Landfill Soil Gas Investigation Workplan (Preliminary)

Pursuant to Technical Guidance for Site Investigation and Remediation (DER-10) & NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York

5 Scobie Drive Landfill
NYSDEC BCP Site No. C336085

5 Scobie Drive
Section 1, Block 1, Lot 6
City of Newburgh
Orange County, New York

Colliers Engineering & Design Project Number: 23013237A

Revision 2 – February 2025

Prepared for:

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CERTIFICATION

5 SCOBIE DRIVE, NEWBURGH, NEW YORK

LANDFILL SOIL GAS INVESTIGATION WORKPLAN

I, John Fortunato, an employee of Colliers Engineering & Design, CT, PC, certify that I am currently a New York State registered professional engineer as defined in 6 NYCRR Part 375, and that this Landfill Soil Gas Investigation Workplan was prepared in accordance with applicable statutes and regulations and in substantial conformance with DER-10 "Technical Guidance for Site Investigation and Remediation" dated May 3, 2010 through Errata Sheet dated April 9, 2019. This work plan is being submitted on behalf of Scobie Industrial Partners, LLC as a delegated engineering document under the responsible charge of the delegator (CT Male), the Engineer-of-Record. This document is a "preliminary" workplan pending agency review and approval.

PE No.	Date	Signature

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1.0 Introduction

This Landfill Soil Gas Investigation Workplan, prepared by Colliers Engineering & Design CT, PC (CED), serves as an addendum to the Remedial Action Work Plan (RAWP) revision prepared by C.T. Male Associates (CT Male) dated May 21, 2024 and submitted to the New York State Department of Environmental Conservation (NYSDEC) on behalf of Scobie Industrial Partners, LLC (SIP). The RAWP was prepared as required under the voluntary Brownfield Cleanup Agreement (BCA) with the NYSDEC for the prospective redevelopment of the 5 Scobie Drive Landfill site (BCP No. C336085).

1.1 Site Location and Description

The subject property consists of the 15.24 acre BCA area of the 18.3 acre parcel (the "subject property") identified as municipal Lot 6 of Section 1, Block 1 within the City of Newburgh ("the City"), Orange County, NY that is owned by the City of Newburgh Industrial Development Agency (IDA). The portion of the subject property evaluated under this workplan consists of a 2.87-acre (125,000 square foot) area for a proposed distribution facility (the "Site"). The subject property, located west of Scobie Drive and south of Interstate 84, is vacant, overgrown land that operated as an unpermitted landfill. The property can be accessed via Scobie Drive.

The site location is shown on the excerpt from the United States Geological Survey (USGS) topographic Newburgh 7.5-minute series quadrangle map provided as **Figure 1**. The conceptual plan for the proposed distribution facility is included as **Figure 2**.

1.2 Description of Surrounding Property

The property is located in a commercial/industrial setting bordered to the west by the Newburgh Department of Public Works (DPW) facility and to the east by Scobie Drive and by a commercial facility. A tributary of the Gidneytown Creek flows from southeast to northwest separating the northern portion of the property from Interstate 84 / New York Route 52. A commercial facility is located to the south of the property, and a residential area is located east of Scobie Drive.

1.3 Project Background and Objectives

The IDA entered into the BCA as a "Volunteer" as defined in ECL 27-1405(1)(b) in July 2013. BCA amendments in March 2023 reduced the BCP Site to the 15.24 acre area of the subject property and added SIP as a Volunteer, because of its role as a future site owner and the developer. The City IDA and SIP selected "Limited Excavation, Surface Cover, Institutional and Engineering Controls, and Groundwater Monitoring" as the remedial cleanup option which included implementing an explosive gas monitoring program beneath proposed building and incorporating a sub-slab depressurization system (SSDS) into the building design. The RAWP dated May 21, 2024 was approved by the NYSDEC in a letter to SIP dated June 4, 2024.

The objective of this workplan is to prepare policy and procedures for evaluating landfill soil gas distribution and relative concentrations across the 125,000 square foot for assessing potential sub-slab vapor conditions and for designing the SSDS as necessary under the selected remedial cleanup option. The balance of remedial activities and landfill gas mitigation is under the responsible charge of CT Male, the Engineer-of-Record.

2.0 Physical Setting

2.1 Land use

The former landfill site is a vacant and densely vegetated with trees, shrubs, brush, and vines. The property is zoned "industrial" by the City.

2.2 Topography

According to the current USGS 7.5-Minute Topographic Map, the elevation of the subject property ranges from approximately 230 to 240 feet above mean sea level (msl). Topography slopes to the east and toward the drainage swale to the northeast. Site reconnaissance (**Section 3.3**) confirmed the topographic relief which varies approximately 10 feet across the property.

2.3 Soils and Geology

According to prior subsurface investigations (**Section 3.2**), the majority of shallow subsurface materials consist of mixed daily cover materials and landfilled waste materials. These materials extend up to 36± feet below ground surface (bgs) according to boring logs prepared by others and are further described under **Section 3.2**.

The US Department of Agriculture, Soil Conservation Service (SCS) SSURGO data indicates the majority of the underlying native soils are classified as the Mardin gravelly silt loam and Alden silt loam soil series which are moderately to poorly drained. Central portions of the Site are also described as the Udorthents smoothed channery loam and very gravelly sandy loam. Geogenic deposits are mapped as poorly sorted glacial till consisting of clay, silt-clay, and boulder clay according to the Surficial Geology Map of the State of New York, Lower Hudson Sheet (Caldwell, 1989). Soils during subsurface exploration in prior investigation were described as well sorted to poorly sorted fine to coarse sand containing varying percentages silt, gravel, and cobbles relatively consistent with the published reports.

The bedrock is the Wappinger Group consisting of the Copake and Rochdale Limestone and Dolostone Formations (Geologic Map of New York, Lower Hudson Sheet; Fisher, Isacksen and Rickard, 1970) which is consistent with prior exploration findings. The subject property is located within the Hudson-Mohawk Lowlands physiographic province. According to cross-sections presented in the Remedial Investigation Workplan prepared by CT Male (**Section 3.2**), the bedrock surface is approximately 46 feet below grade.

2.4 Hydrogeology

CT Male (**Section 3.2**) indicates groundwater was encountered from 6.92 to 21.78 feet bgs across the property according to monitoring well construction logs provided in the Draft Remedial Investigation Report (RIR) prepared December 2014. Groundwater seeps were identified along north-eastern portions of the tributary. Perched water may exist within the fill. The depth to water beneath the proposed building footprint portions may range from 10 to 30 feet from grade based on the ground water elevation contour maps presented in the RIR. Groundwater generally flows to the north toward the tributary.

2.5 Hydrology

Federal wetlands are mapped on the northern and eastern portions of the subject property following the general course of the Gidneytown Creek tributary. FEMA Flood Insurance Rate Map (No. 36071C0143E, effective August 3, 2009) indicates the area falls within the 100-year and 500-year flood zones.

3.0 Record Review

Information collected from online public governmental records and databases and supplemented by records provided by CT Male was relied upon for background information. The review included information available on the NYSDEC Environmental Remediation Database, such as the RAWP and prior remedial investigation reports and documentation pertaining to a buried drum investigation and cleanup action. This historical documentation was used in assessing potential conditions and contaminants of concern that may pose a vapor intrusion risk to the prospective development.

3.1 Site History

As reported by CT Male and summarized in the NYSDEC online records, the Site operated as an unpermitted landfill by the City from the late 1940s until 1962, accepting municipal and potentially industrial and incinerator waste. In 1962, landfill operations ceased when the NYSDOT acquired the land for a potential I-84 on/off ramp. However, disposal activities may have continued in other areas of the landfill accepting sludge and other waste products from DuPont and Stauffer Chemical companies until the City halted landfill operations in 1976. This landfill was not closed in conformance with 6 NYCRR Part 360.

The subject property underwent site characterization and a USEPA emergency removal action for drums that were buried by DuPont and Stauffer Chemical companies on the adjoining land identified as the Dupont-Stauffer Landfill, now the City of Newburgh DPW site, and partly extended onto northwestern portions of the subject property. The removal action, which was completed in 2011, included drums and contents removal and disposal, backfilling the excavations with excavated waste materials (such as scrap metal and tires) in coordination with the USEPA, and adding clean fill to the affected area. Remedial investigation and remedial action design for landfill closure and prospective redevelopment subsequently were initiated further described below.

3.2 Prior Environmental Reporting

The Site has been subject to environmental investigation since 1984. Remedial actions, including drum removal, were completed on the land occupied by the DPW yard and northwestern portions of the subject property. Soil borings, test pits and groundwater monitoring well locations are depicted on the investigation maps also showing the proposed building footprint in this workplan as **Figure 3**. The prior investigation reports provide pertinent information such as the characteristics of the landfilled wastes, the contents of hazardous substance containers (e.g., drums), the approximate depth / thickness of the wastes and first encountered groundwater. Field and laboratory data also are available for field (soil) vapor via jar headspace measurements, and soil, groundwater, sediment, and surface water.

The following reports were available for CED review:

1. Final Draft Inspection Report, Newburgh Landfill, NUS Corporation, 1988
2. Report for the Characterization of Drums, City of Newburgh DPW Landfill, First Environment, 2002
3. Phase I Environmental Site Assessment (ESA), Vacant Parcel, 7-13 Scobie Drive (now 5 Scobie Drive), Newburgh, New York, HRP Associates, 2004
4. Drum Characterization Report, Newburgh DPW Landfill, Camp Dresser and McKee (CDM), 2008
5. Drum Cache Area Operating Plan, O'Brien and Gere for DuPont-Stauffer, 2011
6. Drum Cache Area Removal Action Report (RAR), The City of Newburgh/Newburgh City Landfill Superfund Site (CERCLIS ID #NYD980534846) Newburgh, New York, Site Number 3-36-063, O'Brien & Gere, April 2013

7. Draft Remedial Investigation Report (RIR), 5 Scobie Drive Site, CT Male, December 2014
8. Remedial Action Work Plan (RAWP), 5 Scobie Drive, CT Male, May 21, 2024

Prior environmental soil investigation locations falling within the proposed building footprint consisted of two (2) soil borings (SB-3 and SB-7) and nine (9) test pits (TP-14 through TP-18, TP-24, TP-25, TP-39, and TP-40). Soil boring, test pit, and monitoring well locations relative to the proposed facility footprint are shown on **Figure 3.**

The inferred daily cover soils are described as silts and sands with gravel. Waste materials encountered included ash, slag, wood, glass, plastic/vinyl, porcelain, wood/timber, tires, brick, metal, paper products, and rubber. Suspect asbestos-containing material (ACM), Transite pipe, was reported during the drum remedial action. The refuse materials reportedly extend between approximately 13 to 36.4 feet bgs according to investigation logs prepared by others.

A buried 55-gallon drum was reported at approximately 5 to 6 feet in test pit TP-8, located approximately 160 feet east of the prospective building. The drum reportedly contained "liquid" and a photoionization detector (PID) measurement taken within the drum registered 398 parts per million (ppm). The drum was reportedly staged and covered with sheeting near the test pit location. Buried drums were discovered by the NYSDEC on the DPW site while inspecting an adjoining property as documented in their April 2002 letter. The drums subsequently were removed under an Administrative Consent Order (ACO) as described in the April 2013 O'Brien & Gere report.

The drum investigation and remedial action did not extend to the proposed building footprint. However, CED notes the area of drums reported in the May 2004 Phase I ESA does not correspond to the remediated area shown in the RAR. Therefore, the potential for drums on the subject property cannot be ruled out. The drums were deposited from the Dupont-Stauffer landfill approximately 60 feet to the west beyond the DPW western adjacent property. Drum contents reportedly contained fabric, plastic resins, and black sludge which failed RCRA ignitability and Toxicity Characteristics Leaching Procedure (TCLP) levels for lead and chromium.

Volatile organic vapors were detected at levels up to 110.9 ppm in soil jar headspace measurements. Notably, black, or greenish to gray staining also were reported in test pits TP-5, TP-9, TP-11, TP-15, and TP-20. Strong odors and black staining was reported in soil borings SB-2, SB-5, and SB-10. Soil sample and laboratory analysis data falling within the 125,000 square foot proposed building footprint appears to be limited to two (2) soil samples collected from test pits TP-15 and TP-17. Laboratory analysis samples detected several VOCs at levels below the NYSDEC industrial and ground water Soil Cleanup Objectives (SCO). Semi-volatile organic compounds (SVOCs), including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene and chrysene, exceeded one or more SCO. Mercury concentration exceeded both respective SCOs in a soil sample collected from TP-17.

The single monitoring well (MW-3) installed within the subject Site area was "dry" during the prior investigation. The depth to water reported for the closest well (CTM-MW-2) to the site was 20.62 feet from the top of the well casing. The depth and construction of MW-3 is not described in the reports that CED reviewed. The inferred depth to groundwater within the building footprint area is projected to be between 20 to 30 feet bgs based on the groundwater elevation contour maps.

The subsurface cross-sections prepared by CT Male, suggests the majority of waste material is not consistently saturated; only portions of the waste below 240 feet msl appear to fall within the saturated zone which varies seasonally. Perched water was noted within several borings and test pits between approximately 8 to 10.5 feet below bgs. There is potential for perched water at various depth intervals within the investigation area due to the heterogeneity of the landfilled. Leachate seeps were reported along northeastern limits of the property tributary.

Groundwater samples – collected following a three-volume purge – contained several VOCs (benzene, chlorobenzene; 1,4-dichlorobenzene; and naphthalene) above the respective NYSDEC Ambient Water Quality Standards. SVOCs detected in samples from at least two (2) monitoring wells contained compounds also found in soil samples on the subject property, such as benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and chrysene above the NYSDEC Industrial Soil Cleanup Objective. No free product was observed during the groundwater investigation. However, the well screens do not appear to be set within the waste material or across the vadose zone; therefore, light non-aqueous phase liquids (LNAPLs) may have been missed. It does not appear an evaluation was conducted for dense non-aqueous phase liquids (DNAPLs).

Based on the prior investigation results and anticipated pile foundations, a preferential pathway for vapors exists for prospective development. The potential for vapor intrusion cannot be ruled out.

3.3 Site Reconnaissance

Following site clearing coordinated by CT Male for their supplemental subsurface investigation (report submitted to the NYSDEC under separate cover), CED conducted site reconnaissance on October 15. 2024 to observe current site conditions and compare observations to the records that were reviewed in accordance with DER-10. We note our observations of the ground surface were limited by vegetative debris resulting from the clearing activities, and dense vegetation remaining on the northwestern portion of the site.

During reconnaissance, drums and storage containers were observed on the embankment along proposed southwestern portions of the subject property adjacent to the DPW facility. The drums were in deteriorated condition and appear to contain fabrics. The presence of the containers poses a risk to subsurface activities. Other solid waste material such as tires, plastic, and glass were also apparent throughout the property consistent with prior subsurface investigation.

3.4 Nature of Contamination

The primary contaminants of concern reported in environmental media at the subject property include VOCs, “leachate indicators” (chloride and bromide), SVOCs, and metals in soils, groundwater, surface water, and sediments. Specific identified contaminants found in concentrations above one or more NYSDEC SCO include benzene, chlorobenzene, 1,4-dichlorobenzene, naphthalene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, and mercury. However, based on the heterogeneity and volume of the landfilled material, there is potential for additional compounds of concern to be present. Methane gas also is an expected issue based on the reported solid wastes that were disposed, which has not been previously investigated.

