SITE CHARACTERIZATION WORK PLAN

ROSE ROAD

Corning, Steuben County, New York

Prepared for:

NEW YORK STATE | Department of Environmental Conservation

New York State Department of Environmental Conservation
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ACRONYMS

AHA	Activity Hazard Analysis
bgs	below ground surface
CAMP	Community Air Monitoring Plan
DER	Division of Environmental Remediation
DPT	Direct Push Technology
EM	electromagnetic induction
FAP	Field Activities Plan
GPR	ground-penetrating radar
GPS	global positioning system
HSA	hollow-stem auger
HDPE	high-density polyethylene
IDW	investigation-derived waste
µg/m^3	micrograms per cubic meter
MCL	Minimum Contaminant Levels
MS/MSD	matrix spike/matrix spike duplicate
NTUs	nephelometric turbidity units
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PET	polyethylene terephthalate
PFAS	per- and polyfluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PID	photoionization detector
PPE	personal protective equipment
PSHEP	Project Safety, Health, and Environmental Plan
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
QAPP	Quality Assurance Project Plan
RF	radio frequency
SCOs	Soil Cleanup Objectives
SSHEP	Subcontractor Safety, Health, and Environmental Plan
SVOCs	semivolatile organic compounds
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TOGS	Technical and Operational Guidance Series
USCS	Unified Soil Classification System
VOCs	volatile organic compounds

SECTION 1 PROJECT OBJECTIVES AND BACKGROUND

1.1 Project Objectives

New York State Department of Environmental Conservation (NYSDEC), along with the New York State Department of Health (NYSDOH), have been overseeing the investigation and implementation of remedial activities associated with past disposal of waste materials from historical glass records.

Parsons proposes to assist NYSDEC with the site characterization efforts at the Rose Road site to:

1. Investigate potential impacts from target fill material containing ash, glass, and/or brick (glass manufacturing-related waste).
2. Investigate potential presence and location of contaminants in surface and subsurface soils.
3. Determine whether groundwater is being impacted.

The primary contaminants of concern, based on previous disposal of target fill materials – including ash, glass, and/or brick - have been identified as arsenic, cadmium, lead, and semivolatile organic compounds (SVOCs). Investigations of neighboring properties are not included in this scope.

Tasks are further defined in subsequent sections, and include:

- Installation of soil borings
- Collection of surface and subsurface soil samples
- Collection of surface water samples
- Installation and sampling of groundwater monitoring wells
- Submittal of a final summary report

1.2 Project Background

The Rose Road site encompasses an approximately 6.5-acre area located in the City of Corning and is bounded by College Avenue to the north and west, and by Narrows Creek and forested land to the south and east. The NYSDEC site number is #851073 and a site location map is shown on **Figure 1.**

The site property includes two tax parcels (**Figure 2**):

- [redacted] College Avenue (Tax ID: [redacted]) containing two structures
  - a single-family residence, constructed in 1940
  - a carport, constructed in 1999
- [redacted] College Avenue (Tax ID: [redacted]) containing four structures
  - a single-family residence, constructed in 1948
  - three outbuildings (two detached garages and a shed) constructed in 1952, 1968, and 1994
- [redacted] College Avenue [redacted] containing one residential structure

The area is underlain by glacial deposits, which are expected to be primarily composed of moderately well-drained channery silt loam. Groundwater depth at the site is unknown but is expected to be roughly coincident with water elevation in Narrows Creek, roughly 15 feet below ground surface (bgs).

Overburden soils in the vicinity of the site are likely underlain by Upper Devonian shale or siltstone. Bedrock depth at the site is unknown.

SECTION 2 HEALTH AND SAFETY

2.1 Health and Safety Plans

A Project Safety, Health, and Environmental Plan (PSHEP; Parsons 2022) has been prepared for the investigation activities. All personnel and subcontractors working on the project are required to follow this plan for the work covered in this work plan. Copies of the PSHEP will be maintained at the support zone.

Prior to the start of work, the subcontractors shall submit a Subcontractor Safety, Health, and Environmental Plan (SSHEP) along with specific Activity Hazard Analyses (AHAs) for tasks to be performed under this work plan. Work cannot commence until SSHEP and AHAs are reviewed, and comments have been addressed. Copies of the SSHEP and AHAs will be maintained at the support zone.

A generic Community Air Monitoring Plan (CAMP) prepared for this contract will be implemented for real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the upwind and downwind perimeter of each designated work area during invasive activities on-site. These readings will be provided on a weekly basis with all exceedances reported to NYSDEC and NYSDOH the same day (or next business day if after hours) along with the following:

- Cause of exceedance
- Corrective actions implemented
- Efficacy of corrective actions

Field personnel will follow the NYSDOH Generic CAMP as further detailed in **Appendix B**, Division of Environmental Remediation (DER-10) Fugitive Dust and Particulate Monitoring (NYSDEC 2010), and recommended response levels and action(s) will be implemented in the event of an exceedance.

Intrusive work will be conducted a minimum of 20 feet from occupied residences and on-site structures. Boring locations will be adjusted in the field as needed to avoid proximity to on-site structures and unsafe site features, such as the Narrows Creek embankment.

2.2 Dust/Particulate Response Levels and Actions

Dust suppression techniques must be employed if:

- Particulate concentrations measured at the downwind monitoring station exceed 100 micrograms per cubic meter (µg/m^3) above background for a 15-minute period
- Airborne dust is observed leaving the work area.

Work may continue with dust suppression techniques provided that downwind particulate concentrations do not exceed 150 µg/m^3 greater than background and no visible dust is observed migrating from the work area.

Work must be stopped if dust suppression techniques do not maintain downwind particulate levels below 150 µg/m^3 and work activities and mitigation methods must be reevaluated. Work can resume provided that dust suppression measures and other controls are effective in reducing the downwind particulate concentration to within 150 µg/m3 of the upwind level and in preventing visible dust migration.

General dust suppression techniques may include applying water on haul roads, wetting equipment and work areas, spraying water on buckets during excavation and dumping, and immediately covering or wetting excavated materials. In addition to continuous monitoring, a commonsense approach will be employed to address fugitive dust (i.e., if dust is visually observed to be leaving the work area and is not detected by the monitors, dust suppression techniques will be applied).

SECTION 3 QUALITY CONTROL

3.1 Field Activities

Field activities will be conducted in accordance with the following documents, prepared by Parsons for the NYSDEC program:

- PSHEP (2022)
- generic Quality Assurance Project Plan (QAPP 2020a)
- Field Activities Plan (FAP 2020b)

All proposed sample locations will be discussed with representatives of NYSDEC prior to implementation of this scope. Investigation/sample location may be modified with concurrence from NYSDEC.

3.2 Emerging Contaminants

Sampling will also be conducted for emerging contaminants as part of this investigation in general accordance with the applicable NYSDEC guidance, such as *Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS)* (NYSDEC 2023a). One of these emerging contaminants is the group of per- and polyfluoroalkyl substances (PFAS) compounds. PFAS can be found in many standard environmental sampling materials, including fluoropolymer bailer/tubing, some decontamination solutions, and pump bladders/valves. Two of the principal target analytes – perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) – have been broadly utilized in the production of various everyday items such as waterproof/stain-resistant clothing, non-stick cookware, and many commonly used plastics.

Another of the target emerging contaminants is 1,4-dioxane. This compound has been used in many products including the manufacturing of pharmaceuticals, personal care products, polyethylene terephthalate (PET) plastic, paint strippers, dyes, greases, varnishes, and waxes.

The field activities and methods in the FAP include steps to prevent cross-contamination, and to avoid the introduction of external contaminant sources. These steps include, but are not limited to:

- use of sampling materials, tools, and personal protective equipment (PPE) that are known to be free of emerging contaminants
- use of compatible apparel
- hygiene considerations
- sample management considerations
- quality assurance/quality control (QA/QC) procedures
- use of source water and decontamination solutions that are demonstrated to be free of emerging contaminants

SECTION 4 SURVEYS, INVESTIGATIONS, ENVIRONMENTAL SAMPLING, AND IMPLEMENTATION

Parsons' approach to the site characterization is described in the following sections. Each portion of the investigation work will follow NYSDEC guidelines outlined in DER-10 Technical Guidance document (NYSDEC 2010).

The overall program consists of:

1. Geophysical investigation (utility mapping)
2. Site survey of utilities and as-built coordinates for soil borings and monitoring wells
3. Surface and subsurface investigation soil borings
4. Surface water investigation
5. Installation and sampling of groundwater monitoring wells

4.1 Field Preparation

4.1.1 Geophysical Investigation

Initially, a geophysical investigation will be performed at the site to locate subsurface utilities and/or subsurface anomalies at thirteen soil boring locations locations, which are shown in conjunction with site features on **Figure 3**.

Prior to initiation of site activities, Dig Safely NY will be contacted to locate utility lines that enter and/or cross the property. The geophysical survey will be conducted to detect buried structures and subsurface utilities within the specified locations, and/or to trace a particular utility line or system. The geophysical surveyor will apply the appropriate surface geophysical method(s) to search for utilities and/or buried obstructions. Geophysical technologies may include but not be limited to ground-penetrating radar (GPR), radio frequency (RF), and electromagnetic induction (EM). These techniques will be used to locate subsurface utility lines or subsurface features within a 10-foot radius of each proposed intrusive activity. Specific features may include subsurface utilities, subsurface anomalies, large voids, former subsurface structures, abandoned utilities, and former utility trenches. Based on an interpretation of data, the geophysical surveyor will mark the targets on the ground surface, for subsequent survey performed by others after the boring work and well installations are completed. Paint and flagging shall be used for marking of lines, showing any underground site utilities or obstructions.

