SUPPLEMENTAL WORK PLAN
PHASE 2C REMEDIAL INVESTIGATION
TACONIC SITE

Prepared by:

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136 Coonbrook Road
Petersburgh, New York 12138

NYSDEC Site No. 442047

AUGUST 2023

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1.0 INTRODUCTION

Tonoga, Inc. d/b/a Taconic (Taconic) has prepared this Supplemental Phase 2c Remedial Investigation (RI) Work Plan for the Taconic Site (Site) located in the Town of Petersburgh (Town), Rensselaer County, New York. The RI/FS is being conducted in accordance with the requirements of the Administrative Settlement Agreement and Order on Consent (Index No. CO 4-20160519-01) (Settlement Agreement) executed between the New York State Department of Environmental Conservation (NYSDEC) and Taconic, with an effective date of November 20, 2016. The Site is listed on the New York State Registry of Inactive Hazardous Waste Disposal Sites as a Class 2 site (Site No. 442047).

A phased investigation approach was established in the Remedial Investigation/Feasibility Study (RI/FS) Work Plan (OBG 2018) and approved by the New York State Department of Environmental Conservation (NYSDEC). This supplemental Phase 2c RI Work Plan describes the activities of Phase 2c intended to refine the definition of the primary route(s) for off-site migration of constituents of potential concern (COPCs), refine the extent of COPCs exceeding regulatory or guidance limits, and gather additional data needed to complete the Fish and Wildlife Impact Analysis (FWIA). Taconic will prepare and submit supplemental work plans to the NYSDEC for review and approval as needed to complete the RI.

Phase 2c activities and analysis will be performed in accordance with the Field Sampling and Analysis Plan (FSAP) (Appendix A), Quality Assurance Project Plan (QAPP) (Appendix B), Health and Safety Plan (HASP) (Appendix C), and Community Air Monitoring Plan (CAMP) (Appendix D). These plans were previously submitted to and approved by NYSDEC.

1.1 Site Description

The Taconic facility manufactures polytetrafluoroethylene (PTFE) coated fabrics. The Site is in a rural area, at the northernmost intersection of Coon Brook Road and State Route 22 (**Figure 1**). The Site is a 23.54-acre area that features nine structures related to manufacturing and three parking lots. There is an unnamed stream that runs through the Site. The Site is currently an operating manufacturing facility and employs over 200 people, most of whom reside in the Petersburgh community. The surrounding parcels (some of which are owned by Taconic) are residential or undeveloped. The Little Hoosic River runs south to north on the opposite side of Route 22 from the Site.

On February 13, 2016, NYSDEC and the New York State Department of Health (NYSDOH) began sampling and testing for perfluorooctanoic acid (PFOA). The tests confirmed the presence of PFOA at the Site and in the drinking water of the Town's public water supply. Since that time, Taconic has worked with the Town, Rensselaer County Department of Health (RCDOH) and NYSDOH to implement several interim measures, including:

- Provided residents of the Town with bottled water at multiple locations, free of charge, including home delivery to residents with special needs.
- Provided a climate-controlled bottled water headquarters at the Town Hall where Taconic continues to distribute free water to Town residents.
- Provided a recycling center for Town residents' empty water bottles.
- Installed over 100 point of entry treatment (POET) systems on private wells in the Town and is currently providing sampling and maintenance of the POET systems. At the time of this report, approximately 3,000 samples of residential water supplies have been collected and analyzed to ensure the POET systems continue to provide drinking water to residents in the Town without detectable traces of PFOA and other related poly- and perfluoroalkyl substance (PFAS) compounds.

- Collected samples of residential water supplies throughout the Area of Interest to ensure the raw water quality in wells that are not equipped with POET systems remain below the action levels established by the State. At the time of this report, over 650 samples of raw water supplies have been sampled and analyzed for PFOA and related compounds.
- Designed and installed a customized granular activated carbon (GAC) water treatment system and a building to house the water treatment system for the Town Public Water Supply. The GAC water treatment system has been in operation since the Spring of 2017, with PFOA and related compounds below detectable levels in the treated water. As of this writing, over 200 samples of the Town's water supply have been collected and analyzed.

1.2 Previous Site Characterization Activities

A phased investigation approach was established in the Remedial Investigation/Feasibility Study (RI/FS) Work Plan (OBG 2018) and approved by the NYSDEC. To date, investigation Phases 1a, 1b, and 2a, as well as a focused supplemental investigation at the Building 1 area, have been completed by Taconic. Detailed presentations of analytical results are available in the Phase 1 Interim Investigation Deliverable (IID) (Parsons 2020), and the Phase 2A IID (Parsons 2022).

1.2.1 Phase 1 Remedial Investigation

The objectives of the Phase 1 RI were to define the nature of COPCs, evaluate the extent of COPC impacts in environmental media (e.g., groundwater, surface water, and soil), and develop a preliminary conceptual site model (CSM).

Phase 1 involved sampling of relevant media (e.g., surface water, sediment, groundwater, surface soil, subsurface soil, wastewater and sludge) to define the nature of the COPCs and evaluate their extent. Phase 1 included the sampling of environmental media on the Site and nearby Taconic-owned properties, with laboratory analysis for PFAS, Target Compound List (TCL)/Target Analyte List (TAL) constituents, cyanide, total organic carbon (TOC), major cations/anions, grain size, and pH. Phase 1 was broken into subtasks of Phase 1a and Phase 1b. Phase 1 activities are summarized below and described in detail in the Phase 1 IID (Parsons 2020).

1.2.1.1 Phase 1a

The objective of Phase 1a was to begin to define the nature of the COPCs and evaluate their extent through the collection of environmental samples. The environmental media sampled included groundwater, surface water, sediment, surface soil, and subsurface soil. Wastewater and sludge in tanks were also sampled during Phase 1a for laboratory analysis. A primary objective of Phase 1a was also to collect preliminary groundwater data to inform the placement of groundwater monitoring wells to be installed in Phase 1b.

Phase 1a field activities were implemented from April 2018 through September 2018 and included:

- Subsurface utility location and mark-out;
- Collection and analysis of 26 surface water samples;
- Collection and analysis of 15 sediment samples;
- Collection and analysis of 80 surface soil samples;
- Collection and analysis of wastewater and sludge samples;
- Installation of two exploratory boreholes (with completion as open shallow bedrock monitoring wells);
- Borehole geophysical testing and concurrent depth-discrete groundwater profiling;
- Direct-push overburden investigation, including:

  - Direct sensing at four locations;
  - Collection and analysis of 33 discrete-interval groundwater samples; and
- Collection and analysis of 41 subsurface soil samples.

Phase 1a analytical results for surface water, sediment, subsurface soil, and overburden groundwater indicated a potential PFAS source area behind Building 1. A source area is defined in DER-10/Technical Guidance for Site Investigation and Remediation as "a portion of a site or area of concern at a site where the investigation has identified a discrete area of soil, sediment, surface water or groundwater containing contaminants in sufficient concentrations to migrate in that medium, or to release significant levels of contaminants to another environmental medium, which could result in a threat to public health and the environment" (NYSDEC 2010). Additional investigation during Phase 1b, Phase 2a, and the Supplemental Building 1 RI was performed to further define the potential source area, investigate potential migration pathways, and support the development of an IRM if warranted. This additional investigation work is described below.

1.2.1.2 Phase 1b

Based on the results of the Phase 1a RI, Taconic implemented Phase 1b of the RI. Phase 1b involved installation and sampling of groundwater monitoring wells to further define the nature of the COPCs and evaluate their extent. Groundwater monitoring well locations were chosen based on data from the direct-push overburden investigation, completed as part of Phase 1a.

Phase 1b field activities were implemented from April 2019 through October 2019 and included:

- Installation of 24 overburden monitoring wells;
- Collection of subsurface soil at 4 monitoring well locations;
- Well development;
- Hydraulic conductivity testing;
- Collection and analysis of groundwater samples (24 overburden monitoring wells, and two former residential wells, one at a Taconic-owned property on Coon Brook Rd and another at the Taconic-owned campground adjacent to the Little Hoosic River);
- Site topographic surveying;
- Collection of two rounds of stormflow sampling from natural surface water features and stormwater conveyances, with three locations sampled during both events and one sampled only during the second event; and
- Performance of packer sampling, including collection of a total of four samples from four discrete intervals, from production well PW-4.

The results of the Phase 1a and 1b RI are summarized in the IID, which was submitted to NYSDEC on February 28, 2020 (Parsons 2020). The Phase 1a and 1b results served as the basis for the additional investigations for Building 1 and Phase 2 of the RI.