Considering the landfill’s operational history and likelihood to have received industrial waste materials, there is a potential risk that radioactive substances may have been deposited on site. This possibility does not appear to have been explored in prior environmental investigations. The presence of radioactive materials within the landfill could result in the generation of radon gas, a radioactive decay product, which may pose health risks to site occupants. The potential for radioactive material presents challenges and concerns for the feasibility and safety of the proposed development. Procedures for monitoring potential radioactive materials is incorporated into this investigation workplan further described under **Section 4.0**.

Contaminants of emerging concern, including Per- and Polyfluoroalkyl Substances (PFAS) and its chemical precursors, salts, and esters were identified at the Site in supplemental ground and surface water investigations conducted by CT Male in 2019 and 2020 and are subject to further investigation under amendments to 6 NYCRR Part 597 effective March 3, 2017.

Potential vapor intrusion of PFAS is not currently well publicized at this time. Initial research conducted by the USEPA (et al *Subsurface Per- and Polyfluoroalkyl Substances (PFAS) Distribution at Two Contaminated Sites* dated November 2023) indicate at least four (4) fluorotelomer alcohols (FTOHs) – a precursor to the production of PFAS - having sufficient vapor pressure (VP) to be designated as vapor-forming chemicals and MSW landfills tend to have detectable FTOH in site media. The exposure pathway risk of FTOH vapor intrusion impacting indoor air is not known. Generally, the scholarly community agrees additional research is necessary to assess and address PFAS air emissions from closed landfills.

Health-based standards of PFAS in vapors are not established and investigation methodology are not well-defined by regulatory agencies. As such, soil gas investigation of PFAS will not be evaluated at this time.

4.0 Soil Gas Investigation

Landfill gas (LFG) generation rates are affected by many factors, including refuse composition, the waste age and quantity, condition of the waste mass, moisture content, pH, temperature, and oxygen availability. Based on CED's review of the available documentation, the reported characteristics of the waste materials, and the anticipated design of the proposed facility, there is a potential for the intrusion of hazardous vapors and explosive gases requiring mitigation.

A soil gas investigation is proposed for further evaluating the distribution and concentrations of hazardous and potentially explosive vapors beneath the proposed building. The proposed investigation sequence is as follows: establish a sampling grid and screen predetermined points, select hot spot areas for probe installation, geophysical survey proposed probe locations, conduct soil borings and screening soils, install soil gas probes, and vapor monitoring and sampling including laboratory analysis. A project-specific Quality Assurance Project Plan (QAPP) and Health and Safety Plan (HASP) prepared by CED will be implemented during the investigation, included herein.

4.1 Methodology

Landfill gas concentrations in soils tend to be higher during dry periods and lower after significant rainfall events per EPA *Guidance for Evaluating Landfill Gas Emissions from Closed or Abandoned Facilities* dated September 2005. The intent of the investigation is to target peak anticipated concentrations within the proposed building footprint under site conditions posing the highest potential to emit to the extent practical. Peak anticipated methane concentrations are anticipated during the heat of the day and during the summer season. Soil gas screening and sampling will include at least one (1) event conducted when atmospheric barometric pressure is anticipated to be lowering and ground surface conditions will be visually saturated or snow covered.

4.1.1 Geophysical Survey

Because buried drums were found previously at the landfill and surficial evidence is apparent, a geophysical survey will be performed to clear potential hazards (e.g., drums or other pressure containers) prior to mechanical drilling operations. Depending on surface conditions (e.g., vegetative debris), the geophysical survey may include electromagnetic induction detection (EM), radio-frequency (RF) line tracing and ground penetrating radar (GPR) near-surface geophysical methods. Upon completion of the evaluation, suspect anomalies will be marked in the field. Should suspect buried objects be detected, further investigation may be warranted under a separate cover.

4.1.2 Soil Gas Screening

Sub-surface vapors at each selected investigation point will be assessed by establishing temporary sampling ports and field screening the subsurface vapors. A 100 foot by 100 foot sampling grid pattern will be established over the proposed facility footprint consistent with default grid density procedures specified in EPA *Guidance for Evaluating Landfill Gas Emissions from Closed or Abandoned Facilities* dated September 2005. Each node or intersection of the grid will be numbered and a path for equipment and heavy machinery to traverse will be established across the grid prior to sampling activities. Areas with steep slopes or otherwise inaccessible will not be screened. Screening locations will be biased to areas reported with elevated PID readings in prior investigation. The proposed screening grid is presented as **Figure 4**.

A slide hammer will be used to create sampling ports of approximately three (3) feet bgs. A handheld drill may be used for reaching the desired depth when the slide hammer encounters refusal. Inert 0.25-inch outer diameter

fluorinated ethylene-propylene (FEP) tubing will be inserted into the hole and the opening sealed at ground surface with bentonite clay to minimize the influx of ambient air. The tubing will be connected to the handheld vapor monitoring units.

At each sampling port, once concentrations stabilize, a portable landfill gas meter will measure methane concentrations and a PID will measure total nonmethane organic compounds (NMOC) concentrations. A handheld Geiger Mueller (GM) counter will be used to monitor surface level radiation.

This field screening data will be used in evaluating hot spots and may be used in making homogeneity determinations using statistical methods following procedures outlined in the USEPA *Guidance for Evaluating Landfill Gas Emissions from Closed or Abandoned Facilities* (September 2005). Concentration contour maps may be prepared for a graphical representation of NMOC and methane concentrations detected.

4.1.3 Soil Gas Probe Installation

Probes will be installed at locations that are selected for targeting peak NMOC and methane initial screening concentrations, and for assessing greater depth intervals. The NYSDOH guidance for Evaluating Soil Vapor Intrusion in the State of New York dated October 2006 does not list a minimum recommended quantity of soil gas samples per area. In lieu of NYSDOH guidance, NJDEP Vapor Intrusion Technical Guidance (VIG) dated May 2021 was used which recommends eight (8) sub-slab soil gas samples for building footprints between 50,001 to 250,000 square feet.

Given the heterogeneity and composition of the waste materials deposited, thirteen (13) lateral soil gas probes will be installed based on professional judgement. The soil gas probes will be installed providing representative spatial coverage of the building footprint. A minimum of one (1) soil gas probe will be installed per 10,000 square feet. Additional probes or screened intervals may also be needed for vertical profiling various depths from the same location to capture subsurface heterogeneity to be determined by screening the soil borings further discussed below.

Soil gas probes will be installed to a minimum depth of 5 feet bgs. At each location, a Geoprobe drill rig will be used to advance a soil boring into native soils or ground water, whichever is encountered first. The soils will be screened with a PID, flame ionization detector (FID), and GM counter at each 6-inch interval and field logged. The results will be used in selecting an approximate probe screen interval. A properly decontaminated water level sounder will also be used along with the boring log to determine a selected sampling interval that should not be affected by groundwater.

A driller will then install the soil gas probe consisting of solid 1-inch I.D. PVC pipe with a maximum 5 foot screened interval. The sampling zone will then be backfilled with coarse sand or glass beads at least 5 feet in length and a bentonite slurry will be used to seal the boring minimally 3 feet in length. At the surface, each sampling probe will be finished with a locking well vapor extraction plug affixed to the pipe and protected by an outer casing. The construction of the probe location will be documented. The annular seal of the probe will be verified using handheld equipment further described under the QAPP (see **Section 4.2**).

Soil and waste materials encountered without signs of free product or exhibiting obvious hazardous characteristic constitutes may be reused on-site as coordinated with CT Male. Otherwise, soils/waste materials generated will be containerized for off-site disposal by CED. Equipment will be decontaminated following procedures outlined in a HASP.

4.1.4 Soil Gas Sampling

Each sampling probe will be allowed to equilibrate to natural conditions for a minimum of 24 hours prior to sampling. The approximate volume of the probe (the length of the piping) installed will be calculated and three volumes will be purged. A four-gas meter will also be used in recording peak lower explosive limits (LEL) in general accordance with "Explosive Gas Monitoring" described under the RAWP. Once purged, a portable landfill gas meter will be used for measuring methane, carbon dioxide, oxygen, hydrogen sulfide, carbon monoxide, barometric pressure, and relative pressure.

Soil gas samples will be collected using laboratory-supplied vacuum (Summa®) canisters. The samples will be submitted to a NYSDOH-certified laboratory for analysis using EPA Method TO-15. As provided in the RAWP, the results of the monitoring and sampling will be prepared in a report to be submitted to NYSDEC and NYSDOH (**Section 4.1.5**). If sampling results have an order of magnitude difference in concentrations, the installation of additional probes may be warranted. Additional rounds of soil gas sampling may be warranted to capture seasonal changes in gas generation based on initial results.

4.1.5 Reporting

A single report will be prepared summarizing the results of the investigation and recommendations for sub-slab depressurization system (SSDS) design criteria. The report will include field screening results, boring logs, probe construction diagrams, photographs, sampling location figures, and analytical summary tables. Laboratory analytical results will be used in estimating landfill gas emissions. Recommendations for additional investigation and other control considerations may be warranted depending on investigation results.

4.2 Quality Assurance Project Plan (QAPP)

The following provides the Quality Assurance Project Plan (QAPP) to be implemented during investigation. The procedures outlined in this QAPP may be updated during the course of the project. Consultation with the subject property owner and remedial engineer (CT Male) will be performed prior to investigation. The investigation will follow QAPP procedures outlined in the RAWP. Key elements of the quality assurance protocols specific to this investigation are further defined herein.

4.2.1 Project Organization

CED will be responsible for implementing the QAPP during the soil gas investigation. The balance of remedial investigation and action activities are the responsibility of CT Male and the project remains on schedule. The names and contact information for the assigned project personnel are provided below:

Remediation Project Manager: Jeffrey Marx CT Male 12 Raymond Ave Poughkeepsie, New York 12603	Quality Assurance Officer: Robert Zelley Colliers Engineering & Design, Inc. 53 Frontage Rd, Suite 110 Hampton, NJ 08827
Soil Gas Investigation Phase Manager: John Fortunato Colliers Engineering & Design, Inc. 400 Valley Road, Suite 304 Mt. Arlington, NJ 07856	Health and Safety Officer: Nicholas DiVincent Colliers Engineering & Design, Inc. 400 Valley Road, Suite 304 Mt. Arlington, NJ 07856

Project Manager

The project manager will review the progress is consistent with the project objectives and that the project remains on schedule. The project manager will coordinate with the phase manager and regulatory governmental agencies for submitting required information.

Phase Manager

The phase manager will implement the soil gas investigation and provide status updates to ensure that data generated is consistent with project objectives. The phase manager is responsible for organizing the investigation with relevant parties including contractors conducting investigation, project manager, quality assurance coordinator, and the health and safety coordinator.

Quality Assurance Officer

The Quality Assurance Officer (QAO) specific to this investigation will review the sampling and analysis procedures are performed in accordance with data quality objectives, as well as in accordance with applicable state requirements. The QAO will not be directly involved with the collection and analysis of samples collected.

Health and Safety Officer

The Health and Safety Officer (HSO) specific to this investigation will ensure CED staff are familiar with potential hazards associated with the Site and activities being performed. The HSO will review the site-specific Health and Safety Plan (HASP) prepared by CED in determining H&S protocols are sufficient. CED personnel will familiarize and acknowledge the HASP and notify the HSO of concerns prior to mobilization.

4.2.2 Recordkeeping

Pertinent information regarding the subject property and sampling procedures will be documented. Notations will be made in logbook fashion, noting the time and date of entries. Recorded information will include, but not be limited to, the following:

- Name and exact location of site of investigation;
- Date and time of arrival and departure;
- Affiliation of persons contacted;
- Name of person keeping log;
- Names of persons associated with the investigation on site;
- Field instrument calibration information;
- Weather conditions;
- Location of sampling points;
- Soil boring logs;
- Soil gas probe construction diagrams;
- Number of samples collected;
- Method of sample collection and factors that may affect its quality; and
- Date and time of sample collection and factors that may affect its quality.

4.2.3 Field Instruments

CED will use a combination of various field instrumentation in implementing the investigation. The physical characteristics of soil gas and radiation will be field analyzed using handheld instrumentation. GPS

instrumentation and water interface probes will be used in probe design. Gas analyzers will also be used for purging purposes and as a Quality Assurance / Quality Control (QA/QC) measure in evaluating the seal in the probe installation via fixed gases (e.g., oxygen, carbon monoxide, etc.). In addition, field instrumentation will be equipped to field staff during soil disturbance activities for health and safety considerations further discussed within the HASP included herein. The following equipment or equivalent will be used for field monitoring:

- Photoionization Detector (PID) – MiniRAE 2000/3000
  A portable handheld PID consists of an ultraviolet (UV) lamp of a specific energy and an ionization chamber. Compounds passing through the chamber are excited by photons of UV energy and ionized. The PID will be used to screen soils for total VOC content. The PID provides instantaneous readings with alarms configured to high and low settings. It provides full-range measurement of VOCs with 0.1 part per million (ppm) resolution from 0 to 999.9 ppm and 1 ppm resolution from 1,000 to a maximum of 15,000 ppm. A 10.6 eV lamp or equivalent will be used.

- Flame Ionization detector (FID) – TVA2020 Toxic Vapor Analyzer
  A potable FID measures organic compounds by utilizing a flame produced by the combustion of hydrogen and air. The FID will be used in screening soils for low level methane content. A dilutor kit can also be used to enrich oxygen deficient samples by adding ambient air that is rich in oxygen. The FID technology allows for a wide dynamic and linear range that produces stable and repeatable responses having a range of 1 to 50,000 ppm and resolution of ±2% at 500 ppm methane.

- Multi-gas Detector (a.k.a. Four-Gas Monitor) – QRAE 3
  A four-sensor gas monitor provides for continuous exposure detection and monitoring using a variety of different sensors for measuring oxygen (O_2) from 0 to 30.0% , combustibles (LEL) from 0 to 100%, and toxic gases including hydrogen sulfide (H_2S) from 0 to 100 pm and carbon monoxide (CO) from 0 to 500 ppm. The monitor is capable of readings within 1 ppm resolution. This unit enables access to real-time instrument readings and alarm status for workers in potential hazardous environments. In addition, the meter pump rate may be set to 200 cc/min, which is the maximum allowable flow for purging soil-gas probes.

- Landfill Gas Analyzer Monitor – GEM5000
  A landfill gas analyzer provides real-time measurements on gas concentrations, useful in evaluating potential risks with gas migration. The analyzer is capable of measuring gas concentrations within 2% accuracy with ranges for methane from 0 to 100%, carbon dioxide from 0 to 100%, O_2 from 0 to 25%, CO from 0 to 2,000 ppm, and H_2S from 0 to 500 ppm. In addition, it can also static and differential pressure as well as temperature, which is useful in estimating gas emissions and as a QA measure.

- GPS/GNSS Unit – Trimble GeoXH 6000
  A handheld Global Positioning System (GPS) / Global Navigation Satellite System (GNSS) unit will be used in determining locations for screening and probe installation. Coupled with a Zephyr Model 2 antenna, the proposed unit is capable of achieving accuracy within 1.5 cm post-processing but may vary depending on weather conditions and canopy cover. For all intents and purposes, accuracy within 10 feet is deemed sufficient for the investigation. To verify accuracy, a control point that is visibly identifiable on aerial photographs will be selected with the unit in the field and a measurement of the location collected. To verify precision, duplicate points may be collected during the investigation.

- Water Level Meter – Heron dipper-T
  A water level meter will be used in evaluating ground water conditions in the soil borings advanced to reduce the possibility of water interference with the soil-gas probes installed. When the probe reaches water within each borehole, the pressure sensitive plunger enters the probe body closing a switch, initiating an audible and visual signal. The well depth reading is then taken directly from the measurement tape to ground surface. The meter will be checked for visual and audible alarms with distilled water prior to use and has an accuracy of 1/100th of a foot per 100 feet.

