# REMEDIAL INVESTIGATION PHASE I
# FIELD ACTIVITIES PLAN
# 1735 EXPRESS DRIVE NORTH; SITE NO. 152238
**HAUPPAUGE, NEW YORK**

**WORK ASSIGNMENT NO. D009809-39**

**Prepared for:**

**New York State Department of Environmental Conservation**
**Albany, New York**

**Prepared by:**

**MACTEC Engineering and Geology, P.C.**
**Portland, Maine**

**MACTEC Project No.: 3616236252**

**MAY 2024**

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## GLOSSARY OF UNITS, ACRONYMS AND ABBREVIATIONS

Units of Measurement

| | |
|---|---|
| ºF | degrees Fahrenheit |
| ft | foot/feet |
| µg/kg | micrograms per kilogram |
| µg/L | micrograms per liter |
| mg/kg | milligrams per kilogram |
| mg/L | milligrams per liter |
| ng/kg | nanograms per kilogram |
| ng/L | nanograms per liter |
| ppm | parts per million |
| | |
| amsl | above mean sea level |
| | |
| BCA | Brownfields Cleanup Agreement |
| bgs | below ground surface |
| | |
| CAMP | Community Air Monitoring Plan |
| COC | Contaminant of Concern |
| CSM | Conceptual Site Model |
| | |
| DER | Division of Environmental Remediation |
| | |
| ELAP | Environmental Laboratory Approval Program |
| EPA | Environmental Protection Agency |
| | |
| FAP | Field Activities Plan |
| FDR | Field Data Record |
| FS | Feasibility Study |
| FWIA | Fish and Wildlife Impact Analysis |
| | |
| GPS | Global Positioning System |
| | |
| HASP | Health and Safety Plan |
| | |
| IDW | Investigation Derived Waste |
| | |
| LP | Leaching Pool |
| | |
| MACTEC | MACTEC Engineering and Geology, P.C. |

| | |
|---|---|
| MCL | Maximum Contaminant Level |
| MNA | Monitored Natural Attenuation |
| MP | Monitoring Point |
| MW | Monitoring Well |
| | |
| NTU | Nephelometric Turbidity Units |
| NYCRR | New York Codes, Rules, and Regulations |
| NYS | New York State |
| NYSDEC | New York State Department of Environmental Conservation |
| NYSDOH | New York State Department of Health |
| | |
| PCB | Polychlorinated Biphenyl |
| PDB | Passive Diffusion Bag |
| PFAS | Per- and Polyfluoroalkyl Substances |
| PFOA | Perfluorooctanoic Acid |
| PID | Photoionization detector |
| PPE | Personal Protective Equipment |
| PVC | Polyvinyl Chloride |
| | |
| QAPP | Quality Assurance Program Plan |
| QA/QC | Quality Assurance/Quality Control |
| | |
| RCRA | Resource Conservation and Recovery Act |
| RI | Remedial Investigation |
| | |
| SCDHS | Suffolk County Department of Health Services |
| SCG | Standards, Criteria, and Guidance |
| SCO | Soil Cleanup Objectives |
| SVOC | Semi-volatile Organic Compound |
| SOP | Standard Operating Procedure |
| | |
| TAL | Target Analyte List |
| TCE | Trichloroethene |
| TCL | Target Compound List |
| TCLP | Toxicity Characteristic Leaching Procedures |
| | |
| USEPA | United States Environmental Protection Agency |
| VOC | Volatile Organic Compound |
| | |
| WA | Work Assignment |

# 1.0 INTRODUCTION

MACTEC Engineering and Geology, P.C. (MACTEC), under contract with the New York State Department of Environmental Conservation (NYSDEC), prepared this Field Activities Plan (FAP) in response to Work Assignment (WA) No. D009809-39 dated April 21, 2023. This FAP presents the plan for data collection for conducting a Remedial Investigation (RI) and preparing a detailed analysis of remedial alternatives (Feasibility Study [FS]) at 1735 Express Drive North, NYSDEC Site No. 152238 (Site). The Site is located in the hamlet of Hauppauge within the town of Islip, Suffolk County, New York (Figure 1). This FAP has been prepared in general accordance with the requirements of the WA and the Superfund Standby Contract between MACTEC and NYSDEC dated January 30, 2020, and describes the RI activities planned at the Site.

This FAP is governed by MACTEC's *Quality Assurance Program Plan and Program Field Activities Plan* (MACTEC, 2020a) and applicable standard operating procedures for field activities.

The FAP is organized into five sections as described below, followed by supporting figures, tables, and attachments.

- Section 1.0: Introduction– presents the FAP organization, WA objectives, and the Site background.
- Section 2.0: Physical Setting- presents the physical characteristics of the Site and the region.
- Section 3.0: Conceptual Site Model.
- Section 4.0: Scope of Work- details the proposed Site investigation activities and reporting.
- Section 5.0: References.

## 1.1 WORK ASSIGNMENT OBJECTIVES

Based on the WA issuance and discussions with the NYSDEC Project Manager, the objective of the RI/FS is to assess the nature and extent of volatile organic compounds (VOCs) released into the environment from the Site and to evaluate remedial alternatives to address contamination identified during the remedial investigation. The specific objectives of the RI are:

- Evaluate the extent of VOCs migration from the Site.
- Evaluate risk of exposure via soil vapor intrusion into buildings proximal to the Site.
- Evaluate risk of exposure to Site contaminants via contact with shallow Site soils.
- Evaluate residual contamination present in the Site subsurface soil.

## 1.2 SITE BACKGROUND

The following sections describe the Site location, history, and previous investigations performed at the Site.

### 1.2.1 SITE LOCATION

The Site is located at 1735 Express Drive North in Hauppauge, Suffolk County, New York. The Site is approximately 1.58 acres occupied by a 30,000-square-foot building on a slab foundation with associated paved parking and landscaped areas. The Site is mapped in an industrial zone and is identified as Suffolk County tax parcel 0500-037.00-01.00-023.000. It is bound by residential properties to the east, industrial properties including Holiday Cabinetry and a vacant commercial-industrial building to the north, a commercial building to the west, and Express Drive North to the south.

### 1.2.2 SITE HISTORY

Maggio Data Forms Printing, Ltd (Maggio) acquired the Site in 1982 and is the current owner and occupant, operating the Site as a commercial printing facility. From 1960, when the Site was developed, to 1982, it was occupied by Afta Chemical Corporation (Afta), a chemical manufacturer that manufactured various products sold under separate company labels including cleaners and personal care products, some of which contained halogenated solvents. Historical aerial imagery indicates the Site vicinity was developed around the same time as the Site, and appears to be predominantly industrial and commercial properties, with residential properties to the north (Hillman, 2006a).

### 1.2.3 PREVIOUS INVESTIGATIONS

Several environmental investigations were conducted at the Site between 2006 and 2018. Findings from Phase I and Phase II reports completed by Hillman Environmental Group LLC (Hillman) and subsequent investigations by FPM Group (FPM) indicate that discharge of waste fluids occurred to the on-site leaching facilities during Afta's operations (Hillman, 2006a; Hillman, 2006b). Leaching facilities on-site include sanitary and stormwater leaching pools and cesspools (i.e. septic tanks). Maggio received violation notices from Suffolk County in 1988 and 1990 for presence of industrial wastes in concentrations exceeding effluent limits in an on-site sanitary leaching pool and an underground concrete storage tank, respectively (Hillman, 2006a). A Brownfields Cleanup Agreement (BCA) with Maggio was executed in 2013, and subsequently amended in 2020 (NYSDEC, 2013; NYSDEC, 2020). Under the Brownfields Program, contaminated liquids and sediment were removed from leaching pools and cesspools to mitigate continued release to the environment (FPM, 2006a; FPM, 2006b; FPM, 2006c). In 2014, FPM initiated a remedial investigation on behalf of the property owner (FPM, 2013; FPM, 2017). The investigation identified impacts to soils under the building slab where Afta's chemical mixing operations occurred, and near LP-21, a former drywell connected to floor drains in the chemical mixing area on the north end of the original building (Figure 2). The investigation also identified vapor intrusion in the Site building (FPM, 2009).

Impacted soils were identified to 25 feet (ft) below ground surface (bgs) adjacent to LP-21 with concentrations of Tetrachloroethene (PCE) above the Commercial Use SCO at 15 ft bgs and above the Unrestricted Use Soil Cleanup Objectives (SCOs)[1] at 25 ft bgs, indicating subsurface release (FPM, 2017). Soil borings from below the building near the floor drain in the former Afta chemical mixing area also indicate a source area as VOC concentrations exceeded the Unrestricted Use SCO (FPM, 2015). In 2017, contaminated material in LP-21 was removed to a depth of 19 ft bgs to achieve concentrations under Unrestricted Use SCOs, though impacts in the adjacent boring extended to total boring depth of 25 ft bgs (FPM, 2021).

Site-related contaminants were identified in an off-site groundwater investigation performed under the Suffolk County Department of Health Services (SCDHS) starting in 2008. To date, samples of soil, sediment, and/or groundwater have been analyzed for target compound list (TCL) VOCs, TCL semi-VOCs (SVOCs), TCL pesticides, target analyte list (TAL) metals, mercury, 1,4-dioxane, and per- and polyfluoroalkyl substances (PFAS). Samples of soil vapor and indoor air have been analyzed for TCL VOCs at the Site building.

Concentrations of VOCs exceeded regulatory standards in each sample media. Exceedances of regulatory standards for SVOCs was also identified in Site groundwater, and exceedances of metals have been identified in Site soils. A sub-slab depressurization system was installed at the Site building and remains in operation.

# 2.0 PHYSICAL SETTING

## 2.1 TOPOGRAPHY

The Site is located at approximately 135 ft above mean sea level (amsl). It lies on the south side of the east-west trending ridge formed by the Ronkonkoma Moraine that characterizes central Long Island. The regional topography slopes slightly to the north-northwest, however the local topography is relatively flat (Figure 1).

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*[1] 6 NYCRR Part 375 Environmental Remediation Program, Subpart 375-6 – Remedial Program Soil Cleanup Objectives*

## 2.2 CLIMATE

The Site vicinity is characterized by moderately warm summers and cold winters with mean monthly temperatures ranging from 31.9 degrees Fahrenheit (°F) in January to 75°F in July. The average annual precipitation is 46 inches (NOAA, 2020).

## 2.3 SURFACE WATER/STORMWATER HYDROLOGY

Based on surface topography and impermeable surfaces (e.g., asphalt paving) present at the Site, surface water runoff is likely to the north-northwest via sheet flow. The nearest downgradient surface water body is Stump Pond, approximately 1.5 miles to the northeast. The Site is serviced by municipal storm sewer but has an on-site septic system and leach field south of the Site building. Historically, on-site stormwater leaching pools were also utilized for roof runoff. Roof drains are present on each side of the Site building. Runoff from the parking lot and roof drains is routed to stormwater leaching pools around the perimeter of the Site building (FPM, 2013).

## 2.4 SITE LITHOLOGY

The Site vicinity is mapped on Upper Pleistocene glacial deposits that compose the Upper Glacial aquifer (Smolensky et al., 1990). Near the Site, the Upper Glacial unit is estimated to be 350 ft thick and underlain by the Magothy formation. The Upper Glacial is characterized by interbedded till and outwash deposits, resulting in highly variable lithology throughout the unit. Based on soil boring logs from the Phase II investigation, overburden lithology at the Site consists primarily of sandy clays to clayey sands with varying amounts of silt and gravel, which is consistent with the characteristics of the Upper Glacial (Hillman Environmental, 2006). In 2023, the NYSDEC completed a downhole geophysical investigation utilizing conductivity and gamma radiation in existing offsite monitoring well which indicated that the overburden downgradient of the Site is similar, with interbedded layers of sand and silt. A layer of coarse sand and gravel is indicated beginning at approximately 75 ft (NYSDEC, 2023).

## 2.5 GROUNDWATER HYDROLOGY AND HYDROGEOLOGY

Long Island is underlain by unconsolidated deposits of clay, silt, sand, and gravel that overlie southward-sloping bedrock (Smolensky et al., 1990). In the vicinity of the Site, the upper glacial aquifer is the shallowest unit and is mapped as approximately 350 ft thick. The upper glacial deposits overlay the Magothy formation. As noted in Section 2.4, lithology at the Site consists of silt, sand, clay, and gravel mixtures, which is generally consistent with the upper glacial deposits. Groundwater at the Site is approximately 80 to 85 ft bgs, with shallow declining potentiometric head towards the northeast, indicating the direction of groundwater flow (FPM, 2015).

Existing and proposed overburden groundwater wells will be gauged during this RI to further evaluate overburden groundwater hydrology.

## 3.0 CONCEPTUAL SITE MODEL

The conceptual site model (CSM) presented in this section is based on the review of historical data collected during previous investigations as described above. The following sub-sections describe the CSM components including the contaminants of concern (COCs), the source of contamination and the point of entry to the environment, distribution mechanisms, and the migration pathways and exposure routs for COCs. This section also describes data gaps that were identified during development of the CSM. The CSM is considered a dynamic model and will be used to focus, explain, and modify data gathering activities as well as subsequent reporting. An updated CSM will be presented in the RI Report following the investigation.

### 3.1 CONTAMINANTS OF CONCERN

The principal COCs identified at the Site are chlorinated VOCs that exceeded applicable Standards, Criteria, and Guidance (SCGs). VOCs were detected in historical samples collected from on-Site and downgradient groundwater, Site soil, leaching pool and cesspool sediment, and soil vapor and indoor air in the Site building. PCE and trichloroethene (TCE) concentrations have exceeded Unrestricted Use SCOs and PCE has been identified above Commercial Use SCOs in on-site soils. Concentrations of several VOCs in on-site groundwater and downgradient groundwater exceed NYSDEC Class GA Ambient Water Quality Standards[2]. TCE was identified in sub-slab soil vapor and indoor air at concentrations exceeding the New York State Department of Health (NYSDOH) guidelines[3] in the Site building (FPM, 2017).

Additional contaminants have been identified at concentration levels above NYSDEC regulatory values in Site environmental media. Concentrations of perfluorooctanoic Acid (PFOA) exceed the NYSDOH Maximum Contaminant Level (MCL) in groundwater at one on-site monitoring well (FPM, 2021). Historical exceedances of select SVOCs were identified in leaching pool and cesspool sediment.

### 3.2 COC SOURCE AREAS AND POINTS OF ENTRY

Previous investigations identified the highest concentration levels of VOCs in soils and leaching and cesspool sediment near the Site building. Disposal of waste materials into leaching structures and incidental releases to floor drains during facility operations in the 1960s and 1970s have been documented (Hillman, 2006). These

[2] *6 NYCRR Part 703 Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations*
[3] *Guidance for Evaluating Soil Vapor Intrusion in the State of New York, NYSDOH, October 2006, updated February 2024.*

leaching structures represent the primary source areas and the points of entry into the environment for COCs at the Site. Leaching pools and cesspools have been remediated historically, as noted in Section 1.2.3; however, surrounding impacted soils and groundwater indicate these areas as the source of contamination related to the Site. To date, leaching pool and cesspool sediment has been characterized and removed where identified during the Brownfield investigations and are likely not ongoing sources of contamination for the Site, though several are likely historical release points (FPM, 2006a).

On the southern portion of the Site, former sanitary waste leaching pool LP-19, contained p-isopropyl toluene-impacted sediment from the top of sediment surface at 26 ft bgs to 28 ft bgs. LP-19 was an overflow pool for a solid bottomed septic tank (i.e., cesspool [CP]), CP-1; the two were connected with underground piping (FPM, 2013). Sediment removal at LP-19 was attempted in 2006, however, the concrete rings lining LP-19 were determined to be canted and degraded. The structure was backfilled with material excavated to install a replacement leaching pool (LP-19R) and clean sand (FPM, 2006a). The piping from CP-1 to LP-19 was rerouted to LP-19 during subsequent remedial activities (FPM, 2009). Because concentrations of p-isopropyl toluene exceeded the SCDHS cleanup level at LP-19 in the vicinity of the leach field, risk of exposure to shallow soils in this area should be characterized.

As noted in Section 1.2.3, a former drywell, LP-21, was identified during RI activities. LP-21 was connected to floor drains in the Afta chemical mixing area. Though contaminated material above Unrestricted Use SCOs in LP-21 has been removed to a depth of 19 ft bgs, impacts in the adjacent boring extended to total boring depth of 25 ft bgs. These results indicate that the vertical extent of impacted material remaining near LP-21 has not been fully characterized.

## 3.3 CONTAMINANT DISTRIBUTION

VOCs at the Site historically have been highest in soils around LP-21 and in groundwater near the northeastern extent of the Site. Elevated concentrations in groundwater extend offsite to the northeast towards Rabro Drive and Simeon Woods Road. Most recently, the highest concentration levels of VOCs in offsite groundwater were detected along Ranick Road and Rasons Court, in monitoring wells MP-4 and MP-13 (Figure 3). VOCs with the highest detected concentrations in groundwater include PCE, TCE, and related reductive dichlorination breakdown products. Most frequently, PCE is present in the highest concentration, with the relative amount decreasing with each daughter product.

Several soil removals from leaching structures have been completed at the Site under the Brownfields program as noted in the preceding sections; however, impacts to soils near LP-21, have also been identified at depths up to 25 ft bgs, and impacts below this depth may be present.

### 3.4 MIGRATION PATHWAYS

Potential migration pathways from the Site include groundwater and soil vapor. Contaminants have migrated from the leaching structures into Site soils and groundwater. Groundwater flows is to the northeast, though the overall hydraulic gradient at the Site is shallow. Historical sampling has identified Site COCs in downgradient offsite groundwater, indicating migration through groundwater flow.

