material from the face of an excavation; and raveling, i.e., small amounts of material such as pebbles or little clumps of material suddenly separating from the excavation and trickling or rolling down into the excavation.

Maximum allowable slope means the steepest incline of an excavation face that is acceptable for the most favorable site conditions for protection against cave-ins, and is expressed as the ratio of horizontal distance to vertical rise (H:V).

Short term exposure means a period of time less than or equal to 24 hours that an excavation is open.

(c) **Requirements -- (1) Soil classification.** Soil and rock deposits shall be classified in accordance with appendix A to subpart I of 1926.

(2) **Maximum allowable slope.** The maximum allowable slope for a soil or rock deposit shall be determined from Table B-1 of this appendix.

(3) **Actual slope.** (i) The actual slope shall not be steeper than the maximum allowable slope.

(ii) The actual slope shall be less steep than the maximum allowable slope, when there are signs of distress. If that situation occurs, the actual slope shall be cut back to an actual slope which is at least 1/2 horizontal to one vertical (1/2H:1V) less steep than the maximum allowable slope.

(iii) When surcharge loads from stored material or equipment, operating equipment, or traffic are present, a competent person shall determine the degree to which the actual slope must be reduced below the maximum allowable slope, and shall assure that such reduction is achieved. Surcharge loads from adjacent structures shall be evaluated in accordance with § 1926.651(i).

(4) **Configurations.** Configurations of sloping and benching systems shall be in accordance with Figure B-1.

**TABLE B-1
MAXIMUM ALLOWABLE SLOPES**

SOIL OR ROCK TYPE	MAXIMUM ALLOWABLE SLOPES (H:V)(1) FOR EXCAVATIONS LESS THAN 20 FEET DEEP(3)
STABLE ROCK	VERTICAL (90°)
TYPE A (2)	3/4:1 (53°)
TYPE B	1:1 (45°)
TYPE C	1 1/2:1 (34°)

Footnote(1) Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal. Angle rounded off.

Footnote(2) A short-term maximum allowable slope of 1/2H:1V (63°) is allowed in excavations in Type A soil that are 12 feet (3.67 m) or less in depth. Short-term maximum allowable slopes for excavations greater than 12 feet (3.67 m) in depth shall be 3/4H:1V (53°).

Footnote(3) Sloping or benching for excavations greater than 20 feet deep shall be designed by a registered professional engineer.

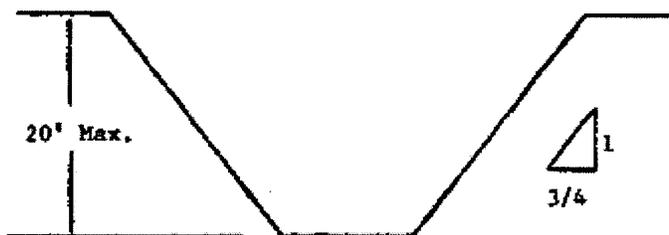
Figure B-1

Slope Configurations

(All slopes stated below are in the horizontal to vertical ratio)

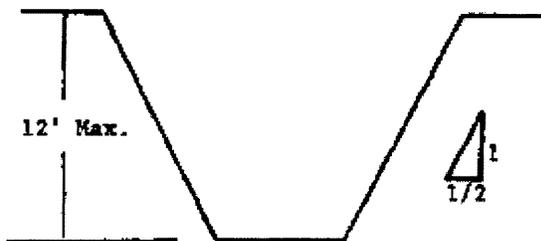
B-1.1 Excavations made in Type A soil.

1. All simple slope excavation 20 feet or less in depth shall have a maximum allowable slope of 3/4:1.



SIMPLE SLOPE -- GENERAL

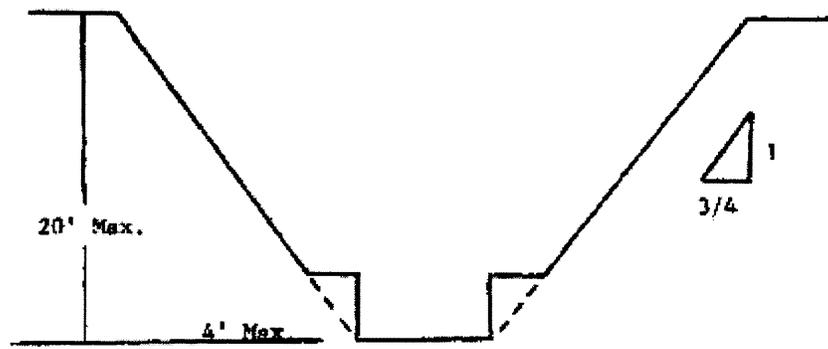
Exception: Simple slope excavations which are open 24 hours or less (short term) and which are 12 feet or less in depth shall have maximum allowable slope of 1/2:1.