1.2.2 Phase 2a and Building 1 Remedial Investigation

Phase 2 is intended to complete the requirements of an RI as described in DER-10/Technical Guidance for Site Investigation and Remediation (NYSDEC 2010). The objective of the Phase 2 RI is to expand the sampling and analysis of environmental media within the Site and adjacent off-site areas to further define the potential source areas, migration pathways, and the nature and extent of the compounds at or emanating from the Site. Similarly, to Phase 1 of the RI, Phase 2 is being completed in iterative phases, whereby data gathered in the initial phases will be used to plan and implement subsequent phases, as needed, to identify and design potential IRMs and to ultimately complete the RI.

Phase 2a investigation activities involved collection of additional data and environmental samples to further delineate the extent of COPCs in environmental media and refine understanding of the geology and hydrogeology to assist with identification of primary migration pathways. In addition, because of detections of elevated concentrations of PFAS in the Building 1 area, particularly in the vicinity of Former Outfalls 003 and 004, a Supplemental Building 1 Remedial Investigation was performed. Activities performed during Phase 2a and Building 1 RI work are summarized below and presented in detail in the Phase 2A IID (Parsons 2022).

Phase 2a field activities were implemented from November 2020 through March 2022 and included:

- Collection and analysis of 48 natural surface water samples during baseflow conditions, collected over two rounds of sampling;
- Collection and analysis of 37 stormwater and natural surface water samples during stormflow conditions, collected over two rounds of sampling;
- Collection and analysis of 12 sediment samples;
- Collection of 90 surface, near surface, and subsurface soil samples from 33 off-site sample locations;
- Collection of 13 surface, near surface, and subsurface soil samples from three on-site soil boring locations drilled for monitoring well installation;
- Collection of 17 subsurface soil samples from eight soil boring locations around Building 1;
- Installation, development, and sampling of two shallow/deep overburden monitoring well pairs (co-located with new bedrock well locations);
- Installation of three new overburden monitoring wells adjacent to Building 1;
- Development and sampling of two out of three new overburden wells adjacent to Building 1;
- Sampling of five existing overburden monitoring wells to assist with investigation of Building 1 groundwater;
- Surface geophysics to preliminarily characterize subsurface conditions, prior to installation of additional groundwater monitoring wells;
- Installation of seven bedrock groundwater monitoring wells;
- Sampling of mixed borehole groundwater from four new bedrock groundwater monitoring wells;
- Borehole geophysics to identify potential water-bearing fracture zones for discrete interval groundwater sampling;
- Discrete interval bedrock groundwater sampling using packer sampling methods in six new bedrock groundwater monitoring wells;
- Installation and two rounds of gauging of three staff gauges in local rivers and streams; and
- Three rounds of monitoring well gauging.

2.0 CONTACTS

Key contact information for NYSDEC, New York State Department of Health (NYSDOH), and Taconic is provided below:

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3.0 PRELIMINARY CONCEPTUAL SITE MODEL (CSM)

A preliminary Conceptual Site Model (CSM) has been developed based on information from previous investigations and data obtained from Phase 1 and Phase 2a of the RI. This preliminary CSM has been modified from that presented in Section 1.3.5 of the RI/FS Work Plan (OBG 2018) to incorporate data that has been obtained thus far in the RI. Additional information will be obtained about the geology and hydrogeology at the Site during Phase 2c of the RI, and the CSM will be refined after collection of additional data. This information will be compiled with regional information and presented in the Phase 2c Interim Investigation Deliverable, and ultimately in the RI Report. The preliminary CSM is described in the following subsections and illustrated in **Figure 3.**

3.1 Summary of Media

Based on Phase 1 and 2a results, potentially impacted media on and adjacent to the site include surface water, groundwater, surface soil, subsurface soil, and sediment. Additional sampling will be performed during Phase 2b and 2c to further assess impacts to environmental media and potential exposure routes.

3.2 Physiography and Geology

The Site is located in a northeast to southwest trending glacial valley. Topography moving across the Site consists of a steep valley wall to the west of the Site and relatively flat terrain toward the east, with a slight downward slope approaching the Little Hoosic River. The Little Hoosic follows the northeast-southwest trend of the valley and flows toward the northeast, generally consistent with the strike of foliation for the underlying phyllite bedrock. Surface water in the vicinity of the Site flows down from the hillside and follows a network of swales and storm sewers, which eventually discharge to the Little Hoosic River and its tributaries that flow into the river from the west. Two unnamed streams flow east through the Site, one south of the Site and the other through the middle of the Site, directly south of the Building 2/4/5 complex.

Bedrock at the Site is composed of phyllite and contains a weathered zone within the top few feet of rock. Depth to bedrock varies greatly throughout the Site, with very shallow bedrock in the north and west portions of the Site, increasing in depth moving to the south and east. Bedrock is encountered at approximately 4 feet below ground surface (ft bgs) on the northwest side of the Site (adjacent to building 1) and at approximately 63 ft bgs in the center of the Site, with deepest bedrock being encountered adjacent to the Little Hoosic River, at 75 ft bgs. Weathered bedrock is overlain by a discontinuous glacial outwash sand and gravel unit, which is overlain by a glaciolacustrine silt and clay that include some interspersed lenses of sand and gravel. In the absence of the lower sand and gravel unit, the glaciolacustrine silt and clay is in contact with the top of bedrock. The silt and clay unit varies in thickness, with the thickest portion being in the center of the Site beneath the Building 2/4/5 complex, pinching out at the bedrock valley walls. Surface deposits above the glaciolacustrine silt and clay are post-glacial sand and gravel, with a few pockets of surficial fill.

3.3 Hydrogeology

3.3.1 Hydrostratigraphy

The hydrostratigraphic framework at the Site consists of three distinct water-bearing zones and an aquitard. Water-bearing fractures are present within the phyllite bedrock. In places, the discontinuous lower sand and gravel unit is in contact with gravelly weathered bedrock collectively forming a hydraulic unit in which both materials contain water (Figure 3). A surficial water-bearing zone is present in the upper sand and gravel unit. Within the valley and beneath the site, the surficial water-bearing zone and the deep water-bearing zone are separated by a glaciolacustrine aquitard, composed of the silt and clay unit. This aquitard restricts the flow of groundwater between the shallow and deeper units. However, the unconsolidated units pinch out at the western side of the valley and bedrock is observed, in places, as the topography rises out the valley. Therefore, the presence and competency of the aquitard is less substantiated along the western side of the site.

3.3.2 Hydraulic Boundary Conditions

This section summarizes the nature of groundwater flow, based on interpretation of potentiometric elevations, relative to boundary conditions: 1) Little Hoosic River and its tributaries; 2) physiography (valley orientation); 3) overburden aquitard; and 4) pumping influences.

Surficial Water-Bearing Zone (Upper Sand and Gravel)

The potentiometric surface of the shallow surficial water-bearing zone declines to the east, indicating groundwater flow toward and potential discharge to the Little Hoosic River. Tributary streams from the west are also expected to locally influence groundwater flow within the surficial water-bearing zone, consisting of groundwater discharge where streams are gaining and groundwater recharge where streams are losing.

Additionally, to the north of the Site in the vicinity of the intersection of Coon Brook Road/Hewitt Road/NYS Route 22 intersection, the bedrock surface raises steeply from about 60 feet bgs on the northern portions of the site to become exposed at the ground surface just to the north of the site, indicating a northern boundary to the shallow overburden water-bearing zone. The down gradient extent of the shallow water bearing zone appears to be completely constrained by Little Hoosick River to the east at the bedrock outcropping to the north.

Deeper Water-Bearing Zone (discontinuous Lower Sand and Gravel)

Beneath the facility, the potentiometric surface of the deeper water-bearing zone declines to the east in the direction of the Little Hoosic River. Farther from the facility along State Route 22, the potentiometric surface exhibits a northerly hydraulic gradient, oblique to the Little Hoosic River. The silt and clay aquitard is expected to inhibit discharge of groundwater from the deeper water-bearing zone to the shallow water bearing zone and surface water, and the alignment of the bedrock valley is expected to influence deeper groundwater flow to the northeast.

Additionally, to the north of the Site in the vicinity of the intersection of Coon Brook Road/Hewitt Road/NYS Route 22 intersection, the bedrock surface raises steeply from about 60 feet bgs on the northern portions of the site to become exposed at the ground surface just to the north of the site, indicating a northern boundary to the deeper overburden water-bearing zone. The down gradient extent of the deeper water bearing zone appears to be completely constrained by Little Hoosick River to the east at the bedrock outcropping to the north.