### 3.5 EXPOSURE ROUTES

Based on sampling completed by the NYSDOH, contaminants have been detected in on-site soil vapor and indoor air. Although impacted groundwater has been identified downgradient of the Site, direct exposure is unlikely as public water is available to the Site vicinity. Vapor intrusion to buildings in the area surrounding the Site has not been evaluated to date. Potential residual contamination in on-Site soils may pose a risk of exposure via direct contact if excavation is conducted. As the downgradient extent of groundwater impacts have not been identified, additional receptors may include surface water bodies such as Stump Pond, to the northeast of the Site.

### 3.6 DATA GAPS

The following data gaps were identified during review of the historical Site records and development of the CSM:

- The vertical extent of remaining impacts to on-Site soils near LP-21 has not been defined.
- The extent of impacts to overburden groundwater has not been defined.
- Groundwater flow rate has not been clearly evaluated and defined.
- The potential for vapor intrusion in buildings in the vicinity of the Site has not been evaluated.

## 4.0 RI SCOPE OF WORK

The RI is designed to address data gaps identified for the Site and to inform the development of the FS for the Site. Upon receipt of approval for the FAP by the NYSDEC project manager MACTEC will begin field efforts. Field operations will be conducted in of four mobilizations.

Field activities are proposed in an iterative approach using results from one or more investigative efforts defining subsequent steps (e.g., well placement). The RI field activities will be executed in multiple mobilizations: Pre-drilling Mobilization, Drilling Mobilization #1, Drilling Mobilization #2, and Post-Drilling Mobilization. Work will be conducted efficiently to reduce travel costs with several efforts completed during single mobilizations (e.g. vertical profiling and well installation).

The tasks to complete the RI scope of work are described in the following sections.

## 4.1 GENERAL FIELD OPERATIONS

### 4.1.1 Health and Safety

The Site-specific Health and Safety Plan (HASP) is provided as Attachment 1. Fieldwork will be conducted in modified Level D personal protective equipment (PPE). Specific investigation activities and required level of personal protection are set forth in the Site-specific HASP. Criteria for upgrading or downgrading the specified level of protection are also provided in the Site-specific HASP. Additional health and safety requirements are set forth in the Program HASP (MACTEC, 2020b). Should Site conditions pose a threat to those present on-Site, and/or should Site conditions warrant an upgrade from modified Level D, as defined by the HASP, work will stop, and the situation will be reevaluated by MACTEC in consultation with the NYSDEC project manager.

### 4.1.2 Property Access and Clearance

Prior to mobilization MACTEC will coordinate access with the NYSDEC and the property owner. Access to off-Site locations will be coordinated by NYSDEC, as needed, to obtain a written grant of access. For clearances of exploration locations, MACTEC will be responsible for marking the locations in the field; the drilling subcontractor will be responsible for coordinating utility clearance with Dig Safely New York to identify utility locations, and to conduct a private utility mark-out prior to ground disturbance activities. If a proposed drilling location is affected by a suspected underground utility, the location will be moved to a nearby location that is cleared by the utility locator. The drilling subcontractor will also be responsible to obtain local permit for traffic control and for work within right-of-way of public roads.

### 4.1.3 Mobilization

Prior to the commencement of field activities, a kick-off meeting will be held on-Site with MACTEC and subcontractor personnel to familiarize on-Site workers with the Site’s history, health and safety requirements, sampling procedures, decontamination efforts, and investigation derived waste (IDW) handling.

MACTEC will coordinate mobilizations to accomplish the maximum amount of work in the most efficient means possible. Based on current understanding, the fieldwork is scheduled to begin on or around August 5, 2024. Mobilization will include obtaining utility clearances and acquisition of the following:

- transportation to and from the Site.
- health and safety equipment.
- sampling equipment and field supplies; and
- decontamination supplies and equipment.

#### 4.1.4 Quality Assurance/Quality Control

Quality Assurance (QA) and Quality Control (QC) measures include standardized procedures for records keeping, samples collection, preservation, and delivery, and laboratory analysis, as described in the Program QAPP (MACTEC, 2020a). Field activities will be documented on field data records (FDRs). Copy of the FDR forms are included in Attachment 2.

Samples identification will be assigned in accordance with the Program QAPP and will include the NYSDEC site number, followed by the location nomenclature, followed by three-digit depth (ft), as follow:
{NYSDEC Site No.}-{Location}-{sample depth}, where:

- {NYSDEC Site No.} is 152238.
- (Location} is comprised of location type code and sequential numbering, starting with 101 for each location type. The following location type codes are anticipated to be used during the RI:
    - AA=Ambient air
    - IA=indoor air
    - MW=Monitoring Well
    - SB=Soil Boring
    - SS=Surface Soil
    - SV=Soil Vapor
- {sample depth} is the discrete sample depth or top of the sampling interval. Sample depths are measured in feet. Three-digit depth will be used.

For example, sample 152238-MW-101085 is a sample from monitoring well MW-101 with a sampling interval of 85-87 ft bgs. If a sample interval is a fraction of a foot, the fraction in tenths of a foot will be added to the end of the sample ID.

During the field investigation, QC samples will be collected in accordance with the program QAPP as follows:

- One field duplicate sample per 20 samples per media.
- One matrix spike/matrix spike duplicate (MS/MSD) per 20 samples per media.
- One equipment-blank per non-dedicated equipment set-up per day.
- One trip blank per cooler of VOC samples.

QA/QC sample abbreviations may consist of the following:

- D = Duplicate Sample
- MS = Matrix Spike
- MSD = Matrix Spike Duplicate
- TB = Trip Blank
- EB = Equipment Blank

The D, MS, or MSD abbreviations will follow the specific sample identification. For example, a duplicate sample for 152238-MW-101085 will be designated as 152238-MW-101085D.

Trip blanks and equipment blanks will be numbered consecutively throughout each sampling event and the sample ID will include the sample date (e.g., trip blanks TB-1-090724; equipment blanks EB-1-090724).

IDW samples that may be collected during the RI will be numbered consecutively and the sample ID will include the sample date (e.g., IDW-1-090724).

Samples submitted to the laboratory will be analyzed using the analytical methods outlined below. Summary of the analytical methods by environmental media are presented in Table 1. The analytical laboratory will be Environmental Laboratory Approval Program (ELAP) certified and will provide NYSDEC Category B deliverables.

#### 4.1.5 Community Air Monitoring Plan

A community Air Monitoring Plan was prepared for the RI in accordance with Appendix 1A of the *Technical Guidance for Site Investigation and Remediation, DER-10 DEC Program Policy. May 2010* (NYSDEC, 2010), and is provided in Attachment 3.

#### 4.1.6 Investigation Derived Waste (IDW)

IDW generated during the investigation is expected to include groundwater, soil, and PPE, and will be handled as follows:

Soil cuttings generated during drilling activities will be containerized in 55-gallon drums at the investigation location and labeled in accordance with program QAPP. Soils will be transferred from the 55-gallon drums to a roll-off dumpster staged at the Site at the end of each workday. At the completion of field activities, the soil will be sampled for waste characterization and disposal parameters and disposed of by a licensed waste transportation and disposal subcontractor. Analyses are to include VOCs by EPA Method 624, SVOCS by EPA Method 625, Total RCRA Metals by EPA Method 6010/7471, TCLP RCRA Metals by EPA Method 1311, pesticides by EPA Method 8081, PCBs by EPA Method 8082, Flashpoint, and Reactivity.

During drilling, well development, and groundwater sampling activities, groundwater will be containerized in totes and 55-gallon steel drums and labeled in accordance with the program QAPP. Turbid groundwater produced during development will be segregated from less turbid water to allow solids to settle to the bottom of the drum. Low turbidity groundwater will be pumped through an onsite granular activated carbon unit and discharged to the ground surface in the vicinity of the sampling location. Turbid groundwater will be allowed to settle, and clear water will be pumped from the top. Water deemed too turbid for the GAC unit will be containerized or mixed with soil cuttings from drilling activities. A prove-out sample will be collected at from the effluent of the granular activated carbon vessel to document SPDES discharge criteria are met.

Used PPE will be bagged and disposed as solid waste.

#### 4.1.7 Sustainability and Resiliency

During investigation activities, MACTEC will consider the implementation objectives of the NYSDEC Program Policy Division of Environmental Remediation (DER)-31 / Green Remediation (NYSDEC, 2011), which identifies the NYSDEC DER's approach to remediating sites in the context of the larger environment, a concept known as green remediation. The "Green Remediation" approach is intended to improve the overall sustainability of the investigation by promoting the use of more sustainable practices and technologies. Green Remediation practices and technologies are less disruptive to the environment, generate less IDW, increase reuse and recycling, and emit fewer pollutants, including greenhouse gases, to the atmosphere. The following bullet points describe Green Remediation concepts and techniques that will be considered for the investigation.

- Waste generated is anticipated to consist of soil and water. MACTEC will evaluate ways to appropriately discard soil cuttings on-site to eliminate possible off-site transportation and disposal of waste, and by that reduce waste management costs and emissions associated with transportation and incineration. As mentioned above, aqueous IDW will be treated on-site using a GAC unit and discharged to the ground surface. Where applicable, PDB samplers will be used for groundwater sample collection, which generate minimal purge water waste.
- Energy efficiency will be considered in the selection of any equipment, and MACTEC will adopt usage practices to minimize unnecessary electrical usage.
- Emissions of air pollutants and carbon dioxide/greenhouse gases will be minimized wherever practical. Consolidation of site visits to reduce total trips, reduction of any trucking to and from the Site, and alternatives to gas-powered generators will be considered.
- Information on energy usage, solid waste generation, transportation and shipping, and water usage will be recorded to facilitate and document consistent implementation of green remediation during site activities and to identify corresponding benefits.

## 4.2 PRE-DRILLING MOBILIZATION

The pre-drilling mobilization will be conducted concurrently with the site walk-through. The scope of work for this mobilization will include preliminary activities evaluate current Site conditions and prepare for subsequent drilling activities.

To prepare for drilling activities, MACTEC will mark out seven drilling locations scoped for Drilling Mobilization #1 for utility clearance. After locations are marked out, MACTEC will coordinate with the drilling subcontractor to complete utility clearance as discussed above.

MACTEC will complete a well inventory to identify existing monitoring well locations. The inventory will document monitoring well condition, total depth, and the static groundwater level measurement. A groundwater sample will be collected from existing monitoring well MP-4 (110 ft), where the highest concentrations of VOCs have been identified historically. The sample will be submitted to the analytical laboratory for VOC analysis via EPA Method 8260. This sample will help to inform potential migration and/or attenuation of the plume since the last sampling event.

Surface soil samples will be collected from three locations on the south side of the Site building in the vicinity of the former LP-19 (Figure 2) to assess potential for direct exposure to Site COCs. The samples will be collected from 0 ft bgs to 0.2 ft bgs, below any root mat. The samples will be analyzed for a full suite of analyses including VOCs via EPA Method 8260 and corresponding percent solids analysis, SVOCs by EPA Method 8270, TAL Metals by EPA Method 6010/7471, pesticides by EPA Method 8081, polychlorinated biphenyls (PCBs) by EPA Method 8082, PFAS by EPA Draft Method 1633, and 1,4-Dioxane by EPA Method 8270SIM.

## 4.3 DRILLING MOBILIZATION #1

The first drilling mobilization will include one on-Site soil boring for subsurface soil sampling, completion of groundwater vertical profiling, and monitoring well installation to assess nature and extent of the groundwater plume downgradient of the Site.

### 4.3.1 Subsurface Soil Sampling

One on-Site soil boring (DP-101) will be advanced near location LP-21 where VOC impacts have previously been identified (**Figure 2**). Drilling will be conducted with rotary sonic drilling with 2-inch inner casing and 4-inch outer casing, to a depth of the water table (approximately 85 ft bgs). Soil samples will be collected continuously and logged by the MACTEC geologist in accordance with the QAPP. Soils will be screened with a photoionization detector (PID) in 1-foot intervals. One sample per 10-foot interval will be collected for laboratory analysis from the highest PID reading across an interval and considered representative of the interval as a conservative approach. If there are not elevated PID readings within an interval, the sample will be collected from the interval mid-point. Samples will be submitted for laboratory analysis by EPA Method 8260 and corresponding percent solids analysis (Table 2). The boring will be backfilled with cement grout upon completion. IDW solids will be transferred to a roll-off dumpster and characterized prior to disposal as outlined in Section 4.7.

### 4.3.2 Groundwater Vertical Profiling

MACTEC will conduct vertical groundwater profile sampling at three downgradient locations along Nicon Court. Two locations will be adjacent to existing monitoring well MP-29 and MP-30, and the third location will be north of MP-29, adjacent to the location of the former MP-31 (Figure 3). Locations will be identified as MW-101, MW-102, and MW-103, respectively. Air monitoring stations will be set up in accordance with the CAMP prior to the commencement of drilling activities.

Boreholes will be drilled using rotary sonic drilling methods with 4-inch inner casing and 6-inch outer casing equipped with a push-ahead groundwater sampler. The screen length of the push ahead sampler is approximately 12 to 24 inches. Groundwater samples will be collected in 15-foot intervals from the water table to approximately 150 ft bgs descending the borehole. The interval will be sampled using low flow methodology to the extent practicable based on the yield of the interval; sample time will be limited to 1 hour per interval. Samples will be collected for VOC analysis via EPA Method 8260 and submitted for 48 to 72-hour turnaround.

Once the target depth is reached and the deepest groundwater sample is collected, the outer casing will remain in the borehole while the samples are analyzed. A permanent monitoring well will be installed within the interval where the highest detections of VOCs were identified. Permanent wells will be constructed as outlined in Section 4.3.3, below.

#### 4.3.3 Monitoring Well Installation and Development

MACTEC will oversee installation and development of three monitoring wells adjacent to existing water table well at locations MP-13, MP-23, and MP-25 to evaluate vertical plume migration and aid in evaluating remedial alternatives. These wells be identified as MW-106, MW-105, and MW-104, respectively (**Figure 3**). During vertical profiling by the SCDHS, these locations contained the highest offsite concentrations of VOCs, though at deeper depths than the existing screened interval. The interval with the highest VOC concentrations during the SCDHS investigation at the corresponding MP will be the screened interval for the new well. The proposed screen interval depths are listed on Table 2.

Boreholes will be drilled using rotary sonic drilling methods equipped with 4-inch inner casing and 6-inch outer casing. Soil samples will be collected continuously during drilling and logged by the MACTEC geologist. Soils will also be screened with a PID. Boreholes will be advanced to the target depth for each monitoring well where historical maximum VOC concentrations were identified as described above. Wells will be constructed with 2-inch diameter schedule 40 polyvinyl chloride (PVC) pipe with 5 ft of 0.010-inch factory slot screen. Filter pack will consist of #1 sand to 2 ft above the top of the screen and sealed with a minimum of 3 ft of bentonite chips. The remainder of the borehole will be backfilled with bentonite grout to 2 ft bgs. The well will be finished with a flush mount 8-inch road box in a 2 ft by 2 ft cement surface pad no sooner than 24 hours after the well is installed.

Once the well is installed, the well will be developed no sooner than 24 hours after installation was completed. Wells will be developed using pump and surge techniques to 50 NTU or below for a maximum of 1 hour.

### 4.3.4 Groundwater Sampling

Once the new wells are installed and developed, MACTEC will collect groundwater samples from a total of 17 monitoring wells: six onsite wells (MW-1, MW-2S, MW-2I, MW-2D, MW-3 (100-102 ft), and MW-4 (85-87 ft)), five existing offsite wells (MP-4 (100 ft), MP-4 (110 ft), MP-5, MP-13, and MP-22), and the six newly installed wells (MW-101 through MW-106) (Table 1). Existing groundwater wells will be redeveloped to 50 NTU or 1 hour to remove stagnant water and facilitate recharge from the formation prior to sampling.

Groundwater samples will be analyzed for VOCs via EPA Method 8260. Samples from two on-site wells (MW-1 and MW-2I) and three offsite wells (MP-4 (100 ft), MP-13, and MP-22) will also be analyzed for a full suite of analytes including SVOCs Base/Neutral and Acid Extractable by EPA Method 8270, TAL Metals by EPA Method 6010/7471, Pesticides and PCBs by EPA Method 608, PFAS by EPA Draft Method 1633, and 1,4-dioxane by EPA Method 8270SIM (Table 2).

To assess potential for natural attenuation, groundwater samples from four wells along the plume core (MW-2I, MP-4, MW-104, and MW-106) will be analyzed for monitored natural attenuation (MNA) parameters including total organic carbon (TOC) by EPA Method SM 5310C, chloride/nitrate/nitrite/sulfate by EPA Method 300, sulfide by Method SM 4500S2, methane/ethane/ethene/carbon dioxide by Method RSK-175, alkalinity by Method SM 2320B, and iron and manganese by EPA Method 6010 (Table 2). Microbe traps will also be installed in these wells for microbial DNA analysis. Traps will be left for a minimum of 2 weeks prior to collection.

## 4.4 DRILLING MOBILIZATION #2

The second drilling mobilization will commence once groundwater data from wells sampled at the end of the first drilling mobilization are finalized as these results will inform placement of two additional monitoring wells. MACTEC will provide recommendations for the well locations and screened zones based on the results of the first round of groundwater sampling to the NYSDEC, prior to this mobilization. Discussion around the recommendations will be documented in meeting minutes and rationale will be presented in the RI Report.