- Radiation Monitor – Radiation Alert Monitor 4, Monitor 4EC
  A Geiger Mueller (GM) counter will be used to monitor ionizing radiation during soil gas screening and soil boring advancement for evaluating potential radioactive substances within waste materials. When a ray or particle of ionizing radiation enters or passes through the monitor tube, it is sensed electronically and audible beep is produced with a direct instrument reading. The monitor is capable of measuring gamma rays from 0 to 50 milli-Roentgens per hour (mR/hr). The relation of Roentgen to rem and other dose units depends upon the biological effect under consideration and upon the conditions for irradiation. A Roentgen due to a dose of X- or gamma radiation is considered equivalent to a 1 rem.

Instrumentation will be field checked daily, calibrated, and maintained per manufacturer requirements prior to use. If the instrument cannot be calibrated to known concentrations within 10% accuracy or otherwise deemed unreliable, the instrument will be taken out of service and replaced with another unit. Calibration readings will be recorded in a field notebook. Background readings will be recorded off the landfill at a location not anticipated to be affected waste materials.

4.2.4 Field Screening

CED will log the physical characteristics of soil media and screen soil gas concentrations. During surface screening, direct instrument readings will be collected for approximately 30 seconds to 1 minute with peak readings recorded. In addition, soils retrieved from soil borings will be field screened and logged at approximate 6-inch intervals. Logs will include a general description of materials observed including anthropogenic signs (such as waste materials, staining, or sheens), the depth of groundwater or water seepage encountered, and a diagram of the soil gas probe construction as well as other pertinent subsurface conditions. Soil boring and probe locations will be logged with a GNSS receiver.

The PID will be equipped with a hydrophobic filter to prevent clogging and water interference upon collecting readings. If no ground water or water seepage is encountered (determined by either soil boring logging or water interface probe), the peak PID and FID concentration, whichever percentage is greater by volume, will be selected as the soil probe interval. If groundwater, perched water, or water seepage is encountered, the greatest concentration PID or FID reading above minimally 2 feet from water will be selected.

Upon sampling completion, to verify the integrity of the annular seal around the sample port, real-time concentrations will be compared to ambient conditions using a four-gas monitor. We note helium detection equipment is sensitive to high methane readings which may result in false positives; therefore we propose oxygen as a tracer gas, which is a common tracer gas specified in NJDEP Vapor Intrusion Technical Guidance document dated May 2021. Following purging the approximate probe volume, oxygen concentrations below 20.9 percent by volume (atmospheric) is generally deemed acceptable.

4.2.5 Sampling and Analysis Protocol

Sampling and laboratory analytical protocols associated with the investigation activities will be employed as summarized below, and in conformance with the New York State Department of Health (NYSDOH) *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* document dated October 2006. Investigative methods that may be required during this or later phases of the investigation will likewise follow methods and protocols.

A duly-certified NYSDOH and Environmental Laboratory Approval Program (ELAP) laboratory will conduct laboratory analyses. The laboratory retained by CED will provide the analyte-appropriate sample containers under vacuum and air flow controllers (AFCs) preset by the laboratory for the desired sampling frequency. It is expected 6-liter Summa canisters under vacuum to 30 inches of Hg with 30-minute AFCs will be utilized. Summa canisters received below 25 inches of Hg will be rejected.

The following soil gas sampling procedure will be followed:

1. Following minimally 24 hours from probe installation, a NYSDOH-certified laboratory will provide certified and evacuated Summa® canisters and flow controllers. CED will use dedicated sampling trains consisting of disposable inert tubing and valves.
2. The approximate volume of the sampling tubing and probe will be calculated and purged from each sampling port using a multi-gas detector set to 200 cc/min (0.2 L/min). Following purging, peak LEL will be recorded and methane and other fixed gas readings collected with the landfill gas analyzer.
3. After purging, tubing will be connected to the Summa® canisters and a shut-in test will be performed to check for leaks. The shut in test is conducted by closing the valve closest to the probe and opening the canister valve momentarily. The test is deemed acceptable if the gauge does not move (remain at full vacuum) after 30 seconds of observation;
4. After confirmation that there are no leaks, the soil gas samples will be collected for a period of approximately thirty (30) minutes.
5. A final vacuum pressure between 5 to 2 inches Hg or lower is judged to be sufficient; the residual vacuum ensures that the sample was collected at a constant flow rate over the time period and for final receipt at the laboratory for evaluating leaks between transit.

Samples will be transported between CED personnel and the laboratory under full Chain-of-Custody (COC). The laboratory will provide analytical reports to CED. No field QA/QC samples (duplicates, field, and trip blanks) are required for the sampling and analysis proposed.

Samples will be analyzed as follows:

Matrix	Parameter	Holding Time[1]	Sample Preservation	Analytical Method	Sample Container / Volume
Soil Gas	Volatile Organic	30 days	None	TO-15	Stainless Summa Steel Canister (1 Liter)

Note:

1) Beginning with the time that the Summa canister was originally shipped from the laboratory.

The following reporting limits – the lowest concentration of a substance that can be accurately reported in a sample – and method detection limits (MDLs) are proposed for the TO-15 analysis:

Compound	CAS No.	Reporting Limit[1]	Method Detection Limit[1]
Acetone (2-Propanone)	67-64-1	1.9	1.4
1,3-Butadiene	106-99-0	1.8	0.76
Benzene	71-43-2	2.6	0.60
Bromodichloromethane	75-27-4	5.2	0.80
Bromoform	75-25-2	8.4	2.9
Bromomethane	74-83-9	3.1	1.1
Bromoethene	593-60-2	3.5	1.1
Benzyl Chloride	100-44-7	4.0	2.6
Carbon disulfide	75-15-0	2.5	0.56
Chlorobenzene	108-90-7	3.7	1.4
Chloroethane	75-00-3	2.1	0.72
Chloroform	67-66-3	3.9	0.72
Chloromethane	74-87-3	1.6	0.76
3-Chloropropene	107-05-1	2.5	1.0
2-Chlorotoluene	95-49-8	4.0	1.5
Carbon tetrachloride	56-23-5	5.2	1.0
Cyclohexane	110-82-7	2.8	0.60
1,1-Dichloroethane	75-34-3	3.2	0.92
1,1-Dichloroethylene	75-35-4	3.2	0.92
1,2-Dibromoethane (EDB)	106-93-4	6.0	0.92
1,2-Dichloroethane	107-06-2	3.2	1.1
1,2-Dichloropropane	78-87-5	3.7	1.2
1,4-Dioxane	123-91-1	2.9	0.68
Dichlorodifluoromethane	75-71-8	4.0	2.0
Dibromochloromethane	124-48-1	6.8	1.8
trans-1,2-Dichloroethylene	156-60-5	3.2	0.44
cis-1,2-Dichloroethylene	156-59-2	3.2	0.48
cis-1,3-Dichloropropene	10061-01-5	3.6	1.1
m-Dichlorobenzene	541-73-1	4.8	3.2
o-Dichlorobenzene	95-50-1	4.8	1.6
p-Dichlorobenzene	106-46-7	4.8	1.9
trans-1,3-Dichloropropene	10061-02-6	3.6	1.8
Ethanol	64-17-5	3.8	3.0
Ethylbenzene	100-41-4	3.5	1.0
Ethyl Acetate	141-78-6	2.9	1.5
4-Ethyltoluene	622-96-8	3.9	1.9
Freon 113	76-13-1	6.0	0.96
Freon 114	76-14-2	5.6	1.4

Heptane	142-82-5	3.3	1.5
Hexachlorobutadiene	87-68-3	8.4	2.6
Hexane	110-54-3	2.8	0.72
2-Hexanone	591-78-6	3.3	2.4
Isopropyl Alcohol	67-63-0	2.0	1.4
Methylene chloride	75-09-2	2.8	1.8
Methyl ethyl ketone	78-93-3	2.4	1.3
Methyl Isobutyl Ketone	108-10-1	3.3	1.2
Methyl Tert Butyl Ether	1634-04-4	2.9	1.2
Methylmethacrylate	80-62-6	3.3	1.2
Propylene	115-07-1	3.4	0.96
Styrene	100-42-5	3.4	0.92
1,1,1-Trichloroethane	71-55-6	4.4	1.7
1,1,2,2-Tetrachloroethane	79-34-5	5.6	1.3
1,1,2-Trichloroethane	79-00-5	4.4	0.84
1,2,4-Trichlorobenzene	120-82-1	6.0	3.6
1,2,4-Trimethylbenzene	95-63-6	3.9	1.7
1,3,5-Trimethylbenzene	108-67-8	3.9	1.6
2,2,4-Trimethylpentane	540-84-1	3.7	0.76
Tertiary Butyl Alcohol	75-65-0	2.4	1.1
Tetrachloroethylene	127-18-4	1.1	0.38
Tetrahydrofuran	109-99-9	2.4	1.1
Toluene	108-88-3	3.0	0.84
Trichloroethylene	79-01-6	0.84	0.40
Trichlorofluoromethane	75-69-4	4.4	3.5
Vinyl chloride	75-01-4	2.0	0.72
Vinyl Acetate	108-05-4	2.8	1.6
m,p-Xylene	108-38-3/106-42-3	3.5	2.4
o-Xylene	95-47-6	3.5	1.3
Xylenes (total)	1330-20-7	3.5	1.3

Note:

1) Concentration in micrograms per cubic meter ($\mu g/m^3$)

If other analyses are selected or required based on conditions encountered in the field, protocol will follow those established by the USEPA. Laboratory quality control checks will be those specified in USEPA Methods for the analytical method performed may consist of the following:

- Blanks (method, preparation);
- Initial and continuing calibrations;
- Surrogate spikes;
- Matrix spikes/matrix spike duplicates;
- Duplicate samples; and

- Control samples/matrix spike blanks.

The laboratory will be responsible for complying with appropriate standards and certifications of the selected USEPA method. NYSDEC does not currently regulate health-based standards for concentrations of compounds in soil vapor. NMOC analytical results will therefore be compared to guideline values provided in the NYSDOH *Final Guidance for Evaluating Soil Vapor Intrusion* in the State of New York, dated October 2006. Where no value is available, analytical results will be compared to the EPA Regional Screening Levels generic tables, as applicable. Results will be compared under a "commercial" use scenario.

40 CFR 258.23 requires subsurface methane monitoring if methane concentrations are greater than 25 percent of the LEL (1.25 percent LEL by volume) within onsite buildings or subsurface concentrations are greater than the 5 percent LEL at the property boundaries. Therefore, gas analyzer results will be compared to 1.25 percent LEL (0.0625 percent methane) as this investigation is evaluating mitigation for the proposed warehouse.

The primary U.S. limit for occupational exposure to ionizing radiation is 5,000 mrem/year established by the Nuclear Regulatory Commission under 10 CFR Part 20. Therefore radiation readings will be compared to 2.4 mrem/hour assuming 260 days in a working year and 8 hours in a working day. At this level, the probability of increased cancer risk – the primary low dose health effect – is so low that it cannot be measured against the normal incidence of cancer (*The U.S. Department of Energy, Office of Environment, Health, Safety & Security, Radiation in Perspective*).

4.2.6 Data Reliability

A Conformance / Non-Conformance Summary Category B data deliverable will be provided by the laboratory for each sampling event. The summary will state laboratory analysis data that are deemed usable and reliable. Data reliability will be assessed by comparing the data provided to field documentation such as logs, field screening results, photography, and COCs. Limitations or errors in the data and/or corrective actions procedures undertaken will be documented. An opinion on data usability will be provided by a third-party data validator. Data Usability Summary Reports (DUSR) will be prepared consistent with DER-10 requirements.

4.3 Site-specific Health & Safety Plan (HASP)

Workers conducting activities on-site must be informed of the potential hazards associated with and aware of the guidelines and procedures for controlling/minimizing exposures to hazards of the Site prior to commencing work. A site-specific HASP – prepared for the investigation and certified by a Certified Industrial Hygienist (CIH) – will be implemented prior to commencing work. Subcontractors involved in soil disturbance activities will review the site-specific HASP with CED personnel and are responsible for complying with their company HASP. The HASP will include provisions for air monitoring. The site-specific HASP prepared by CED is provided as **Appendix A**.

The presence of radioactive materials on-site is currently unknown. On-site activities are expected to last no more than ten (10) days thus an action level of 50 mrem/hr is recommended which is the maximum range of the suggested handheld unit. Should handheld radiation monitoring detect levels above background concentrations at this action limit, investigation activities will be halted, and workers will demobilize from the site. The NYSDEC and NYSDOH will be promptly notified should such conditions exist. Further investigation activities will not proceed without an amended and certified Health and Safety Plan (HASP).

5.0 Project Schedule

The following identifies CED's tentative schedule of investigation activities following acceptance of the workplan by CT Male and NYSDEC/NYSDOH approval. Depending on overall project scheduling, SIP may opt to conduct initial gas sampling in the summer season further illustrated below. CED's anticipated effort and schedule are as follows contingent on authorization, regulatory approval, and weather conditions:

1. Landfill Soil Gas Investigation Workplan Regulatory Review and Approval (February - March 2025)
2. Conduct geophysical survey of the proposed probe locations (March or May 2025)
3. Conduct soil gas screening, data review, and probe location selection (March or May 2025)
4. Advance soil borings and install soil gas probes (March or May 2025)
5. Conduct soil gas monitoring and sampling of probes installed (March 2025 or June 2025)
6. Obtain, summarize, and validate analytical results (March - April 2025 or June - July 2025)
7. Prepare reporting and preliminary SSDS design (March – April 2025 or June - July 2025)

Our complete anticipated schedule will depend on investigation findings. Additional investigation(s) may be warranted based on initial results.