Water-Bearing Fractures in Bedrock

The orientation of bedrock fractures and foliation of the phyllite are expected to influence groundwater flow direction in bedrock beneath the weathered zone, by creating anisotropy in the hydraulic gradient field (i.e.

increased hydraulic conductivity in the direction of foliation and facture orientation). The northeast trend of the valley suggests northeast-southwest structural orientation which is supported by borehole geophysical logging measurements. Specifically, there are a higher number of fractures with a prominent northeast-southwest strike.

Pumping Influences

Groundwater flow within overburden water-bearing zones appears to be influenced by water extraction from the Taconic production wells (PWs) and potentially from nearby residential wells. Groundwater elevation data indicate a downward hydraulic gradient between surficial and deep overburden water-bearing zones in the center of the site, which is potentially induced by pumping at nearby wells. Though a downward gradient is observed, the glaciolacustrine aquitard likely inhibits vertical migration based on the vertical head difference of up to about -10 feet observed between the surficial and deep overburden water-bearing units.

3.3.3 Hydraulic Properties

Hydraulic conductivity test results indicate similar average hydraulic conductivities among wells screened in the three different water bearing zones. The mean hydraulic conductivity from wells screened within bedrock was 7.78E-04 cm/sec, which is consistent within the expected range of hydraulic conductivity for fractured metamorphic rock (Heath 1983). Mean hydraulic conductivities of the deeper water-bearing unit and surficial water-bearing unit were 1.41E-03 cm/sec and 2.18E-03 cm/sec, respectively, both of which fall within range of hydraulic conductivities for sand (Heath 1983). The surficial water-bearing unit has a slightly higher hydraulic conductivity than the deeper and bedrock fracture units, and hydraulic conductivity within bedrock is slightly lower than the other two water-bearing units.

3.4 Preliminary Migration Pathways, and Exposure Routes

The preliminary, primary release mechanisms, based on an evaluation of the Phase 1 and Phase 2a RI results are:

1) Historic discharge of process wastewater discharge through surface and sub-surface outfalls permitted under the State Pollution Discharge Elimination System (SPDES);
2) Historic air emissions from site operations with subsequent deposition to surface soils in the vicinity of the site; and,
3) Incidental spillage to surface soils during the handling of PFAS -containing wastewater and sludges.

As described in the Section 4 pathways analysis of the FWIA (Weston and Sampson 2022), the following sections present the migration pathways and potential exposure routes for the various environmental media.

3.4.1 Air

Migration Pathways

Historical air emissions and subsequent deposition to surface soil and surface water have likely occurred within the vicinity of the Site. Potential migration of this historical air deposition mechanism is discussed below related to soil and sediment.

Potential Exposures

Direct exposure to air emissions from environmental media is unlikely as the contaminants of potential ecological concern are not volatile.

3.4.2 Soil and Sediment

Migration Pathways

Potential migration pathways for contaminated soil and sediment include:

- Stormwater runoff from areas with contaminated soil and sediment may contain dissolved contaminants; impacted surface soil particles may become suspended in the runoff if velocity is sufficient.
- Precipitation leaching through soil and transport of the contamination to groundwater, with subsequent migration with the groundwater.

Potential Exposures

Potential exposure to contaminated soil and sediment could occur through:

- Direct contact with and ingestion of contaminated soil and sediment; and,
- Ingestion of plants and animals from within contaminated soil and sediment areas.

3.4.3 Surface Water

Migration Pathways

Potential migration pathways for impacted surface water are as follows:

- Contaminated suspended solids and dissolved phase contaminants may be transported by storm and surface water;
- Contaminated suspended particles can be deposited and then re-suspended and transported during varying flow conditions; and,
- Contaminated surface water may recharge into groundwater transporting dissolved contaminants to the soil and groundwater.

Potential Exposures

Potential exposure to contaminated surface water can occur through:

- Direct contact with and ingestion of contaminated surface water; and,
- Ingestion of plants and animals from within areas of contaminated surface water.

3.4.4 Groundwater

Migration Pathways

Potential migration pathways for contaminated groundwater include:

- transport of dissolved phase contaminants along groundwater flow paths.
- discharge of impacted groundwater to streams and ponds.

Potential Exposures

Potential exposure to contaminated groundwater can occur through:

- direct contact with and ingestion of contaminated groundwater; and,
- ingestion of plants and animals within areas impacted by contaminated groundwater.

4.0 SCOPE OF WORK

4.1 Objectives

The objectives for Phase 2c of the RI are as follows:

1. The delineation of PFAS in surface and shallow unsaturated subsurface samples in off-site areas proximal to the Site that exceed Residential Soil Cleanup Objectives (SCOs) for PFAS is substantively complete. Additional surface soil sampling is proposed to better define the limits of PFOA in surface soils exceeding the Unrestricted SCO. (See **Figure 4).** Also, soil sampling to support the assessment of potential human health risks associated with agricultural products will be conducted in the summer of 2023 as part of Supplemental Work Plan Phase 2b Remedial Investigation (Taconic 2023).

2. The nature and extent of PFAS contamination in small streams and drainage swales in the vicinity of the site is well defined during baseflow and stormflow conditions. Some data gaps exist related to PFAS concentrations in small ponds and springs in the vicinity of the site. Additional sampling of surface water in ponds and springs and sediment in ponds is proposed to refine the delineation and to support FWIA evaluations. (See **Figures** 5 and 6).

3. Slight exceedance of fish and wildlife criteria for TAL metals in site drainage system was identified in Phase 1 RI and discussed in the Fish and Wildlife Impact Analysis (steps 1 and 2a) (Weston and Sampson, August 2022). Additional sampling of surface water and sediment in on-site drainage systems is proposed to refine the delineation of potential TAL metals contamination and to support FWIA evaluations. (**See Figures 5 and 6**).

4. Delineation of PFAS contamination in groundwater on-site and in nearby areas off-site is substantively complete. There are potential data gaps related to two hydrogeologic features: (1) East-West trending bedrock outcrops and surficial topography in the vicinity of the intersection of Coon Brook Road/Hewitt Road/NYS Route 22 intersection, and (2) the hydraulic divide caused by the Little Hoosic River. These features suggest the overburden aquifers beneath the site pinch-out to the north thereby restricting the down-valley migration of the overburden groundwater. Also, the residential wells east of the Little Hoosic River are significantly less contaminated than those on the west side, suggesting the River presents a hydraulic divide limiting the migration of bedrock and overburden groundwater to the east.

5. During Phase 2a, a bedrock monitoring well was installed north of the site and west of the River at a residential property on the west side of NYS 22. No overburden groundwater was encountered at this location. The understanding of hydraulic conditions north of the site might be improved by installation of one monitoring well cluster east of the river and one west of the river. General locations are indicated on the attached **Figure 7**, subject to property access agreements.

6. To support the evaluation and design of potential groundwater remedial actions, additional hydrogeologic characterizations, consisting of a pump test, in the vicinity of the Site will be performed. A pump test was previously performed for the plant bedrock water supply well, PW4, installed in 2019. During that pump test, water levels were monitored in available monitoring wells, however this data is of limited value in evaluating bedrock groundwater conditions since there were limited bedrock monitoring wells installed at that time. A separate pump-test protocol is under development and will be submitted for NYSDEC review. The pump test would be performed after the installation of new monitoring wells described in item 5 above.

7. To update groundwater elevations and PFAS concentrations, a full synoptic round of groundwater levels and sampling will be performed.

4.2 Investigation Approach and Media

The objectives listed in Section 4.1 will be achieved in Phase 2c through additional sampling and analysis of impacted environmental media, including unsaturated soil, surface, overburden groundwater, and bedrock groundwater. Testing will also be performed to improve understanding of potential off-site transport mechanisms, including historic air emissions, surface water and groundwater interactions, and groundwater pathways in overburden and bedrock. Proposed investigation activities are detailed in the following subsections.

4.2.1 Unsaturated Soil

As described in the Phase 2a IID, PFAS impacts to surface and shallow subsurface soils have been observed in off-site areas near the Site. As shown in Figure 16 and Table 9 of the Phase 2a IID, at most sample locations, (40 out of 70 samples) the concentrations of PFOA within the top 1-foot of soil (0-2 inches and 2-12 inches bgs) sample intervals) were less than the Residential SCO of 6.6 ppb. As requested by the NYSDEC, additional soil sampling is proposed in areas further from the site to define the limits of soil concentrations that exceed the Unrestricted SCO for PFOA of 0.66 ppb. However, delineation of the extent of PFOA contamination at the Unrestricted SCO may not be possible as this level can be below the Method Detection Limit and PFAS at these concentrations can be ubiquitous.

