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Memorandum

To: Ms. Brianna Scharf
Assistant Engineer (Environmental)
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau E, Remedial Section C
625 Broadway
Albany, NY 12233-7017

From: Anthony Raposo, PE
Project Manager

Subject: NYSDEC Standby Engineering Contract
Work Assignment No. D009812-04.1
Site Management Portfolio B
100 Oser Avenue, NYSDEC Site No. 152162
Post-Remediation Site Characterization Plan

Date: August 1, 2023

cc: S. Saucier – NYSDEC
A. Perretta – NYSDOH
J. Bone and J. Magda – TRC

This Post-Remediation Site Characterization Plan has been prepared in support of soil vapor extraction (SVE) system IRM #1 (SVE IRM #1) shut down at the 100 Oser Avenue Site, located at 100 Oser Avenue, Hauppauge, New York 11788 (the "Site"). Recommended Post-Remediation Site Characterization activities/tasks are described below.

Executive Summary	
Task No.	**Summary of Proposed Activities**
Task 1 – Gauge SVE IRM #1 Wells	• Measure the depths to water and/or total depths of SVE IRM #1 wells to determine if elevated volatile organic compound (VOC) concentrations in extracted soil vapor are volatilizing from the groundwater. • EAR to disassemble and gauge the SVE IRM #1 wells (SVE-A, SVE-B, and SVE-C) to determine the depths of the wells relative to the groundwater table. • EAR to reassemble the wells following completion of the work.
Task 2 – Soil Sampling	• Complete soil sampling in accordance with Section 6.4(b)(2)(iii) of DER-10 Technical Guidance for Site Investigation and Remediation as necessary for approval of permanent SVE IRM #1 shut down. • Perform public utility mark outs and private utility locating survey prior to intrusive activities to clear an approximately 15-foot radius around each proposed soil boring location. • EAR to disassemble the aboveground piping connected to the exterior SVE IRM

Executive Summary	
Task No.	**Summary of Proposed Activities**
	#2 wells prior to advancing the soil borings. • Six on-Site direct push soil borings will be advanced to approximately 75 feet below ground surface (bgs). Up to three soil samples will be selected from each boring (18 samples total) for laboratory analysis of Target Compound List (TCL) VOCs plus 10 Tentatively Identified Compounds (TICs) via United States Environmental Protection Agency (USEPA) Method 8260: ▪ Zone 1: highest observed impacts as identified by field observations (visual, odor, staining, PID). ▪ Zone 2: the first clean interval underlying the interval of highest observed impacts. ▪ Zone 3: directly above the gauged bottom of each SVE well or terminal depth of the boring. o If no impacts are observed in a soil boring one soil sample directly above the gauged bottom of each SVE well or terminal depth of the boring will be selected for laboratory analysis. • The horizontal coordinates of each direct push boring will be determined via Global Positioning System (GPS). • Well piping reassembly to be performed at the conclusion of characterization activities.
Task 3 – Building Foundation /Floor Slab Crack Repair	• Preparation of a request to the Site owner to seal cracks and other penetrations in the Site building foundation and/or concrete floor slab to help limit migration of indoor air (e.g., alcohols) into the subsurface and SVE IRM #2.
Task 4 – Groundwater Sampling for Attenuation Parameters	• Collection via low-flow sampling methods and analysis of groundwater samples from monitoring wells MW-13, ITMW-04S, ITMW-04D, IW-25S, and ITMW-05S for attenuation parameters including chloride and sulfate via USEPA Method 300.0, nitrate/nitrite via USEPA Method 353.2, sulfide via USEPA Method SM4500, total organic carbon (TOC) via USEPA Method 5310C, and dissolved gases (methane, ethene, and ethane) via USEPA Method RSK-175 to determine if optimal conditions exist in Site groundwater for the reductive dichlorination of PCE.
Task 5 - Reporting	• Preparation of a letter report summarizing the results of the post-remediation characterization activities, including conclusions and recommendations for NYSDEC review and approval.