FIGURES

LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE SITE BOUNDARY

BASE MAP SOURCE: USGS, NEWBURGH QUADRANGLE NEW YORK 7.5-MINUTE SERIES, DATED 2023

500 0 500

SCALE : 1" = 500'
SELECT LINEAR UNIT OF MEASURE

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LANDFILL SOIL GAS INVESTIGATION WORKPLAN
FOR
5 SCOBIE DRIVE LANDFILL

SECTION 1, BLOCK 1, LOT 6

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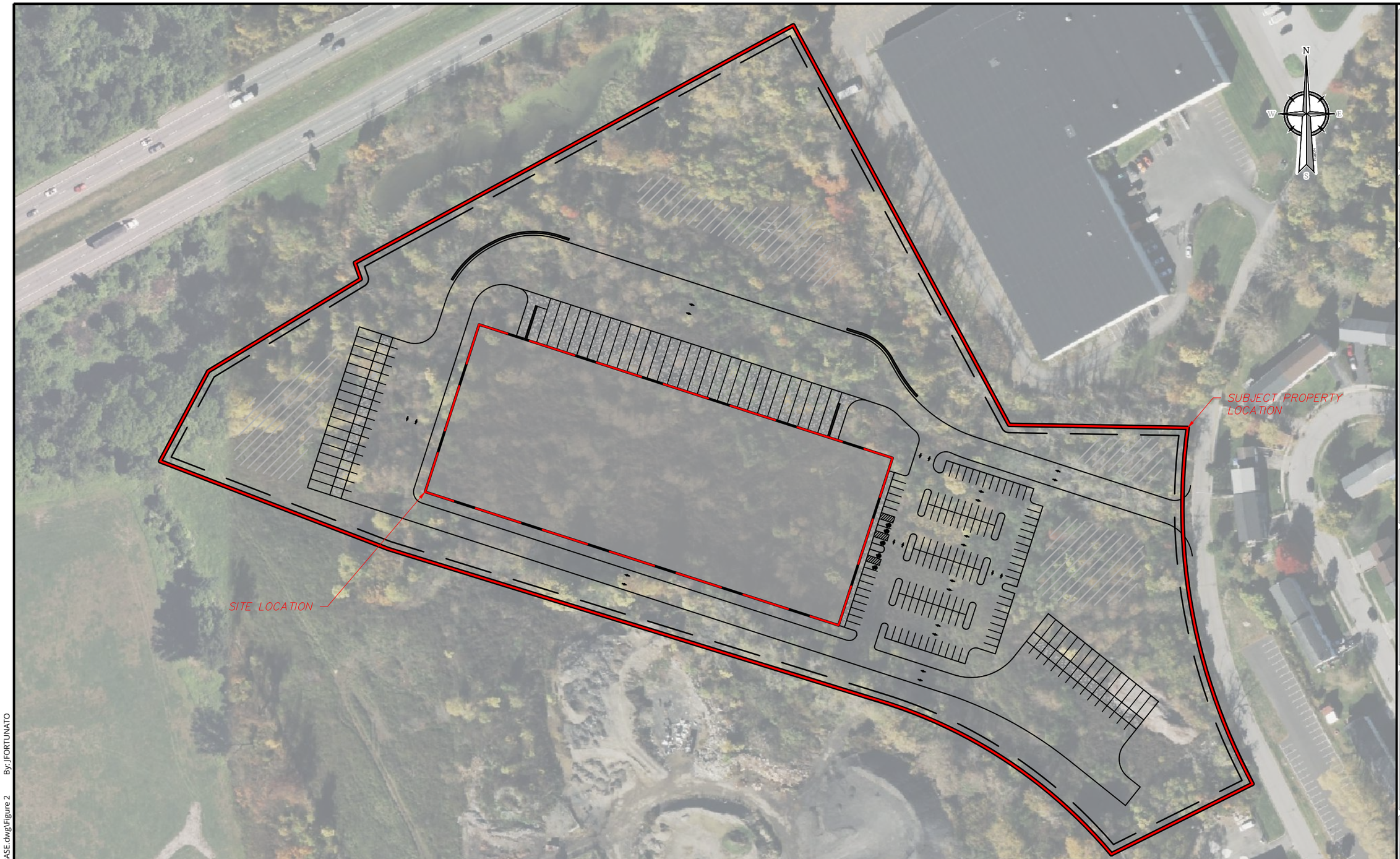
AS SHOWN	11/13/2024	JF	XX

PROJECT NUMBER: 23013237A
DRAWING NAME: E-BASE

SHEET TITLE: SITE LOCATION MAP
FIELD BOOK: XX PAGE:XX

SHEET NUMBER: FIGURE 1

2023\23013237A\Environmental\E-BASE.dwg\Figure 1 By: JFORTUNATO



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE SITE BOUNDARY

BASE MAP SOURCE: COLLIERS ENGINEERING AND DESIGN, CONCEPT PLAN, DATED 14 NOVEMBER 2023
MICROSOFT AERIAL PHOTOGRAPHY, IMAGERY DATED 2023

120 0 120

SCALE : 1" = 120'
SELECT LINEAR UNIT OF MEASURE

2023\23013237A\Environmental\E-BASE.dwg\Figure 2 By: JFORTUNATO

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LANDFILL SOIL GAS INVESTIGATION WORKPLAN
FOR
5 SCOBIE DRIVE LANDFILL

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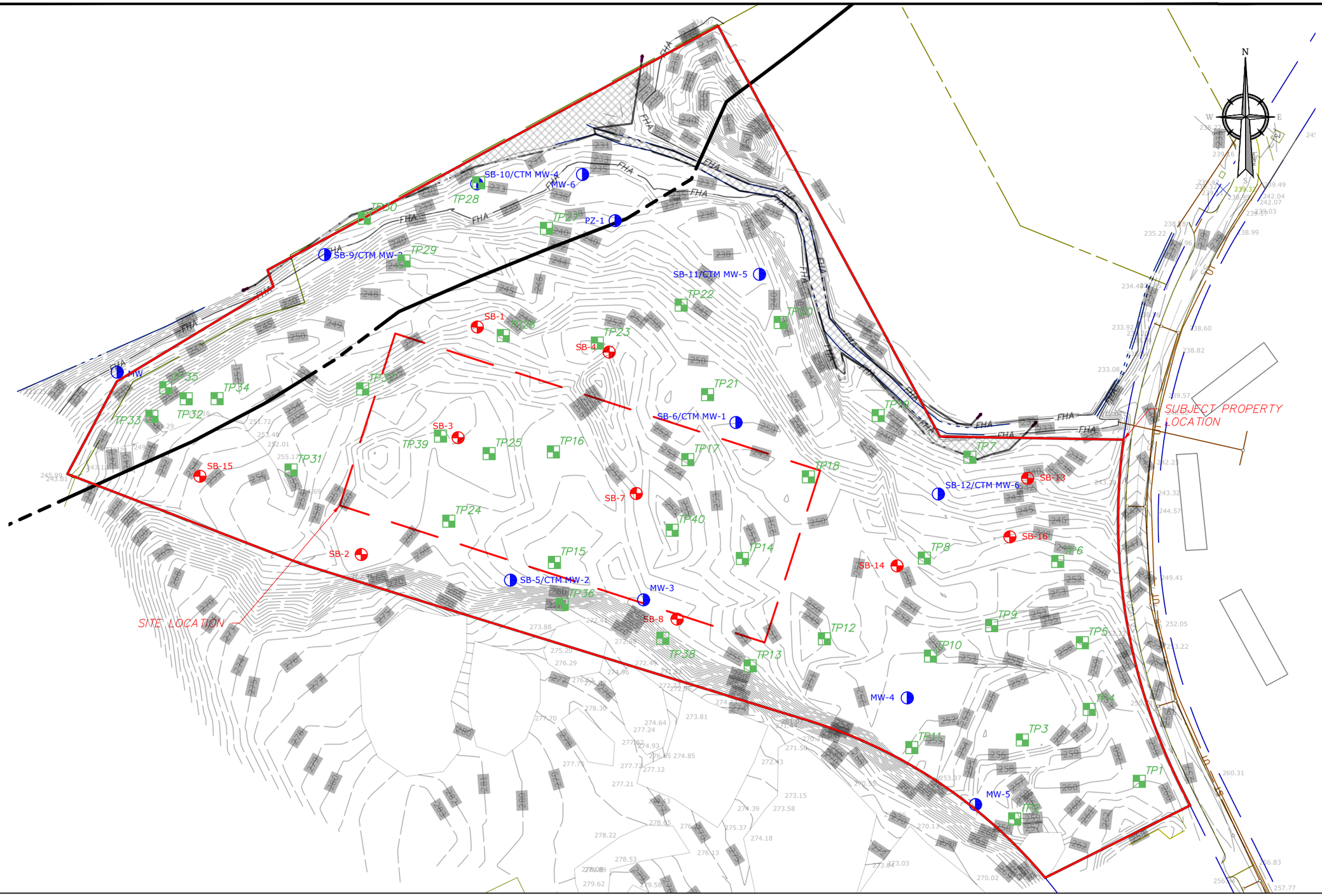
PROJECT NUMBER: 23013237A
DRAWING NAME: E-BASE

SHEET TITLE: SITE PLAN MAP
FIELD BOOK: XX PAGE:XX

SHEET NUMBER: FIGURE 3



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE SITE BOUNDARY
- SB — APPROXIMATE PRIOR SOIL BORING (CT MALE 2014)
- MW — APPROXIMATE EXISTING MONITORING WELL (CT MALE 2014)
- TP1 — APPROXIMATE TEST PIT LOCATION (CT MALE 2014)

BASE MAP SOURCE: CT MALE ASSOCIATES, BOUNDARY & TOPOGRAPHIC SURVEY, 5 SCOBIE DRIVE, DATED 17 JULY, 2014
SAMPLING LOCATIONS BASED ON DRAFT REMEDIAL INVESTIGATION REPORT PREPARED BY CT MALE ASSOCIATES DATED DECEMBER 2014

120 0 120

SCALE : 1" = 120'
SELECT LINEAR UNIT OF MEASURE

2023\23013237A\Environmental\E-BASE.dwg\Figure 3 By: JFORTUNATO

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LANDFILL SOIL GAS INVESTIGATION WORKPLAN
FOR
5 SCOBIE DRIVE LANDFILL

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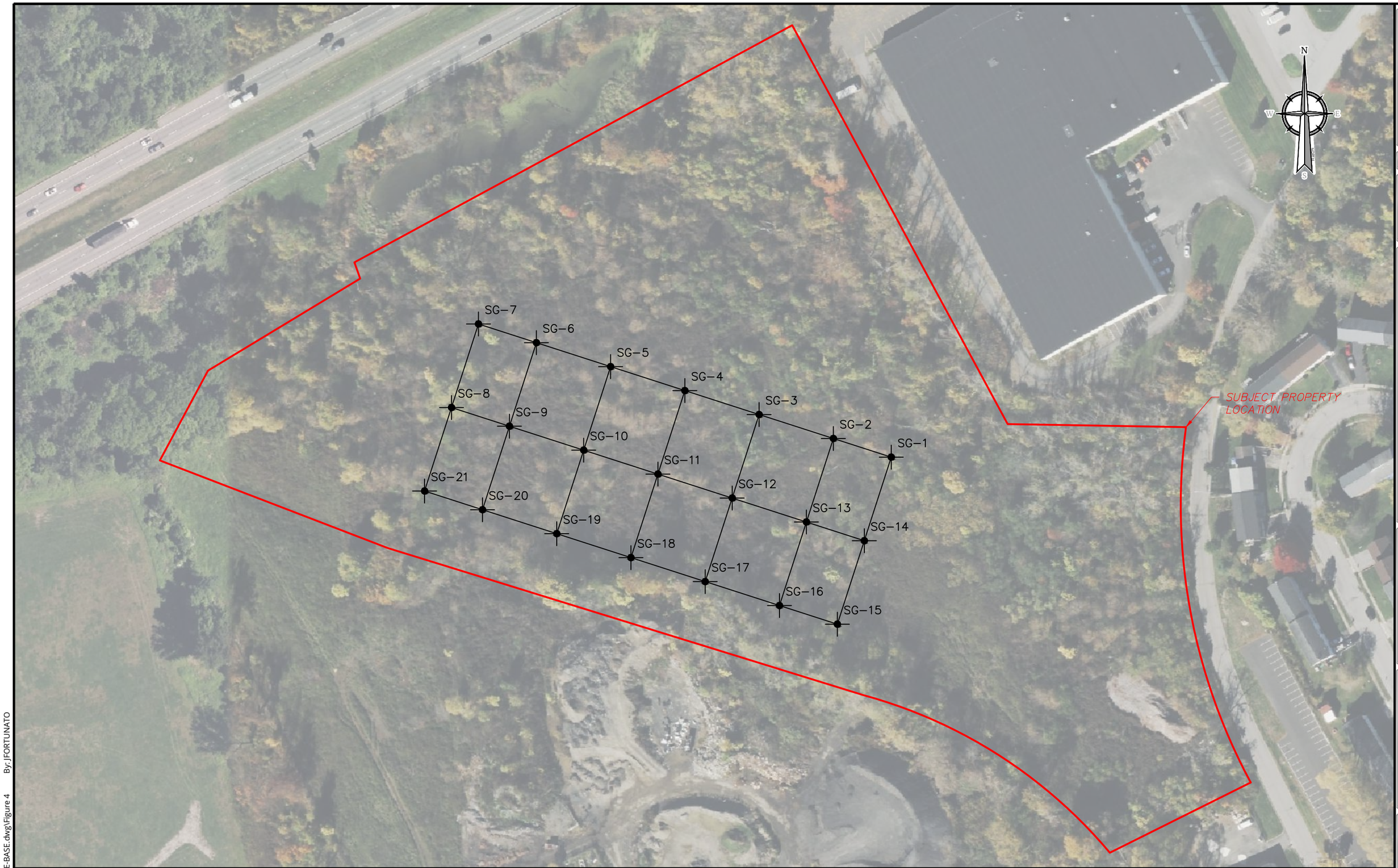
PROJECT NUMBER: 23013237A
DRAWING NAME: E-BASE

SHEET TITLE: PRIOR SAMPLING LOCATION MAP
FIELD BOOK: XX PAGE:XX

SHEET NUMBER: FIGURE 3



LEGEND

APPROXIMATE PROPERTY BOUNDARY

SS–1 APPROXIMATE SOIL GAS SCREENING / POTENTIAL PROBE LOCATION

BASE MAP SOURCE: MICROSOFT AERIAL PHOTOGRAPHY, IMAGERY DATED 2023

120 0 120

SCALE : 1" = 120'

SELECT LINEAR UNIT OF MEASURE

2023\23013237A\Environmental\E-BASE.dwg\Figure 4 By: JFORTUNATO

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LANDFILL SOIL GAS INVESTIGATION WORKPLAN
FOR

5 SCOBIE DRIVE LANDFILL

SECTION 1, BLOCK 1, LOT 6

CITY OF NEWBURGH, ORANGE COUNTY, NY

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AS SHOWN	11/13/2024	JF	XX

PROJECT NUMBER: 23013237A
DRAWING NAME: E-BASE

SHEET TITLE: PROPOSED SOIL-GAS SCREENING LOCATION MAP
FIELD BOOK: XX PAGE:XX

SHEET NUMBER: FIGURE 4

APPENDIX A
HEALTH AND SAFETY PLAN PREPARED BY CED
DATED NOVEMBER 2024

Site-Specific Health and Safety Plan – Soil-gas Investigation

Pursuant to 29 Code of Federal Regulations (CFR) 1910.120 &29 CFR 1926.65

5 Scobie Drive Landfill
NYSDEC BCP Site No. C336085

5 Scobie Drive
Section 1, Block 1, Lot 6
City of Newburgh
Orange County, New York

Colliers Engineering & Design Project Number: 23013237A

Revision 0 – November 2024

Prepared for:

Scobie Industrial Partners, LLC
234 Broadway
Newburgh, NY 12550

Prepared by:

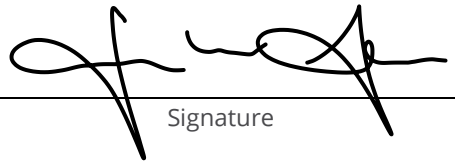
Colliers Engineering & Design, CT, PC
400 Valley Road, Suite 304
Mt. Arlington, NJ 07856
Main: 973-398-3110
Colliersengineering.com

CERTIFICATION

5 SCOBIE DRIVE, NEWBURGH, NEW YORK

SITE-SPECIFIC HEALTH AND SAFETY PLAN – SOIL-GAS INVESTIGATION

I, James W Frisbee an employee of RJB Environmental, Inc., and a Certified Industrial Hygienist (CIH) credentialed by the Board for Global EHS Credentialing, Inc., hereby certify that the policies and procedures outlined in this Health and Safety Plan (HASP) adhere to standard industrial practices and are deemed appropriate for the specified tasks.

