REMEDIAL INVESTIGATION WORK PLAN

FOR

NEIGHBORHOOD OF THE ARTS
110 CHERRY STREET
CITY OF ITHACA, TOMPKINS COUNTY, NEW YORK
SITE NO. TBD

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CERTIFICATION

I, John T. Camp, certify that I am currently a NYS Registered Professional Engineer and that this Remedial Investigation Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

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State of New York Professional Engineer No. 082375

September 14, 2021

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ACRONYM LIST

AAR	Alternatives Analysis Report
ASP	Analytical Services Protocol
BCA	Brownfield Cleanup Agreement
BCP Site	Area that includes 110 Cherry Street
BGS	Below Ground Surface
CAMP	Community Air Monitoring Plan
CPP	Citizen Participation Plan
CVOC	Chlorinated Volatile Organic Compound
DER	Department of Environmental Remediation
DUSR	Data Usability and Summary Report
EDD	Electronic Data Deliverable
ELAP	Environmental Laboratory Accreditation Program
HASP	Health and Safety Plan
IRM	Interim Remedial Measures
MS/MSD	Matrix Spike / Matrix Spike Duplicate
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyl
Phase II ESA	Phase II Environmental Site Assessment
PID	Photo-ionization Detector
RI	Remedial Investigation
RIWP	Remedial Investigation Work Plan
SCO	Soil Cleanup Objectives
SVI	Soil Vapor Intrusion
SVOC	Semi-volatile Organic Compounds
U.S. EPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatile Organic Compounds

EXECUTIVE SUMMARY

This document presents the Remedial Investigation Work Plan for the proposed Brownfield Cleanup Program Site located along Cherry Street in Ithaca, New York (the "Site"). The project details are summarized below:

Contaminant Source and Constituents

A Phase II Environmental Site Assessment (Phase II ESA) was completed for the Site in 2021. In addition, subsurface investigations were performed for the Site in 2019. As a result of these studies / investigations, the contamination at the Site is believed to be associated with multiple sources:

- The placement of historic fill across the Site resulting in semi-volatile organic compound (SVOC), metal, and poly-chlorinated biphenyl (PCB) impacts.
- The operation of a scrap metal recycling, including vehicles, on the central portion of the Site, resulting in the possible release of vehicle oils and fuels.
- An upgradient off-site source of chlorinated volatile organic compounds (CVOCs).

Extent of Known Contamination

Based on the information gathered, the historic fill containing elevated concentrations of contaminants extends to a maximum depth of 10 feet below grade but is generally found at depths up to 6 feet below ground surface (BGS), and is present across the Site. In addition to impacts identified within the historic fill, residual petroleum-related nuisance impacts were identified in three borings located within the central portion of the Site. Groundwater generally contained SVOC, PCB, and metal impacts. CVOCs are present in the groundwater on the western portion of the Site.

Proposed Site Redevelopment

The proposed BCP Site will be comprised of dense mid-rise residential buildings, as well as a parking garage to serve commercial activity on the adjacent non-BCP parcel to the south. The non-BCP part of the project includes a public space along Cecil Malone Drive, as well as the adaptive reuse of "The Warehouse", the neighborhood's centerpiece. The BCP Site and adjacent Warehouse property will become home to a dynamic mix of residential and business activities.

Remedial Investigation

To characterize site conditions and identify the appropriate remedy for the Site, a Remedial Investigation (RI) will be implemented. The RI will include the collection and analysis of surface soil, historic fill, native soil, and groundwater samples. Soil vapor samples will be collected, if necessary.

Interim Remedial Measures

Interim Remedial Measures (IRM) may be proposed based on the results of the RI.

Cleanup Track

110 Cherry Street, LLC proposes to remediate the Site by pursuing a Track 4 cleanup to Restricted-Residential Use criteria using the Soil Cleanup Objectives at 6 NYCRR Part 375-6.

1 INTRODUCTION

This Remedial Investigation Work Plan (RIWP) provides a description of the procedures that will be implemented to characterize the nature and extent of contamination at the Neighborhood of the Arts Site (the "Site") and the proposed methods to address that contamination. This RIWP has been prepared consistent with Division of Environmental Remediation "Technical Guidance for Site Investigation and Remediation" (DER-10). To effectively characterize the environmental conditions, this RIWP discusses the following:

- Current and historic site conditions
- Contaminants of concern and the extent of the contamination
- Extent of RI activities
- Quality controls and protocols for analytical sampling
- Health and safety procedures to protect site workers and the local community
- Community participation activities

In July 2021, 110 Cherry Street, LLC (the "Applicant"), acting as a Brownfield Cleanup Program (BCP) Volunteer, submitted a BCP Application to remediate and develop the Site. On _____, the Brownfield Cleanup Agreement (BCA) was executed.

The Property is currently leased and operated by Upstate Shredding, Weitsman Recycling as a scrap metal collection facility. The property is currently owned by 110 Cherry Street LLC. Visum Development Group plans to build the Neighborhood of the Arts (NOTA) on the Site and adjoining parcels along Cherry Street and Cecil Malone Drive. This mixed-use district will be an inclusive, connected, and creative community set along Ithaca's western waterways. NOTA includes the proposed BCP Site, as well as the parcel to the south. A conceptual plan is provided in the **Figures** section as Figure L1.0.

An RI will be implemented to further evaluate the extent of the contamination and to aid in the preparation of an Alternatives Analysis Report (AAR). **Section 4 Remedial Investigation** describes the scope of the investigation during remediation.

1.1 Site Description

The Site is located at 110 Cherry Street in the City of Ithaca, Tompkins County, New York. The Site consists of a single tax parcel located on both sides of Cherry Street. The Site includes a 17,281 square foot building currently used primarily as office space and a 7,584 square foot canopy currently used for the handling of fuels and oils as a result of recycling operations. The remainder of the property is covered with varying amounts of vegetation, construction rubble, and recycling debris. The office space features asphalt parking adjacent to the building. Auxiliary parking is located on the opposite side of Cherry Street on a gravel lot. The topography of the subject property is generally flat, but the western perimeter is generally sloped downwards along the Cayuga Inlet.

Figure 1 shows the location of the Site and **Figure 2** shows the Project Area and Site Boundaries.

1.2 Site History

The Property has been used for industrial and commercial purposes since it was first developed prior to 1914 as the Thomas-Morse Aircraft Corporation. Site operations included aircraft development and manufacturing. Between 1961 and 1971, the Site was used for vehicle wrecking processes. The site has since been used for scrap metal recycling from the mid 2000s to present day. First operated by Reamer Recycling Services Inc. and subsequently by Ben Weitsman of Ithaca.

1.3 Site Geography, Geology, and Hydrogeology

Each soil sample retrieved from the Geoprobe® during the Phase II ESA was observed for general soil type, estimated moisture content, and other pertinent features. Soils borings across the site generally produced the following pattern, not including evidence of physical impacts.

Description	Approx. Depth
Brown sandy soil with Fine/Medium/Coarse (FMC) gravel	0'-2'
Gray silty sand with FMC gravel	2'-4'
Black silt (organic), with FMC gravel	3.5'-4'
Gray silty sand, with FMC gravel	4'-8'
Gray silty sand, fine gravel	8'-9'
Gray clay sometimes sandy	9'-16'

The Site contains historic fill with observed thickness up to a maximum of approximately ten feet. The historic fill is intermixed with the soil types described above. Per 6 NYCRR Part 375, historic fill is defined as: *non-indigenous or non-native material, historically deposited or disposed in the general area of, or on, a site to create useable land by filling water bodies, wetlands or topographic depressions, which is in no way connected with the subsequent operations at the location of the emplacement, and which was contaminated prior to emplacement*. The historic fill contains:

- Rock, Sand, Silt, Clay
- Clay Tile
- Ash
- Coal
- Brick
- Slag

Native soil is located below the fill and consists of silty sand and gravel.

Due to the presence of coarse-grained materials, the monitoring wells generally produce plentiful groundwater. Groundwater is present at eight to nine feet BGS. Based on topography and the location of Cayuga Lake to the immediate north, it is likely that groundwater flow is in that direction.

The primary drinking water source for the City of Ithaca is Cayuga Lake. Water processed in the water treatment facilities for Tompkins County undergoes varying levels of treatment to ensure that drinking water meets NYSDEC and United States Environmental Protection Agency (USEPA) standards.

2 SUMMARY OF ENVIRONMENTAL CONDITIONS

2.1 Environmental Reports

Environmental information exists for the Site from one Phase II Environmental Site Assessments (Phase II ESA) conducted by C&S and two subsurface investigations conducted by Geologic NY, P.C. These documents are included in **Appendix A.** The following provides a summary of those reports.

C&S Phase II ESA Report – 2021

C&S reviewed historical Fire Insurance Mapping (FIM), city directories, and ownership records, in order to assess current and past site uses. As a result of that assessment, several contamination concerns were identified including:

- The site was used by Thomas-Morse Aircraft Corporation from at least 1914 to 1928 for industrial purposes.
- The site was used for automobile wrecking processes from at least 1961 to 1971.
- The site has been used for scrap metal recycling from at least 2009 to present day. First operated by Reamer Recycling Services Inc. and subsequently by Ben Weitsman of Ithaca.

Based on the above, further evaluation was recommended. Due to the historical land uses, samples collected as part of this Investigation were analyzed for a combination of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), poly-chlorinated biphenyls (PCBs), and metals.

The scope of the Phase II included surface soil sampling, a soil boring program, temporary groundwater well monitoring installation, sampling, and reporting.

C&S' Investigation of the Site was conducted on April 6, 2021.

Sampling Tasks

Task A – Surface Soil Sampling

C&S collected six surface soil samples from across the Site. C&S collected the samples using a decontaminated stainless steel spoon. The proposed analytical program included USEPA Target Compound List (TCL) SVOCs, PCBs, and Target Analyte List (TAL) metals.

Task B – Boring Program

C&S performed a drilling program to assess subsurface soil conditions across the Site. The boring program consisted of 11 soil borings that were to be advanced using a direct-push drilling rig from grade to approximately 12 to 16 feet below grade or refusal. C&S subcontracted the drilling services to a qualified firm. The firm placed a call to Dig Safe NY to mark out site utilities prior to starting the drilling program.

A C&S scientist screened and logged the soil, and selected samples for analysis based on evidence of contamination, which may have included staining, odors, and the presence of historic fill material (HFM). Six subsurface soil samples were selected from the borings for analysis based on visual and screening evidence of contamination. The proposed analytical program included TCL VOCs and SVOCs, PCBs, and TAL metals.

Task C – Well Installation and Sampling

C&S installed three temporary 1-inch wells, based on field observations. Following installation, the wells were attempted to be developed and subsequently sampled. The wells were very turbid during development and sampling. The groundwater samples were analyzed for TCL VOCs and SVOCs, PCBs, and TAL metals.

Data Summary:

Comparison of the surface soil analytical data to the Part 375-6 SCOs indicates:

- SVOCs were detected in SS-02. Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno (1,2,3-cd)pyrene were detected at concentrations at least greater than Restricted Residential Use SCOs. Commercial Use SCOs were exceeded in some cases.
- Metals were detected in SS-01, SS-02, SS-04, and SS-06. Copper, lead, cadmium, mercury, and nickel were detected at concentrations at least greater than Restricted Residential Use SCOs. Commercial Use SCOs were exceeded in some cases. Most notably, Arsenic was detected in SS-02 at concentrations exceeding Industrial Use SCOs.

Comparison of the sub-surface soil analytical data to the Part 375-6 SCOs indicates:

- SVOCs were detected in SB-09 (3.5'-6'). Benzo(b)fluoroanthene was detected at concentrations greater than Restricted Residential Use SCOs.
- PCB's were detected in SB-10 (3.5'-6'). Total PCBs was detected at concentrations greater than Commercial Use SCOs.
- Metals were detected in SB-01 (1'-4'), SB-05 (2'-4'), SB-04 (2'-8'), and SB-10 (3.5'-6'). Mercury, copper, lead, nickel, and manganese were detected at concentrations at least greater than Restricted Residential Use SCOs. Commercial Use SCOs were exceeded in some cases. Most notably, arsenic was detected in SB-10 (3.5'-6') at concentrations exceeding Industrial Use SCOs.

Comparison of the groundwater analytical data to the TOGs 1.1.1 Class GA Ambient Water Quality Standards indicates:

- VOCs were not detected at concentrations greater than the TOGs 1.1.1 Class GA Ambient Water Quality Standards.
- SVOCs were detected at concentrations greater than the TOGs 1.1.1 Class GA Ambient Water Quality Standards in all three groundwater samples (GW-1, GW-2, GW-3). Exceedances of the TOGs standards included the same six analytes in all samples: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene.

- Total PCBs were detected at concentrations greater than the TOGs 1.1.1 Class GA Ambient Water Quality Standards in all three groundwater samples (GW-1, GW-2, GW-3).
- Metals were detected at concentrations greater than the TOGs 1.1.1 Class GA Ambient Water Quality Standards in all three groundwater samples (GW-1, GW-2, GW-3). Exceedances of the TOGs standards included mostly the same analytes in all three samples. The complete list of analytes is too long for this summary. However, arsenic, lead, cadmium, chromium, and mercury, to name a few, were detected in all three samples at concentrations greater than the TOGs 1.1.1 Class GA Ambient Water Quality Standards.

Figure 3 through **Figure 5** show the exploration locations and results of the Phase II ESA.

Geologic NY, P.C. Subsurface Investigation – 2019

On September 9, 2019, Geologic NY, P.C. oversaw the advancement of four direct push soil borings on a small portion of the site located on the opposite side of Cherry Street. The area investigated is used primarily as auxiliary parking space.

The soils encountered consisted of brown sand and gravel fill overlying predominately silt and clay soils. The recovered soils were screened with a hand-held photoionization detector (PID) for the presence of VOCs. All PID readings were 0.0 parts per million. Groundwater samples were collected at each soil boring location utilizing a peristaltic pump. The samples were analyzed for TCL VOCs utilizing EPA method 8260 and 8270. Soil boring location DP-1, produced insufficient water for analysis, therefore a soil sample from a depth of 11 feet was utilized instead.

Data Summary:

The following compounds were detected at concentrations in excess of TOGs 1.1.1 Class GA Ambient Water Quality Standards:

Location	Analyte	Concentration (ug/L)	TOGS Limit (ug/L)
DP-1	Vinyl Chloride	6.3	0.3
	Cis-1,2-Dicoloroethene	986	5
DP-2	Naphthalene	15.1	10
	Vinyl Chloride	2.3	0.3
	Cis-1,2-Dichloroethene	92.9	5

Geologic NY, P.C. Supplemental Subsurface Investigation – 2019

On October 21 2019, Geologic NY, P.C. oversaw the excavation of four test pits in the same area referenced in their previous investigation (above). Test pits extended through the fill layer of brown sand and gravel, which was about four feet thick across the property, and into the underlying native silt soil unit. Composite soil samples were taken from each test pit and analyzed for TCL VOCs utilizing EPA method 8260. No VOCs were detected in the samples.

Geologic NY, P.C. concluded the following: "*Given no other volatile compounds were detected in the samples analyzed and the fact that the site has never been developed, it is our opinion based on the data obtained on September 9 and October 21 2019, that the chlorinated compounds detected in the groundwater samples obtained from the property* (Site) *likely migrated on to the property* (Site) *from an off-site location*."

2.2 Nature and Extent of Contamination

Site soils generally consist of two to six feet of HFM containing gravel, sand, brick, slag, and ash. The HFM contains SVOC, metal, and PCB contamination, as shown in recent sampling. No discrete contamination layer was observed, and therefore, the extent of contamination within the fill material is difficult to identify due to its heterogeneous nature. The Site is approximately 6.65 acres, although the areas of the Site that will be finished with pervious surfaces (e.g. grass or landscaping) is estimated to be at most half. Therefore, the estimated volume of contaminated soil / fill that exceeds Restricted-Residential Use SCOs is approximately 868,000 cubic feet, or 32,150 cubic yards.

Groundwater was encountered and tested during recent evaluations of the Site. SVOCs, PCBs, and metals are present at elevated concentrations on the main portion of the Site on the eastern side of Cherry Street. It is believed that some analyte concentrations were elevated due to turbidity at the time of sampling. Chlorinated VOCs are present at elevated concentrations on the portion of the Site on the western side of Cherry Street. Groundwater flow is expected to be to the north towards Cayuga Lake.

3 OBJECTIVES, SCOPE AND RATIONALE

The objectives of the scope of work described in this Work Plan are to evaluate contaminant impacts to soil and identify and evaluate appropriate remedial actions necessary to redevelop the Site. The investigation work will include evaluating the nature and extent of contaminant impacts, conducting a qualitative exposure assessment for actual or potential exposures to contaminants at the Site and / or emanating from the Site, and producing data that will support the development of an acceptable RI Report and subsequent AAR.

The RI is based on information previously gathered regarding historical operations conducted at the Site, the results of the subsurface investigations, and the project objectives. The RI will include the following:

- Soil Evaluation – This task will consist of the following elements: surface soil, historic fill, and underlying native soil characterization.
    - Surface soils will be characterized to assess the nature and extent of contamination in areas that are proposed to be pervious (e.g. grass and landscaped areas, or other areas not covered by pavement).
    - Historic fill will be characterized to identify the nature and extent of contamination within the fill. This material may also be the subject of waste characterization sampling because subsequent remedial activities may require the excavation and off-site disposal of some fill.
    - The underlying native soils will be characterized to determine the depth of impacts from the overlying historic fill, if any.
    - The soils within / adjacent to the identified anomalies will be characterized to determine the extent of soil impacts, if any.
- Groundwater Evaluation – Subsequent to completing soil investigation tasks, groundwater monitoring wells will be installed. Proposed well locations are shown on **Figure 8**. If field conditions observed during the RI require a change to the proposed locations, their adjusted locations will be discussed with the NYSDEC.
- Soil Vapor Intrusion (SVI) Sampling – Soil vapor wells will be installed and sampled on the western portion of the Site. If required, sampling will be performed on the eastern portion of the Site to determine if SVI may pose a concern for future buildings. Proposed soil vapor well locations are shown on **Figure 9**.

The RI activities will be completed consistent with NYSDEC Part 375-6 and NYSDEC Division of Environmental Remediation: Technical Guidance for Site Investigation and Remediation dated May 2010 (DER-10).

4 REMEDIAL INVESTIGATION

This part of the RI Work Plan describes the scope of investigative work necessary to collect sufficient data to determine the extent of contaminated fill material which will support a subsequent AAR and RWP in achieving **Residential-Restricted Use SCOs under Track 4**. This section of the RI Work Plan includes:

- Field Investigation
- Sampling Program
- Laboratory Analysis

4.1 Field Investigation

The RI is intended to supplement the previous subsurface investigation information by the advancement of soil borings, excavation of test pits, installation of monitoring wells, and collecting and analyzing soil, groundwater, and air samples.