Two SVE systems are operated at the 100 Oser Avenue Site (the Site) to remediate tetrachloroethene (PCE) in soil and control soil vapor intrusion (SVI) into the Site building. One SVE system, identified as IRM #1, is connected to three SVE wells, identified as SVE-A, SVE-B and SVE-C, located along the western side of the Site building near a suspected source area. The other SVE system, identified as IRM #2, is connected to six SVE wells located inside the building, identified as SVE-A1-100, SVE-A2-100, SVE-B1-100, SVE-B2-100, SVE-C1-100 and SVE-C2-100, that were designed to function as a sub-slab depressurization system (SSDS), and eight SVE wells located west of the Site building, identified as SVE-3A, SVE-3B, SVE-4A, SVE-4C, SVE-5B, SVE-5C, SVE-6B and SVE-6C, installed to aid in the

remediation of soil in the suspected source area. SVE wells SVE-3A, SVE-3B, SVE-4A and SVE-4C are located on the 100 Oser Avenue property and SVE wells SVE-5B, SVE-5C, SVE-6B and SVE-6C are located on the adjacent 110 Oser Avenue property west of the Site.

Between October 2021 and February 2022 TRC Engineers, Inc. (TRC) conducted SVE system pulsing activities at the Site and SVI sampling of the on-Site building to determine if past SVE system operations had reached asymptotic mass recovery conditions and reduced volatile organic compound concentrations (VOCs) to levels where mitigation of SVI was no longer required. Results of pulsing activities were documented in the June 24, 2022 draft *Soil Vapor Extraction System Pulsing Completion Report*, prepared by TRC. SVE system pulsing activities did not result in significantly higher PCE concentrations in recovered soil vapor, suggesting recovery of PCE from both systems has reached asymptotic conditions. Additionally, results of SVI sampling indicated that continued SVI mitigation of the Site building is required. However, several limitations and data gaps were identified during SVE system pulsing and SVI sampling activities.

Additional operation and maintenance (O&M) activities were performed in consultation with New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH) from July 2022 to December 2022 to address the limitations and data gaps identified during SVE system pulsing and SVI sampling activities with the objective of optimizing efficiency of the SVE systems while maintaining SVI control. During the July 20, 2022 O&M event, Environmental Assessment & Remediations (EAR), a NYSDEC call-out contractor, identified that SVE IRM #1 had stopped operating due to a damaged blower motor. After the July 20, 2022 O&M event, EAR removed the SVE IRM #1 blower from the Site for inspection by KG Power Systems of Hauppauge, NY. It was determined that installing new bearings and a cooling fan and re-winding the motor would be required to repair the motor. In consultation with NYSDEC, it was determined that the additional O&M activities to assess PCE recovery rates and SVI mitigation effectiveness should be completed while only operating SVE IRM #2 before deciding if the SVE IRM #1 blower would be repaired and reinstalled. Results of the additional O&M activities were documented in the February 24, 2023 draft *Operation and Maintenance Activities Summary Report*, prepared by TRC.

Currently, SVE IRM #1 is shutdown and SVE IRM #2 is operating with extraction from only the six interior SVE wells. During the additional O&M activities it was observed that the historic SVE IRM #2 operating configuration of extraction from the eight exterior wells and three western interior wells did not result in consistent depressurization of the entire building slab. However, extraction from all six interior SVE wells depressurizes the subsurface beneath the building. Additionally, indications are that due to cracks (or similar conditions) in the Site building floor slab, applying the full vacuum of SVE IRM #2 to the interior SVE wells may result in drawing vapors (e.g., alcohols), associated with Site manufacturing operations, in indoor air into the subsurface and SVE treatment system. The existing vapor treatment system is not designed to remove alcohols and under these conditions (i.e., applying the full vacuum of SVE IRM #2 to the interior SVE wells) elevated concentrations may be discharged to the atmosphere.