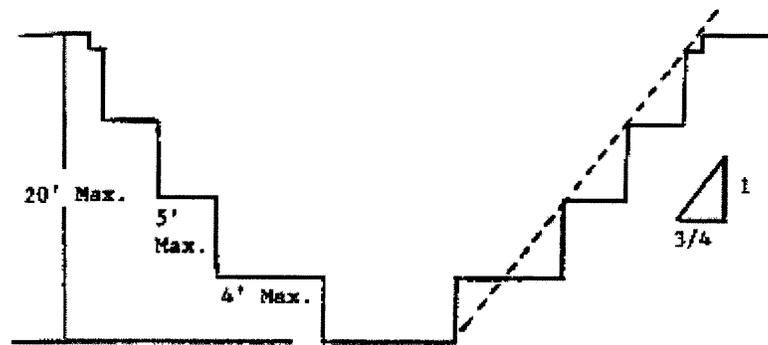
SIMPLE SLOPE -- SHORT TERM

2. All benched excavations 20 feet or less in depth shall have a maximum allowable slope of 3/4 to 1 and maximum bench dimensions

follows:

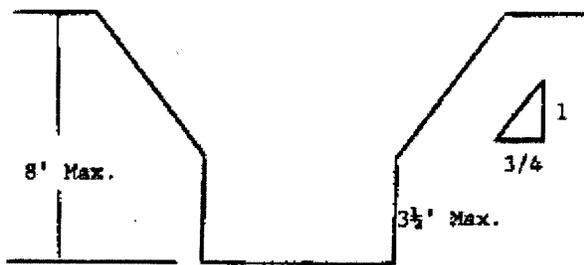


SIMPLE BENCH



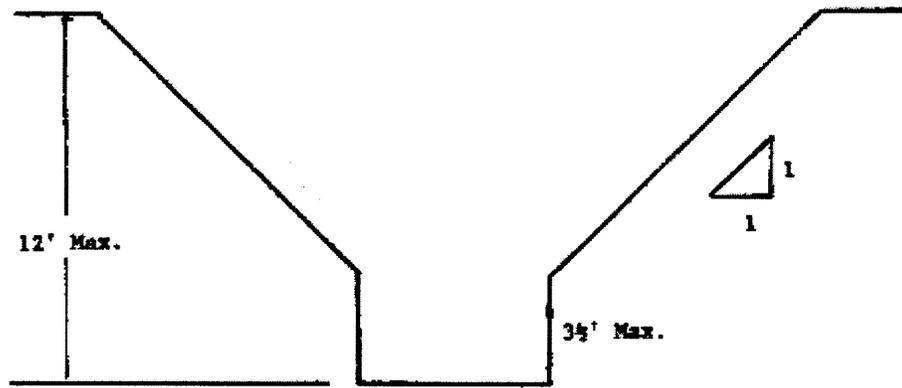
MULTIPLE BENCH

3. All excavations 8 feet or less in depth which have unsupported vertically sided lower portions shall have a maximum vertical side feet.



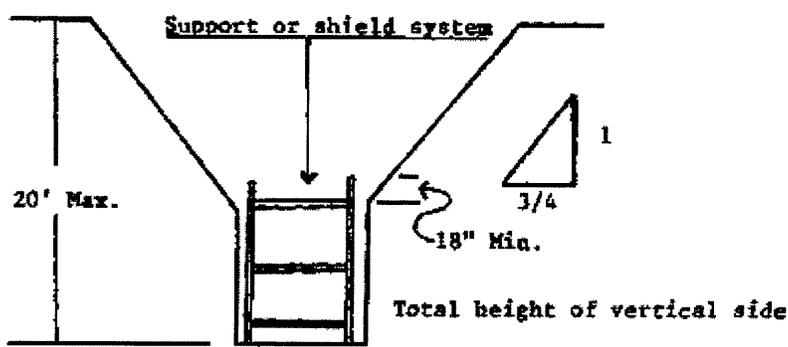
UNSUPPORTED VERTICALLY SIDED LOWER PORTION -- MAXIMUM 8 FEET IN DEPTH)

All excavations more than 8 feet but not more than 12 feet in depth with unsupported vertically sided lower portions shall have a allowable slope of 1:1 and a maximum vertical side of 3 1/2 feet.



UNSUPPORTED VERTICALLY SIDED LOWER PORTION -- MAXIMUM 12 FEET IN DEPTH)

All excavations 20 feet or less in depth which have vertically sided lower portions that are supported or shielded shall have a maximum allowable slope of 3/4:1. The support or shield system must extend at least 18 inches above the top of the vertical side.

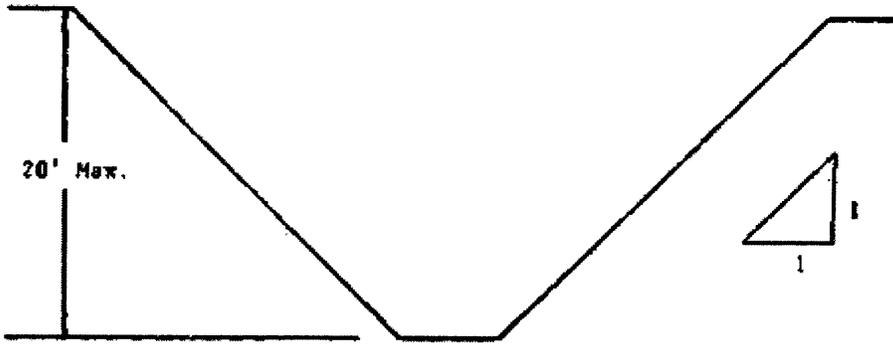


SUPPORTED OR SHIELDED VERTICALLY SIDED LOWER PORTION

4. All other simple slope, compound slope, and vertically sided lower portion excavations shall be in accordance with the other options permitted under § 1926.652(b).