4.1.1 Surface Soil Sampling

Surface soil samples will be collected across the Site. Up to 10 surface soil samples will be spatially distributed across the Site in areas not currently or proposed to be "capped" by asphalt or buildings. The samples will be collected from 0 to 2 inches below grade using a decontaminated, stainless steel spoon or spatula. Surface soil samples will be collected at the locations shown on **Figure 6**.

The surface soil samples will be analyzed for the following analyte list:

- Part 375 VOCs
- Part 375 SVOCs
- Part 375 pesticides / herbicides
- PCBs
- Part 375 metals, including total mercury
- Cyanide and hexavalent chromium
- Per-and Polyfluoroalkyl Substances (PFAS) and 1,4-dioxane

4.1.2 Soil Boring / Test Pit Program

Soil borings and test pits will be advanced across the Site to facilitate the sampling of historic fill and native material. In general, borings have been positioned to ensure complete coverage of the Site. The test pit locations will be selected based on field observations of anomalies identified (if any) during the proposed geophysical survey. Proposed exploration locations are shown on **Figure 7**, which includes 29 soil borings and up to five test pits.

Subsurface areas showing signs of impacts (staining, odors, free product, and measureable volatile vapors) will be further investigated if laboratory analytical data indicates significant exceedances of the applicable SCOs. Soil and groundwater sampling analytical data will be assessed, in consultation with NYSDEC and New York State Department of Health (NYSDOH) to determine the need for SVI sampling during the RI.

Each soil boring will be advanced into native material, up to 16 feet (ft) bgs or to the top of bedrock (whichever is shallower), or at the discretion of the project geologist and with consultation from NYSDEC. Test pits will be advanced to at least two feet below the extent of the anomaly, but no deeper than eight feet bgs. Exploration locations will be located with a hand-held global positioning system (GPS) device or tape measured from existing site features.

From the borings and test pits, fill and native soil samples, or soils physically impacted will be collected to document Site conditions. Some of the soil boring locations will also be used for the construction of groundwater monitoring wells, as discussed in **Section 4.1.3 Groundwater Monitoring**.

For the borings in which wells will not be installed, a direct-push drilling rig will be used to advance the borings. Each boring location will be continuously sampled in four- or five-foot intervals using a one-inch by four- or five-foot stainless steel sampling tube fitted with a disposable acetate liner. Test pits will be excavated with a backhoe or track mounted excavator. All non-disposable sampling equipment will be decontaminated between runs and between drill locations to avoid potential cross contamination of samples.

In locations where direct-push techniques are not feasible and / or groundwater wells will be constructed, a rotary drill will be used to advance 4-1/4-inch hollow stem augers. Split-spoon samples will be advanced at two-foot intervals using a 140-pound hammer ahead of the augers. The augers and drilling rods will be decontaminated prior to use via high pressure sprayer. The split-spoons will be decontaminated prior to use via an Alconox wash followed by a potable water rinse. Between each soil sample and soil boring, decontamination procedures will be repeated.

Soils from the split-spoons and acetate liners will be screened in the field for visible impairment (e.g. staining), olfactory indications of impairment, evidence of non-aqueous phase liquids (NAPLs), and / or indication of detectable VOCs over 10 ppm with a 10.6 eV PID. Such evidence is collectively referred to as "evidence of impairment" and the results will be recorded on boring logs. The soil boring and test pit logs will also include soil description, PID readings, etc. The boring and test pit logs will be included in the RI Report.

HFM Sampling

HFM samples will be collected from borings based on evidence of impairment and to provide characterization across the Site. Up to 20 HFM samples will be collected based on evidence of impairment, spatial distribution, and fill type. At least one sample will be collected from each fill type encountered. The HFM samples will be collected and analyzed for the following:

- Part 375 VOCs
- Part 375 SVOCs
- Part 375 pesticides / herbicides (25% of samples)
- PCBs
- Part 375 metals, including total mercury
- Cyanide and hexavalent chromium (10% of samples)
- PFAS and 1,4-dioxane

Native Soil Sampling

Native soil will be visually assessed in each of the locations from its upper extent to 15 feet below ground surface. In order to assess the impact of fill on the underlying native soil, a total of 10 soil samples will be collected from the top of native material. The soil samples will be collected and analyzed for:

- Part 375 VOCs
- Part 375 SVOCs
- Part 375 pesticides / herbicides (25% of samples)
- PCBs
- Part 375 metals, including total mercury
- Cyanide and hexavalent chromium (10% of samples)
- PFAS and 1,4-dioxane

Anomaly Area Soil Sampling

If discovered during the geophysical survey, soil will be visually assessed in anomaly locations from its upper extent to no more than two feet below its terminus. In order to assess possible impacts in the fill / soil, a total of 5 soil samples are reserved for collection and analysis from these areas. Contingent on field observations, the soil samples may be analyzed for one or a combination of the following:

- Part 375 VOCs
- Part 375 SVOCs
- Part 375 pesticides / herbicides
- PCBs
- Part 375 metals, including total mercury
- Cyanide and hexavalent chromium
- PFAS and 1,4-dioxane

4.1.3 Groundwater Monitoring

To characterize groundwater conditions at the Site, six monitoring wells will be installed. **Figure 8** shows the proposed locations of the monitoring wells. The wells will be installed from soil borings discussed in **Section 4.1.1 Soil Borings** and sampled. Wells will be distributed across the Site for groundwater flow determination and / or around anomalies and in borings with evidence of impairment. The proposed well locations will be based on field observations and will be submitted to the NYSDEC for review prior to installation.

The overburden wells will be constructed to intersect the top of the water table. Each well will be completed with 5 to 10 feet of 2-inch Schedule 40 0.010-slot well screen connected to an appropriate length of schedule 40 PVC well riser to complete the well. The annulus will be sand packed with quartz sand to approximately one to two feet above the screened section, and one to two feet of bentonite chips or pellets above the sand. The remaining annulus will be grouted to ground surface. Each well will be completed without a flush-mount protective casing.

Following installation, the monitoring wells will be developed through the removal of up to ten well volumes using dedicated bailers or a peristaltic or submersible pump.

Groundwater sampling will follow well development and be conducted using low-flow purging and sampling techniques. Before purging the well, water levels will be measured using an electric water level sounder capable of measuring to the 0.01-foot accuracy. Peristaltic or bladder pumps using manufacturer-specified tubing will be used for purging and sampling groundwater. Sampling protocol and equipment will comply with NYSDEC "Groundwater Sampling for Emerging Contaminants" guidance, dated April 2018. In addition, calibration, purging and sampling procedures will be performed as specified by the USEPA[1] for low-flow sampling. Decontamination will be conducted after each well is sampled to reduce the likelihood of cross contamination. Calibration times, purging volumes, water levels and field measurements will be recorded in a field log and will be provided in the Remedial Investigation Report.

The groundwater samples will be analyzed for the following analyte list:

- TCL VOCs
- TCL SVOCs
- TCL pesticides / herbicides (1 sample per round)
- PCBs
- TAL metals including mercury (total and filtered)
- Cyanide and hexavalent chromium (total and filtered, 1 sample per round)
- PFAS and 1,4-dioxane. Please note that 100% of the wells will be analyzed for these parameters during the first round of sampling. If detected above NYSDEC guidance levels, PFAS will be tested during the second round of sampling in the respective well.

Drilling decontamination, development, and purge fluids will be allowed to infiltrate the ground surface of the Site in the vicinity of each soil sampling location, unless these fluids contain petroleum / chemical odors and / or show signs of contamination, in which case they will be collected and treated or disposed.

A second round of groundwater sampling will be performed one to three months after the first round. Except as noted above, the second round of groundwater samples will be analyzed for the same analytes as in the first round.

4.1.4 Soil Vapor Intrusion Sampling

CVOCs have been documented in the shallow groundwater on the portion of the Site on the western side of Cherry Street. Therefore, it is presumed that SVI is a concern for the proposed building on that portion of the Site. However, soil vapor wells will be installed and sampled during the RI to confirm / assess impacts. If soil vapor well sampling confirms that CVOCs are present, SVI sampling will also be completed for the building (once constructed), and be performed prior to occupancy. The sampling will be performed consistent with NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, August 2006. A vapor mitigation system will be included in the design of the building, if warranted based on the results of the RI.

[1] U.S. EPA Region 1 Low Stress (low-flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells, January 19, 2010.

If VOCs are detected in the subsurface on the eastern portion of the Site, those results will be discussed with NYSDEC and NYSDOH to determine the scope and timing for a soil vapor assessment. Although a SVI sampling work plan will be submitted for review and approval prior to sampling, the following is the expected scope and procedure for the sampling:

Indoor Air Sampling

Indoor air samples will be collected using a Summa™ canister (1-Liter capacity) equipped with a critical orifice flow regulation device sized to allow an air sample to be collected over a 24-hour sampling period. Care will be taken to deploy the canisters away from the direct influence of any forced air emanating from air conditioning units, central air conditioning vents, furnaces or heaters. The indoor air sampling procedure is as follows:

- Building spaces will be examined to determine appropriate locations for deploying sample canisters. In addition, an inventory of building components / products utilized in or near the sampling areas will be prepared.
- Air sample canisters will be labeled with a unique sample designation number. The sample number and location will be recorded in the field log book.
- The canister vacuum will be measured using an integrated vacuum gauge immediately prior to canister deployment and recorded in the field log book. The critical orifice flow controller will be installed, as supplied by the laboratory, on the canister; the canister will be opened fully at the beginning of sample collection period; and the start time is recorded.
- The canister valve will be closed fully at the end of the sample period by disconnecting the regulator from the canister (after 24-hours) and the end time recorded. Any evidence of canister disturbance during the sample collection will be recorded.
- The canister vacuum will be measured and recorded immediately after canister retrieval at the end of the sample period. Once the vacuum is measured, the canisters will be returned to their sampling boxes for safe storage and shipping. Field data will be verified as correctly entered into field books prior to shipment and the canisters will be shipped to the laboratory under a chain-of-custody.
- Each sample will be analyzed for VOCs via United States Environmental Protection Agency (USEPA) Method TO-15.

Sub-Slab Soil Gas Sampling

Sub-slab sampling points will be installed to collect soil gas immediately below the slab. Sub-slab gas samples will be collected using a 1-Liter Summa™ canister fitted with a flow orifice pre-calibrated to collect a 1-Liter sample over a 24-hour period. Once the 24-hour sampling period has been completed, the canister will be boxed and shipped to the laboratory for analysis. A brief summary of the sampling protocol is provided below. The sub-slab vapor points will be installed by first advancing a small diameter hole (approximately 3/8-inches in diameter) through the floor slab to determine thickness. The holes will be drilled via a hammer drill. The hole will extend through the slab and terminate at the interface with underlying material (i.e. gravel base or soil). A sample point consisting of a length of tubing will be placed into the boring. The cored slab annulus will be filled with clay placed around the sub-slab vapor point. The bottom of the sub-slab vapor point will extend to the bottom of slab. Prior to sub-slab soil gas sample collection, the monitoring point and above grade tubing will be purged at a rate not exceeding 200 ml/min. The total

volume purged prior to sample collection will equal three volumes of air in the open space of tubing and the sample point. At the end of the sampling event, a pressure gauge reading will be recorded. The 1-Liter canister with a calibrated 24-hour orifice will be connected to the tubing. The following summarizes the above:

- The sub-slab sampling point construction will be temporary, with the sampling points securely mounted through the concrete slab and grouted in place using pottery clay.
- Prior to sub-slab soil gas sample collection, the monitoring point and above grade tubing will be purged at a rate not exceeding 200 ml/min.
- Samples will be collected over a 24-hour period at a flow rate not greater than 200 mL/min.
- Helium will be used as a field tracer during sampling. The Helium will be introduced into a dome next to the above grade sampling train and Summa™ canister. The helium concentration will be read using a helium meter that is capable to read down to 1-2%.
- Field documentation will be maintained in a field notebook and on field data forms.

Soil Vapor Wells

Permanent soil vapor wells will be installed with a direct push drill rig to a depth comparable to the depth of the foundation footings (+/- 8' bgs), or at least one-foot above the water table. The wells will be constructed with a 6" stainless steel vapor point implant with a double woven stainless steel wire screen (150 micron) connected to an appropriate length of tubing. A vapor proof valve will be fitted to the top of the tubing. The annulus will consist of 60 to 100 mesh size glass beads to create an approximate one-foot sampling zone, then approximately one foot of dry bentonite chips, followed by hydrated bentonite above the sampling zone. Each monitoring point will be completed with a protective casing set into Portland cement.

Following at least 24-hours after installation, one to three implant volumes will be purged prior to collecting the samples. Flow rates for both purging and collecting will not exceed 0.2 liters per minute to minimize outdoor air infiltration during sampling.

An enclosure will be constructed around the sampling point (e.g., plastic bag, plastic bucket, etc.) and sealed to the sample point tubing in order to perform a tracer gas evaluation. The enclosure will be enriched with helium as a tracer gas. During purging, the purged soil gas will be tested for the tracer gas by an appropriate meter (i.e., a meter capable of measuring the concentration of the tracer gas in at least percentage increments).

Subsequent to purging and tracer gas testing, a certified clean summa canister equipped with a laboratory calibrated regulator will be connected to the tubing to collect the sample over a 1-hour period.

At the end of sampling, at least one inch of vacuum will remain in the summa canister to meet data quality objectives.

Ambient Air Sampling

Ambient air samples will be collected in the same manner as the indoor air samples.

The laboratory data will be presented in tabular form, compared to NYSDOH air guideline values, and submitted to the NYSDEC and NYSDOH for review.

If required, the sampling will consist of the collection and analysis of several indoor air samples in the proposed buildings, as well as an outdoor air sample from an upwind location. The precise locations will subsequently be described in a SVI sampling work plan.

4.2 Sampling Plan and Laboratory Analysis

Table 1 summarizes the sampling program described in the sections above. Additionally, Quality Assurance / Quality Control (QA / QC) samples will be collected, and the following describes the minimum number of samples per media type.

- Soil samples (excluding waste characteristic samples)
    - Matrix Spike / Matrix Spike Duplicate (MS / MSD) – 5%

- Groundwater samples
    - Trip blank – 1 per shipment
    - Blind Duplicate – 5%
    - Matrix Spike / Matrix Spike Duplicate (MS / MSD) – 5%

C&S will utilize the services of an NYSDOH Environmental Laboratory Approval Program (ELAP) certified laboratory for analytical testing. The laboratory results for the samples will be reported in a Category B deliverables package to facilitate validation of the data, and a third party validator will review the laboratory data and prepare a Data Usability Summary Report (DUSR). The validator will evaluate the analytical results for the field samples and quality assurance / quality control samples and compare the findings to USEPA guidance to determine the accuracy and validity of the results. The EDD for all media will be uploaded to the EQuIS software application.

5 QUALITY ASSURANCE AND QUALITY CONTROL PROTOCOLS

To ensure that suitable and verifiable data results are obtained from the information collected at the Site, quality assurance procedures are detailed in this section.

During the RI the NYSDEC may split any waste, soil, groundwater, or air sample.

5.1 Sampling Methods, Analytical Procedures and Documentation

5.1.1 Sampling Methods

Sampling procedures will be conducted consistent with the NYSDEC *Sampling Guidelines and Protocols Manual*. Collection of representative samples will include the following procedures:

- Ensuring that the sample taken is representative of the material being sampled;
- Using proper sampling, handling and preservation techniques;
- Properly identifying the collected samples and documenting their collection in field records;
- Maintaining chain-of-custody; and
- Properly preserving samples after collection.

Soil Sampling

Soil sampling will be performed using two methods: (1) field screening using a PID; and (2) grab samples. Whether soil samples are collected from the excavator bucket, direct-push rig sleeves, or split-spoons, they will be collected as grab samples that are split and placed into jars supplied by the laboratory as well as into individual zip-lock bags for screening. Screening soil samples will be allowed to sit in sealed zip-lock bag for a short period of time (minimum of five minutes). Head space measurements will then be taken from each zip-lock bag. To prevent cross contamination, zip-lock bags will not be reused and will be properly disposed. Calibration of electronic field screening equipment will be completed daily and will be done to manufacturer's specifications.

As detailed in the *Sampling Guidelines and Protocols Manual*, grab samples will be placed in two to 16 ounce wide-mouth, glass jars. Sample jars will immediately be placed on ice in a cooler. The soil will be analyzed on a standard turnaround time. Except for surface soil sampling, PCBs and pesticides / herbicides will be analyzed at a reduced frequency as listed in the above sections.

Water Sampling

Groundwater sampling will be conducted consistent with NYSDEC and USEPA guidance for low-flow purging and sampling, as described in **Section 4**.

Water samples will be collected via pouring directly into pre-cleaned bottles provided by the laboratory and immediately placing the bottles on ice. The bottles and associated preservatives used, if any, will be based on the requirements of the analytical methods. The water will be analyzed for VOC, SVOC, PCBs, 1,4-dioxane, PFAS, pesticides and metals on a standard turnaround time. Pesticides / herbicides, PCBs, cyanide, and hexavalent

chromium will be analyzed at a reduced frequency as detailed in the above sections. 1,4-dioxane and PFAS will be analyzed for 100% of the samples for the first round. Second round analytical requirements for dioxane and PFAS are contingent on the results of the first round sampling.

SVI Sampling

SVI sampling will be conducted consistent with the methods described in **Section 4**.

Samples will be collected in dedicated canisters provided by the laboratory. The canisters will be based on the requirements of the analytical methods. The samples will be analyzed for VOCs on a standard turnaround time.

QA/QC Sampling

Matrix Spike / Matrix Spike Duplicates (MS / MSD) and duplicate samples will be collected from a minimum of 5% of the locations, and will be selected randomly. Quality Assurance / Quality Control samples will not be collected and analyzed for the waste characterization sampling.

Table 6-1: Summary of Estimated Sampling

Sample Type	***Matrix***	***Est. #***	***Purpose***
Surface Soil	Soil	8	Characterization
Historic Fill	Soil	20	Characterization
Native Soil	Soil	10	Confirmatory
Anomalies	Soil	5	Characterization
Groundwater	Water	6	Characterization
SVI	Air	3	Characterization
Duplicate Groundwater	Water	1	QA / QC
MS/MSD – Soil	Soil	2	QA / QC
MS/MSD – Water	Water	2	QA / QC
Trip Blank – Water	Water	2	QA / QC
Equipment Blank – Water	Water	1	QA / QC
Total		**60**	

5.1.2 Analytical Procedures

Laboratory Analysis

Laboratory analysis will be conducted by a third-party laboratory that is accredited by the NYSDOH ELAP. Laboratory analytical methods will include the most current NYSDEC Analytical Services Protocol (ASP).

