



Strong Advocates, Effective Solutions, Integrated Implementation

June 5, 2018

Mr. Benjamin McPherson
Project Manager
New York State Department of Environmental Conservation
Division of Environmental Remediation
270 Michigan Ave.
Buffalo, New York 14203

**Re: Supplemental Remedial Investigation Work Plan -Revised
Oregon Road Site
Olean, New York
BCP Site No. C905045**

Dear Mr. McPherson:

On behalf of our client, Homer Street Properties, LLC (HSP), TurnKey Environmental Restoration, LLC (TurnKey) has prepared this Supplemental Remedial Investigation (RI) Work Plan for the above-referenced Site. This Work Plan has been prepared to further investigate data gaps identified in the initial RI. The findings of the initial RI work, including the data tables, figures, and boring/well logs, were previously provided to you under separate cover in an RI Report dated April 2018.

BACKGROUND

This document presents the proposed scope of work and implementation procedures for completion of a Supplemental RI at the Oregon Road Site in the City of Olean, New York (Site, see Figure 1). The Supplemental RI also includes sampling three existing monitoring wells and three planned monitoring wells for “Emerging Contaminants” as required by the New York Department of Environmental Conservation (NYSDEC) as part of the State-wide initiative to better understand the risk posed by 1,4-dioxane and per- and polyfluoroalkyl substances (PFAS).

TurnKey completed initial RI fieldwork in January-August 2017. In general, and as summarized in the RI text and analytical summary tables previously provided, the initial RI findings included:

GCS/LNAPL

- Grossly contaminated soil (GCS), light non-aqueous phase liquid (LNAPL), petroleum sheen and/or petroleum staining was noted in test pits, test trenches, soil borings and monitoring wells in numerous sample locations across the Site as shown on Figure 2. The majority of GCS/LNAPL impacts appear to be located in the central portion of the Site, although it is apparent that localized areas of impacts exist in various locations.

Soil

- Arsenic was the only metal detected in surface and subsurface soil at concentrations above its Part 375 Commercial soil cleanup objective (SCO) of 16 mg/kg at sample locations SS-5, SS-7, TP-10, MW-5, MW-9 and MW-12.

Piping

- Underground piping was encountered in several test pits across the Site as shown on Figure 2. Piping diameter ranged from approximately 4 to 8 inches. The full extent of subsurface piping is not known and requires further assessment to quantify.

Groundwater

- Individual volatile organic compounds (VOCs), pesticides, herbicides and PCBs were not detected during the RI; however, VOC TICs were detected up to 334 ug/L (MW-7).
- Five semi-volatile organic compounds (SVOCs) were detected above groundwater quality standards/guidance values (GWQS/GV) in MW-3 during the historic Phase II Investigation. During the RI, individual SVOC analytes were reported as non-detect; however, SVOC TICs were detected up to 8.4 ug/L (MW-7).

Sediment

- Arsenic was detected above Class A sediment guidance value (SGV) in the midstream (SED-2) and the downstream (SED-3) samples; however, both concentrations detected were below Class C SGV (exceedance of Class C SGVs would indicate that remediation may be required).

Surface Water

- Individual VOCs, SVOCs, pesticides, herbicides, and PCBs were not detected. However, VOC TICs ranged from 0.9 ug/L in the downstream surface water sample (SW-3) to 89.2 ug/L in the upstream surface water sample (SW-1). Iron was detected in each of the three sample locations at concentrations slightly exceeding the surface water quality standards (SWQS). Iron is a naturally occurring mineral and does not pose an environmental threat to the Site or local receptors. Based on our knowledge of other nearby sites, naturally occurring iron is present at relative high concentrations in soil, groundwater and surface water.