Parsons will follow their *Subsurface Soil Disturbance Protocol* (see **Appendix A**) during intrusive site activities.

Hand clearing procedures at soil borings with proposed shallow soil sampling may consist of three hand-cleared holes advanced to a depth of 5 feet using non-mechanical "soft dig" methods. The three hand-cleared holes will be advanced in a 3-foot by 3-foot by 3-foot triangular pattern centered on a given sample location to identify potential utilities that cross through each sample location. Once all three locations have been advanced to 5 feet in depth and no utilities are identified, the proposed boring and/or well location can be completed in the center of the triangle using a drill rig to target depth.

4.1.2 Site Layout and Proposed Boring Locations

The site characterization efforts will include the following proposed field sampling activities:

Matrix	Approach	Number of locations	Purpose
SOIL			
	Soil Borings	15	Soil characterization, sample collection, laboratory analyses
	Surface Soil	13	Soil characterization, sample collection, laboratory analyses
SURFACE WATER			
	Grab Samples	5	Sample collection, laboratory analyses
GROUNDWATER			
	Monitoring Wells	4	Water table depth, sample collection, laboratory analyses

The site layout with proposed sampling locations is shown in **Figure 3**.

Initially, the proposed sampling locations will be roughly located with a handheld global positioning system (GPS) and will take into account surface and overhead features that may affect execution of field investigation activities. Following completion of the field investigation activities, a licensed professional land surveyor registered to practice in the state of New York will collect as-built data from the sample locations (as described in **Section 4.5 Site Survey**).

4.2 Soil Investigation

Soil characterization activities at the site consist of sampling eight surface soil locations, installing thirteen soil borings, and collection of soil samples from each boring. The proposed locations for each soil boring are shown on **Figure 3**. These proposed locations will be marked out during the initial site survey and will be verified following installation (**Section 4.5 Site Survey**).

Prior to intrusive work Dig Safely NY will be notified and a geophysical investigation will be conducted to identify underground utilities or buried obstructions at each proposed test pit or boring location (as described in **Section 4.1.1 Geophysical Investigation**).

Archive samples will be collected from target fill material encountered during site characterization activities and logged in the corresponding database. Additionally, field personnel will document and photograph areas where target fill material is encountered, as well as areas where target fill material has been observed at the surface.

4.2.1 Soil Borings

Fifteen soil borings are proposed for installation. The locations of proposed soil borings were selected to provide adequate coverage and distribution across the site, including areas where target fill materials have been previously identified, or are expected to have been disposed of, at the site. The proposed locations for each soil boring are shown on **Figure 3**. The proposed soil boring locations will be marked out during the site survey and will be verified following boring installation (**Section 4.5 Site Survey**). Soil borings will be advanced using the following methods depending on the location and objective of the sample location:

- Direct Push Technology (DPT) with MacroCore sampler, or equivalent
- Hollow-stem augers (HSA) with continuous sampling via split-spoon or Macrocore samplers

Proposed soil boring locations will be adjusted in the field as needed to maintain a minimum 20-foot distance from on-site structures, including occupied residences.

4.2.1.1 INSTALLATION

Soil cores will be collected and logged continuously until borings are terminated, estimated to be 25 feet bgs. Soils will be visually classified using a modified Burmister (1970) and Unified Soil Classification System (USCS, ASTM International 2018) systems. Soil descriptions will be recorded in the field notes or soil boring log form. Any non-native material present in the soil core will be noted and described (type, color, texture, moisture content, etc.) and any layer of fill material containing ash, brick and/or glass will be noted in the field logs. Photographs of recovered soils and any fill material containing ash, brick, and/or glass will be taken to provide in the final report. Each soil core will also be screened for the presence of VOCs with a photoionization detector (PID) and readings will be recorded on the boring log and/or field book.

Soil borings that do not require monitoring well construction will be grouted from total depth to surface after installation and sampling, and the area around the soil boring will be restored to match preexisting conditions.

Monitoring wells will be constructed in soil borings SB-01, SB-02, SB-03, and SB-14, in accordance with **Section 4.4.1** (**Monitoring Well Installation**). These borings will be advanced until approximately 8 feet below the observed water table to install the monitoring well.

Sampling equipment will be decontaminated between pushes and soil boring locations by washing equipment using a phosphate-free cleaning solution (e.g., Alconox) along with a distilled water rinse. All "down hole" drilling equipment will be decontaminated inside the decontamination pad, using a high-pressure steam wash.

Drill cuttings and decontamination rinsates will be containerized in 55-gallon steel drums and transported to a central waste staging area for further characterization and disposal (**Section 4.5 Waste Handling**).

4.2.1.2 SAMPLING

As previously noted in **Section 3.2 Emerging Contaminants**, care will be taken to prevent cross contamination of samples, especially introduction of emerging contaminants, into the samples. MacroCore samplers will be equipped with PFAS-free acetate liners. All necessary equipment, material, and supplies will be provided by the drilling subcontractor and will be compatible for collection of emerging contaminant samples (e.g., PFAS-free).

Soil boring samples will be collected from the following intervals and submitted for laboratory analysis:

- 0 – 6 inches (exclusive of sod/grass layer)
- 6 – 12 inches
- 12 – 24 inches
- Bottom interval of the boring

In addition to the intervals above, up to two additional soil samples will be collected and submitted for laboratory analysis based on the following criteria:

- If target fill material is encountered one sample will be collected from the target fill material itself, and another from the material directly below the fill layer.
- If target fill material is not encountered, one soil sample will be collected from the interval exhibiting the highest PID reading, or other evidence of impacts (staining or odors), and another collected from the interval directly above the water table.

As shown on **Table 1**, all samples will be analyzed for total and Toxicity Characteristic Leaching Procedure (TCLP) metals (including mercury) and SVOCs. The remaining parameters will be analyzed on 20 percent of the samples collected at locations based on field observations. Except for soils that will be analyzed for VOCs, each soil

sample collected for laboratory analysis will be field homogenized prior to placement in laboratory-supplied bottles.

Archive samples will be collected if target fill material/waste glass is encountered, as described in **Appendix B**.

For QA/QC purposes, duplicate samples, equipment blanks and matrix spike/matrix spike duplicate (MS/MSD) samples will be collected and analyzed at a rate of one for every 20 field samples.

Results from the analytical sampling will be compared to Part 375 *Soil Cleanup Objectives* (SCOs; NYSDEC 2006).

4.2.2 Surface Soils

Surface soil samples will be collected at 13 locations using hand methods. Surface soil samples will be collected from 0 to 2 inches, excluding surficial sod or grass layers.

As shown on **Table 1**, all surface soil samples will be analyzed for total and TCLP metals (including mercury) and SVOCs. The remaining parameters will be analyzed on 20 percent of the samples collected at locations based on field observations. Results from the analytical sampling will be compared to Part 375 SCOs (NYSDEC 2006). Except for soils that will be analyzed for VOCs, each surface soil sample collected for laboratory analysis will be field homogenized prior to placement in laboratory-supplied bottles.

For QA/QC purposes, field duplicate samples, MS/MSD samples, and equipment blanks will be collected and analyzed at a rate of one for every 20 field samples collected.

Care will be taken to preserve the grass or sod overlying the target interval during sample collection. The sampler will regrade the sample area by hand, as needed, and replace the surficial layer of grass or sod following sampling.

Surface soil sample locations will be adjusted in the field as needed to characterize areas where:

- Target fill material is observed at the surface
- Individuals may readily encounter target fill material by disturbing the soil
- There are indications of children's play or other outdoor recreational activity (if present)

Any modifications to proposed sampling locations will be identified and documented in the final report where applicable.

4.3 Surface Water Investigation

Five surface water samples, denoted as SW-01 through SW-05, will be collected from Narrows Creek using a dipper bucket and extendable pole. Proposed surface water samples are shown on **Figure 3**. All samples will be analyzed for total and TCLP metals (including mercury) and SVOCs. Surface water samples will be analyzed as shown in **Table 1**. All samples will be filtered by the laboratory to report both dissolved and total analyte concentrations. Laboratory analytical results will be compared to Class C NYSDEC Ambient Water Quality Standards presented in *Technical and Operational Guidance Series (TOGS) 1.1.1* (NYSDEC 1998). PFAS and 1,4-dioxane analytical results will be compared to the *New York State Ambient Water Quality Standards and Guidance Values* presented in the February 2023 addendum to TOGS 1.1.1 (NYSDEC 2023b).

For QA/QC purposes, field duplicate samples, MS/MSD samples, and equipment blanks will be collected and analyzed at a rate of one for every 20 field samples collected. Trip blanks will also be included in sample coolers containing field samples for VOC analyses; these trip blanks will be analyzed for Target Compound List (TCL) VOCs.

As previously noted in **Section 3.2 Emerging Contaminants**, care will be taken to prevent cross contamination of samples, especially introduction of emerging contaminants into the samples. Any non-dedicated sampling equipment will be decontaminated between sample locations by washing equipment using a phosphate-free cleaning solution (e.g., Alconox) along with a distilled water rinse. Decontamination rinsates will be containerized in 55-gallon steel drums and transported to a central waste staging area for further characterization and disposal (**Section 4.6 Waste Handling**).