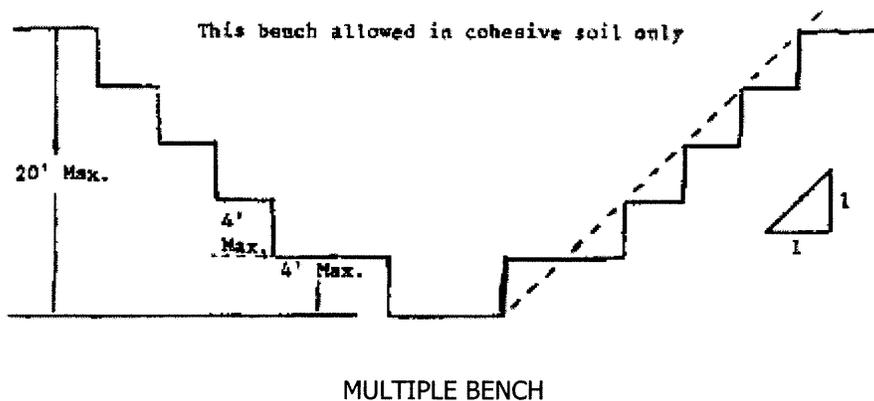
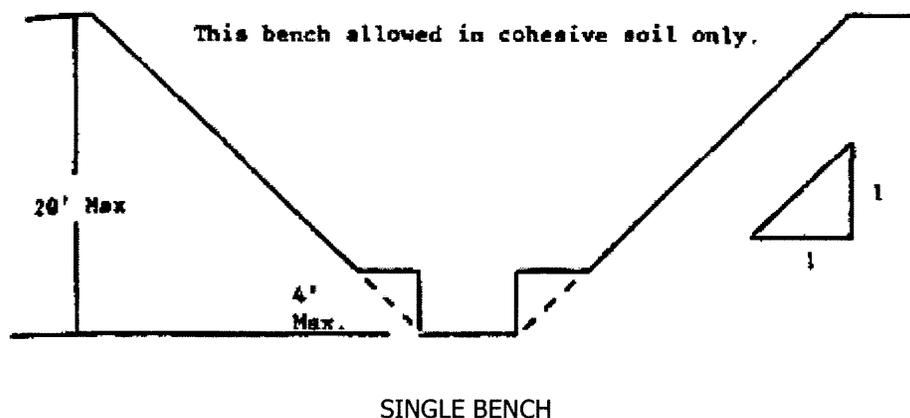
B-1.2 Excavations Made in Type B Soil

1. All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1.

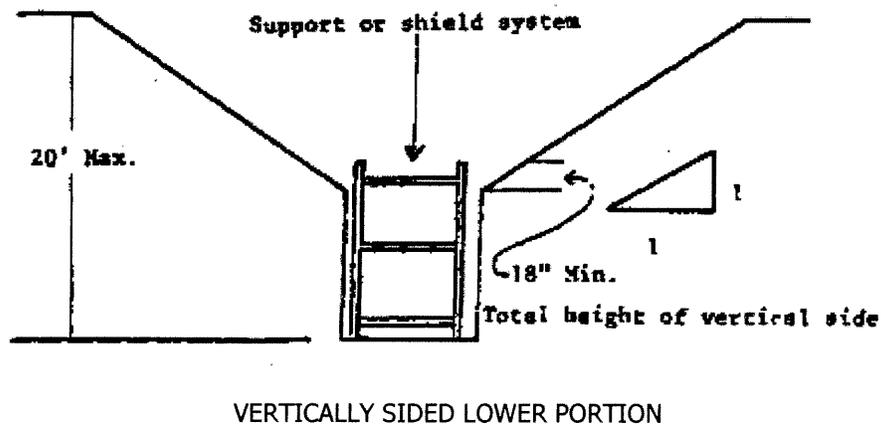


SIMPLE SLOPE

2. All benched excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1 and maximum bench dimensions



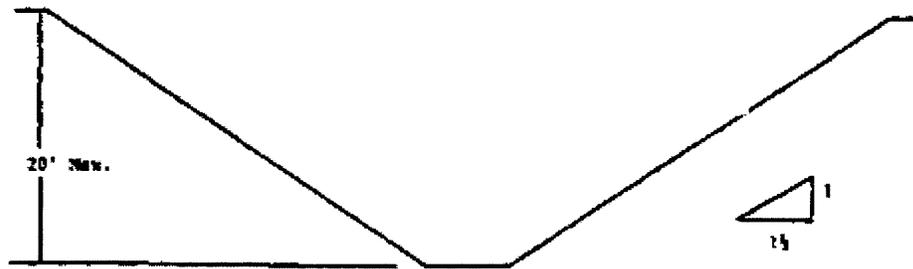
3. All excavations 20 feet or less in depth which have vertically sided lower portions shall be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of 1:1.



