C.T. MALE ASSOCIATES
Engineering, Surveying, Architecture, Landscape Architecture &
Geology, D.P.C.

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September 6, 2024
Revised September 26, 2024

Ms. Brittany O'Brien-Drake, Assistant Geologist, Project Manager
New York State Department of Environmental Conservation
Remedial Bureau D, Section D
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, New York 12233-7013

VIA EMAIL: Brittany.obrien-drake@dec.ny.gov

RE: ***Supplemental Subsurface Investigation Work Plan***
5 Scobie Drive, City of Newburgh, Orange County
BCP Site ID No. C336085
C.T. Male Project No. 23.3460

Dear Ms. O'Brien-Drake,

On behalf of Scobie Industrial Partners, LLC (SIP), C.T. Male Associates Engineering, Surveying, Architecture, Landscape Architecture & Geology, D.P.C. (C.T. Male) has prepared this supplemental subsurface investigation work plan ("Work Plan") to provide the supporting documentation requested by NYSDEC to modify the surface cover system in the northern portion of the above-referenced Site. Limited information exists pertaining to environmental subsurface conditions (i.e. extent of landfilled material, etc.) in the northern portion of the Site.

The NYSDEC-approved Remedial Action Work Plan (RAWP, dated May 21, 2024) indicates that "A surface cover system will be required to cover the furthest extent of remaining onsite landfilled material, or soils exceeding Commercial Use SCOs within the top one foot across the Site." NYSDEC indicated in a correspondence dated April 29, 2024 that "Details regarding the extent of the cover system can be defined during the remedial design phase. DEC and DOH will require justification (sampling, boring logs, landfilled material was removed etc) for areas that are not proposed to have a cover system." The work proposed under this Work Plan will identify potential areas in the northern portion of the Site where landfilled material is not present to assess the extent of the surface cover system, as defined in the RAWP. Furthermore, if no landfilled material is encountered, soil samples will be collected to determine the suitability of existing soils in this area to remain uncapped as part of the future final cover system.

Findings of this investigation will be incorporated in the Remedial Design Document (RDD).

Scope of Work

Health and Safety Plan
Work to be conducted by C.T. Male under this Work Plan will be performed in accordance with the Health and Safety Plan (HASP) provided in Appendix C of the RAWP and as Attachment A of this Work Plan. Each contractor planning to work on this investigation will be responsible for preparing their own HASP in compliance with NYSDEC DER-10, and 29 CFR 1910 and 1926, and applicable Federal, State and local regulations.

Site Clearing
Existing overgrown vegetation and trees will be cleared prior to subsurface work to access the areas to be investigated. Based on our review of the information in the NYSDEC EAF Mapper, no constraints exist regarding site clearing associated with threatened or endangered species as habitat for these species was not identified on-site.

Core Down Drilling LLC (CDD) has been retained by the Volunteer to clear a path to access test pit and trench locations utilizing a Kubota KX057-4 excavator with a forestry cutting head. A Proposed Fieldwork Map showing the proposed locations of the test pit and trenches is presented in Attachment B. It is noted that CDD will also clear areas associated with a future proposed soil gas investigation, which is anticipated to be conducted by others under a separate work plan. This work plan, anticipated in the late Fall of 2024, will be submitted to NYSDEC for review and approval. CDD will call DigSafe before test pitting and trenching work begins. Clearing work is estimated to be completed within three (3) to five (5) days.

Air Monitoring
Air monitoring will consist of landfill gas and volatile organic compound (VOC) monitoring to be conducted in the immediate work area during ground intrusive activities in accordance with the C.T. Male HASP. The ambient air in the work area will be monitored for methane and oxygen content. Furthermore, the ambient air in the work area will be monitored with a photoionization detection meter (PID) on a continuous full-time basis.

Community Air Monitoring
A limited community air monitoring plan (CAMP) will be implemented during ground intrusive activities (i.e. test pitting and trenching work) as a measure of protection for the downwind community. Due to the limited nature of the work (selected test pit locations and trenches), commercial/industrial uses and dense vegetation surrounding the proposed work area, a modified CAMP is proposed. The CAMP will continuously monitor VOCs vapors (VOC air monitoring) at the downwind perimeter of the work area. No dust monitoring is proposed at this time. Two (2) real-time particulate monitors capable of integrating over a period of 15 minutes (or less) will be utilized. The instruments will be placed at temporary monitoring stations based on the prevailing wind direction each day, one (1) upwind and one (1) downwind of the designated work area.

Subsurface Investigation for the Presence/Absence of Landfilled Material
Five (5) test pits will be advanced utilizing a Kubota KX057-4 excavator to a maximum depth of twelve (12) feet below ground surface (bsg), as warranted, in areas north of the wetland. Nine (9) trenches ranging from 40 to 100 feet in length will also be advanced to a maximum depth of twelve (12) feet bsg, as warranted. Depending on the progress of the work, intermittent test pits might be advanced at set distances (approximately 10 - 12 feet apart) along the length of the proposed trench (in lieu of extensive trenches) to limit the time and scope of the excavation. The aim of the investigation is to ascertain the presence/absence of landfilled material and determine the upper limit of the landfilled material. In areas near the wetland, the lower limit of the landfilled material will be assessed to determine the approximate length of the landfilled material interval. This information will be utilized to assess potential cleanup efforts at/near the wetlands, if feasible and practical. Soils will be visually classified by a geologist/scientist/engineer and subjectively assessed for field evidence of contamination (sheen, discoloration, presence of visible waste or foreign materials) and screening with a PID. At the completion of assessment, the trenches and test pits will be filled with the excavated material. The excavated material will be backfilled in order from which it was removed, to the extent possible.

If grossly impacted material is encountered, it will be segregated and staged on 12-mil plastic and covered with 12-mil plastic to limit precipitation infiltration. Sampling of this material will occur during or as soon as possible for characterization. Timing of offsite disposal will be driven by the sampling results. A temporary barrier (i.e. construction fencing, or comparable barrier) will be placed around the material to restrict access while the Site is unsecure. The analysis of the samples will be in accordance with the target disposal facility's disposal permit requirements.

The subsurface work is estimated to take approximately five (5) days to complete. A Proposed Fieldwork Map showing the proposed locations of the test pit and trenches is presented in Attachment B. An additional set of figures depicting Surface and Subsurface Soil Parameters Above Commercial Use SCOs with the Proposed Fieldwork Map Overlay is presented in Attachment C.

Soil Collection and Analysis

Approximately ten (10) surface/near-surface (0-12") soil samples (maximum) will be collected from the test pits and trenches in areas where landfilled material is not present to determine suitability of existing soils to be used as the final cover system. Soils collected for laboratory analysis will be placed into laboratory prepared containers and submitted under chain of custody documentation to Pace Analytical Laboratory (formerly Alpha Analytical Laboratories) for analysis for Target Compound List (TCL) for Semi-Volatile Organic Compounds (SVOCs) and Total Analyte List (TAL) Metals. Pace is an accredited laboratory under the Environmental Laboratory Accreditation Program (ELAP Certification Number 11627).

The surface and near-surface soil samples will be collected using field decontaminated sampling equipment which may include shovels, trowels, or hand augers. The discrete sample will be collected by advancing the sampling equipment to the appropriate depth interval and retrieving the soil sample. The soils will be logged in accordance with ASTM D2488 (visual-manual method) and screened in the field for organic vapors with a photoionization detector (PID) and assessed for field evidence of contamination (i.e., sheen, discoloration, etc.). The samples will be promptly transferred into laboratory-provided clean containers. C.T. Male's Surface and Subsurface Soil Sampling SOP dated December 28, 2017, included as Attachment D, will be followed by C.T. Male's field personnel during the collection of soil samples.

Reporting and Schedule

A letter report will be prepared and include a summary of findings, inclusive of test pit and trench logs, photographs and analytical results summary table. Findings will be incorporated in the RDD and determine whether modifications to the final surface cover system are possible near the wetland and to the north of the wetland.

Tentatively, the work has been scheduled for September 30 to October 10, 2024, contingent upon NYSDEC approval.

Please feel free to contact me at 845-454-4400 or via email at r.andujar-mcneil@ctmale.com if you have any questions regarding this project.

Sincerely,

Rosaura Andújar-McNeil, P.E.,
Environmental Engineer/Project Manager

cc: James D. McIver, P.G. Branch Manager (C.T. Male)
Eric White, Senior Environmental Scientist (C.T. Male)
Erik Cooney (SIP)
Chris Cooney (SIP)
Robert Arias (SIP)

Attachments:

A	HASP
B	Proposed Fieldwork Map
C	Figure 6 - Surface Soil Parameters Above Commercial Use SCOs with the Proposed Fieldwork Map Overlay Figure 8 - Subsurface Soil Parameters Above Commercial Use SCOs with the Proposed Fieldwork Map Overlay
D	C.T. Male Surface and Subsurface Soil Sampling SOP

April 29, 2022

NYS Brownfield Cleanup Program

Site-Specific Health & Safety Plan
Remedial Action

5 Scobie Drive
City of Newburgh
Orange County, New York
BCP No. C336085

Prepared by:

C.T. MALE ASSOCIATES
ENGINEERING, SURVEYING, ARCHITECTURE
& LANDSCAPE ARCHITECTURE, D.P.C.
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C.T. Male Project No: 19.9405

SITE-SPECIFIC HEALTH & SAFETY PLAN
5 SCOBIE DRIVE, CITY OF NEWBURGH
ORANGE COUNTY, NEW YORK

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1.0 GENERAL

1.1 Overview

This Site-specific Health and Safety Plan (HASP) has been prepared for use during implementation of the Remedial Action (RA) at the 5 Scobie Drive Site ("the Site") located in the City of Newburgh, Orange County, New York. This HASP has been developed as an integral part of the RA Work Plan (RAWP) as prepared by C.T. Male Associates Engineering, Surveying, Architecture & Landscape Architecture D.P.C. (C.T. Male). The RA is being performed under the NYS Brownfield Cleanup Program (BCP Site No. C336085).

This HASP is written to follow the regulatory requirements and guidelines in the following:

- 29 CFR 1910, OSHA, Safety and Health Regulations for General Industry.
- C.T. Male Associates Health and Safety Manual.
- Federal, State, County, and local guidance on Airborne Infectious Disease and COVID-19.

A designated Office Health and Safety Officer (OHSO) will be responsible for implementing this HASP during the completion of the field work. A designated Site Health and Safety Officer (SHSO) will be responsible for implementing this HASP during the completion of the field work. C.T. Male employees who enter the work area (support, decontamination, exclusion zone) must review, sign and comply with this HASP. A list of individuals authorized to enter the Site is presented in Section 13.0 of this HASP. Subcontractors retained by either C.T. Male or Scobie Industrial Partners, LLC (Volunteer in the BCP) will be required to prepare their own HASP for implementation by their employees, personnel and subcontractors. A copy of this Site-specific HASP will be maintained at the work area throughout the duration of the project.

A complete description of the RA work is presented in the RA Work Plan. A brief description of the proposed scope of work is outlined below.

Remedial Action Activities:

- Excavation, clearing, and grading across the Site;
- Subsurface investigation, test pits/borings;
- Collect environmental samples (soil, groundwater, etc.);
- Site survey;
- Foundation installation and subgrade improvements;
- Building and utilities construction;
- Installation of stormwater management facilities;
- Relocation of wastes on the 5 Scobie Drive Site (no off-site waste materials will be brought onto the 5 Scobie Drive Site);
- Site restoration;
- Waste relocation/disposal or other activities resulting in excavation into waste;
- Management of unexpected drums or other hazardous wastes; and
- Other unforeseen environmental conditions which may be encountered during work activities.

This HASP will be implemented throughout the duration of the remedial action or subsequent environmental monitoring activities following the RA.

1.2 Contact Names & Numbers

For this project, the following NYSDEC, City of Newburgh, and Emergency Response names and telephone numbers are presented below as site contacts.