Soil, groundwater, and SVI samples sent to a certified laboratory will be analyzed in accordance with EPA SW-846 methodology. A combination of the following contaminants will be analyzed:

- TCL VOCs (EPA Method 8260);
- TCL SVOCs (EPA Method 8270);
- TCL Pesticides / Herbicides (USEPA 8081);
- PCBs (USEPA 8082);
- TAL Metals (EPA Method 6010);
- 1,4-dioxane (EPA Method 8270-SIM)
- PFAS (EPA Method 537 or ISO 25101)
- SVI VOCs (EPA TO-15)

Category B deliverables will be requested to be used in a third-party data validation.

Data Usability

DUSR will be performed by a third-party data consultant using the most recent methods and criteria from the USEPA. The DUSR will assess all sample analytical data, blanks, duplicates and laboratory control samples and evaluate the completeness of the data package. Waste characterization samples will not be validated.

5.1.3 Documentation

Custody Procedures

As outlined in NYSDEC *Sampling Guidelines and Protocols,* a sample is in custody under the following conditions:

- It is in your actual possession;
- It is in your view after being in your physical possession;
- It was in your possession and then you locked or sealed it up to prevent tampering; or
- It is in a secure area.

The environmental professional will maintain all chain-of-custody documents that will be completed for all samples that will leave the Site to be tested in the laboratory.

Air Monitoring

Air monitoring will be conducted for on-site health and safety. Air monitoring will be conducted during active invasive activities periods, such as test boring advancement, test pitting, and well installation. The monitoring will include dust and VOC screening. The specifics of the air monitoring procedures and criteria are detailed in the Health and Safety Plan (HASP) in **Appendix D** and Community Air Monitoring Plan (CAMP) in **Appendix C.**

6 HEALTH AND SAFETY

To verify the safety of the workers and the local community during the performance of the work, monitoring practices of the work environment will be in place during all phases of RI activities. A Health and Safety Plan (HASP) was prepared that details procedures for maintaining safe working conditions and minimizing the potential for exposure to hazardous material. The HASP is provided in **Appendix D**.

Air monitoring during RI activities will be conducted using a PID and an aerosol particle meter. Details on air monitoring are provided in the Community Air Monitoring Plan (CAMP). The CAMP is provided in **Appendix C**.

7 FISH AND WILDLIFE RESOURCES IMPACT ANALYSIS

The Site and surrounding area consists of densely developed urban land in the City of Ithaca. The NYSDEC Online EAF Mapper was utilized to determine if there are significant natural communities, endangered species, or threatened species on the Site. The land approximately one-quarter of a mile in each cardinal direction from the Site was searched. According to the EAF Mapper, glomerate sedge may be present in the area of the Site. However, according to the New York Natural Heritage Program (NYNHP), the habitat for this sedge typically includes sandy soils in a cemetery; rich woods, meadows, thickets, and open forests, usually on calcareous soils; moist woods, meadows, and ditches; or dry clearings of an open hackberry forest over shallow limestone soils. These habitats and soil types are not present on the Site.

According to the NYSDEC Environmental Resource Mapper, there are no wetlands or significant natural communities on the Site.

Based on the above, there are no ecological resources present on the Site and, consequently, no fish and wildlife resource impacts have been identified.

8 REPORTING

Based on the results of the work described above, a report will be prepared to describe the methodologies and results of the RI. The RI Report will describe:

- Investigative methods;
- Observations and findings;
- Comparison of soil sample results to Residential Restricted Use SCOs;
- Results of the community air monitoring program; and
- Analytical results.

The document will be submitted to the NYSDEC for review and approval.

9 SCHEDULE

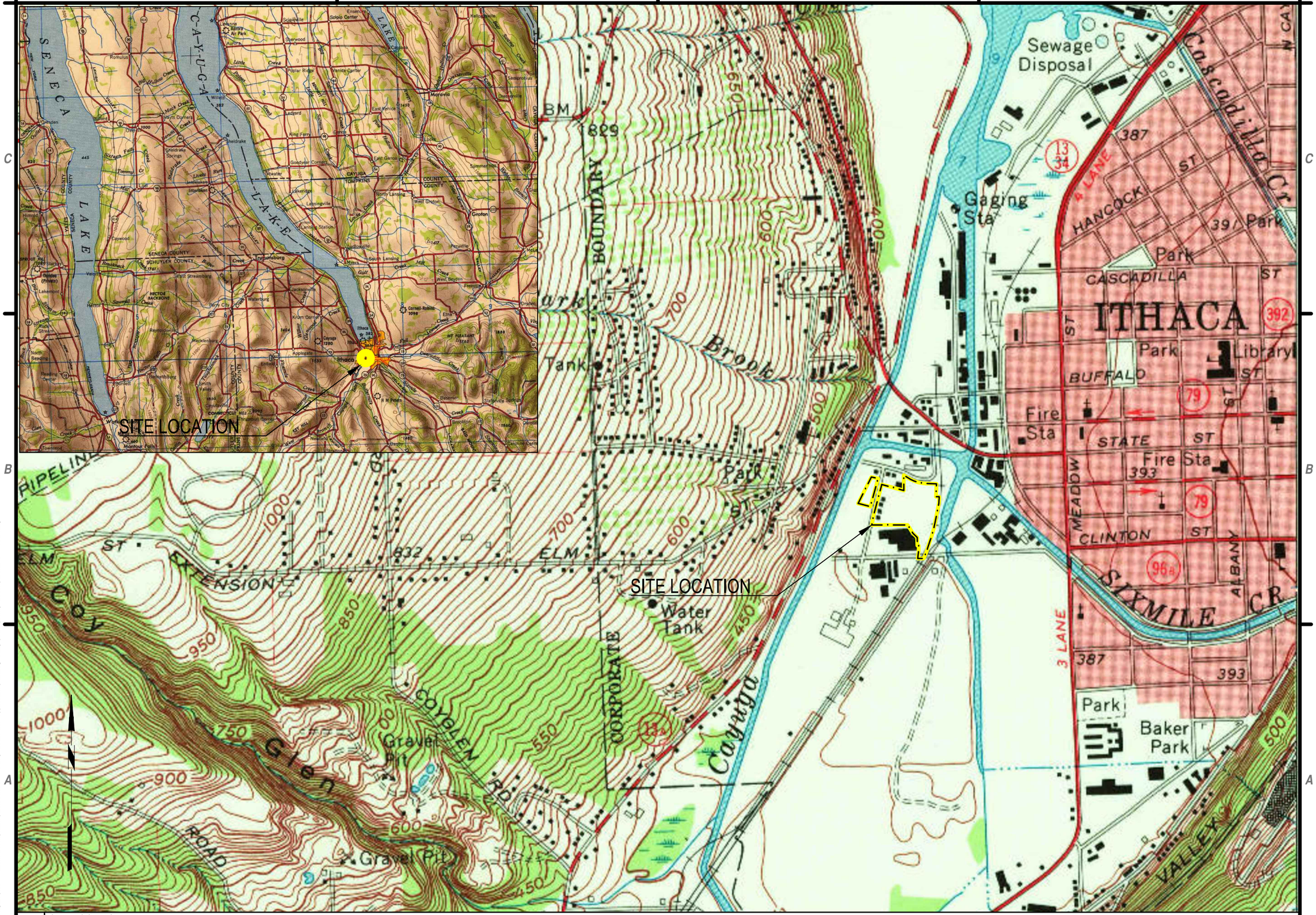
It is assumed that NYSDEC will promptly review this RI Work Plan. Below is an anticipated schedule of milestones for the remediation of the Site.

Anticipated Date	Milestone
July 2021	BCP Application Submission
September 2021	BCP Application Re-Submission
September 2021	RIWP Submission
November 2021	Brownfield Cleanup Agreement (BCA) Executed and RIWP Approved
Winter 2021 / 2022	RI is performed
Spring 2022	Report / Work Plan Submission / Approvals
Summer 2022	Decision Document
Fall 2022	Certificate of Completion (COC) Issued

The schedule does not account for the possibility of Interim Remedial Measures (IRMs). If during the RI, impacts are identified that can readily be addressed by IRMs, the schedule will be updated accordingly.

The Citizen Participation Plan (CPP) for the project is provided in **Appendix B**.

Figures



A1 SITE LOCATION
NTS

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NEIGHBORHOOD OF THE ARTS
BROWNFIELD CLEANUP SITE
TOMPKINS COUNTY
110 CHERRY STREET
ITHACA, NEW YORK 14850

MARK	DATE	DESCRIPTION

REVISIONS

PROJECT NO:	X55.001.001
DATE:	APRIL 2021
DRAWN BY:	ANGEL ALEJO
DESIGNED BY:	ANGEL ALEJO
CHECKED BY:	MATTHEW WALKER

SITE LOCATION MAP

FIGURE 1

Sep 06, 2021 - 11:21am
P:\Projject\X55 - Vacuum Development\X55.001.001 - Cherry Street BCP Application\Planning--Study\CADD\Cherry Street\FIGURE 1 - RIWP.dwg

A1 SITE MAP
SCALE: (11x17) 1"=80' (22x34) 1"=40'

0 40' 80'

Sep 08, 2021 – 11:21am
F:\Project\X55 – Warm Development\X55.001.001 – Cherry Street BCP Application\Planning–Study\CADD\Cherry Street\FIGURE 2 – RIWP.dwg

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SITE MAP

FIGURE 2

A1 SITE MAP
SCALE: (11x17) 1"=80' (22x34) 1"=40'

0 40' 80'

Sep 08, 2021 – 11:21:1m
P:\Projects\X05 – Vacant Development\X55.001.001 – Cherry Street BCP Application\Planning–Study\CADD\Cherry Street\FIGURE 3 – RIWP.dwg

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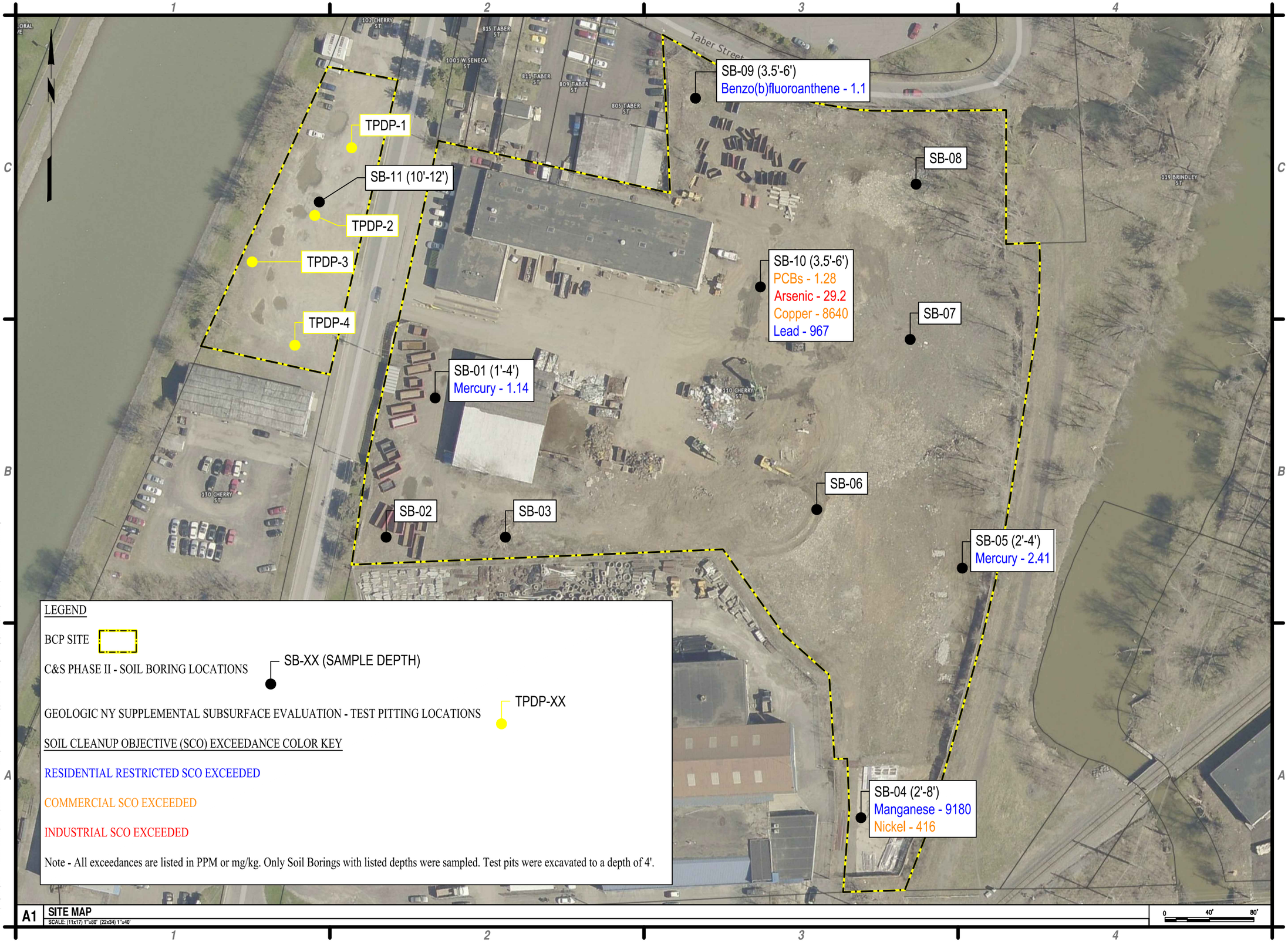
SURFACE SOIL SAMPLING RESULTS

FIGURE 3



A1 **SITE MAP**
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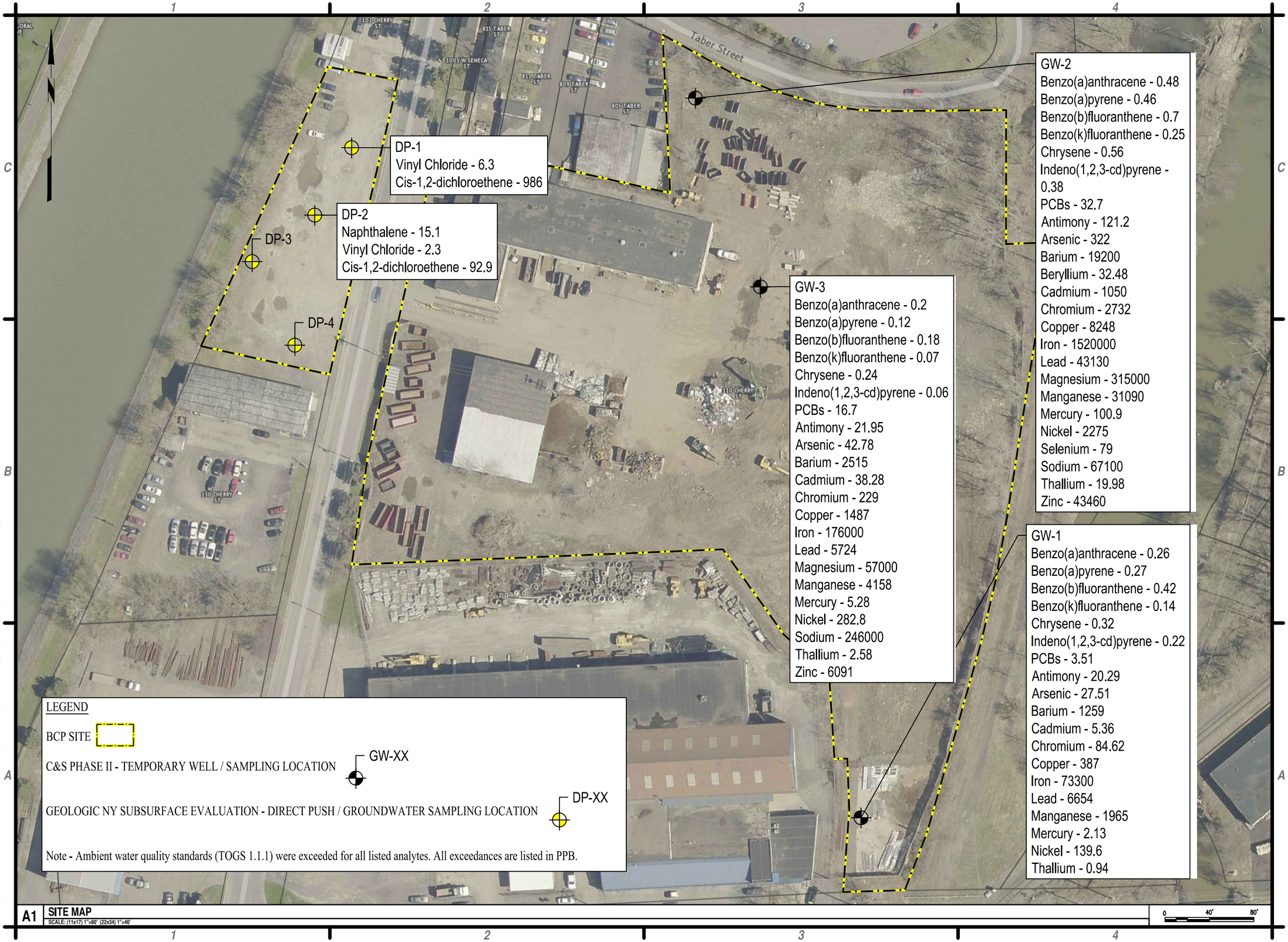
SOIL SUBSURFACE SAMPLING RESULTS

FIGURE 4

Sep 08, 2021 - 11:22am
P:\Projects\X55 - Vacuum Development\X55.001.001 - Cherry Street BCP Application\Planning--Study\CADD\Cherry Street\FIGURE 4 - RIWP.dwg



LEGEND

BCP SITE

C&S PHASE II - TEMPORARY WELL / SAMPLING LOCATION — GW-XX

GEOLOGIC NY SUBSURFACE EVALUATION - DIRECT PUSH / GROUNDWATER SAMPLING LOCATION — DP-XX

Note - Ambient water quality standards (TOGS 1.1.1) were exceeded for all listed analytes. All exceedances are listed in PPB.