4.2.1.1 Unsaturated Soil Locations

To better define the extent of surface and near surface soils exceeding the Unrestricted SCO for PFOA of 0.66 ppb, samples will be collected at seven locations **(Figure 4)** at the approximate directions of (north, south, east, west, northeast, northwest, southwest) at a distance slightly farther than the extent of sampling conducted during Phase 2a. A sampling location in the southeast direction is not proposed as sample locations SS-64 and SS-65 collected during Phase 2a are below the Unrestricted SCOs. Unsaturated soil sampling locations are summarized in **Table 1.**

Specific sample locations will be selected in these areas with NYSDEC concurrence based on the following criteria:

- Land appears undisturbed (not cultivated, farmed, filled, or manicured) for the past 60 years;
- No indication or evidence of dumping or other potential sources of contamination nearby;
- Outside of the floodplain;
- Not within a wetland;
- Sufficient soil thickness available (avoiding bedrock outcrops and areas of shallow bedrock); and
- Access agreement with the property owner.

4.2.1.2 Sampling and Analysis

At each location, surface (0-2 inches bgs) and near surface (2-12 inches bgs) grab soil samples will be collected using a stainless-steel hand auger. If refusal is encountered, the sampling location will be offset by approximately 3 feet up to two times. If refusal is encountered at all offsets for a given location, the sampling interval in which refusal was reached will not be collected. Each sampling location will be documented by a recognizable landmark, with a handheld GPS unit, and marked in the field using survey flagging.

All soil samples will be analyzed for PFAS by EPA Method 1633. Sample collection, handling, and analysis will be performed in accordance with the FSAP and QAPP.

4.2.1.3 Soil Sampling During Monitoring Well Installation

To gain a more detailed understanding of the connection between soil and groundwater PFAS concentrations, soil samples will also be collected during overburden monitoring well installation at the approximate locations shown on **Figure 4** and summarized in **Table 1**. Samples will be collected in the following intervals: 0-2, 2-12, and 12-24 inches bgs as well as the 12-inch interval directly above the water table, as estimated during soil logging. In addition, samples will be collected from the following subsurface zones (if encountered): mottled zones (encompassing the total thickness of the observed mottling), and subjectively impacted soils (based on visual, olfactory, or other field screening observations). All samples will be analyzed for PFAS by EPA Method 1633. Sample collection, handling, and analysis will be performed in accordance with the FSAP and QAPP.

4.2.2 Surface Water and Stormwater

Surface water and stormwater samples have been collected during 10 sampling events as part of RI Phase 1 and 2a activities. A total of 47 locations have been sampled from natural streams and ponds, including the Little Hoosic River, as well as from storm water infrastructure (ponds, drainage ditches, outfalls, etc.) throughout the site.

To refine the definition of surface water impacts associated with the site and to provide additional data to support the assessment of fish and wildlife impacts, the following additional surface water samples are proposed as shown on **Figure 5**:

- Ponds and springs in the vicinity of the Site;
- Stormwater drainage paths on-site and nearby off-site areas.

4.2.2.1 Pond Surface Water Locations

Surface water sampling will occur at six to eight local ponds in the vicinity of the Site. Proposed pond surface water sampling is summarized in **Table 2.** The location of ponds for potential sampling are shown on **Figure 5**. Final locations will be selected based on owner access agreements in consultation with the NYSDEC. As discussed in Section 4.2.3.1 below, co-located sediment samples will also be collected in conjunction with the pond surface water samples.

Three sampling events will be performed at the pond surface water locations as follows:

1. An initial baseline event at all locations
2. A second baseline event at approximately one-half of the locations to be selected in consultation with the NYSDEC and NYSDOH.
3. The baseline events described above will be planned to occur at high water table and low water table conditions.
4. A stormwater sampling event at approximately one-half of the locations to be selected in consultation with the NYSDEC and NYSDOH.

4.2.2.2 Spring Surface Water Locations

For this investigation, springs are defined as areas where groundwater discharges at the ground surface. Proposed pond surface water sampling is summarized in **Table 2.** As shown on **Figure 5,** an area of approximately 1-mile radius from the site will be evaluated for springs by a field reconnaissance. The reconnaissance will consist of review of small drainages at or near roads with follow-up investigations to determine upstream sources

for the small drainages, subject to access agreements with the property owners. Additionally, some residents have springs for residential water use, and some of these are sampled as part of the raw water residential well sampling program. Four to six natural springs will be sampled at or near the source where the groundwater discharges at the ground surface.

Three sampling events will be performed at the spring surface water locations as follows:

1. An initial baseline event at all locations
2. A second baseline event at approximately one-half of the locations to be selected in consultation with the NYSDEC and NYSDOH.
3. The baseline events described above will be planned to occur at high water table and low water table conditions.
4. A stormwater sampling event at approximately one-half of the locations to be selected in consultation with the NYSDEC and NYSDOH.

4.2.2.3 Stormwater Drainage Locations

Slight exceedance of FWIA criteria for TAL metals in site drainage system was identified in Phase 1 RI and discussed in FWIA Part 1 (Weston and Sampson 2022). Additional sampling of surface water within the on-site drainage system and in the receiving water body (Little Hoosic River) is proposed as shown on Figure 5 and summarized in Table 2.

Surface water sampling will occur at two locations in the on-site drainage system and three locations in the Little Hoosic River. The Little Hoosic River samples include one location just upstream and one location just downstream of the location where the site drainage flow discharges into the Little Hoosic River. Also, one sample location is proposed in the Little Hoosic River upstream of any potential impacts from site discharges.

4.2.2.4 Surface Water Re-Sampling Location

In 2016, the NYSDEC/NYSDOH collected a sample of surface water from the Little Hoosic River near the NYS Rt 22 bridge. PFOA was detected in this sample, HFSW23, at a reported concentration of 130 ppt. As requested by the NYSDEC, Taconic will collect a surface water sample and a co-located sediment sample at this location.

Three sampling events will be performed at Little Hoosic River resampling location as follows:

1. An initial baseline event.
2. A second baseline event .
3. The baseline events described above will be planned to occur at high water table and low water table conditions.
4. A stormwater sampling event.

4.2.2.5 Surface Water and Stormwater Sampling and Analysis

Prior to sampling, field parameters (temperature, pH, specific conductance, oxidation-reduction potential (ORP), dissolved oxygen (DO), and turbidity) will be measured. Each sampling location will be documented by a recognizable landmark, with a handheld GPS unit, and marked in the field using survey flagging, so that the same location may be sampled during subsequent events. Samples will be collected from the middle of the water column, with care being taken to not sample near the air-water interface nor near the mudline.

Pond and spring surface water samples will be analyzed for PFAS by EPA Method 1633. The re-sampling of the Little Hoosic River at the 2016 NYSDEC location HFSW23 will be analyzed for PFAS by EPA Method 1633.

Surface water drainage and the associated Little Hoosic River samples will be analyzed for TAL Metals. Sample collection, handling, and analysis will be performed in accordance with the FSAP and QAPP.

4.2.3 Sediment

Sediment samples have been collected during four sampling events as part of the RI Phase 1 and 2a activities. A total of 12 locations have been sampled from natural streams, including the Little Hoosic River, as well as from storm water infrastructure (ponds, drainage ditches, outfalls, etc.) throughout the site.

To refine the definition of sediment impacts associated with the site and to provide additional data to support the assessment of fish and wildlife impacts, the following additional sediment samples are proposed, as shown on **Figure 6**:

- Ponds and springs in the vicinity of the Site;
- Stormwater drainage paths on-site and nearby off-site areas.
- Little Hoosic River at the intersection of NYS Rt 22 at the 2016 NYSDEC/NYSDOH sampling location designated as HFSW23.

4.2.3.1 Pond Sediment Locations

Sediment sampling will occur at six to eight local ponds located in the vicinity of the Site. Proposed pond sediment sampling is summarized in **Table 3.** The location of ponds for potential sampling are shown on **Figure 6**, final locations will be selected based on owner access agreements in consultation with the NYSDEC. The sediment samples will be co-located with the surface water samples discussed in Section 4.2.2.1 above.

Three sampling events will be performed at the pond sediment locations as follows:

1. An initial baseline event at all locations
2. A second baseline event at approximately one-half of the locations to be selected in consultation with the NYSDEC and NYSDOH.
3. The baseline events described above will be planned to occur at high water table and low water table conditions.
4. A stormwater sampling event at approximately one-half of the locations to be selected in consultation with the NYSDEC and NYSDOH.