NYSDEC and NYSDOH determined that continued operation of SVE IRM #1 would not result in significant VOC mass recovery (i.e., asymptotic conditions had been achieved) and the IRM #1 system has remained shut down since July 2022. As part of the final approval process to permanently shut down and decommission SVE IRM #1 NYSDEC requires soil sampling in accordance with Section 6.4(b)(2)(iii) of DER-10 *Technical Guidance for Site Investigation and Remediation*.

Please find below the proposed Post-Remediation Site Characterization Scope of Work for investigating vadose zone soil conditions at the Site. The proposed characterization activities will be conducted in five phases as described below and will be completed in accordance with the Standby Engineering Services Contract (the Contract), 6 NYCRR Part 375 Environmental Remediation Programs, NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation (DER-10), the generic and Site-specific Health and Safety Plans, NYSDOH generic Community Air Monitoring Program, Contract-specific Field Activities Plan (FAP), and Contract-specific Quality Assurance Project Plan (QAPP).

SCOPE OF WORK

Task 1 – Gauge SVE IRM #1 Wells

Construction details of the SVE wells associated with SVE IRM #1 are not included in the historical records and were not available for review by TRC. EAR will disassemble aboveground piping connected to the SVE IRM #1 wells and gauge each SVE well with an oil/water interface probe (OIP) to determine the depths of the SVE IRM #1 wells relative to the groundwater table. The groundwater table at the Site is approximately 70 feet below ground surface (bgs). EAR will reassemble the SVE wells at the conclusion of characterization activities.

Results of SVE well gauging will be used to determine if elevated VOC concentrations detected in extracted soil vapor are volatilizing from the groundwater. Additionally, confirmation of the depths of the SVE wells will provide the intervals at which soil samples should be collected from during Task 2.

Task 2 – Soil Sampling

Private Utility Locating Survey
Prior to intrusive activities, a private utility locating survey will be conducted, in addition to public utility mark outs, to clear soil boring locations (shown on **Figure 1**). The utility locating surveyor will survey an approximately 15-foot radius around each proposed investigation location. Any subsurface utilities/structures/anomalies will be identified on the ground surface with spray paint and/or pin flags.

TRC will discuss any soil boring repositioning, due to identified subsurface utilities/structures/anomalies, with NYSDEC prior to installation. It is anticipated that minor offsets (10 feet or less) will not require prior notification/approval.

Site Preparation and Mobilization
In order to access the proposed soil sample locations, EAR will disassemble the aboveground piping connected to the exterior SVE IRM #2 wells prior to advancing the soil borings. The Site will be accessed with a track-mounted direct push technology (DPT) drill rig. Following soil sampling, the aboveground piping for the exterior SVE IRM #2 wells will be reassembled.

Direct Push Soil Borings
Six on-Site direct push soil borings (OA-SB-101 through OA-SB-106) will be advanced to approximately 75 feet below ground surface (bgs) at locations shown on **Figure 1.** Soil samples will be collected continuously from ground surface to 75 feet bgs utilizing 4-foot or 5-foot long Macro-Core® samplers. Recovered soil will be classified for lithology by TRC personnel and screened [visual, olfactory, and photoionization detector (PID)] for indications of contamination. Soil samples will be selected for laboratory analysis as follows:

- Up to three soil samples will be selected from each boring for laboratory analysis.
    - Soil samples will be collected from discrete 6-inch intervals representing three vertical zones within each boring:
        - Zone 1: highest observed impacts as identified by field observations (visual, odor, staining, PID).
        - Zone 2: the first clean interval underlying the interval of highest observed impacts.
        - Zone 3: directly above the gauged bottom of each SVE well or terminal depth of the boring.
    - If no impacts are observed in a soil boring one soil sample directly above the gauged bottom of each SVE well or terminal depth of the boring will be selected for laboratory analysis.
    - Up to eighteen soil samples will be submitted for laboratory analysis for Target Compound List (TCL) VOCs plus 10 Tentatively Identified Compounds (TICs) via United States Environmental Protection Agency (USEPA) Method 8260.