NYSDEC CONTACTS:

PROJECT MANAGER:	Kiera Thompson, P.G. Project Manager NYS Department of Environmental Conservation Division of Environmental Remediation 625 Broadway, 11th Floor Albany, NY 12233-7014	(518) 402-9662

NYSDOH CONTACT:

TECHNICAL LEAD:	Kristin Kulow NYSDOH-Oneonta District Office 28 Hill Street, Suite 201 Oneonta, New York 13820	(607) 432-3911

CITY OF NEWBURGH CONTACTS:

OWNER REPRESENTATIVE:	Mr. Jason Morris City of Newburgh 83 Broadway Newburgh, New York 12550	(845) 569-7448

CONSULTANT CONTACTS:

CONSULTING ENGINEER:	C.T. Male Associates 12 Raymond Avenue, Poughkeepsie, New York 12603	(845) 454-4400
	Daniel P. Reilly, P.E., Project Principal	(518) 786-7625 (O) (518) 928-9792 (C)
	Jim McIver, P.G., Project Manager	(845)-454-4400 (O) (845) 594-1788 (C)
	Nancy Garry, P.E., CSP Office Health & Safety Officer	(518) 786-7541 (O) (518) 320-5783 (C)
	To be determined, based on field staff onsite Site Health & Safety Officer (HSO)	

EMERGENCY PHONE NUMBERS:

PERSONAL INJURY OR EMERGENCY:	St. Luke's Cornwall Hospital 70 Dubois Street Newburgh, NY 12550	(845) 568-2351

FIRE DEPARTMENT:	Emergency City of Newburgh Fire Department 22 Grand Street Newburgh, NY 12550	911 (845) 562-1212
POLICE:	Emergency City of Newburgh Police Department 55 Broadway Newburgh, NY 12550	911 (845) 561-3131
	Emergency NYS Troopers Barracks 55 Crystal Run Road Middletown, NY 10941-9755	911 (845) 344-5300
UPSTATE NEW YORK REGIONAL POISON CONTROL CENTER:	University Hospital Upstate Medical University SUNY Health Science Center 750 East Adams Street Syracuse, NY 13201	(800) 222-1222
NATIONAL RESPONSE CENTER:	c/o United States Coast Guard (G-OPF) 2100 2nd Street, Southwest - Room 2611 Washington, DC 20593-0001	(800) 424-8802
NYSDEC SPILL HOTLINE:		(800) 457-7362

2.0 HEALTH AND SAFETY PERSONNEL

The Office Health and Safety Officer (OHSO) will be responsible for implementing C.T. Male's health and safety policies and to ensure field work follows C.T. Male policies.

The Site Health and Safety Officer (SHSO) or designee will be responsible for implementation of the HASP and the delegation of health and safety duties. The SHSO will coordinate the resolution of safety issues that arise during Site work or ask the OSHO, and/or Project Manager for direction and compliance of the situation. When the SHSO is not present on-Site, a designee will be authorized to perform the duties of the SHSO. The designee will be responsible for implementation of the HASP.

The SHSO or designee has stop work authorization upon their determination of an imminent safety hazard, emergency situation or other potentially dangerous situations (e.g. weather conditions), when this action is deemed appropriate. Authorization to resume work will be issued by the OSHO, Project Manager or the SHSO.

3.0 SITE LOCATION AND DESCRIPTION

The subject Site is located at 5 Scobie Drive in the City of Newburgh, Orange County, New York. The Site consists of one (1) tax parcel (S.B.L. 1-1-6) and is approximately 15.6 acres in size. The Site is located to the northeast of the former DuPont-Stauffer Chemical Manufacturing site and the City Department of Public Works (DPW) facility, west of Scobie Drive and two (2) ongoing commercial enterprises, and south of Interstate I-84 (Figure 1). The Site is entered from Scobie Drive. Access to the Site by vehicle is restricted by the absence of a stabilized entrance. The Site area topography is generally slopes to the north with some flatter spots with a slight downward grade to the north and east.

The Site is currently vacant and had historically been used as a landfill. Buildings are not present within the Site. The Site is currently overgrown. Stockpiles and scattered junkyard type objects (i.e., empty containers, tanks, empty drums, car parts, televisions, refrigerator carcasses, etc.) are present on the southern portion of the Site, adjacent to the City-owned DPW site. Some of the debris may be from convenience dumping. A pile of wood chips located in the southeastern portion of the Site generated during previous Site clearing activities.

No utilities are currently present on-site. However, the region is serviced with electricity and natural gas from Central Hudson Gas and Electric, and municipal water and sewer.

A shallow drainage ditch that appears to be manmade exists along the northern boundary of the Site. Federal wetlands are located along the drainage ditch and on the northern edge of the Site. The drainage swale on the northeastern side of the Site drains generally east to west-northwest into the wetlands on the northern edge of the Site. The drainage swale collects water from the adjacent commercial facilities located to the north and east of the property and from a portion of the residential development located on the east side of 5 Scobie Drive. The water course observed in the wetland flows east to west and is partially located along the northern Site boundary, existing between the Site and Interstate I-84. The water eventually flows into the Gidneytown Creek, located approximately 1,000 feet west of the wetlands to the north and west of the Site.

4.0 KNOWN AND POTENTIAL SITE CONTAMINANTS

Site contaminants identified during the RI, above their respective standards/guidance values include the following:

Surface Soils

- Semi-volatile organic compounds (SVOCs) (Benzo(a)pyrene); and
- Metal (Arsenic).

Subsurface Soils

- SVOCs (Benzo(a)pyrene); and
- Metals (Arsenic, Lead and Mercury).

Groundwater

- Anions (Bromide and Chloride);
- Volatile organic compounds (VOCs) (Chlorobenzene, Benzene, 1,4-Dichlorobenzene, and Naphthalene);
- SVOCs (1,4-Dichlorobenzene, Bis(2-Ethylhexyl)phthalate, Naphthalene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene and Chrysene);
- Metals (Antimony, Boron, Iron, Lead, Magnesium, Manganese and Sodium);
- PCBs (Aroclors 1242 and 1254); and
- Per and Polyfluoroalkyl Substances (PFAS).

Surface Water

- SVOCs (Benzo(a)pyrene, Benzo(b)fluoranthene and Chrysene);
- Metals (Aluminum, Antimony, Cobalt, Iron, Magnesium, Manganese and Vanadium); and
- Per and Polyfluoroalkyl Substances (PFAS).

Sediment

- Metals (Arsenic, Silver and Zinc).

Previous environmental investigations have also encountered petroleum-range hydrocarbons and surface debris. Other VOCs, SVOCs, metals, pesticides, PCBs and PFAS compounds have the potential to be present in surface soil, subsurface soil, sediment, surface water and groundwater.

4.1 Potential Exposure Pathways

Occupational exposure to chemical hazards associated with the work activities could potentially occur by dermal contact (skin contact), inhalation and an indirect route (incidental ingestion).

4.1.1 Dermal Contact

The primary route of potential exposure for C.T. Male employees is dermal contact. Personnel walking or handling associated equipment may be exposed to chemical hazards by skin contact or adsorption. In addition, personnel have the potential to be exposed to landfill waste due to excavation and regrading activities due to the nature of the Site as a former landfill. However, exposure is expected to be limited since workers will be required to wear appropriate personal protective equipment (PPE) (i.e. appropriate work gloves, shoes, clothing, and safety glasses).

4.1.2 Ingestion

Personnel handling of associated equipment, including project hazardous materials, could be exposed by incidental ingestion. Typically, this exposure occurs if proper PPE is not used or personal hygiene was not practiced. Personal protection against exposure via ingestion can be accomplished by performance of proper decontamination procedures when exiting contaminated work areas as well as using the correct PPE.

4.1.3 Inhalation

Personnel handling of associated equipment, including project hazardous materials, could be exposed by incidental inhalation. Due to the nature of the Site as a former landfill and uncovering of waste material personnel might be exposed to gases and vapors. If a potential inhalation hazard is noted on-Site, C.T. Male staff will immediately stop work and take the appropriate steps to notify SHSO, PM or OHSO. The work being conducted will be reevaluated to determine the potential exposure and further PPE that may be needed.

5.0 HAZARD ASSESSMENT

5.1 General

The hazard assessment, use of specific protective equipment, and monitoring associated with each field work task of the RA to be conducted at the subject Site are presented in following subsections.

For this project, C.T. Male and the Applicant will be contracting/subcontracting portions of the RA activities. Each contractor/subcontractor will be responsible for developing and implementing a Site-specific health and safety plan for their activities, for protection of their employees, and use of personal protective equipment. The construction contractors and subcontractors health and safety plans shall be submitted to C.T. Male prior to the work beginning. In addition, if there are training or professional certificates required for the project as per OSHA or other applicable regulations, the subcontractor(s) shall provide copies of certificates to C.T. Male before work begins. The contractor/subcontractor will also be responsible for developing and following their own Respiratory Protection Program, as applicable.

5.2 Site Survey

The potential hazards during surveying include slip and fall hazards from potentially uneven terrain. To protect against these potential hazards, any personnel completing this work should wear, at a minimum: ASTM approved steel or composite toe boots, Type R/Class 2 safety vest (ANSI/ISEA 107-2015 or 107-2020), hard hat, safety glasses, and microspikes as needed. Refer to Table 2 for potential hazards and controls associated with slip, trips, and falls.

5.3 Excavation, Grading, and Site Clearing / Building and Utility Construction

The potential hazards to personnel during this work are slip/trip/fall, excavations, working around construction & subsurface investigation machinery (hit /struck by), dermal contact and vapor inhalation of potential site contaminants. Level D protection should be sufficient to protect against these potential hazards.

5.4 Soil, Sediment, Groundwater and Surface Water Sampling

Soil and groundwater sampling are planned for the Site. Sediment and surface water sampling has a potential to be sampled but is not planned at this time. The potential hazards to personnel during this work are dermal contact and vapor inhalation of potential site contaminants. Level D protection should be sufficient to protect against dermal contact. If organic vapors are present at the action levels described in Section 5.6, on the basis of organic vapor monitoring of the area during the work, it may be necessary to upgrade to Level C respiratory protection. There is a potential for explosive gas, due to the Sites previous use as a landfill. A landfill gas meter will be utilized during work activities. If gas is detected by the landfill meter, the SHSO shall review the levels and follow the steps in Section 5.6. This may include work stopping or adjust of work areas.

5.5 Subsurface Work

Subsurface work will include the advancement of test pits and/or test borings to aid in the collection of fill/soil samples for disposal facility waste characterization; the decommissioning of monitoring wells; the excavation and temporary staging and/or direct load-out of fill/soil for off-site disposal; excavation; grading groundwater dewatering, treatment and disposal. Other subsurface work may include the relocation of wastes.

The potential hazards to personnel during this work are dermal contact and potential for vapor inhalation of potential site contaminants. Level D protection should be sufficient to protect against dermal contact during excavation of and/or handling of the subsurface soils and groundwater. If organic vapors are present at the action levels described in Section 5.6, on the basis of organic vapor monitoring of the area during the work, it may be necessary to upgrade to Level C respiratory protection. There is a potential for explosive gas, due to the Sites previous use as a landfill. A landfill gas meter will be utilized during work activities. If gas is detected by the landfill meter, the SHSO shall review the levels and follow the steps in Section 5.6. This may include work stopping or adjust of work areas.

There is a potential for encountering unexpected drums and other unforeseen environmental conditions, including but not limited to hazardous wastes, during

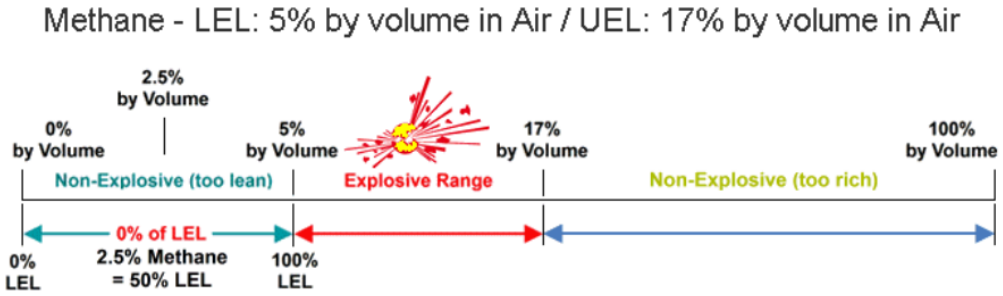
grading activities and subsurface activities. If these conditions are encountered, workers shall shut down equipment and leave the area immediately. The OHSO and SHSO will be notified of the finding and the work activity will be evaluated.

5.6 Air Monitoring

5.6.1 Landfill Gas Monitoring

The ambient air in the work area will be monitored with a gas meter (e.g., four gas meter, landfill gas monitor) that can detect at least methane and oxygen content. The instrument shall have preliminary checks completed as per manufacturer's instructions prior to using to take readings.

If the methane reading by volume reaches 1.0 to 1.25%, activities at the Site work zone are to cease, workers should leave the work zone. The Site activities will be reviewed and evaluated by the PM and/or OSHO prior to work activities restarting. The lower explosive limit for methane gas by volume is 5%. The explosive range for methane is 5% to 17% by volume.



The readings for Oxygen shall be in the range of 20.9% and 21%. If the readings are not within that range, work is to cease, and a review of site activities will be evaluated by the PM and/or OSHO.

5.6.2 VOC Monitoring

The ambient air in the work area will be monitored with a photoionization detection meter (PID, total volatile compound – MiniRAE 3000 or equivalent personal wearable

unit) on a continuous full-time basis. If a concentration of 10 parts per million (ppm) sustained for 5 minutes of total volatile compounds is detected within the work area on the instrument, relative to an isobutylene standard (used to calibrate the instrument), the workers shall leave the area immediately. C.T. Male shall immediately notify the site foreman, superintendent or construction manager leading the excavation activity of our findings. The level of personal protective equipment (PPE) protection for C.T. Male employees will be evaluated prior to continuing observation work. If a PPE upgrade to Level C is required, it will include: a half face air purifying respirator equipped with combination organic vapor and particulate cartridges for 10-15 ppm exposure levels; and a full-face air purifying respirator for greater than 15 ppm to less than 50 ppm exposure levels, prior to continuing work. If a concentration greater than 50 ppm is encountered, work will cease immediately and the situation will be evaluated prior to continuation of work. Table 5.6.2-1 summarizes the action levels relative to the required respiratory protection.