4.2.3.2 Drainage Sediment Locations

Slight exceedance of FWIA criteria for TAL metals in site drainage system was identified in Phase 1 RI and discussed in FWIA Part 1 (Weston and Sampson 2022). Additional sampling of sediment within the on-site drainage system and in the receiving water body (Little Hoosic River) is proposed as shown on **Figure 6** and summarized in **Table 3.**

Sediment sampling will occur at two locations in the on-site drainage system and three locations in the Little Hoosic River. The Little Hoosic River samples include one location just upstream and one location just downstream of the location where the site drainage flow discharges into the Little Hoosic River. Also, one sample location is proposed in the Little Hoosic River upstream of any potential impacts from site discharges.

4.2.3.2 Little Hoosic River Sediment Location

In 2016, the NYSDEC/NYSDOH collected a sample of surface water from the Little Hoosic River near the NYS Rt 22 bridge. PFOA was detected in this sample, HFSW23, at a reported concentration of 130 ppt. As requested by the NYSDEC, Taconic will collect a surface water sample and a co-located sediment sample at this location.

Three sampling events will be performed at Little Hoosic River resampling location as follows:

1. An initial baseline event.
2. A second baseline event .
3. The baseline events described above will be planned to occur at high water table and low water table conditions.
4. A stormwater sampling event.

4.2.3.3 Sediment Sampling and Analysis

Each sampling location will be documented by a recognizable landmark, with a handheld GPS unit, and marked in the field using survey flagging, so that the same location may be sampled during subsequent events. Samples will be collected from the top six inches of sediment in the vicinity of the surface water.

Pond sediment samples and the re-sampling at the location of the 2016 NYSDEC/NYSDOH sample HFSW23 will be analyzed for PFAS by EPA Method 1633. Surface water drainage and the associated Little Hoosic River samples will be analyzed for TAL Metals. Sample collection, handling, and analysis will be performed in accordance with the FSAP and QAPP.

4.2.4 Overburden Groundwater

During Phase 1 and Phase 2 activities (including the supplemental Building 1 IRM), a total of 32 overburden monitoring wells were installed and sampled. Of the sampled wells, 18 were shallow and were generally screened within the surficial water-bearing layer, comprised of the upper sand and gravel unit. The remaining 14 wells were screened in the deep overburden (lower sand and gravel and upper weathered bedrock).

Delineation of PFAS contamination in overburden groundwater on-site and in nearby areas off-site is substantively complete. There are potential data gaps related to two hydrogeologic features: (1) East-West trending bedrock outcrops and surficial topography in the vicinity of Coon Brook Road/Hewitt Road/NYS 22 intersection (See **Figure 7**), and (2) the hydraulic divide caused by the Little Hoosic River. These features suggest the overburden aquifers beneath the site pinch-out to the north thereby restricting the down-valley migration of the overburden groundwater. Also, the residential wells east of the Little Hoosic River are significantly less contaminated than those to the west of the River, suggesting the River presents a hydraulic divide limiting the migration of groundwater to the east.

During Phase 2b, a bedrock monitoring well was installed north of the site and west of the River at a residential property on the west side of NYS 22. No overburden groundwater was encountered during the installation of MW-27BR off-site to the north. The understanding of hydraulic conditions north of the site would be improved by installation of one monitoring well cluster east of the river and one west of the river.

Additional overburden groundwater monitoring wells will be installed at two locations and shown on to provide downgradient characterization of PFAS concentrations, and to improve the definition of the shallow groundwater potentiometric surface, including hydraulic gradients, groundwater flow/discharge areas, and down-valley boundary conditions.

4.2.4.1 Location Selection

Overburden monitoring wells are proposed to refine the definition two hydrogeologic features: (1) East-West trending bedrock outcrops and surficial topography in the vicinity of Coon Brook Road/Hewitt Road/NYS 22 intersection, and (2) the hydraulic divide caused by the Little Hoosic River. As shown on **Figure 7**, one proposed location for overburden well installation is located west of the Little Hoosic River and the other is located east of the River. It is anticipated that up to two wells will be installed at each location, with one well being screened in each sand and gravel water-bearing unit encountered with sufficient thickness for monitoring well construction.

4.2.4.2 Well Installation and Development

Overburden drilling and monitoring well installation will be accomplished using hollow-stem auger and/or sonic drilling techniques. During installation, soil cores will be collected continuously and logged in accordance with the procedures presented in the FSAP. Soil samples will be collected as described in Section 4.2.1.2. Given the variable thickness of overburden material across the site, well depths will vary. It is anticipated that one well at each location will be screened in surficial sand and gravel, and the other will be screened in deep sand and gravel (where these units are encountered), which are separated by the glaciolacustrine aquitard. Wells will be installed with 5 to 10 feet of slotted PVC screen with a slot size of 0.010- or 0.020-inch, based on the grain size of screened material. The screen will be followed by PVC riser to approximately 3 ft above ground or just below ground surface, depending on the finishing specifications of each well. The annular space will be filled with filter sand (#00 or equivalent) to approximately 2 feet above the top of the screen, followed by bentonite, and grout to the surface. Wells will be finished with either a 3-foot stick-up protective casing or a minimum 8-inch diameter flush-mount protective casing. Stick-ups and flush-mount completions will be set in an approximately 2-foot diameter concrete pad. A locking J-plug will be installed on top of the well.

Monitoring wells will be developed in accordance with the FSAP to remove the fine material which may have settled within the wells, to remove introduced drilling fluids, and to provide better hydraulic communication with the surrounding formation. After allowing the grout to set for a minimum of 24 hours, well development can begin. Development will consist of surging and purging the well until water is clear, when field measured turbidity values are below 5 NTUs and/or turbidity values have stabilized, or when ten volumes are removed. In the event of low yielding wells, development of those wells will consist of purging dry three times over three consecutive days or less. During well development, pH, temperature, dissolved oxygen (DO), oxidation-reduction potential (ORP), turbidity and specific conductance will be measured and recorded after each well volume. After allowing 72 hours for the aquifer and the well to re-equilibrate, groundwater sampling can begin.

4.2.4.3 Sampling and Gauging

Following well development and the subsequent equilibration period, existing and newly installed overburden monitoring wells will be sampled as summarized in **Table 4** using techniques as described in the FSAP. Water quality parameters will be measured using a flow-through cell during the low-flow sampling. Measurements of DO, ORP, temperature, pH, specific conductivity, and turbidity will be obtained. Groundwater samples will be collected for PFAS analysis by EPA draft Method 1633, and managed and analyzed in accordance with the QAPP.

Manual water-level measurements will be collected from the newly installed monitoring wells and previously installed monitoring wells. The resulting data will be used to estimate horizontal and vertical hydraulic gradients, assist in assessing compound fate and transport, and to help refine the CSM.

Three additional quarterly sampling events will be performed at a subset of representative on-site and off-site overburden monitoring wells. Wells to be sampled will be selected in consultation with the NYSDEC.

4.2.5 Bedrock Groundwater

During Phase 1, two exploratory boreholes were drilled to a depth of 25 ft into bedrock to assess overburden and bedrock conditions, and samples of bedrock groundwater were collected from each of these open-hole wells. To further assess bedrock groundwater quality, and improve definition of groundwater flow within bedrock, seven bedrock monitoring wells were installed during Phase 2a. Bedrock monitoring well locations were selected to provide perimeter characterization around the facility, and along a potential migration pathway to the northeast towards the Petersburgh Public Water Supply.

Delineation of PFAS contamination in bedrock groundwater on-site and in nearby areas off-site is substantively complete. There are potential data gaps related to two hydrogeologic features: (1) East-West trending bedrock outcrops and surficial topography in the vicinity of Coon Brook Road/Hewitt Road/NY 22 intersection (see Figure 7), and (2) the hydraulic divide caused by the Little Hoosic River. These features suggest the overburden aquifers beneath the site pinch-out to the north thereby restricting the down-valley migration of the overburden groundwater. Also, the residential wells east of the Little Hoosic River are significantly less contaminated than those west of the River, suggesting the River presents a hydraulic divide limiting the migration of groundwater to the east.

Additional bedrock groundwater monitoring wells will be installed at two locations to provide additional downgradient characterization of PFOA concentrations, and to improve the definition of the bedrock groundwater potentiometric surface, including hydraulic gradients, and down-valley boundary conditions.