4.4 Groundwater Investigation

Groundwater investigation activities at the site consist of installing four monitoring wells within the borings described in **Section 4.2 Soil Investigation**. The proposed well locations, shown on **Figure 3,** were selected to target downgradient locations along the southern edge of the property as well as provide one upgradient/ambient location. The location, ground surface elevation, and top of casing elevation will be documented during the as-built survey (**Section 4.5 Site Survey**).

4.4.1 Monitoring Well Installation

Monitoring wells will be installed in SB-01, SB-02, SB-03, and SB-14 as discussed in **Section 4.2 Soil Investigation**. Each monitoring well will be constructed with 2-inch-diameter schedule 40 polyvinyl chloride (PVC) riser threaded with 10 feet of 2-inch-diameter schedule 40 PVC 0.010-slot screen. The screened interval should extend from the bottom of the boring to between 2 and 3 feet above the groundwater interface. Groundwater depth is estimated to be 15 feet bgs.

The annular space surrounding the well will be backfilled with clean sand from 6 inches below the bottom of the screen to 2 feet above the top of screen. A bentonite seal will be installed above the sand pack and either allowed to hydrate (in saturated conditions) or hydrated using potable water (in unsaturated conditions). Each well will be grouted from the top of bentonite to grade using a Portland cement and bentonite slurry grout. Each well will be completed with a flush-mount or stick-up protective cover set within a 2-foot-diameter concrete apron, whichever is more conducive to site conditions.

As noted in **Section 3.2 Emerging Contaminants**, care will be taken to prevent the introduction of emerging contaminants into the completed monitoring wells. Downhole drilling equipment will be decontaminated between wells as previously noted and the area around the wells (including access routes) will be restored to previous conditions.

All necessary equipment, material, and supplies used to advance the sampler, purge groundwater, and collect groundwater samples will be compatible with emerging contaminant sampling (e.g., PFAS-free).

4.4.2 Monitoring Well Development

Each new monitoring well will be developed to remove drilling fluid used during boring advancement, as well as any fine-grained material that may have settled in and around the well screen during well construction. Well development will be performed a minimum of 24 hours after grout has been installed to provide sufficient time for the grout to cure.

Well development activities will consist of purging water until one of the following two criteria are met:

1. Water quality parameters have stabilized for three successive measurements and purge water turbidity drops below 50 nephelometric turbidity units (NTUs).
2. A maximum of 10 well volumes have been removed.

Well development may be performed using a stainless steel or PVC bailer, or a water pump paired with high-density polyethylene (HDPE) tubing and surge block. If the well goes dry during development, bailing or pumping will pause until 80 percent of the initial water level has recharged, at which point pumping or bailing will resume. The well will be considered developed once this process has been repeated, and the well has been pumped dry three times.

Development water will be temporarily containerized using new 55-gallon steel drums, which will be staged on-site at a central investigation-derived waste (IDW) accumulation area (refer to **Section 4.6 Waste Handling**). The drilling subcontractor will provide drums of sufficient number and quality to contain well development water, and will provide the equipment, personnel, and materials necessary to transport IDW from the investigation location to the central IDW accumulation area. Parsons will be responsible for collecting waste characterization samples and coordinating subsequent disposal.

4.4.3 Monitoring Well Sampling

One round of groundwater sampling will be conducted at each of newly installed monitoring wells using low-flow sampling techniques. Prior to sampling, the water level in each boring will be measured and recorded to the nearest 0.01-foot using a PFAS-free electronic water level meter. Well sampling will commence once water quality parameters are stable for three consecutive readings. The stabilization guidelines are as follows:

- Temperature ± 10% of measurement
- pH ± 0.1 pH units
- Specific conductance ± 3% of measurement
- Redox ± 10 mV
- Dissolved oxygen ± 10% of measurement
- Turbidity ± 10% of measurement, or under 10 NTUs

Dedicated and disposable groundwater sampling equipment (e.g., tubing) will be used for sample collection. Any non-dedicated or non-disposable equipment (e.g., water level meter) will be decontaminated between samples by washing equipment with phosphate-free solution followed by a PFAS-free distilled water rinse. Purge water and decontamination water will be transferred to drums for characterization and disposal (**Section 4.6 Waste Handling**).

Groundwater samples will be analyzed as shown in **Table 1**. Laboratory analytical results will be compared to NYSDEC Class GA Ambient Water Quality Standards presented in *Technical and Operational Guidance Series 1.1.1* (NYSDEC 1998). PFAS and 1,4-dioxane analytical results will be compared to the *New York State Ambient Water Quality Standards and Guidance Values* presented in the February 2023 addendum to TOGS 1.1.1 (NYSDEC 2023b). For QA/QC purposes, duplicate samples, equipment blanks and MS/MSD samples will be collected and analyzed at a rate of one for every 20 field samples. Trip blanks will also be included in sample coolers containing field samples for VOC analyses; these trip blanks will be analyzed for TCL VOCs.

As previously noted in **Section 3.2 Emerging Contaminants**, care will be taken to prevent cross contamination of samples, especially introduction of emerging contaminants into the samples. Any non-dedicated well sampling equipment will be decontaminated between well locations.

4.5 Site Survey

Following the completion of investigation activities, a licensed professional land surveyor registered to practice in the State of New York will collect as-built data from the sample locations.

The following as-built data will be collected for soil borings and monitoring wells:

- Northing
- Easting
- Ground surface elevation
- Top of casing/riser (monitoring wells only)
- Top of protective cover (monitoring wells only)

Horizontal survey data will be based on the North American Datum of 1983 (NAD 83) New York State Plane (Central Zone) coordinate system (in feet). Elevations will be based on the North American Vertical Datum of 1988 (NAVD 88).

4.6 Waste Handling

Investigation-derived waste (IDW), including excess soils from sample locations, decontamination rinsates, purge water, and other used materials (such as PPE, acetate Geoprobe liners, poly sheeting, etc.) will be placed in Department of Transportation-approved 55-gallon 17-H type drums. The IDW will be classified as hazardous or non-hazardous based on characterization results and will be disposed of in accordance with applicable NYSDEC regulations. Appropriate equipment capable of handling and/or moving IDW stored to the designated waste storage area will be used, and IDW drums will be stored in an area lined with polyurethane sheeting for secondary containment.

SECTION 5 REPORT PREPARATION

Data obtained during the field investigations described in this work plan will be validated, evaluated, and summarized. A Site Characterization Report will then be prepared following completion of the investigation and receipt of analytical data. This report will document investigation activities specified in this work plan.

Chemical analytical results for the environmental sample matrices specified in this work plan will be compared with standards and guidance values, as listed below. The document will include Category B data validation, and an evaluation of data for reclassification/delisting, or continuation of next steps of the site characterization.

Sample Matrix	Standards/Guidance	Reference	Acronym
Soils (surface and subsurface)	Part 375 Soil Cleanup Objectives	NYSDEC 2006	SCOs
Surface Water	Class C NYSDEC Ambient Water Quality Standards	NYSDEC 1998	Class C AWQSGV
Surface water (PFAS and 1,4-dioxane)	NYSDEC Ambient Water Quality Standards	NYSDEC 2023	AWQSGV
Groundwater	Class GA Ambient Water Quality Standards	NYSDEC 1998	Class GA AWQS
Groundwater (PFAS and 1,4-dioxane)	NYSDEC Ambient Water Quality Standards	NYSDEC 2023	AWQSGV

SECTION 6 SCHEDULE

Following approval of this work plan by NYSDEC, the schedule shown below will be implemented. The work scope described herein is assumed to be completed during Spring – Summer of 2023.

Task Name	Start	Finish
Geophysical Investigation and Sample Location Mark-Out	Week 1	Week 1
Drilling Mobilization	Week 2	Week 2
Drilling/Soil Sampling/Well Installation	Week 3	Week 6
Well Development/Groundwater Sampling	Week 6	Week 7
As-built Coordinates and Elevations Survey	Week 8	Week 8
Waste Transportation and Disposal	Week 9	Week 9
Data Management and Reporting Tasks	2 months after completion of field activities (pending receipt of analytical results)	