6150	11/08/2024	
CIH No.	Date	Signature

Colliers Engineering & Design

Table of Contents

APPENDICES

1.0 HEALTH AND SAFETY PROGRAM

1.1 HEALTH AND SAFETY INTRODUCTION

Colliers Engineering & Design, Inc (CED) developed this site-specific Health and Safety Plan (HASP) to guide its employees in completing field activities related to planned soil gas investigation activities at the 5 Scobie Drive Landfill located at 5 Scobie Drive, City of Newburgh, Orange County, NY (the "Site" a.k.a the "subject property"). The subject property, located west of Scobie Drive and south of Interstate 84, is vacant, overgrown land that was operated as an unpermitted landfill and is under voluntary cleanup for prospective redevelopment to a warehouse facility.

This HASP designates the site-specific health and safety procedures for materials handling, personal protection, and information about the chemicals that might be encountered. The procedures outlined in this HASP are designed to reduce the risk of exposure to contaminants of concern and to general working conditions. This HASP is supplemented by CED's standard health and safety procedures that are pertinent to this project.

The procedures within this HASP were developed in accordance with Occupational Safety and Health Administration (OSHA) standards for protecting workers during field activities from contaminants, as required by the Hazardous Waste Operations and Emergency Response (HAZWOPER) Standard (29 CFR 1910.120 & 29 CFR 1926.65). These OSHA standards include general health and safety concerns, airborne contaminants, environmental controls, personal protection equipment (PPE), materials handling, and emergency response.

It is the responsibility of management personnel to review this plan and put into effect those policies and procedures applicable to its operations, job tasks and personnel. The CED Health and Safety Manager will be consulted, as needed, as this HASP is being implemented.

1.2 PROJECT ACTIVITIES

CED will conduct a soil gas investigation of the abandoned landfill in assessing hazardous landfill gases posing a risk to a prospective development of an approximate 125,000 square foot warehouse. To evaluate the risk, the approach of the investigation is to establish a sampling grid, geophysical survey proposed locations to clear potential hazardous containers (e.g. drums), screen the predetermined points, select hot spot areas for probe installation, conducts soil borings and screen soils, install soil gas probes, and vapor monitoring and sampling including laboratory analysis.

Applicable CED Standard Operating Procedures (SOPs) are incorporated into this HASP herein. It is expected CED personnel familiarize and acknowledge the SOPs through the site-specific Health and Safety (H&S) Checklist available online via CED's employee-specific "Intranet" webpage (https://safety.collierseng.com/). Subcontractors involved in field aspects of this project will be required to have their own HASP and must be appropriately trained, participate in the necessary medical surveillance programs, and comply with the required policies, procedures, and regulations.

1.3 POLICY STATEMENT

It is the policy of CED to provide a safe and healthful workplace for employees, subcontractors, and clients that complies with governmental requirements. This project will be conducted under the guidance of applicable federal, state, and local requirements. It is the policy of CED to adhere to or exceed the minimum requirements of each governing document. CED personnel will receive the appropriate training, equipment, and other resources necessary to complete their assigned tasks in a safe and efficient manner.

1.4 DISSEMINATION

CED personnel active on this project will acknowledge understanding and acceptance of the conditions and procedures defined in this plan on the HASP Acknowledgement Form (included herein).

1.5 MODIFICATION TO THIS HASP

Modifications/changes to this plan must be reviewed for approval by the Company Health and Safety Manager. Approved changes will be incorporated into the controlled copies of the plan with a review signature page for all active site personnel.

1.6 REFERENCES

This HASP has been written in reference to or in accordance with the following documents:

- American Conference of Governmental Industrial Hygienists (ACGIH), Threshold Limit Values and Biological Exposure Indices, 1997.
- National Institute for Occupational Safety and Health (NIOSH)/OSHA/USCG/USEPA, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, Publication No. 85-115, October 1985.
- Title 29 Code of Federal Regulations (CFR) Part 1910 - Safety and Health Regulations for General Industry.
- Title 29 CFR 1910.120 Hazardous Waste Operations and Emergency Response
- Title 29 CFR 1926 - Safety and Health Regulations for Construction.
- Title 29 CFR 1926.62- Hazardous Waste Operations and Emergency Response

2.0 PERSONNEL RESPONSIBILITIES

The following sections describe CED's health and safety organization.

2.1 HEALTH AND SAFETY PROGRAM MANAGER

CED Senior Management (SM) is responsible for assuring development, implementation and operation of the Health and Safety Program. The Senior Management of CED will have overall responsibility for the implementation of the H&S Program. They will be responsible for providing appropriate personnel and resources to the Discipline Leaders so that operations can be conducted in a safe manner and in compliance with this program. The Health and Safety Manager reports directly to the company Chief Executive Officer (CEO).

2.2 DISCIPLINE LEADER

The CED Discipline Leader (DL) is responsible for:

- Ensuring implementation of this plan and the CED Health and Safety Program through coordination with the Program Health and Safety Manager (SM), Project Manager (PM) and Health and Safety Officers (HSO), as applicable.
- Ensuring that the site-specific Health and Safety Plans (HASPs) have all the required approvals before any site work is conducted.
- Review and approve all site-specific HASPs.
- Provide status reports to the Discipline Leader on the status of Health and Safety activities.
- Direct the auditing program to ensure that policies and procedures of the Health and Safety Plan are being met.
- Update the Health and Safety Program when appropriate.
- Direct liaison activities with client, OSHA and other government agency personnel associated with health and safety matters.
- Ensure that all personnel have met the applicable medical and training requirements.
- Review the policy and procedures of the Medical Surveillance Program and assure that Health and Safety Program elements are consistent and current.

2.3 PHASE MANAGER

The designated Phase Manager, specific to the project activities herein, is responsible for:

- Ensuring implementation of the site-specific HASP through coordination with the SM.
- Conducting inspections.
- Participating in major incident investigations.
- Ensuring that the HASP has all the required approvals before any site work is conducted.
- Ensuring that the designated Health and Safety Officer (HSO) is informed of project changes which require modification of the site safety plan.
- Overall project responsibility for project Health and Safety.

The Phase Manager may also serve as the Field Operations Leader (FOL) and take on these additional responsibilities:

- Ensuring that the site-specific HASP is implemented in conjunction with the SM and HSO.
- Ensuring that field work is scheduled with adequate personnel and equipment resources to complete the job safely.
- Ensuring that adequate communication between field crews and emergency response personnel is maintained.
- Ensuring that field site personnel are adequately trained and qualified to work at the site.
- Enforcing site health and safety rules.
- Investigating all incidents.
- Assisting in conducting daily safety briefings.
- Maintain Accident/Incident Report Forms.
- Conducting weekly site inspections.
- Acting as the Emergency Coordinator.

2.4 Health and Safety Officer

The Health and Safety Officer (HSO), also known as the Site Safety Officer (SSO), will direct the health and safety activities on-site. The primary responsibilities of the HSO are to:

- Work as a member of the project team to ensure implementation of the HASP.
- Ensure that all health and safety activities identified in the HASP including PPE decontamination are conducted and/or implemented.
- Identify operational changes that require modifications to health and safety procedures and HASP and ensure that the procedure modifications are implemented and documented through changes to the HASP.
- Direct and coordinate health and safety monitoring activities.
- Ensure that proper personal protective equipment (PPE) is utilized by field teams.
- Assist in conducting and documenting daily safety briefings.
- Monitor compliance with the HASP.
- Notify the SM and your Manager of all accidents/incidents.
- Coordinate with your Manager during any accident/incident investigation.
- Accompany all clients, OSHA and other Government agency personnel visiting the site in response to health and safety issues.
- Order the shutdown of any or all site activities upon determination of an imminent health or safety hazard.
- Determine upgrades/downgrades of PPE based on site conditions and/or monitoring results.
- Ensure that monitoring instruments are properly calibrated.
- Report to the PM to provide summaries of field operations and progress.
- Maintain health and safety field logbooks.

2.5 ALL EMPLOYEES

All employees are responsible for:

- Immediately leaving the property in the event of an alarm or an unsafe / potentially hazardous condition is identified.
- Reporting any unsafe or potentially hazardous conditions to the HSO.
- Maintaining knowledge of the information, instructions and emergency response actions contained in the HASP.
- Complying with rules, regulations and procedures as set forth in the HASP and in the CED Health and Safety program and any revisions.
- Cooperating in health surveillance activities such as the wearing of personal monitors.
- Reporting to the HSO and the FOL any and all facts pertaining to incidents resulting in employee injury, exposure to hazardous materials, or "near misses".
- Preventing admittance to work sites by unauthorized personnel.
- Inspecting all tools and equipment, including PPE, daily prior to use.

This plan comprehensively describes the organization, position responsibilities and the methods that CED will employ to ensure that proper health and safety practices are implemented.

A safe working environment can only be achieved by close and complete cooperation between management and employees. CED management intends to ensure that the knowledge and tools are available so that each employee may perform his/her duties in a safe and efficient manner. Each employee is required to accept the responsibility to properly use all materials provided, to follow work procedures and rules, and to comply with the implementation of the Health and Safety Program.

Employee failure to utilize established safety procedures and protective equipment properly may lead to injury and illness. Deviation from safety procedures will therefore not be tolerated. Failure to comply with Health and Safety procedures and requirements may lead to disciplinary action and/or termination.

2.6 SUBCONTRACTORS, VISITORS, AND OTHER ON-SITE PERSONNEL

Subcontractors involved in fieldwork associated with this project are responsible for the safety and health of their employees and for complying with the standards established in their company HASP. Their company HASP must meet the requirements, at least by reference, of this HASP and other project requirements. The following are some of the requirements that apply to subcontractors:

- Subcontractors under the direct employment of CED will report to the PM.
- Subcontractors under the direct employment of CED will submit all required training and medical surveillance documents to CED prior to mobilization.
- Subcontractor personnel under the direct employment of CED must attend a project safety orientation prior to beginning work onsite and must attend a daily morning tailgate safety meeting.
- Accidents, fires, injuries, illnesses, and spills must be immediately reported to the PM.

3.0 ACCIDENT PREVENTION PLAN

3.1 PROJECT SAFETY GOAL

Safety is CED's highest priority. The process of planning the project work is done to identify, evaluate, and control the site hazards and to help realize a goal of zero accidents.

3.2 INDOCTRINATION OF NEW EMPLOYEES

Both CED and subcontractor personnel are required to attend a safety orientation meeting prior to working on-site.

3.3 FIRE PREVENTION AND PROTECTION

This section details fire prevention and protection procedures/resources at the project site:

- The local Fire Department is the available firefighting services. The fire department should be contacted through the 911 operator.
- Project personnel are only permitted to extinguish fires in their incipient stages and only if they have received fire extinguisher training within the last year. Fighting fires is prohibited by project personnel and will only be performed by the local fire department.
- Heavy equipment and other machines will be turned off while refueling.
- See **Section 4.3.2** Fire Safety at drill rig locations.

3.4 FIRST AID AND MEDICAL FACILITIES

The following addresses first aid and medical facilities:

- A first aid kit is provided and maintained onsite.
- Emergency medical service should be contacted through the 911 operator.
- The route to the nearest hospital is included at the end of this HASP, however, the facility to care for serious medical emergencies will be determined by the Emergency Medical Technician responding to the incident.
- At a minimum, one person on site will be certified in First Aid and Cardiopulmonary Resuscitation (CPR) by the American Red Cross.

4.0 PROJECT HAZARDS AND HAZARD CONTROL MEASURES

4.1 POTENTIAL SITE HAZARDS

The primary physical site hazards include work near machinery/equipment for drilling, inhalation of organic vapors and gases, direct contact exposure to hazardous substances and wastes in soil or groundwater, contact with electrical equipment and slips, trips, and falls.

On-site workers could be exposed to hazardous situations by several possible mechanisms:

- Possible inhalation of volatile organic vapors, and flammable/combustible gases,
- Possible ingestion or direct contact of contaminated soils or groundwater;
- Possible inhalation of contaminated dust, asbestos, or particulate matter;
- Injury due to contact with machines/equipment used with drilling,
- Contact with electrical equipment,
- Slips, trips, and falls.
- Fires, Explosions, Hot Work, and
- Operation of Motor Vehicles

4.2 ROUTES OF EXPOSURE

The primary routes of exposure to the contaminants of concern include inhalation, contact, and ingestion. The personal protective equipment (PPE) that will be required for this project is discussed in **Section 5.6** below. Also, to reduce the possibility of ingestion, employees will not be permitted to eat or drink in the work area. Smoking is prohibited in all work areas.

4.3 PHYSICAL HAZARDS

4.3.1 NOISE AND HEARING CONSERVATION

There are various sources of noise that are anticipated at the project site such as vehicular traffic and the use of heavy equipment and tools on-site. Hearing loss, resulting from occupational exposure to noise, can be prevented. Hearing protection is required to be worn by personnel working with or around heavy equipment, power tools, and as noise monitoring indicates.

OSHA limits worker exposure to noise to less than 90 dBA for an 8-hour day (PEL). As sound level increases, OSHA shortens the duration that workers can be exposed to that level of sound. When workers have to raise their voices over the noise of surrounding machinery to be heard by someone 3 feet away, sound levels are likely to be over 85 dBA.

OSHA requires that methods to reduce the noise through engineering controls must be considered first. Engineering controls for noise should be designed to reduce the production of noise at the source, interrupt the transmission of noise along a pathway from the source to the receiver, or attenuate the intensity at the receiver. Since most noise sources are equipment that is not owned or under the control of CED and the nature of fieldwork, engineering controls are usually not feasible. CED will consider noise reduction engineering controls for any equipment owned and operated by CED.

Administrative controls are measures taken to limit the amount of time that an employee is exposed to high noise levels. This typically is done by rotating or moving employees between areas of high and low noise exposure, and/or controlling the operating duration of equipment producing excessive noise levels.

Employees are encouraged to distance themselves from noise producing equipment in reducing noise exposure. When feasible, engineering and administrative controls that fail in reducing noise exposure to acceptable levels and the employee is inspecting high noise construction operations (i.e. drilling, etc.), personal protective equipment in the form of hearing protection devices (ear plugs or muffs) must be used.

Refer to: SOP #11 – Personal Protective Equipment & SOP #13 – Hearing Conservation.

2.3.2 Slips, Trips, Falls

The following details procedures to prevent slips, trips, and falls:

- Personnel will keep working areas clean and orderly. Tools, equipment, and materials will be used and stored in a fashion to minimize tripping hazards.
- Small, loose items such as tools, materials, and other small objects and debris will not be left lying around in any place, particularly in areas where personnel walk.
- Spills will be cleaned up immediately.
- Personnel will take extra precautions, such as establishing firm hand holds, wearing suitable footwear, and walking slowly when walking or working during wet, snowy, or icy weather.
- Personnel will not jump from elevated places or equipment.
- Personnel using hand and mechanical tools will position themselves properly and consider the events if a tool slips or suddenly moves.
- Electrical extension cords and electrical wiring must be kept clear of walking and working areas and/or covered, buried, or otherwise secured.
- Walking and working surfaces will be properly maintained during inclement weather.
- Running is prohibited on job sites unless under emergency conditions.
- Personnel will be informed of potential hazards as they develop. Signs, postings, and/or barricades will be used to ensure access is restricted or denied to such areas.

Refer to: SOP #6 – Hazardous Field Conditions.

4.3.2 Fires, Explosions, and Hot Work

Hot work (welding, burning, cutting, etc.) is not expected to be conducted during this project. Drilling operations have the potential for explosions should conditions present sufficient ratios of air and flammable gases. To reduce the risk of exposure to hazardous landfill gases and mitigate the risk of explosions, the lower explosive limit (LEL) will be monitored during drilling operations using handheld equipment within vicinity of the drill rig. Should monitoring results exceed action levels (**See Section 5.4**), the use of an industrial fan will be used to dilute surface concentrations with ambient air to reduce explosive levels. Work will not continue until LEL action levels are permissible. However, the potential exists for combustion, and fire extinguishing equipment will be present at active drilling locations. Should combustion occur that results in fire to equipment, materials, or clothing, immediate actions to extinguish these fires will be made.