4.2.5.1 Location Selection

Bedrock monitoring wells are proposed to refine the definition of two hydrogeologic features: (1) East-West trending bedrock outcrops and surficial topography in the vicinity of Coon Brook Road/Hewitt Road/NY 22 intersection, and (2) the hydraulic divide caused by the Little Hoosic River. The bedrock wells will be installed at the same locations of the overburden wells pairs discussed in Section 4.2.5.1 above. One proposed location for bedrock well installation is located west of the Little Hoosic River and the other is located east of the River (see Figure 7).

4.2.5.2 Depth and Construction

Bedrock wells are proposed to be finished approximately 250’ bgs consistent with the previously installed bedrock wells. Bedrock monitoring well construction will consist of a 6-inch diameter steel casing, installed and grouted 5 feet into the top of competent bedrock, and a 6-inch diameter (nominal) open borehole to the target depth.

4.2.5.3 Drilling, Installation, Completion, and Development

Bedrock monitoring wells will be drilled using sonic, air rotary, or air hammer methods. The borehole will be advanced 5 feet into competent bedrock, and a 6-inch diameter steel casing will be grouted in place to keep the borehole open and to prevent migration of overburden groundwater into the borehole. The grout will be allowed at least 24 hours to cure prior to advancing further into bedrock. Once grout has set, a nominal 6-inch diameter borehole will be advanced to the target depth by drilling through the casing. As drilling advances, rock cuttings or cores will be collected for description of lithology. The depth of significant changes in drilling rate or water yield will be noted on the boring log.

Wells will be finished with either a 3-foot stick-up protective casing or a minimum 8-inch diameter flush-mount protective casing. Flush-mount curb boxes will be fitted over the well head and will be set in an approximate 2-foot diameter concrete pad. A locking J-plug will be installed on top of the well and/or a locking lid will be installed on the protective casing.

Bedrock monitoring wells will be developed as described in the FSAP to remove the fine material, to remove introduced drilling fluids, and to provide better hydraulic communication with the surrounding formation. Development will consist of purging by air lift methods or surging and purging with a submersible pump until water is clear, when field measured turbidity values are below 5 nephelometric turbidity units (NTUs) and/or turbidity values have stabilized. During well development, pH, temperature, turbidity and specific conductance will be measured and recorded periodically.

4.2.5.4 Testing and Sampling

Borehole geophysical logging will be conducted in proposed bedrock monitoring wells consisting of the following:

- Optical televiewer
- Acoustic televiewer (amplitude, travel time, and caliper)
- Fluid temperature
- Fluid conductivity
- Heat pulse flow meter (five depths based on drilling observations).

As summarized in Table 5, these data will be used to select approximately three to five depths for discrete interval packer sampling for PFAS, based on indications of open fractures with fluid flow (e.g., deflection in fluid temperature, fluid conductivity, and/or heat pulse flow meter).

Packer sampling will consist of the deployment of inflatable rubber packers to isolate a 10-foot interval across the target fracture or fracture zone. The interval will be purged of three interval volumes by submersible pump, collecting samples for PFOA and measuring field parameters (pH, temperature, specific conductivity) initially and after each volume. For low yielding intervals, one sample will be conducted following recovery after removal of one packer interval volume. The packer assembly will be equipped with pressure transducers to monitor above and below the packer assembly as an indication of packer seal integrity or short-circuiting. The purge rate and volume will also be measured and recorded.

Should the data indicate a downward gradient, discrete zone of impact, or discretely impacted open and flowing fractures, alternative construction will be evaluated (e.g., targeted well screen or multi-level sampler).

Low-flow sampling techniques described in the FSAP will be used to sample the previously installed bedrock monitoring wells. Generally, the interval with the highest concentration of PFOA as determined based on previous packer sampling profiling will be targeted for sampling. For wells with similar concentrations of PFOA in multiple intervals, the most productive interval, based on the bore-hole geophysics, will be targeted in consultation with the NYSDEC.

Synoptic manual water-level measurements will be collected from the newly installed monitoring wells and previously installed monitoring wells. The resulting data will be used to estimate horizontal and vertical hydraulic gradients, assist in assessing compound fate and transport, and to help refine the CSM.

5.0 PROJECT PLANNING AND IMPLEMENTATION

5.1 Applicable Guidance Documents

Work will be performed in accordance with the Field Sampling Plan (FSP) developed for this site, which includes the field methods and procedures to be used during all RI field activities. The FSP has been revised from the originally approved version to include additional investigation activities proposed in Phase 2 and to comply with *Guidelines for Sampling and Analysis of PFAS* (NYSDEC 2023). All sample handling and analysis will be performed in accordance with the Quality Assurance Project Plan (QAPP), which includes data quality objectives and criteria, data acquisition, management, and analytical procedures, quality control measures, data validation and usability elements, and assessment and oversight details. Work will also be performed in accordance with the Community Air Monitoring Plan (CAMP) and Health and Safety Plan (HASP). The FSAP, QAPP, and HASP/CAMP were prepared in accordance with *DER-10, Technical Guidance for Site Investigation and Remediation* (NYSDEC 2010) and have been previously approved by NYSDEC.

5.2 Notifications and Communications

In accordance with DER-10, NYSDEC will be notified of the start of any field activities associated with Phase 2 seven calendar days prior to the actual start of field activities. Notification will be provided in writing and will include a schedule of the work. Subsequent seven-day notices and work schedules will be provided where the work is to proceed in phases not subject to the initial schedule provided.

5.3 Management of Investigation Derived Materials

Investigation Derived Materials (IDM) produced during this project include soil, decontamination water, groundwater (from drilling, well development, purging associated with sampling, geophysical testing [e.g., vertical flow meter profiling under pumping conditions] and potential other testing), personal protective equipment (PPE), disposable sampling equipment and other debris. IDM will be handled and disposed of in accordance with applicable state and federal regulations. Detailed procedures for handling and disposal of each type of IDM are included in the FSAP.

5.4 Documentation

All field activities will be documented and described in a field log. Stratigraphic logs from soil borings and well construction logs from monitoring well installation will be prepared. Other types of documentation will include surface soil, surface water, and groundwater sampling logs. All field documentation will be digitized and included in the Remedial Investigation Report. Logs will be completed in accordance with the procedures described in the FSAP.

6.0 REPORTING

6.1 Monthly Progress Reports

As required under the Settlement Agreement, Monthly Progress Reports (MPRs) will be prepared and submitted to NYSDEC throughout implementation of the RI/FS. MPRs will cover the following:

- Actions taken during the month
- Analytical and other results obtained during the month
- Deliverables submitted or approved during the month
- Actions planned for the following month
- Anticipated delays and mitigative measures
- Proposed or approved modifications
- Citizen participation activities.

6.2 Phase 2c Interim Deliverable Report

Upon completion of Phase 2c of the RI, an interim submittal that includes summary tables and figures will be prepared and submitted to NYSDEC. The interim investigation deliverable and any potential data gaps will be discussed with NYSDEC. If there are no data gaps, then the RI Report will be prepared and submitted to NYSDEC within 90 days of the determination that no additional investigation activities are needed to complete the RI. If data gaps are identified, a scope for contingent subsequent activities will be developed and submitted to NYSDEC within 45 days of reaching concurrence on the additional activities needed to complete the RI.

6.3 Remedial Investigation Report

As described in the RI/FS Work Plan (OBG 2018), the RI Report will be prepared and submitted to NYSDEC within 90 days of receiving the final analytical data package. The RI Report will be completed in accordance with Section 3.14 of NYSDEC's DER-10 guidance. The report will summarize the data collected during the RI, as well as other relevant data collected prior to and during the RI for the Site.

The RI Report will include comparison of the soil, groundwater, surface water and sediment analytical data to relevant SCGs. Analytical data presented in the report text, tables and figures will include values for constituents reported by the lab, including those below the reporting limit but above the method detection limit, with appropriate qualifiers.

The content of the RI Report will include the following:

- Facility history including an overview of the products manufactured, chemicals used and relevant waste management practices through time
- An updated Site description, if necessary
- Site maps
- Hydrogeologic interpretation
- Summary of prior investigations/sampling performed by Taconic and others
- A presentation of the available analytical data for PFAS

- Investigation approach (including any phasing, and the sequence within each phase), sampling locations, and analyses performed
- Field investigation observations
- Chemical analyses results
- Nature and extent characterization
- Presentation of the QHHEA and FWIA, prepared during the RI
- A refined CSM (see Section 3 for a preliminary CSM)
- Assessment of existing data to evaluate whether there is the need for supplemental data collection
- Summary of the RI results, conclusions, and any recommendations.