Soil Vapor

- Compounds detected in the soil vapor samples generally included petroleum VOCs including benzene, ethylbenzene, toluene, and xylene (BTEX), and 1,2,4-trimethylbenzene. Of note, the highest soil vapor concentration was isopropanol detected at a concentration of 5,920 ug/m³ in the SV-03 sample; this result appears anomalous compared to the other sample results.
- NYSDEC and NYSDOH do not currently have standards, criteria or guidance values for concentrations of petroleum compounds in soil vapor. Therefore, no comparative regulatory guidance values or cleanup concentrations are included in Table 9. NYSDOH's October 2006 Soil Vapor Intrusion guidance document states that soil vapor sampling results are reviewed "as a whole," in conjunction with the results of other environmental sampling, to identify trends and spatial variations in the data. It also indicates that to put some perspective on the data, soil vapor results might be compared to background outdoor air levels, Site-related outdoor air sampling results, or the NYSDOH's guidelines for volatile chemicals in air [soil vapor/indoor air matrices of the NYSDOH guidance document]. Two compounds listed in those matrices were detected in soil vapor samples; tetrachloroethene (PCE) was detected in SV-02 at a concentration of 2.64 ug/m³, and methylene chloride was detected in SV-05 at a concentration of 2.35 ug/m³, both below the lowest threshold of the NYSDOH indoor air guideline (Matrix B) of 100 ug/m³ that would require mitigation. No petroleum-related VOCs are included on in the NYSDOH guidance document for comparison to Site soil vapor results.

PROJECT OBJECTIVES

This Supplemental RI Work Plan outlines the additional scope of work that will be completed to supplement the initial RI data collected to date. The Supplemental RI will be completed by TurnKey on behalf of HSP. The work will be completed in accordance with NYSDEC DER-10 guidelines, the approved December 2016 RI Work Plan protocols and this Supplemental RI Work Plan. The primary objectives of the Supplemental RI are to:

- Collect additional groundwater samples, under appropriate quality assurance/quality control criteria, to further assess groundwater in the area of MW-2;
- Collect additional groundwater samples from three existing monitoring wells, under appropriate quality assurance/quality control criteria, to further assess groundwater for 1,4-dioxane and PFAS;
- Complete additional investigation of known GCS areas via test pits to further refine volumes of GCS and further evaluate potential remedial measures to address GCS;
- Identify and delineate known underground piping to the extent practicable.
- Collect two additional sediment samples from Two Mile Creek to further assess potential toxicity of sediments in areas where previous samples exhibited elevated arsenic.

- Collect additional surface/near surface samples in one-foot intervals from the area of higher elevations on the western portion of the Site to assess whether the surface/near surface soil from that area would be suitable for backfill or soil cover on other parts of the Site;
- Complete off-Site surface/near surface soil, subsurface soil sediment, surface water and groundwater sampling (including two monitoring wells for 1,4-dioxane and PFAS) on the south adjacent property to assess for presence of contamination and potential BCP eligibility.

ADDITIONAL GROUNDWATER ASSESSMENT

Groundwater Monitoring Well Replacement

One (1) groundwater monitoring well, identified as MW-2R, will be installed to replace MW-2. MW-2R will be installed and sampled for TCL VOCs plus TICs, TCL SVOCs plus TICs and TAL metals in accordance with the approved RI Work Plan. LNAPL if present will be measured and the thickness recorded.

Groundwater samples will not be collected less than 24 hours after purging.

Emerging Contaminants

The NYSDEC is requiring the Site be sampled for “emerging contaminants” as part of a State-wide initiative to better understand the risk posed by 1,4-dioxane and per- and polyfluoroalkyl substances (PFAS). The emerging contaminants sampling will be completed on three of the existing monitoring wells at the Site. Specifically, MW-12 (down-gradient location), MW-2R (down-gradient, proximate residential properties) and MW-4 (up-gradient location) will be sampled for 1,4-dioxane and PFAS.

Sampling Preparation

Sampling equipment, components, and containers will be handled appropriately to avoid contact with aluminum foil, low density polyethylene (LDPE), glass, or polytetrafluoroethylene (PTFE, aka. teflon) materials including sample bottle cap liners with a Teflon layer. Clothing to be worn by sampling personnel will be laundered multiple times (without the use of fabric softener) and will not contain PTFE material (including GORE-TEX® and Tyvek) or that which has been waterproofed with perfluorinated compounds (PFC) materials. Regarding note taking, no waterproof field books will be used nor will plastic clipboards, binders or spiral hard cover notebooks. Further, no Sharpies markers or Post-It Notes will be used. Typical ballpoint pens are acceptable.