SECTION 7 REFERENCES

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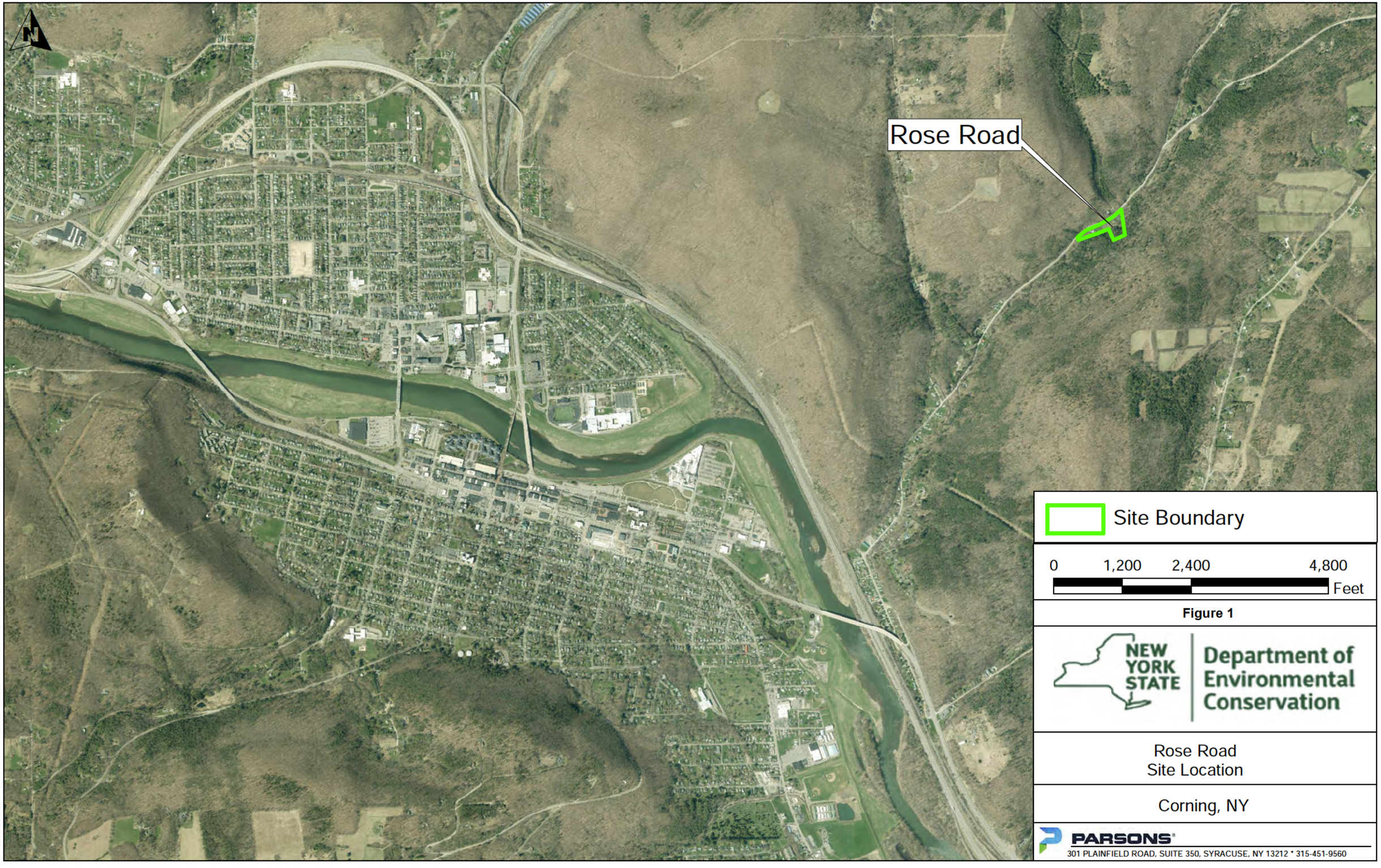
FIGURES