Table 5.6.2-1 - C.T. Male Action Levels & Required Respiratory Protection

Action Level	Level of PPE	Type of Respiratory Protection
0-10 parts per million	Level D	No respiratory protection
10-15 parts per million	Level C	Negative pressure half-face respirator
15-50 parts per million	Level C	Positive pressure full-face respirator
Greater than 50	Cease Work	Evaluate work procedures

-Facial hair is not permitted while wearing most respirators.

-Workers required to wear a respirator must have a minimum of OSHA 40 Hour training with current medical monitoring and fit test documentation.

5.7 Community Air Monitoring Plan

A Community Air Monitoring Plan (CAMP) will be followed for the project on the basis of the New York State Department of Health Generic Community Air Monitoring Plan dated May 2010. CAMP will be employed during ground intrusive activities having the ability to disturb the Site's fill/soil during the RA. These include the advancement of test pits and test borings and impacted fill/soil excavation/handling.

The intent of the CAMP 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 remedial work activities. The CAMP is not intended for use in establishing action levels for worker respiratory protection. The CAMP will monitor the air for dust (particulate air monitoring, see Section 5.6.1) and volatile organic compound vapors (VOC air monitoring, see Section 5.6.2) at the downwind perimeter of the work area. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown.

5.7.1 Particulate Air Monitoring

Three (3) real-time particulate monitors capable of continuously measuring concentrations of particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) will be utilized. The instruments will be placed inside environmental enclosures at temporary monitoring stations based on the prevailing wind direction each work day, one (1) upwind and two (2) downwind of the designated work areas. If the remedial action is taking place within 20 feet of occupied structures, monitoring will be conducted opposite the walls of the occupied structures or next to the structures' air intake vents.

Each particulate monitor will be equipped with a telemetry unit capable of transmitting real-time particulate data. The particulate monitoring instruments will be capable of displaying and transmitting the short term exposure limit (STEL) or 15 minute averaging period, which will be compared to the NYSDOH Generic and Special Requirements Community Air Monitoring Plan action levels for particulates, as listed below. Instrument alarms will be transmitted in real time to the Remediation Engineer and/or the Remediation Engineer's field representative via email and/or text message. The dust monitoring data for the remedial action will be stored in the Environet database and will be periodically downloaded and stored in C.T. Male's electronic project directory.

- If the downwind and/or occupied structures 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 the downwind and/or occupied structures 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.

- If, after implementation of dust suppression techniques, the downwind and/or occupied structures 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 and/or occupied structures PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

In the event of poor weather such as heavy rain, particulate monitoring will not be performed for protection of instrumentation. These weather conditions would limit the effectiveness of the sensitive monitoring equipment and likely suppress particulate generation. Work activities will be halted if fugitive dust migration is visually observed for a sustained period of time during poor weather conditions.

5.7.2 Volatile Organic Compound Air Monitoring

C.T. Male will continuously monitor for VOCs at the downwind perimeter of the immediate work areas and/or occupied structures with a MiniRAE 3000 VOC monitor (10.6 eV lamp) or equal. The VOC monitors will be placed in the downwind and occupied structures environmental enclosures containing a particulate monitor. The downwind VOC monitors will be equipped with telemetry units capable of transmitting real-time VOC data. The VOC monitoring instruments will be capable of displaying and transmitting the short term exposure limit (STEL) or 15 minute averaging period, which will be compared to the NYSDOH Generic Community Air Monitoring Plan action levels for VOCs, as listed below. The monitoring data for the remedial action will be downloaded to a PC and retained for future reference and reporting.

Upwind VOC STEL concentrations will be measured at the start of the work day and periodically thereafter employing a handheld MiniRae 3000 VOC monitor (10.6 eV lamp) to evaluate the Site's background conditions. The upwind VOC STEL readings will be manually recorded for future reference and reporting.

- If the ambient air concentration of total organic vapors opposite the walls of occupied structures exceeds 1 ppm above background for the 15-minute average, work activities will be temporarily halted, and monitoring will be conducted within the occupied structure.
- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone (not including the occupied structures) exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone (not including the occupied structures) persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown. Work activities will then be evaluated to determine the source of the organic vapors and the engineering controls required to reduce/eliminate the organic vapors.

5.8 Hazard Identification and Control

The following table presents generalized hazards potentially involved with the tasks to be completed on this project. Table 5.6-1 identifies general procedures to follow to prevent or reduce accident, injury or illness. Any worker on-site who identifies a potential hazard must report the condition to the SHSO and OHSO or designee, and initiate control of the hazardous condition.

Biological Hazards

During the Site walk through for the project task, the area will be screened for biological hazards. The most common hazards anticipated are discussed below.

Insects

Bees, wasps, yellow jackets, spiders, snakes, and mosquitoes may be a potential hazard on this project, especially so for those individuals sensitized to those bites or stings. Protection methods against insects may be employed, such as the use of protective clothing or insect repellents and training in recognition and identification of harmful insects.

Poisonous Plants

Personnel need to be aware of poisonous plants in the environment. These plants include, but not limited to, poison ivy, poison oak, and poison sumac which are identified by three leaves or five leaves emanating from a stem. The plants contain a resin that causes a delayed reaction on contact. Signs and symptoms are usually evident within 24 to 48 hours after exposure. These include burning, stinging, and blisters. Notify the Site-specific health and safety officer if these plants are observed. If exposure or contact occurs, wash the affected area, but do not spread the resin to unexposed areas.

The following table presents generalized hazards potentially involved with the tasks to be completed on this project. Table 2 identifies general procedures to follow to prevent or reduce accident, injury or illness. Any worker on-site who identifies a potential hazard must report the condition to the SHSO or designee, and initiate control of the hazardous condition.

Table 2 Potential Hazards and Control	
Potential Hazard	**Control**
Vehicular Traffic	1. Wear Hi-Vis safety vest when vehicular hazards exist. 2. Use cones, flags, barricades, and caution tape to define work area. 3. Use vehicle to block work area. 4. Use vehicle caution lights in high traffic areas within the Site. 5. Contact local police for high traffic situations on public roadways.
Slip, Trip, and Fall Protection	1. Assess work area to determine if there is a potential for falling. Additional PPE can be utilized to reduce slip, trip, fall hazards. 2. Make sure work area is neat and tools are staged in one general area. 3. Wear steel-toe boots with adequate tread and always watch where the individual is walking. Carry flashlight when walking in poorly lighted areas.
Inclement Weather	1. Stop outdoor work during electrical storms and other extreme weather conditions such as extreme heat or cold temperatures. 2. If there is lighting or thunder, staff need to stop work for 30 minutes since last occurrence and take cover in a safe location. Not in a field or under a tree. 3. Take cover indoors or in vehicle. 4. Listen to local forecasts for warnings about specific weather hazards such as tornadoes, hurricanes, and flash floods.
Utility Lines Contact	1. Contact UFPO to have utility lines marked prior to any underground excavation, trenching or drilling. UFPO must be contacted at least 72 hours prior to work. 2. Conduct onsite utility mark out by a subcontractor, if needed. 3. Refer to Site drawings for utility locations. 4. Pre-clear the utility. Refer to the guidance on clearance from Dig Safely 411 or 811.
Noise	1. Wear hearing protection when equipment such as a drill rig, excavator, jackhammer, or other heavy equipment is operating on-site. 2. Wear hearing protection whenever you need to raise your voice above normal conversational speech due to a loud noise source as this much noise indicates the need for protection.

Table 2 Potential Hazards and Control	
Potential Hazard	**Control**
	3. Hearing protection is required when measured sound exceeds 85 decibels (dB) where employees stand or conduct work.
Electrical Shock	1. Maintain appropriate distance between heavy equipment and overhead utilities; 20-foot minimum clearance from power lines; and 10-foot minimum clearance from shielded power lines. 2. Contact local underground utility locating service prior to penetrating the ground surface.
Hand and Power Tools	1. Ensure cords to tools are not frayed and are properly grounded. 2. Ensure guards for power tools are in place (such as portable circular saw) as recommended by the manufacturer. 3. Tool cutting edges are kept in proper condition so the tool will operate properly. 4. Worn or bent tools are not to be used. Tool handles must be secure. 5. When not in use, tools are stored in a dry, secure location. 6. Ensure proper PPE use with hand and power tools. Cut or puncture resistant gloves, or work gloves to provide protection may be used. Check with OSHO or SSHO prior to use of the power tools. 7. If a generator is used with the power tools, ensure there is proper ventilation for the generator.
Physical Injury	1. Wear safety glasses, reflective Hi-vis safety vest and/or shirt always when on-site. Personnel to have hearing protection on them and in use when it is required. 2. Maintain visual contact with any equipment operators and wear hard hats and Hi-vis safety vest when heavy equipment is operating on-site. Be aware of other vehicle traffic while heavy machinery is operating on-site. 3. Avoid loose clothing, long hair, and jewelry when working around rotary equipment. 4. Keep hands and feet away from drilling augers, excavation equipment tracks/tires, and other on-site heavy equipment. 5. Test emergency shut-off switches on equipment prior to daily use. 6. Wear life preserver in boats.

Table 2 Potential Hazards and Control	
Potential Hazard	**Control**
	7. Do not enter manholes or confined spaces. 8. Be aware of openings into manholes and keep area clear of trip hazards. 9. Be aware of outside terrain – steep slopes and slip, trip hazards while working. 10. Be aware of biological hazards on-site such as insects (bees, mosquitoes, and flies), ticks, spiders, and snakes. 11. Be aware of botanical hazards such as poison ivy, poison sumac, and giant hogweed.
Back Injury	1. Use a mechanical lifting device or a lifting aid where appropriate. 2. Ensure the route is free of obstructions. 3. Bend at the knees and use leg muscles when lifting. 4. Use the buddy system if lifting heavy or awkward objects. 5. Do not twist or jerk your body when lifting.
Heat Stress	1. Increase consumption of water and electrolytes while working. 2. Avoid excessive alcohol intake the night before working in heat stress situations. 3. Avoid excessive caffeine intake when working in heat stress situations. 4. Increase number of rest breaks as necessary, and rest in a shaded area. 5. Watch for signs and symptoms of heat exhaustion and fatigue. 6. Rest in cool, dry areas. 7. In the event of heat stress or heat stroke, bring the victim to a cool environment and call 911.
Cold Stress	1. Wear cotton, wool or synthetic (polypropylene) undergarments to absorb perspiration from the body. 2. Wear additional layers of light clothing as needed for warmth. The layering effect holds in air, trapping body heat, and some layers could be removed as the temperature rises during the day. 3. Pay close attention to body signals and feelings (hypothermia symptoms), especially to the extremities. Correct any problem indicators by breaking from the work activity and moving to a rest area to warm up and add additional clothing.

Table 2 Potential Hazards and Control	
Potential Hazard	**Control**
	4. Increase water intake while working. 5. Avoid excessive alcohol intake the night before working in cold conditions. 6. Increase the number of rest breaks as necessary, and rest in a warm area. 7. In the event of hypothermia or frost bite, bring the victim to a warm environment and call 911.
Fire Control	1. Smoking is not allowed on-site. 2. Keep flammable liquids in closed containers. 3. Isolate flammable and combustible materials from ignition sources. 4. Keep fire extinguisher nearby and use only if deemed safe. 5. Inform SHSO prior to a chemical being brought on-site. 6. Facility Hot Work permit may be required for certain tasks. "Hot work" means riveting, welding, flame cutting or other fire or spark-producing operation.
Media Sampling (water, soil, sediment, soil gas, etc.)	1. Wear appropriate PPE to avoid skin, eye, and inhalation contact with contaminated media. 2. Stand upwind to minimize possible inhalation exposure, especially when opening monitoring wells or closed containers/vessels. 3. Conduct air monitoring, whenever necessary, to determine level of respiratory protection. 4. If necessary, employ engineering controls to assist in controlling chemical vapors. 5. When collecting samples on or near water bodies, wear a life jacket and employ the buddy system. 6. When collecting samples from water bodies, assess water conditions and the water current and ensure that the sampling vessel is stabilized, or the water is safe to enter.
Cleaning Equipment	1. Wear appropriate PPE to avoid skin and eye contact with Alconox or other cleaning materials. 2. Stand upwind to minimize possible inhalation exposure.