4. All other sloped excavations shall be in accordance with the other options permitted in § 1926.652(b).

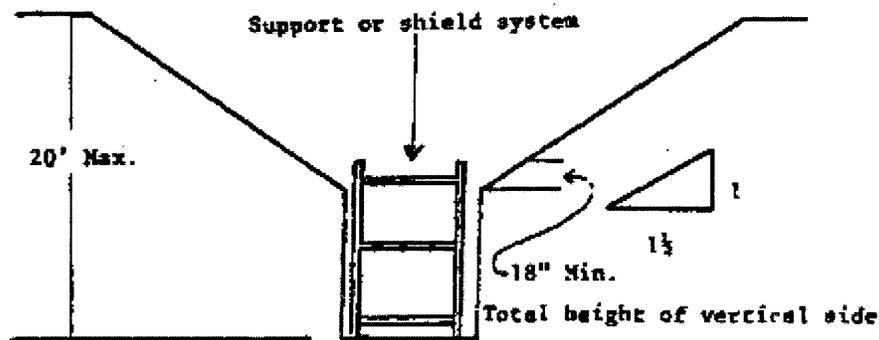
B-1.3 Excavations Made in Type C Soil

1. All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1½:1.



SIMPLE SLOPE

2. All excavations 20 feet or less in depth which have vertically sided lower portions shall be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of 1 1/2:1.

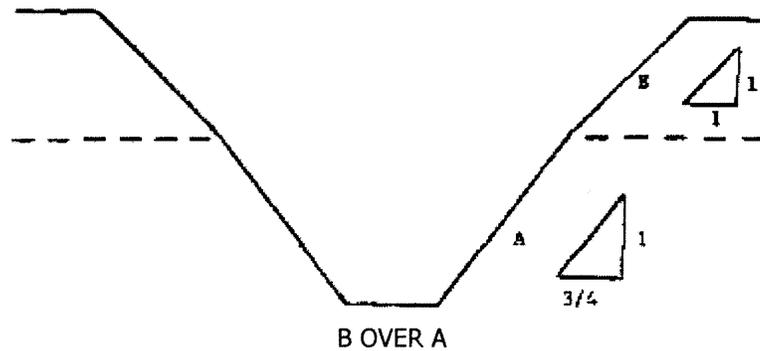


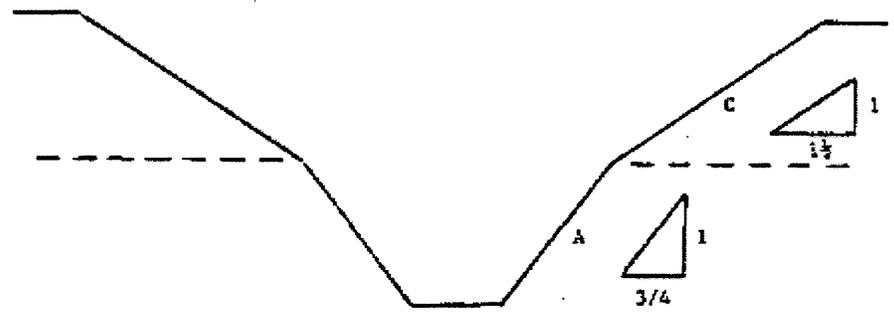
VERTICAL SIDED LOWER PORTION

3. All other sloped excavations shall be in accordance with the other options permitted in § 1926.652(b).

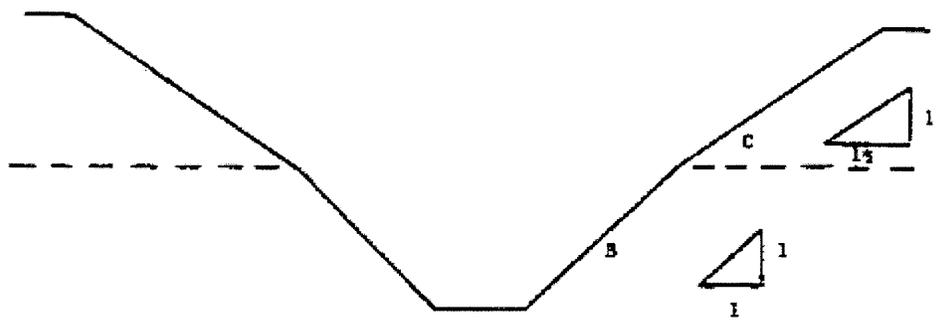
B-1.4 Excavations Made in Layered Soils

1. All excavations 20 feet or less in depth made in layered soils shall have a maximum allowable slope for each layer as set forth b

