ARCADIS Design & Consultancy for natural and built assets

New York State Department of Environmental Conservation

SOIL VAPOR SCREENING EVALUATION WORK PLAN

Former United Stellar Industries
131 Sunnyside Boulevard
Plainview, New York
NYSDEC Site 1-30-115

August 18, 2020

Robert Porsche
Principle Scientist

Steven M. Feldman
Project Manager/Associate Vice President

SOIL VAPOR SCREENING EVALUATION WORK PLAN

Former United Stellar Industries
131 Sunnyside Boulevard
Plainview, New York
NYSDEC Site 1-30-115

Prepared for:

New York State Department of Environmental Conservation

Former United Stellar Industries Site

131 Sunnyside Boulevard

Plainview, New York

NYSDEC Site 1-30-115

Prepared by:

Arcadis of New York, Inc.

Two Huntington Quadrangle

Suite 1S10

Melville

New York 11747

Tel 631 249 7600

Fax 631 249 7610

Our Ref:

30017762.00007

Date:

August 18, 2020

CONTENTS

FIGURES

1 INTRODUCTION

On behalf of the 131 Sunnyside, LLC, Arcadis has prepared this Soil Vapor Screening Evaluation Work Plan (Work Plan) to evaluate soil vapor quality at 131 Sunnyside Boulevard, Plainview, NY (Site), in Nassau County, New York. The scope of work presented in this Work Plan has been developed in response to a request from the New York State Department of Environmental Conservation (NYSDEC) to provide updated soil vapor analytical data for the Site. The NYSDEC suggested that soil vapor samples be collected from the locations used for the July 2010 soil vapor screening evaluation. The scope of work presented in this Work Plan will evaluate volatile organic compounds (VOCs) in soil vapor at the Site and provide updated analytical data for comparison with the July 2010 Soil Vapor Investigation (SVI).

The key aspects of the work scope are as follows:

- Soil borings will be advanced to a depth of eight (8) feet below land surface (ft bls) and post-run tubing will be utilized in the same manner as the July 2010 SVI to collect soil vapor samples with a consistent methodology.
- Soil borings locations for this study will replicate the sample locations from the July 2010 soil vapor sampling program, with the exception that locations SV-6, SV-7 and SV-8 will not be resampled. These locations exhibited very low detections of site-related VOCs during the July 2010 SVI.
- The soil vapor sample results will be evaluated in accordance with the NYSDOH – Final Soil Vapor Intrusion Guidance (October 2006).
- Laboratory analysis of soil vapor samples will be by United States Environmental Protection Agency (USEPA) Method TO-15A.
- A summary letter report will be prepared that describes the sampling methodology, analytical results and data evaluation, and significant findings associated with present-day conditions.

2 ENVIRONMENTAL SETTING

The following subsections of this Work Plan describe the geology in the vicinity of the proposed soil borings and recent environmental conditions as they relate to groundwater flow conditions and groundwater quality.

2.1 Geology

In general, the geology at the Site, from land surface down to the bottom of the Magothy Formation, consists primarily of sand with interbedded layers of silt, clay and gravel. The uppermost sequence of these sediments is a part of the Upper Pleistocene outwash and/or morainal deposits, while the lower sequence comprises the Magothy Formation, which is a part of the Atlantic Coastal Plain deposits. In the vicinity of the Site, the Upper Pleistocene deposits are approximately 100 feet thick. Of the numerous clay lenses penetrated during previous drilling efforts, two areally extensive perching zones were encountered at approximately 80 and 100 ft below land surface. The clay units, referred to as the shallow and deep clays, respectively, were the only clays found to support perched water (Arcadis 2007).

2.2 Groundwater Flow Conditions

Water level measurements were taken on April 29, 2019 from wells screened immediately above the shallow clay and deep clay surfaces that support perched water, and from downgradient wells that are screened in the regional groundwater system. The shallow perched water zone, as indicated by water level measurements, is unconfined and relatively thin (approximately six feet thick). The depth to water in the shallow perched zone at the Site ranges from approximately 66 to 76 ft bls. Based on the equipotential lines generated from water level observations, the shallow perched water flow direction is to the northeast.