Table 2 Potential Hazards and Control	
Potential Hazard	**Control**
	3. Properly dispose of spent chemical cleaning solutions and rinse accordingly.
Deer Ticks	1. Wear long pants and long sleeve shirts. Pants could be tucked into the top of socks at boot level. Shirt tucked into pants. 2. Wear insect repellant clothing, if available, see SHSO for appropriate clothing. 3. Use tick repellent, this will need to be cleared with OSHO or SHSO to ensure that new chemicals are not introduced to the Site. 4. Perform personal body checks for the presence of ticks, after field work is complete and before the personnel have left the Site. 5. Notify the Office Health and Safety Officer immediately if you have been bitten by a tick or discovered a tick on yourself.
Excavations	1. Do not stand near the edge of an excavation, regardless of how deep or shallow the excavation might be. Maintain a distance of at least five (5) feet away from the excavation edge. 2. Do not enter any excavations, regardless of how deep or shallow the excavation might be. 3. Always remain in the view of the excavator operator. Do not stand behind the excavator.
Explosive Gas Monitoring	1. Be cautious when using equipment to drive the sampling point into the ground. 2. Wear gloves at all times when installing the sampling point. 3. Maintain sufficient air space between the end of the explosive gas sampling point to prevent incidental inhalation. 4. Employ the buddy system to alert others of your presence on-site.
Setting Survey Points	1. Wear appropriate PPE to avoid skin, eye, and inhalation contact with contaminated media. 2. Stand upwind to minimize possible inhalation exposure, especially when near monitoring wells, sludge and sewage areas, or closed containers/vessels.

Table 2 Potential Hazards and Control	
Potential Hazard	**Control**
	3. Conduct air monitoring, whenever necessary to determine level of chemical vapors and determine respiratory protection. 4. If necessary, employ engineering controls to assist in controlling chemical vapors.
Note: A first aid kit and fire extinguisher will be located in the C.T. Male company vehicle.	

Response actions to personal exposure from on-site contaminants include skin contact, eye contact, inhalation, ingestion, and puncture or laceration. The recommended response actions are presented in Section 11.2.

5.9 Airborne Infectious Disease Plan and COVID-19

C.T. Male will follow applicable CDC, OSHA, New York State, and Local authorities for COVID-19 and other related infectious diseases. To address work Site safety regarding infectious disease exposure (including COVID-19), C.T. Male personnel will follow C.T. Male Associates 'Airborne Infectious Disease Exposure Prevention Plan' dated August 5, 2021. This plan would be followed when an airborne infectious disease is designated by the NYS Health Commissioner as a highly contagious communicable disease that presents a serious risk of harm to the public health.

For field activities, C.T. Male shall follow C.T. Male's SOP – 'Procedures for field staff in relation to COVID-19 or other virus', dated March 19, 2020, when applicable.

In addition to the above referenced Plan and SOP, C.T. Male employees will not report to work and notify their supervisor immediately if they are experiencing illness such as fever, cough, shortness of breath or difficulty breathing, chills, repeated shaking with chills, muscle aches, sore throat, loss of taste or smell, or runny/stuffy nose.

C.T. Male will also:

- Make effort to hold safety/tailgate meetings outdoors; maintain social distancing of six feet;
- Avoid sharing tools and equipment without cleaning and disinfecting;

- Avoid touching their eyes, nose and mouth with unwashed hands;
- Cover their cough or sneeze with a tissue, then throw the tissue in the trash;
- Clean and disinfect frequently touched objects and surfaces using a bleach solution or wipe; and,
- Wash their hands often with soap and water for 20 seconds, and use an alcohol-based hand sanitizer that is 60% alcohol when soap and water are unavailable.

6.0 TRAINING

Site specific training of workers and personnel will be conducted and provided by the SHSO or OHSO or designee prior to any on-site activity. The training will specifically address the activities, procedures, monitoring and equipment for the site operations. It will include area and facility layout (including a walkthrough of the site), hazards, emergency services (police, hospital, fire, etc.), and review of this HASP. Questions by workers, field personnel, etc. will be addressed at this time.

Workers and personnel conducting and/or supervising the project must have attended and successfully completed a 40 Hour Health and Safety Training Course for Hazardous Waste Operations, an annual 8 hour Refresher Course, a 10-hour Occupational Safety and Health Training Course in Construction Safety & Health, and take part in an employer medical surveillance program in accordance with OSHA 1910.120 requirements, specifically, that the workers have had a medical physical within one (1) year prior to the date the work begins and that they are physically able to wear a respirator, and have been fit tested.

Documentation of training and medical surveillance will be submitted to the OHSO or designee prior to the start of any on-site work. A copy of the training certificates shall be maintained by the OSHO and Human Resources Department at the C.T. Male Latham Office.

7.0 SITE ACCESS

The RA will be performed within the Site boundaries. Due to the Site location, it is possible that the public or curious bystanders will be present at the time of the work. Therefore, the exclusion/work zone will be considered any area of the Site where exposed waste exists. Only OSHA trained C.T Male staff which are qualified to do the work and have read and signed this Site specific HASP and have been briefed by the SHSO will be allowed within the exclusion/work zone. The exclusion/work zone will be secured, at a minimum, with construction fencing to prevent unauthorized entry. The SHSO or designee will be responsible for limiting access to unauthorized individuals employed by C.T. Male, visitors to the Site, and the general public. Other subcontractors and contractors will be responsible for limiting/granting access to their employees.

The Contamination Reduction Zone (decontamination area), and Support Zone (clean area) shall be established outside the work area as necessary. The work/exclusion, contamination reduction and support zone during the RA work have been identified and designated as follows:

Exclusion Zone - The location of the exclusion zone will be determined in the field prior to the start of work and will vary depending on the work activities conducted. For the most part, the exclusion zone is anticipated to be a 25-foot buffer around the edge of any waste disturbance. The outside exclusion zones may be delineated with cones and yellow caution tape or equal method, where applicable. Only authorized C.T. Male employees with proper training and protective gear will be allowed to enter the exclusion zone. If the exclusion zones, as previously explained, changes orientation during the completion of the work, the HASP will be amended in the field to reflect the change.

Contamination Reduction Zone – If applicable, this zone will generally be a 10'± by 10'± area, marked off with stakes and blue and white colored flagging or equal method, containing the decontamination pad. The location will be determined in the field prior to the start of work and will vary depending on the area(s) the work is being conducted. This zone is where decontamination of personnel and equipment will take place, as necessary, on the basis of the work being performed. It will be located upwind of the Exclusion Zone, if possible.

Support Zone - Area outside of contamination reduction zone and not including the exclusion zone. Unauthorized or untrained C.T. Male employees must remain in this zone.

8.0 PERSONAL PROTECTION

8.1 Level of Protection

Based on evaluation of the potential hazards, the minimum level of protection to be worn by workers during implementation of the RA activities is defined as Level D protection and will be determined by the SHSO or designee.

The minimum level D protective equipment will consist of field clothes, Hi-Vis vests, Hi-Vis shirts, rubber gloves **(NITRILE and/or PVC ONLY)**, safety glasses, face covering (COVID-19) and safety boots (steel or composite toed). As appropriate, this level of protection may be modified to include hard hats, ear plugs, protective suits **(NOT TYVEK)**, coveralls, leg chaps, or face shield for additional protection.

If required, level C protective equipment will consist of the items listed for Level D protection with the added protection of a half face air purifying respirator or a full-face air purifying respirator equipped with combination organic vapor and particulate cartridges as outlined in Section 5.5., chemical resistant clothing **(NOT TYVEK)**, inner and outer chemically resistant gloves (i.e. nitrile and/or PVC), and chemical resistant safety over boots. Prior to field staff donning a respirator, C.T. Male PM and OSHO will need to approve the use of the respirator and staff donning them. Staff that have medical clearance and have been fit tested, should have their full-face or half-face air purifying respirators available. Appropriate combination organic vapor and particulate cartridge filters will be available at the Site to use, if necessary, with the air purifying respirators.

Level A or B is not anticipated, but if required, level B protective equipment will consist of the items listed for Level D protection except a self-contained breathing apparatus (SCBA) will be worn dependent on the level of contaminants present in the work zone, and protective suits **(NOT TYVEK)** will be required. When site conditions warrant the need for level A or B protective equipment, work will cease, and the project will be re-evaluated to determine the necessity for employing engineering controls to reduce or eliminate the potential contaminants of concern. C.T. Male staff are not approved for donning SCBA equipment.

8.2 Safety Equipment

Basic emergency and first aid equipment will be available at an area within the Support Zone clearly marked and available or within C.T. Male company vehicle. This shall include, at a minimum, a first aid kit, fire extinguisher, supply of potable water, hand sanitizer, soap, towels face coverings, Clorox wipes or bleach solution. Extra PPE will also be kept in the work area, or within C.T. Male company vehicle.

The construction manager/general contractor will be responsible for maintaining their own basic emergency and first aid equipment.

9.0 COMMUNICATIONS

9.1 General

The SHSO or designee shall be equipped with a mobile phone in case of emergencies. The SHSO or designee shall notify the C.T. Male project manager as soon as safely possible in the event of an accident, injury or emergency action. C.T. Male employee shall not be working in a work zone alone and may rely on the Contractor for emergency assistance if a mobile phone is not available or is inoperable.

Hand signals for certain work tasks will be employed, as necessary, and the buddy system will be employed during excavation, grading, construction, sampling, relocation of wastes and drum management activities.

Employing a buddy system will allow a person to travel to the construction trailer in the event of an emergency, exposure or injury.

9.2 Tailgate Safety Meetings

Prior to the daily start of work, a tailgate safety meeting shall be held between C.T. Male and any subcontractor. The content of the meeting shall be what work tasks are planned, what hazards may exist, what controls are being put in place and what emergency actions will be taken. Each person working on Site shall be familiar with the location of the hospital and reminded to call 911 in the case of an emergency.

10.0 DECONTAMINATION PROCEDURES

10.1 Personnel Decontamination Procedures

Decontamination procedures will be carried out by all personnel leaving the Exclusion Zone (except under emergency evacuation). The amount of decontamination performed will be dependent on the level of personal protection currently being worn within the exclusion zone.

1. Do not remove respiratory protection until all steps have been completed.
2. Clean outer protective gloves and outer boots, if worn, with water (preferably with a pressurized washer) over designated wash tubs in the exclusion zone to remove the gross amount of contamination.
3. Deposit equipment used (tools, sampling devices, and containers) at designated drop stations - on plastic drop sheets or in plastic lined containers.
4. Rinse outer boots if worn and gloves with clean water in designated rinse tubs. Remove outer boots if worn and gloves and deposit in designated area to be determined in the field for use the next day or when necessary. If disposable outer boots are worn, remove and discard in designated container.
5. Remove hard hat & safety glasses, rinse with clean water as necessary and deposit in designated area for use the next day or when necessary. Use of Clorox wipes (or similar, with EPA registered disinfectants for protection against SARS-CoV-2).
6. Remove Tyvek suit, if worn, and discard in designated container. Remove respirator at this time, if used; wash and rinse with clean water. Organic vapor cartridges, when used, will be replaced daily. Used cartridges will be discarded in the designated waste container. Remove inner gloves and discard in designated container.
7. Prior to entering the C.T. Vehicle, ensure that C.T. Male SOP for field staff in relation to COVID-19 is followed, if applicable.

10.2 Equipment and Sample Containers Decontamination

All decontamination will be completed by personnel in protective gear appropriate for the level of protection determined by the site SHSO or designee. Manual sampling equipment including scoops, hand augers, and shovels which come into contact with the Site's soils and sediment, will be cleaned with a tap water (or filtered water)/detergent wash and a tap water (or filtered water) rinse. The sampling equipment will be decontaminated after each sample is collected at the Contaminant Reduction Zone (Decontamination Station). The sampling equipment wash, and rinse water will be captured in plastic pails or tubs and ultimately transferred to labeled appropriate storage container(s) (e.g.: DOT 17H approved 55-gallon open top steel drum or frac tank) and staged on-Site at a secure location.

Drill rig equipment (i.e., casing, drill rods, bits, core samplers) which comes into contact with the Site's soils will be decontaminated with a high pressure/hot water wash and/or other methods within the Contaminant Reduction Area. The cleaning will be performed at the completion of each boring location. Equipment decontamination wastes will be transferred to labeled appropriate storage containers and staged on-Site at a secure location.

Larger equipment (i.e., drill rig, excavator) which comes into contact with the Site's soils will be decontaminated with a hot water wash and/or other methods within a decontamination pad. The decontamination procedure will focus on portions of the equipment that has come into contact with the Site's soils such as the tires, excavator bucket and tracks. The cleaning will be performed prior to the equipment leaving the Site. Equipment decontamination wastes will be transferred to labeled appropriate storage containers and staged on-Site at a secure location.

Exterior surfaces of sample containers will be wiped clean with disposable paper towels in the decontamination zone and transferred to a clean cooler for transportation or shipment to the analytical laboratory. Sample identities will be noted and checked off against the chain-of-custody record. The disposable paper towels will be placed in the designated disposal container and disposed of as solid waste.

11.0 EMERGENCY RESPONSE PROCEDURES

THE PROJECT EMERGENCY COORDINATOR IS:

Project Manager	Jim McIver 845.454.4400, ext. 111 (O) 845.594.1788 (C)
Office Health and Safety Officer (OHSO)	Nancy Garry 518.786.7541 (O) 518.320.5783 (C)
Site Health and Safety Officer (SHSO)	To be determined, based on field staff onsite

The following standard emergency procedures will be used by on-site personnel. The Project Manager, OHSO, and SHSO shall be notified of any on-site emergencies and be responsible for assuring that the appropriate procedures are followed.