Site Boundary

0 1,200 2,400 4,800

Feet

Figure 1

NEW YORK STATE | Department of Environmental Conservation

Rose Road
Site Location

Corning, NY

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, NY 13212 * 315-451-9560

Plotted By: CS

Plot Date: 7/20/2023

Document Path: Q:\GIS\NYSDEC\Corning\MXDs\Additional Properties\Rose Road.mxd

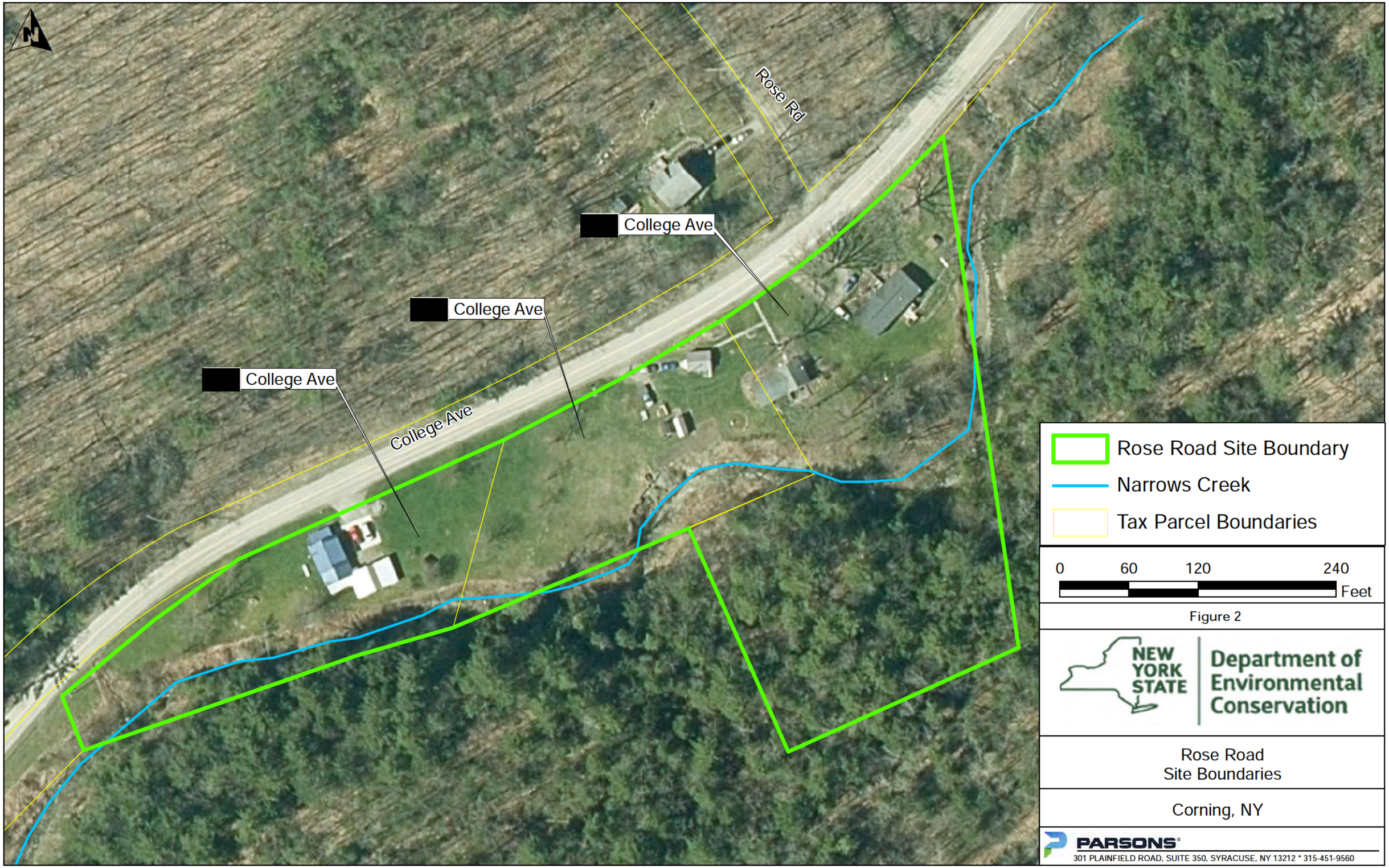


Figure 2

NEW YORK STATE | Department of Environmental Conservation

Rose Road
Site Boundaries

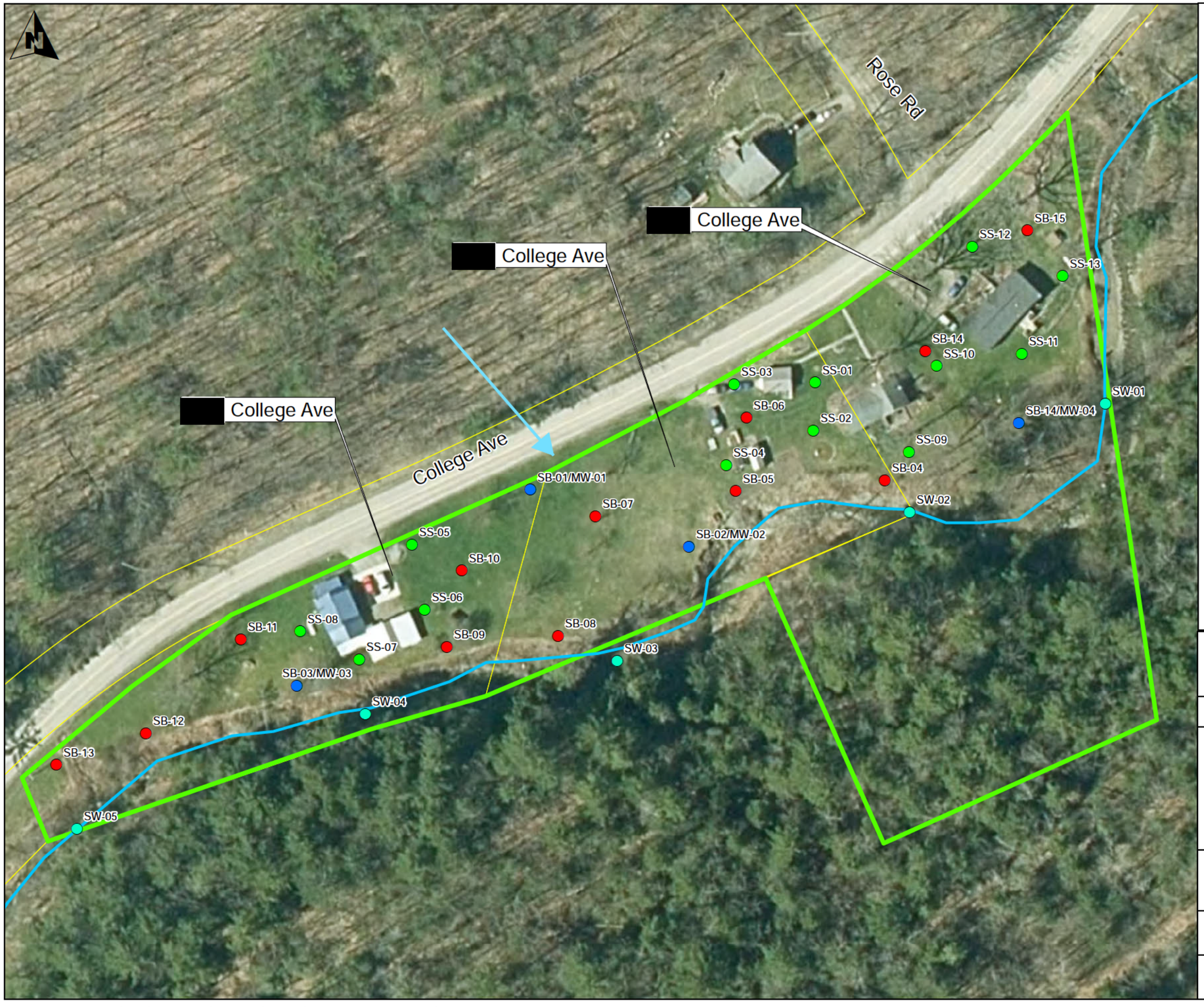
Corning, NY

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, NY 13212 * 315-451-9560

Plotted By: CS

Plot Date: 7/20/2023

Document Path: Q:\GIS\NYSDEC\Corning\MXDs\Additional Properties\Rose Road.mxd



Surface Water Sample Locations

Surface Soil Sample Location

Soil Boring Sample Location

Monitoring Well Location

Narrows Creek

Presumed Groundwater Flow Direction

Rose Road Site Boundary

Tax Parcel Boundary

0 60 120 240 Feet

Figure 3

NEW YORK STATE | Department of Environmental Conservation

Rose Road
Proposed Sample Locations

Corning, NY

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, NY 13212 * 315-451-9560

Plotted By: CS

Plot Date: 7/31/2023

Document Path: Q:\GIS\NYSDEC\Corning\MXDs\Additional Properties\Rose Road Scope.mxd

TABLES

TABLE 1
ANALYTICAL DATA SUMMARY FOR SITE CHARACTERIZATION
ROSE ROAD SITE, CORNING NEW YORK

Task	Sample Type	Analysis	Method	Turn-Around-Time	Samples	QA/QC Samples						Total
						Duplicate	Equipment Blank	Trip Blank	Field Blank	MS	MSD	
Soil Boring Sampling[1,2,4]	Soil	Metals	SW6010D/SW7471B	Standard	90	5	1	0	0	5	5	**106**
	Soil	TCLP Metals	SW6010C/SW7470A	Standard	90	5	1	0	0	5	5	**106**
	Soil	SVOCs+1,4-Dioxane	SW8270D	Standard	90	5	1	0	0	5	5	**106**
	Soil	Cyanide	SW9012B	Standard	18	1	1	0	0	1	1	**22**
	Soil	VOCs	SW8260C	Standard	18	1	1	0	0	1	1	**22**
	Soil	Pesticides	SW8081B	Standard	18	1	1	0	0	1	1	**22**
	Soil	PCBs + Total	SW8082A	Standard	18	1	1	0	0	1	1	**22**
	Soil	Herbicides	SW8151A	Standard	18	1	1	0	0	1	1	**22**
	Soil	TPH	EPA 1664 (SGT HEM)	Standard	18	1	1	0	0	1	1	**22**
	Soil	PFAS	Method 1633	Standard	18	1	1	0	0	1	1	**22**
Surface Soil Sampling[1,4]	Soil	Metals	SW6010D/SW7471B	Standard	13	1	1	0	0	1	1	**17**
	Soil	TCLP Metals	SW6010C/SW7470A	Standard	13	1	1	0	0	1	1	**17**
	Soil	SVOCs+1,4-Dioxane	SW8270D	Standard	13	1	1	0	0	1	1	**17**
	Soil	Cyanide	SW9012B	Standard	3	1	1	0	0	1	1	**7**
	Soil	VOCs	SW8260C	Standard	3	1	1	0	0	1	1	**7**
	Soil	Pesticides	SW8081B	Standard	3	1	1	0	0	1	1	**7**
	Soil	PCBs + Total	SW8082A	Standard	3	1	1	0	0	1	1	**7**
	Soil	Herbicides	SW8151A	Standard	3	1	1	0	0	1	1	**7**
	Soil	TPH	EPA 1664 (SGT HEM)	Standard	3	1	1	0	0	1	1	**7**
	Soil	PFAS	Method 1633	Standard	3	1	1	0	0	1	1	**7**

TABLE 1
ANALYTICAL DATA SUMMARY FOR SITE CHARACTERIZATION
ROSE ROAD SITE, CORNING NEW YORK

Task	Sample Type	Analysis	Method	Turn-Around-Time	Samples	QA/QC Samples						Total
						Duplicate	Equipment Blank	Trip Blank	Field Blank	MS	MSD	
Surface Water Sampling[3]	Groundwater	VOCs	SW8260C	Standard	5	1	1	1	1	1	1	**11**
	Groundwater	SVOCs + 1,4-Dioxane	SW8270D/SW8270D SIM	Standard	5	1	1	0	1	1	1	**10**
	Groundwater	Pesticides	SW8081A	Standard	5	1	1	0	1	1	1	**10**
	Groundwater	PCBs + Total	SW8082A	Standard	5	1	1	0	1	1	1	**10**
	Groundwater	Herbicides	SW8151A	Standard	5	1	1	0	1	1	1	**10**
	Groundwater	Metals	SW6010D/SW7470A	Standard	5	1	1	0	1	1	1	**10**
	Groundwater	TPH	EPA 1664 (SGT HEM)	Standard	5	1	1	0	1	1	1	**10**
	Groundwater	PFAS	Method 1633	Standard	5	1	1	0	1	1	1	**10**
Groundwater Sampling[3]	Groundwater	VOCs	SW8260C	Standard	4	1	1	1	1	1	1	**10**
	Groundwater	SVOCs + 1,4-Dioxane	SW8270D/SW8270D SIM	Standard	4	1	1	0	1	1	1	**9**
	Groundwater	Pesticides	SW8081A	Standard	4	1	1	0	1	1	1	**9**
	Groundwater	PCBs + Total	SW8082A	Standard	4	1	1	0	1	1	1	**9**
	Groundwater	Herbicides	SW8151A	Standard	4	1	1	0	1	1	1	**9**
	Groundwater	Metals	SW6010D/SW7470A	Standard	4	1	1	0	1	1	1	**9**
	Groundwater	TPH	EPA 1664 (SGT HEM)	Standard	4	1	1	0	1	1	1	**9**
	Groundwater	PFAS	Method 1633	Standard	4	1	1	0	1	1	1	**9**
Waste Characterization Sampling	Soil	TCLP	SW1311	Standard	1	0	0	0	0	0	0	**1**
	Soil	TCLP Volatiles	SW8260C	Standard	1	0	0	0	0	0	0	**1**
	Soil	TCLP Semivolatiles	SW8270D	Standard	1	0	0	0	0	0	0	**1**
	Soil	TCLP Pesticides	SW8081B	Standard	1	0	0	0	0	0	0	**1**
	Soil	TCLP Herbicides	SW8151A	Standard	1	0	0	0	0	0	0	**1**
	Soil	TCLP Metals	SW6010C/SW7470A	Standard	1	0	0	0	0	0	0	**1**
	Soil	PCBs + Total	SW8082A	Standard	1	0	0	0	0	0	0	**1**
	Soil	Corrosivity	SW9045	Standard	1	0	0	0	0	0	0	**1**
	Soil	Ignitability	SW1030	Standard	1	0	0	0	0	0	0	**1**
	Soil	Reactivity (Cyanide and Sulfide)	SW7.3.3.2/SW7.3.4.2	Standard	1	0	0	0	0	0	0	**1**
	Liquid	VOCs	SW8260C	Standard	1	0	0	0	0	0	0	**1**
	Liquid	SVOCs	SW8270D	Standard	1	0	0	0	0	0	0	**1**
	Liquid	Pesticides	SW8081B	Standard	1	0	0	0	0	0	0	**1**
	Liquid	Herbicides	SW8151A	Standard	1	0	0	0	0	0	0	**1**
	Liquid	Total Cyanide	SW9012B	Standard	1	0	0	0	0	0	0	**1**
	Liquid	PCBs + Total	SW8082A	Standard	1	0	0	0	0	0	0	**1**
	Liquid	Metals	SW6010D/SW7470A	Standard	1	0	0	0	0	0	0	**1**
	Liquid	Corrosivity (pH)	SW9040	Standard	1	0	0	0	0	0	0	**1**
	Liquid	Flashpoint	SW1010	Standard	1	0	0	0	0	0	0	**1**
	Liquid	Reactivity (Cyanide and Sulfide)	SW7.3.3.2/SW7.3.4.2	Standard	1	0	0	0	0	0	0	**1**

NOTES:

1. NYCRR Subpart 375 Compounds
2. An additional soil sample will be collected from native materials directly under any ash/brick/glass layer encountered
3. NYSDEC Ambient Water Quality Standard TOGS 1.1.1
4. Analysis of Cyanide, Hexavalent & Trivalent Chromium, VOCs, Pesticides, PCBS + Total, Herbicides, TPH, and PFAS will be submitted for 20% of samples.