### 4.4.1 Monitoring Well Installation

MACTEC will oversee installation and development of two additional monitoring wells to refine the plume extent. Activities will be conducted as outlined in Section 4.3.3 and documented on applicable FDRs.

#### 4.4.2 Groundwater Sampling

Once the monitoring wells are developed, MACTEC will collect groundwater samples from the two newly installed wells (MW-107 and MW-108) using low-flow sampling techniques. Samples will be analyzed for VOCs via EPA Method 8260. MACTEC will also retrieve the microbe traps from MW-2I, MP-4, MW-104, and MW-106.

Microbe traps will be analyzed to assess the microbial community in groundwater capable of biodegrading chlorinated ethenes, by quantitative PCR (qPCR) method for genomic material of known reductive dechlorination bacteria or enzyme encoding genes (e.g., dehalococcoides, BAV1, vinyl chloride reductase, tceA reductase, vinyl chloride reductase).

Following sampling of the newly installed monitoring wells and retrieval of the microbe traps, MACTEC will deploy passive diffusion bags (PDBs) in the newly installed wells and the monitoring wells listed in Section 4.3.4.

#### 4.4.3 Soil Vapor and Air Sampling

MACTEC will conduct sub-slab soil vapor and indoor air sampling to assess vapor intrusion sampling at ten buildings around the Site (Figure 4). As noted in Section 4.1.2, property access will be coordinated by the NYSDEC. Outdoor ambient air samples will be collected at two locations. Outdoor ambient air samples will not be collected concurrent with drilling activities to prevent potential cross-contamination. Prior to collecting samples, an indoor air survey will be completed using the NYSDOH Indoor Air Quality Questionnaire and Building Inventory form and the indoor air will be monitored with a PID that gives readings in parts per billion.

Indoor air and outdoor ambient air will be collected prior to sub-slab sampling. Samples will be collected with 6-liter summa-type air sampling canisters utilizing 24-hour regulators. Indoor air cannisters will be placed adjacent to the selected location for the corresponding sub-slab sample approximately 4 to 6 ft high, in the breathing zone.

To collect sub-slab samples, MACTEC will install soil vapor points by drilling a 5/8-inch hole to approximately 3 inches below the slab and placing a Vapor Pin™. The Vapor Pin™ will be sealed with the integrated silicone gasket. The sub-slab will be collected with a 1.5-liter summa cannister equipped with a 30-minute regulator. Samples will be analyzed for VOCs via EPA Method TO15 SIM. Sampling activities will be documented on FDRs (Appendix B) and will include the time of sample collection, canister vacuum (in inches Mercury), weather conditions, and barometric pressure. Upon completion of the sampling, the Vapor Pin™ will be removed from the building floor and the holes will be filled completely with a fast-drying hydraulic cement (e.g. Quikrete™).

Samples will be shipped to the analytical laboratory for VOC analysis via EPA Method TO15.

## 4.5 POST-DRILLING MOBILIZATION

The objective of the post-drilling mobilization is to collect a comprehensive and contemporaneous set of groundwater elevation and VOC concentration data for the Site with the newly installed monitoring wells.

### 4.5.1 Groundwater Gauging and Sampling

Groundwater depth measurements will be collected from 26 historical offsite wells, six onsite wells, and the eight newly installed wells. Measurements will be collected to the nearest 0.01 ft.

After gauging is completed, MACTEC will collect groundwater samples from the 17 monitoring wells listed in Section 4.3.4 as well as MW-107, and MW-108 (Table 2). Samples will be collected from the PDBs deployed to the monitoring wells at the completion of drilling mobilization #2, as described above. Five wells with the highest concentrations of VOCs from the previous sampling rounds will also be sampled by low flow procedures. Samples will be analyzed for VOCs via EPA Method 8260.

### 4.5.2 Hydraulic Conductivity Testing

MACTEC will conduct hydraulic conductivity testing at two newly installed wells via "slug" tests. Slug tests will be performed for downgradient wells with the highest VOCs concentrations to evaluate contaminant migration. A target of three rising head and three falling head tests will be performed. Water level data will be collected using a level-logging transducer and data will be evaluated by Hvorslev (1951) and Bouwer and Rice (1976) methods using aquifer test analysis software (e.g., HydroSOLVE's Aqtesolv).

### 4.5.3 Surveying

The 32 existing monitoring wells and eight newly installed monitoring wells will be surveyed by a New York State-licensed surveyor who will provide the horizontal and vertical coordinates to an accuracy of 0.1 ft and 0.01 ft, respectively. The surveyor will work with the MACTEC technicians who performed the well installation and sampling to identifying and label locations. Soil sampling locations will be surveyed by field technicians using a handheld global positioning system (GPS) with an accuracy of +/- 3 feet as samples are collected.

## 4.6 REPORTING

Upon completion of the field investigations and receipt of analytical data, MACTEC will prepare a draft RI Report (Report) in accordance with DER-10 (NYSDEC, 2010). Due to the nature of industrial development around the Site and the reported direction of groundwater flow, a Fish and Wildlife Impact Assessment is not anticipated to be necessary. The Report will include a summary of the Site background and history including results of investigations conducted prior to the RI, summary of data generated during the RI field investigation, and a comparison of laboratory analytical results to applicable NYS groundwater standards and soil clean up objectives (NYSDEC, 1999). Air and vapor sample results will be evaluated in accordance with NYSDOH Guidance (NYSDOH, 2006) and presented in a stand-alone SVI report. SVI data will also be summarized in the RI Report. The conceptual site model will be updated based on the investigation findings. FDRs and environmental sampling data will be included as appendices to the RI Report.

Upon receipt of NYSDEC comments, MACTEC will address the comments and submit a Final RI Report. Laboratory and location information will be uploaded electronically to the NYSDEC EQuIS™ database.

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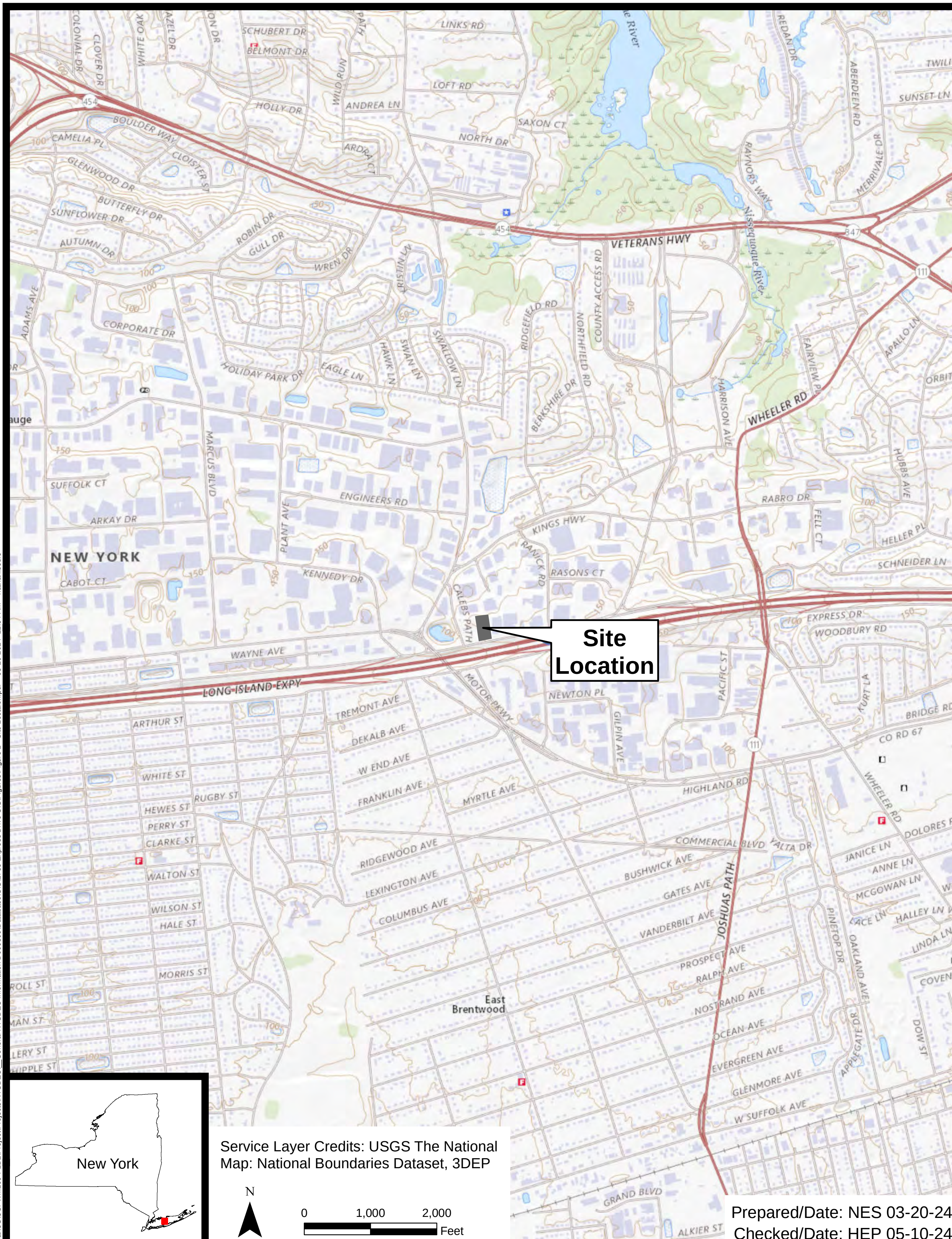
# FIGURES




1735 EXPRESS DRIVE NORTH
NYSDEC SITE # 152238
HAUPPAUGE, NEW YORK

MACTEC

Site Location

Project 3616236252

Figure 1

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PDF: \\corp.pbwan.net\glb-e&i\US\USPWM100-PLD2\Project\Projects\NYSDEC__General NYSDEC Information D009809\Database\GIS\1735 Express Drive GIS\Figures\Figure 1 - Site Location.pdf 03-20-2024 11:34 AM nathan.soule

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**Legend**

- Existing Monitoring Well
- Proposed Surface Soil Sample Location
- Proposed Soil Boring Location
- Leaching Pool Location
- Site Boundary

N

0 30 60 Feet

Prepared/Date: NES 04-24-24
Checked/Date: HEP 05-10-24

1735 EXPRESS DRIVE NORTH
NYSDEC SITE # 152238
HAUPPAUGE, NEW YORK

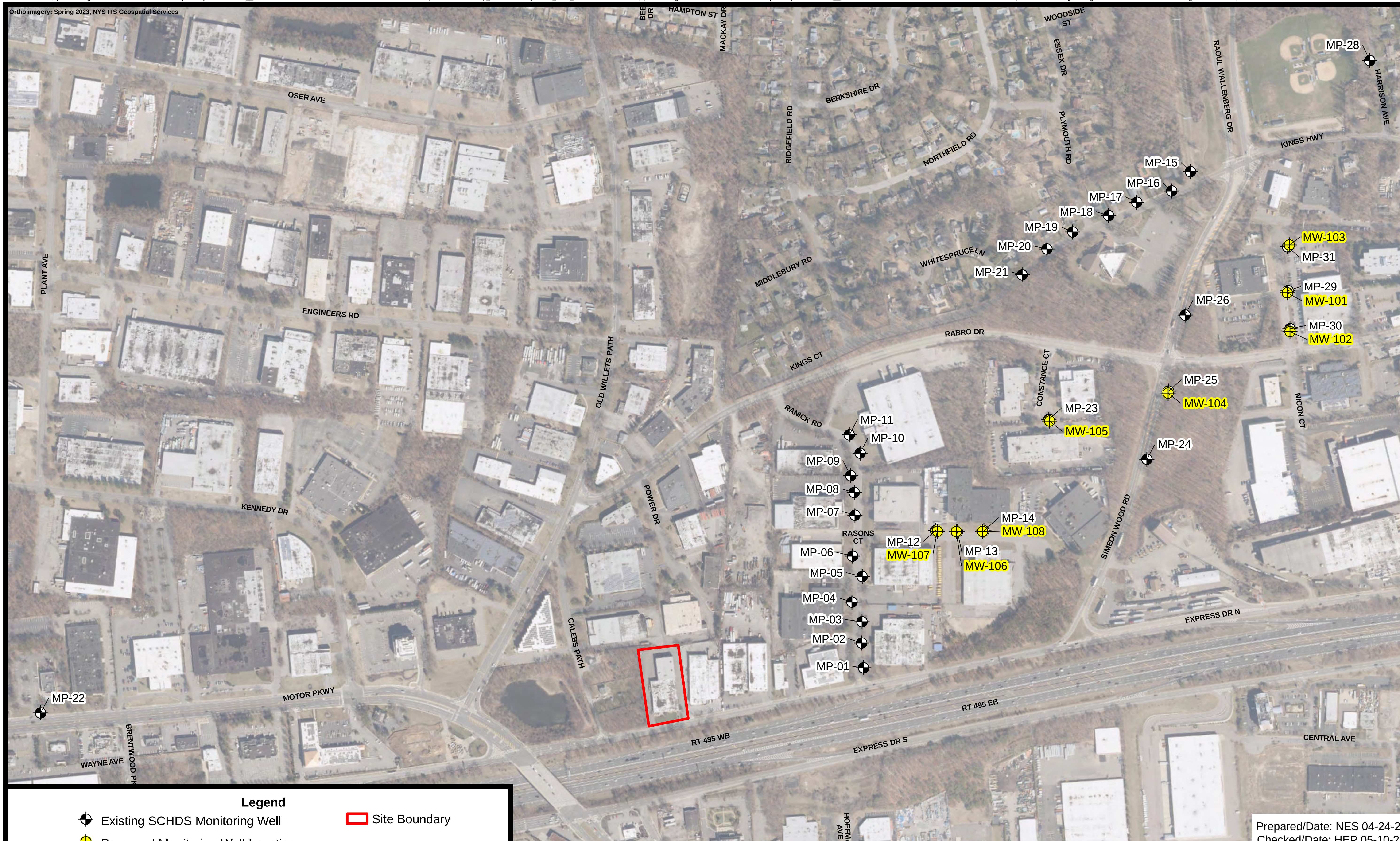
MACTEC

Site Investigation Locations

Project 3616236252

Figure 2

Document: \\corp.pbwan.net\glb-e&i\US\USPWM100-PLD2\Project\Projects\NYSDEC__General NYSDEC Information D009809\Database\GIS\1735 Express Drive GIS\Map_Documents\ExpressDr_1735_11x17.mxd PDF: \\corp.pbwan.net\glb-e&i\US\USPWM100-PLD2\Project\Projects\NYSDEC__General NYSDEC Information D009809\Database\GIS\1735 Express Drive GIS\Figures\Figure 3 - Offsite Groundwater Investigation Locations.pdf 04-24-2024 10:31 AM nathan.soule