11.1 Personal Injury

Emergency first aid shall be administered on-site as deemed necessary and only by a trained individual, if available at the Site. If a trained individual is not available on-site, decontaminate, if feasible, and transport individual to nearest medical facility (St. Luke's Cornwall Hospital). A map depicting the route to St. Luke's Cornwall Hospital is shown as Figure 2. If feasible, the injured individual shall not transport themselves to the nearest medical facility. The SHSO will be responsible for completing the incident report in conjunction with the employee.

11.2 Personal Exposure

The recommended response to worker exposure from contaminants on-site includes the following:

SKIN CONTACT: Use generous amounts of soap and water. Wash/rinse affected area thoroughly, then provide appropriate medical attention, as necessary.

EYE CONTACT: Wash eyes thoroughly with potable water supply provided on site. Eyes should be rinsed for at least 15 minutes subsequent to

chemical contamination. Provide medical attention, as necessary.

INHALATION: Move worker to fresh air and outside of the work zone and/or, if necessary, decontaminate and transport to hospital (St. Luke's Cornwall). If respirator use is implemented at the time of inhalation, worker must not remove respirator until completely away from the work zone.

INGESTION: Decontaminate, if feasible, and transport to hospital (St. Luke's Cornwall).

PUNCTURE WOUND OR
LACERATION: Provide first aid at the site and if wound needs medical attention, decontaminate, if feasible, and transport to hospital (St. Luke's Cornwall).

If the affected worker is exposed to contaminants on-site and the injury or accident prevents decontamination of the individual, the emergency responders must be notified of this condition and the exposure must be kept to a minimum.

11.3 Potential or Actual Fire or Explosion

Immediately evacuate area in the event of potential or actual fire or explosion. Notify the local fire and police departments, and other appropriate emergency response groups, as listed in Section 1.2. Perform off-site decontamination and contain wastes for proper disposal. If a fire or explosion occurs, all on-site personnel must meet in the designated area of the Site (established by the SHSO or designee) for an accurate head count.

11.4 Equipment Failure

Should there be any equipment failure, breakdown, etc. the Project Manager and SHSO shall be contacted immediately. The Project Manager or the SHSO will make every effort to replace or repair the equipment in a timely manner.

11.5 Spill Response

The SHSO or designee shall initiate a corrective action program with the subcontractors in the event of an accidental release of a hazardous material or suspected hazardous material. The SHSO or designee will act as the Emergency Coordinator with the subcontractors for the purposes of: spill prevention; identifying releases; implementing clean up measures; and notification of appropriate personnel.

The corrective action program will be implemented by the SHSO and subcontractor to effectively control and minimize any impact accidental releases may have to the environment.

Effective control measures will include:

- Preliminary assessment of the release
- Control of the release source
- Containment of the released material
- Effective clean-up of the released material

Potential sources of accidental releases include: hydraulic oil spills or petroleum leaks from heavy equipment; and spills from unexpected encounter of drums, vats, vessels, and tanks. The SHSO/Emergency Coordinator in conjunction with the subcontractor shall respond to an accidental release in the following manner:

- Identify the character, source, amount and area affected by the release.
- Have subcontractor take all reasonable steps to control the release.
- Notify the NYSDEC Spill Hotline at 1-800-457-7362. Notify NYSDEC Project Manager Kiera Thompson and the City of Newburgh.
- Contain the release with sorbent material which should include speedi-dry, spill socks and sorbent pads.
- Prevent the release from entering sensitive receptors (i.e., catch basins and surface water) using the specified sorbent material or sandbags.
- Coordinate cleanup of the release material.
- Oversee proper handling and storage of contaminated material for disposal.

At no time should personal health or safety be compromised or jeopardized in an attempt to control a release. All health and safety measures as outlined in this HASP should be adhered to.

12.0 ADDITIONAL WORK PRACTICES

Workers will be expected to adhere to the established safety practices. Work on the project will be conducted according to established protocol and guidelines for the safety and health of all involved. The following will be adhered to:

- Employ the buddy system when possible, and for those work tasks which require it. The buddy system may be applied by utilizing contractor staff. Establish and maintain communications.
- Minimize contact with potentially contaminated soil and water.
- Employ disposable items when possible to minimize risks during decontamination and possible cross-contamination during sample handling.
- Smoking, eating, or drinking after entering the work zone and before decontamination will not be allowed (to prevent oral ingestion of potential on-site contaminants).
- Avoid heat and other work stress related to wearing personal protective equipment. Take breaks as necessary and drink plenty of fluids to prevent dehydration.
- Withdrawal from a suspected or actual hazardous situation to reassess procedures is the preferred course of action.
- The removal of facial hair (except mustaches) prior to working on-site will be required to allow for a proper respiratory face piece fit.
- The Project Manager, the OHSO, the SHSO and sampling personnel shall maintain records recording daily activities, meetings, facts, incidents, data, etc. relating to the project. These records will remain at the project Site during the full duration of the project so that replacement personnel may add information while maintaining continuity.

13.0 AUTHORIZATIONS

Personnel authorized to enter the exclusion zone at the Brownfield Cleanup Program lcoated at the 5 Scobie Drive Site in the City of Newburgh, Orange County, New York while operations are being conducted must be certified by the OHSO or SHSO. Authorization will involve completion of appropriate training courses, initial jobsite briefing including a walkthrough of the project site, and review and sign off this HASP prior to entry.

Personnel authorized to perform work on-site are as follows:

1. James D. McIver C.T. Male Associates
2. Kristine Garbarino C.T. Male Associates
3. Jeffrey Marx C.T. Male Associates
4. Dan Achtyl C.T. Male Associates
5. Jon Dippert C.T. Male Associates
6. Aimee Smith C.T. Male Associates
7. Rosaura Andújar-McNeil C.T. Male Associates
8. Brittany Taranto C.T. Male Associates
9. Mary Loughlin C.T. Male Associates
10. Chris Ormsby C.T. Male Associates
11. Ryan Hubbard C.T. Male Associates
12. Nancy Garry C.T. Male Associates
13. Cliff Bondi C.T. Male Associates
14. Dan King C.T. Male Associates
15. Alex Malamet C.T. Male Associates
16. C.T. Male Associates

14.0 FIELD TEAM REVIEW

Each field team member shall sign this section after site specific training is completed and before being permitted to work on-site.

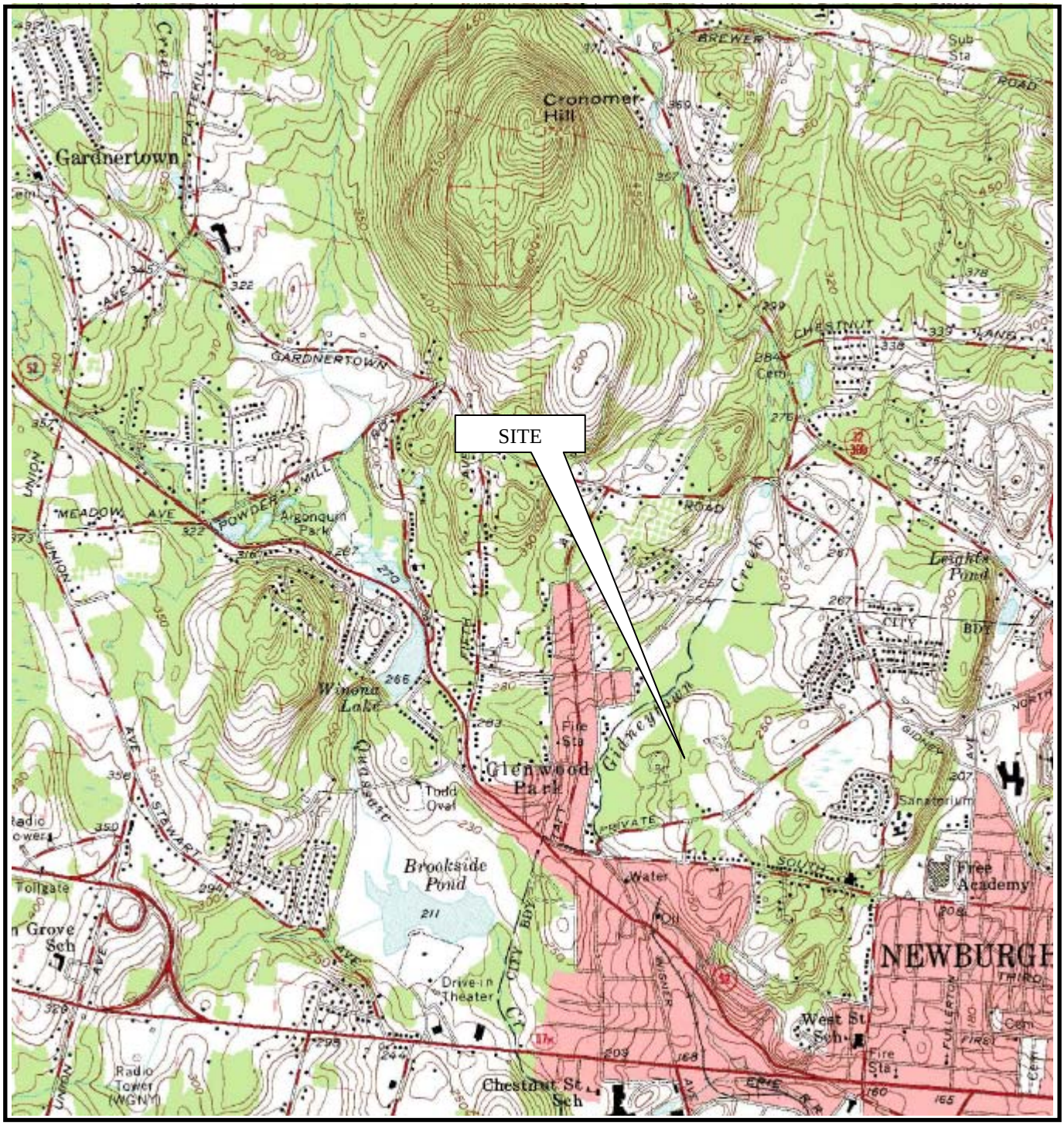
I have read and understood this Site Specific Health and Safety Plan, and I will comply with the provisions contained therein.

PROJECT: Remedial Action
5 Scobie Drive Site
City of Newburgh
Orange County, New York

Name: Printed	Signature	Date

FIGURE 1

SITE LOCATION MAP



MAP REFERENCE
United States Geological Survey
7.5 Minute Series Topographic Map
Quadrangle: Newburgh, NY
Date: 1957

N

C.T.MALE ASSOCIATES
ENGINEERING, SURVEYING, ARCHITECTURE & LANDSCAPE ARCHITECTURE, P.C.