APPENDIX A PARSONS SUBSURFACE SOIL DISTURBANCE PROTOCOL

PARSONS ENVIRONMENT & INFRASTRUCTURE GROUP
MANDATORY SUBSURFACE SOIL DISTURBANCE PROTOCOL

1. INTRODUCTION

Intrusive investigation or excavation of the subsurface in areas developed for commercial, industrial or residential use exposes Parsons to the risk of causing damage to underground utilities and structures on a daily basis.

The potential consequences of causing damage to an underground utility or structure include, but are not limited to the following:

- Injury or loss of life
- Financial responsibility for repair, lost time, and/or loss of service
- Loss of client
- Federal investigation of job site work practices
- Litigation (third party lawsuits)

The mandatory protocol and checklists provided herein are intended as tools to aid in the management of risk, and ensure that a responsible standard is consistently applied at project sites where intrusion of the subsurface will occur.

2. PURPOSE

The purpose of this mandatory protocol is the prevention of potential injury and/or loss of life; and damage to subsurface utilities and structures. Parsons' staff will identify and evaluate the hazards associated with underground utilities and other structures prior to conducting any intrusive subsurface operation including but not limited to drilling/boring, test pitting, excavation and other subsurface intrusive activities.

3. SCOPE

Parsons' staff will employ sound investigative and work practices, and will use appropriate measures to avoid damage to subsurface utilities and structures. Furthermore, Parsons requires that these procedures be implemented by all of Parsons' employees and subcontractors, as appropriate. Subcontractors will have a copy of the procedures set forth in Section 6 of this document as an appendix to their contracts.

4. POLICY

Parsons' policy requires that the project manager follow all local, state, and federal laws applying to intrusive subsurface work (i.e. obtain permits, inform agencies, obtain utility clearances, etc). The project manager shall review, as available, all current and historical site drawings and plans from the client, facility owner or tenant, utility providers, municipal government offices (i.e. city engineer or building department) and third parties as appropriate.

The Pre-Drilling/Subsurface Checklist for Intrusive Fieldwork **(Attachment A)** shall be completed prior to initiating fieldwork. Note: *The checklist includes a site visit as a requisite to meet with knowledgeable staff as appropriate (current or former site/owner personnel, utility representatives, municipal representatives, etc.), and review site conditions and features relative to the proposed locations for intrusive work. The checklist should be turned in to the Parsons Project Manager and a copy placed in the project file.*

The procedure described under Section 6 of this document is mandatory at all sites where any intrusive subsurface activities will take place, including but not limited to drilling, augering, boring, excavating, test pitting, trenching or direct push (Geoprobe) technology.

Variance from the Subsurface Soil Disturbance Protocol is allowed only with the written approval from the appropriate Parsons' Program Manager or Sector Leader and the completion of the Utility Clearance Variance Request Form (Attachment B). GBU, Division or Project Safety personnel should be consulted as needed. Failure to obtain a variance in writing is grounds for disciplinary action. Copies of all variances will be maintained in the project files.

The Project Manager is encouraged to find locations that are acceptable to the project team to perform intrusive subsurface work that are not within right-of-ways, streets, highways, or near municipal or third party-owned utility corridors. When it is necessary to conduct work within these areas, the Project Manager should obtain approval from either the Program Manager or Sector Leader and submit the existing work plan to the GBU or Division Safety Manager for review.

5. RESPONSIBILITY

It is the responsibility of the Project Manager to ensure that the Pre-Drilling/Subsurface Checklist for Intrusive Fieldwork and Utility Clearance Variance Request form are followed. If a variance is sought, it is the responsibility of the Project manager to gain written approval of the appropriate Parsons' Program Manager or Sector Leader.

6. PROCEDURE: SUBSURFACE SOIL DISTURBANCE PROTOCOL

The Parsons' Project Manager will be responsible for fulfilling the objectives of this protocol by ensuring that the procedures are carried out by Parsons' employees, subcontractors, and any other person acting on behalf of Parsons. The Parsons' Project Manager will ensure that all individuals working on drilling and other subsurface exploration projects are adequately trained and supervised. Parsons will practice sound investigation and work practices and employ

all necessary measures to avoid damage to subsurface systems and structures. The Parsons' Program Manager or Sector Leader will be contacted and advised in advance of beginning field work in the event that a variance to this protocol is requested by the Parsons' Project Manager or designee. The following tasks/subtasks will be completed at every site and documented on the checklist.

6.1 PRE-INVESTIGATION TASKS

The objective of these tasks is to gather all relevant information about the site to assist in identifying exploration locations and obtaining necessary permits. Please note that in some instances the following information will be obtained or gathered by a subcontractor, which meets this objective.

6.1.1 Obtain Site Plans

Obtain as-built drawings and/or existing site plans as available. NOTE: As-built drawings may not accurately depict the locations of improvements and subsurface features and should therefore not be solely relied upon to determine acceptable locations for intrusive subsurface activities.

6.1.2 Obtain Permits

The project staff will observe all local, state, and federal laws, obtain all necessary permits and utility clearances, and secure site access permission. NOTE: Some permits/clearances require this step to be completed after the exploration locations have been identified and marked in the field. If this is required, proceed with Items 6.2 and 6.3 prior to obtaining permits.

6.1.3 Utility Mark-outs

Parsons' project staff will request a utility mark-out through the local utility locating one-call system for the work site, and document a reasonable degree of effort to locate all main electrical, gas, telephone and all other subsurface utilities. The Parsons' Project Manager must be notified of the status of locating underground utilities before field work progresses. If locating utilities becomes problematic, the Parsons' Project Manager should update the client and discuss potential alternative methods for locating or reducing risk of damage to underground utilities/structures for consideration (i.e. subcontract a private locating service, re-evaluate risk/reward of specific locations or utilize intrusive non-destructive methods as described in Section 6.5.6). Site plans will be updated as appropriate to include utility mark-out information. On third party sites, close coordination with the site owner's representatives for mark-outs, review of as-builts, and other information reviews should be conducted prior to work. NOTE: Some utilities require the exploration locations to be identified and marked in the field prior to performing mark-outs. If this is required proceed with Items 6.2 and 6.3 prior to obtaining permits.

6.2 SITE VISIT

A site visit is required to compare the site plan to actual conditions, document all findings, and update the site plan. Parsons will obtain information needed to prepare a vicinity map of the area that may include significant neighboring addresses, land use, surface water bodies, and other natural as well as manmade features of note, as appropriate. The site visit should be scheduled concurrent with, or soon after the utility mark-out. The inspection should include the following activities at a minimum.

6.2.1 Utilities

Note the location of all utility mark-outs and aboveground utilities:

- Area lights
- Phones
- Drain lines
- Overhead lines
- Fire hydrants
- Fiber optic cable signage
- Catch basins
- Manholes
- Junction boxes
- Natural gas
- Other utilities
- Observe paving scars such as areas of new pavement or saw cuts

6.2.2 Plant/Property Systems

If possible, speak with someone having historical site knowledge to gain information about the site (locations of former tanks, lines, etc.). For UST systems:

- Inspect for the presence of a dispenser pan and, if possible, determine whether product piping is rigid or flexible.
- Visually inspect the location of the tank field, observation wells (if present), dispensers and vent stack(s).

- Note the orientation, arrangement, location, sizes, etc. of the tanks and manholes. Estimate the burial depth of the tank field.
- Observe paving scars (i.e. fresh asphalt/concrete patches, scored asphalt/concrete). Note that this may not indicate location of product piping.

6.2.3 Existing Remediation Systems

Visually inspect the location of aboveground components. Note the locations of well manholes, sparge points, etc.

6.2.4 Safety

For UST systems, note the location of the emergency shut off switch and become familiar with its use.

6.3 SELECTION OF DRILLING/TEST PIT LOCATIONS

6.3.1 Critical Zones

Establish pre-drilling critical zones appropriate to the project site. These are zones where no drilling (if possible and if client concurs) will be conducted. As an example, the following critical zones could be applied at a UST site:

- 10ft (3m) distance from the furthest edge of any operating tank
- 10ft (3m) distance surrounding operating dispenser islands
- At active service station sites, the entire area between the tank field and the dispenser islands.
- The zone between 0 and 5-feet of utility markings

6.3.2 Select Drilling Locations

The information collected to this point will be utilized in combination with regulatory requirements and investigation objectives to select drilling locations. It is recommended that alternate drilling locations be selected in case additional explorations are required or obstructions are encountered. The effort to investigate a specific proposed drilling location should be to clear a minimum five-foot radius circle around the location.