**Legend**

Existing SCHDS Monitoring Well

Proposed Monitoring Well Location

Site Boundary

N

0 225 450 Feet

NOTE:
SCDHS - Suffolk County Department of Health Services

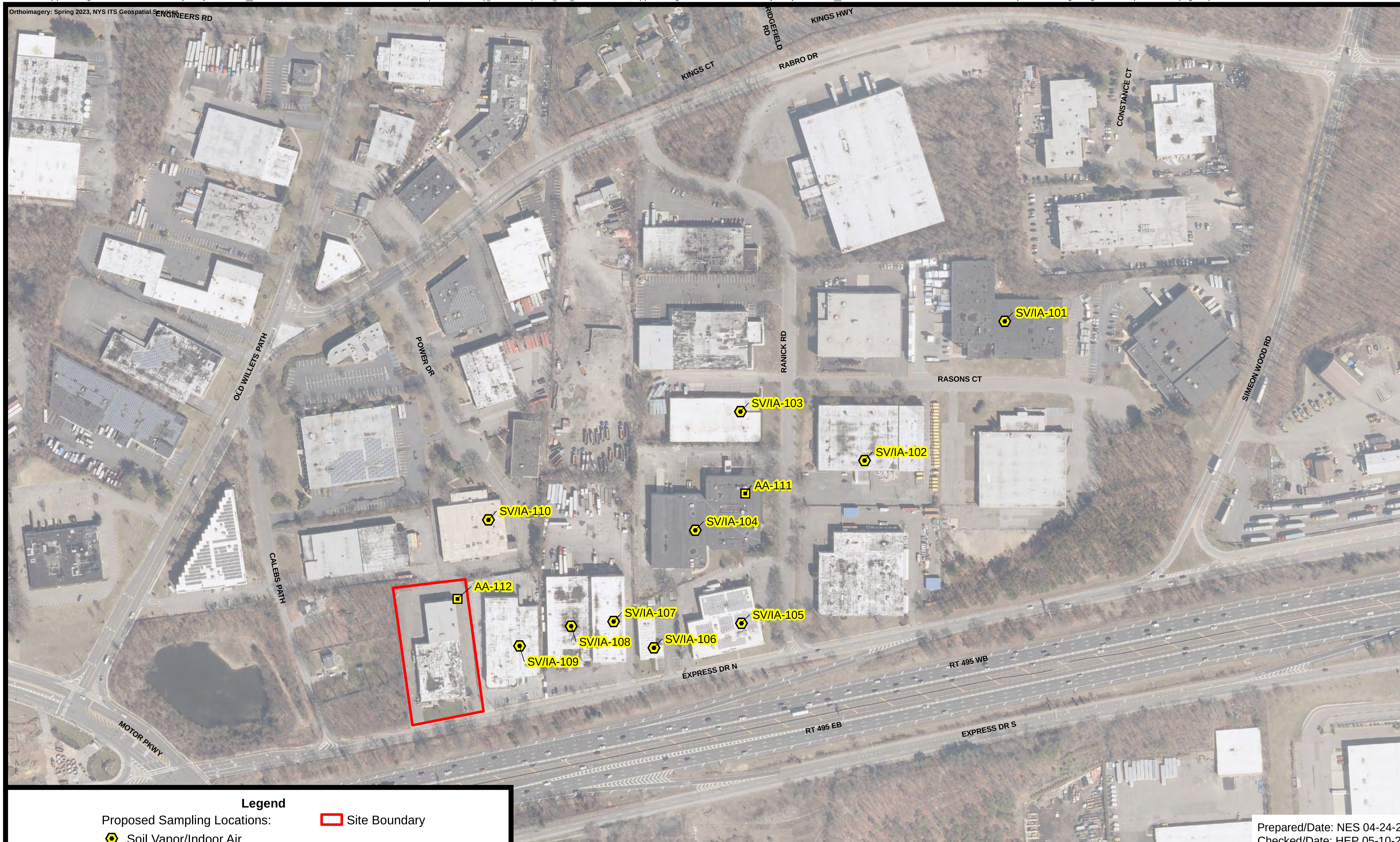
1735 EXPRESS DRIVE NORTH
NYSDEC SITE # 152238
HAUPPAUGE, NEW YORK

MACTEC

Offsite Groundwater Investigation Locations

Project 3616236252

Figure 3




**Legend**

Proposed Sampling Locations:
- Soil Vapor/Indoor Air
- Ambient Air

Site Boundary

NOTE:
AA = Ambient Air
IA = Indoor Air
SV = Soil Vapor

N

0 125 250 Feet

Prepared/Date: NES 04-24-24
Checked/Date: HEP 05-10-24

1735 EXPRESS DRIVE NORTH
NYSDEC SITE # 152238
HAUPPAUGE, NEW YORK

MACTEC

Soil Vapor and Air Sampling Plan

Project 3616236252

Figure 4

# TABLES

**Table 1: Analytical Methods**

| Media | Analyte | Method |
|---|---|---|
| Soil | VOCs | EPA Method 8260 + percent moisture |
| | SVOCs | EPA Method 8270 |
| | TAL Metals | EPA Method 6010/7471 |
| | Pesticides | EPA Method 8081 |
| | PCBs | EPA Method 8082 |
| | PFAS | EPA Draft Method 1633 |
| | 1,4-Dioxane | EPA Method 8270SIM |
| Aqueous (Groundwater, Quality Control, Blanks) | VOCs | EPA Method 8260 |
| | SVOCs | EPA Method 8270 |
| | TAL Metals, iron, manganese | EPA Method 6010/7471 |
| | Pesticides | EPA Method 8081 |
| | PCBs | EPA Method 8082 |
| | PFAS | EPA Draft Method 1633 |
| | 1,4-Dioxane | EPA Method 8270SIM |
| | TOC | EPA Method SM 5310C |
| | chloride/nitrate/nitrite/sulfate | EPA Method 300 |
| | sulfide | Method SM 4500S2 |
| | methane/ethane/ethene/carbon dioxide | Method RSK 175 |
| | alkalinity | Method SM 2320B |
| | Reductive Dechlorination | qPCR (DNA) |
| IDW | VOCs | EPA Method 624 |
| | SVOCs | EPA Method 625 |
| | RCRA Metals | EPA Method 6010/7471 |
| | TCLP Metals | EPA Method 1311 |
| | Pesticides/PCBs (aqueous) | EPA Method 608 |
| | Pesticides (soil) | EPA Method 8081 |
| | PCBs (soil) | EPA Method 8082 |
| | Flashpoint | NA |
| | Reactivity | EPA Method 9010/9030 |
| Air/Soil Vapors | VOCs | EPA Method TO15 |

Notes:
EPA = Environmental Protection Agency
IDW = investigation-derived waste
PCB = polychlorinated biphenyl
PFAS = per- and polyfluoroalkyl substance
RCRA = Resource Conservation and Recovery Act
SVOC = semi-volatile organic compound
TAL = target analyte list
TCLP = toxicity characteristic leaching procedure
TOC = total organic carbon
VOC = volatile organic compounds

**Table 2: Investigation Summary**

| Location ID | Location Type | Sampling Depth (ft bgs) | Sampling Method | Monitoring Objective | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | VOCs[1] | Full Suite[2] | MNA[3] | Microbe Trap | WC[4] |
| **Groundwater (Sampling Locations)** | | | | | | | | |
| MW-1 | Existing On-Site Well | 85-87 | LF/PDB | 2a | 1 | | | |
| MW-2S | Existing On-Site Well | 85-87 | LF/PDB | 2a | | | | |
| MW-2I | Existing On-Site Well | 95-97 | LF/PDB | 2a | 1 | 1 | 1 | |
| MW-2D | Existing On-Site Well | 105-107 | LF/PDB | 2a | | | | |
| MW-3 | Existing On-Site Well | 100 -102 | LF/PDB | 2a | | | | |
| MW-4 | Existing On-Site Well | 85 - 87 | LF/PDB | 2a | | | | |
| MP-4 | Existing Off-Site Well | 100-105 | LF/PDB | 2p | 1 | 1 | 1 | |
| | Existing Off-Site Well | 110-115 | LF/PDB | 2a | | | | |
| MP-5 | Existing Off-Site Well | 90-95 | LF/PDB | 2a | | | | |
| MP-13 | Existing Off-Site Well | 100-105 | LF/PDB | 2a | 1 | | | |
| MP-22 | Existing Off-Site Well | *80-85** | LF/PDB | 2a | 1 | | | |
| MW-101 | Vertical Profile | Various | LF/PDB | 2a | | | | |
| | New Well | TBD | LF/PDB | 2a | | | | |
| MW-102 | Vertical Profile | Various | LF/PDB | 2a | | | | |
| | New Well | TBD | LF/PDB | 2a | | | | |
| MW-103 | Vertical Profile | Various | LF/PDB | 2a | | | | |
| | New Well | TBD | LF/PDB | 2a | | | | |
| MW-104 | New Well | 100 - 105 | LF/PDB | 2a | | 1 | 1 | |
| MW-105 | New Well | 120 - 125 | LF/PDB | 2a | | | | |
| MW-106 | New Well | 140 - 145 | LF/PDB | 2a | | 1 | 1 | |
| MW-107 | New Well | TBD | LF/PDB | 2b | | | | |
| MW-108 | New Well | TBD | LF/PDB | 2b | | | | |
| Equipment Blank | QC | NA | NA | 1 | | | | |
| Field Blank | QC | NA | NA | 1 | | | | |
| Trip Blank | QC | NA | NA | 1 | | | | |

**Table 2: Investigation Summary**

| Location ID | Location Type | Sampling Depth (ft bgs) | Sampling Method | Monitoring Objective | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | VOCs[1] | Full Suite[2] | MNA[3] | Microbe Trap | WC[4] |
| **Groundwater (Gauging Only)** | | | | | | | | |
| MP-1 | Existing Off-Site Well | 100-105 | Gauging | Groundwater elevation monitoring | | | | |
| MP-2 | Existing Off-Site Well | 100-105 | Gauging | | | | | |
| MP-3 | Existing Off-Site Well | 100-105 | Gauging | | | | | |
| MP-6 | Existing Off-Site Well | 90-95 | Gauging | | | | | |
| MP-7 | Existing Off-Site Well | 100-105 | Gauging | | | | | |
| MP-8 | Existing Off-Site Well | 100-105 | Gauging | | | | | |
| MP-9 | Existing Off-Site Well | 100-105 | Gauging | | | | | |
| MP-10 | Existing Off-Site Well | 100-105 | Gauging | | | | | |
| MP-11 | Existing Off-Site Well | 100-105 | Gauging | | | | | |
| MP-12 | Existing Off-Site Well | 100-105 | Gauging | | | | | |
| MP-14 | Existing Off-Site Well | 100-105 | Gauging | | | | | |
| MP-16 | Existing Off-Site Well | 100-115 | Gauging | | | | | |
| MP-17 | Existing Off-Site Well | 90-95 | Gauging | | | | | |
| MP-19 | Existing Off-Site Well | 80-85 | Gauging | | | | | |
| MP-20 | Existing Off-Site Well | *50-55* | Gauging | | | | | |
| MP-21 | Existing Off-Site Well | 90-95 | Gauging | | | | | |
| MP-23 | Existing Off-Site Well | *70-75* | Gauging | | | | | |
| MP-24 | Existing Off-Site Well | 70-75 | Gauging | | | | | |
| MP-25 | Existing Off-Site Well | 60-65 | Gauging | | | | | |
| MP-26 | Existing Off-Site Well | 90-95 | Gauging | | | | | |
| MP-29 | Existing Off-Site Well | Unconfirmed | Gauging | | | | | |
| MP-30 | Existing Off-Site Well | Unconfirmed | Gauging | | | | | |

**Table 2: Investigation Summary**

| Location ID | Location Type | Sampling Depth (ft bgs) | Sampling Method | Monitoring Objective | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | VOCs[1] | Full Suite[2] | MNA[3] | Microbe Trap | WC[4] |
| **Soil** | | | | | | | | |
| SS-01 | Surface Soil | 0 - 0.2 | Grab | 1 | 1 | | | |
| SS-02 | Surface Soil | 0 - 0.2 | Grab | 1 | 1 | | | |
| SS-03 | Surface Soil | 0 - 0.2 | Grab | 1 | 1 | | | |
| SB-101 | Subsurface Soil | 0 - ~85** | Grab | 1 | | | | |
| Trip Blank | QC | NA | NA | 1 | | | | |
| **Soil Vapor and Air** | | | | | | | | |
| SV-101 | Collocated SV/IA | 1" Below Building Slab | 24-hour | 1 | | | | |
| IA-101 | | Breathing Zone | 24-hour | 1 | | | | |
| SV-102 | Collocated SV/IA | 1" Below Building Slab | 24-hour | 1 | | | | |
| IA-102 | | Breathing Zone | 24-hour | 1 | | | | |
| SV-103 | Collocated SV/IA | 1" Below Building Slab | 24-hour | 1 | | | | |
| IA-103 | | Breathing Zone | 24-hour | 1 | | | | |
| SV-104 | Collocated SV/IA | 1" Below Building Slab | 24-hour | 1 | | | | |
| IA-104 | | Breathing Zone | 24-hour | 1 | | | | |
| SV-105 | Collocated SV/IA | 1" Below Building Slab | 24-hour | 1 | | | | |
| IA-105 | | Breathing Zone | 24-hour | 1 | | | | |
| SV-106 | Collocated SV/IA | 1" Below Building Slab | 24-hour | 1 | | | | |
| IA-106 | | Breathing Zone | 24-hour | 1 | | | | |
| SV-107 | Collocated SV/IA | 1" Below Building Slab | 24-hour | 1 | | | | |
| IA-107 | | Breathing Zone | 24-hour | 1 | | | | |
| SV-108 | Collocated SV/IA | 1" Below Building Slab | 24-hour | 1 | | | | |
| IA-108 | | Breathing Zone | 24-hour | 1 | | | | |
| SV-109 | Collocated SV/IA | 1" Below Building Slab | 24-hour | 1 | | | | |
| IA-109 | | Breathing Zone | 24-hour | 1 | | | | |
| SV-110 | Collocated SV/IA | 1" Below Building Slab | 24-hour | 1 | | | | |
| IA-110 | | Breathing Zone | 24-hour | 1 | | | | |
| AA-111 | Ambient Air | NA | 24-hour | 1 | | | | |
| AA-112 | Ambient Air | NA | 24-hour | 1 | | | | |

**Table 2: Investigation Summary**

| Location ID | Location Type | Sampling Depth (ft bgs) | Sampling Method | Monitoring Objective | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | VOCs[1] | Full Suite[2] | MNA[3] | Microbe Trap | WC[4] |
| **Investigation Derived Waste** | | | | | | | | |
| IDW-01 | TBD | NA | Grab | | | | | 1 |
| IDW-02 | TBD | NA | Grab | | | | | 1 |
| IDW-03 | TBD | NA | Grab | | | | | 1 |

Notes:
1) Volatile organic compounds (VOC) analytical methods are media-specific as listed on Table 1.
2) Full suite analysis includes: SVOCs, TAL Metals, Pesticides, PCBs, PFAS, and 1,4-dioxane
3) Monitored Natural Attenuation: TOC, chloride/nitrate/nitrite/sulfate, sulfide, methane/ethane/ethene/carbon dioxide, alkalinity, and iron and manganese

4) Waste Characterization includes: VOCs, SVOCS, Total RCRA Metals, TCLP RCRA Metals, pesticides, PCBs, Flashpoint, and Reactivity
* Sampling intervals in italics are presumed based on the shallowest historical sampling interval.
** Sample collected at 10 ft intervals from ground surface to the water table

1= one sampling event
2a= two sampling events: samples will be collected via low-flow in the first event (Mobilization #1) and via PDB in the second sampling event (post drilling mobilization); PDBs deployed at the end of Mobilization #2
2b= two sampling events: samples will be collected via low-flow in the first event (Mobilization #2) and via PDB in the second sampling event (post drilling mobilization)
2p= two sampling events: samples will be collected via low-flow in the pre-drilling mobilization and via PDB in the second sampling event (post drilling mobilization)

ft bgs = feet below ground surface
MNA = monitored natural attenuation
PDB = passive diffusion bag
qPCR = quantitative polymerase chain reaction
SVOCs = semi-volatile organic compounds
USEPA = United States Environmental Protection Agency
VOCs = volatile organic compounds

**ATTACHMENT 1:**

**SITE SPECIFIC HEALTH & SAFETY PLAN**

# Site-Specific Health and Safety Plan
# Short Form

MACTEC

| | | | |
|---|---|---|---|
| Site: | 1735 Express Drive North | Job #/Task # | 3616236252 |
| Street Address: | 1735 Express Drive North, Hauppauge, Suffolk County, NY | | |
| Proposed Date(s) of Investigation: | 1/29/2024 - Ongoing | | |
| Prepared by: | Meril Benny | Date: | 02/01/2024 |
| *Approved by: | Ehud Ardon | Date: | 04/30/2024 |
| Site Description: **(attach map)** | The Site is comprised of one approximately 1.58-acres property. The property is a 30,000 square-foot building on a slab foundation with associated paved parking and landscaped areas. The site currently operates as a commercial printing facility. Additionally, work will be conducted in ROW of public roads. | | |
| Comments: | | | |

*Approval also serves as certification of a Hazard Assessment as required by 29 CFR 1910.132

## Tasks:

| WSP | Sub | Task Description | AHA Attached? |
|---|---|---|---|
| ☑ | ☑ | Mobilization / demobilization | ☑ |
| ☐ | ☑ | Drilling Operations | ☑ |
| ☑ | ☐ | Soil Sampling | ☑ |
| ☑ | ☐ | Field Work -General | ☑ |
| ☑ | ☐ | Field Work Oversight | ☑ |
| ☑ | ☐ | Groundwater Sampling | ☑ |
| ☐ | ☐ | | ☐ |
| ☐ | ☐ | | ☐ |
| ☐ | ☐ | | ☐ |

## High Hazard Activities (Check all that apply):

| WSP | Sub | Activity | WSP | Sub | Activity |
|---|---|---|---|---|---|
| ☐ | ☐ | Confined space entry | ☐ | ☑ | Operating drill rig |
| ☐ | ☐ | Entering excavations | ☐ | ☐ | Operating other heavy equipment |
| ☐ | ☐ | Hot work | ☐ | ☐ | Using aerial lift |
| ☐ | ☐ | Lockout/tagout | ☐ | ☐ | Working from scaffolding |
| ☐ | ☐ | Operating forklift | ☐ | ☐ | Working at heights >6 feet |

## Life Saving Actions (Check all that apply):

The following WSP Life Saving Actions potentially apply to the work being conducted at the site:

- ☐ **Plant / People / Interface – Working around heavy equipment**
- ☐ **Suspended Loads**
- ☑ **Driving**
- ☐ **Hazardous Atmospheres / Substances -**
- ☐ **Working on or Near Water**
- ☐ **Lone or Remote Work**
- ☐ **Ground Stability**
- ☐ **Energy Sources**
- ☐ **Working at Height**

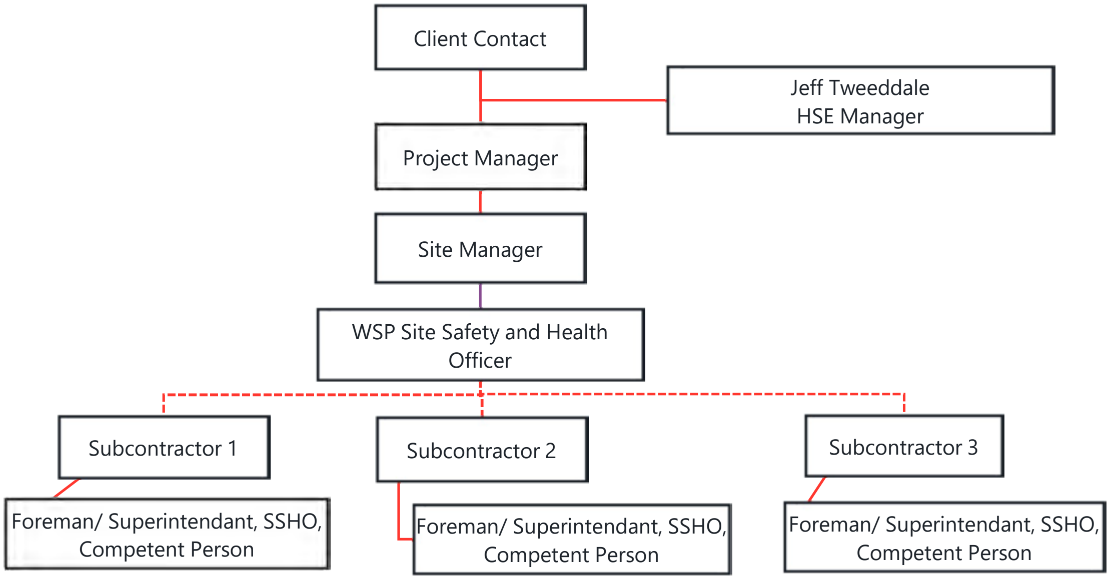
## Journey Management Plan:

A Journey Management Plan (JMP) is to be developed to address non-routine/non-commute type travel to and from the project site. See the WSP Journey Management Plan. A JMP is a critical control for WSP

# Site-Specific Health and Safety Plan
# Short Form

employee's and project team's safety. All WSP employees should install and activate the free International SOS Assistance App on their mobile devices.