The hydraulic head elevation in the deep perched water zone is above the bottom of the shallow clay, indicating that the deeper perched water zone is confined. The direction of groundwater flow in the deep perched water zone is toward the south-southwest.

2.3 Shallow Perched Zone Water Quality

Based on the conceptual site model (CSM) that transfer of VOC mass from water to soil gas could only occur from the shallow perched zone, only shallow perched water quality is discussed below.

Concentrations of VOCs in the shallow perched zone based on sampling events between August 2006 and July 2013 were either non-detect or below drinking water standards. Therefore, concentrations of VOCs in the shallow soil gas observed during the July 2010 soil vapor screening do not appear to be associated with the mechanism of VOC mass transfer from the liquid phase to the gas phase.

3 SOIL VAPOR SCREENING EVALUATION

Consistent with the scope of work objectives described in Section 1, this Work Plan focuses on updating the available soil vapor analytical data generated from the July 2010 SVI. To meet this objective, a screening evaluation will be conducted through the collection of soil vapor samples from locations (i.e., SV-1 through SV-5 and SV-9 through SV-11) and depths as those previously collected.

3.1 Previous Soil Vapor Investigation

The July 2010 soil vapor evaluation was conducted by collecting soil vapor samples from a total of eleven (11) sample locations positioned across the on-site asphalt paved parking lot to provide good spatial coverage of the Site. Soil vapor samples were collected by installing a temporary soil vapor sampling point using a Geoprobe® direct push drill rig and the Geoprobe® Post Run Tubing (PRT) System.

PCE, TCE and/or cis-1,2-DCE were detected at all sample locations with the exception of SV-9. The highest concentration of PCE and TCE was detected at SV-11, which exhibited concentrations of 820 ug/L and 66,000 ug/L respectively. The highest concentration of cis-1,2-DCE was detected at SV-1 at a concentration of 7,400 ug/L (Arcadis 2020).

3.2 Sampling Approach and Methodology

To evaluate current VOC concentrations in soil vapor, eight (8) soil borings (SV-1 through SV-5 and SV-9 through SV-11) will be advanced for the collection of soil vapor samples in the outdoor, asphalt paved parking lot at the Site. The proposed soil boring locations are shown on Figure 1 and are positioned to provide an update to the analytical data produced from the July 2010 sampling event at the Site. Soil boring will be advanced to a depth of approximately 7.5 to 8 ft bls for the installation of soil vapor points and the collection of soil vapor samples.

Soil vapor samples will be collected using the following methodology. At each location, Arcadis will install a temporary soil vapor sampling point using a Geoprobe® direct push drill rig and the Geoprobe® PRT System. The PRT System allows for the collection of soil vapor samples at the desired sampling depth while significantly reducing the chances of rod leakage and ambient air contamination. O-ring connections enable the PRT System to deliver a vacuum-tight seal that prevents sample contamination from ambient air and assures that the sample is taken from the desired depth at the bottom of the boring. A tracer gas (i.e., helium) test will be conducted at each of the soil boring locations to check the seal established around the temporary soil vapor sampling point.

A temporary soil vapor sampling point consisting of 1.25-inch diameter steel drive rods will be advanced to a depth approximately eight (8) ft bls. An expendable PRT System point holder and expendable PRT System point will be affixed at the downhole end of the rods. Once the desired sample depth is reached, the sampling assembly will be retracted approximately 6 inches, allowing the expendable point to disengage from the rods, and creating a void in the subsurface for soil vapor sample collection. A bentonite seal will be placed around the outside of the rods at the ground surface. Teflon®-lined tubing and a PRT adapter will then be inserted down the center of the rods. The system is airtight and the potential for rod leakage is significantly reduced using O-ring connections. New Teflon®-lined tubing will be used at each sample location.

The soil vapor samples will be collected in batch certified, pre-cleaned 6-liter SUMMA® canisters provided by Alpha Analytical, a NYSDOH approved laboratory, located in Westborough, Massachusetts. All samples will be analyzed for the TO-15 compound list by USEPA Method TO-15.