Many food and drink packaging materials contain PFCs. If consumption of food and drink occurs prior to and/or during the sampling event, sample personnel will use a standard two (2) step decontamination procedure using detergent and clean water rinse to wash hands prior to starting and/or resuming sampling.

Sampling Procedures

Prior to well purge sample collection, static water levels will be measured and recorded. The groundwater wells will be developed using a plastic submersible pump (containing nitrile seals) and PVC tubing prior to sampling the groundwater at the sample locations, starting with the up-gradient location first (MW-4). The wells will be purged using low-flow sampling techniques to minimize water level draw down within the well until groundwater quality parameters (pH, temperature, turbidity, DO, ORP, specific conductance) stabilize or at least a minimum of one (1) well volume has been removed.

In general, stability is defined as variation between field measurements of 10 percent or less and no overall upward or downward trend in the measurements. Upon stabilization of field parameters, The wells will be allowed to stabilize for 24 hours prior to groundwater sample collection. Sampling will be done using either a submersible pump and PVC tubing or by using a bailer. The pumps will be decontaminated between wells using PFA-free water prepared by the analytical laboratory. Sampling personnel will wear nitrile gloves while handling empty sample containers, filling sample containers, sealing sample containers, and placement into sample coolers. Samples will be placed on ice prior to transportation to the laboratory.

If sampling equipment and/or sampling personnel's hands come in contact with PFC materials, a standard two (2) step decontamination process using detergent and clean water rinse will be performed on the equipment prior to reuse or the sampling personnel's hands prior to continuing with the sampling. Clean nitrile gloves will be worn while handling sample containers, during the groundwater sampling, and sealing/placement of samples into the laboratory supplied cooler.

Sample Analysis

Groundwater samples will be analyzed by an Environmental Laboratory Accreditation Program (ELAP) certified laboratory, which will provide a Category B deliverable package for preparation of a Data Validation Usability Summary Report (DUSR) by a third party data validator.

Samples collected for 1,4-dioxine analysis will be collected into laboratory provided containers: two (2) 500 milliliter (ml) unpreserved amber bottles for each well location. The samples will be analyzed via EPA Method 8270 Selective Ion Monitoring (SIM) mode. The method detection limit (MDL) for the 1,4-dioxane analysis will be no higher than 0.28 micrograms per liter ($\mu\text{g}/\text{l}$), assuming there is no sample matrix interference. The samples have a holding time of 7 days till extraction and 40 days for the extract. Standard turnaround time will be used for the analysis.

Samples collected for PFAS analysis will be collected into laboratory provided containers: three (3) 250 ml plastic bottles preserved with Trizma for each well location. The samples will be analyzed via a modified EPA Method 537 to achieve reporting limits of 2 nanograms per

liter (ng/l). The samples have a holding time of 14 days for analysis. Standard turnaround time will be used for the analysis.

Sample Reporting

The sample results will be tabulated and included within the RI report. An electronic data deliverable (EDD) will also be provided to NYSDEC. The detection limits will be provided within the table in lieu of “non-detect” or “ND” reporting. Any matrix interferences reported for the sampling will also be noted.

GCS ASSESSMENT

Twenty-two (22) exploratory test pits will be advanced to further refine volumes of known GCS. Qualified TurnKey personnel will observe the test pit excavations and create a test pit log for each test pit location. Real-time air and particulate monitoring will be conducted while the excavations are open using a PID and particulate monitor. Visually impacted excavated soil/fill will be placed on plastic sheeting near the test pit location, if necessary. Representative samples will be described in the field by qualified TurnKey personnel, scanned for total volatile organic vapors with a calibrated MiniRAE 2000 PID equipped with a 10.6 eV lamp (or equivalent), and characterized for impacts via visual and/or olfactory observations. Excavated soil/fill shall be returned to the test pit in the general order that it was excavated. Photographs of each excavated test pit will be taken as documentation. Each location will also be mapped using a hand-held GPS unit. Real time air monitoring will be collected using the Community Air Monitoring Plan (CAMP) included in Appendix C of the RI/AA Work Plan.