Refer to: SOP #4 – Hazardous Waste Operations.

4.3.3 Use of Ladders and Scaffolds

Ladders and scaffolding will not be used during this project.

4.3.4 Use of Small Tools

Hand and power tools will be used, inspected, and maintained in accordance with the manufacturer's instructions and recommendations and will be used only for the purpose for which designed. The following requirements will be adhered to:

- Tools designed to accommodate guards will be equipped with such guards when in use.
- Tools will be inspected before each use to assure safe operating condition and be kept clean and free of accumulated dirt.
- Electric power tools and extension cords will be used with ground fault circuit interrupters (GFCI).
- Portable power cords will be designated as hard usage or extra hard usage and will not be used if damaged, patched, oil-soaked, worn, or frayed.

Refer to: SOP #20 – Hand and Power Tools & SOP#21 Electrical Safety.

4.3.5 Use of Heavy and Mechanized Equipment

Use of specialized heavy equipment (drilling machine, etc.) by CED is not anticipated on this project. Contractors using heavy equipment should implement policy and procedures consistent with their HASP. CED personnel will exercise extra care in the use of heavy equipment and while working near this equipment. Personnel needing to approach heavy equipment while it is in operation will observe the following protocols:

- Make eye contact with the operator (and spotter).
- Signal the operator to cease heavy equipment activity should conditions warrant a hazard.
- Approach the equipment only after the operator has given a signal to do so.

Refer to: SOP #2 – Multi-Employer Construction Sites.

4.3.6 Operation of Motor Vehicles

CED personnel operating company owned, leased, or rented vehicles and subcontractors operating motor vehicles will hold a valid driver's license and comply with the requirements of all federal, state, and local traffic regulations. Only vehicles that are in good condition and safe to operate will be used.

Personnel will drive defensively and wear seat belts while vehicles are in motion. Since backing accidents at this type of project are frequent, the following guidelines will be observed:

- Backing of vehicles will be avoided when possible. Extra care will be taken to back vehicles when unavoidable.
- Before backing a vehicle that has been parked, the driver will physically walk to the back of the vehicle to observe the area before entering the vehicle.
- Spotters will be used to back vehicles whenever possible.
- Personnel operating liquid-transport vehicles (tank trucks and trailers) will be trained to operate the specific vehicle and transfer their cargo safely.

Refer to: SOP #16 – Roadway and Traffic Safety & SOP#17 – Vehicle Safety.

4.3.7 Material Handling

Various materials and equipment may be handled manually during project operations. Care should be taken when lifting and handling heavy or bulky items to avoid back injuries. The following fundamentals address the proper lifting techniques that are essential in preventing back injuries:

- The size, shape, and weight of the object to be lifted must first be considered. No individual employee is permitted to lift any object that weighs over 60 pounds. Multiple employees or the use of mechanical lifting devices is required for objects over the 60-pound limit.
- The anticipated path to be taken by the lifter should be considered for the presence of slip, trip, and fall hazards.
- The feet will be placed far enough apart for good balance and stability (typically shoulder width).
- The worker will get as close to the load as possible. The legs will be bent at the knees.
- The back will be kept as straight as possible and abdominal muscles should be tightened.
- To lift the object, the legs are straightened from their bent position.
- A worker will never carry a load that cannot be seen over or around.
- When placing an object down, the stance and position are identical to that for lifting. The legs are bent at the knees and the object lowered.

When two or more workers are required to handle the same object, coordination is essential to ensure that the load is lifted uniformly and that the weight is equally divided between the individuals carrying the load. When carrying the object, each worker, if possible, will face the direction in which the object is being carried. In handling bulky or heavy items, the following guidelines will be followed to avoid injury to the hands and fingers:

- A firm grip on the object is essential; leather gloves will be used if necessary.
- The hands and object will be free of oil, grease, and water that might prevent a firm grip. Fingers will be kept away from any points that could cause them to be pinched or crushed, especially when setting the object down.
- The item will be inspected for metal slivers, jagged edges, burrs, and rough or slippery surfaces prior to being lifted.

Refer to: SOP #34 – Fatigue Management.

4.3.8 Hazardous Energies (Electrical, Mechanical, Pressurized Systems)

Portable electrical equipment and extension cords must be protected with a GFCI as part of the circuit. Only heavy-duty construction-type extension cords with “hard” or “extra-hard” usage ratings will be used if needed. Applicable OSHA standards for electrical power, 29 CFR 1926 Subpart K, and Section 11 of EM-385-1-1 apply.

Refer to: SOP# 6 – Hazardous Field Conditions, SOP#20 – Hand and Power Tools & SOP #21 – Electrical Safety.

4.3.9 Intrusive Activities

Utilities are not known or suspected on the property. However, given proposed subsurface activities, before commencing intrusive activities (e.g. drilling) the existence and location of underground pipes, electrical equipment, telephone, gas lines, etc. must be determined and documented by calling the New York One Call (811) System. This call must be made a minimum of three (3) working days prior to commencement of activities. In addition to performing the One Call, a private utility mark out must be performed to identify subsurface utility clearance in the area of proposed intrusive activities (i.e., drilling, direct push borings). A review of the site

plans/drawings should also be conducted to determine if utilities will interferer investigation/exploratory locations.

Refer to: SOP #7 – Excavation and Trenches.

4.3.10 Excavations

Excavations are not expected for this investigation and should not proceed without amendment of this HASP.

4.3.11 Confined Space Entry

No Confined Space Entry is anticipated or will be required by CED or its subcontractors on this project.

4.3.12 Dust

The generation of dust and fugitive emissions will be prevented when possible and controlled when necessary. Work practices will be adjusted in a manner to minimize dust generation such as lowering drill rates or suppression with water. Personnel will avoid working in dust by positioning themselves upwind of activities that generate dust. Dust will be monitored visually. An air purifying respirator with High Efficiency Particulate Respirators (HEPA) / Organic Vapor (OV) cartridges should be worn if water dust suppression measures are deemed inadequate.

Refer to: SOP# 11 – PPE & SOP #12 – Respiratory Protection.

4.4 General Work Rules

While the procedures outlined in this HASP are required, the following list presents general work rules that will be enforced by the PM and subcontractor supervisors:

- Loose jewelry, clothing, or long hair is not permitted on or near equipment with moving parts.
- Whenever possible, personnel should avoid contact with contaminated (or potentially contaminated) surfaces. Walk around (not through) puddles and discolored surfaces. Do not kneel or set equipment on potentially contaminated ground.
- Legible and understandable labels will be affixed prominently to the containers of waste materials.
- Food, beverages, unapplied cosmetics, and tobacco products are not allowed in regulated work zones.
- Field personnel are to observe each other for signs and symptoms of toxic material exposures. These signs and symptoms include, but are not limited to:
    - Changes in complexion and skin discoloration
    - Changes in coordination
    - Changes in demeanor
    - Excessive salivation and pupillary response
    - Changes in speech pattern
- Field personnel are to advise each other of non-visual effects of toxic material exposures such as:
    - Headaches
    - Dizziness
    - Nausea
    - Blurred vision
    - Cramps
    - Irritation of eyes, skin, or respiratory tract

- Field activities must not be conducted during severe weather such as thunderstorms, lightning, tornado warnings, and winter storm warnings.
- Personnel must thoroughly wash their hands and face before eating, smoking, or drinking.
- Possession of controlled substances and prohibited items, such as alcohol, firearms, or weapons, while working On-site is strictly prohibited. At no time while on duty may employees use or be under the influence of alcohol, narcotics, intoxicants, or similar mind-altering substances. Employees found under the influence of or consuming such substances will be immediately removed from the job.
- Overhead and underground utility hazards will be identified and/or located prior to conducting operations.

4.5 Site Communications

A combination of communication methods will be used. For close communication and communication within visual range, an assembly of verbal and common hand signals will be used by site personnel. For communication outside of visual range, either radios or cellular phones will be available. Individuals will be capable of requesting assistance via one or more of these methods.

Refer to: SOP #29 – Working Alone.

4.6 Environmental Hazards

In addition to possible chemical and physical hazards, there are environmental (including biological) hazards that may be present. For the purposes of this HASP, the environmental hazards are comprised of extreme ambient temperatures, insects, spiders, rodents, snakes, poisonous plants, and sunburn.

Refer to: SOP#6 – Hazardous Field Conditions & SOP #9 – Heating & Cold Stress.

4.6.1 Heat Stress

Heat stress is of concern for worker safety during hot weather. Heat stress is caused by a number of interacting factors, including environmental conditions, clothing, PPE, workload, and individual characteristics. Hot weather can cause physical discomfort, loss of efficiency, or personal illness/injury. Individuals vary in their susceptibility to heat stress. Factors that may predispose individuals to heat stress include:

- Lack of physical fitness,
- Insufficient acclimation,
- Sunburn,
- Age,
- Diarrhea,
- Dehydration,
- Chronic disease,
- Obesity and/or
- Medical conditions.

Reduced work tolerance and the increased risk of heat stress are directly influenced by the amount and type of PPE worn. PPE adds weight and bulk and severely reduces the body's access to normal heat exchange mechanisms (evaporation, convection, and radiation) and increases energy expenditure.

Signs and Symptoms of Heat Stress - If the body's physiological processes fail to maintain a normal body temperature because of excessive heat, a number of physical reactions can occur ranging from mild to fatal. Heat-related problems include:

- Heat rash - Caused by continuous exposure to heat and humidity and aggravated by chafing clothes. Heat rash decreases the body's ability to tolerate heat in addition to being a nuisance.
- Heat cramps - Caused by profuse perspiration with inadequate electrolytic fluid replacement. Heat cramps cause painful muscle spasms and pain in the extremities and abdomen.
- Heat exhaustion - Caused by increased stress on various organs to meet increased demand to cool the body. Heat exhaustion causes willow breathing; pale, cool, moist skin; profuse sweating; and dizziness.
- Heat stroke - The most severe form of heat stress. Heat stroke symptoms include hot, dry skin; no perspiration; nausea; dizziness; confusion; strong, rapid pulse; coma; and sometimes death. Heat stroke is a serious medical emergency. The affected person must be cooled down rapidly and medical attention must be given immediately.

Heat Stress Prevention - The following practices will help prevent heat stress problems:

- Acclimate workers to heat conditions when field operations are conducted during hot weather.
- Provide liquids to replace the body fluids lost by perspiration. Fluid intake must be forced because, under conditions of heat stress, the normal thirst mechanism is not adequate to bring about a voluntary replacement of lost fluids. Drinking water will be obtained by removing PPE and exiting the controlled area. When heat stress conditions become a factor, personnel will be trained to take fluids in a manner that prevents the possibility of any cross contamination. This could include the use of single use sports bottles or a disposable outer cover on a container.
- Provide cooling devices to aid natural body ventilation.
- If possible, conduct field operations in the early morning or provide shade when possible.
- Personnel at risk of heat stress conditions will review the following:

  Employees:
  - Sources of heat stress, influence of protective clothing, and importance of acclimation,
  - How the body handles heat,
  - Heat-related illnesses,
  - Preventive/corrective measures, and
  - First-aid procedures.

  Supervisors:
  - Physiological monitoring and establishment of work/rest regimes.
  - Rotate personnel to various job duties, if possible.
  - Provide shade or shelter during rest periods.

Heat Stress Treatment - Individuals or coworkers expressing heat stress symptoms will notify the HSO promptly. At the onset of heat-related illness, activities must be halted, and treatment initiated. The affected person should be moved to a nearby cool location and provided cool water to drink. In a heat stroke situation, the body should be cooled immediately with cold water and medical attention must be sought.

Acclimation - The degree to which an employee's body has physiologically adjusted or acclimatized to working under hot conditions is extremely important. NIOSH recommends a progressive 6-day acclimatization period for un-acclimatized workers before allowing them to work at their full capacity. The HSO will determine if there is a significant difference between the employee's origin and on-site weather conditions. Should there be a significant difference, the first day of work on site is begun using only 50 percent of the anticipated workload and exposure

time, and 10 percent is added each day through day six. Six days should be considered the average time needed for worker acclimatization based on each individual's physical condition and their ability to adjust to hot and humid environments.

4.6.2 Cold Stress

Cold stress is of concern for worker safety during cold weather. Cold injuries are classified as either localized, as in frostbite or generalized, as in hypothermia. Physical conditions that worsen the effects of cold include allergies, vascular disease, excessive smoking and drinking and specific drugs and medications. Factors contributions to cold injury include exposure to humidity and high winds, duration of exposure, contact with wetness or metal, inadequate clothing, age and general health of the individual, including circulation and diet. The wind-chill factor (the combination of wind speed and air temperature) is a better indicator of the current thermal condition than temperature alone. The wind increases the rate of cooling at low temperatures. Table 1 depicts equivalent temperature with wind on exposed flesh.

Table 1: Equivalent Chill Temperatures

Wind Speed (mph)	Actual Temperature Reading (°F)											
	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
	Equivalent Chill Temperature (ECT) (°F)											
calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-64	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148
Wind speed greater than 40 mph have little additional effect	LITTLE DANGER in < 1 hr with dry skin. *Maximum danger of false sense of security*				INCREASING DANGER Danger from freezing of exposed flesh within one minute			GREAT DANGER Flesh may freeze within 30 seconds				
	Trench foot and immersion foot may occur at any point on this chart											

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The greatest incremental increase in wind chill occurs when a wind of 5 mph increases to 10 mph. In addition, water conducts heat 240 times faster than air; thus, the body cools suddenly when protective equipment is removed and clothing underneath is wet from perspiration.

Frostbite – Local injury resulting from excessive cold is called frostbite. Frostbite of the extremities can be categorized by degree of damage.

Degrees of damage include:

- **Frost nip or incident frostbite** – This is a condition characterized by a sudden blanching or a whitening of the skin.
- **Superficial frostbite** – The skin has a waxy or white appearance and is firm to the touch, but the tissue beneath is resilient.
- **Deep frostbite** – Tissues are cold, pale, and solid; extremely serious injury.

Factors that contribute to frostbite include handling solvents, tight footwear, wet clothing, high altitudes, and race. Frostbitten or potentially frostbitten skin should never be rubbed. The rubbing action can result in permanent tissue damage. For frostnip, the skin should be warmed by applying firm pressure with a hand or other warm body part.

Professional medical help should be sought for frostbite cases since it is difficult to assess the degree of frostbite. First aid responders can begin to warm the affected part by skin-to-skin contact or by submerging in 108° to 110° water. Care should be taken, because the skin is easily burned due to loss of feeling in the affected part. It is important to note that pain will occur when the thawing begins.

Hypothermia – Hypothermia is the general lowering of the body temperature. It can occur from exposure to conditions well above freezing. This condition can occur when a worker is immersed in cold water or is exposed to cool, high winds. Individuals who are in a state of physical exhaustion or have had insufficient food are particularly susceptible to hypothermia.

The first symptoms of hypothermia are uncontrollable shivering and the sensation of cold. The heartbeat then slows and sometimes becomes irregular, the pulse weakens and the blood pressure changes. Other symptoms are slurred and slow speech, memory lapses, incoherence, drowsiness, poor judgment, mental confusion, and apparent exhaustion. See Table 2: Symptoms of Hypothermia for additional clinical symptoms of hypothermia.