6.3.3 Review Selected Locations with the Client

At a minimum, offer to review the selected and alternate drilling locations with the client's project manager or designated representative. When completing Geoprobe^{tm} (or similar) investigations in which some boring locations are not selected in advance, but partially

determined in the field based on field screening results, the client should approve the areas in which work will be performed. Do not proceed with the investigation until the plan has been discussed with the client, and approval to proceed has been granted. If relocation of a boring outside approved limits is necessary at any time and for any reason, contact the client prior to proceeding. CLIENT APPROVAL MUST BE DOCUMENTED. Verbal approval is acceptable if followed with written approval. Documentation may include a notation in the field book, email or written correspondence.

6.4. REQUIRED NOTIFICATIONS

Affected parties must be notified at least 48-hours (longer if possible) in advance of planned intrusive fieldwork. An exception would be in the event of an emergency response situation. Parsons' staff will avoid scheduling conflicts with facility activities at the site. The Parsons' Project Manager or designee will notify the following persons as applicable:

- The oversight regulatory agency (includes local fire, police and municipal contacts as appropriate).
- Property owner for private properties. This should include neighboring third party property owners if a potential exists for causing inconvenience as a result of the scheduled fieldwork.
- Client specific notifications as appropriate (i.e. facility maintenance, retail and/or real estate managers as appropriate)

6.5. ON-SITE SUBSURFACE ACTIVITIES

6.5.1 Safety

A Project Safety, Health and Environmental Plan (PSHEP) must be available on site at all times and all Parsons' staff, contractors and subcontractors must be familiar with it. Parsons' employees are to acknowledge their review of the PSHEP by signing the signature form contained within the PSHEP. The Parsons' field team leader is tasked with conducting a tailgate meeting at the start of each day to review project specific health and safety items with staff and subcontractors. Subcontractors, however, are responsible for their own health and safety. All work areas shall be secured with safety cones, safety tape, construction fence, barricades, or signs as appropriate.

A copy of this entire subsurface activity protocol and completed checklist must be appended to the health and safety plan.

6.5.2 Supervision

A Parsons' on-site representative will be responsible for overseeing subsurface activities. This representative will ensure that the work is performed with due caution and will be alert for warning signs that could indicate the presence of underground tanks, lines, or other subsurface structures.

6.5.3 Warning Signs

The following warning signs may indicate the presence of a subsurface structure such as tanks or lines:

- Pea Gravel/Sand/Non-indigenous Material.
- The absence of soil recovery in the hand auger. This could indicate pea gravel that has spilled out of the auger.
- Any unexpected departure from the native soil or groundwater conditions as established in other on-site digging.
- Obstructions encountered

If any of the above warning signs or a suspicious condition is encountered, intrusive subsurface activities in this area should immediately cease and the Parsons' Project Manager shall be contacted.

6.5.4 Drill Boring Sequence

If possible, the boring sequence should be planned such that the boring furthest from any suspected underground improvements is carried out first. This is done to determine the natural subsurface conditions and to allow the field geologist/scientist to recognize native versus fill conditions. Also, least impacted locations should be done first if possible to prevent possible cross contamination.

6.5.5 Surface Removal for Paved Areas

Sufficient paving or surface improvement should be removed to allow clear visibility of the subsurface conditions during hand augering/digging, and allow excavation with hand tools. Drilling in an area of high risk may warrant a larger pavement opening.

- Monitoring Well Installations: 2-ft x 2-ft (60cm x 60cm) minimum removal is suggested (assumes for example: 6.25-inch hollow stem auger (HSA) or smaller).
- Soil Borings: 8-inch (20cm) diameter minimum removal is suggested (assumes for example: 3.25-inch HAS or smaller).
- Direct Push Samplers: 4 to 6 inch (10 to 15 cm) diameter minimum removal is suggested (assumes for example: 2-inch diameter sample tube).

The technique used should not pose a threat to subsurface structures. Final completion for holes in pavement shall be neatly saw-cut or cored unless otherwise directed by the client.

6.5.6 Clearing the Subsurface for Utilities and Other Structures

Parsons' staff must ensure that no subsurface utilities, structures, or improvements exist where intrusive subsurface activities will occur. Locations will be cleared using results of historical data research and with geophysical methods (see below for details) at a zone 5 feet in radius around the proposed location. Staff (or personnel supervised by Parsons) will also utilize intrusive, non-destructive procedures such as hand digging to a depth of 5 feet and a diameter or width equivalent to the outside dimensions of the auger to investigate the boring location.

The method used to delineate the subsurface should be compatible with the inherent risk associated with the type of facility/property and the location of the drilling. Proactive investigative methods to clear specific drilling locations will include the following non-invasive and invasive non-destructive methods:

Non-Invasive Geophysical Remote Sensing: Multiple appropriate instruments (ground penetrating radar, electromagnetic detector, magnetometer, metal detector) can be used for this work. Survey an area around the location to a distance of 5 feet using geophysical methods to identify potential subsurface utilities or facilities. Move the borehole location, if necessary, within the cleared circle to avoid an object identified by the geophysical instrument. Examples of geophysical methods are provided below:

- Electromagnetic and radio frequency;
- Ferrous metal or magnetic locators;
- Ground probing radar (GPR).

Important note: A combination of two or more non-invasive instruments may be required to properly clear a subsurface area. For example, a ferrous metal detector may not detect metals pipes embedded in concrete duct banks, PVC pipes, FRP pipes, or other non-ferrous materials.

Intrusive Non-Destructive Procedures: Delineate the subsurface at the borehole location by probing or digging. Several acceptable methods are discussed below. In some cases, these intrusive procedures may not be practical due to the subsurface conditions or requirements of the explorations.

- Vacuum/Air Knife Digging: Vacuum digging has proven to be a very effective and safe means of digging and is recommended instead of probing and digging with hand tools.
- Probing: The probe should have a blunt or rounded tip and should be advanced by hand in a triangular pattern around the bore location without excessive force.
- Hand Digging: Should be performed with a small hand garden spade.

- Hand Augering: The auger is to be turned slowly and not forced through the soil. It is recommended that an auger without sharp points (some augers have rounded edges) be used.

- Post Hole Digging: Can be used for soil removal only in soil that has been probed and cannot be used to advance the hole beyond the depth or width of probing.

The area to be cleared for underground utilities or structures for augering shall exceed the diameter of the largest tool (hand auger, drill auger, sampling tube, etc.) to be advanced and sufficiently large to allow for visual inspection of any obstructions encountered. The first 1 - 2ft (0.3 - 0.6m) can be cleared by hand digging to remove the soil. Slowly and carefully probe (i.e. triangular pattern), vacuum, or hand auger throughout the area to be cleared to ensure that no obstructions exist anywhere near the potential path of the drill auger or push type sampler. The soil in the area to be cleared shall be fully removed during this step. If probing is utilized, then alternate probing with soil removal as necessary, until the first 5-ft (1.5m) has been delineated.

6.5.7 Refusal

Where natural subsurface conditions (e.g. cobbles/rocks, fill material, and/or bedrock) may prevent adequate probing and augering, a practical and sensible evaluation by the Parsons' Project Manager will be the basis for determining if continuation of probing and augering is feasible. In all cases Parsons must employ all means necessary to prevent damaging subsurface utilities, product lines, tanks, or other structures. **When conventional means of probing and augering cannot be utilized, the Parsons' field representative believes that additional probing/augering is not feasible, or if the probing/augering poses additional hazard to personnel because of the physical demands of performing the task, work in that specific area will cease**. The Parsons' Project Manager will contact the client's project manager or designee to discuss alternatives. If Parsons' staff suspects, based on past information or boring logs, that hand augering is infeasible, then alternatives such as vacuum clearing or non-invasive procedures should be evaluated in advance.

6.5.8 Event Notification

If any portion of a tank, pipe, utility or other subsurface structure is encountered, or if there is any doubt it has been encountered, the work is to cease in that area and the Parsons' Project Manager notified immediately. If there is reason to believe that the structure has been damaged, if applicable, the emergency shut-off switch should be activated (if applicable) and the appropriate municipality and client notified immediately. The Parsons' Project Manager and/or client will decide if additional uncovering by hand is required. If it is confirmed that a UST system has been encountered, a tightness test(s) should be considered. Under no circumstances is the area to be backfilled without notifying the Parsons' Project Manager, unless risk of personal injury or damage warrants a temporary backfilling.

In case of refusal or if an unknown subsurface object is encountered during intrusive subsurface activities, then the following specified resolution process must take place.

- Additional and deliberately careful excavation by hand will be conducted in an attempt to define the cause of refusal or identify the subsurface object.

    a. If the cause CAN be readily and correctly defined as not destructive or hazardous, the field task manager should call the PM to discuss the situation.

    b. If the cause CAN be readily and correctly defined as potentially destructive or hazardous, the field task manager should call the PM to discuss the situation. The specific location must be re-evaluated.

    c. If the cause CANNOT be readily and correctly defined, the field task manager should call the PM to discuss the situation. The specific location must be re-evaluated.

- In case "a," drilling may proceed ONLY after consultation with the PM.

- In cases "b" and "c," drilling MUST STOP so that location re-evaluation can take place. The client, the utility owner (if applicable) and if required, the appropriate regulatory agency, must be advised of the situation and consulted to determine if (1) the location is necessary, which may require additional effort to clear a new location, or (2) the location is not necessary, and can be deleted from the program.