Prior to sampling, a portable vacuum pump will be used to purge at least 1.5 volumes of air from the temporary soil vapor sampling point and tubing at a rate of approximately 100 to 200 mL/min. A laboratory pre-calibrated 0.5-hour flow controller (i.e., calibrated to collect the soil vapor sample at a rate of less than 200 mL/min) with an in-line particulate filter will be attached to the SUMMA® canister. Following purging, the tubing will be connected to the flow controller and the SUMMA® canister. The SUMMA® canister valve will be opened, the sample start time and initial vacuum will be recorded, and the soil vapor sample will be collected. The SUMMA® canister vacuum and sample time duration will be monitored during sampling and the SUMMA® canister valve will be closed when the vacuum is between 2 and 5 inches of mercury (Hg). The sample end time and final vacuum will be recorded. Weather-related data such as barometric pressure and wind speed will also be recorded. The SUMMA® canisters will then be submitted to Alpha Analytical for analysis.

A duplicate soil vapor sample will be collected at the SV-3 location, as had been done during the July 2010 sampling event. The duplicate sample will be collected at the same time as the SV-3 sample using a stainless steel “T” fitting, a second SUMMA® canister, and the procedures described above.

4 DATA EVALUATION AND REPORTING

The soil vapor sample analytical results will be evaluated in accordance with the technical guidance provided in the NYSDOH October 2006 Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH 2006). As discussed in the NYSDOH Guidance, New York State currently does not have any standards, criteria or guidance values for concentrations of VOCs in soil vapor. In the absence of this information, soil vapor sampling results are reviewed "as a whole" in conjunction with the results of other environmental sampling and the CSM to identify trends and spatial variations in the data. The soil vapor analytical results will be tabulated, compared with the July 2010 soil vapor analytical results, and used to characterize the nature and extent of subsurface vapor contamination.

A summary report will be prepared that describes the sampling methodology, analytical results and data evaluation, and significant findings associated with present-day conditions.

5 REFERENCES

Arcadis. 2007. *Site Characterization Report*. United Stellar Industries Property. 131 Sunnyside Boulevard, Plainview, New York. June 2007.