When a person is mildly hypothermic, he/she should be moved indoors where it is warm, wet clothing removed, and a warm beverage provided. The body must be rewarmed slowly. In more severe cases emergency medical services will be notified promptly. While transporting the person or awaiting the arrival of the emergency unit the following steps should be taken to try to prevent further heat loss:

Actions to take:

- Keep the person dry, remove wet clothing
- Apply external warmth
- Have person breathe warm moist air
- Handle the person gently
- Remain alert of any complications

Actions to avoid:

- Give hot liquids
- Allow person to exercise.

Table 2: Symptoms of Hypothermia		
Core Temperature		Clinical Symptom(s)
°C	°F	
37°	98.6°	"Normal" oral temperature
36°	96.8°	Metabolic rate increases in an attempt to compensate for heat loss
35°	95.0	Maximum shivering
34°	93.2°	Victim conscious and responsive, with normal blood pressure
33°	91.4°	***Severe hypothermia below this temperature***
32° 31°	89.6° 87.8°	Consciousness clouded, blood pressure becomes difficult to obtain, pupils dilated but react to light, shivering ceases
30° 29°	86.0° 84.2°	Progressive loss of consciousness, muscular rigidity increases, pulse and blood pressure difficult to obtain, respiratory rate decreases
28°	82.4°	Ventricular fibrillation possible with myocardial irritability
27°	80.6°	Voluntary motion ceases, pupils nonreactive to light, deep tendon and superficial reflexes absent
26°	78.8°	Victim seldom conscious
25°	77.0°	Ventricular fibrillation may occur spontaneously
24°	75.2°	Pulmonary edema
22° 21°	71.6° 69.8°	Maximum risk of ventricular fibrillation
20°	68.0°	Cardiac standstill
18°	64.6°	Lowest accidental hypothermia victim to recover

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Cold Stress Prevention - Prevention includes proper work practices, protective clothing, and proper diet. The following is recommended to prevent cold related injuries:

- Temperature and wind monitoring via. cellular devices at the site
- Work periods with frequent breaks for rewarming
- Supply of beverages
- Bare skin should not contact metal objects
- The buddy system should be used
- Clothing that becomes damp or wet should be changed immediately. Dress in layers. Remove clothing as exercise increases and the body begins to sweat. Remove wet clothing and replace shed dry clothing as work pace decreases.
- Provide shelter when working outside for prolonged periods.

If work is performed continuously at 20°F ECT or below, heated warming shelters (e.g. vehicle) should be used for warm up breaks. A work warming regimen can be established using the ACGIH guidelines. The HSO will determine the frequency of warm up breaks according to the anticipated workload. For work at or below 10°F ECT the following additional considerations should apply:

- The work rate should not be so vigorous as to cause sweating that will result in wet clothing; if heavy work must be done, all rest periods be taken in heated shelters and the opportunity for changing into dry clothing.
- The work will be arranged in such a way that sitting still or standing still for long periods is minimized.

Clothing Requirements - Clothing should be worn loosely, in layers, and selected for the type of work to be performed. The loose clothing and layers provide maximum protection because layers of warm air are trapped between the clothing layers. This method of dressing also allows the outer layer to be removed during heavy manual work, or if there is an increase in temperature. The layer closest to the skin should keep the skin dry and allow the perspiration to escape.

The outer layers of clothing are for insulation and should be made of wool, goose down, or synthetic fiber-filled materials. Wool absorbs significant amount of body moisture before losing its ability to insulate, making it preferable to cotton. Gore-Tex and polypropylene are often recommended for use next to the skin.

If clothing becomes damp or wet from the work activity or perspiration, it should be changed. Waterproof outerwear should be worn if there is precipitation.

Up to 50 percent of heat loss occurs through the head, ears and back of the neck. Appropriate head coverings are an important clothing item. Hands should be protected since hands and fingers are susceptible to frostbite.

Waterproof boots should be worn when working outside in snow or wet areas. The soles and upper part of the boots should provide good insulation. The footwear should not be too constricting and the socks should allow evaporation of perspiration.

Cold Stress Treatment - Individuals or coworkers expressing the symptoms of cold stress will notify the HSO immediately. At the onset of cold-related illness, activities must be halted, and treatment initiated.

4.6.3 Ticks

Working in tall grass, especially in or at the edge of wooded areas, increases the potential for ticks to affect workers. Ticks are vectors of many different diseases, including Rocky Mountain spotted fever, Q fever, tularemia, Colorado tick fever, and Lyme disease. Ticks attach to their host's skin and intravenously feed on the host's blood thus creating an opportunity for disease transmission. Covering exposed areas of the body and the use of tick repellent N,N Diethyl m toluamide (DEET) can help prevent tick bites. Please note that there are some concerns with the use of DEET on skin and associated potential adverse health effects. Periodically during the workday, employees will inspect themselves for the presence of ticks. If a tick is discovered, the following procedure should be used to remove it:

- Do not try to detach a tick with bare fingers; bacteria from a crushed tick may be able to penetrate even unbroken skin. Fine-tipped tweezers should be used.
- Grip the tick as close to the skin as possible and gently pull it straight away from the skin until it releases its hold.
- Do not twist the tick while pulling and do not squeeze its bloated body. That may actually inject bacteria into the skin.
- Thoroughly wash hands and the bite area with soap and water. Then apply an antiseptic to the bite area.
- Save the tick in a small container with the date, the body location of the bite, and where it is thought the tick came from.
- Notify the HSO of any tick bites as soon as possible.

Recently, Lyme disease has been the most prevalent type of disease transmitted by ticks in the United States.

4.6.4 Rodents

Buildings housing rodent nests are not anticipated and workers are not permitted to eat on site. Exposure to potential hazardous associated with rodents is not expected.

4.6.5 Poisonous Plants

Poison ivy, poison oak, and poison sumac are identified by three or five leaves radiating from a stem. Poison ivy is in the form of a vine while oak and sumac are bush-like. All of these plants can produce a delayed allergic reaction. The plant tissues have an oleoresin, which is active in live, dead, and dried parts. The oleoresin may be carried through smoke, dust, contaminated articles, and the hair of animals. Symptoms usually occur 24 to 48 hours after exposure and result in rashes that itch and blister. Should exposure to any of these plants occur, wash the affected area with a mild soap and water within one-half hour, but do not scrub the area. The best preventative measure for poisonous plants is recognition and avoidance.

4.6.6 Snakes

Rattlesnakes and copperheads are two poisonous snake species that could potentially be found within the project area. The degree of toxicity resulting from snakebites depends on the potency of the venom, the amount of venom injected, and the size of the person bitten. Poisoning may occur from injection or absorption of venom through cuts or scratches.

The most effective way to prevent snakebites is to avoid snakes. Personnel should avoid walking at night or in high grass and underbrush, to the extent practical. Visual inspection of work areas should be performed prior to activities taking place. The use of leather boots and long pants will be required, since more than half of all bites are on the lower part of the leg. No attempts at killing snakes should be made. Personnel will not put their hands in areas where the hands cannot be seen.

If a snake bite occurs by a potentially poisonous snake, the following treatment should be initiated:

- Keep the employee calm.
- Notify emergency medical services (by calling 911).
- Wash the wound and keep the affected body part still.
- Apply direct pressure to the bite if bleeding is extreme.
- Keep the affected area lower than the heart.
- Carry a victim who must be transported or have him/her walk slowly.
- Transport the victim to the closest medical facility.

4.6.7 Flying Insects

Flying insects such as mosquitoes, wasps, hornets, and bees may be encountered while site activities occur. Personnel who are allergic to bee stings must notify their supervisor and the HSO. Mosquito bites can be effectively prevented by the use of insect repellants containing DEET. Please note that there are some concerns with the use of DEET on skin and associated potential adverse health effects. Treatment for insect bites and bee stings can be affected by the use of commercially prepared ointments.

4.6.8 Spiders

Personnel will be alert to the potential for spider bites. Spiders sometimes establish residence in stored clothing and PPE. It is advisable for personnel to inspect clothing and PPE for spiders prior to donning. Prompt reporting and medical evaluation is necessary if personnel show an allergic reaction after being bitten by a spider.

4.6.9 Sun Burn

Personnel working in direct sunlight are encouraged to apply sunscreen to unprotected skin surfaces. The benefits of preventing sunburn and skin cancer are self-evident.

5.0 MONITORING AND PERSONAL PROTECTIVE EQUIPMENT

Tasks associated with site inspection, sampling and contaminated material handling present hazardous conditions. Exposure pathways include inhalation, contact and ingestion (via improper decontamination and poor personal hygiene practices). The risk of exposure will be minimized by the use of work practices, engineering controls, and air monitoring.

5.1 KNOWN AND POTENTIAL SITE CONTAMINANTS

The Site has been subject to investigation since 1984. The following below listed compounds have been identified in media at the subject property above on or more respective New York State Department of Environmental Conservation (NYSDEC) Standard, Criteria, or Guidance (SCG) value in prior environmental investigation having applicability to the prospective warehouse use. Exposure to surface water and sediments are not expected during the soil gas investigation.

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);
- 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).

Various waste materials are also well known within soil media including ash, slag, wood, glass, plastic/vinyl, porcelain, wood/timber, tires, brick, metal, paper products, and rubber. Drums have also been previously documented on the property. There is a potential for the landfill to have also received Asbestos Containing Material (ACM) as well as additional contaminants within soils which have not been identified due to the heterogeneity of the waste materials deposited in addition to other VOCs, SVOCs, metals, pesticides, PCBs and PFAS compounds that have been identified by below respective warehouse use scenario SCG, posing additional risk during development. The degree of impacted gases is also under investigation as described pursuant to this plan. It is anticipated at a minimum methane, hydrogen sulfide, and carbon monoxide are present.

Generally, the compounds identified pose a long term risk of developing adverse health impacts including various forms of cancer based on the known contaminants and concentrations identified in prior investigation. The immediate symptoms of acute poisoning to one or more contaminants may generally include coughing, shortness of breath, chest pain, nausea, vomiting, abdominal pain, headaches, confusion, drowsiness, dizziness, weakness, muscle/joint pain, irritability, diarrhea, narcosis, tremors, muscle spasms, and restlessness.

Methane and carbon monoxide are primarily considered simple asphyxiants (displacing oxygen in air). Methane can also form explosive mixtures with air. Air containing less than 5.5% methane no longer explodes and limits of flammability of methane is published as 5% and 15% by volume in air at room temperature.

Hydrogen sulfide is a colorless, flammable, and toxic gas with a strong odor similar to that of rotten eggs. However, with continuous low-level exposure, or at high concentrations, a person loses his/her ability to smell the gas even though it is still present (olfactory fatigue). Hydrogen sulfide is both an irritant and a chemical asphyxiant with effects on both oxygen utilization and the central nervous system.

Research is still ongoing to determine how different levels of exposure to different PFAS can lead to a variety of health effects but currently have been shown to lead to reproductive effects, developmental effects, increased cancer risk, reduced immune system ability, interference with hormones, increased risk of obesity.

The administrative and controls outlined in this HASP aim to mitigate exposure to hazardous substances, thereby minimizing the potential health risks. Soil gas investigation is expected to conclude within approximately 3 months. As a result, the duration of these potential exposure activities is projected to be substantially shorter than the overall development timeline of the project.

The risks of worker exposure to impacted media (soil, ground water, gas) is minimal due to the limited duration and frequency of soil-disturbing activities (e.g. drilling). Personnel will wear appropriate Personal Protective Equipment (PPE), dust control measures will be implemented, decontamination procedures will be applied, and an air monitoring program initiated, further mitigating potential risks.

5.2 Administrative Controls

Administrative controls - such as work practices and work rules listed below - will assist in minimizing exposure to site contaminants. Work practices will be adjusted in a manner to minimize dust generation, such as lowering drilling rates, limiting soil free-fall from equipment augers, and limiting equipment speed over the Site. Personnel will avoid working in dust by positioning themselves upwind. Workers will be prohibited from dry sweeping equipment during decontamination. Potential exposure from contamination will be limited by the following work practices listed below.

5.2.1 Contamination Control/Decontamination

Contamination will be minimized by limiting the exposure of personnel, materials, and equipment to contaminants. Disposable PPE will be removed and disposed of at a designated location. Zip-lock bags and plastic sheeting will be used to protect difficult-to-decontaminate materials and equipment. The protective barrier method will be used on items such as cameras, radios, certain monitoring instruments, notebooks, maps, papers, etc.

5.2.2 General Personal Decontamination

Decontamination involves scrubbing with detergent/water solution followed by clean water rinses. All disposable personal protection equipment will be disposed of in plastic bags. Respirators will be cleaned using disinfectant wipes designated for such use after applicable use. Alternatively, soap and water may be applied if disinfectant wipes are unavailable.

5.2.3 Sampling Equipment Decontamination

Equipment in contact with soils and waste materials will be decontaminated between each sample taken. Sampling instruments will be decontaminated using wet wipes. As necessary, equipment (that is reusable) may be decontaminated using LIQUINOX® liquid detergent and gentle scrubbing with a brush then a water rinse.

5.2.4 Procedures for Equipment and Vehicle Decontamination

Larger machinery equipment and vehicle decontamination procedures consist of cleaning with a low volume, high pressure (or steam) washer will consist of the following, as applicable.

- Gross decontamination:
  - Remove excess solids (mud) with scraper, water hose, or pressure washers
- Final decontamination:
  - High pressure wash all outside surfaces
  - Vacuum and wipe down interior surfaces

Contractors are responsible for implementing their own decontamination procedures and containing wastes. Augers should be decontaminated between boreholes. Sheeting should be used in collecting and transferring wastes. 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, to the extent practical.

5.3 Engineering Controls

Engineering controls are strategies that protect workers from hazardous conditions by isolating the worker from the hazard or removing the hazard. Significant dust emissions are not anticipated based on CED's experience on similar projects. Visible dust emissions will be controlled by suppression with amended water, if work practices are insufficient. Exposure to potential asbestos exposure within landfill waste will also be minimized by work practices and water suppression of visible emissions. When methane levels exceeds the action level listed under below in **Section 5.4**, an industrial fan will be used to dilute air around the drill rig in reducing the potential for exposure and an explosion.

5.4 Air Monitoring

Work areas will be monitored visually and with the use of air monitoring instrumentation during subsurface exploration (e.g. drilling). Surface activities under current site conditions are expected to have adequate air quality based on CED's experience on similar projects. However, there is the potential buried waste materials could be encountered, therefore air monitoring methods will be used to reduce the risk of potential hazards. Ambient air monitoring will be implemented during drilling with the use of a four-gas meter and photoionization detector (PID) will gauge real-time exposure concentrations. Equipment will be calibrated and field-checked prior to use.

The four-gas meter will measure oxygen (O_2) content, Lower Explosive Limit (LEL), hydrogen sulfide (H_2S), and carbon monoxide (CO) which will be set to alarm visually and audibly if a parameter exceeds OSHA Permissible Exposure Limits (PELs). The four-gas meter will be equipped to on-site personnel while traversing the site and will be affixed to tubing within proximity of the borehole during drilling. The PID will measure total Volatile Organic Compounds (VOC). Air monitoring equipment will be affixed to on-site personnel or placed approximately

downwind of drilling activities and will continuously monitor vapor levels. The monitors will be routinely checked and the Time-Weighted Average (TWA) compared to action levels.

Should any action level be exceeded, operations will be adjusted following administrative and engineering controls to reduce the risk of exposure. The following action levels below apply.