SEDIMENT SAMPLING

Sediment samples will be collected from the location of SED-2 and SED-3 using precleaned dedicated stainless steel spoons. The sediment samples will be taken from the bed of the creek by first removing roots, leaves and any other vegetated matter. Samples will be placed in laboratory provided containers, preserved on wet ice and sent via overnight delivery to the test laboratory. We intend to use EA Engineering, Science and Technology, Inc. Hunt Valley, Maryland Laboratory to complete the toxicity testing. The samples will be tested for 28-day *Hyalella azteca* (amphipod) survival and growth test, and *Chironomus dilutus* (midge) survival, growth and emergence test. Results will be compared to a laboratory control sample to assess the statistical likelihood on whether the sediment is toxic to aquatic life.

UNDERGROUND PIPING ASSESSMENT

Five (5) test trenches will be advanced in the vicinity of former petroleum aboveground storage tanks (ASTs) at the locations shown on Figure 2 to investigate potential piping associated with former ASTs.

In an effort to further refine the amount (i.e., linear feet and diameter) of piping remaining in the subsurface identified during the initial RI, TurnKey will excavate along known and/or encountered pipes, including the apparent Buckeye pipeline, until a terminus is identified or property boundary encountered. A minimum of four pipes will be tapped to: observe the pipe contents; and to obtain samples to characterize the pipe contents and perform waste characterization testing.

One apparent sewer man-hole identified on the southern portion of the Site will be inspected to observe the use and direction of any associated subsurface piping. If needed, in-line photo/video surveillance may be employed to further inspect the pipe.

During the piping investigation, any observations of GCS will also be documented. Excavated soil/fill shall be returned to the test pit in the general order that it was excavated. Piping locations will be mapped using a hand-held GPS unit.

Real time air monitoring will be collected using the previously referenced CAMP.

COVER SOIL ASSESSMENT

The Site cleanup is planned as Commercial Track 4 requiring a soil cover system. A cover soil assessment will be performed to determine if there may be soil in the western portion of the Site, which is suitable as cover material, and/or, which can be used elsewhere on-Site either on the surface as cover soil or in the subsurface as backfill.

Eleven (11) surface/near-surface soil sample locations from the area of higher elevations on the western portion of the Site will be utilized to assess the upper 4 feet of soil with the following rationale:

- If the upper 1 foot below ground surface (fbgs) interval, including surface samples collected from 0-2 inches below ground surface (ibgs), and near-surface samples from 2-12 ibgs does not contain contaminants above Part 375 CSCOs, the upper foot would be considered suitable as cover and imported material would not be required;
- If the 1 to 2 fbgs interval also does not contain contaminants above Part 375 CSCOs, the upper 1 foot could be excavated and used as cover material or subsurface backfill for on-Site areas that require cover soil. And the 1-2 fbgs interval that remains after the 0-1 fbgs is removed would be considered suitable as cover and imported material would not be required; and,
- Additional depth intervals (2-3 fbgs, 3-4 fbgs, etc.) could be assessed in the same manner as above to further evaluate the volume of soil that may be suitable to use as cover or backfill on other parts of the Site and to balance Site grades in preparation for redevelopment. For purposes of this work plan, we plan to assess the upper 4 fbgs in this manner.

A test pit will be used to excavate to the full-depth of the planned sampling location. For each surface/near-surface sample, a dedicated stainless steel hand trowel or stainless steel spoon will be used to collect a representative aliquot by scraping the soil off of the face of the test pit. In the upper 1 fbgs, surface soil samples will be collected from 0 to 2 ibgs following removal of the sod/vegetation. Representative samples will be described in the field by qualified TurnKey personnel, scanned for total volatile organic vapors with a calibrated MiniRAE 2000 PID equipped with a 10.6 eV lamp (or equivalent), and characterized for impacts via visual and/or olfactory observations.