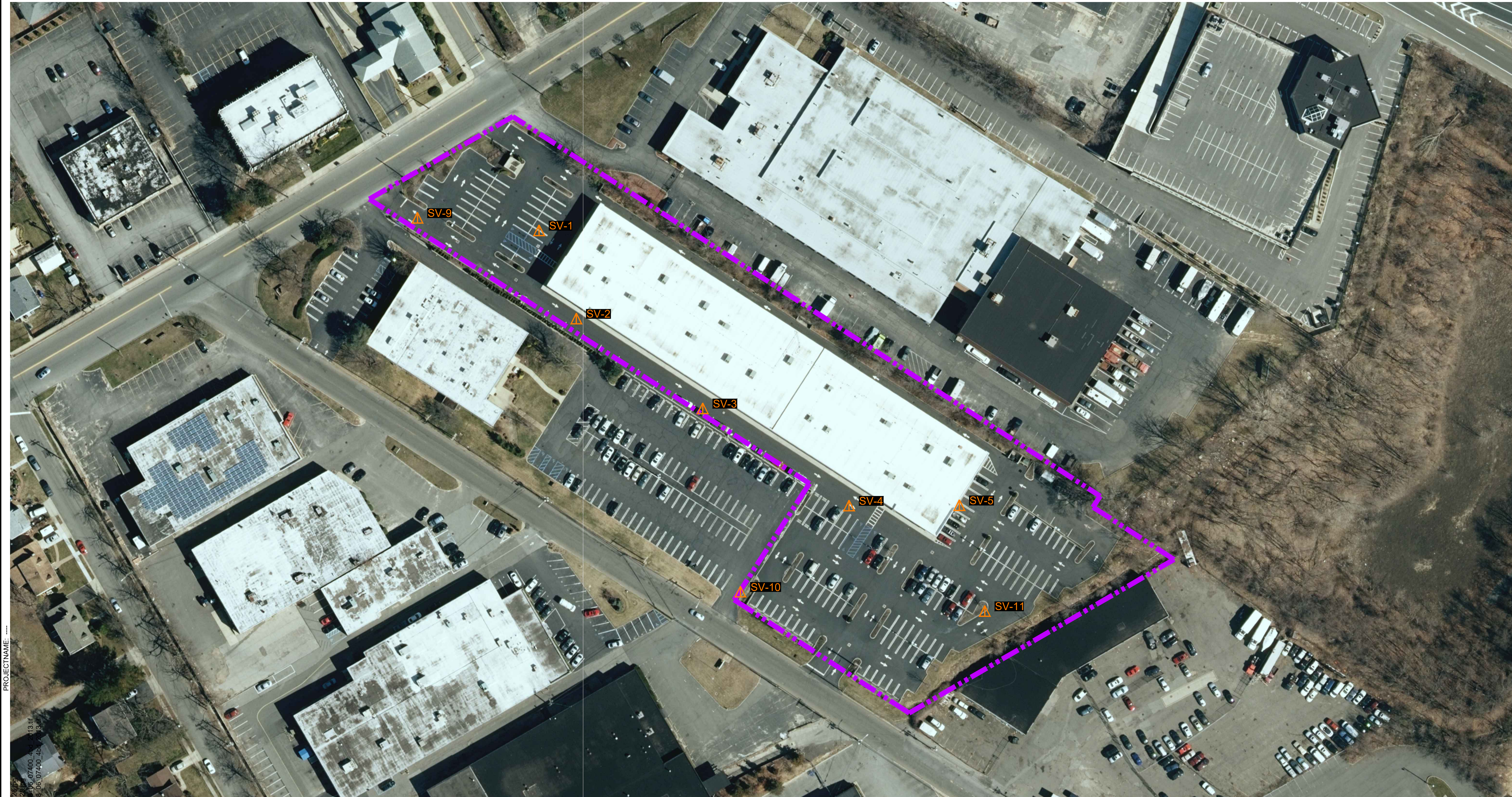
Arcadis. 2020. *Remedial Investigation/Feasibility Study Report – Operable Unit 1*. United Stellar Industries Site (Site No. 130115). 131 Sunnyside Boulevard, Plainview, New York. NYSDEC Site Number 1-30-104. January 24, 2020.

NYSDOH. 2006. *Final Guidance for Evaluation Soil Vapor Intrusion in the State of New York.* New York State Department of Health, Center for Environmental Health, Bureau of Environmental Exposure Investigation. October 2016. http://www.health.state.ny.us/environmental/indoors/vapor_intrusion

NYSDOH. 2017. *Updates to the Soil Vapor/ Indoor Air Decision Matrices.* May 2017. https://health.ny.gov/environmental/indoors/vapor_intrusion/update.htm

USEPA. 2019. *Method TO-15A,* D*etermination of Volatile Organic Compounds (VOCs) in Air Collected in Specially Prepared Canisters and Analyzed by Gas Chromatography-Mass Spectrometry (GC-MS)*. U.S. Environmental Protection Agency. Office of Research and Development, National Exposure Research Laboratory. Office of Air Quality Planning and Standards, Air Quality Assessment Division. September 2019. https://www.epa.gov/sites/production/files/2019-12/documents/to-15a_vocs.pdf

FIGURES



LEGEND:

PROPERTY LINE

SV-1 SOIL VAPOR SAMPLE LOCATION

0 100' 200'

APPROXIMATE SCALE IN FEET

NOTES:

1. ALL LOCATIONS ARE APPROXIMATE.

FORMER UNITED STELLAR INDUSTRIES SITE
131 SUNNYSIDE BOULEVARD
PLAINVIEW, NEW YORK

PROPOSED SOIL VAPOR SAMPLE LOCATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 1

Arcadis of New York, Inc.

Two Huntington Quadrangle

Suite 1S10

Melville, New York 11747

Tel 631 249 7600

Fax 631 249 7610

www.arcadis.com