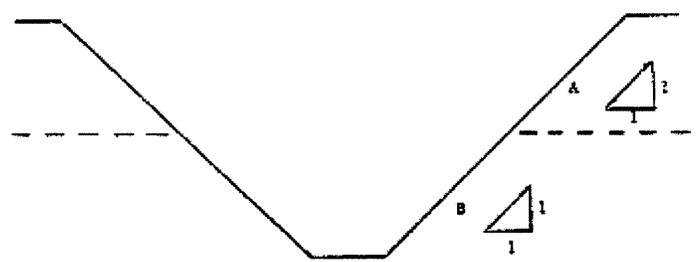




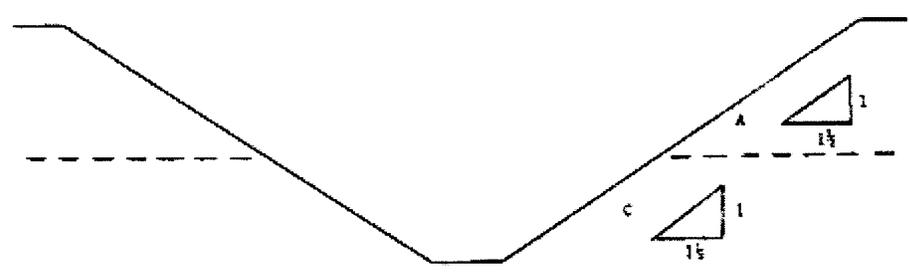
C OVER A



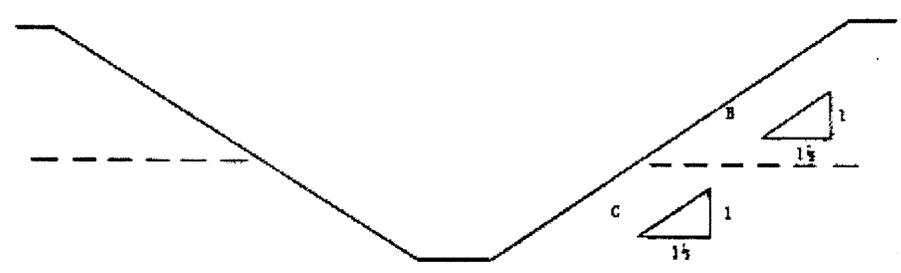
C OVER B



A OVER B



A OVER C



B OVER C

2. All other sloped excavations shall be in accordance with the other options permitted in § 1926.652(b).

◀ [Next Standard \(1926 Subpart P App C\)](#)

◀ [Regulations \(Standards - 29 CFR\) - Table of Contents](#)

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Regulations (Standards - 29 CFR) - Table of Contents

- **Part Number:** 1926
- **Part Title:** Safety and Health Regulations for Construction
- **Subpart:** P
- **Subpart Title:** Excavations
- **Standard Number:** 1926 Subpart P App F
- **Title:** Selection of Protective Systems

The following figures are a graphic summary of the requirements contained in subpart P for excavations 20 feet or less in depth. Protective systems for use in excavations more than 20 feet in depth must be designed by a registered professional engineer in accordance with 1926.652(b) and (c).