Samples will be transferred to laboratory-supplied, pre-cleaned sample containers for analysis of TCL SVOCs, and SVOC tentatively identified compounds (TICs) and Target Analyte List (TAL) metals using USEPA SW-846 methodology. If elevated PID readings (i.e., sustained readings greater than 5 ppm) are observed in any sample, that sample will also be analyzed for TCL VOCs and TIC-VOCs.

OFF-SITE ASSESSMENT TO ASSESS BCP ELIGIBILITY

Based on environmental Site conditions at the southern property boundary, it appears that petroleum and arsenic may be present at elevated concentrations on the south adjacent property, which is also owned by HSP. Further, based on historical aerial photographs at least two apparent petroleum ASTs were historically present on that property. Therefore, soil and groundwater sampling will be performed on the south adjacent property (see Figure 2). If data shows that remediation of that property is warranted, that property may be added to the existing BCP Site. The off-Site assessment activities will include:

Surface Water and Sediment Investigation

One (1) sediment and one (1) surface water sample will be collected from Two Mile Creek as shown on Figure 2. Dedicated stainless steel sampling tools will be used to collect representative samples from 0-6 inches below the face of the stream/ditch in accordance with the approved RI-AA Work Plan. Representative samples will be analyzed for TCL VOC+TICs, TCL SVOC + TICs, TAL metals, PCBs, herbicides and pesticides via USEPA SW-846 methodology.

Surface/Near-Surface Soil Investigation

Fifteen (15) surface/near surface soil samples will be collected to assess the 0-2 ibgs (“surface samples”) and 2-12 ibgs (“near-surface samples”) of soil across the parcel. A dedicated stainless steel hand trowel or stainless steel spoon will be used to collect each surface/near surface soil/fill sample. If an area is vegetated, then the surface soil/fill sample will be collected from 0 to 2 ibgs following removal of the sod/vegetation. Representative samples will be described in the field by qualified TurnKey personnel, scanned for total volatile organic vapors with a calibrated MiniRAE 2000 PID equipped with a 10.6 eV lamp (or equivalent), and characterized for impacts via visual and/or olfactory observations.

Surface soil samples will be collected and analyzed for TCL SVOCs+ TICs and TAL metals (all samples), and PCBs, herbicides, and pesticides (three samples). Near-surface samples will be collected and analyzed for TCL VOCs + TICs, TCL SVOCs + TICs, TAL metals (all samples), and PCBs, herbicides and pesticides (same three samples as surface samples) via USEPA SW-846 methodology.

Subsurface Soil Investigation

Eight (8) test pits will be advanced to characterize the subsurface soil/fill across the south adjacent property. A backhoe or excavator will be used to complete the test pits to a target nominal depth of 15 fbgs.

Three (3) soil boring/monitoring well installations (designated MW-13 through MW-15) will be completed at the approximate locations shown on Figure 2 to assess groundwater flow direction, collect soil samples, and allow for the collection of groundwater samples to assess groundwater quality. The soil borings will be completed with a drill rig capable of advancing hollow stem augers to install 2-inch inside diameter PVC monitoring wells. Each well location will be advanced to approximately 15 fbgs, or refusal, with a target minimum of five feet below the first encountered groundwater. Non-dedicated drilling tools and equipment will be decontaminated between boring locations using potable tap water and a phosphate-free detergent (e.g., Alconox).

Qualified TurnKey personnel will observe the test pits and soil borings, and create a field log (including photographs) for each location. Real time air and particulate monitoring will be conducted during intrusive activities using a PID and particulate monitor in accordance with the CAMP. Excavated soil/fill will be placed on the ground adjacent to the test pit location. Soil/fill samples will be collected at two-foot intervals for classification, potential laboratory analysis, and field screening with a PID. Upon reaching the completion depth of each investigation locations, visual/olfactory results will be reviewed. The sample interval identified as the most impacted (i.e., greatest PID scan result and/or evidence of visual/ olfactory impact) at each boring location will be selected for laboratory analysis. If differentiable impacts are noted within a particular location, additional samples may be collected from more than one depth interval to characterize the differentiable impacts in that location. In the event that either the impacts are ubiquitous from grade to final depth or no impacts were identified, the soil/fill directly above water table will be selected for analysis. If the impacts are ubiquitous from grade to final depth or no impacts were identified and water is not encountered at a particular sample location, the sample interval will be selected based on the discretion of the field personnel and in consultation with the NYSDEC.