## Project Organization Chart:




## Dates of Required Training and Medical Surveillance:

Add additional training topics, as required.

| **Name:** | Ehud Ardon | Meril Benny | Haley Plante | | |
|---|---|---|---|---|---|
| **Job duties:** | **Site Manager** | **SSHO/ Field Staff** | | Field Staff | Field Staff |
| | **Dates** | **Dates** | **Dates** | **Dates** | **Dates** |
| **Medical Surveillance** | 10/2023 | 4/28/2022 | 2/12/24 | | |
| **40-Hour Initial** | 3/1999 | | 7/24/2017 | | |
| **8-Hour Supervisor**[2] | | | 4/6/2018 | | |
| **8-Hour Refresher** | 01/2024 | | 7/13/2023 | | |
| **First Aid**[1] | | 04/06/2022 | 3/31/2022 | | |
| **CPR**[1] | | 04/06/2022 | 3/31/2022 | | |
| **Hazard Communication** | 01/2024 | | 7/24/2017 | | |
| **Fire Extinguisher** | | | | | |

[1] At least one worker must be trained in First Aid/CPR
[2] Required for Site Manager and Site Health and Safety Officer

**Site-Specific Health and Safety Plan**
**Short Form**

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## Goals/Targets:

The following goals/targets have been established for the project:

- ☑ Zero OSHA Recordable Incidents
- ☑ Weekly HSE Inspections (documented Project Safety Checklist)
- ☐ Monthly Leadership (PM) HSE Inspections
- ☑ One HSE Observations (iSMS) per week

## Meetings:

The following meetings will be held at the site:

| | Lead by | | Frequency | | | | |
|---|---|---|---|---|---|---|---|
| Meeting | WSP | Sub | Initial | Daily | Weekly | Monthly | As Needed |
| ☑ Project Kick-off [1] | ☑ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ |
| ☑ Tailgate [2] | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ |
| ☐ Safety Committee [1] | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☑ Incident Reviews [1] | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ |
| ☐ E&I Monthly Safety Topics [1] | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ |
| ☐ HSE Closeout Meetings [1] | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ |
| ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

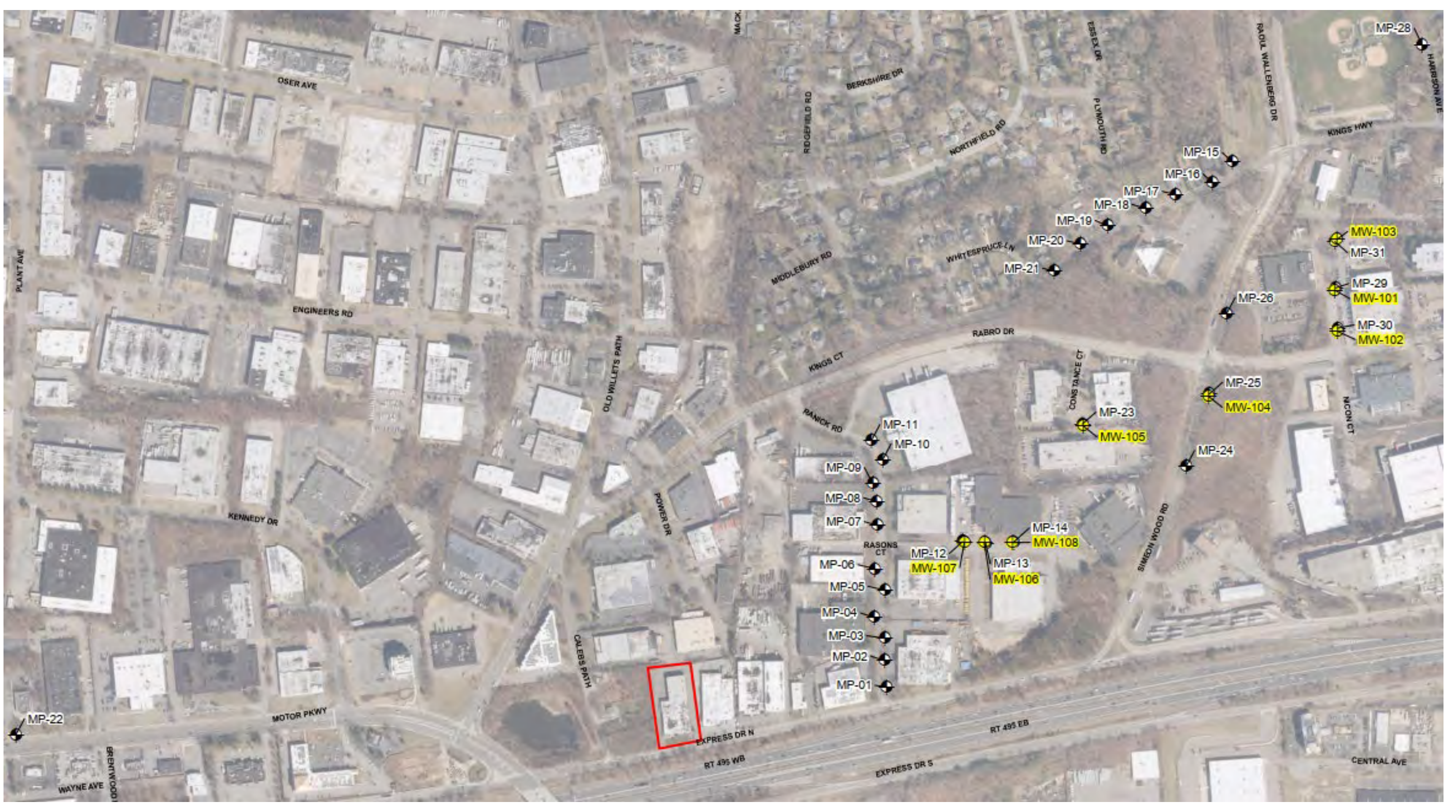
[1] Attended by subcontractor management representative.
[2] Attended by all subcontractor employees and supervisors.

## Inspections:

Regular inspections will be conducted by WSP and/or subcontractor personnel. Inspections will be documented, and corrective actions established for all findings. Corrective actions will be tracked to closure. Safety observations will be entered into iSMS.

| | Lead by | | Frequency | | | |
|---|---|---|---|---|---|---|
| Inspection Type | WSP | Sub | Daily | Weekly | Monthly | Before Use |
| ☑ HSE (Visual) | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ |
| ☑ HSE (Documented) | ☑ | ☑ | ☐ | ☑ | ☐ | ☐ |
| ☐ Leadership HSE (e.g., PM) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ Scaffolding | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ Excavations | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☑ Heavy Equipment | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ |
| ☑ PPE | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ |
| ☑ Tools/Equipment | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ |
| ☑ HSE Observations (iSMS) | ☑ | ☐ | ☐ | ☐ | ☑ | ☐ |
| ☐ eFLRA | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

## INSERT SITE MAP(s) HERE

## Site-Specific Health and Safety Plan Short Form

### Known or Suspected Contaminants (include PELs/TLVs): LINK to Contaminant Fact Sheet Library

| Contaminants of Concern (COC) (Attach Fact Sheets*) | Maximum Concentrations Soil (mg/kg) | Water/Groundwater (µg/l) | PEL/TLV** |
|---|---|---|---|
| Trichloroethene (TCE) | | | 10 ppm TWA |
| | | | |
| | | | |
| | | | |

*Workers must be made aware of the signs, symptoms, and first aid for each COC. Information is located on the COC fact sheets.
**See (LINK) for OSHA PELs and ACGIH TLVs

### Air Monitoring Action Levels:

| PID/FID Reading[1] | Detector Tube[1] | Dust Meter[1] | LEL[2]/$O_2$[1] | Action |
|---|---|---|---|---|
| | | | >10% LEL | Stop work. Evacuate area. Consider return with ventilation system and spark proof/intrinsically safe equipment. |
| | | | <19.5% $O_2$ | Stop work and evacuate area. |

[1] Sustained readings measured in the breathing zone
[2] Readings at measured at the source (borehole, well, etc.)

### Job Hazard Analyses (AHA):

Check and attach all that apply (add applicable AHA s not already listed) (LINK to AHA Library):

**Activity Specific AHAs:**

- ☑ Mobilization/Demobilization and Site Preparation
- ☑ Vehicle Travel – Journey Management Plan
- ☑ Field Work - General
- ☑ Field Work - Oversight
- ☑ Decontamination
- ☑ Utility Clearance Activities
- ☑ Groundwater Sampling
- ☑ Soil Sampling
- ☑ Geoprobe
- ☐ Excavations and Backfilling
- ☐ Stream/Wetlands Work

**Hazard Specific AHAs:**

- ☑ Insect Stings and Bites
- ☐ Gasoline
- ☑ Working with Preservatives (Acids)
- ☑ General PPE Use
- ☐
- ☐
- ☐
- ☐
- ☐
- ☐
- ☐

# Site-Specific Health and Safety Plan
# Short Form

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## Review of AHAs and Field Level Risk Assessments (eFLRA)

Supervisors shall conduct a daily tailgate meeting, specifying the applicable AHAs and ensure that everyone involved in the work acknowledges the AHA or daily renewal forms applicable to their work.

The work area shall be inspected for any additional hazards prior to initiating work. Where additional hazards are present, the hazards and controls shall be identified prior to initiating the work and documented on the AHA and the Field Level Risk Assessments (eFLRA) form.

If there is a change or deviation from the planned activity, you must stop the job and re-evaluate the risk assessment and the precautions taken. Any changes to the work described in the AHA shall require a review by a Qualified Person.

- eFLRA QR Code:
- eFLRsA Form (online / printable): LINK

## PPE and Monitoring Instruments:

**Initial Level of PPE ***

☐ Level D ☑ Modified Level D ☐ Level C * Cannot use Short Form HASP for Level B or A or Confined Space Entry work

| Personal Protective Equipment | Utility Locating | Groundwater Sampling | Soil Sampling | Hand Auger Borings | Well Installation | Well Development | Land Surveying | Groundwater Pumping Test | General Site Work (inspections, maintenance, | Decontamination |
|---|---|---|---|---|---|---|---|---|---|---|
| Hard hat | X | X | X | X | X | X | X | X | X | X |
| Safety glasses | X | X | X | X | X | X | X | X | X | X |
| Safety Goggles | | | | | | | | | | |
| Hearing protection (earmuffs, earplugs) | | | A | A | A | A | | | A | A |
| Safety-toed boots | X | X | X | X | X | X | X | X | X | X |
| Chemical resistant boots or boot covers | | A | A | A | A | A | | A | A | A |
| High visibility/ reflective vest | X | X | X | X | X | X | X | X | X | X |
| Nitrile gloves – thicker (outer) | A | X | X | X | X | X | A | X | X | X |
| Nitrile gloves - thin (inner) | A | X | X | X | X | X | A | X | X | X |
| Vinyl gloves (inner) | A | X | X | X | X | X | A | X | X | X |
| Other chemical resistant gloves: ______ | A | X | X | X | X | X | A | X | X | X |

# Site-Specific Health and Safety Plan
# Short Form

| Personal Protective Equipment | Utility Locating | Groundwater Sampling | Soil Sampling | Hand Auger Borings | Well Installation | Well Development | Land Surveying | Groundwater Pumping Test | General Site Work (inspections, maintenance, | Decontamination |
|---|---|---|---|---|---|---|---|---|---|---|
| Work gloves (leather or cut resistant) | X | | | | | | X | | X | |
| Uncoated Tyvek coverall | | | | | | | | | | A |
| Polycoated Tyvek coverall | | | | | | | | | | A |
| Saranex Tyvek Coveralls | | | | | | | | | | A |
| High Visibility Vest / clothing | X | X | X | X | X | X | X | X | X | X |
| High Visibility / Reflective vest / clothing | X | X | X | X | X | X | X | X | X | X |
| Half-face respirator with OV/HEPA cartridge | | | | | | | | | | |
| Full-Face respirator with OV/HEPA cartridge | | | | | | | | | | |

X = required A = available

## Monitoring Instruments Required*

Periodic monitoring shall be conducted when the possibility of an IDLH condition or flammable atmosphere has developed or when there is indication that exposures may have risen over permissible exposure limits levels since prior monitoring. Situations where it shall be considered whether the possibility that exposures have risen are as follows:

- When work begins on a different portion of the site.
- When contaminants other than those previously identified are being handled.
- When a different type of operation is initiated (e.g., drum opening as opposed to exploratory well drilling.)
- When employees are handling leaking drums or containers or working in areas with obvious liquid contamination (e.g., a spill or lagoon.)

☑ PID: ☑ 10.0/10.6 eV Lamp ☐ 11.7 eV Lamp ☐ FID

☐ Hydrogen Sulfide meter ☐ Carbon Monoxide meter ☐ Other: ______

☐ LEL/O2 Meter ☐ Dräger Pump (or equivalent) List Tubes:

☑ Dust Meter: ☐ Respirable dust ☐ Total dust

*Monitoring instruments will be calibrated daily in accordance with manufacturer's instructions. Results will be recorded in the field logbook.

## Chemicals Brought to the Site:

List all chemicals brought to the site (e.g., preservatives, decon solutions, calibration gases, gasoline, etc.).

| **Product Identifier:** (Note: Name listed below must match name on label and SDS) | **SDS Attached?** |
|---|---|
| YSI BUFFER SOLUTION PH 4.00 | ☑ |
| YSI BUFFER SOLUTION PH 7.00 | ☑ |

| | |
|---|---|
| HI 7021 240 MV ORP SOLUTION | ☑ |
| STABLECAL 10 NTU STANDARD | ☑ |
| STABLECAL 20 NTU STANDARD | ☑ |
| STABLECAL 100 NTU STANDARD | ☑ |
| STABLECAL 800 NTU STANDARD | ☑ |
| CONDUCTIVITY STANDARD 1412 US/CM | ☑ |
| HYDROCHLORIC ACID | ☑ |
| NITRIC ACID | ☑ |
| ALCONOX | ☑ |
| SULFIRIC ACID | ☑ |
| DEIONIZED WATER | ☑ |
| ISOBUTYLENE GAS 100 PPM | ☑ |
| DO PROBE ELECTROLYTE SOLUTION | ☑ |
| | ☐ |

Chemicals will be kept in their original containers. If transferred to another container, aside from day use by one individual, the new container will be clearly labeled with the name of the chemical (product identifier), signal word, hazard statement, pictogram(s), precautionary statement, and name, address and telephone number of the chemical manufacturer, importer or other responsible party.