A1 SITE MAP

SCALE: (11x17) 1"=80' (22x34) 1"=40'

0 40' 80'

Sep 08, 2021 – 11:22pm
P:\Project\X55 – Vision Development\X55.001.001 – Cherry Street BCP Application\Planning–Study\CAD\Cherry Street\FIGURE 5 – RIWP.dwg

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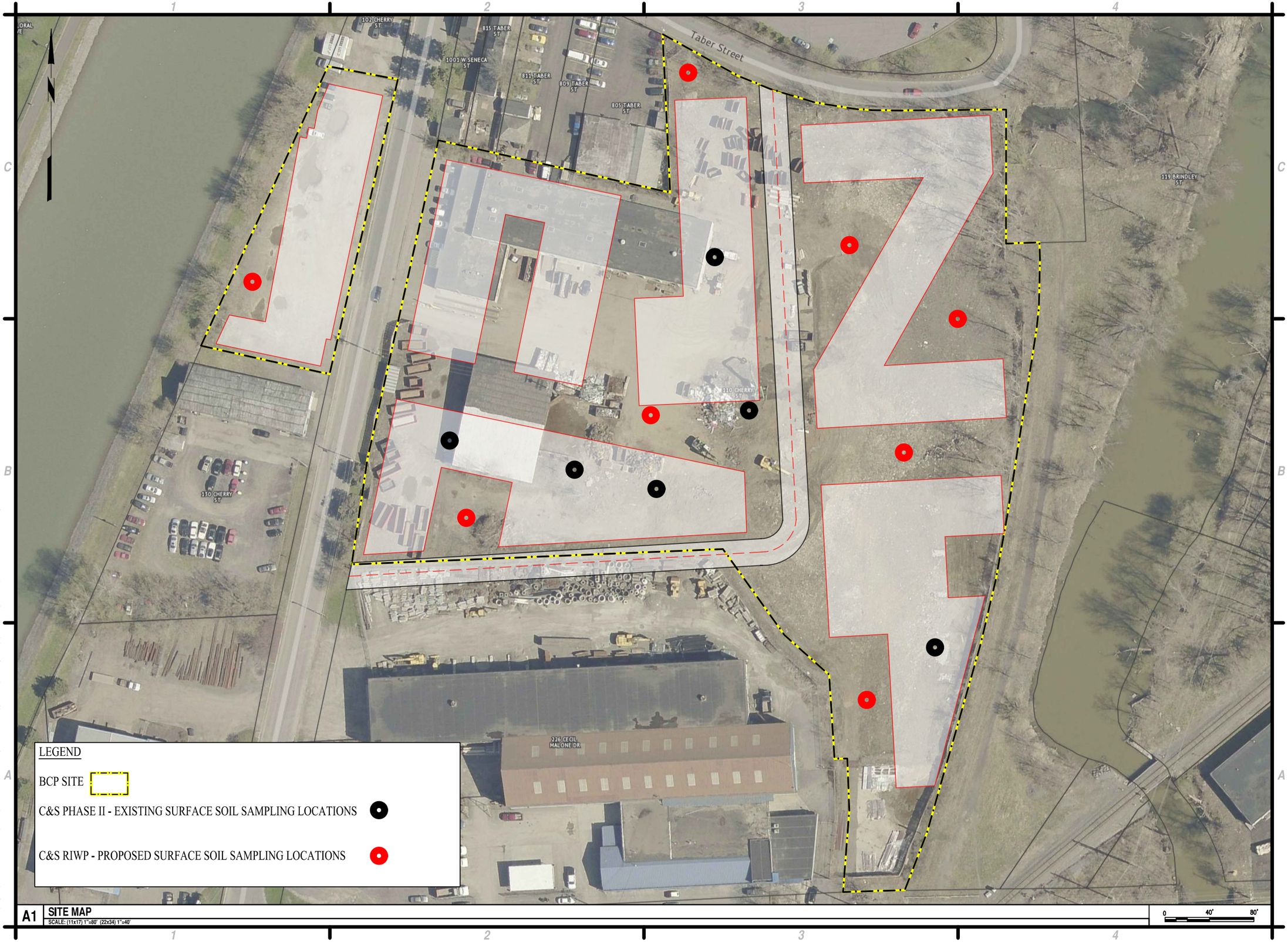
GROUND WATER SAMPLING RESULTS

FIGURE 5



A1 SITE MAP
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PROPOSED SURFACE SOIL SAMPLING LOCATIONS

FIGURE 6

Sep 10, 2021 - 12:21pm
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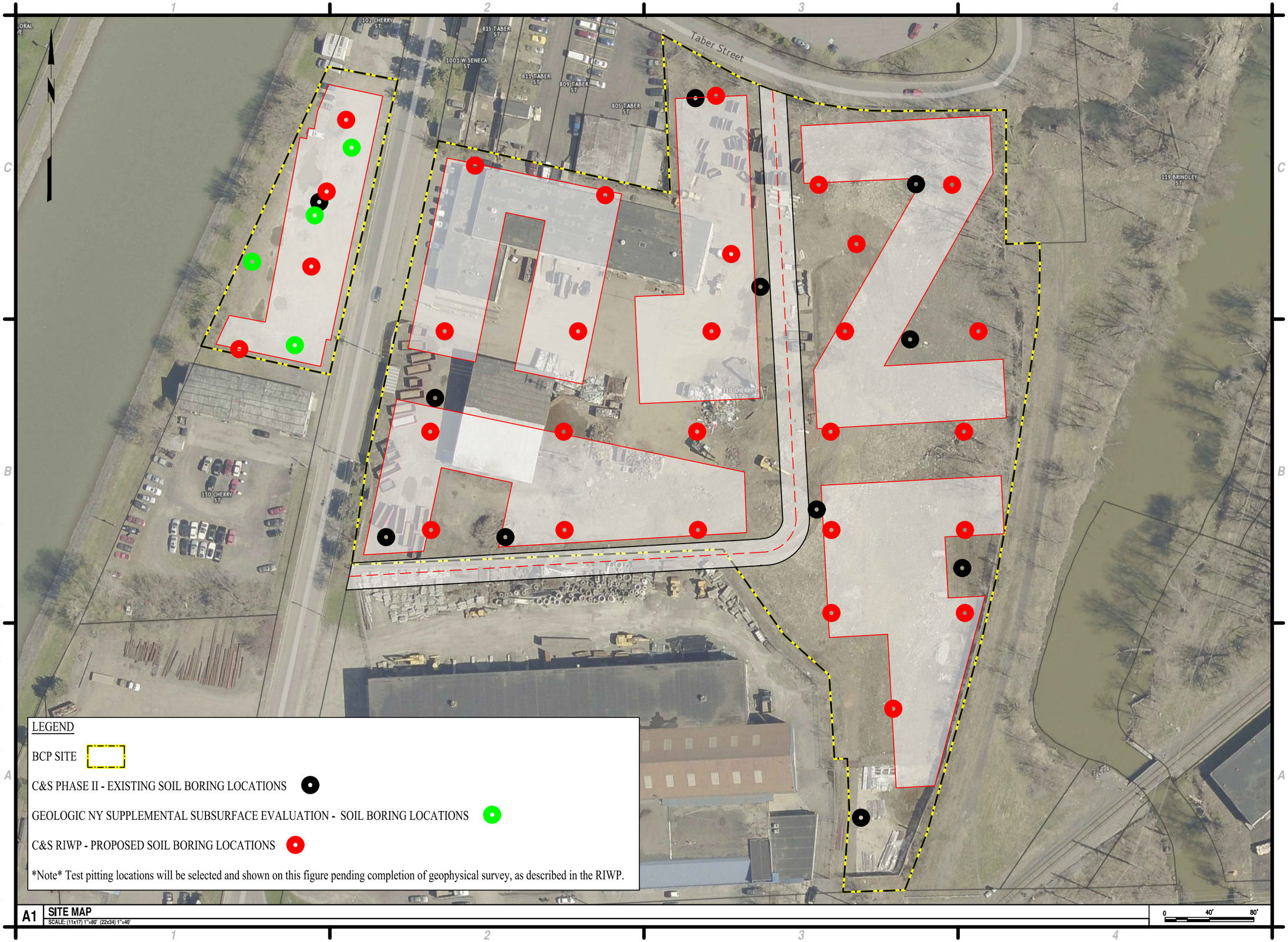

LEGEND

BCP SITE

C&S PHASE II - EXISTING SOIL BORING LOCATIONS

GEOLOGIC NY SUPPLEMENTAL SUBSURFACE EVALUATION - SOIL BORING LOCATIONS

C&S RIWP - PROPOSED SOIL BORING LOCATIONS

Note Test pitting locations will be selected and shown on this figure pending completion of geophysical survey, as described in the RIWP.

A1 SITE MAP
SCALE: (11x17) 1"=80' (22x34) 1"=40'

0 40' 80'

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PROPOSED SOIL BORING LOCATIONS

FIGURE 7

Sep 10, 2021 – 12:21pm
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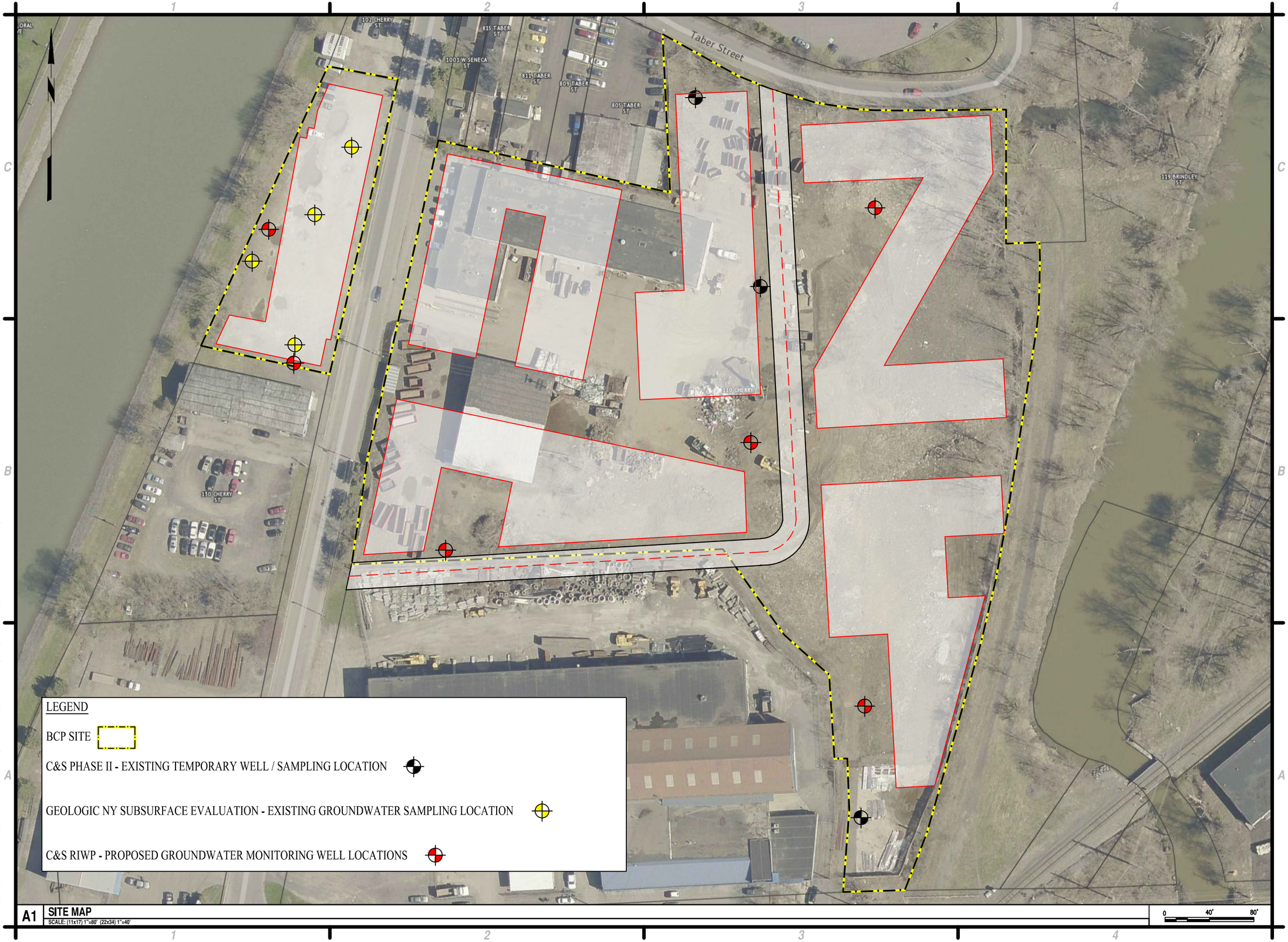

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PROPOSED GROUNDWATER MONITORING LOCATIONS

FIGURE 8

Sep 10, 2021 – 12:21pm
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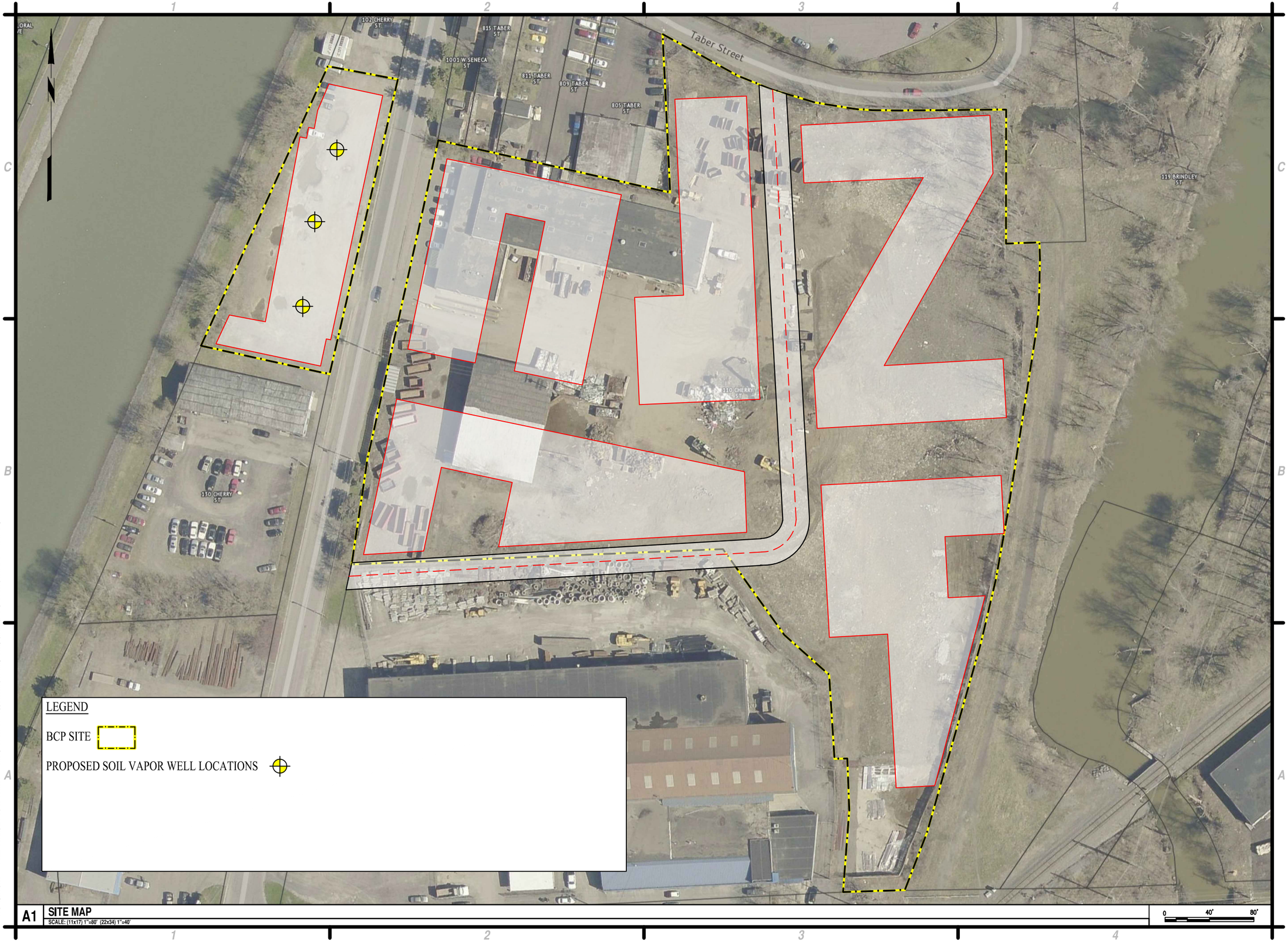

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PROPOSED SOIL VAPOR WELL LOCATIONS

FIGURE 9

Sep 10, 2021 – 12:21pm
F:\Project\X55 – Waste Development\X55.001.001 – Cherry Street BCP Application\Planning–Study\CADD\Cherry Street\FIGURE 9 – RIWP.dwg

CHERRY STREET

VISUM DEVELOPMENT

TABER STREET

CAYUGA INLET

110

132

CHERRY STREET

STREET

CECIL MALONE DRIVE

OPEN SPACE SYSTEMS

- SHARED OPEN SPACE
- PRIVATE OPEN SPACE
- EXISTING / PUBLIC CIRCULATION
- PROPOSED CIRCULATION
- BUILDING/ LANDSCAPE CONNECTIONS

145X75'
LARGE

65X45'
MEDIUM

45 x 20'
SMALL

N

CONCEPTUAL PLAN 1

SCALE: 1"=100'-0"

DATE: 6/30/2021

DWG NO:

L-1.0

Tables

Table 1 – Proposed Remedial Investigation Sampling Program			
Task	**Location**	**Number of Samples**	**Lab Analysis**
Surface Soil Samples	Site-wide for areas proposed to be pervious (i.e. without asphalt or buildings)	8	TCL VOCs, SVOCs, and pesticides / herbicides, PCBs, TAL Metals, Cyanide, Hex Chromium, PFAS / 1,4-dioxane
Historic Fill Samples	Site-wide	Up to 20	TCL VOCs, SVOCs, and pesticides / herbicides (25%), PCBs, TAL Metals, Cyanide and Hex Chromium (10%), PFAS / 1,4-dioxane
Native Soil Samples	Site-wide	Up to 10	TCL VOCs, SVOCs, and pesticides / herbicides (25%), PCBs, TAL Metals, Cyanide and Hex Chromium (10%), PFAS / 1,4-dioxane
Historic Fill Samples	Anomaly Areas (if present)	Up to 5	TAL VOCs, SVOCs, and pesticides / herbicides, PCBs, TCL Metals, Cyanide, Hex Chromium, PFAS / 1,4-dioxane
Groundwater Samples	Site-wide	5 (times two rounds)	TCL VOCs, SVOCs, and pesticides / herbicides (1 per round), PCBs, TAL Metals (total and filtered), Cyanide, Hex Chromium 1,4-dioxane and PFOS 1st round (2nd round sampling contingent on 1st round results)
Soil Vapor Samples	Buildings	TBD	TO-15 VOCs
QA / QC Blind Dupe	Groundwater Sampling	5%	TCL VOCs, SVOCs, and pesticides / herbicides, PCBs, TAL Metals, Cyanide, Hex Chromium, PFAS / 1,4-dioxane
QA / QC MS / MSD	Soil and Groundwater Sampling	5%	TCL VOCs, SVOCs, and pesticides / herbicides, PCBs, TAL Metals, Cyanide, Hex Chromium, PFAS / 1,4-dioxane
QA / QC Trip Blank	Groundwater Sampling	1 per round	VOCs
QA / QC Equipment Blank	Groundwater Sampling	1 per round (if PFAS is sampled)	PFAS

Appendix A
Environmental Reports

Appendix B

Citizen Participation Plan

New York State Department of Environmental Conservation

Brownfield Cleanup Program

Citizen Participation Plan

for

Neighborhood of the Arts

110 Cherry Street
Ithaca, Tompkins County, New York

Prepared By:

C&S COMPANIES®

August 2021

Contents

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Note: The information presented in this Citizen Participation Plan was current as of the date of its approval by the New York State Department of Environmental Conservation. Portions of this Citizen Participation Plan may be revised during the site's investigation and cleanup process.