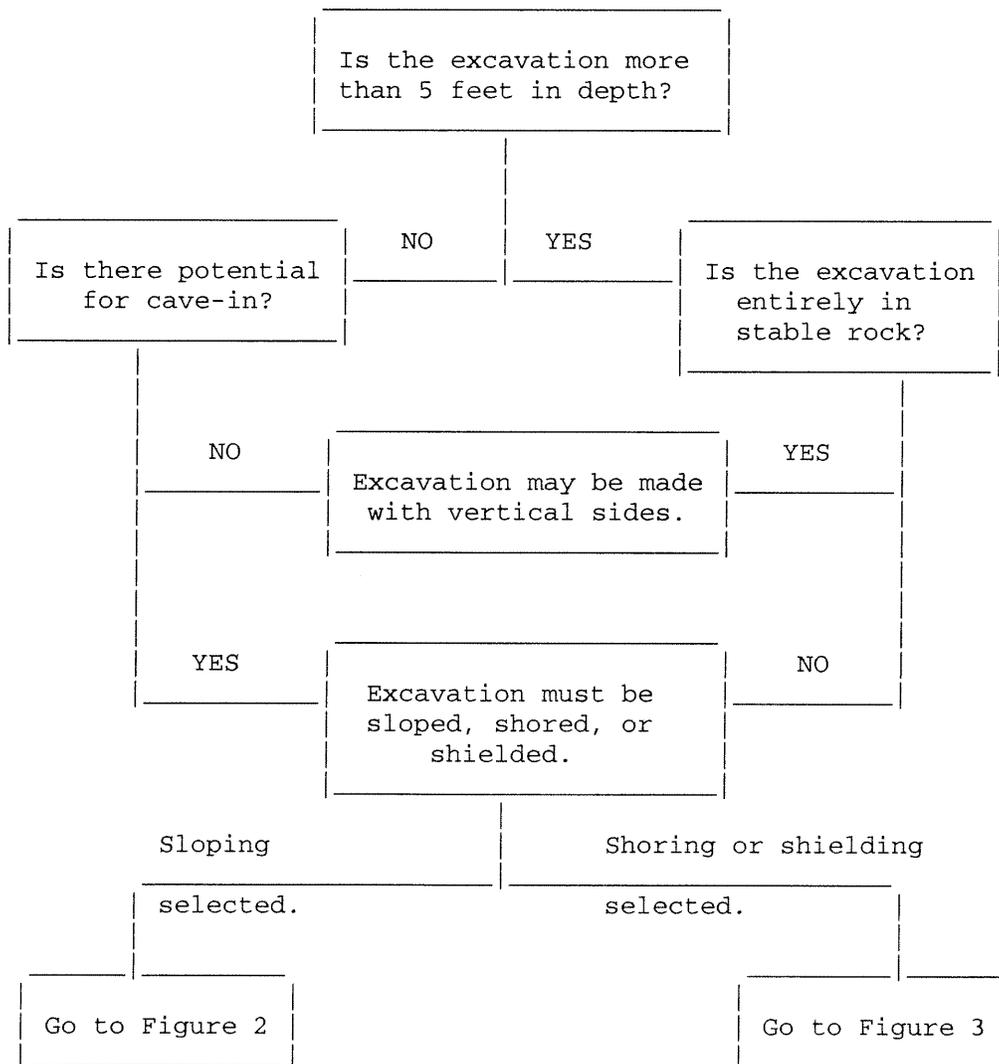


FIGURE 1 - PRELIMINARY DECISIONS

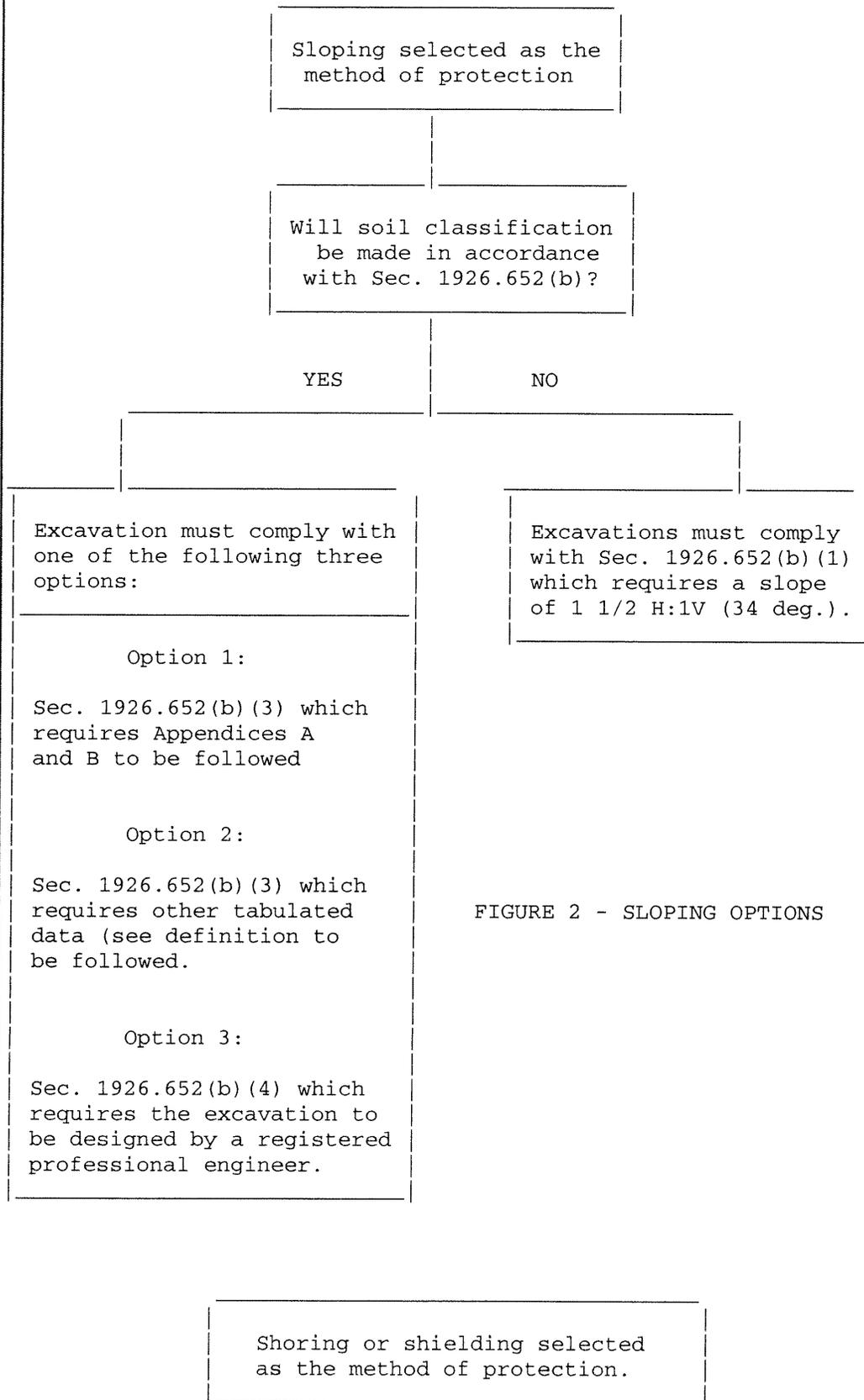


FIGURE 2 - SLOPING OPTIONS

Soil Classification is required when shoring or shielding is used. The excavation must comply with one of the following four options:

Option 1

Sec. 1926.652(c)(1) which requires Appendices A and C to be followed (e.g. timber shoring).

Option 2

Sec. 1926.652(c)(2) which requires manufacturers data to be followed (e.g. hydraulic shoring, trench jacks, air shores, shields).

Option 3

Sec. 1926.652(c)(3) which requires tabulated data (see definition) to be followed (e.g. any system as per the tabulated data).

Option 4

Sec. 1926.652(c)(4) which requires the excavation to be designed by a registered professional engineer (e.g. any designed system).

FIGURE 3 - SHORING AND SHIELDING OPTIONS

[◀ Next Standard \(1926 Subpart Q\)](#)

[◀ Regulations \(Standards - 29 CFR\) - Table of Contents](#)

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Appendix B

GUIDANCE ON INCIDENT INVESTIGATION

AND REPORTING



3. Following the treatment and care of the injured employee, the emergency coordinator or his on-site designee and the project manager will initiate the completion of the first injury report. The Health & Safety Manager will assist.