## Work Zones:

The work zones will be defined relative to the location of the work activity. The Exclusion Zone is considered the area within a 10-foot diameter of the sampling location. The Contamination Reduction Zone is considered to be the area with in a 20-foot diameter of the sampling location. The Decontamination Zone is to be located upwind of the work area. Work zones will be maintained through the use of:

- ☐ Warning Tape
- ☑ Cones and Barriers
- ☑ Visual Observations

## Decontamination Procedures and Equipment:

Note: See Decontamination AHA for further information

**Level D Decontamination Procedures**

| | |
|---|---|
| Decontamination Solution: | Detergent and Water |
| Station 1: Equipment Drop | Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, etc. on plastic drop cloths. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, a cool-down station may be set up within this area. |
| Station 2: Outer Boots, and Gloves Wash and Rinse (if worn) | Scrub outer boots, and outer gloves decon solution or detergent water. Rinse off using copious amounts of water. |
| Station 3: Outer Boot and Glove Removal (if worn) | Remove outer boots and gloves. Deposit in plastic bag. |
| Station 4: Inner glove removal | Remove inner gloves and place in plastic bag. |
| Station 5: Field Wash | Hands and face are thoroughly washed. Shower as soon as possible. |

**Modified Level D and Level C PPE Decontamination Procedures**

| | |
|---|---|
| Decontamination Solution: | Detergent and Water |
| Station 1: Equipment Drop | Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, etc. on plastic drop cloths. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, a cool-down station may be set up within this area. |
| Station 2: Outer Garment, Boots, and Gloves Wash and Rinse | Scrub outer boots, outer gloves, and splash suit with decon solution or detergent water. Rinse off using copious amounts of water. |
| Station 3: Outer Boot and Glove Removal | Remove outer boots and gloves. Deposit in container with plastic liner. |
| Station 4: Canister or Mask (Level C only) Change | If worker leaves exclusion zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot covers are donned, joints are taped, and worker returns to duty. |
| Station 5: Boot, Gloves and Outer Garment Removal | Boots, chemical resistant splash suit, and inner gloves are removed and deposited in separate containers lined with plastic. |
| Station 6: Face Piece Removal (Level C only) | Facepiece is removed. Avoid touching face with fingers. Facepiece is deposited on plastic sheet. |
| Station 7: Field Wash | Hands and face are thoroughly washed. Shower as soon as possible. |

## Site Communication:

- ☑ Verbal
- ☑ Two-way radio
- ☑ Cellular telephone
- ☐ Hand signals
  - Hand gripping throat ---------- Out of air, can't breathe
  - Grip partner's wrist or both hands around waist ---------- Leave area immediately
  - Hands on top of head ---------- Need assistance
  - Thumbs up ---------- OK, I am all right, I understand
  - Thumbs down ---------- No, negative
- ☐ Horn
- ☐ Siren
- ☐ Other: ____________________

## EMERGENCY CONTACTS

| NAME | TELEPHONE NUMBERS | | DATE OF PRE-EMERGENCY NOTIFICATION (if applicable) |
|---|---|---|---|
| Fire Department: | 911 | | |
| Hospital: The Nass Suffolk Hospital | (631) 435-3000 | | |
| TriageNow (early case management) | 1-(877) 311-0038 | | |
| Police Department: | 911 | | |
| | **Office** | **Cell** | |
| Site Safety and Health Officer: | | | |
| Client Contact (NYSDEC PM): Brian Jankauskas | 518-402-9626 | 518-429-9632 | |
| Program Manager: Jean Firth | | 207-441-7530 | |
| Project Manager: Ehud Ardon | | 801- 448-1559 | |
| *Regional HSE Manager: Jeff Tweeddale | | 860-805-8553 | |
| *USA Director of HSE: Renee Weaver | 336-852-4903 | 336-707-3869 | |
| Corporate SVP of HSE: Ted Devens | 703-742-5767 | 703-629-5283 | |
| EPA/DEP (if applicable): | | | |
| Other: Ambulance | 911 | | |
| | | | |

*See Incident Flow Chart for Regional HSE Manager's Contact Information

## Emergency Equipment:

The following emergency response equipment is required for this project and shall be readily available:

- ☑ Field First Aid Kit (including bloodborne pathogen kit/supplies)
- ☐ Fire Extinguisher (ABC type)
- ☐ Eyewash (Note: 15 minutes of free-flowing fresh water)
- ☐ Other: ____________________

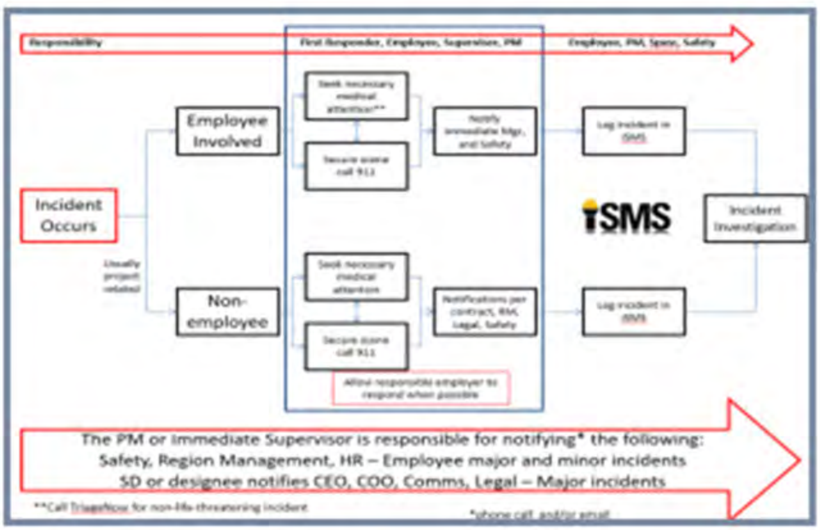
## Emergency Procedures:

- The SSHO (or alternate) should be immediately notified via the on-site communication system. The HSO assumes control of the emergency response.
- The SSHO notifies the Project Manager and client contact of the emergency.
- If the emergency involves an injury to a WSP employee, the SSHO or Site Manager are to implement the WSP Early Injury Case Management program. See TriageNow poster below:
- If applicable, the SSHO shall notify off-site emergency responders (e.g., fire department, hospital, police department, etc.) and shall inform the response team as to the nature and location of the emergency on-site.

- If applicable, the SSHO evacuates the site. Site workers should move to the predetermined evacuation point (See Site Map).
- For small fires, flames should be extinguished using the fire extinguisher but only if trained within the past year. Use the **PASS** method (**P**ull the pin, **A**im at the base of the fire, **S**queeze the trigger, use a **S**weeping motion to put out the fire) when extinguishing fires. Large fires should be handled by the local fire department.
- In an unknown situation or if involved in a toxic gas emergency, appropriate PPE (e.g., level C or B PPE), is required. If appropriate PPE is unavailable, site workers should evacuate and call-in emergency personnel.
- For chemical spills, follow the job specific AHA and SDS for spill containment and spill handling procedures.
- If chemicals are accidentally spilled or splashed into eyes or on skin, use eyewash bottle/station for the eyes and wash affected area. Site worker should shower as soon as possible after incident.
- If the emergency involves toxic gases, workers will back off and reassess. Prior to re-entering the work zone, the area must be determined to be safe, that the required PPE and air monitoring equipment is available. Entry is prohibited if PPE or air monitoring equipment is inadequate.
- An injured worker must be decontaminated appropriately.
- Within 24 hours after any emergency response, the incident shall be entered into iSMS. When the use of drugs or alcohol cannot be ruled out as a factor in the incident, contact your Regional HSE Manager to determine if post-accident drug testing is required.

### INCIDENT FLOW CHART / TriageNow

# E&E Incident flow chart




**For workplace injuries call TriageNow: (877) 311-0038**

Enter all incidents into iSMS within 24hours

Get it on Google Play

Download on the App Store

| Safety Manager Name/E-Mail | Region | Contact Information |
|---|---|---|
| Renee Weaver<br>Renee.weaver@wsp.com | E&E USA | (336) 707-3869 (cell) |
| Greg Ertel<br>gregory.ertel@wsp.com | Applied Solutions | (585) 465-0557 (cell) |
| Carissa Johnsen<br>carissa.johnsen@wsp.com | Oil & Gas | (201) 618-2151 (cell) |
| Kevin Dunsmore<br>kevin.dunsmore@wsp.com | Northeast Region: Mid-Atlantic<br>Southeast Region: SSW/Capital | (856) 373-6576 (cell) |
| Jeff Tweeddale<br>jeff.tweeddale@wsp.com | Northeast Region: New England / New York/Midwest/Plains | (860) 805-5883 (cell) |
| Kirby Lastinger<br>kirby.lastinger@wsp.com | Southeast Region: Florida/SSE | (863) 272-4775 (cell) |
| Tré Wilson<br>trevon.wilson@wsp.com | West Region: Pacific/California/SWMt /Texas Ops | (316) 202-9030 (cell) |
| Renee Weaver (interim)<br>Renee.weaver@wsp.com | Mining | (406) 201-0345 (cell) |
| Tom Bemrich<br>Tom.Bemrich@wsp.com | Radiation Safety | (602) 315-2647 (cell) |
| Zach Manthey<br>Zach.Manthey@wsp.com | Lab Safety | (602) 616-7703 (cell) |

Incidents requiring reporting include injuries, illnesses, high potential near misses, unsafe work refusals, workplace violence / harassment, security incidents, subcontractor incidents, regulatory inspections, spills, and property damage.

The Supervisor is responsible for Local/Client Notifications and Drug/Alcohol Testing coordination as per client requirements.

Download iSMS Mobile App. Open the app, enter iSMS URL: zeroharm.onepb.net. Available on Google Play or the App Store.


**Site Specific Emergency Procedures are as follows:**

## Field Team Review:

I acknowledge that I understand the requirements of this HASP, and agree to abide by the procedures and limitations specified herein. I also acknowledge that I have been given an opportunity to have my questions regarding the HASP and its requirements answered prior to performing field activities. Health and safety training and medical surveillance requirements applicable to my field activities at this site are current and will not expire during on-site activities.

Name: ______________________________ Date: ____________________

Name: ______________________________ Date: ____________________

Name: ______________________________ Date: ____________________

Name: ______________________________ Date: ____________________

Name: ______________________________ Date: ____________________

# Site-Specific Health and Safety Plan
# Short Form

## Routes to Emergency Medical Facilities:

### HOSPITAL (for immediate emergency treatment):

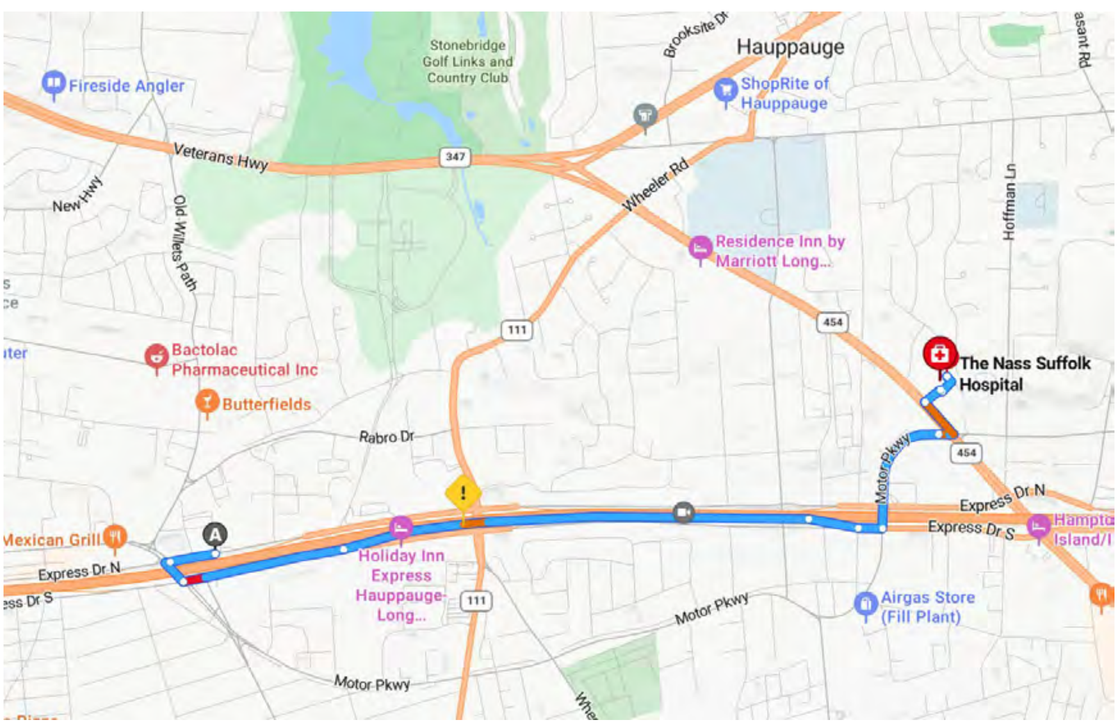
Facility Name: The Nass Suffolk Hospital

Address: 1383 Veterans Memorial Hwy Ste 26, Hauppauge, NY 11788

Telephone Number: 631 435 3000

### DIRECTIONS TO PRIMARY HOSPITAL (attach map):

| | | |
|---|---|---|
| 1. | Head **west** on **Express Dr N** toward Calebs Path | 0.1 mi |
| 2. | Turn **left** onto **Motor Pkwy / County Hwy-67** | 489 ft |
| 3. | Bear **left** onto **Express Dr S** | 0.5 mi |
| 4. | Take the ramp on the **left** and follow signs for **I-495 East**<br>*Minor congestion* | 1.4 mi |
| 5. | At Exit **57**, head **right** on the ramp for **NY-454** toward **Commack / Patchogue** | 0.2 mi |
| 6. | Keep **straight** to get onto **Express Dr S** | 387 ft |
| 7. | Turn **left** onto **Motor Pkwy / County Hwy-67** | 0.4 mi |
| 8. | Turn **left** onto **NY-454 / Veterans Hwy** | 0.2 mi |
| 9. | Turn **right** | 318 ft |
| 10. | Turn **right** | 36 ft |
| 11. | Turn **left** | 331 ft |
| 12. | Arrive at destination<br>The last intersection before your destination is NY-454 / Veterans Hwy | |



### CLINIC (for non-emergency medical treatment)

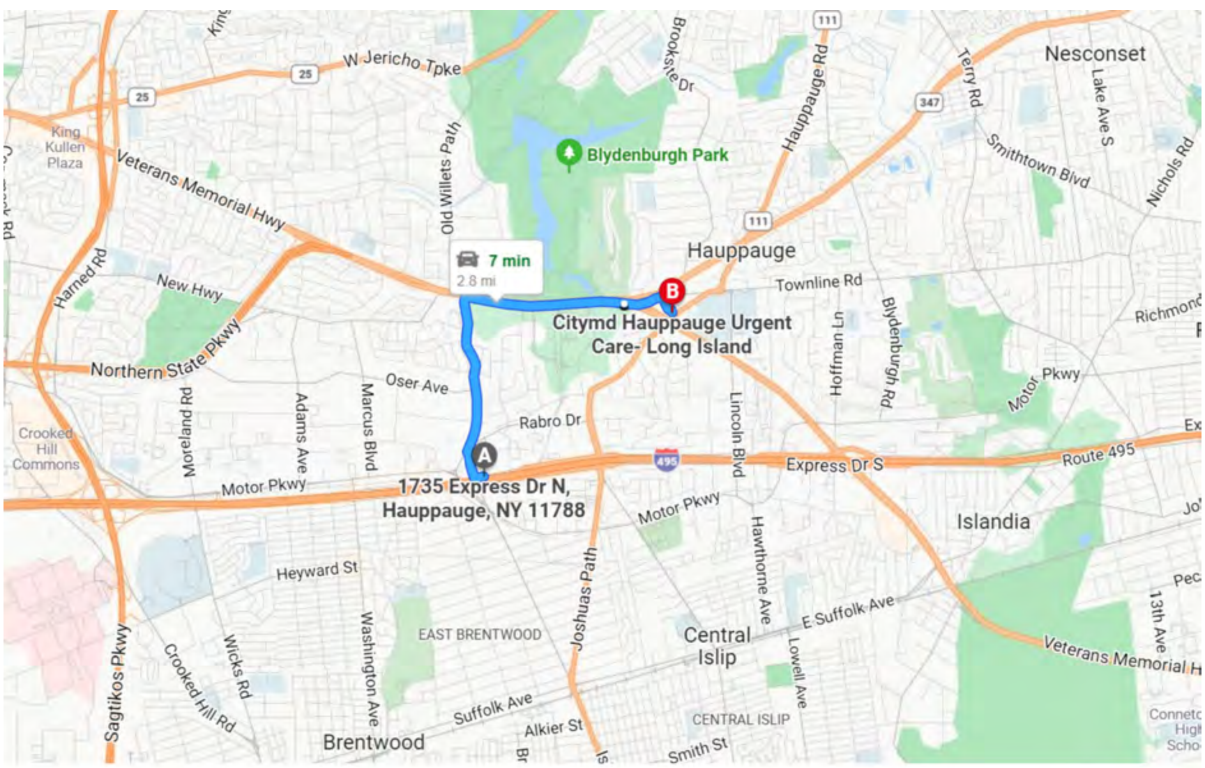
Facility Name: Citymd Hauppauge Urgent Care

Address: 812 Wheeler Rd, Hauppauge, NY 11788

Telephone Number: (631) 230-5777

### DIRECTIONS TO CLINIC (attach map):

| | | |
|---|---|---|
| 1. | Head **west** on **Express Dr N** toward Calebs Path | 341 ft |
| 2. | Turn **right** onto **Calebs Path** | 0.2 mi |
| 3. | Turn **right** onto **Old Willets Path** | 1.0 mi |
| 4. | Turn **right** onto **NY-454 / NY-347 / Veterans Hwy** | 1.1 mi |
| 5. | Keep **left** to get onto **NY-347 / Smithtown Byp** | 0.2 mi |
| 6. | Bear **right** onto **road** | 249 ft |
| 7. | Turn **right** | 505 ft |
| 8. | Turn **left**<br>Five Guys on the corner | 85 ft |
| 9. | Turn **right**<br>Five Guys on the corner | 167 ft |
| 10. | Arrive at destination | |



## Expectations For Health Safety and Wellbeing Management

The WSP HSW Safety Expectations includes elements that apply to the global operations, and E&I. The purpose of this document is to set out WSP's "Expectations for Health, Safety and Wellbeing Management". These Expectations are based on international best practices, including ISO 45001: Occupational Health and Safety Management System; and ISO 45003: "Occupational Health and Safety Management - Psychological Health and Safety at Work: Managing Psychological Risks – Guidelines".

These principles tie into the WSP - USA Health, Safety and Wellness (HSW) Policy Statement: LINK

## WSP Zero Harm

Our Zero Harm Vision is a commitment shared by WSP and all employees to consider and effectively reduce or mitigate health, safety, and wellbeing risks from our activities.