Test pit soil samples will be collected and analyzed for TCL VOC + TICs, TCL SVOC+ TICs and TAL metals; three of test pit soil samples will also be analyzed for PCBs, herbicides and pesticides using USEPA SW-846 methodology. Soil samples from soil borings will be collected and analyzed for TCL VOC + TICs, TCL SVOC + TICs and TAL metals.

Piping Assessment

Two (2) test trenches will be advanced at the locations shown on Figure 2 to identify potential remaining underground piping in the area of former ASTs and at the southern property boundary. During the piping investigation, any observations of GCS will also be documented. Excavated soil/fill shall be returned to the test pit in the general order that it was excavated. Piping locations will be mapped using a hand-held GPS unit.

Groundwater Investigation

Three (3) groundwater monitoring wells will be installed, developed and sampled in accordance with the approved RI work plan protocols to assess groundwater flow direction and groundwater quality. Figure 2 identifies the planned groundwater monitoring well locations. These wells will be gauged for the presence of light non-aqueous phase liquid (LNAPL)

Collected groundwater samples will be analyzed for TCL VOCs + TICs, TCL SVOCs + TICs, TAL and dissolved metals, PCBs, herbicides, pesticides, and emerging contaminants (1,4 dioxane and polyfluoroalkyl substances (PFAs) via USEPA SW-846 methodology. Emerging contaminants will be sampled in accordance with the protocols described above.

FIELD SPECIFIC QA/QC SAMPLING & ANALYTICAL REPORTING

In addition to the soil/fill and groundwater samples described above, field-specific quality assurance/quality control (QA/QC) samples will be collected and analyzed to ensure the reliability of the generated data and to support the required third-party data usability assessment effort. Site-specific QA/QC samples will include matrix spikes, matrix spike duplicates, blind duplicates, and trip blanks in accordance with the NYSDEC-approved RI Work Plan. A Category B (Level IV) deliverable package will be provided for all samples collected to allow third-party data validation and provide defensible data.

SITE MAPPING AND REPORTING

The Site map developed during the RI will be supplemented with the sample locations and wells identified herein. TurnKey will employ a Trimble GeoXH handheld GPS unit to identify the locations of all surface/near-surface soil/fill, sediment, surface water, soil boring, test pit, test trench, and newly installed wells relative to State planar grid coordinates. Monitoring well elevations will be measured by TurnKey's surveyor. An isopotential map showing the general direction of groundwater flow will be prepared based on water level measurements relative to USGS vertical datum. The findings of the Supplemental RI and updated Site maps will be provided in the comprehensive RI/AAR report.

PROJECT SCHEDULE

TurnKey is prepared to mobilize to the Site to complete the Supplemental RI tasks upon NYSDEC approval of this Work Plan.