Project Manager

1. Upon notification of a personal injury or illness on the job site, will notify C & S Engineers, Inc, President and Corporate Legal and C&S Companies Health and Safety Manager.
2. Will report to the worksite to initiate the first injury report.
3. Will report to the treatment facility to check on the well being of the injured employee. The project manager will ensure that the treatment facility is aware that this is a workers compensation case.
4. Will assist the Health and Safety Manager in the analysis of the incident.

Health & Safety Manager

1. Upon notification of the personal injury will determined if it is necessary to report to the treatment facility or the accident site, depending on the nature of the injuries and the circumstances of the accident.
2. Will report to the worksite to begin a root cause analysis investigation of the accident. The investigation may include interview of witnesses, field crew , and project manager, the photographing of the scene, reconstruction of the accident scene, using test instruments and taking measurements. The Health and Safety Manager may draw diagrams from the information learned.
3. The Health and Safety Manager will work with the owner/client as necessary to investigate the accident.
4. The Health & Safety manager will ensure that the site is safe to resume work.
5. The Health & Safety Manager shall initiate the New York State Compensation form requirements (C-2) and forward a copy of the C-2 to the C & S Engineers, Inc. controller for transmittal to the Compensation Carrier within 8 hrs of notification of the incident or by the end of the next business day.
6. The Health and Safety manager, upon completion of the investigation, will provide the Project Manager with a written investigative report (copy to the President)
7. The accident will be reviewed at the next Project Managers meeting with the intent to prevent further or similar events on other projects.
8. The Health & Safety Manager will assess the incident to determine OSHA record ability and make record if necessary on the OSHA 300 form, within five working days.

Incident Response

1.0 PURPOSE

To prevent the occurrence of accidents on C&S Engineers, Inc., work sites and to establish a procedure for investigation and reporting of incidents occurring in, or related to C&S work activities.

2.0 SCOPE

Applies to all incidents related to C&S Engineers, Inc. work activities.

3.0 DEFINITIONS

Accident - An undesired event resulting in personal injury and/or property damage, and/or equipment failure.

Fatality - An injury or illness resulting in death of the individual.

Incident - Any occurrence which results in, or could potentially result in, the need for medical care or property damage. Such incidents shall include lost time accidents or illness, medical treatment cases, unplanned exposure to toxic materials or any other significant occurrence resulting in property damage or in "near misses."

Incidence Rate - the number of injuries, illnesses, or lost workdays related to a common exposure base of 100 full-time workers. The rate is calculated as:

$$N/EH \times 200,000$$

N = number of injuries and illnesses or lost workday cases; EH = total hours worked by all associates during calendar year. 200,000 = base for 100 full-time equivalent workers (working 40 hours per week, 50 weeks per year).

Injury - An injury such as a cut, fracture, sprain, amputation, etc. which results from a work accident or from a single instantaneous event in the work environment.

Lost Workday Case - A lost workday case occurs when an injured or ill employee experiences days away from work beginning with the next scheduled work day. Lost workday cases do not occur unless the employee is effected beyond the day of injury or onset of illness.

Recordable Illness - An illness that results from the course of employment and must be entered on the OSHA 300 Log and Summary of Occupational Injuries and Illnesses. These illnesses require medical treatment and evaluation of work related injury. For example, dermatitis, bronchitis, irritation of eyes, nose, and throat can result from work and non-work related incidents.

Recordable Injury - An injury that results from the course of employment and must be entered on the OSHA 300 Log and Summary of Occupational Injuries and Illnesses. These injuries require medical treatment; may involve loss of consciousness; may result in restriction of work or motion or transfer to another job; or result in a fatality.

Near Miss - An incident which, if occurring at a different time or in a different personnel or equipment configuration, would have resulted in an incident.

4.0 RESPONSIBILITIES

Employees - It shall be the responsibility of all C&S Engineers, Inc. employees to report all incidents as soon as possible to the HSC, regardless of the severity.

Human Resources - has overall responsibility for maintaining accident/ incident reporting and investigations according to current regulations and recording injuries/ illness on the OSHA 300 log, and posting the OSHA 300 log.

Emergency Coordinator - It is the responsibility of the Emergency Coordinator to investigate and prepare an appropriate report of all accidents, illnesses, and incidents occurring on or related to C&S Engineers, Inc. work. The Emergency Coordinator shall complete Attachment A within 24 hours of the incident occurrence.

Health and Safety Manager (HSM) - It is the responsibility of the HSM to investigate and prepare an appropriate report of all lost time injuries and illnesses and significant incidents occurring on or related to C&S Companies. The HSM shall maintain the OSHA 300 form.

Project Managers (PM) - It shall be the PM's responsibility to promptly correct any deficiencies in personnel, training, actions, or any site or equipment deficiencies that were determined to cause or contribute to the incident investigated.

5.0 GUIDELINES

5.1 Incident Investigation

The Project Manager will immediately investigate the circumstances surrounding the incident and will make recommendations to prevent recurrence. The HSM shall be immediately notified by telephone if a serious accident/ incident occurs. The incident shall be evaluated to determine whether it is OSHA recordable. If the incident is determined to be OSHA 300 recordable, it shall be entered on the OSHA 300 form.

The Project Manager with assistance from the HSM must submit to the office an incident report form pertaining to any incident resulting in injury or property damage.

5.2 Incident Report

The completed incident report must be completed by the Project Manager within 12 hours of the incident and distributed to the HSM, and Human Resources. This form shall be maintained by Human Resources for at least five years for all OSHA recordable cases. This form serves as an equivalent to the OSHA 101 form.