The soil borings (shown on **Figure 1**) will be advanced in locations adjacent to each SVE IRM #1 well, in the locations of the historic soil samples collected in 2000, and adjacent to the on-Site monitoring well with the highest detected PCE concentration in groundwater (IW-25S).

The horizontal coordinates of each direct push boring will be determined via Global Positioning System (GPS). Soil not retained for laboratory analysis will be returned to the borehole and the remainder of the borehole will be grouted with a bentonite/cement slurry.

No low-density polyethylene (LDPE) or polytetrafluoroethylene (PTFE, Teflon™) materials, including plumber's tape, will be placed downhole or be in contact with downhole equipment and materials during performance of the work.

All down-hole drilling equipment will be decontaminated prior to use at each sample location using a combination of a steam genie and pressure washer in a decontamination pad. Sampling equipment (or items which cannot be safely pressure washed) will, at a minimum, be cleaned of all foreign matter, washed with potable water and Alconox™, and rinsed with potable water between locations.

Task 3 – Building Foundation/Floor Slab Crack Repair

TRC will prepare, for NYSDEC's review, a request on NYSDEC letterhead to the Site owner to seal the cracks and other penetrations in the Site building foundation and/or concrete floor slab to prevent migration of indoor air into the subsurface.

Task 4 – Groundwater Sampling for Attenuation Parameters

Groundwater sampling as required in the Site Management Plan (SMP) is performed annually to monitor the concentrations of PCE and VOCs in groundwater until concentrations decrease to below applicable NYSDEC Class GA Values and potential off-Site migration is no longer a concern. During the next groundwater sampling event (November 2023), TRC will collect and analyze groundwater samples from monitoring wells MW-13, ITMW-04S, ITMW-04D, IW-25S, and ITMW-05S for attenuation parameters including chloride and sulfate via USEPA Method 300.0, nitrate/nitrite via USEPA Method 353.2, sulfide via USEPA Method SM4500, total organic carbon (TOC) via USEPA Method 5310C, and dissolved gases (methane, ethene, and ethane) via USEPA Method RSK-175 to determine if optimal conditions exist in Site

groundwater for the reductive dichlorination of PCE. These monitoring wells will be sampled utilizing USEPA low-flow sampling methods. Monitoring well locations are shown on **Figure 2.**

Results of groundwater sampling for attenuation parameters will be discussed in the next Periodic Review Report (PRR).

Task 5 – Reporting

- A letter report will be prepared summarizing the results of the post-remediation characterization activities. The report will include:
    - Text, tables, figures, and appendices.
    - A description of the characteristics of the area investigated, including setting, physical features, and geology and hydrogeology.
    - A description of characterization activities and any issues that were encountered during the investigation.
    - Tables summarizing field measurements, tests and data and laboratory analytical results, including a comparison of results to standards, criteria, and guidance values (SCGs), where applicable.
    - Figures showing sampling locations, summaries of sampling data, and extent of contamination.
    - A Data Usability Summary Report (DUSR) for the analytical results.
    - Conclusions and recommendations for next steps.

FIGURES

LEGEND (SYMBOLS NOT TO SCALE):

- SITE BOUNDARY
- BUILDING FOOTPRINT
- LOT BOUNDARY
- FENCE
- SVE-# / SVE-##-### — SOIL VAPOR EXTRACTION WELL LOCATION AND IDENTIFICATION NUMBER
- VP-100-# / FSG-# — VAPOR MONITORING POINT LOCATION AND IDENTIFICATION NUMBER
- OA-SB-### — PROPOSED SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- MW-##, ITMW-###, IW-###, P-1-## — EXISTING MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

NOTES:

1. LOCATIONS AND DIMENSIONS OF PHYSICAL FEATURES AND BOUNDARIES ARE APPROXIMATE, UNLESS STATED OTHERWISE.
2. AERIAL IMAGERY SOURCED FROM GOOGLE EARTH PRO 2023 DATED OCTOBER 14, 2022.
3. SVE - SOIL VAPOR EXTRACTION

PROJECT:
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SITE MANAGEMENT PORTFOLIO B
TASK NO. 3 - 100 OSER AVENUE - SITE NO. 152162
100 OSER AVENUE, HAUPPAUGE, SUFFOLK COUNTY, NEW YORK

TITLE:

PROPOSED SAMPLING PLAN

DRAWN BY:	H. DELGADO	PROJ NO.:	386554.0000.0000
CHECKED BY:	M. WELLS		FIGURE 1
APPROVED BY:	A. RAPOSO		
DATE:	JUNE 2023		

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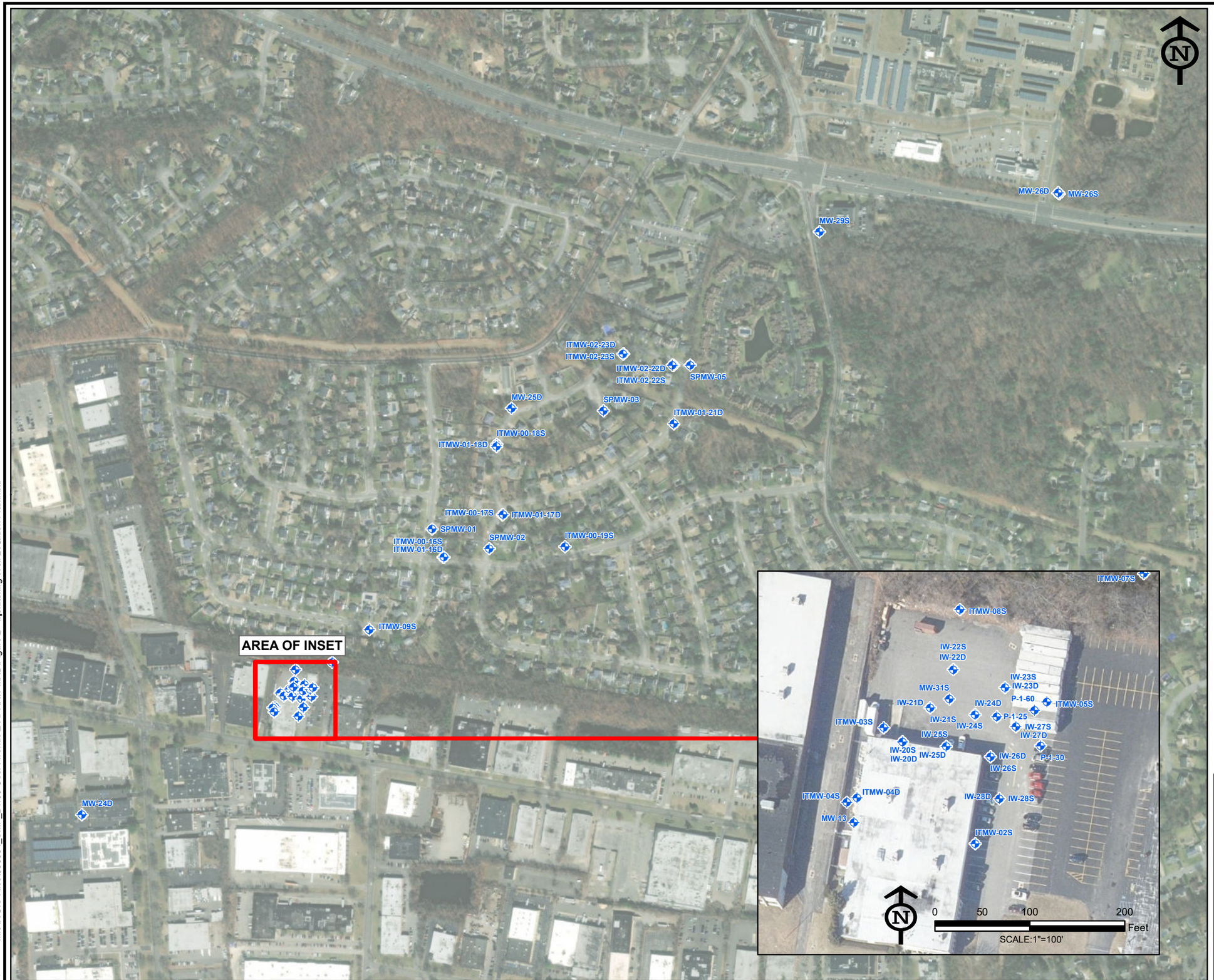
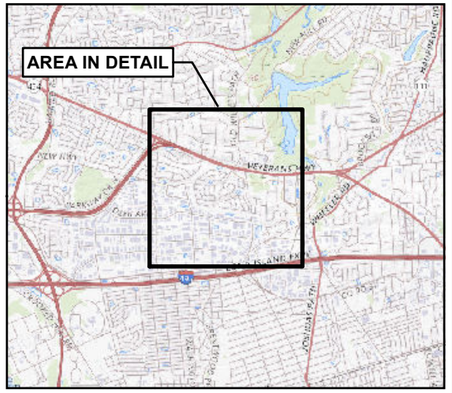
FILE NO.: Fig 1 - Prop. Samp. Plan (100).dwg