Sincerely,
TurnKey Environmental Restoration, LLC



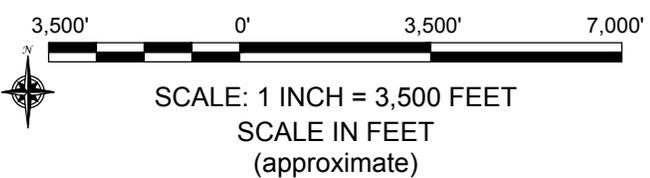
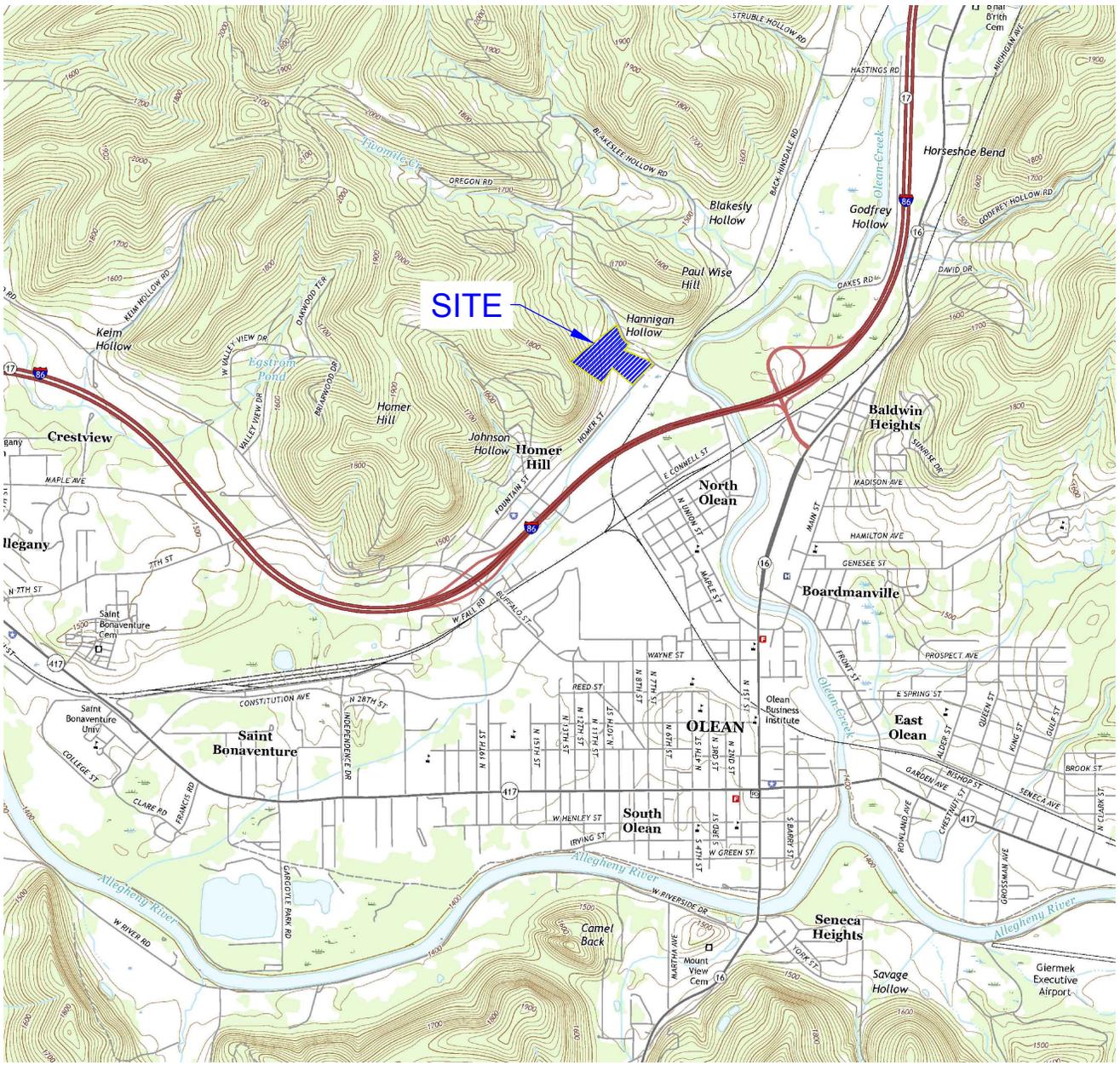
Michael Lesakowski
Sr. Project Manager/Principal

cc: Don Benson (Homer Street Properties, LLC)
Chad Staniszewski (NYSDEC)
Renata Ockerby (NYSDOH)

File: 0323-015-100

FIGURES

FIGURE 1



NOTE: BASE MAP USGS OLEAN, NY QUADRANGLE 2016

QUADRANGLE LOCATION



SITE LOCATION & VICINITY MAP

SUPPLEMENTAL RI WORK PLAN
OREGON ROAD SITE

OLEAN, NEW YORK
PREPARED FOR

HOMER STREET PROPERTIES, LLC

PROJECT NO.: 0323-017-001
DATE: MARCH 2018
DRAFTED BY: RFL

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