**Our goal is to ensure that our activities result in:**


- Zero Fatalities
- Zero permanently disabling injuries
- Zero injuries to members of the public
- Zero long term harm to health

**By Actively Caring for your personal safety, and for those around you, we can prevent accidents and injury. Caring together, we can attain Zero Harm.**

# Tailgate Meeting Form

***Check One:***

☐ Initial Kickoff Safety Meeting ☐ Regular/Daily Tailgate Safety Meeting ☐ Unscheduled Tailgate Safety Meeting

Date: ______________________ Site: ______________________

Site Manager: ______________________ Site Health and Safety Officer: ______________________

*Print* *Print*

## Order of Business

*Topics Discussed (Check all that apply)*

☐ Scope of Work

☐ Site History/Site Layout

☐ Personnel Responsibilities

☐ Training Requirements

☐ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazard effects)

☐ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)

☐ Safe Work Practices

☐ Engineering Controls

☐ Chemical Hazards and Controls

☐ Signs and symptoms of over exposure to site chemicals

☐ Medical Surveillance Requirements

☐ Action Levels

☐ Monitoring Instruments and Personal Monitoring

☐ Perimeter Monitoring, Type and Frequency

☐ PPE Required/PPE Used

☐ Define PPE Levels, Donning, Doffing Procedures

☐ Decontamination Procedures for Personnel and Equipment

☐ Physical Hazards and Controls (e.g., overhead utility lines)

☐ Anticipated Weather (snow, high winds, rain)

☐ Temperature Extremes (heat or cold stress symptoms and controls)

☐ Biological Hazards and Controls (e.g., poison ivy, spiders)

☐ Site Control (visitor access, buddy system, work zones, security, communications)

☐ Sanitation and Illumination

☐ Logs, Reports, Recordkeeping

☐ Incident Reporting Procedures

☐ Near Misses/Hazard ID including worker suggestions to correct and work practices to avoid similar occurrences

☐ General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)

☐ General Emergency Response Procedures (e.g., earthquake response, typhoon response, etc.)

☐ Medical Emergency Procedures (e.g., exposure control precautions, location of first aid kits, etc.)

☐ Route to Hospital and Medical Care Provider Visit Guidelines

☐ Site/Regional Emergency Response Procedures (e.g., exposure control precautions, location of first aid kits, etc.)

☐ Hazardous Materials Spill Procedures

PPE required for the tasks to be conducted: ______________________

______________________

______________________

Required Permits: ______________________

______________________

Site Access or other issues: ______________________

______________________

## Tailgate Meeting Form

MACTEC

Safety Suggestions by Site Workers: ______________________________

______________________________

______________________________

Action Taken on Previous Suggestions: ______________________________

______________________________

______________________________

Injuries/Incidents/Personnel Changes since last meeting: ______________________________

______________________________

______________________________

Observations of unsafe work practices/conditions that have developed since previous meeting: ______________________________

______________________________

______________________________

Location of (or changes in the locations of) evacuation routes/safe refuge areas: ______________________________

______________________________

______________________________

Additional Comments: ______________________________

______________________________

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting

| Name (Print) | Company | Signature |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Meeting Conducted by: ______________________________ Title: ______________________________

*Print*

Signature: ______________________________ Time: ______________________________

*Print*

# ATTACHMENT 2:
# FIELD DATA RECORDS

| SOIL BORING LOG | | | |
|---|---|---|---|
| MACTEC<br>511 Congress Street, Portland Maine 04101 | Project Name: | | Boring ID: |
| | Project Location: | | Page No. |
| | Project No.: | Client: | of: |
| Boring Location: | Refusal Depth: | Total Depth: | Bore Hole OD: |
| Weather: | Soil Drilled: | Drilling Method: | Casing Size: |
| Subcontractor: | Rock Drilled: | Protection Level: | Sampler: |
| Driller: | Date Started: | Date Completed: | Sampler ID/OD: |
| Rig Type/Model: | Logged By: | Checked By: | |
| Reference Elevation: | Water Level: | Time: | |

| Drilling Information | | | | | Sample Information | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Depth (feet bgs) | Sample Number | Penetration (ft) / Recovery (ft) | Blow Counts | N Value | PID Field Screening (ppm) | PID Head Space Reading (ppm) | Analytical Sample Depth (ft) | Sample Description and Classification | USCS Classification | Remarks |
| | | | | | | | | | | |

**NOTES:**

# DAILY PFAS PROTOCOL CHECKLIST RECORD

MACTEC

511 Congress Street
Suite 200
Portland, Maine 04101

| | |
|---|---|
| PROJECT NAME | DATE |
| PROJECT NUMBER | START TIME |
| INSTALLATION | WEATHER |

**Field Clothing and PPE (as applicable):**

- ☐ Field crew in compliance with Tables 1 and 2, SOP S6
- ☐ Field crew has not used fabric softener on clothing
- ☐ Field crew has not used cosmetics, moisturizers, hand cream, or other related products on exposed body parts this morning
- ☐ Field crew has not applied unacceptable sunscreen or insect repellant

**Field Clothing and PPE (as applicable):**

- ☐ No Teflon® containing materials on-site
- ☐ All sample materials made from stainless steel, HDPE, acetate, silicon, or polypropylene
- ☐ No waterproof field books on-site other than Rite-in-the-Rain® Products
- ☐ No plastic clipboards, binders, or spiral hard cover notebooks on-site
- ☐ No adhesives (Post-it® Notes) on-site
- ☐ Coolers filled with regular ice only. No chemical (blue) ice packs in possession

**Sample Containers:**

- ☐ All sample containers made of HDPE or polypropylene. Samples are not stored in containers made of LDPE
- ☐ Caps are lined or unlined and made of HDPE or polypropylene

**Wet Weather (as applicable):**

- ☐ For personnel in direct contact with samples and/or sampling equipment, wet weather gear made of Vinyl, polyurethane, PVC, latex or rubber-coated materials only

**Equipment Decontamination:**

- ☐ "PFAS-free" water on-site for decontamination of sample equipment
- ☐ Alconox and Liquinox to be used as decontamination materials

**Food and Drink**

- ☐ No food or drink on-site with exception of bottled water and/or hydration drinks (i.e., Gatorade and Powerade) that is available for consumption only in the staging area

**If any applicable boxes cannot be checked, the Field Lead shall describe the noncompliance issues below and work with field personnel to address noncompliance issues prior to commencement of that day's work. Corrective action shall include removal of noncompliance items from the investigation area or removal of worker offsite until in compliance. Repeated failure to comply with PFC sample protocols will result in the permanent removal of worker(s) from the investigation area.**

Describe the noncompliance issues (include personnel not in compliance) and action/outcome of noncompliance:

Sampler Signature: Print Name:

Checked By: Date:

# FIELD INSTRUMENT CALIBRATION RECORD

PROJECT NAME: ____________ TASK NO: ________ DATE: ________
PROJECT NUMBER: ____________ MACTEC CREW: ________
PROJECT LOCATION: ____________ SAMPLER NAME: ________
WEATHER CONDITIONS (AM): ____________ SAMPLER SIGNATURE: ________
WEATHER CONDITIONS (PM): ____________ CHECKED BY: ________ DATE: ________

**MULTI-PARAMETER WATER QUALITY METER**

METER TYPE ________
MODEL NO. ________
UNIT ID NO. ________

**AM CALIBRATION** Start Time ________/End Time________

**POST CALIBRATION CHECK** Start Time ________/End Time________

| | Units | Standard Value | Meter Value | *Acceptance Criteria (AM) | Standard Value | Meter Value | *Acceptance Criteria (PM) |
|---|---|---|---|---|---|---|---|
| pH (4) | SU | 4.0 | ____ | +/- 0.1 pH Units | | | |
| pH (7) | SU | 7.0 | ____ | +/- 0.1 pH Units | 7.0 | ____ | +/- 0.3 pH Units |
| pH (10) | SU | 10.0 | ____ | +/- 0.1 pH Units | | | |
| Redox | +/- mV | 240 | ____ | +/- 10 mV | 240 | ____ | +/- 10 mV |
| Conductivity | mS/cm | 1.413 | ____ | +/- 0.5 % of standard | 1.413 | ____ | +/- 5% of standard |
| DO (saturated) | % | 100 | ____ | +/- 2% of standard | | | |
| DO (saturated) | mg/L[1] (see Chart 1) | ____ | ____ | +/- 0.2 mg/L | ____ | ____ | +/- 0.5 mg/L of standard |
| DO (<0.1) | mg/L | <0.1 | ____ | < 0.5 mg/L | | | |
| Temperature | $^{o}C$ | | ____ | | | ____ | |
| Baro. Press. | mmHg | | ____ | | | ____ | |

**TURBIDITY METER**

METER TYPE ________
MODEL NO. ________
UNIT ID NO. ________

| | Units | Standard Value | Meter Value | Standard Value | Meter Value | *Acceptance Criteria (PM) |
|---|---|---|---|---|---|---|
| <0.1 Standard | NTU | <0.1 | ____ | <0.1 | ____ | +/- 0.3 NTU of stan. |
| 20 Standard | NTU | 20 | ____ | 20 | ____ | +/- 5% of standard |
| 100 Standard | NTU | 100 | ____ | 100 | ____ | +/- 5% of standard |
| 800 Standard | NTU | 800 | ____ | 800 | ____ | +/- 5% of standard |

**PHOTOIONIZATION DETECTOR**

METER TYPE ________
MODEL NO. ________
UNIT ID NO. ________

| | Units | Standard Value | Meter Value | Standard Value | Meter Value | *Acceptance Criteria (PM) |
|---|---|---|---|---|---|---|
| Background | ppmv | <0.1 | ____ | <0.1 | ____ | within 5 ppmv of BG |
| Span Gas | ppmv | 100 | ____ | 100 | ____ | +/- 10% of standard |

**$O_2$-LEL 4 GAS METER**

METER TYPE ________
MODEL NO. ________
UNIT ID NO. ________

| | Units | Standard Value | Meter Value | Standard Value | Meter Value | *Acceptance Criteria (PM) |
|---|---|---|---|---|---|---|
| Methane | % | 50 | ____ | 50 | ____ | +/- 10% of standard |
| $O_2$ | % | 20.9 | ____ | 20.9 | ____ | +/- 10% of standard |
| $H_2S$ | ppmv | 25 | ____ | 25 | ____ | +/- 10% of standard |
| CO | ppmv | 50 | ____ | 50 | ____ | +/- 10% of standard |

**OTHER METER**

METER TYPE ________
MODEL NO. ________
UNIT ID NO. ________

See Notes Below for Additional Information

☐ Equipment calibrated within the Acceptance Criteria specified for each of the parameters listed above.
☐ Equipment (not) calibrated within the Acceptance Criteria specified for each of the parameters listed above**.

**MATERIALS RECORD**

**Deionized Water Source:** Portland FOS
**Lot#/Date Produced:** ________
**Trip Blank Source:** Laboratory provided
**Sample Preservatives Source:** Laboratory provided
**Disposable Filter Type:** in-line 0.45μm cellulose
**Calibration Fluids / Standard Source:**
- DO Calibration Fluid (<0.1 mg/L) Portland FOS
- Other ________
- Other ________
- Other ________

| | Cal. Standard Lot Number | Exp. Date |
|---|---|---|
| pH (4) | | |
| pH (7) | | |
| pH (10) | | |
| ORP | | |
| Conductivity | | |
| <0.1 Turb. Stan. | | |
| 20 Turb. Stan. | | |
| 100 Turb. Stan. | | |
| 800 Turb. Stan. | | |
| PID Span Gas | | |
| $O_2$-LEL Span Gas | | |
| Other | | |

**NOTES:**

* = Unless otherwise noted, calibration procedures and acceptance criteria are in general accordance with USEPA Region 1 SOPs for Field Instrument Calibration (EQASOP-FieldCalibrat) and Low Stress Purging and Sampling (EQASOP-GW001), each dated 1/19/2010. Additonal acceptance criteria obtained from instrument specific manufacturer recommendations.
** = If meter reading is not within acceptance criteria, clean/replace probe and re-calibrate, or use calibrated back-up meter if available. If project requirements necessitate use of the instrument, clearly document any deviations from acceptance criteria on all data sheets and log book entries.
1 = DO Saturated standard value is calculated based on Oxygen Solubility at Indicated Pressure Chart from the USEPA Region 1 SOP for Field Instrument Calibration (EQASOP-FieldCalibrat), dated 1/19/2010.

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511 Congress Street, Portland Maine 04101

**FIELD INSTRUMENT CALIBRATION RECORD**

## WELL/PIEZOMETER CONSTRUCTION RECORD
## STICKUP

**LOCATION ID:**

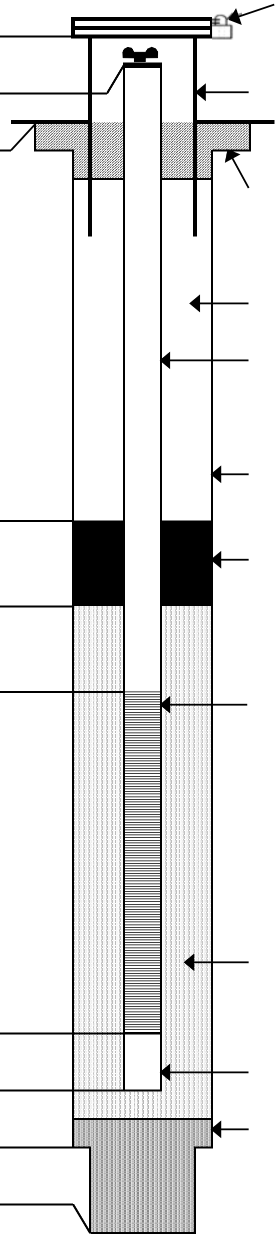
| | | | |
|---|---|---|---|
| Project Name: | | Date Started: | Date Completed: |
| Project Location: | | Logged By: | |
| Project Number: | Task Number | Checked By: | Checked Date: |
| Subcontractor: | Drilling Method: | | |
| Development Method: | Development Date: | | |
| Bucking Posts/Ballards: | | | |
| Notes: | | | |

**Measuring Point Information**

**Measuring Point (MP) Type:** Top Of Riser

**MP Elevation (ft):**

| Item | Depth BMP (ft) | Elevation (ft) |
|---|---|---|
| Stickup | | |
| Riser Pipe (Top) | | |
| Ground Surface Elevation | | |
| Top of Well Seal | | |
| Top of Sand Pack | | |
| Top of Screen | | |
| Base of Screen | | |
| End Cap | | |
| Drilled Depth | | |
| Bottom of Exploration | | |
| Bedrock Surface | | |



**Description**

| | |
|---|---|
| Lock Identification | |
| Stickup Casing Type: | |
| Stickup Casing Diameter: | |
| Surface Seal Type: | |
| Backfill/Grout Type: | |
| Riser Pipe Type: | |
| Riser Pipe ID: | |
| Borehole Diameter: | |
| Type of Seal: | |
| Screen Type: | |
| Screen ID: | |
| Screen Slot Size: | |
| Screen Length: | |
| Filter/Sand Pack Type: | |
| Sump: | |
| Fallback/Backfill: | |

NOT TO SCALE

MACTEC
511 Congress Street, Portland Maine 04101

**WELL/PIEZOMETER CONSTRUCTION RECORD - STICKUP**

# WELL/PIEZOMETER CONSTRUCTION RECORD FLUSHMOUNT

**LOCATION ID:**

Project Name: ____________________

Project Location: ____________________

Project Number: ____________ Task Number ____________

Subcontractor: ____________ Drilling Method: ____________

Development Method: ____________ Development Date: ____________

Bucking Posts/Ballards: ____________

Notes: ____________________

Date Started: ____________ Date Completed: ____________

Logged By: ____________________

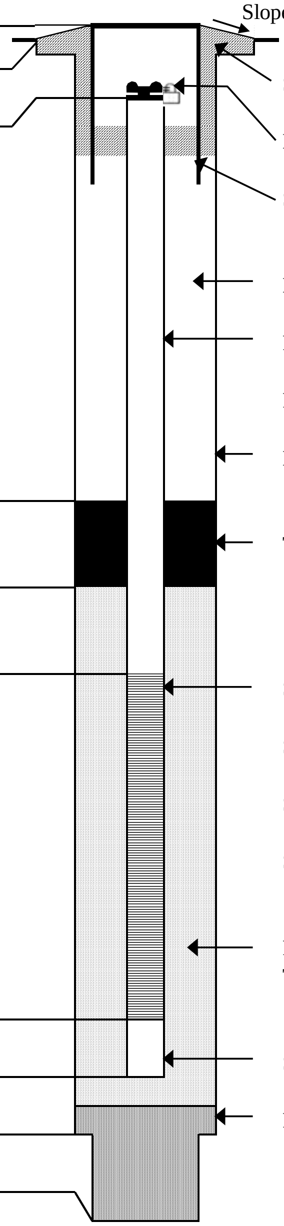
Checked By: ____________ Checked Date: ____________

**Measuring Point Information**

**Measuring Point (MP) Type:** Top Of Riser

**MP Elevation (ft):** ____________

| Item | Depth BMP (ft) | Elevation (ft) |
|---|---|---|
| Surface Casing Elevation | | |
| Ground Surface Elevatio | | |
| Riser Pipe (Top) | | |
| Top of Well Seal | | |
| Top of Sand Pack | | |
| Top of Screen | | |
| Base of Screen | | |
| End Cap | | |
| Drilled Depth | | |
| Bottom of Exploration | | |
| Bedrock Surface | | |