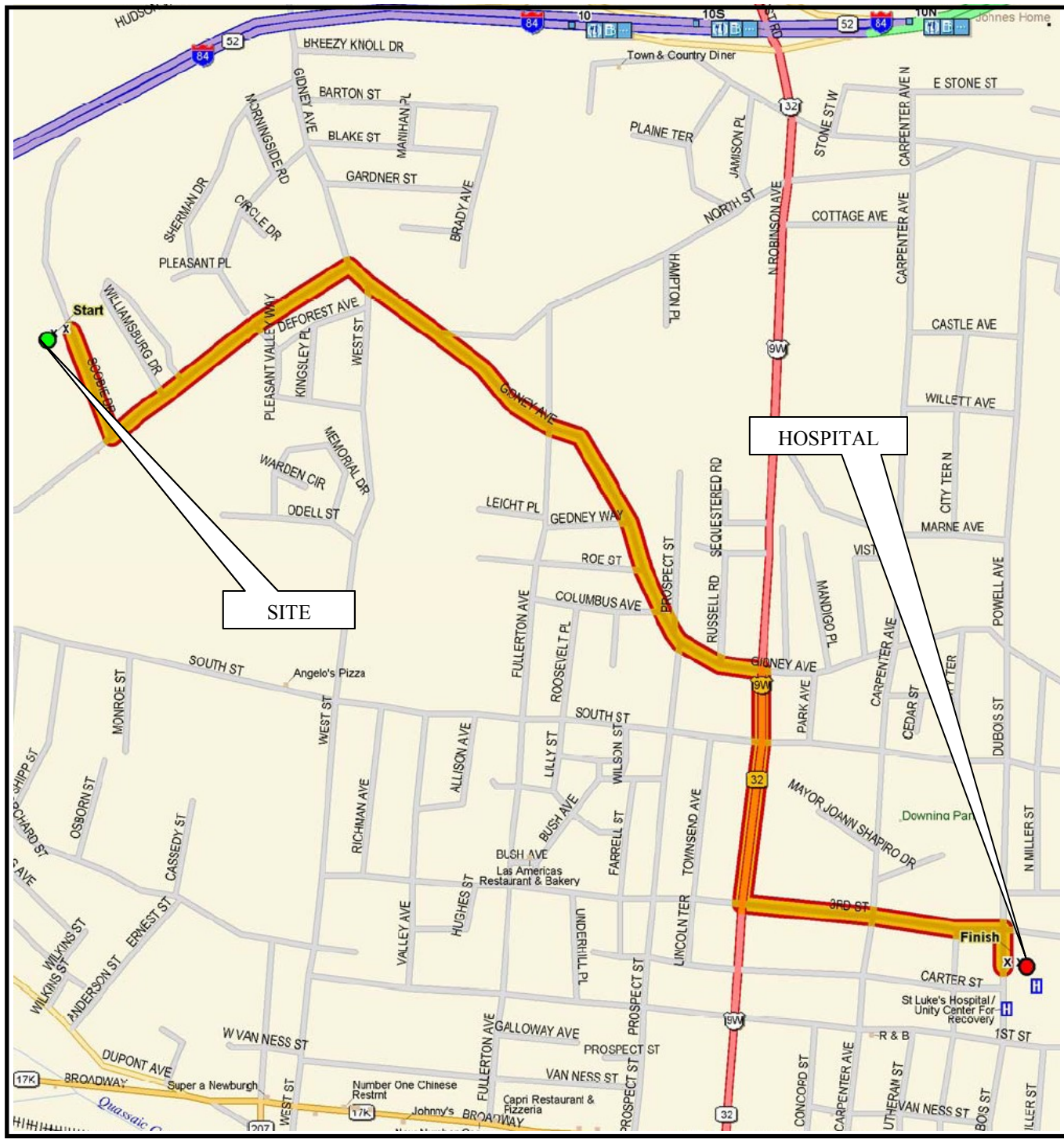
50 CENTURY HILL DRIVE
LATHAM, NY 12110

FIGURE 1 - SITE LOCATION MAP

CITY OF NEWBURGH	ORANGE COUNTY, NY
SCALE: 1:2,000±	The locations and features depicted on this map are approximate and do not represent an actual survey.
DRAFTER: ASG	
PROJECT No: 13.3061	

FIGURE 2

MAP SHOWING ROUTE TO ST. LUKE'S CORNWALL HOSPITAL



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LATHAM, NY 12110

FIGURE 1 – MAP SHOWING ROUTE TO ST. LUKE'S – CORNWALL HOSPITAL

CITY OF NEWBURGH	ORANGE COUNTY, NY
SCALE: Not to Scale	The locations and features depicted on this map are approximate and do not represent an actual survey.
DRAFTER: ASG	
PROJECT No: 13.30--	

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	EDGE OF PAVEMENT	
FACE / BACK	CURB	FACE / BACK
	DEPRESSED CURB	
	SIDEWALK	
X X	FENCES	X X
	ROADWAY SIGNS	
	WETLAND LINE	
	'B' INLET	
	'E' INLET	
D	STORM MANHOLE	D
S	SANITARY MANHOLE	S
	FLARED END SECTION	
	HEADWALL	
	HYDRANT	
	POLE MOUNTED LIGHT	
75 / 74	CONTOURS	75 / 74
× G 29.0	SPOT ELEVATION	× G 29.0
	DIRECTION OF OVERLAND FLOW	
× TC 29.0	TOP OF CURB ELEVATION	× TC 29.0
× BC 29.0	BOTTOM OF CURB ELEVATION	× BC 29.0
	TOP OF DEPRESSED CURB ELEVATION	× TDC 29.0

TRENCHES TO A MAX DEPTH OF 10-12', DEPENDING ON EXTENT OF LANDFILLED MATERIAL

RED DOTS - TEST PIT TO A MAX DEPTH OF 10-12', DEPENDING ON EXTENT OF LANDFILLED MATERIAL

WETLAND BUFFER ~ 100 FT

INTERSTATE ROUTE 503-I-7.2
184

100-YR FLOODPLAIN BOUNDARY

LOADING DOCK ELEV = 252.5

FFE = 256.5

PROPOSED DISTRIBUTION FACILITY
125,000 SF
31 LOADING DOCKS
125 EMPLOYEE PARKING SPACES
30 TRAILER STORAGE SPACES
FFE = 256.50

MATCH LINE WEST

MATCH LINE EAST

225'

556'

RIDGE

SCOBIE DRIVE

NOTE: IN LIEU OF TRENCHING, SEVERAL TEST PITS CAN BE EXCAVATED ALONG THE PROPOSED TRENCHING LINES DEPENDING ON THE WORK THAT CAN BE ACCOMPLISHED IN 5 DAYS WITH THE EXCAVATOR. ALTERNATIVELY, TRENCHING COULD BE REDUCED TO 6 TO 7 TRENCHES DEPENDING ON THE WORK THAT CAN BE ACCOMPLISHED 5 DAYS WITH THE EXCAVATOR.

GRADING NOTES:

1. PROPOSED GRADE ELEVATIONS SHOWN AT BUILDING LINE ARE GROUND ELEVATIONS.
2. PROPOSED SPOT ELEVATIONS IN PAVEMENT AREAS ARE TOP OF FINISHED PAVEMENT.
3. PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDING FOUNDATION.

50 0 50 100

SCALE : 1" = 50'

Linear unit of measure: US Survey Foot (1 ft = 1200/3937 m)

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REV	DATE	DRAWN BY	DESCRIPTION

Andrew B Fetherston
NEW YORK LICENSED PROFESSIONAL ENGINEER
LICENSE NUMBER: 073555-01
COLLIERS ENGINEERING & DESIGN CT, P.C.
N.Y. C.O.A #: 0017609

PRELIMINARY SITE PLAN

FOR

SCOBIE INDUSTRIAL PARTNERS, LLC

SECTION 1
BLOCK 1
LOT 6

CITY OF NEWBURGH
ORANGE COUNTY
NEW YORK STATE

Colliers Engineering & Design
NEWBURGH
555 Hudson Valley Avenue
Suite 101
New Windsor, NY 12553
Phone: 845.564.4495
COLLIERS ENGINEERING & DESIGN, ARCHITECTURE, LANDSCAPE ARCHITECTURE, SURVEYING CT, P.C. DOING BUSINESS AS MASER CONSULTING ENGINEERING & LAND SURVEYING

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	05/10/2024	KAS	JED

PROJECT NUMBER:	DRAWING NAME:
23013237A	C-GRAD

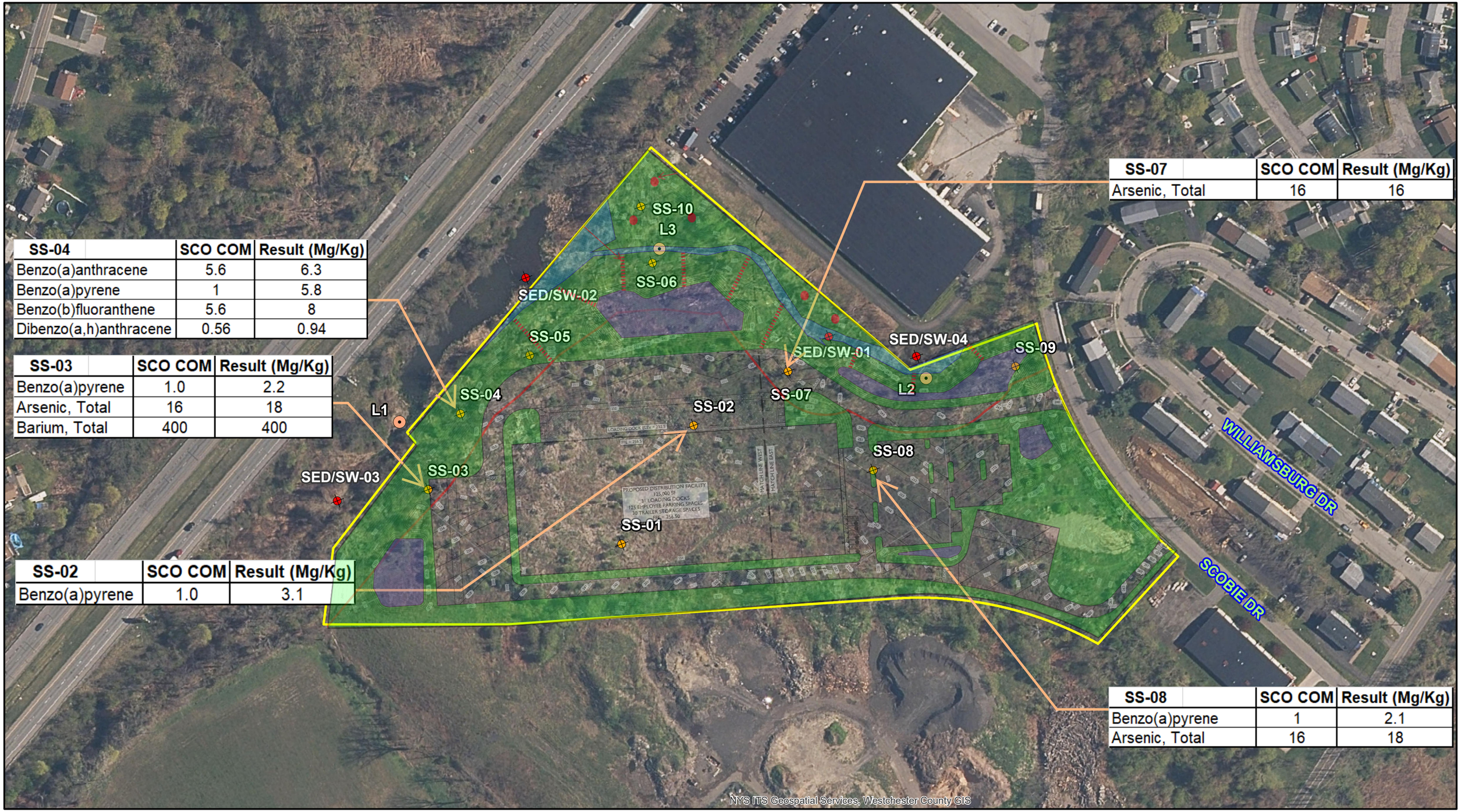
SHEET TITLE:

OVERALL GRADING PLAN

SHEET NUMBER:

C-4.0

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



SS-04	SCO COM	Result (Mg/Kg)
Benzo(a)anthracene	5.6	6.3
Benzo(a)pyrene	1	5.8
Benzo(b)fluoranthene	5.6	8
Dibenzo(a,h)anthracene	0.56	0.94

SS-03	SCO COM	Result (Mg/Kg)
Benzo(a)pyrene	1.0	2.2
Arsenic, Total	16	18
Barium, Total	400	400

SS-02	SCO COM	Result (Mg/Kg)
Benzo(a)pyrene	1.0	3.1

SS-07	SCO COM	Result (Mg/Kg)
Arsenic, Total	16	16

SS-08	SCO COM	Result (Mg/Kg)
Benzo(a)pyrene	1	2.1
Arsenic, Total	16	18

0 150 300 450 FT

1 inch = 150 feet

Project Number: 13.3061
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (feet)
Date: August 22, 2023
File: Fig6_Parameters_SS_SED_SW11x17_BlankMap2023.mxd
GIS: D Landreville
Edits: E White

Legend

- L1 — Approximate Leachate Seeps Location and Number
- SED/SW-01 — Approximate Sediment and Surface Water Sampling Location and Number (collected 5/19/14 & 5/20/14)
- SS-01 — Approximate Surface Soil Sampling Location and Number (collected 5/19/14 & 5/20/14)
- Property Boundary (Approx)

NOTES:

SCO ER: Soil Cleanup Objective Ecological Resources

SCO COM: Soil Cleanup Objective Commercial Use

NY-AWQS: TOGS 1.1.1 Ambient Water Quality Standard

MG/KG: Milligrams per Kilogram or Parts per Million

UG/L: Micrograms per Liter or Parts per Billion

Figure 6 - Surface Soil Parameters Above Commercial Use SCOs

5 Scobie Drive Site

City of Newburgh — **Orange County, New York**

C.T. MALE ASSOCIATES
ENGINEERING, SURVEYING, ARCHITECTURE & LANDSCAPE ARCHITECTURE, D.P.C
50 CENTURY HILL DRIVE, LATHAM, NEW YORK 12110
(518) 786-7400 * FAX (518) 786-7299 * WWW.CTMALE.COM
FOUNDED IN 1910

TP-17 (1.5')	SCO COM	Result (Mg/Kg)
Benzo(a)pyrene	1	4.3
Dibenzo(a,h)anthracene	0.56	0.64
Barium, Total	400	710
Copper, Total	270	480
Lead, Total	1,000	13,000
Mercury, Total	2.8	32

TP-35 (3')	SCO COM	Result (Mg/Kg)
Arsenic, Total	16	23
Barium, Total	400	1,200
Copper, Total	270	850
Lead, Total	1,000	3,300
TP-35 (5')	**SCO COM**	**Result (Mg/Kg)**
Benzo(a)pyrene	1	1.7
Dibenzo(a,h)anthracene	0.56	1.2
Barium, Total	400	590
Mercury, Total	2.8	4