Applicant: **110 Cherry Street LLC**
Site Name: **Neighborhood of the Arts**
Site Address: **110 Cherry Street, Ithaca, New York 14850**
Site County: **Tompkins**
Site Number: **TBD**

1. What is New York's Brownfield Cleanup Program?

New York's Brownfield Cleanup Program (BCP) works with private developers to encourage the voluntary cleanup of contaminated properties known as "brownfields" so that they can be reused and developed. These uses include recreation, housing, and business.

A *brownfield* is any real property that is difficult to reuse or redevelop because of the presence or potential presence of contamination. A brownfield typically is a former industrial or commercial property where operations may have resulted in environmental contamination. A brownfield can pose environmental, legal, and financial burdens on a community. If a brownfield is not addressed, it can reduce property values in the area and affect economic development of nearby properties.

The BCP is administered by the New York State Department of Environmental Conservation (NYSDEC) which oversees Applicants that conduct brownfield site investigation and cleanup activities. An Applicant is a person who has requested to participate in the BCP and has been accepted by NYSDEC. The BCP contains investigation and cleanup requirements, ensuring that cleanups protect public health and the environment. When NYSDEC certifies that these requirements have been met, the property can be reused or redeveloped for the intended use.

For more information about the BCP, go online at: http://www.dec.ny.gov/chemical/8450.html .

2. Citizen Participation Activities

Why NYSDEC Involves the Public and Why It Is Important

NYSDEC involves the public to improve the process of investigating and cleaning up contaminated sites, and to enable citizens to participate more fully in decisions that affect their health, environment, and social well-being. NYSDEC provides opportunities for citizen involvement and encourages early two-way communication with citizens before decision makers form or adopt final positions.

Involving citizens affected and interest in site investigation and cleanup programs is important for many reasons. These include:

- Promoting the development of timely, effective site investigation and cleanup programs that protect public health and the environment

- Improving public access to, and understanding of, issues and information related to a particular site and that site's investigation and cleanup process

- Providing citizens with early and continuing opportunities to participate in NYSDEC's site investigation and cleanup process

- Ensuring that NYSDEC makes site investigation and cleanup decisions that benefit from input that reflects the interests and perspectives found within the affected community

- Encouraging dialogue to promote the exchange of information among the affected/interested public, State agencies, and other interested parties that strengthens trust among the parties, increases understanding of site and community issues and concerns, and improves decision making.

This Citizen Participation (CP) Plan provides information about how NYSDEC will inform and involve the public during the investigation and cleanup of the site identified above. The public information and involvement program will be carried out with assistance, as appropriate, from the Applicant.

Project Contacts

Appendix A identifies NYSDEC project contact(s) to whom the public should address questions or request information about the site's investigation and cleanup program. The public's suggestions about this CP Plan and the CP program for the site are always welcome. Interested people are encouraged to share their ideas and suggestions with the project contacts at any time.

Locations of Reports and Information

The locations of the reports and information related to the site's investigation and cleanup program also are identified in Appendix A. These locations provide convenient access to important project documents for public review and comment. Some documents may be placed on the NYSDEC web site. If this occurs, NYSDEC will inform the public in fact sheets distributed about the site and by other means, as appropriate.

Site Contact List

Appendix B contains the site contact list. This list has been developed to keep the community informed about, and involved in, the site's investigation and cleanup process. The site contact list will be used periodically to distribute fact sheets that provide updates about the status of the project. These will include notifications of upcoming activities at the site (such as fieldwork), as well as availability of project documents and announcements about public comment periods. The site contact list includes, at a minimum:

- chief executive officer and planning board chairperson of each county, city, town and village in which the site is located;
- residents, owners, and occupants of the site and properties adjacent to the site;
- the public water supplier which services the area in which the site is located;
- any person who has requested to be placed on the site contact list;

- the administrator of any school or day care facility located on or near the site for purposes of posting and/or dissemination of information at the facility;
- location(s) of reports and information.

The site contact list will be reviewed periodically and updated as appropriate. Individuals and organizations will be added to the site contact list upon request. Such requests should be submitted to the NYSDEC project contact(s) identified in Appendix A. Other additions to the site contact list may be made at the discretion of the NYSDEC project manager, in consultation with other NYSDEC staff as appropriate.

Note: The first site fact sheet (usually related to the draft Remedial Investigation Work Plan) is distributed both by paper mailing through the postal service and through DEC Delivers, its email listserv service. The fact sheet includes instructions for signing up with the appropriate county listserv to receive future notifications about the site. See http://www.dec.ny.gov/chemical/61092.html .

Subsequent fact sheets about the site will be distributed exclusively through the listserv, except for households without internet access that have indicated the need to continue to receive site information in paper form. Please advise the NYSDEC site project manager identified in Appendix A if that is the case. Paper mailings may continue during the investigation and cleanup process for some sites, based on public interest and need.

CP Activities

The table at the end of this section identifies the CP activities, at a minimum, that have been and will be conducted during the site's investigation and cleanup program. The flowchart in Appendix D shows how these CP activities integrate with the site investigation and cleanup process. The public is informed about these CP activities through a CP website, fact sheets and notices distributed at significant points during the program. Elements of the investigation and cleanup process that match up with the CP activities are explained briefly in Section 5.

- **CP Website, notices and fact sheets** help the interested and affected public to understand contamination issues related to a site, and the nature and progress of efforts to investigate and clean up a site.

- **Public forums, comment periods, and contact with project managers** provide opportunities for the public to contribute information, opinions and perspectives that have potential to influence decisions about a site's investigation and cleanup.

The public is encouraged to contact project staff at any time during the site's investigation and cleanup process with questions, comments, or requests for information.

This CP Plan may be revised due to changes in major issues of public concern identified in Section 3 or in the nature and scope of investigation and cleanup activities. Modifications may include additions to the site contact list and changes in planned citizen participation activities.

Technical Assistance Grant

NYSDEC must determine if the site poses a significant threat to public health or the environment. This determination generally is made using information developed during the investigation of the site, as described in Section 5.

If the site is determined to be a significant threat, a qualifying community group may apply for a Technical Assistance Grant (TAG). The purpose of a TAG is to provide funds to the qualifying group to obtain independent technical assistance. This assistance helps the TAG recipient to interpret and understand existing environmental information about the nature and extent of contamination related to the site and the development/implementation of a remedy.

As of the date the declaration (page 2) was signed by the NYSDEC project manager, the significant threat determination for the site had not yet been made.

An eligible community group must certify that its membership represents the interests of the community affected by the site, and that its members' health, economic well-being or enjoyment of the environment may be affected by a release or threatened release of contamination at the site.

For more information about TAGs, go online at http://www.dec.ny.gov/regulations/2590.html

Note: The table identifying the citizen participation activities related to the site's investigation and cleanup program follows on the next page:

Citizen Participation Activities	Timing of CP Activity(ies)
Application Process:	
• Prepare site contact list • Establish document repository(ies)	At time of preparation of application to participate in the BCP.
• Publish notice in Environmental Notice Bulletin (ENB) announcing receipt of application and 30-day public comment period • Publish above ENB content in local newspaper • Mail above ENB content to site contact list • Conduct 30-day public comment period	When NYSDEC determines that BCP application is complete. The 30-day public comment period begins on date of publication of notice in ENB. End date of public comment period is as stated in ENB notice. Therefore, ENB notice, newspaper notice, and notice to the site contact list should be provided to the public at the same time.
After Execution of Brownfield Site Cleanup Agreement (BCA):	
• Prepare Citizen Participation (CP) Plan	Before start of Remedial Investigation **Note:** Applicant must submit CP Plan to NYSDEC for review and approval within 20 days of the effective date of the BCA.
Before NYSDEC Approves Remedial Investigation (RI) Work Plan:	
• Distribute fact sheet to site contact list about proposed RI activities and announcing 30-day public comment period about draft RI Work Plan • Conduct 30-day public comment period	Before NYSDEC approves RI Work Plan. If RI Work Plan is submitted with application, public comment periods will be combined and public notice will include fact sheet. Thirty-day public comment period begins/ends as per dates identified in fact sheet.
After Applicant Completes Remedial Investigation:	
• Distribute fact sheet to site contact list that describes RI results	Before NYSDEC approves RI Report
Before NYSDEC Approves Remedial Work Plan (RWP):	
• Distribute fact sheet to site contact list about draft RWP and announcing 45-day public comment period • Public meeting by NYSDEC about proposed RWP (if requested by affected community or at discretion of NYSDEC project manager) • Conduct 45-day public comment period	Before NYSDEC approves RWP. Forty-five day public comment period begins/ends as per dates identified in fact sheet. Public meeting would be held within the 45-day public comment period.
Before Applicant Starts Cleanup Action:	
• Distribute fact sheet to site contact list that describes upcoming cleanup action	Before the start of cleanup action.
After Applicant Completes Cleanup Action:	
• Distribute fact sheet to site contact list that announces that cleanup action has been completed and that NYSDEC is reviewing the Final Engineering Report • Distribute fact sheet to site contact list announcing NYSDEC approval of Final Engineering Report and issuance of Certificate of Completion (COC)	At the time the cleanup action has been completed. **Note:** The two fact sheets are combined when possible if there is not a delay in issuing the COC.

3. Major Issues of Public Concern

This section of the CP Plan identifies major issues of public concern that relate to the site. Additional major issues of public concern may be identified during the course of the site's investigation and cleanup process.

Site soils generally consist of two to six feet of HFM containing gravel, sand, brick, slag, and ash. The HFM contains SVOC, metal, and PCB contamination, as shown in recent sampling. No discrete contamination layer was observed, and therefore, the extent of contamination within the fill material is difficult to identify due to its heterogeneous nature. The Site is approximately 6.65 acres, although the areas of the Site that will be finished with pervious surfaces (e.g. grass or landscaping) is estimated to be at most half. Therefore, the estimated volume of contaminated soil / fill that exceeds Restricted-Residential Use SCOs is approximately 868,000 cubic feet, or 32,150 cubic yards.

Groundwater generally contained SVOC, PCB, and metal impacts. CVOCs are present in the groundwater on the western portion of the Site. Groundwater flow is expected to be to the north towards Cayuga Lake.

The presence of the contamination is limiting the future use and re-investment opportunities on the parcel. Stakeholders in the remediation of the Site include the City of Ithaca, local residents and users of adjacent buildings. See Appendix B for a contact list of stakeholders.

4. Site Information

Appendix C contains a map identifying the location of the site.

Site Description

Location: 110 Cherry Street, Ithaca, New York 14850
Setting: Urban
Site size: 6.65 acres

Adjacent properties:

- **East:** Various commercial buildings
- **South:** Various commercial buildings
- **West:** Various commercial buildings
- **North:** Various commercial buildings

History of Site Use, Investigation, and Cleanup

The proposed BCP site was originally developed prior to 1914. Since that time, the Property has been utilized by the following significant occupants:

- The Site was used by Thomas-Morse Aircraft Corporation from at least 1914 to 1928 for industrial purposes.

- The Site was used for automobile wrecking processes from at least 1961 to 1971.

- The Site has been used for scrap metal recycling from at least 2009 to present day. First by Reamer Recycling Services Inc. and subsequently by Ben Weitsman of Ithaca.

No known remedial events were completed prior to Brownfield Cleanup Program sampling. No active or passive remediation has taken place on-site.

Based on recent investigation results, contaminated urban fill appears to have been deposited at the Site at some point in its history.

The Site contains HFM with observed thickness up to approximately six feet. Per 6 NYCRR Part 375, historic fill is defined as: non-indigenous or non-native material, historically deposited or disposed in the general area of, or on, a site to create useable land by filling water bodies, wetlands or topographic depressions, which is in no way connected with the subsequent operations at the location of the emplacement, and which was contaminated prior to emplacement. The HFM contains gravel, sand, brick, ash, and scrap metal.

Native soil is located below the HFM and consists of silty sands, and FMC gravel.

5. Investigation and Cleanup Process

Application

The Applicant has been accepted into New York's Brownfield Cleanup Program as a Volunteer. This means that the Applicant was not responsible for the disposal or discharge of the contaminants or whose ownership or operation of the site took place after the discharge or disposal of contaminants. The Volunteer must fully characterize the nature and extent of contamination onsite, and must conduct a qualitative exposure assessment, a process that characterizes the actual or potential exposures of people, fish and wildlife to contaminants on the site and to contamination that has migrated from the site.

The Applicant in their Application proposes that the site will be will be repurposed into a mixed use commercial and residential facility.

To achieve this goal, the Applicant will conduct cleanup activities at the site with oversight provided by NYSDEC. The Brownfield Cleanup Agreement sets forth the responsibilities of each party in conducting these activities at the site.

Investigation

The Applicant will conduct an investigation of the site officially called a "remedial investigation" (RI). This investigation will be performed with NYSDEC oversight. The Applicant must develop a remedial investigation work plan (RIWP), which is subject to public comment.

The site investigation has several goals:
1) Define the nature and extent of contamination in soil, surface water, groundwater and any other parts of the environment that may be affected.
2) Identify the source(s) of the contamination.
3) Assess the impact of the contamination on public health and the environment.
4) Provide information to support the development of a proposed remedy to address the contamination or the determination that cleanup is not necessary.

The Applicant submits a draft "Remedial Investigation Work Plan" to NYSDEC for review and approval. NYSDEC makes the draft plan available to the public review during a 30-day public comment period.

When the investigation is complete, the Applicant will prepare and submit a report that summarizes the results. This report also will recommend whether cleanup action is needed to address site-related contamination. The investigation report is subject to review and approval by NYSDEC.

NYSDEC will use the information in the investigation report to determine if the site poses a significant threat to public health or the environment. If the site is a "significant threat," it must be cleaned up using a remedy selected by NYSDEC from an analysis of alternatives prepared by the Applicant and approved by NYSDEC. If the site does not pose a significant threat, the Applicant may select the remedy from the approved analysis of alternatives.

Interim Remedial Measures

An Interim Remedial Measure (IRM) is an action that can be undertaken at a site when a source of contamination or exposure pathway can be effectively addressed before the site investigation and analysis of alternatives are completed. If an IRM is likely to represent all or a significant part of the final remedy, NYSDEC will require a 30-day public comment period.

Remedy Selection

When the investigation of the site has been determined to be complete, the project likely would proceed in one of two directions:

1. The Applicant may recommend in its investigation report that no action is necessary at the site. In this case, NYSDEC would make the investigation report available for public comment for 45 days. NYSDEC then would complete its review, make any necessary revisions, and, if appropriate, approve the investigation report. NYSDEC would then issue a "Certificate of Completion" (described below) to the Applicant.

or

2. The Applicant may recommend in its investigation report that action needs to be taken to address site contamination. After NYSDEC approves the investigation report, the Applicant may then develop a cleanup plan, officially called a "Remedial Work Plan". The Remedial Work Plan describes the Applicant's proposed remedy for addressing contamination related to the site.

When the Applicant submits a draft Remedial Work Plan for approval, NYSDEC would announce the availability of the draft plan for public review during a 45-day public comment period.
Cleanup Action

NYSDEC will consider public comments, and revise the draft cleanup plan if necessary, before approving the proposed remedy. The New York State Department of Health (NYSDOH) must concur with the proposed remedy. After approval, the proposed remedy becomes the selected remedy.

The Applicant may then design and perform the cleanup action to address the site contamination. NYSDEC and NYSDOH oversee the activities. When the Applicant completes cleanup activities, they will prepare a final engineering report that certifies that cleanup requirements have been achieved or will be achieved within a specific time frame. NYSDEC will review the report to be certain that the cleanup is protective of public health and the environment for the intended use of the Site.

Certificate of Completion

When NYSDEC is satisfied that cleanup requirements have been achieved or will be achieved for the Site, it will approve the final engineering report. NYSDEC then will issue a Certificate of Completion (COC) to the Applicant. The COC states that cleanup goals have been achieved, and relieves the Applicant from future liability for Site-related contamination, subject to certain conditions. The Applicant would be eligible to redevelop the Site after it receives a COC.

Site Management

Site management is the last phase of the Site cleanup program. This phase begins when the COC is issued. Site management may be conducted by the Applicant under NYSDEC oversight, if contamination will remain in place. Site management incorporates any institutional and engineering controls required to ensure that the remedy implemented for the Site remains protective of public health and the environment. All significant activities are detailed in a Site Management Plan.

An institutional control is a non-physical restriction on use of the Site, such as a deed restriction that would prevent or restrict certain uses of the property. An institutional control may be used when the cleanup action leaves some contamination that makes the Site suitable for some, but not all uses.

An engineering control is a physical barrier or method to manage contamination. Examples include: caps, covers, barriers, fences, and treatment of water supplies.

Site management also may include the operation and maintenance of a component of the remedy, such as a system that is pumping and treating groundwater. Site management continues until NYSDEC determines that it is no longer needed.

Appendix A
Project Contacts and Locations of Reports and Information

Project Contacts

For information about the site's investigation and cleanup program, the public may contact any of the following project staff:

New York State Department of Environmental Conservation (NYSDEC):

TBD
Project Manager
NYSDEC Region 7
Division of Environmental Remediation
615 Erie Blvd. West
Syracuse, NY 13204
(315) 426-7400

TBD
Citizen Participation Specialist
NYSDEC Region 7
615 Erie Boulevard West
Syracuse, NY 13204
(315) 426-7400

New York State Department of Health (NYSDOH):

TBD
Project Manager
NYSDOH
Empire State Plaza – Corning Tower, RM 1787
Albany, NY 12237
(518) 402-7860

Locations of Reports and Information

The facilities identified below are being used to provide the public with convenient access to important project documents:

Tompkins County Public Library
101 East Green Street
Ithaca, NY 14850
Attn: Teresa Vadakin
Phone: (607) 272-4557
Hours: Monday to Friday 9am to 6pm
Saturday 10am to 5pm
(call for appointment)

NYSDEC Region 7
615 Erie Blvd. West
Syracuse, NY 13204
Attn: TBD
Phone: (315) 426-7400
Hours: Monday to Friday 9 am to 5 pm
(call for appointment)

Visum Development Group
119 S. Cayuga St. Suite 301
Ithaca, NY 14850
Phone: (607) 269-7300

The citizen participation website can be found at http://www.dec.ny.gov/public/51805.html. The website provides information for the interested and affected public to help understand contamination issues related to a site, and the nature and progress of efforts to investigate and clean up a site.