5.3 Incident Follow-up Report

The Incident Follow-Up Report (Attachment B) shall be distributed with the Incident Report within one week of the incident. Delay in filing this report shall be explained in a brief memorandum.

5.4 Reporting of Fatalities or Multiple Hospitalization Accidents

Fatalities or accidents resulting in the hospitalization of three or more employees must be reported to OSHA verbally or in writing within 8 hours. The report must contain 1) circumstances surrounding the accident(s), 2) the number of fatalities, and 3) the extent of any injuries.

5.5 OSHA 300A Summary Form

Recordable cases must be entered on the log within six workdays of receipt of the information that a recordable case has occurred. The OSHA log must be kept updated to within 45 calendar days.

OSHA 300 forms must be updated during the 5 year retention period, if there is a change in the extent or outcome of an injury or illness which affects an entry on a log. If a change is necessary, the original entry should be lined out and a corrected entry made on that log. New entries should be made for previously unrecorded cases that are discovered or for cases that initially weren't recorded but were found to be recordable after the end of the year. Log totals should also be modified to reflect these changes.

5.5.1 Posting

The log must be summarized at the end of the calendar year and the summary must be posted from February 1 through May 31.

5.6 OSHA 300A

Facilities selected by the Bureau of Labor Statistics (BLS) to participate in surveys of occupational injuries and illnesses will receive the OSHA 300A. The data from the annual summary on the OSHA 300 log should be transferred to the OSHA 300A, other requested information provided and the form returned as instructed by the BLS.

5.7 Access to OSHA Records

All OSHA records (accident reporting forms and OSHA 300 logs) should be available for inspection and copying by authorized Federal and State government officials.

Employees, former employees, and their representatives must be given access for inspection and copying to only the log, OSHA No. 300, for the establishment in which the employee currently works or formerly worked.

6.0 REFERENCES

29 CFR Part 1904

7.0 ATTACHMENTS

Attachment A - Incident Investigation Form

Attachment B - Incident Follow-Up Report

Attachment C - Establishing Recordability

ATTACHMENT A
INCIDENT INVESTIGATION FORM

Accident investigation should include:

Location: _____

Time of Day: _____

Accident Type: _____

Victim: _____

Nature of Injury: _____

Released Injury: _____

Hazardous Material: _____

Unsafe Acts: _____

Unsafe Conditions: _____

Policies, Decisions: _____

Personal Factors: _____

Environmental Factors: _____

ATTACHMENT B

Date _____

Foreman: _____

INCIDENT FOLLOW-UP REPORT

Date of Incident: _____

Site: _____

Brief description of incident: _____

Outcome of incident: _____

Physician's recommendations: _____

Date the injured returned to work: _____

Project Manager Signature: _____

Date: _____

ATTACH ANY ADDITIONAL INFORMATION TO THIS FORM

ATTACHMENT C

ESTABLISHING RECORDABILITY

1. Deciding whether to record a case and how to classify the case.

Determine whether a fatality, injury or illness is recordable.

A fatality is recordable if:

- Results from employment

An injury is recordable if:

- Results from employment and
- It requires medical treatment beyond first aid or
- Results in restricted work activity or job transfer, or
- Results in lost work day or
- Results in loss of consciousness

An illness is recordable if:

- It results from employment

2. Definition of "Resulting from Employment"

Resulting from employment is when the injury or illness results from an event or exposure in the work environment. The work environment is primarily composed of: 1) The employer's premises, and 2) other locations where associates are engaged in work-related activities or are present as a condition of their employment.

The employer's premises include company rest rooms, hallways, cafeterias, sidewalks and parking lots. Injuries occurring in these places are generally considered work related.

The employer's premises EXCLUDES employer controlled ball fields, tennis courts, golf courses, parks, swimming pools, gyms, and other similar recreational facilities, used by associates on a voluntary basis for their own benefit, primarily during off work hours.

Ordinary and customary commute, is not generally considered work related.

Employees injured or taken ill while engaged in consuming food, as part of a normal break or activity is not considered work related. Employees injured or taken ill as the result of smoking, consuming illegal drugs, alcohol or applying make up are generally not considered work related. Employee injured by an authorized horseplay is generally not considered work related, however, an employee injured as a result of a fight or other workplace violence act, may be considered work related.

Associates who travel on company business are considered to be engaged in work related activities all the time they spend in the interest of the company. This includes travel to and from customer contacts, and entertaining or being entertained for purpose of promoting or discussing business. Incidents occurring during normal living activities (eating, sleeping, recreation) or if the associate deviates from a reasonably direct route of travel are not considered OSHA recordable.

3. Distinction between Medical Treatment and First Aid.

First aid is defined as any one-time treatment, and any follow up visit for the purpose of observation, of minor scratches, cuts, burns, splinters, etc., which do not ordinarily require medical care. Such one time treatment, and follow up visit for the purpose of observation, is considered first aid even though provided by a physician or registered professional personnel.

Medical Treatment (recordable)

- a) They must be treated only by a physician or licensed medical personnel.
- b) They impair bodily function (i.e. normal use of senses, limbs, etc.).
- c) They result in damage to physical structure of a non superficial nature (fractures).
- d) They involve complications requiring follow up medical treatment.