6.5.9 Scheduling

Since clearing locations for augering, drilling, excavation and similar intrusive field work can be time consuming, it may be appropriate to perform the surface removal subsurface delineation prior to the arrival of subcontractors and their equipment on site. If these activities are conducted prior to the actual day of intrusive field work, then the cleared locations must be adequately covered with plates and/or backfilled, or barricaded to protect pedestrians and other surface traffic. Care must be taken to prevent settlement of the material used to cover the holes.

ATTACHMENT A

PRE-DRILLING/SUBSURFACE CHECKLIST FOR INTRUSIVE FIELD WORK

PREDRILLING/SUBSURFACE CHECKLIST FOR INTRUSIVE FIELDWORK

Site Name: _____ **Job Number:** _____
Site Phone Number: _____
Site Address: _____ **County:** _____
Client Proj. Mgr.: _____ **Phone:** _____
Site Manager Contacted Date: _____ **By:** _____
Site Drawings (yes / no / NA) _____ (please attach) **Historical Drawings (yes / no / NA)** _____
Third Party Construction/Redevelopment Plans (Yes/No/NA)

***ATTACH SITE FIGURE WITH PROPOSED BORING LOCATIONS

Subcontractor's (drillers, concrete, etc…) **Company** _____
Subcontractor's Contact Person _____ **Phone** _____
Meeting / Start Date _____ **Time** _____

1) Health and Safety Signoff Form Completed? (Yes/No) **Date** _____

2) Utility Protection Services (Minimum 48 Hrs. Advance Notice, State Specific Notification Period Supercedes)
Called: Date _____ **Time** _____ **Initials** _____
Reference # _____
Proposed Drilling Locations Premarked for Locating Service. **Y / N**

3) Private or In-House Utility Locating Service Performed? **Y / N** _____
Called: Date _____ **Time** _____ **Initials** _____
Name of Locating Service: _____
Telephone #/ contact: _____
Name of Supplier Locating Technician: _____
Type of sensing equipment used: _____
Proposed Drilling Locations Premarked **Y / N**

4) Other Potential Underground Structures
Name of City Engineer/Utility Representative: _____
Telephone #: _____
Date Notified _____ **Maps:** **Y / N**
Cleared: **Y / N**

5) COMPLETED SITE WALKOVER W/ SITE MANAGER/DESIGNEE OR OWNER/TENANT REP. **Y / N**
Name of Site Manager: _____
Name of Property Owner/Tenant Representative:_____
Cleared: **Yes / No**
Building Utility Service Line Connections Identified: **Y / N**
(Hand sketch on site map w/proposed boring locations and most likely utility trench locations)

6) Utility Inventory: **Y / N**

Utility	Name	Depth (ft) (If Available)	Phone	Notified - Date	Marked
Above Ground Services					
Electric		NA		Y / N	Y / N
Telephone		NA		Y / N	Y / N
Cable		NA		Y / N	Y / N
Overhead Supports		NA		Y / N	Y / N
Traffic light cables		NA		Y / N	Y / N

PREDRILLING/SUBSURFACE CHECKLIST FOR INTRUSIVE FIELDWORK

6) Utility Inventory Continued:

Below Ground Services:

Electric				Y / N		Y / N
Telephone				Y / N		Y / N
Cable				Y / N		Y / N
Gas				Y / N		Y / N
Water				Y / N		Y / N
UST System				Y / N		Y / N
Storm				Y / N		Y / N
Sanitary				Y / N		Y / N
Steam				Y / N		Y / N
Pipeline Companies				Y / N		Y / N

Other:

				Y / N		Y / N
				Y / N		Y / N
				Y / N		Y / N

7) Site-Specific Emergency Contingency Plan Incorporated in Health & Safety Plan Y / N

8) Drilling Locations Approved by Client Project Manager Named Above? Y / N

9) Signature of Parsons' Project Mgr. (required to begin fieldwork):

Name of Project Manager	**Signature of Project Manager**
Name of Parsons Field Personnel	**Signature of Field Personnel**

(This document to be included with the site H&S Plan and should be available upon request.)

ADDITIONAL COMMENTS / NOTES:

ATTACHMENT B
UTILITY CLEARANCE VARIANCE REQUEST FORM

PARSONS

UTILITY CLEARANCE VARIANCE REQUEST

To: Enter Parsons Manager (Program, Sector or Operations)

From:

Client Company Name:

Site/Project Name:

Date of Request:

Work Start Date:

The purpose of this document is to request a variance from one or more of the PE&I Mandatory Subsurface Soil Disturbance Protocol requirements. The purpose of the mandatory protocol is to prevent potential injury and/or loss of life; and damage to subsurface utilities and structures during any soil disturbance. Any waiver of these requirements should be carefully evaluated.

Variance from the Subsurface Soil Disturbance Protocol is allowed only with the written approval of the appropriate Parsons' Program/Sector/Operations Manager. GBU/Divisional/Program safety resources should be consulted as needed. Failure to obtain a variance in writing is grounds for disciplinary action.

Brief Project Description

Insert a brief background and description of the intrusive activities, which are the reason(s) for requesting a variance.

Utility Clearance Requirements

Step No.	Requirement	Step Completed[1]
Prep-1	Obtain as-built drawings and/or existing site plans if available and review for on-site utilities.	☐ Yes ☐ No

[1]Any "No" response must include the rationale for not completing the step at the end of the Variance Request form.

Step No.	Requirement	Step Completed[1]
Prep-2	Utility mark-out requested through the nationwide utility locating one-call system (www.call811.com) for the work site.	☐ Yes ☐ No
Prep-3	Review the Subsurface Soil Disturbance protocol with all PE&I technical staff that will potentially be involved in projects that include subsurface investigation.	☐ Yes ☐ No
Pre Mob-1	Notify affected parties at least 48-hours (longer if possible) in advance of planned intrusive fieldwork.	☐ Yes ☐ No
Pre Mob-2	Prepare a Project Safety, Health and Environmental Plan (PSHEP) that includes a copy of the Subsurface Soil Disturbance protocol.	☐ Yes ☐ No
Pre Mob-3	Select a competent Parsons' on-site representative to oversee all surface removal, hand augering/digging, drilling, and test pitting.	☐ Yes ☐ No
Site [2] Visit-1	Perform a site visit and identify indications of underground utilities. Indications could include [3]: ➢ Area lights ➢ Phones ➢ Drain lines ➢ Overhead lines ➢ Fire hydrants ➢ Fiber optic cable signage ➢ Catch basins ➢ Manholes ➢ Junction boxes ➢ Natural gas	☐ Yes ☐ No

[1] Any "No" response must include the rationale for not completing the step at the end of the Variance Request form.

[2] Site visit activities must be included with mobilization activities if a Site visit is not performed prior to mobilization for the field work.

[3] Note that list is not all inclusive.

Step No.	Requirement	Step Completed[1]
	➢ Observe paving scars such as areas of new pavement or saw cuts	
Site Visit-2	Prepare a vicinity map of the proposed work area to include significant features and utilities. The site visit should be scheduled concurrent with, or soon after the utility mark-out.	☐ Yes ☐ No
Site Visit-3	Interview someone having historical site knowledge to gain information about the site (locations of former tanks, lines, etc.).	☐ Yes ☐ No
Site Visit-4	Establish pre-drilling critical zones appropriate to the project site	☐ Yes ☐ No
Site Visit-4	Review Selected Locations with the Client	☐ Yes ☐ No
Field Work-1	Review site utility maps against each proposed work activity. Check for legibility, accuracy, and scale while walking areas of concern. Evaluate the work area for any items in Site Visit-1 that may have been missed.	☐ Yes ☐ No
Field Work-2	Obtain all necessary permits and utility from the facility.	☐ Yes ☐ No
Field Work-3	Remove any surface paving or surface cover allow clear visibility of the subsurface conditions during hand augering/digging, and allow excavation with hand tools.	☐ Yes ☐ No
Field Work-4	Non-Invasive Clearing: Clear a minimum of a five foot radius for each proposed intrusive activity. Locations will be cleared using results of historical data research and with geophysical methods. Multiple appropriate instruments (ground penetrating radar, electromagnetic detector, magnetometer, metal detector) can be used for this work.	☐ Yes ☐ No
Field Work-5	Invasive Clearing: Delineate the subsurface at the borehole location by probing or digging. Dimensions of the intrusive method must exceed the diameter of the largest tool (hand auger, drill auger, sampling tube, etc.) to be advanced and	☐ Yes ☐ No

Step No.	Requirement	Step Completed[1]
	sufficiently large to allow for visual inspection of any obstructions encountered. Approved methods could include the following: ➢ Vacuum Extraction (Air Knifing, SoftDig®) ➢ Probing ➢ Hand Digging ➢ Hand Augering ➢ Post Hole Digging	

Rationale

Below, identify the step or steps the variance is being requested for and an explanation of why the waiver is necessary and/or justified.

Step No.	Rationale for Variance Request

Approvals

	Name	Date
Parsons Manager (Program, Sector, or Operations)		

APPENDIX B NYSDOH GENERIC COMMUNITY AIR MONITORING PLAN

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

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

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

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

Community Air Monitoring Plan

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

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

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

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

VOC Monitoring, Response Levels, and Actions

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

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

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

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

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

Particulate Monitoring, Response Levels, and Actions

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

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

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

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

December 2009

Appendix 1B
Fugitive Dust and Particulate Monitoring

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

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

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

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

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

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

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

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

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

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

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

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

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