Appendix B Site Contact List

1. Local Government – City of Ithaca and Tompkins County

Svante Myrick
City of Ithaca Mayor
108 East Green Street
Ithaca, New York 14850

JoAnn Cornish
City of Ithaca Director of Planning and Economic Development
108 East Green Street
Ithaca, New York 14850

Jason Molino
Tompkins County Administrator
125 East Court Street,
Old Jail Bldg. 3rd Floor
Ithaca, New York 14850

Joe McGrath, CEO/President
Finger Lakes Regional Land Bank Corporation
1 DiPronio Drive
Waterloo, NY 13165

2. Residents, Owners and Occupants of Property and Property Adjacent to Site:

Adjacent properties are listed below and shown in **Figure 5**.

Downstate 201 Excavation, LLC
226 Cecil A Malone Dr.
Ithaca, NY 14850

City of Ithaca
119-139 Brindley St.
Ithaca, NY 14850

Ithaca Arthaus, LLC
130 Cherry St.
Ithaca, NY 14850

Performance Premises, LLC
102 Cherry St.
Ithaca, NY 14850

Bouche Frederic R.
817 Taber St.
Ithaca, NY 14850

Bouche Frederic R.
815 Taber St.
Ithaca, NY 14850

Taber Street One, LLC
811-13 Taber St.
Ithaca, NY 14850

Taber Street One, LLC
809 Taber St.
Ithaca, NY 14850

Taber Street One, LLC
805-813 Taber St.
Ithaca, NY 14850

Ithaca Aeroplane Fty Hldg, LLC
120-40 Brindley St.
Ithaca, NY 14850

Ithaca Aeroplane Fty Hldg, LLC
902 Taber St.
Ithaca, NY 14850

Beckadam, Inc
132 Cherry St.
Ithaca, NY 14850

3. Local Media:

Local Newspaper:

Ithaca Times
109 N. Cayuga St.
Ithaca, NY 14850
(607) 277-7000
https://www.ithaca.com/

Local Television:

WENY News – NY Local Ithaca
112 W. State St.
Ithaca, NY 14850
https://www.weny.com/category/334129/ny-local-ithaca

Radio:

WHCU 97.7fm/870am
1751 Hanshaw Road
Ithaca, NY 14850
https://whcuradio.com/

4. Local Water Supplier:

City of Ithaca Department of Public Works – Water and Sewer Division
510 1st St.
Ithaca, NY 14850
(607) 272-1717

5. Persons Requesting to be Placed on Contact List:

To Be Completed as Necessary

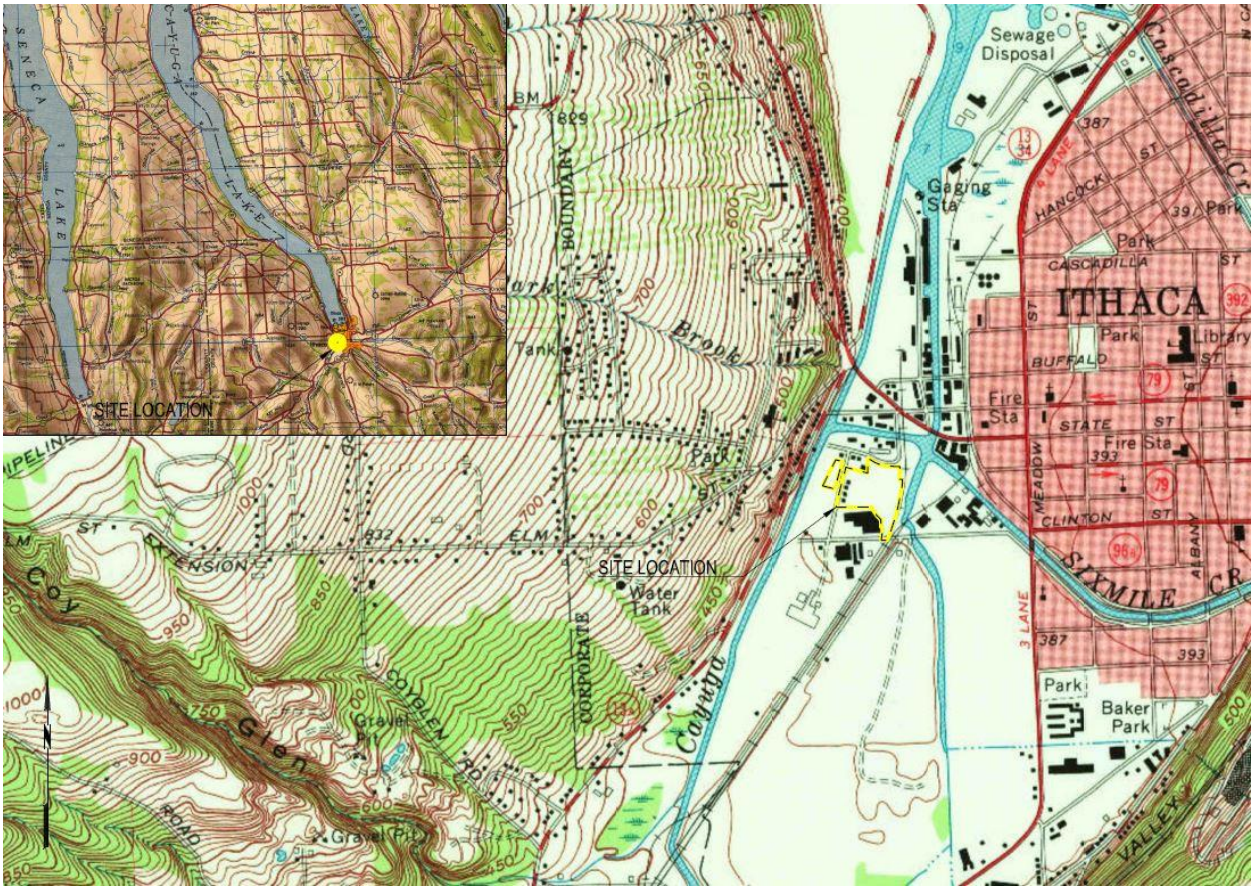
6. School and Day Care Facilities:

There are several schools or day care facilities located on or in the vicinity (1 mile) of the proposed BCP Site.

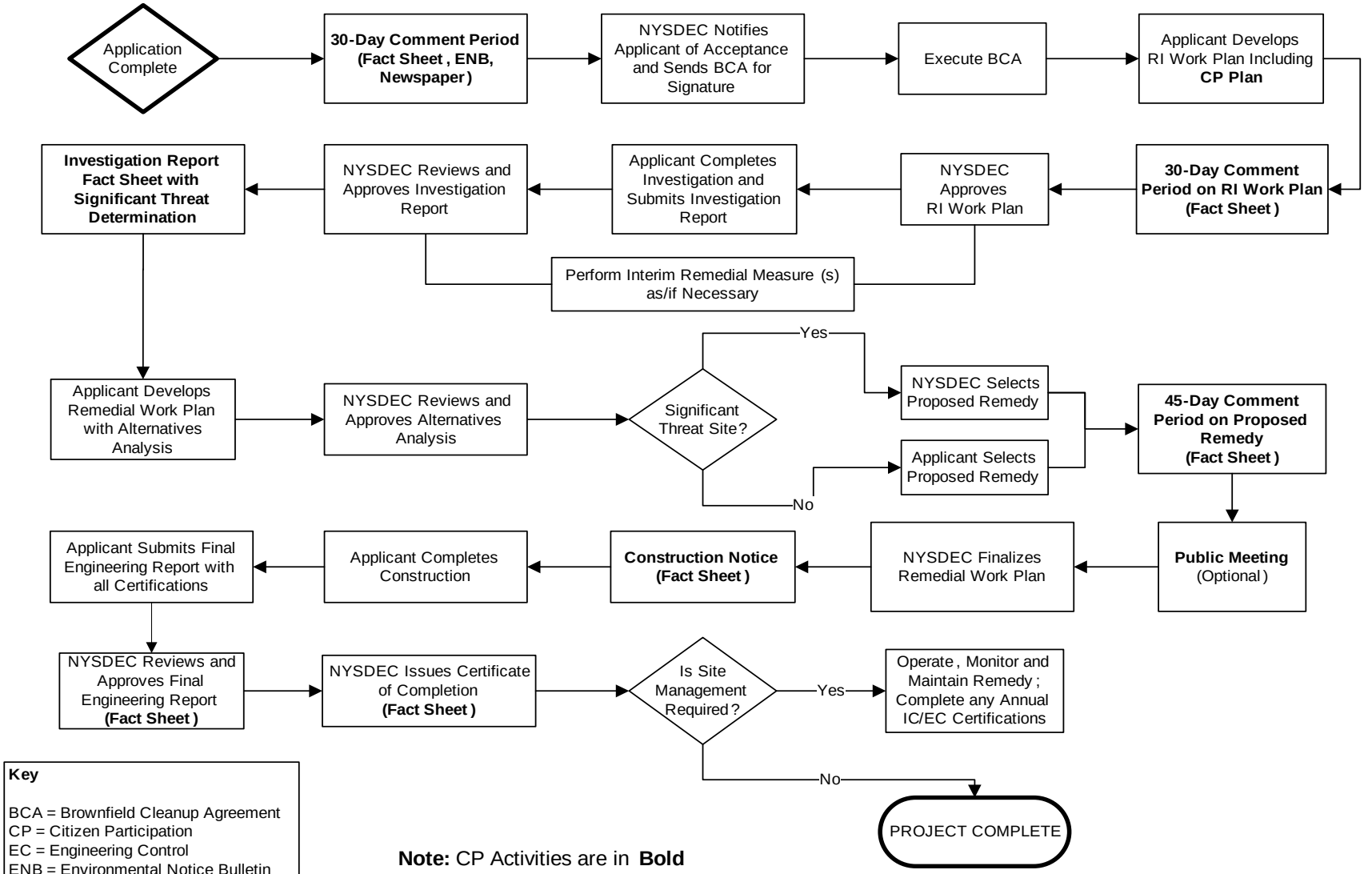
Beverly J. Martin Elementary
302 West Buffalo St.
Ithaca, NY 14850
Principal – Susan Eschbach

Over the Moon Preschool
516 W. Green St.
Ithaca, NY 14850

Appendix C- Site Location Map



Appendix D– Brownfield Cleanup Program Process



Key

BCA = Brownfield Cleanup Agreement
CP = Citizen Participation
EC = Engineering Control
ENB = Environmental Notice Bulletin
IC = Institutional Control
RI = Remedial Investigation

Note: CP Activities are in **Bold**

Appendix C

Community Air Monitoring Plan

Community Air Monitoring Plan

for

Neighborhood of the Arts
110 Cherry Street
Ithaca, New York, 14580

Site No. TBD

August 2021

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.

<u>VOC Monitoring, Response Levels and Actions</u>

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

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be

stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/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$_o$ C (14 to 122$_o$ 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 D
Health and Safety Plan

Health and Safety Plan
for
Brownfield Remedial Investigation

Neighborhood of the Arts

110 Cherry Street
Syracuse, Onondaga County, New York

Site No. TBD

Prepared by

C&S Engineers, Inc.
499 Colonel Eileen Collins Boulevard
Syracuse, New York 13212

August 2021

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APPENDICES

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 Neighborhood of the Arts Site located at 110 Cherry Street, Ithaca, Tompkins 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.

DISCLAIMER

This document addresses 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

C&S Corporate H&S Manager…….	Brent Testut Phone: (315) 703-4376 Cell: (707) 631-8846
C&S Project Manager and Site Health and Safety Officer……...	Matt Walker Phone: (315) 703-4323 Cell: (315) 200-5872
C&S Onsite Emergency Coordinator…….	Angel Alejo Phone: (315) 703-4459 Cell: (315) 720-5335

Emergency Phone Numbers

Emergency Medical Service.....911

Police: Tompkins County Sheriff or NYS Police 911

Fire: Ithaca Fire Department 911

Hospital: Cayuga Medical Center .....(607) 274-4011

National Response Center .....(800) 424-8802

Poison Control Center .....(800) 222-1222

Center for Disease Control.....(800) 311-3435

NYSDEC Region 7 (Cortland, New York).....(607) 753-3095

C&S Engineers.....(315) 455-2000

Site Superintendent .....**TBD**

Project Field Office Trailer .....**TBD**

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 OHSA 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 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 Neighborhood of the Arts Site (Site) is located at 110 Cherry Street, Ithaca, Tompkins County, New York. The Site includes five brick and block buildings which account for approximately 204,964 square feet of gross building space. The buildings were constructed sometime before 1892 until 1956. The Site includes a 17,281 square foot building currently used primarily as office space and a 7,584 square foot canopy currently used for the handling of fuels and oils as a result of recycling operations. The remainder of the property is covered with varying amounts of vegetation, construction rubble, and recycling debris. The office space features asphalt parking adjacent to the building. Auxiliary parking is located on the opposite side of Cherry Street on a gravel lot. The topography of the subject property is generally flat, but the western perimeter is generally sloped downwards along the Cayuga Inlet.

Figure 1 shows the location of the Site and Figure 2 shows the Project Area and Site Boundaries.

Site History and Suspect Recognized Environmental Conditions

The Property has been used for industrial and commercial purposes since it was first developed prior to 1914 as the Thomas-Morse Aircraft Corporation. Site operations included aircraft development and manufacturing. Between 1961 and 1971, the Site was used for vehicle wrecking processes. The site has since been used for scrap metal recycling from at least 2009 to present day. First operated by Reamer Recycling Services Inc. and subsequently by Ben Weitsman of Ithaca.

The soil across the Site generally consists of historic fill extending to six feet bgs. Consistent with historic fill found in cities in the Northeast US, this historic fill contains SVOC, metal and PCB contamination, as shown in recent sampling. No discrete contamination layer was observed within the fill, and therefore, the extent of contamination within the fill material is difficult to identify due to its heterogeneous nature. The latitudinal extent of the fill appears to comprise nearly the entire extent of the exposed Site.

In addition to impacts identified across the site, there is a potential for historic fill beneath the building footprint. Impacts to groundwater and below the building footprints will be documented as part of the Remedial Investigation.

SECTION 4 - HAZARD ASSESSMENT AND HAZARD COMMUNICATION

Hazards to workers during site work include typical construction-related hazards such as slip-trip-fall, equipment malfunction, faulty electrical grounding, and heat/cold/excessive noise exposure. In addition to those typical construction-related hazards, there is also the potential for chemical exposures associated with environmental conditions. The most likely routes of chemical exposure during site work tasks include skin adsorption and inhalation of airborne dust particles.

It is difficult to draw a correlation between the concentrations of contaminants found in one media and the potential for exposure to these contaminants to site workers. However, their potential presence indicates that the potential for exposure to these compounds exist, and the requirements for protective measures and monitoring of exposure is based on this potential.

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.

8.1.1 Drilling Operations – Monitoring Well Installation, Subsurface Borings, and Test Pit Excavations

Monitoring will be performed by the HSO or drilling 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, the borehole, and subsurface samples upon their retrieval. Drill cuttings and excavation spoils 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. If subsurface conditions warrant, a combustible gas indicator (CGI) with oxygen alarm may also be used to monitor the borehole for the presence of combustible gases. Similar monitoring of fluids produced during well development will also be conducted.

8.1.2 Remedial Measures

During Remedial Measures (RM), monitoring will be performed during excavation and sampling operations when C&S personnel are within the work zone. Although historical information previously obtained at the Site indicates low level of volatile organic vapors and compounds, a photoionization detector (PID) will be used during subsurface activities. If RM is performed, the, the remedial contractor will be required to employ dust control practices during work.

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 remedial 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: ..... Angel Alejo.....Cell Phone: (315) 720-5335

The Emergency Coordinator or his on-site designee will, in concert with the Volunteer, will 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 RIWP) 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 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.