Based on the Settlement Agreement, NYSDEC's comments on the RI Report are expected within 60 days. NYSDEC's comments on the RI Report will be addressed in accordance with the standard provisions included in Appendix A of the Settlement Agreement. Upon approval of the RI Report by NYSDEC, the report will be placed in the local document repository.

7.0 SCHEDULE

A draft schedule for completion of the RI/FS is provided below. Proposed dates and/or durations for investigation activities and report preparation are presented. The start date of these activities is dependent upon approval of this work plan by NYSDEC.

Milestone Activity	Estimated Schedule
NYSDEC approval of Phase 2c Work Plan	TBD
Implementation of Phase 2c field activities	Late Summer through end of 2023
Interim investigation deliverable (with Phase 2c results) submittal to NYSDEC for review	90 days following receipt of the final analytical data for Phase 2c
Implementation of additional Phase 2 (i.e. Phase 2d) field activities (if necessary)	TBD
RI Report submittal to NYSDEC for review	90 days following receipt of final analytical data for additional Phase 2 activities (i.e. Phase 2c); if additional Phase 2 activities are determined to not be necessary, then 90 days following that determination

8.0 REFERENCES

NYSDEC 2010. *DER-10/Technical Guidance for Site Investigation and Remediation*. May 3.

NYSDEC 2023. *Guidelines for Sampling and Analysis of PFAS*. April 2023

OBG 2018. *Remedial Investigation/Feasibility Study Work Plan, Taconic Site, NYSDEC Site No. 442047*. April.

Taconic 2023. *Supplemental Work Plan Phase 2b Remedial Investigation. March 2023.*

Weston and Sampson 2022. *Fish and Wildlife Impact Analysis (Steps 1 and 2A)*. August 2022.

TABLES

TABLE 1 – UNSATURATED SOIL PROPOSED SAMPLING SUMMARY

Location	Matrix	Number of Samples	Sample Depths	Analysis
SS-66	Soil	2	0-2"; 2-12"	PFAS
SS-67	Soil	2	0-2"; 2-12"	PFAS
SS-68	Soil	2	0-2"; 2-12"	PFAS
SS-69	Soil	2	0-2"; 2-12"	PFAS
SS-70	Soil	2	0-2"; 2-12"	PFAS
SS-71	Soil	2	0-2"; 2-12"	PFAS
SS-72	Soil	2	0-2"; 2-12"	PFAS
MW-28	Soil	5 (estimated)[1]	0-2"; 2-12"; 12-24", TBD[1]	PFAS
MW-29	Soil	5 (estimated)[1]	0-2"; 2-12"; 12-24", TBD[1]	PFAS

Notes:
1. Samples will be collected from select monitoring well locations in the listed intervals, as well as in the 12" interval directly above the water table, and from the following unsaturated subsurface zones (if encountered): from mottled zones (encompassing the total thickness of the observed mottling), and subjectively impacted soils (based on visual, olfactory, or other field screening observations).

TABLE 2 – SURFACE WATER PROPOSED SAMPLING SUMMARY

Location	Matrix	Number of Samples[1]	Depth(s)[2]	Analysis	Rationale
SW-40	Surface water	1	TBD	PFAS	Local pond sample in vicinity of site.
SW-41	Surface water	1	TBD	PFAS	Local pond sample in vicinity of site
SW-42	Surface water	1	TBD	PFAS	Local pond sample in vicinity of site
SW-43	Surface water	1	TBD	PFAS	Local pond sample in vicinity of site
SW-44	Surface water	1	TBD	PFAS	Local pond sample in vicinity of site
SW-45	Surface water	1	TBD	PFAS	Local pond sample in vicinity of site
SW-46	Surface water	1	TBD	PFAS	Local pond sample in vicinity of site
SW-47	Surface water	1	TBD	PFAS	Local pond sample in vicinity of site
SW-48	Surface water	1	TBD	PFAS	Sample of spring in vicinity of site
SW-49	Surface water	1	TBD	PFAS	Sample of spring in vicinity of site
SW-50	Surface water	1	TBD	PFAS	Sample of spring in vicinity of site
SW-51	Surface water	1	TBD	PFAS	Sample of spring in vicinity of site
SW-52	Surface water	1	TBD	PFAS	Sample of spring in vicinity of site
SW-53	Surface water	1	TBD	PFAS	Sample of spring in vicinity of site
SW-3	Surface water	1	TBD	TAL metals	Delineate potential TAL metals impacts
SW-13	Surface water	1	TBD	TAL metals	Delineate potential TAL metals impacts
SW-15	Surface water	1	TBD	TAL metals	Delineate potential TAL metals impacts
SW-32	Surface water	1	TBD	TAL metals	Delineate potential TAL metals impacts
SW-34	Surface water	1	TBD	TAL metals	Delineate potential TAL metals impacts
SW-54	Surface Water	1	TBD	PFAS	Resampling of NYSDEC/NYSDOH 2016 Sample Location HFSW23 in the Little Hoosic River

Notes:

1. Three surface water sampling events will be conducted at pond and spring, and Little Hoosic River re-sampling locations.
2. Sample depth will be dependent on the depth of the water body; Sample will be approximately mid-depth.

TABLE 3 – SEDIMENT PROPOSED SAMPLING SUMMARY

Location	Matrix	Number of Samples [1]	Depth(s)	Analysis	Rationale
SED-40	Sediment	1	0-6”	PFAS	Sample co-located with SW-40 in local pond
SED-41	Sediment	1	0-6”	PFAS	Sample co-located with SW-41 in local pond
SED-42	Sediment	1	0-6”	PFAS	Sample co-located with SW-42 in local pond
SED-43	Sediment	1	0-6”	PFAS	Sample co-located with SW-43 in local pond
SED-44	Sediment	1	0-6”	PFAS	Sample co-located with SW-44 in local pond
SED-45	Sediment	1	0-6”	PFAS	Sample co-located with SW-45 in local pond
SED-46	Sediment	1	0-6”	PFAS	Sample co-located with SW-46 in local pond
SED-47	Sediment	1	0-6”	PFAS	Sample co-located with SW-47 in local pond
SED-3	Sediment	1	0-6”	TAL metals	Sample co-located with SW-3 to delineate potential TAL metals impacts
SED-13	Sediment	1	0-6”	TAL metals	Sample co-located with SW-13 to delineate potential TAL metals impacts
SED-15	Sediment	1	0-6”	TAL metals	Sample co-located with SW-15 to delineate potential TAL metals impacts
SED-32	Sediment	1	0-6”	TAL metals	Sample co-located with SW-32 to delineate potential TAL metals impacts
SED-34	Sediment	1	0-6”	TAL metals	Sample co-located with SW-34 to delineate potential TAL metals impacts
SED-54	Sediment	1	TBD	PFAS	Sampling of NYSDEC/NYSDOH 2016 Sample Location HFSW23 in the Little Hoosic River

1. Three sediment sampling events will be conducted at pond, spring, and Little Hoosic River re-sampling locations.

TABLE 4 – OVERBURDEN GROUNDWATER PROPOSED SAMPLING SUMMARY

Location	Matrix	Number of Samples[2]	Depth(s)	Analysis	Rationale
EXB-1	Overburden groundwater	1	55 to 80.5’	PFAS	Resampling existing well.
EXB-2	Overburden groundwater	1	74 to 100’	PFAS	Resampling existing well.
MW-1S	Overburden groundwater	1	7 to 12’	PFAS	Resampling existing well.
MW-1D	Overburden groundwater	1	20 to 40’	PFAS	Resampling existing well.
MW-3	Overburden groundwater	1	6 to 11’	PFAS	Resampling existing well.
MW-4	Overburden groundwater	1	3 to 5’	PFAS	Resampling existing well.
MW-5S	Overburden groundwater	1	8 to 13’	PFAS	Resampling existing well.
MW-6S	Overburden groundwater	1	3 to 7’	PFAS	Resampling existing well.
MW-7D	Overburden groundwater	1	14 to 20’	PFAS	Resampling existing well.
MW-8D	Overburden groundwater	1	57 to 62’	PFAS	Resampling existing well.
MW-9S	Overburden groundwater	1	6 to 16’	PFAS	Resampling existing well.
MW-9D	Overburden groundwater	1	55 to 60’	PFAS	Resampling existing well.
MW-10S	Overburden groundwater	1	10 to 17’	PFAS	Resampling existing well.
MW-10D	Overburden groundwater	1	60 to 70’	PFAS	Resampling existing well.
MW-11S	Overburden groundwater	1	10 to 15’	PFAS	Resampling existing well.
MW-11D	Overburden groundwater	1	49 to 54’	PFAS	Resampling existing well.
MW-12S	Overburden groundwater	1	7 to 12’	PFAS	Resampling existing well.
MW-13S	Overburden groundwater	1	6 to 9’	PFAS	Resampling existing well.
MW-13D	Overburden groundwater	1	21 to 26’	PFAS	Resampling existing well.
MW-14S	Overburden groundwater	1	10 to 20’	PFAS	Resampling existing well.
MW-14D	Overburden groundwater	1	59 to 64’	PFAS	Resampling existing well.
MW-15S	Overburden groundwater	1	10 to 15’	PFAS	Resampling existing well.