TP-19 (1.5')	SCO COM	Result (Mg/Kg)
Benzo(a)pyrene	1	5.4
Benzo(b)fluoranthene	5.6	7.7
Dibenzo(a,h)anthracene	0.56	1

TP-9 (8')	SCO COM	Result (Mg/Kg)
Arsenic, Total	16	54
Barium, Total	400	500
Lead, Total	1,000	1,200
Mercury, Total	2.8	3.2

TP-5 (4.5')	SCO COM	Result (Mg/Kg)
Lead	1,000	1,200

TP-31 (1')	SCO COM	Result (Mg/Kg)
Benzo(a)pyrene	1	3.2
Barium, Total	400	470
Copper, Total	270	510
Mercury, Total	2.8	5.6

TP-15 (9.5')	SCO COM	Result (Mg/Kg)
Benzo(a)pyrene	1	2.5

TP-11 (5')	SCO COM	Result (Mg/Kg)
Barium, Total	400	580
Lead, Total	1,000	1,200
Mercury, Total	2.8	8.1

TP30 TP28 TP27 TP22 TP20 TP7 TP29 TP21 TP19 TP26 TP23 TP18 TP6 TP17 TP8 TP9 TP37 TP16 TP39 TP25 TP40 TP14 TP5 TP10 TP34 TP4 TP12 TP35 TP32 TP31 TP15 TP3 TP1 TP24 TP36 TP38 TP13 TP33 TP11 TP2

84

SCOBIE DR

WILLIAMSBURG DR

NYS ITS Geospatial Services, Westchester County GIS

0 150 300 450 FT

1 inch = 150 feet

Project Number: 13.3061
Data Source: NYSGIS Clearinghouse, BING
Projection: State Plane NAD83 NYE (feet)
Date: August 22, 2023
File: Fig8_Parameters_SubsurfaceSoil11x17_BlankMap2023.mxd
GIS: D Landreville
Edits: E White

Legend

- TP25 — Approximate Test Pit Location and Number - Sample Not Submitted For Laboratory Analysis
- TP12 (11') — Approximate Test Pit Location and Number - Sample Submitted For Laboratory Analysis with Depth at Which Sample was Collected
- Property Boundary (Approx)

NOTES:

SCO COM: Soil Cleanup Objective Commercial Use
MG/KG: Milligrams per Kilogram or Parts per Million

Figure 8 - Subsurface Soil Parameters Above Commercial Use SCOs

5 Scobie Drive Site

City of Newburgh — **Orange County, New York**

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C.T. MALE ASSOCIATES ENGINEERING,
SURVEYING, ARCHITECTURE,
LANDSCAPE ARCHITECTURE &
GEOLOGY, D.P.C

STANDARD OPERATING PROCEDURE

SURFACE and SUBSURFACE SOIL SAMPLING

December 28, 2017

Print	Technical Reviewer	Signature	Date
Print	QA Manager	Signature	Date

Review of the SOP has been preformed and the SOP still reflects the current practice			
Initials		**Date**	
Initials		**Date**	

SOP: SURFACE AND SUBSURFACE SOIL SAMPLING

1.0 PURPOSE

This standard operating procedure (SOP) provides the methodology for collecting discrete surface and subsurface soil samples to characterize the nature of soil contamination, the areal and vertical extent of contaminated soil, to determine the geotechnical, physical, and chemical properties of the soil, and for remedial action confirmatory and/or documentation sampling.

2.0 SCOPE

This SOP applies to all C.T. Male Associates personnel and sub consultants engaged in collecting or otherwise handling surface or subsurface soil samples.

This SOP focuses on the most commonly used soil sampling tasks and applications and should be used in conjunction with other applicable project SOPs, including the following:

- SOP: Note Taking and Field Logs.
- SOP: Organic Vapor Monitoring and Air Monitoring
- SOP: Drilling and Associated Sampling Methods.
- SOP: Equipment Decontamination Procedures.
- SOP: Field Screening Soil Samples
- SOP: Collection of Quality Control Samples
- SOP: Documentation on a Chain-of-Custody
- SOP: Domestic Transport of Samples to Laboratories in USA

3.0 GENERAL

Selecting the proper methods and tools for surface and subsurface soil sampling is a critical part of field investigations and remedial actions. This SOP describes the

methods generally used for surface and subsurface soil sampling, as well as the tools commonly used.

Soil sample collection activities should adhere to the note-taking, decontamination, labeling, packaging, shipping, storage, and chain-of-custody requirements applicable to the soil sampling activities being conducted according to the site-specific QAPP.

Personnel who collect or handle the soil samples should wear, at a minimum, disposable nitrile gloves to prevent cross-contamination and provide personal protection. New gloves should be donned for sample collection at each location, or whenever gloves are torn or otherwise compromised. The project-specific Health and Safety Plan (HASP) provides information on site-specific personal protective equipment (PPE) requirements.

4.0 RESPONSIBILITIES

4.1 Project Manager

The Project Manager is responsible for providing adequate resources and ensuring that field staff have adequate experience and training to successfully comply with and execute project-specific SOPs and implement the project health, safety, and environment (HS&E) program. The Project Manager will solicit the appropriate technical expertise to identify suitable sampling methods and technology for the job given the current understanding of the site and project goals.

4.2 Health & Safety Officer

The Health & Safety Officer is assigned to oversee site-specific HS&E and ensure overall compliance with project HS&E requirements. The Health & Safety Officer conducts PPE evaluations, selects the appropriate PPE for the project, lists the requirements in the site-specific HASP, coordinates with the Field Team Leader to complete and certify the PPE program, and conducts project Health & Safety audits on the effectiveness of the HS&E program.

4.3 Site Health and Safety Officer

The role of Site Health and Safety Officer is delegated to the Field Team Leader by the Project Manager to assist in implementing the project HASP. The Project Manager

and/or Health & Safety Officer assists the Site Health and Safety Office /Field Team Leader with the health and safety program, implements the PPE requirements described in the project HASP and receives input from project staff that the assigned PPE requirements and on-going HS&E procedures are effective.

4.4 Field Team Leader

The Field Team Leader should ensure that soil samples are collected according to this procedure and other SOPs identified in Section 2.0. The Field Team Leader should also be required to make rational and justifiable decisions when deviations from this procedure are necessary because of field conditions or unforeseen problems. The Field Team Leader should consult the Project Manager if deviations from the site-specific QAPP are necessary because of field conditions. The Field Team Leader should document that the applicable requirements the site-specific HASP are followed.

5.0 PROCEDURES

5.1 General Guidelines

The following procedures should be used to collect soil samples for laboratory analysis:

- Unless otherwise specified, laboratory soil samples must be discrete samples and may not be composited before analysis.
- Soil samples must be collected according to the method specifications appropriate for the laboratory parameters to be analyzed.
- Soil samples must be collected with disposable or clean tools that have been decontaminated as outlined in SOP, Equipment Decontamination Procedures.
- Disposable nitrile gloves (at a minimum) must be worn and changed between sample collections.
- Soil samples must be placed in containers quickly and in the order of volatility; for example, volatile organic aromatic samples must be taken first, gasoline range organics next, heavier range organics next, and soil classification samples last.

- Sample containers must be quickly and adequately sealed, and rims must be cleaned before tightening lids; tape may be used only if known not to affect sample analysis.

- Sample containers must be labeled and handled as outlined in the site specific QAPP.

- Samples must immediately be preserved according to the method specifications appropriate for the laboratory parameters to be analyzed. And unless specified otherwise, at a minimum, the samples must be immediately chilled to 4 ±2 degrees Celsius (°C) and this temperature must be maintained through delivery to the laboratory for analysis.

- Sample holding times must conform to the method specifications of the required analytical methods.

- Alternative methods to obtain soil samples may be used only if the alternative methods have been approved by the Project Manager and documented in the site-specific QAPP and Environmental Services field Log.

- Soil samples collected for analysis of volatile organic compounds (VOCs), Per & Poly-fluoroalkyl substances (PFAS), and gasoline range organics (GROs) will be collected with special precautions as detailed below in Section 5.7.

- Each soil sample fraction collected for analyses other than VOCs, PFAS, GRO, or VPH will be thoroughly homogenized using a sampling spoon or trowel. The homogenized material will then be divided equally among the appropriate sample containers. The sample containers will then be sealed tightly. Care should be taken so that the sampling tools and containers (such as spoons and bowls) used for sample collection and homogenization does not interfere with the analytes of interest.

- Multi-incremental samples (MIS) should be collected by placing equal amounts (or aliquots) of soil collected from multiple locations into a decontaminated, dedicated collection container. The aliquots will then be homogenized using a sample collection tool such as a scoop or spoon. The homogenized material will

be divided equally among the appropriate sample containers, and the sample containers will be sealed tightly.

5.2 Sampling Tools and Equipment

Equipment that may be used to facilitate the collection of surface or subsurface soil samples includes, but is not limited to, the following items:

- Photoionization detector (PID) devices.
- Stainless-steel trowel, scoop, or spoon.
- Stainless-steel hand (bucket) auger.
- Stainless-steel or carbon steel split spoon, split barrel, or macro-core sampler.
- Shovels, pickaxes, pick mattocks, or similar excavating tools.
- Soil core samplers (En Core® sampler, TerraCore®, or equivalent), except for PFAS.
- Stainless-steel bowls or pans.
- Paper towels.
- Decontamination equipment (buckets, brushes, Alconox, etc.).
- High-density polyethylene (HDPE) sheeting.
- PPE.
- Sample cooler.
- Ice.
- Sample jars and labels.
- Chain-of-custody forms.
- Soil classification charts.

- Ziploc® (or similar) re-sealable bags.
- Survey stakes or flags.
- Hammer.

5.3 Decontamination

Before collecting soil samples, reusable, non-disposable sampling equipment should be decontaminated. Decontamination supplies must be on hand so that equipment can be decontaminated in the field if sampling equipment is to be reused. Each piece of reusable sampling equipment should be decontaminated between each sample location or sampling interval. Procedures presented in SOP Equipment Decontamination Procedures, shall be followed for decontamination of re-usable field equipment and for personnel decontamination.

Disposable sampling equipment will be used whenever feasible to minimize decontamination and the potential for cross-contamination. Disposable sample equipment will be observed before use to document that it is clean and free of potential contaminants.

5.4 Surface Soil Sampling

Surface soil sample will be collected using a stainless steel scoop, spoon, or other appropriate tools. Samples for VOC and PFAS analysis will be collected directly from the soil column at the specified sampling depth interval if possible. For non-VOC samples (i.e., PCBs), the sampler, wearing clean disposable nitrile gloves, will remove materials, including pebbles and roots, from the mixture as the sample is collected. Each non-VOC sample will be collected by thoroughly homogenizing material from the appropriate depth interval from the respective sampling location. A clean, decontaminated stainless-steel scoop or spoon will be used to collect the soil sample and fill all laboratory-supplied analytical sample containers.

5.5 Subsurface Soil Sampling

Before subsurface soil sampling, each sample location should be checked and cleared for buried utilities before intrusive activities begin.

5.5.1 Shallow Subsurface Soil Sampling with Hand Tools

Shallow subsurface soil samples can be collected by hand using a variety of sampling equipment and devices. Common equipment used to collect shallow subsurface soil samples include soil coring devices, various types of hand augers (bucket-type, continuous-flight, and posthole), and other common hand tools such as shovels and pickaxes. Depending on field conditions or sampling objectives, several types of sample collection equipment may be used to collect soil samples at a single location. Of the equipment listed, only soil coring devices collect an undisturbed soil sample and thus are recommended for sampling of VOCs. Bucket augers and other common hand tools are not recommended when an undisturbed soil sample for volatile organics is desired. Sampling personnel should choose the sampling equipment that is best suited for project requirements and task needs.

Using a decontaminated hand auger (or similar equipment), the soil borehole will be advanced to the depth immediately above the sampling interval, and cuttings will be removed from the borehole. Before advancing a borehole, remove unnecessary rocks, twigs, and other non-soil materials from the selected sampling location. Assemble the sampling equipment, if necessary, per the manufactures specifications and place the sampler in position with the bit or cutting shoe touching the ground. Begin turning the auger with a clockwise motion or driving the soil core device with the slide hammer until the desired sampling depth is obtained. During advancement of the auger or coring device, cuttings from within and around the borehole will be periodically removed and placed next to the borehole. If the sample is to be collected using the same hand auger or soil coring device, the auger bucket or core sampler will be decontaminated (or replaced with a decontaminated bucket or sampler) before collecting the soil sample. The discrete sample will then be collected by advancing the sampling equipment to the appropriate depth interval and retrieving the soil sample. When collecting samples at depths greater than 12 inches, it is advisable to discard approximately the upper 1 inch of material in the top portion of the auger or sampler because of borehole slough and cave-in. The sample will then be promptly transferred into laboratory-cleaned sample containers using a decontaminated stainless steel spoon or trowel.