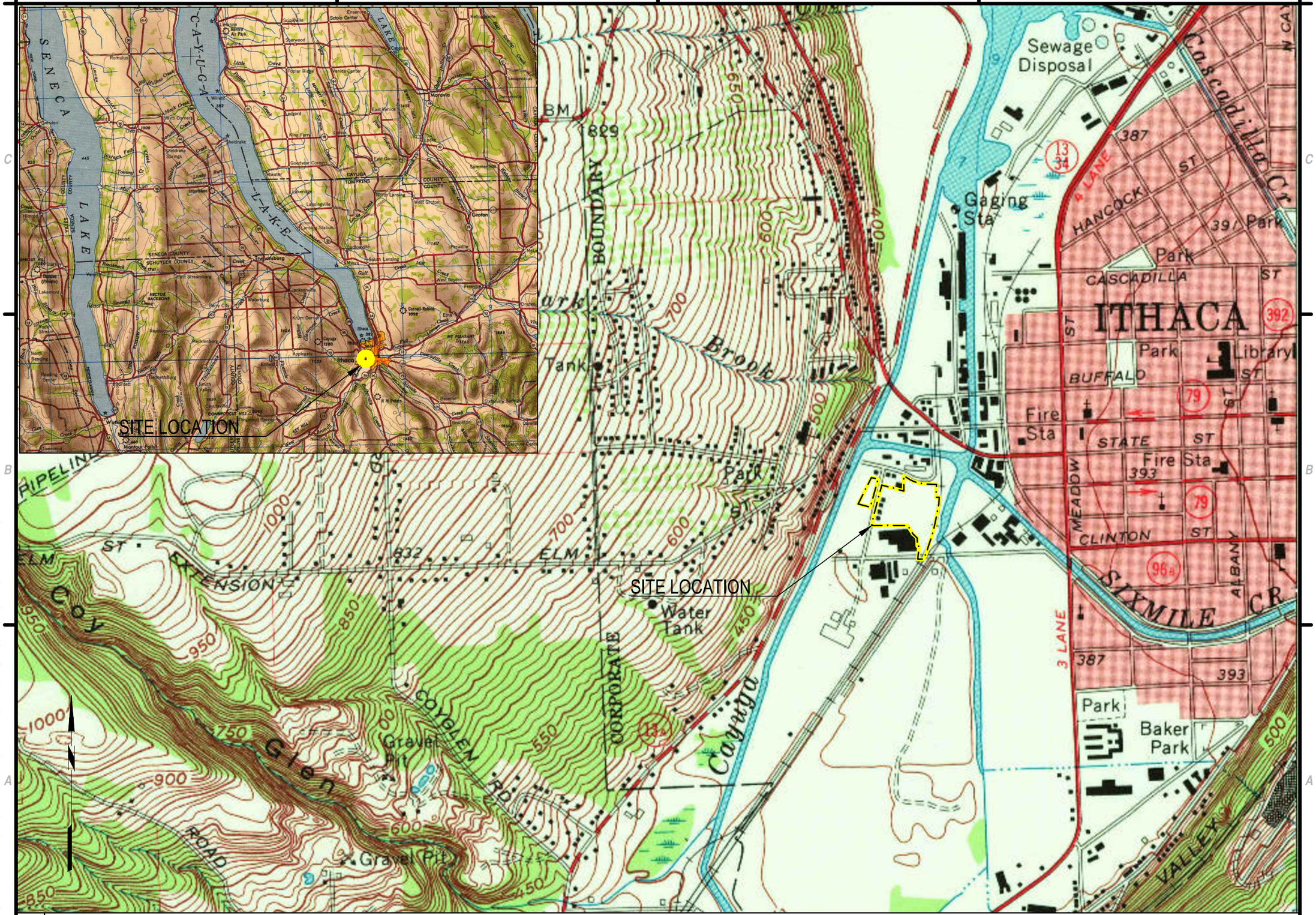
SECTION 15 - AUTHORIZATIONS

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

C&S ENGINEERS



A1 SITE LOCATION
NTS

C&S COMPANIES

C&S Engineers, Inc.
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Syracuse, New York 13212
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NEIGHBORHOOD OF THE ARTS
PROPOSED BROWNFIELD CLEANUP SITE
TOMPKINS COUNTY
110 CHERRY STREET
ITHACA, NEW YORK 14850

MARK	DATE	DESCRIPTION
REVISIONS		

PROJECT NO:	X55.001.001
DATE:	APRIL 2021
DRAWN BY:	ANGEL ALEJO
DESIGNED BY:	ANGEL ALEJO
CHECKED BY:	MATTHEW WALKER

SITE LOCATION MAP

FIGURE 1

Jul 20, 2021 - 11:22am
P:\Project\X55 - Vacuum Development\X55.001.001 - Cherry Street BCP Application\Planning-Study\CAD\Cherry Street\FIGURE 1 - RIWP.dwg

FIGURE 2

SITE MAP

C&S ENGINEERS

A1 **SITE MAP**
SCALE: (11x17) 1"=80' (22x34) 1"=40'

0 40' 80'

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SITE MAP

FIGURE 2

Jul 29, 2021 – 11:22am
F:\Project\X55 – Vitarm Development\X55.001.001 – Cherry Street BCP Application\Planning–Study\CADD\Cherry Street\FIGURE 2 – RIWP.dwg

ATTACHMENT A

MAP TO HOSPITAL

C&S ENGINEERS

from 110 Cherry St, Ithaca, NY 14850
to Cayuga Medical Center, 101 Dates Dr, Ithaca, NY 14...

6 min (2.7 miles)

via NY-96 N

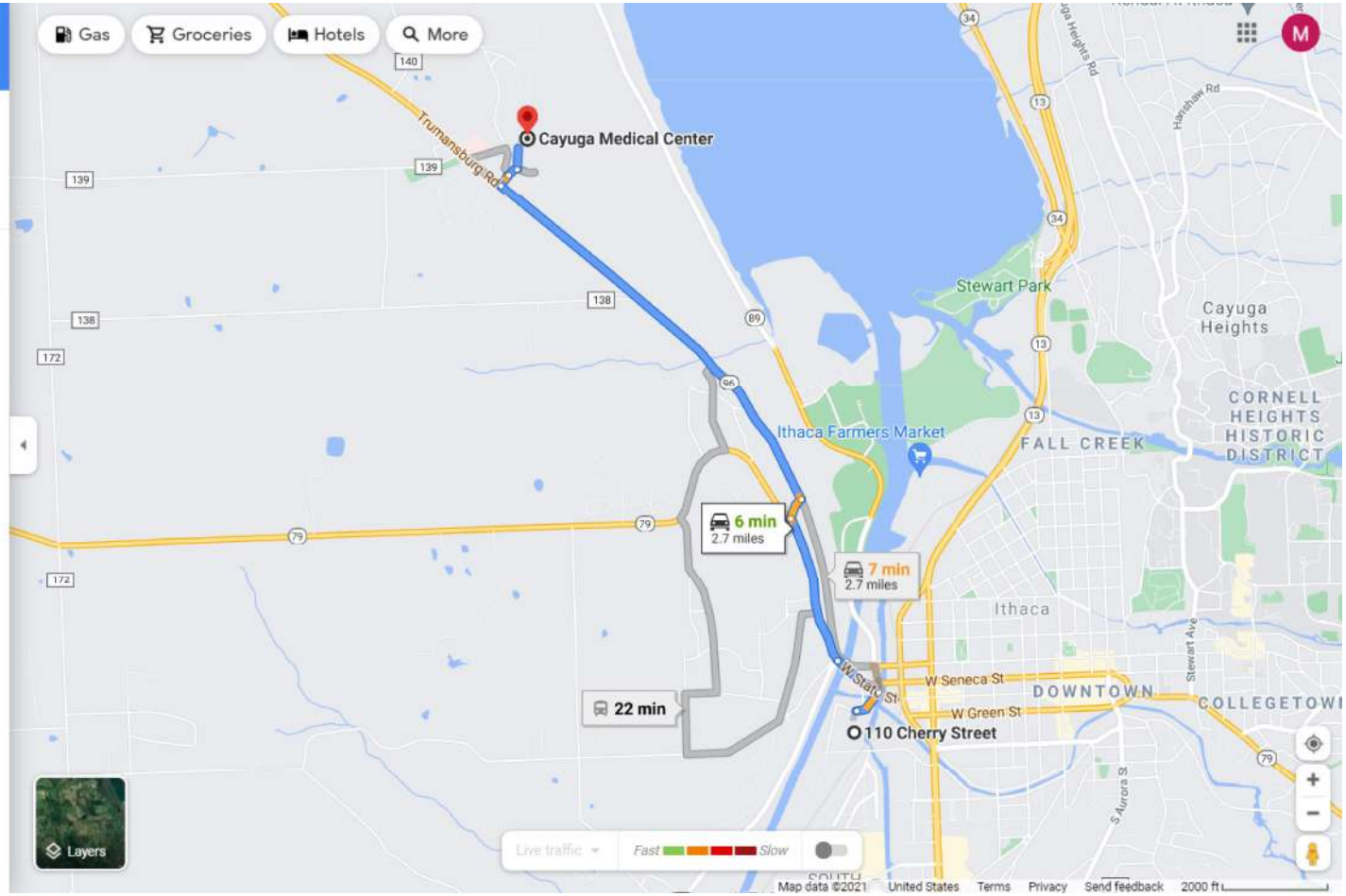
Fastest route now due to traffic conditions

110 Cherry St
Ithaca, NY 14850

- Head east on Taber St toward Brindley St
  31 s (0.1 mi)
- Take NY-96 N to Harris B Dates Dr Exn in Northwest Ithaca
  5 min (2.4 mi)
- Drive to County Hospital Rd
  41 s (0.2 mi)

Cayuga Medical Center
101 Dates Dr, Ithaca, NY 14850

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



APPENDIX A

EXCAVATION / TRENCHING GUIDELINE

C&S ENGINEERS

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

TABLE OF CONTENTS

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 nvestigation 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

• **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 fo 1926.652(b)(2) as a method of protection for employees from cave-ins. This appendix also applies when timber shoring for excav 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 selec from data prepared in accordance with the requirements set forth in 1926.652(c), and the use of the data is predicated on the us 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 T Materials (ASTM) Standards D653-85 and D2488; The Unified Soils Classification System; The U.S. Department of Agriculture (US 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 sheer 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 perso 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 analysis. Such analyses shall be conducted by a competent person using tests described in paragraph (d) below, or in other reco methods of soil classification and testing such as those adopted by the American Society for Testing Materials, or the U.S. Depart 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 thi shall be designed and conducted to provide sufficient quantitative and qualitative information as may be necessary to identify prc 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 laye 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 w changes shall be evaluated by a competent person. The deposit shall be reclassified as necessary to reflect the changed circumst

(d) Acceptable visual and manual tests. - (1) Visual tests. Visual analysis is conducted to determine qualitative information regarc excavation site in general, the soil adjacent to the excavation, the soil forming the sides of the open excavation, and the soil take samples 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 material is cohesive material. Soil composec 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 nc clumps is granular.

(iii) Observe the side of the opened excavation and the surface area adjacent to the excavation. Crack-like openings such as tens could indicate fissured material. If chunks of soil spall off a vertical side, the soil could be fissured. Small spalls are evidence of m 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 s and to identify previously disturbed soil.

(v) Observed the opened side of the excavation to identify layered systems. Examine layered systems to identify if the layers slop 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 see the sides of the excavation, 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 s the excavation face.

(2) Manual tests. Manual analysis of soil samples is conducted to determine quantitative as well as qualitative properties of soil a 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. Cohe material can be successfully rolled into threads without crumbling. For example, if at least a two inch (50 mm) length of 1/8-inch 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 g combination of gravel, sand, or silt). If the soil is dry and falls into clumps which break up into smaller clumps, but the smaller clu 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 wh break up into small clumps and which can only be broken with difficulty, and there is no visual indication the soil is fissured, the s considered unfissured.

(iii) Thumb penetration. The thumb penetration test can be used to estimate the unconfined compressive strength of cohesive so test is based on the thumb penetration test described in American Society for Testing and Materials (ASTM) Standard designatior "Standard Recommended Practice for Description of Soils (Visual - Manual Procedure).") Type A soils with an unconfined compre strength of 1.5 tsf can be readily indented by the thumb; however, they can be penetrated by the thumb only with very great eff soils with an unconfined compressive strength of 0.5 tsf can be easily penetrated several inches by the thumb, and can be molde finger pressure. This test should be conducted on an undisturbed soil sample, such as a large clump of spoil, as soon as practicat excavation to keep to a minimum the effects of exposure to drying influences. If the excavation is later exposed to wetting influe 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 penetron using a hand-operated shearvane.

(v) Drying test. The basic purpose of the drying test is to differentiate between cohesive material with fissures, unfissured cohesi and granular material. The procedure for the drying test involves drying a sample of soil that is approximately one inch thick (2.5 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 ha 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 t pulverize the dried clumps of the sample by hand or by stepping on them. If the clumps do not pulverize easily, the material is cc fissures. 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

U.S. Department of Labor | Occupational Safety & Health Administration | 200 Constitution Ave., NW, Washington, D
Telephone: 800-321-OSHA (6742) | TTY: 877-889-5627

www.OSHA.gov

• **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 protectiv 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 phen the development of fissures in the face of or adjacent to an open excavation; the subsidence of the edge of an excavation; the slu material from the face or the bulging or heaving of material from the bottom of an excavation; the spalling of material from the fa excavation; and ravelling, 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 condi 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 1926.

(2) ***Maximum allowable slope***. The maximum allowable slope for a soil or rock deposit shall be determined from Table B-1 of tl 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 occur slope shall be cut back to an actual slope which is at least ½ horizontal to one vertical (½H:1V) less steep than the maximum allo slope.

(iii) When surcharge loads from stored material or equipment, operating equipment, or traffic are present, a competent person sh determine the degree to which the actual slope must be reduced below the maximum allowable slope, and shall assure that such 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 ½:1 (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 feed (3.67 m) or l 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.

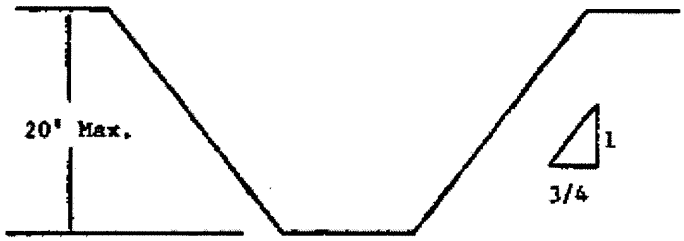
Figure B-1

Slope Configurations

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

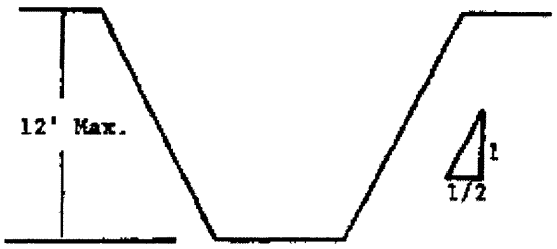
B-1.1 Excavations made in Type A soil.

1. All simple slope excavation 20 feet or less in depth shall have a maximum allowable slope of ¾:1.



SIMPLE SLOPE -- GENERAL

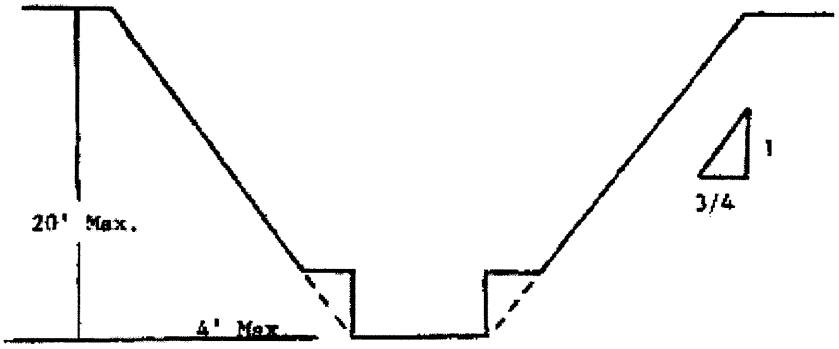
Exception: Simple slope excavations which are open 24 hours or less (short term) and which are 12 feet or less in depth shall have maximum allowable slope of ½:1.



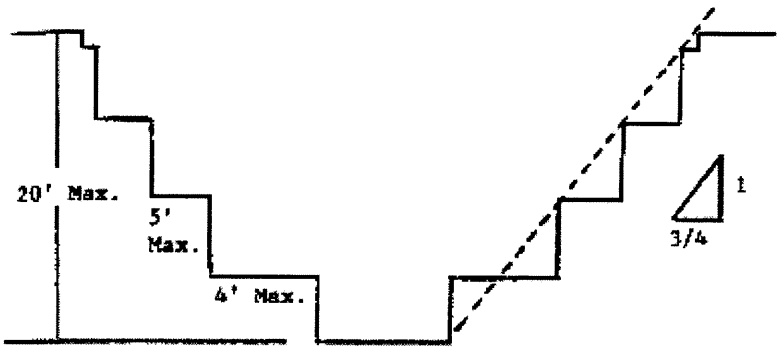
SIMPLE SLOPE -- SHORT TERM

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

follows:

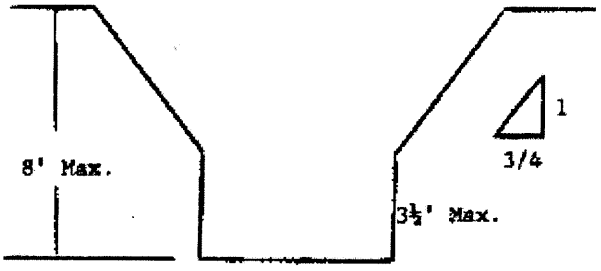


SIMPLE BENCH



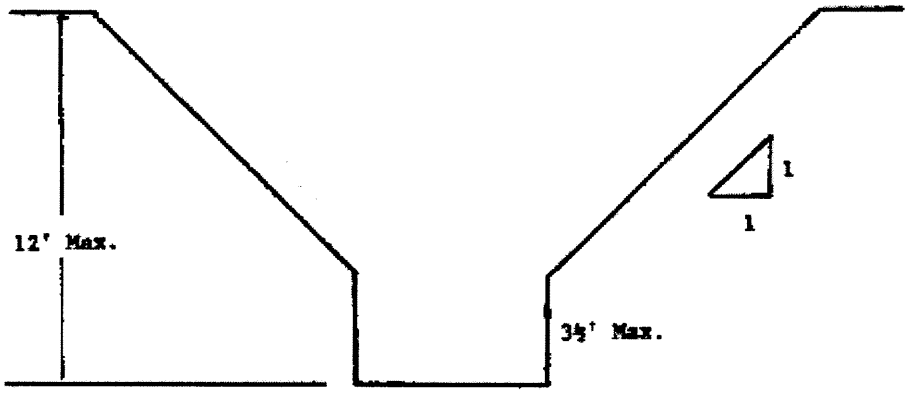
MULTIPLE BENCH

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



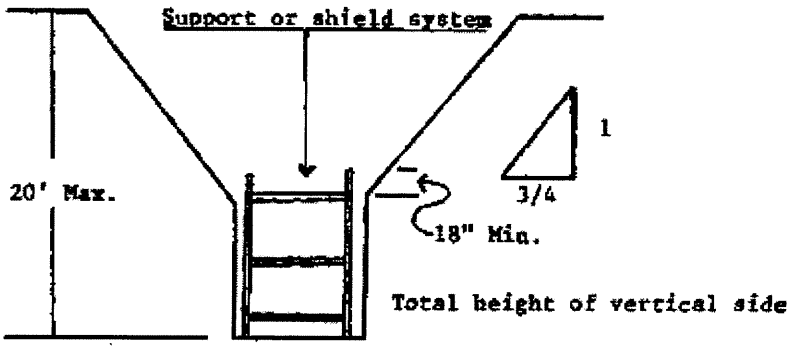
UNSUPPORTED VERTICALLY SIDED LOWER PORTION -- MAXIMUM 8 FEET IN DEPTH)

All excavations more than 8 feet but not more than 12 feet in depth with unsupported vertically sided lower portions shall have a r allowable slope of 1:1 and a maximum vertical side of 3½ 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 maxi allowable slope of ¾:1. The support or shield system must extend at least 18 inches above the top of the vertical side.