DRAWING NAME: \\CLIFTONPARK-VFP\cliftonpark\ECR\Projects\NYSDEC\D009812\Work Assignments\D009812-04 Site Management Portfolio B\03_100 Oser Avenue 152162\Soil Characterization Plan\Figures\TRC WD\Fig 1 - Prop. Samp. Plan (100).dwg --- PLOT DATE: June 20, 2023 - 8:34PM --- LAYOUT: 11X17L





KEYMAP
SCALE:1"=10,000'

LEGEND

MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

NOTES

1. BASE MAP IMAGERY RETRIEVED FROM ESRI AND NEW YORK STATE GIS CLEARINGHOUSE.
2. LOCATIONS AND DIMENSIONS OF PHYSICAL FEATURES ARE APPROXIMATE, UNLESS STATED OTHERWISE.
3. MONITORING WELL LOCATIONS TAKEN FROM THE MAY 2020 SITE MANAGEMENT PLAN, PREPARED BY URS CORPORATION.
4. FOR CLARITY, ONLY MONITORING WELLS INCLUDED IN THE ANNUAL MONITORING NETWORK ARE SHOWN.

0 500 1,000 Feet
SCALE:1"=500'

PROJECT:
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SITE MANAGEMENT PORTFOLIO B
TASK NO. 3 - 100 OSER AVENUE - SITE NO. 152162
100 OSER AVENUE, HAUPPAUGE, SUFFOLK COUNTY, NEW YORK

TITLE:
MONITORING WELL LOCATION PLAN

DRAWN BY:	M. GIAMBATTISTA	PROJ NO.:	386554.0000.0000
CHECKED BY:	M. WELLS		
APPROVED BY:	A. RAPOSO		**FIGURE 2**
DATE:	JUNE 2023		

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FILE NO.: Figure 2 - Monitoring Well Location Plan.mxd

TRC - GIS
Plot Date: 6/15/2023, 12:13:21 PM by LBOCHKIS -- LAYOUT: ANSI B(11"x17")
Path: M:\ArcGIS Files\386554_SMP_B\100 Oser Avenue\2-APRX\1-MXD\Figure 2 Monitoring Well Location Plan.mxd
Coordinate System: NAD 1983 StatePlane New York Long Island FIPS 3104 Feet (Foot US)