5.5.2 Deep Subsurface Soil Sampling

Deep subsurface soil samples are typically collected using split-spoon and/or macro-core samplers. A split-spoon sampler is a soil coring device that consists of a length of carbon or stainless-steel tubing, split longitudinally and equipped with a sample shoe and a drive head. A macro-core sampler is a soil coring device that consists of a length of stainless steel tubing equipped with a screw-on sample shoe and drive head. Split-spoon samplers and macro-core samplers are used in conjunction with a power auger drill rig or direct-push vehicle, and are usually either hammered or hydraulically pushed into the interval to be sampled. The interval(s) to be sampled may be either predetermined or determined according to criteria observed during advancement of the drilling equipment as specified in the site-specific QAPP. The following procedures focus on sampling soil for chemical analysis, using a split-spoon or direct push system continuous macro-core sampler. Soil samples obtained for physical characterization are typically collected using similar procedures.

Drilling Method

Using hollow stem auger or advancing flush joint casing, the soil borehole will be advanced to the depth immediately above the sampling interval as described in SOP for Drilling and Associated Sampling. Utilize a split-spoon sampler to collect a relatively undisturbed, representative soil sample during the drilling activities. Standard Penetration Test blow counts for that sample, as well as the interval from which the sample was obtained, will be recorded on the Subsurface Exploration Logs. Depending on the size of the split-spoon employed, typically 18 to 24 inches of soil should be recovered in advance of the drill bit. The split-spoon sampler will then be removed from the borehole and opened exposing the soil core for sample collection and examination. Soil samples for laboratory analysis should be collected from the undisturbed, middle portion of the soil core and soil from the very ends of the soil core must be discarded as they often contain disturbed soils. The sample will then be immediately and quickly transferred into clean, laboratory sample containers using a decontaminated stainless steel spoon or scoop as described in Section 5.1. The soil core will be examined by the field geologist, screened for VOCs

using a PID (see SOP Organic Vapor Monitoring and Air Monitoring), and logged for lithology on the Subsurface Exploration Log.

Direct Push System Drilling Method

Direct push system soil samples are typically collected using a continuous macro-core sampler with acetate liners using the direct push system drilling procedures described in SOP for Drilling and Associated Sampling. At the top of each sample interval, the macro-core sampler will be driven into the substrate to a depth equal to the length of the sampler. After the sampler has been advanced, it is retrieved from the borehole and the acetate liner containing the soil core is placed on a firm, horizontal surface, for opening, inspection, and sampling. The acetate liner for each sample core is then cut open to expose the soil sample core for soil sampling and examination. Samples for laboratory analysis will be immediately transferred into clean laboratory sample containers using a decontaminated stainless-steel spoon or scoop, as described in Section 5.1. The soil core will then be examined by the field geologist, screened for VOCs using a PID, and logged for lithology. Special attention must be given to labeling and storage of individual core samples when continuous soil samples are collected from a single boring. In many instances, soil cores can be produced faster than they can be opened, logged, screened and sampled by a Field Geologist/Environmental Scientist. In those instances when a backlog of cores is being generated, protect the cores from direct sunlight, excessive ambient temperatures, and rain. These conditions may have an adverse effect on highly sensitive volatile organics within the core or the instruments used for screening. Keep the cores labeled so that the up/down orientation is not lost. If necessary, log soils for lithology information after sample collection.

5.6 Excavation and Stockpile Sampling

Soil sampling of excavations and stockpiles should be conducted using similar techniques as described in Sections 5.4 and 5.5.1.

5.6.1 Excavation Sampling

When collecting soil samples from excavations including test pits, soil samples should generally be collected from freshly uncovered soil. Remove 4 to 6 inches of soil promptly before sample collection. If the excavation has been open for longer

than 1 hour, remove at least 12 inches of soil immediately before collection. Do not collect samples from disturbed soil that has fallen into the bottom of the excavation pit. If the depth of the excavation (i.e., greater than 4 feet) is such that sampling cannot be safely conducted within the excavation, soil samples may be collected directly from the excavator bucket. When collecting soil samples from an excavator bucket, samples should be collected from the center of the bucket and away from the bucket sides. Refer to the project-specific HASP and/or consult with the Project Manager and/or Health & Safety Officer regarding excavation safety before entering open excavations.

5.6.2 Stockpile Sampling

Stockpiled soil must be field screened before sample collection. Field screening and analytical soil samples must be collected at least 18 inches beneath the exposed surface of the stockpile, unless additional shallower field screening samples are needed to represent soil contaminant heterogeneity. Contamination can be persistent near the bottom of long-term stockpiles, so some samples shall be collected near the base. Soil samples from the surface, within, and near the bottom of a stockpile will be collected using the methods previously discussed in Sections 5.4 and 5.5.1.

5.7 Volatile Organic Soil Sampling

If VOCs are among the analytes to be investigated at a particular site, discrete soil samples will be collected following opening of the soil core. Soil samples for VOC analysis should be collected in a way that minimizes sample volatilization through excessive atmospheric exposure, mixing, and/or other disturbance. It is recommended that VOC samples be collected using core-type samples such as split-spoons, macro-core samplers, and soil coring devices that reduce the loss of volatiles during sampling. Soil core samplers must be constructed of non-reactive materials that will minimize the loss of volatile organics from the sample.

VOC soil samples analyzed using U.S. Environmental Protection Agency (EPA) Method SW8260B will be collected as follows:

- To collect a sample, have ready a pre-weighed, pre-preserved, and labeled 40 mL VOC vial containing methanol (MeOH) supplied by the laboratory. Place 10 grams of soil into the VOC vial containing 10 mL of MeOH. Interim storage/containers (such as resealable plastic bags) are not allowed.
- After sealing, gently agitate the sample so that entire sample is submerged.
- Do not place tape, including evidence tape, on the container directly.
- Samples collected shall be placed inside coolers to maintain the samples at 4°C ±2 degrees Celsius (°C).
- Collect a sample of the same material from the same location in an unpreserved jar for percent moisture determination.
- Collect appropriate field and laboratory quality control samples including field duplicates and matrix spike/matrix spike duplicate (MS/MSD) samples.
- Analytical samples should be collected in the following order:
    - VOCs, GRO, VPH, and BETX
    - Semi-volatile organic compounds (SVOCs); including pesticides, herbicides, diesel range organics (GRO) , residual range organics (RRO), and polychlorinated biphenyls (PCBs)
    - Total Organic Carbon
    - Metals
- VOC samples should be accompanied by an appropriate trip blank from the time of the collection until analysis at the project laboratory.

VOC soil samples analyzed using U.S. Environmental Protection Agency (EPA) Method SW-846 Method 5035A will be collected as follows:

- Discrete soil samples can be collected using a 5-gram soil core sampler with a new, dedicated, and disposable sample syringe or tip as described in American

Society for Testing and Materials (ASTM) standard D6418-09. These devices are used to collect a specific soil sample mass for volatile organic analysis in a manner that minimizes loss of contaminants because of volatilization or biodegradation. Frequently accepted discrete soil core samplers are listed below.

  - En Core® sampler
  - TerraCore® sampler
  - EasyDraw Syringe® with PowerStop Handle® sampler
  - Core N' One™ sampler
  - Lock N' Load™ sampler

- Soil samples will be collected from a specified location and soil depth as determined by field screening or as determined in the project-specific HASP. After determining the sample location, the soil core sampler will be plunged into the soil core to collect a sample.
- To collect a sample, have ready a pre-weighed, pre-preserved, and labeled 40 mL VOC vial containing sodium bisulfate/water preservative. With the syringe or plunger seated in the handle, push the soil core sampler into freshly exposed soil until the sample chamber is filled. Do not pull the syringe or plunger back before use.
- Wipe soil or debris from the outside of the soil core sampler and remove excess soil that extends beyond the end of the sampler, so that the soil plug is flush with the end of the sampler. A filled chamber will deliver approximately 5 grams of soil.
- Place the mouth of the soil core sampler into the 40-ml VOC vial containing sodium bisulfate/water preservative and extrude the 5-gram sample into the VOC vial by pushing the syringe or plunger down.
- Quickly seal the lid back on the 40-ml VOC vial.

- Take care not to leave soil grains along the threaded cap area of the VOC vial so that the lid can be screwed on tightly forming a tight seal. Be sure to remove soil or debris from the top and/or threads of the vial.

- Following collection, samples will be labeled with unique sample identification, and packaged appropriately.

- Samples collected shall be placed inside coolers to maintain the samples at 4°C ±2 degrees Celsius (°C).

- VOC containers should be padded so that the glass walls of the containers do not come into direct contact with ice or other samples, thereby reducing the risk of cracking the glass containers.

5.8 PFAS Soil Sampling

If PFAS are among the analytes to be investigated at a particular site, discrete soil samples will be collected following the surface or subsurface investigation activity. Soil samples for PFAS analysis should be collected in a way that minimizes sample volatilization or degradation through excessive atmospheric exposure, mixing, and/or other disturbance. PFAS samples shall be collected using split-spoons, macro-core samplers, and hand tools.

PFAS soil samples analyzed as specified in the site specific work plan and site specific QAPP. Samples should be collected as follows:

- Soil samples will be collected from a specified location and soil depth as determined by field screening or as determined in the project-specific work plan.

- To collect a sample, place soil into a laboratory supplied container specifically required for PFAS media samples. Ensure non-PFAS containing PPE is used.

- Wipe soil or debris from the outside of the sample container and place lid on container.

- Following collection, samples will be labeled with unique sample identification, packaged appropriately, and kept at a temperature of approximately 4 degrees Celsius inside a cooler for preservation.

- Containers should be padded so that the glass walls of the containers do not come into direct contact with ice or other samples, thereby reducing the risk of cracking the glass containers.

5.9 Diesel Range Organics (DRO) / SVOC / General Chemistry / Metals

Using either a composited sample or a homogenized, discrete sample, fill the remaining containers in the order listed in the QAPP. Unless aliquot weights are listed, pack the soil into the sample jars leaving no headspace. If allowed by applicable regulations, the WIDRO sample may be weighed directly into the sample container by placing the pre-weighed sample container on the field balance, taring the field balance, then adding the appropriate amount of soil to the container to reach the desired sample weight (~25 g).

Wipe the container lip and screw threads to remove soil and provide a good sealing surface, and immediately screw on the lid.

5.10 Quality Assurance/Quality Control Procedures and Samples

Quality Assurance/Quality Control (QA/QC) samples will be collected during soil sampling according to the site-specific QAPP and will include duplicate (replicate), matrix spike, matrix spike duplicate, trip blank and equipment (field) blank samples. One set of QA/QC samples will be collected per 20 field samples per media (i.e., soil, groundwater, etc.).

QA/QC samples will be assigned unique sample identifications and handled and submitted to the laboratory the same as field samples.

5.10.1 Equipment Blanks

An equipment blank sample is collected in the field by running ASTM Type II Reagent-Grade water (or deionized water with less than 15 microSiemens conductivity) across the surface of re-usable, decontaminated sampling equipment and into appropriate sample containers.

5.10.2 Field Duplicate Samples

Field duplicate samples will be collected simultaneously or in immediate succession to the normal samples using identical sampling techniques.

5.10.3 Matrix Spikes and Matrix Spike Duplicates

Matrix spike/matrix spike duplicate samples will be collected simultaneously or in immediate succession to the normal samples using identical sampling techniques.

5.10.4 Trip Blanks

A trip blank is a sample of analyte-free water prepared by the laboratory, taken to the sampling site along with the sample bottles, and returned to the laboratory for analysis, to measure possible cross contamination of containers/samples during shipping to and from the site. Typically there is only one trip blank per chain of custody per sample cooler, except when trip blanks require different preservatives for different methods.

6.0 Handling

After collection, all samples should be handled as few times as possible. Samplers should use extreme care to ensure that samples are not contaminated. Immediately after samples are collected, they are bubble wrap or bagged and placed in a cooler containing bagged ice. Samples will be kept cold (≤ 6 °C, but not frozen) until receipt at the laboratory, where they are to be stored in a refrigerated area. Keep samples secure to prevent tampering. If sample coolers are left in a vehicle or field office for temporary storage, the area will be locked and secured.

6.1 Shipment/Delivery

Once the cooler is packed to prevent breaking of containers, the proper COC documentation is relinquished by the sampler, placed into a plastic bag, and included in the cooler. Custody seals may be used, and the coolers should be taped shut if not hand delivered.

7.0 DISPOSAL

Waste generated by this process will be disposed of in accordance with Federal, State and Local regulations and SOP 'Investigative Derived Waste'. Where reasonably feasible, technological changes have been implemented to minimize the potential for environmental pollution.

8.0 RECORDS

Records should be documented on the Environmental Services Field Logs and Subsurface Exploration Logs.

9.0 DEFINITIONS

Discrete soil sample: A discrete aliquot from a distinct sampling interval (of a specific sample size) that is representative of one specific location at a specific point in time.

Surface soil: Generally considered to be the top 6 inches of a soil horizon profile (that is, soil from 0 to 6 inches bgs), soil down to depths of 2 feet bgs may be considered surface and/or near-surface soil.

Subsurface soil: The soils below surface soil.