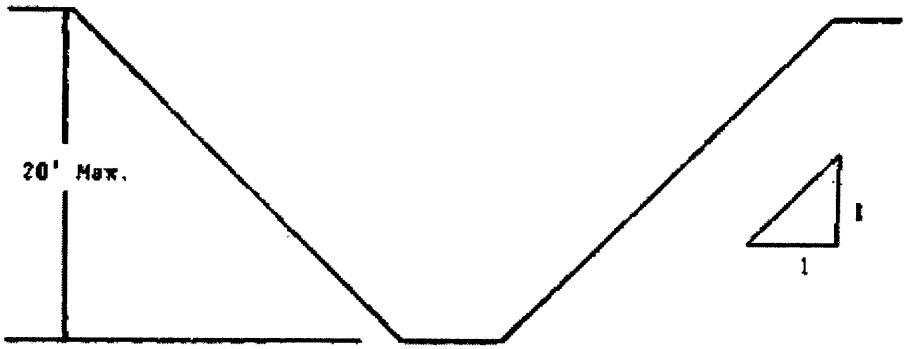


SUPPORTED OR SHIELDED VERTICALLY SIDED LOWER PORTION

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

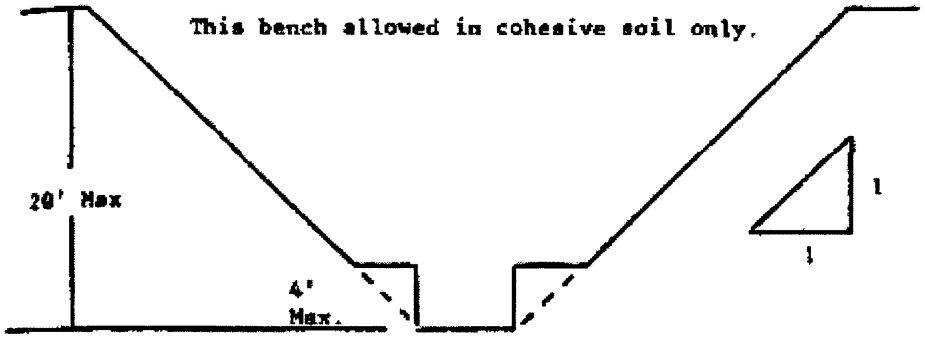
B-1.2 Excavations Made in Type B Soil

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

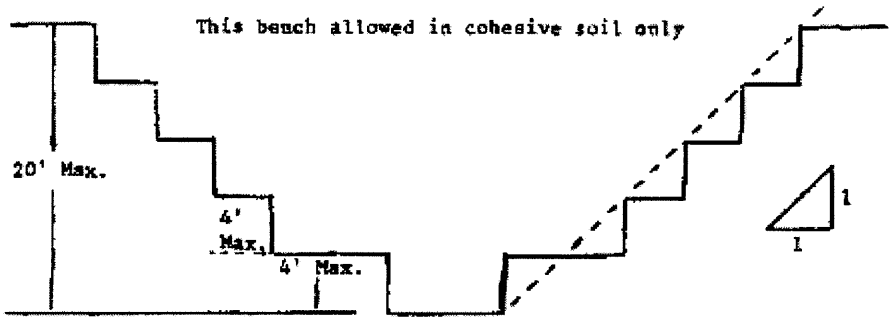


SIMPLE SLOPE

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

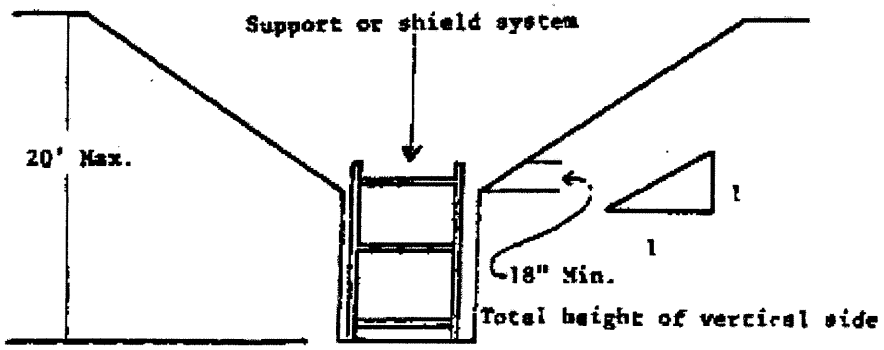


SINGLE BENCH



MULTIPLE BENCH

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

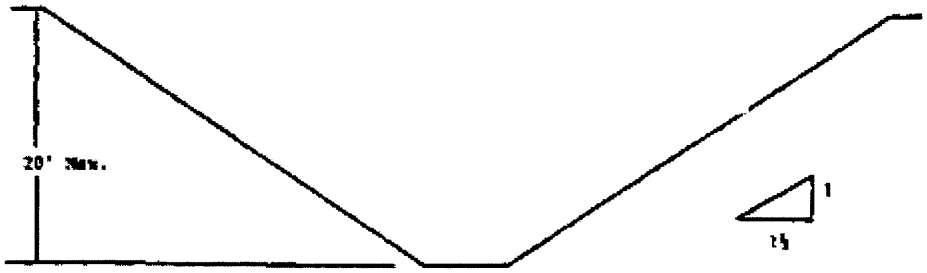


VERTICALLY SIDED LOWER PORTION

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

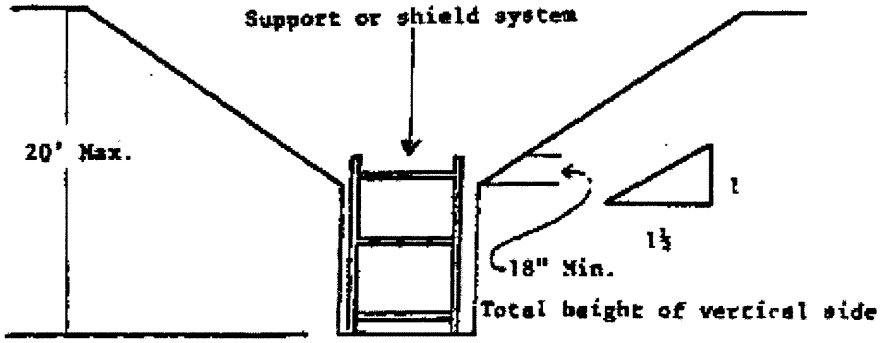
B-1.3 Excavations Made in Type C Soil

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 le inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of 1½:1.

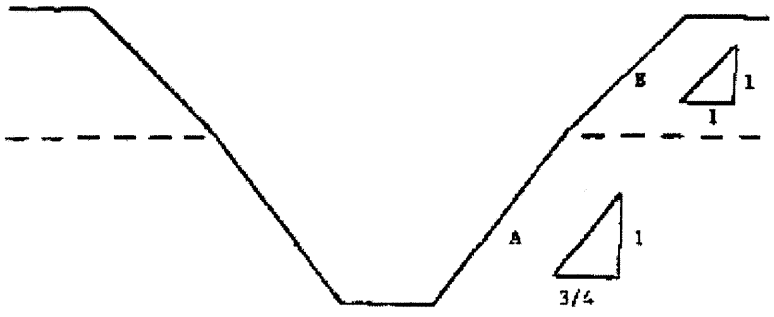


VERTICAL SIDED LOWER PORTION

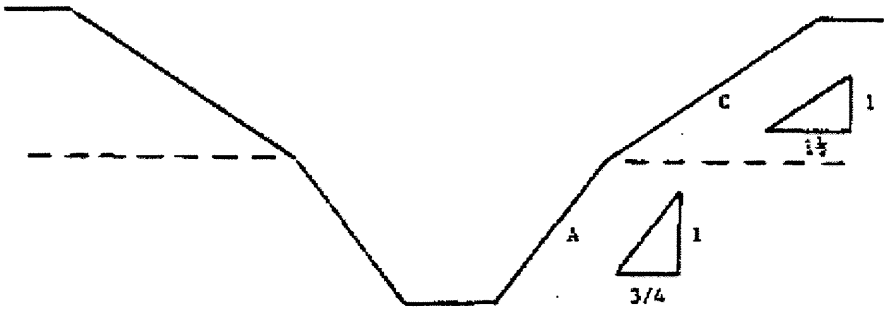
3. All other sloped excavations shall be in accordance with the other options permitted in § 1926.652(b).

B-1.4 Excavations Made in Layered Soils

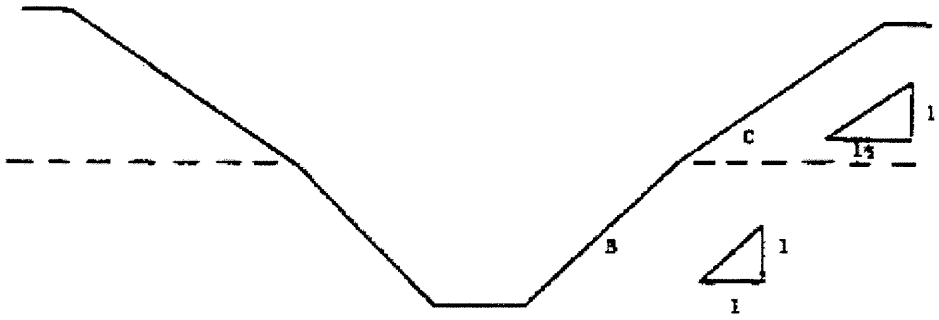
1. All excavations 20 feet or less in depth made in layered soils shall have a maximum allowable slope for each layer as set forth b



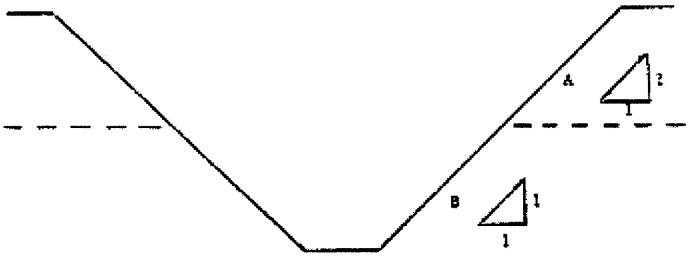
B OVER A



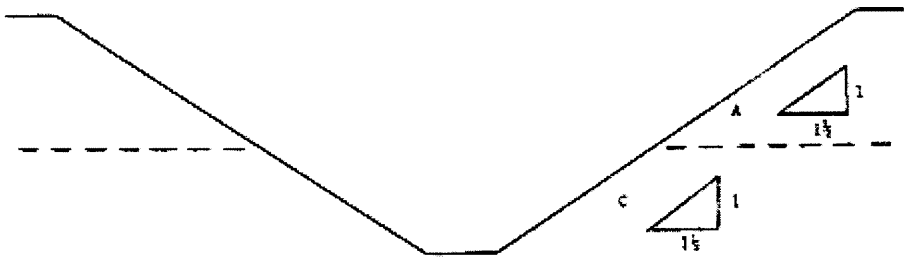
C OVER A



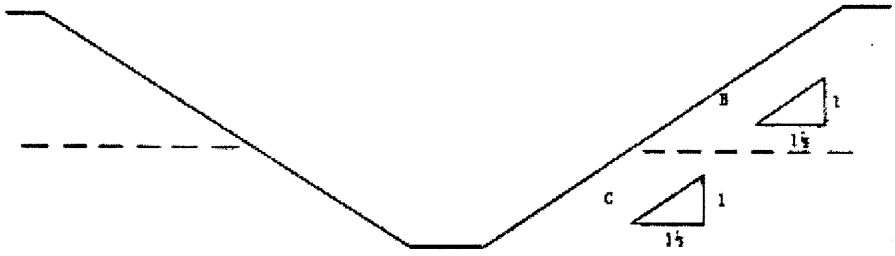
C OVER B



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

• **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. Prc systems for use in excavations more than 20 feet in depth must be designed by a registered professional engineer in accordance wit 1926.652(b) and (c).

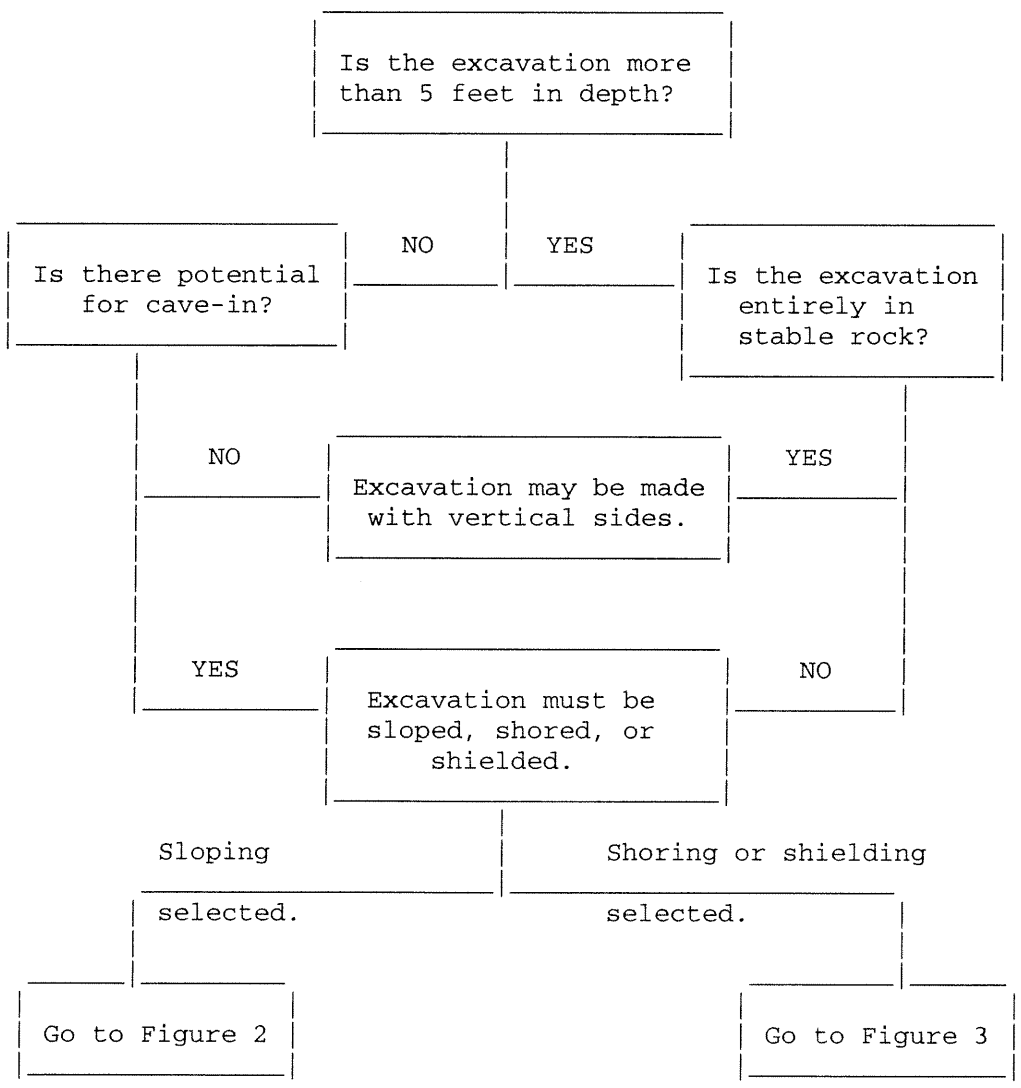


FIGURE 1 - PRELIMINARY DECISIONS

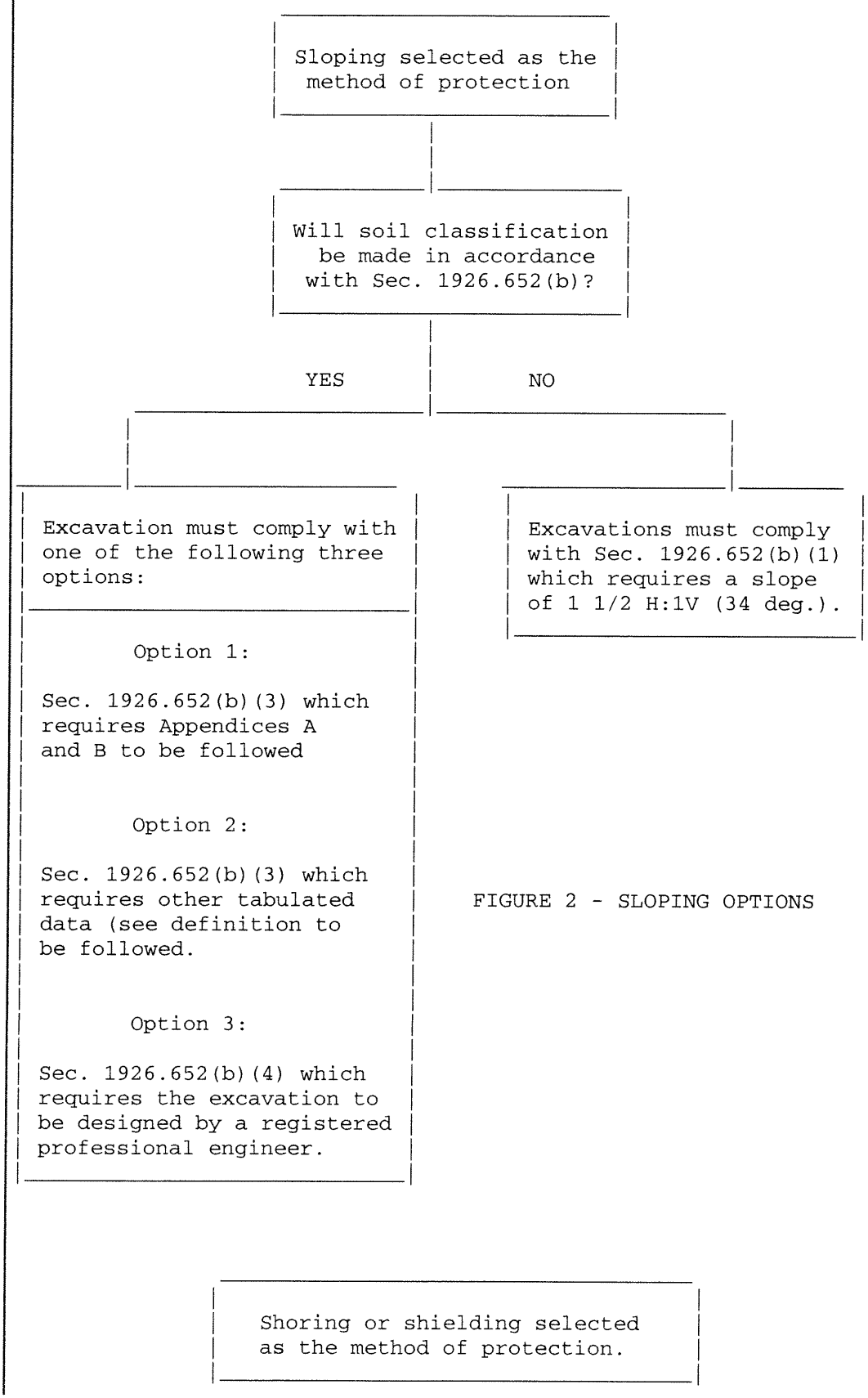


FIGURE 2 - SLOPING OPTIONS

Shoring or shielding selected as the method of protection.

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

APPENDIX B

GUIDANCE ON INCIDENT INVESTIGATION

AND REPORTING

C&S ENGINEERS

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 x 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 un 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.