5.4.1 Volatile Organic Compounds

Volatile organic compounds (VOCs) are documented within on-site soils and waste as well as other potential containerized hazards (e.g. drum) posing a safety concern. Although the American Conference of Governmental Industrial Hygienists (ACGIH) does not have a Threshold Limit Value (TLV) specific to total VOCs (TVOCs), the following is suggested based on prior investigation VOC analytical results which uses the benzene OSHA PEL as the TVOC action levels:

Direct Reading Instrument:	Photoionization Detector (PID)
Action Concentration:	One (1) ppm over an 8-hour TWA Five (5) ppm over 15-minutes TWA (a.k.a. short-term exposure limit (STEL)
Frequency of Direct Reading Measures:	Readings will be taken periodically throughout the activities unless conditions suggest more frequent readings (e.g., soils being encountered are known to be contaminated)

Ambient air will routinely monitor VOCs utilizing a Photoionization Detector (MiniRAE 3000 or similar). Should total VOCs exceed the action levels above in the breathing zone above background, level C PPE should be implemented including respiratory protection. Conditions that may present an additional hazardous VOC environment include pooled discolorized liquids, an oily sheen on water or surfaces, open unlabeled containers of unknown liquids, or detecting an odor while wearing the specified respiratory protection. Work practices should be adjusted if encountered. Higher level PPE may be required depending on the below listed action levels.

5.4.2 Oxygen, Hydrogen Sulfide, Carbon Monoxide, and Methane Gas

Ambient air will routinely be routinely monitored utilizing a four-gas monitor (QRAE 3 or similar) for the following parameters and alarm should any parameter be outside action levels. OSHA defines as oxygen deficient any atmosphere that contains less than 19.5 percent oxygen, and as oxygen enriched for any atmosphere that contains more than 22 percent. The action level for hydrogen sulfide is 1 ppm (8-hour TWA) and 5 ppm STEL. The action level for carbon monoxide is a 25 ppm 8-hour TWA with a ceiling (maximum at any reading) of 200 ppm. Methane will be monitored for health and safety purposes by observation of the Lower Explosive Limit of 5% air by volume around the drill rig boring hole. Operations must be suspended, ignition sources eliminated, and the area must be ventilated if the concentration of flammable/combustible vapors reaches or exceeds 5% of the LEL.

5.5 Community Air Monitoring Program

Action levels are not anticipated to be exceeded at the site perimeter based on CED's experience with similar projects. As such, a community air monitoring program (CAMP) is not proposed as part of this investigation. Air monitoring will commence at the immediate vicinity of activities or at an approximate location downwind of the

drilling activities as described under **Section 5.4**. Should results indicate a potential exposure pathway to the site perimeter, an amended HASP will be prepared including policy and procedures for a CAMP, to be determined by the HSO.

5.6 Personal Protective Equipment

When engineering and administrative controls are not feasible or adequate to protect personnel from the hazards associated with project activities, higher levels of PPE use will be required. Several items of PPE such as full-face shields, goggles, cut-resistant gloves, fall protection, etc., will be addressed on a task-by-task basis. The following is a description of the PPE that will be required during various phases of the project. The U.S. Environmental Protection Agency (EPA) terminology for protective equipment will be used: Levels A, B, C, and D.

5.6.1 Level A Protection

Level A protection use is not anticipated during this project.

5.6.2 Level B Protection

Level B protection use is not anticipated during this project.

5.6.3 Level C Protection

Level C protection will be required during active drilling operations and at the immediate drilling vicinity. Level C protective equipment will consist of the following in addition to Level D PPE:

- Air purifying respirator (APR) with NIOSH-approved combination high-efficiency particulate air (HEPA) /organic vapor (OV) cartridges; and,
- Tyvek® coveralls with elastic wrist, hood and boots (or equivalent synthetic fiber).

Employees utilizing respirators will be trained and fitted for respirator use in accordance with SOP #12 – Respiratory Protection. Higher levels of PPE will be required should oxygen concentrations fall outside of the permissible limits established under **Section 5.4.** The HSO will determine when higher levels of PPE are needed.

5.6.4 Level D Protection

Level D protection will be worn for all activities during this project unless site conditions warrant a higher level of protection if real time airborne concentrations of contaminants exceed the action levels under **Section 5.4**. Level D PPE used at the site will consist, at a minimum, of:

- Work clothing as prescribed by weather (cotton coveralls)
- Head protection (Hardhat);
- Eye and face protection (Safety glasses);
- Foot protection (Safety boots);
- Hand protection (disposable nitrile gloves and/or leather gloves); and,
- Hearing protection (earplugs or earmuffs, if necessary).

To avoid skin contact, minimally, latex or vinyl gloves will be worn by personnel. After the gloves are removed, the workers will wash their hands using potable water and liquid soap, or disposable towelettes before leaving the site.

5.6.5 Activity-Specific Levels of Protection

The required level of personal protection is specific to the activity being conducted. Based on the available information reviewed at the time of the preparation of this HASP, the activities being performed, and the projected engineering/administrative controls, Level C protection is required during active drilling operations. Level D protection is anticipated of the balance of the investigation activities to the completion of this project. The level of protection described above is based on known or suspected hazards on the subject site. Higher level protection may be required based on actual site conditions encountered. Actual conditions observed and additional hazards potentially requiring higher levels of protection must be conveyed to the HSO and PM.

6.0 TRAINING REQUIREMENTS

6.1 General Training

The HSO is responsible for informing all site personnel and all visitors of the contents of this HASP and ensuring that each person signs the HASP and Training Acknowledgment Forms prior to working on the site. Training certification will be retained by CED Corporate Health & Safety Management and submitted to agencies (as required). Employees deficient of any training will notify the HSO.

6.2 Hazardous Waste Operations Training

Any person conducting on-site remediation activities will have successfully completed a 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) safety and health training course.

6.3 Supervised Field Experience

Any person conducting on-site activities will have received a minimum of three (3) days actual field experience under the direct supervision of a trained, experienced supervisor.

6.4 First Aid and CPR Training

There will be at least one person trained and certified in both American Red Cross first aid techniques and CPR on-site whenever activities occur.

6.5 Hearing Conservation Training

CED employees on-site during drilling operations will have received initial and annual hearing conservation training. Training will be issued and records maintained by CED Corporate Health & Safety Management.

6.6 Respiratory Protection Training

CED employees on-site during drilling operations will have received training for respirator use with a respirator that has been fit tested following the method described under 29 CFR 1910. Training and fit testing will be conducted initially and annually thereafter. Should respiratory protection be required, based on air monitoring results, employees without respirators and appropriate training and fit testing are not permitted to be on site.

7.0 MEDICAL SURVEILLANCE

CED will use the services of a Board-Certified Occupational Medicine Physician for the medical surveillance requirements of this project.

7.1 MEDICAL EXAMINATION

On-site personnel with the potential for exposure to contamination will have successfully completed a pre-placement or periodic/updated physical examination.

7.2 PRE-PLACEMENT EXAM

This examination has been designed to meet 29 CFR 1926.65 and 29 CFR 1910.120 requirements for hazardous waste site operations.

The medical surveillance program examination, at a minimum, will consist of:

- Medical and occupational history questionnaire, which includes information on past gastrointestinal, hematologic, renal cardiovascular, reproductive, immunological, and neurologic problems
- Physical examination
- Chest X-ray (As determined by physician or other licensed healthcare professional)
- Blood pressure
- Complete blood count (CBC) and differential to include hemoglobin and hematocrit determinations, red cell indices, and smear of peripheral morphology
- Blood urea nitrogen and serum creatinine
- Sequential Multiple Analyzer Computer Profile (SMAC 24)
- Pulmonary function test (As determined by physician or other licensed healthcare professional)
- Audiogram (if exposure at or above 85 dBA)
- Electrocardiogram (EKG) for employees over 35 years old or when other complications indicate the necessity
- Stress test (as directed by the occupational physician based on EKG/pulmonary function testing)
- Visual acuity; and,
- Urinalysis for baseline bioassay of the major radioactive PCOCs at HISS will be conducted for Ra-226, U-234, U-235, and U-238. Urinalysis, as necessary, for baseline bioassay for heavy metals (arsenic, cadmium, chromium), serum lead, and zinc protoporphyrin.

The following information will be provided to the occupational physician:

- Copy of 29 CFR 1926.65 and 29 CFR 1910.120;
- Description of employee's duties;
- Site contaminant information;
- Description of the PPE to be used and employee anticipated or measured exposure;
- Information from previous medical exams;
- Copy of Section 5.0 of NIOSH Publication 85-115; and,
- Information required by 29 CFR 1910.134.

The medical surveillance provided to the employee includes a judgment by the medical examiner of the ability of the employee to use either positive- or negative-pressure respiratory protection equipment. Employees found

to have a medical condition that could directly or indirectly be aggravated by exposure to chemical substances onsite or by the use of respiratory equipment will not be employed for the project. A copy of the medical examination is provided at the employee's request.

The employee will be informed of any medical conditions that would result in work restriction or that would prevent them from working at hazardous waste sites.

7.3 Subcontractor Requirements

Subcontractors will certify that their employees have successfully completed a physical examination by a qualified physician. The physical examinations will meet the requirements of 29 CFR 1926.65 and 29 CFR 1926.103.

7.4 Medical Records

Medical and personal exposure monitoring records will be maintained according to the requirements of 29 CFR 1926.65 and 29 CFR 1910.120 and will be kept for a minimum of 30 years by CED Corporate Health & Safety Management. The confidentiality of employee medical records is maintained. Written medical opinions from the occupational physician are kept in site files.

7.5 Medical Restrictions

When a medical care provider identifies a need to restrict work activity, the health and safety program manager will communicate the restriction to the employee. The terms of the restriction will be discussed with the employee, the PM and the HSO. Every attempt will be made to keep the employee working, while not violating the terms of the medical restriction.

8.0 SECURITY

Unauthorized personnel are not permitted from accessing the site. The HSO will be responsible for limiting access to unauthorized individuals during investigation activities. All CED employees entering the work areas will have completed the 40-hour HAZWOPER training course, including the annual, 8-hour refresher training. Employees will adhere to the project HASP.

9.0 EMERGENCY RESPONSE

9.1 NOTIFICATION OF SITE EMERGENCIES

In the event of an emergency, site personnel will leave the work area immediately and gather at a rendezvous location - to be decided upon by the HSO assigned to the project prior to initiating work activities. The rendezvous location will be chosen for accessibility, will be at least 100 feet from the structures and will not impede entrance by emergency response vehicles and personnel. An emergency signal such as waving arms overhead, an air horn, or cellular devices will be used for emergency communications. The HSO will be responsible for accounting for all personnel at the rendezvous location and notifying emergency response personnel of any missing personnel.

9.2 GENERAL REQUIREMENTS

All first aid equipment will be maintained in proper working order and inspected by HSO assigned to the project. In the event that any disposable items are utilized, the HSO will ensure they are replaced promptly. Site operations will not be conducted if adequate first aid equipment are not available. The HSO will oversee all health & safety activities including posting emergency telephone numbers at each work site and documenting any "near miss."

9.3 FIRST AID KIT REQUIREMENTS

To ensure that adequate first aid supplies are available, the first aid kit will be maintained in the field vehicle in a weatherproof location with individual sealed packages for each type of needed item and will be checked at least weekly to ensure expended items are replaced. At a minimum the kit should include:

- 30 adhesive bandages (3/4 x 3")
- 1 adhesive tape (1" x 2.5 yds)
- 6 antiseptic wipes
- 20 assorted woven bandages
- 1 cold pack
- 6 first aid crème packets
- 1 gauze roll (2" X 4.5 yds)
- 2 ammonia inhalants
- 1 cotton sterile roll
- 2 eye dressings (2")
- 2 eye wash (16 oz bottles)
- 4 gauze pads (3 x3")
- 1 scissor
- 1 trauma pad
- 1 tweezer
- 1 CPR Mask kit
- box of latex gloves
- 1 biohazards waste bag
- 1 face mask/eye shield

The content and location of the first aid kit(s) will be made known to all personnel.

9.4 Accident / Incident Report Requirements

An Accident/Incident Report will be completed for any personal injury, accidental damage to property, or near miss which could have resulted in personal injury, illness, or property damage. The incident report will be completed within 24 hours and the investigation report will be completed within 72 hours. The procedures listed on the below copy of the CED "Incident Reporting Instructions" wallet card will be followed.

Colliers Engineering & Design

REPORT INCIDENT IMMEDIATELY

When it is safe, contact Lisa DeBenedetto

732 704 5870 or 732 300 2797

or Jim Marschner **585 455 7043**

Incident Type	Initial Step	Next Steps
Serious Injury	Call 911 / Emergency Services	Contact Lisa with injured employee information
Non-Serious Injury	Call Lisa or Jim and your Manager	Guidance depends on injury
Vehicle Accident	Call police for accident report	Call Lisa, Jim or Jorge Perez (732 704 5397) with accident info

9.5 Emergency Contact Phone Numbers

EMERGENCY INFORMATION

- Fire Department - 911 ((845) 562-1212 for Non-Emergency)
- Police Department - 911 ((845) 561-3131 for Non-Emergency)
- Ambulance - 911 ((845) 561-0950 for Non-Emergency)
- NYS Troopers Barracks – 911 ((845-344-5300 for Non-Emergency)
- National Response Center – c/o United States Coast Guard (G-OPF) – 800-424-8802

NYSDEC Contact

- Project Manager: Brittany O'Brien.: 518-402-9672

NYSDOH Contact:

- Technical Lead: Julia Kenney: 518-402-7873

City of Newburgh Contacts:

- Owner Representative: Jason Morris: 845-569-7448

Consulting Contacts:

- Remedial Consulting Engineer: C.T. Male Associates: 845-454-4400
- Soil Gas Investigation Consulting Engineer: CED: 732-383-1950

CED Corporate Health & Safety Managers:

- Lisa DeBenedetto, Director of Health & Safety - (732) 300-2797 lisa.debenedetto@colliersengineering.com
- Jim Marschner, Senior Manager, Health & Safety – (585) 455-7043 jim.marschner@colliersengineering.com

CED Health and Safety Committee Members

- Allison Colantuoni, Chief People Officer – (732) 704-5031 allison.colantuoni@colliersengineering.com
- Craig Zeidman, Chief Integration Officer – (856) 242-2042 craig.zeidman@colliersengineering.com
- Mark Delor, Division Director-Survey/Geospatial – (518) 807-6177 mark.delor@colliersengineering.com

Project Specific Health and Safety Members

- CED Phase Manager: John Fortunato: (732) 710-1142
- CED - HSO: Nicholas DiVincent: (551) 206-0638

Hospital:

Montefiore Saint Luke's Cornwall
70 Dubois Street, Newburgh, NY
Phone: (845) 561-4400

Directions to the hospital are included as **Appendix A**.

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HASP Acknowledgement Form

I have read this document in its entirety, understand its contents, and will abide by the policies set forth herein:

Name	Signature	Date

APPENDIX A
DIRECTIONS TO NEAREST HOSPITAL

Google Maps

5 Scobie Dr, Newburgh, NY 12550 to 70 Dubois St, Newburgh, NY 12550

Drive 2.1 miles, 7 min

Imagery ©2024 CNES / Airbus, Landsat / Copernicus, Maxar Technologies, Map data ©2024 2000 ft

5 Scobie Dr
Newburgh, NY 12550

1. Head south on Scobie Dr toward Pierces Rd — 0.2 mi
2. Turn right onto Pierces Rd — 0.4 mi
3. Turn left onto South St — 1.3 mi
4. Turn right onto Dubois St — 0.2 mi
5. Turn left
   Destination will be on the right — 46 ft

70 Dubois St
Newburgh, NY 12550

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