**Description**

Slope Away

Surface Seal Type: ____________

Lock Identification ____________

Stickup Casing Diameter: ____________

Backfill/Grout Type: ____________

Riser Pipe Type: ____________

Riser Pipe ID: ____________

Borehole Diameter: ____________

Type of Seal: ____________

Screen Type: ____________

Screen ID: ____________

Screen Slot Size: ____________

Screen Length: ____________

Filter/Sand Pack Type: ____________

Sump: ____________

Fallback/Backfill: ____________

NOT TO SCALE

MACTEC

511 Congress Street, Portland Maine 04101

# WELL DEVELOPMENT RECORD

MACTEC
511 Congress Street, Portland Maine 04101

| | | | |
|---|---|---|---|
| PROJECT NAME | | LOCATION ID | PAGE OF |
| PROJECT NUMBER | | START TIME | START DATE |
| WELL INSTALLATION DATE | WELL DEVELOPMENT DATE | END TIME | END DATE |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WELL DIAMETER | IN | CASING DIAMETER | IN | MEASUREMENT POINT (MP) | | | |
| INITIAL WELL DEPTH (BMP) | FT | FINAL WELL DEPTH (BMP) | FT | SCREEN LENGTH | FT | PROT. CASING STICKUP (AGS) | FT |
| INITIAL DTW (BMP) | FT | SEDIMENT REMOVED (final well depth - initial well depth) | FT | SCREENED INTERVAL (BMP) | TO | TOC/TOR DIFFERENCE | FT |
| WATER COLUMN (initial well depth - initial depth to water) | FT | DTW AFTER DEVELOP. (BMP) | FT | PUMPING DEPTH (BMP) | FT | PID AMBIENT AIR | PPM |
| CALCULATED GAL/VOL (column X well diameter squared X 0.041) | GAL | FINAL RECOVERY DEPTH (BMP) | FT | APPROXIMATE RECHARGE RATE | FT/MIN | PID WELL MOUTH | PPM |
| TOTAL VOL. PURGED (mL per minute X total minutes X 0.00026 gal/mL) | GAL | FINAL RECOVERY TIME (elapsed) | MIN | FLUIDS LOST DURING DRILLING | GAL | END OF WELL DEVELOPMENT SAMPLE TAKEN? | Y ☐ N ☐ |

**FIELD PARAMETERS**

| TIME | DTW (ft BMP) | PURGE RATE (mL/min) | TURBIDITY (ntu) | VOLUME PURGED (gal) | TOTAL GALLONS (gal) | COMMENTS |
|---|---|---|---|---|---|---|
| | | | | | | |
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**EQUIPMENT DOCUMENTATION**

- ☐ DEDICATED SUBMERSIBLE
- ☐ SURGE BLOCK
- ☐ BAILER
  - ☐ 2" ☐ ______
- ☐ GRUNDFOS
  - ☐ 2" ☐ 4"
- ☐ OTHER
- ☐ WATER LEVEL METER
- ☐ PID ______
- ☐ WQ METER ______
- ☐ TURB. METER ______
- ☐ OTHER ______
- ☐ OTHER ______
- ☐ OTHER

**WELL DEVELOPMENT CRITERIA**

| | Y | N |
|---|---|---|
| Well water clear to the unaided eye? | ☐ | ☐ |
| Sediment thickness remaining in well <1.0% of screen length? | ☐ | ☐ |
| Total water removed = a minimum of 5x calculated well volumes plus 3x drilling fluids lost? | ☐ | ☐ |
| Turbidity < 5NTUs? | ☐ | ☐ |

**WAS DEVELOPMENT CRITERIA MET?** Y ☐ N ☐

**ADDITIONAL OBSERVATIONS**

PURGE WATER CONTAINERIZED Y ☐ N ☐

NUMBER OF GALLONS GENERATED ______

**SKETCH**

**NOTES**

Well Developer Signature:
Print Name:
Checked By:
Date:

WELL DEVELOPMENT RECORD

# LOW FLOW GROUNDWATER SAMPLING RECORD

MACTEC

511 Congress Street
Suite 200
Portland, Maine 04101

| PROJECT NAME | | LOCATION ID | DATE |
|---|---|---|---|
| PROJECT NUMBER | | START TIME | END TIME |
| SAMPLE ID | SAMPLE TIME | SITE NAME/INSTALLATION | PAGE OF |

**WELL DIAMETER (IN.)** ☐ 1 ☐ 2 ☐ 4 ☐ 6 ☐ 8 ☐ OTHER ______

**TUBING ID (INCHES)** ☐ 1/8 ☐ 1/4 ☐ 3/8 ☐ 1/2 ☐ 5/8 ☐ OTHER ______

**MEASUREMENT POINT (MP)** ☐ TOP OF RISER (TOR) ☐ TOP OF CASING (TOC) ☐ OTHER ______

**WELL INTEGRITY**

| | YES | NO | N/A |
|---|---|---|---|
| CAP | ___ | ___ | ___ |
| CASING | ___ | ___ | ___ |
| LOCKED | ___ | ___ | ___ |
| COLLAR | ___ | ___ | ___ |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **INITIAL DTW (BMP)** | FT | **FINAL DTW (BMP)** | FT | **PROT. CASING STICKUP (AGS)** | FT | **TOC/TOR DIFFERENCE** | FT |
| **WELL DEPTH (BMP)** | FT | **SCREEN INTERVAL** | FT | **PID AMBIENT AIR** | NA PPM | **REFILL TIMER SETTING** | NA SEC |
| **WATER COLUMN** | FT | **DRAWDOWN VOLUME** (final DTW- initial DTW X well diam. squared X 0.041) | GAL | **PID WELL MOUTH** | NA PPM | **DISCHARGE TIMER SETTING** | NA SEC |
| **CALCULATED GAL/VOL** (water column X well diameter$^2$ X 0.041) | GAL | **TOTAL VOL. PURGED** (mL per minute X total minutes X 0.00026 gal/mL) | GAL | **DRAWDOWN/ TOTAL PURGED** | | **PRESSURE TO PUMP** | NA PSI |

**FIELD PARAMETERS WITH PROGRAM STABILIZATION CRITERIA (AS LISTED IN THE QAPP)**

| TIME | DTW (FT) | PURGE RATE (mL/min) | TEMP. ($^oC$) ±3% | SP. CONDUCTANCE (mS/cm) ±3% | DISS. $O_2$ (mg/L) ±10% or 3 values <0.5 mg/L | pH (units) ±0.1 | REDOX (mv) ±10 mv | TURBIDITY (ntu) ±10% and <10 ntu or 3 values <5 ntu | PUMP INTAKE DEPTH (ft) | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|
| | **BEGIN PURGING** | | | | | | | | | |
| | | | | | | | | | | |
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| | | | | | | | | | | |
| **FINAL STABILIZED FIELD PARAMETERS (rounded to appropriate significant figures)** | | | | | | | | | | |
| | | | | | | | | | | |

**TEMP.**: nearest degree (ex. 10.1 = 10)
**COND.**: 3 significant figure max (ex. 1.686 = 1.69)
**pH**: nearest tenth (ex. 5.53 = 5.5)
**DO**: nearest tenth (ex. 3.51 = 3.5)
**TURB**: 3 SF max, nearest tenth (6.19 = 6.2, 101 = 101)
**ORP**: 2 SF (44.1 = 44, 191 = 190)

**EQUIPMENT DOCUMENTATION**

| TYPE OF PUMP | DECON FLUIDS USED | TUBING/PUMP/BLADDER MATERIALS | | EQUIPMENT USED |
|---|---|---|---|---|
| ☐ PERISTALTIC | ☐ ALCONOX | ☐ SILICON TUBING | ☐ S. STEEL PUMP MATERIAL | ☐ WL METER ______ |
| ☐ SUBMERSIBLE | ☐ DEIONIZED WATER | ☐ HDPE TUBING | ☐ PVC PUMP MATERIAL | ☐ PID ______ |
| ☐ BLADDER ______ | ☐ POTABLE WATER | ☐ LDPE TUBING | ☐ GEOPROBE SCREEN | ☐ WQ METER ______ |
| ☐ WATTERA | ☐ NITRIC ACID | ☐ OTHER ______ | ☐ OTHER ______ | ☐ TURB. METER ______ |
| ☐ OTHER ______ | ☐ HEXANE | ☐ OTHER ______ | ☐ OTHER ______ | ☐ PUMP ______ |
| ☐ OTHER ______ | ☐ METHANOL | | ☐ OTHER ______ | ☐ OTHER ______ |
| | ☐ OTHER ______ | | | ☐ FILTERS NO. ____ TYPE ______ |

**ANALYTICAL PARAMETERS**

| | PARAMETER | METHOD NUMBER | ANALYTE LIST | FIELD FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | QC COLLECTED |
|---|---|---|---|---|---|---|---|
| ☐ | | | | | | | |
| ☐ | | | | | | | |
| ☐ | | | | | | | |
| ☐ | | | | | | | |
| ☐ | | | | | | | |
| ☐ | | | | | | | |
| ☐ | | | | | | | |

**PURGE OBSERVATIONS**

PURGE WATER CONTAINERIZED YES ☐ NO ☐ NUMBER OF GALLONS GENERATED ______

NO-PURGE METHOD UTILIZED YES ☐ NO ☐

**NOTES**

**DEVIATIONS FROM THE WORK PLAN**

Sampler Signature: Print Name:

Checked By: Date:

# GRAB SAMPLING RECORD - WATER

MACTEC

511 Congress Street
Suite 200
Portland, Maine 04101

| PROJECT NAME | | LOCATION ID | DATE |
|---|---|---|---|
| PROJECT NUMBER | | START TIME | END TIME |
| SAMPLE ID | SAMPLE TIME | SITE NAME/INSTALLATION | PAGE OF |

**SAMPLE TYPE:** ☐ GROUNDWATER ☐ SURFACE WATER ☐ STORM WATER ☐ DRINKING WATER ☐ PORE WATER ☐ OTHER: ______

**FIELD PARAMETERS WITH PROGRAM STABILIZATION CRITERIA (AS LISTED IN THE FAP)**

| TIME | DTW (FT) | PURGE RATE (mL/min) | TEMP. (°C) ±3% | SP. CONDUCTANCE (mS/cm) ±3% | DISS. $O_2$ (mg/L) ±10% or 3 values <0.5 mg/L | pH (units) ±0.1 | REDOX (mv) ±10 mv | TURBIDITY (ntu) ±10% and <10 ntu or 3 values <5 ntu | PUMP INTAKE DEPTH (ft) | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

**FINAL STABILIZED FIELD PARAMETERS (rounded to appropriate significant figures)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

**TEMP.**: nearest degree (ex. 10.1 = 10)
**COND.**: 3 significant figure (SF) max (ex. 1.686 = 1.69)
**pH**: nearest tenth (ex. 5.53 = 5.5)
**DO**: nearest tenth (ex. 3.51 = 3.5)
**TURB**: 3 SF max, nearest tenth (6.19 = 6.2, 101 = 101)
**ORP**: 2 SF (44.1 = 44, 191 = 190)

**EQUIPMENT DOCUMENTATION**

| TYPE OF PUMP | DECON FLUIDS USED | TUBING/PUMP/BLADDER MATERIALS | | EQUIPMENT USED |
|---|---|---|---|---|
| ☐ PERISTALTIC | ☐ ALCONOX | ☐ SILICON TUBING | ☐ S. STEEL PUMP MATERIAL | ☐ WL METER ______ |
| ☐ SUBMERSIBLE | ☐ DEIONIZED WATER | ☐ HDPE TUBING | ☐ PVC PUMP MATERIAL | ☐ PID ______ |
| ☐ BLADDER ______ | ☐ POTABLE WATER | ☐ LDPE TUBING | ☐ GEOPROBE SCREEN | ☐ WQ METER ______ |
| ☐ PDB | ☐ NITRIC ACID | ☐ OTHER ______ | ☐ OTHER ______ | ☐ TURB. METER ______ |
| ☐ HYDRASLEEVE ______ | ☐ HEXANE | ☐ OTHER ______ | ☐ OTHER ______ | ☐ PUMP ______ |
| ☐ OTHER ______ | ☐ METHANOL | | ☐ OTHER ______ | ☐ OTHER ______ |
| | ☐ OTHER ______ | | | ☐ FILTERS NO. ____ TYPE ______ |

**ANALYTICAL PARAMETERS**

| | PARAMETER | METHOD NUMBER | ANALYTE LIST | FIELD FILTERED | PRESERVATION METHOD | VOLUME REQUIRED | QC COLLECTED |
|---|---|---|---|---|---|---|---|
| ☐ | | | | | | | |
| ☐ | | | | | | | |
| ☐ | | | | | | | |
| ☐ | | | | | | | |
| ☐ | | | | | | | |
| ☐ | | | | | | | |
| ☐ | | | | | | | |

**PURGE OBSERVATIONS**

PURGE WATER CONTAINERIZED YES ☐ NO ☐
NUMBER OF GALLONS GENERATED ______
NO-PURGE METHOD UTILIZED YES ☐ NO ☐

**NOTES:**

**DEVIATIONS FROM THE WORK PLAN:**

Sampler Signature: Print Name:

Checked By: Date:

# SOIL VAPOR INTRUSION SAMPLING RECORD

PROJECT NAME: ____________________ LOCATION ID: ____________ DATE: ________

PROJECT NO./TASK NO.: ____________________ CLIENT: ____________________

PROJECT LOCATION: ____________________ SAMPLER NAME: ____________________

WEATHER CONDITIONS (AM): ____________________ SAMPLER SIGNATURE: ____________________

WEATHER CONDITIONS (PM): ____________________ CHECKED BY: ____________ DATE: ________

**SUMMA Canister Record Information**

| SUB-SLAB SOIL VAPOR SAMPLE | | BASEMENT INDOOR AIR SAMPLE | | FIRST FLOOR AIR SAMPLE | | AMBIENT AIR SAMPLE | |
|---|---|---|---|---|---|---|---|
| Flow Regulator Number: | | Flow Regulator Number: | | Flow Regulator Number: | | Flow Regulator Number: | |
| Flow Rate (mL/min): | | Flow Rate (mL/min): | | Flow Rate (mL/min): | | Flow Rate (mL/min): | |
| Canister Serial Number: | | Canister Serial Number: | | Canister Serial Number: | | Canister Serial Number: | |
| Start Date/Time | | Start Date/Time | | Start Date/Time | | Start Date/Time | |
| Start Pressure ("Hg): | | Start Pressure ("Hg): | | Start Pressure ("Hg): | | Start Pressure ("Hg): | |
| Stop Date/Time | | Stop Date/Time | | Stop Date/Time | | Stop Date/Time | |
| Stop Pressure ("Hg): | | Stop Pressure ("Hg): | | Stop Pressure ("Hg): | | Stop Pressure ("Hg): | |
| Sample ID: | | Sample ID: | | Sample ID: | | Sample ID: | |

**Other Sampling Information:**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Finished Basement, Crawl Space, Unfinished Basement | | Story/Level: | | Story/Level: | | Direction from Building | |
| Floor Slab Thickness: | | Room: | | Room: | | Distance from Building: | |
| Potential Vapor Entry Points: | | Potential Vapor Entry Points: | | Potential Vapor Entry Points: | | Distance from Roadway: | |
| Floor Surface: | | Floor Surface: | | Floor Surface: | | Ground Surface: | |
| Noticable Odor: | | Noticable Odor: | | Noticable Odor: | | Noticable Odor: | |
| PID Reading (ppb): | | PID Reading (ppb): | | PID Reading (ppb): | | PID Reading (ppb): | |
| Intake Depth/Height: | | Intake Height: | | Intake Height: | | Intake Height above Ground Surface: | |
| Helium Test Conducted? Breakthrough %: | | Indoor Air Temp | | Indoor Air Temp | | Intake tubing? | |

**Comments/Location Sketch:**

MACTEC

511 Congress Street, Portland, ME 04101

**SOIL VAPOR INSTRUSION SAMPLING RECORD**

# ATTACHMENT 3:
# COMMUNITY AIR MONITORING PLAN

MACTEC, Inc.

## COMMUNITY AIR MONITORING PLAN

A Community Air Monitoring Plan (CAMP) will be implemented during intrusive activities. The purpose of the CAMP is to provide a measure of protection for the downwind community from potential airborne contaminant releases, including fugitive dust and volatile organic compounds (VOCs), resulting from the proposed Site investigation activities. Site-specific procedures described below for fugitive dust monitoring are consistent with the New York State (NYS) Department of Health generic CAMP as outlined in NYS Department of Environmental Conservation (NYSDEC) *Technical Guidance for Site Investigation and Remediation* (DER-10).

### Particulate Air Monitoring

Particulate air monitoring will be conducted continuously during ground intrusive activities (i.e., advancement of soil borings). Dust/particulate monitoring will be conducted near upwind and downwind perimeters of the work area or where dust generating operations are obvious. Dust monitoring may be suspended during periods of heavy precipitation and snow cover.

Particulate air monitoring will be conducted with a DataRAM-4 or similar device. This instrument is equipped with an audible alarm (indication of action level exceedance) and is capable of measuring particulate matter less than 10 micrometers in size (PM-10). It will continually record emissions generated during field activities, calculating 15-minute running average concentration levels. The upwind and downwind dust monitoring devices will be checked periodically throughout each day of intrusive activities to assess emissions and the need for corrective action.

Weather conditions, including prevailing wind direction, will be observed and recorded each day of site activities. As work and weather conditions change throughout the day, the locations of the dust monitoring devices may be adjusted accordingly.

<u>Particulate monitoring response and action levels</u>

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (µg/m3) greater than background (upwind perimeter) for the 15-minute period, or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 µg/m3 above the upwind level and provided that no visible dust is migrating from the work area.
- If after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 µg/m3 above the upwind level, work will be stopped, and a re-evaluation of activities initiated. Work can resume if dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration levels to within 150 µg/m3 of the upwind level and in preventing visible dust migration.

## VOC Air Monitoring

VOC air monitoring will be conducted in conjunction with the dust monitoring program. The VOC air monitoring will be conducted using a photo-ionization detector (PID) (e.g., RAE Systems MiniRAE 2000) which provides real-time recordable air monitoring data.

VOCs will be continuously monitored in the immediate work zone only. Upwind concentration levels will be measured before field activities commence and periodically throughout the day to establish background conditions.

<u>VOC monitoring response and action levels</u>

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