Location	Matrix	Number of Samples[2]	Depth(s)	Analysis	Rationale
MW-15D	Overburden groundwater	1	45 to 55'	PFAS	Resampling existing well.
MW-16S	Overburden groundwater	1	10 to 15'	PFAS	Resampling existing well.
MW-16D	Overburden groundwater	1	60 to 65'	PFAS	Resampling existing well.
MW-17S	Overburden groundwater	1	11 to 21'	PFAS	Resampling existing well.
MW-17D	Overburden groundwater	1	93 to 103'	PFAS	Resampling existing well.
MW-19S	Overburden groundwater	1	10 to 20'	PFAS	Resampling existing well.
MW-19D	Overburden groundwater	1	58.4 to 68.4'	PFAS	Resampling existing well.
MW-21S	Overburden groundwater	1	5 to 15'	PFAS	Resampling existing well.
MW-21D	Overburden groundwater	1	36 to 56'	PFAS	Resampling existing well.
MW-28S/D[1]	Overburden groundwater	2 (1 each zone)	TBD	PFAS	Proposed well cluster, off-site characterization north of site, west side of Little Hoosic River
MW-29S/D[1]	Overburden groundwater	2 (1 each zone)	TBD	PFAS	Proposed well cluster, off-site characterization north of site, east side of Little Hoosic River

Notes:

1. It is anticipated that well pairs will be installed, with one screened in surficial sand and gravel and the other screened in deeper sand and gravel, corresponding to well labels S and D. Actual number of wells installed at each location and screen depths will be based on the hydrostratigraphic conditions encountered.
2. Three additional quarterly sampling events will be performed at a subset of representative on-site and off-site overburden monitoring wells. Wells to be sampled will be selected in consultation with the NYSDEC.

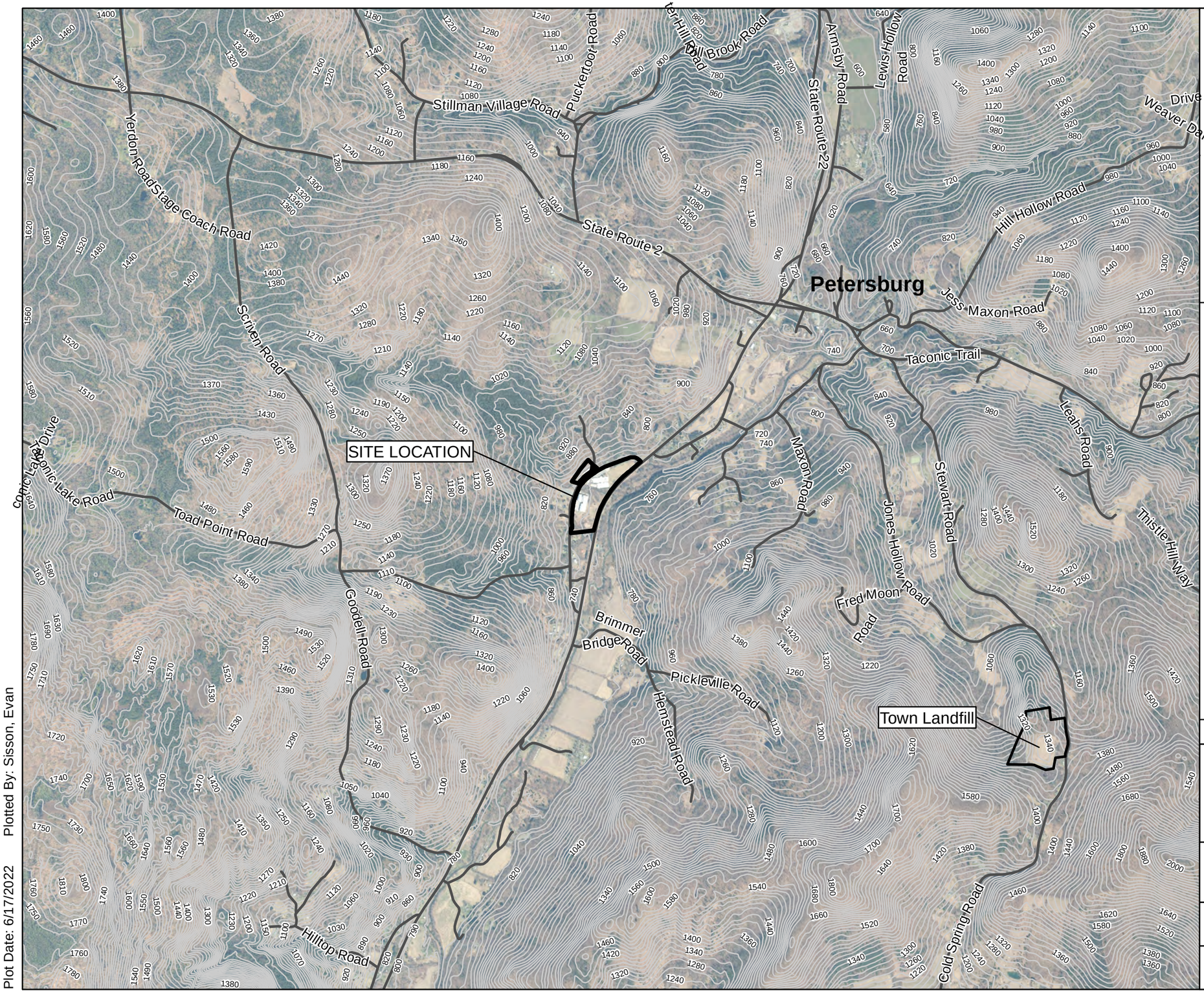
TABLE 5 – BEDROCK GROUNDWATER PROPOSED SAMPLING SUMMARY

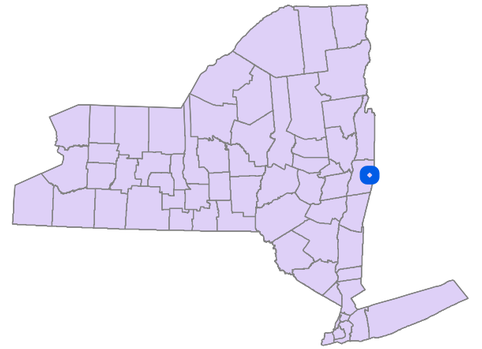
Location	Matrix	Number of Samples	Depth(s)	Analysis	Rationale
MW-16BR	Bedrock groundwater	1	TBD[1]	PFAS	Resampling existing well.
MW-20BR	Bedrock groundwater	1	TBD[1]	PFAS	Resampling existing well.
MW-21BR	Bedrock groundwater	1	TBD[1]	PFAS	Resampling existing well.
MW-22BR	Bedrock groundwater	1	TBD[1]	PFAS	Resampling existing well.
MW-22BRS	Bedrock groundwater	1	TBD[1]	PFAS	Resampling existing well.
MW-23BR	Bedrock groundwater	1	TBD[1]	PFAS	Resampling existing well.
MW-27BR	Bedrock groundwater	1	TBD[1]	PFAS	Resampling existing well.
MW-28BR	Bedrock groundwater	TBD[2]	TBD[2]	PFAS	Proposed well, off-site characterization north of site, west side of Little Hoosic River
MW-29BR	Bedrock groundwater	TBD[2]	TBD[2]	PFAS	Proposed well, off-site characterization north of site, east side of Little Hoosic River

Notes:

1. Depth will be based on the interval with the highest concentration of PFOA as determined based on previous packer sampling profiling.
2. Number of samples and sample depths will be determined based on borehole testing and surface geophysical results.

FIGURES





Elevation Contours (20 foot intervals)

0 1,500 3,000 6,000 Feet

FIGURE 1

TACONIC
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SITE LOCATION

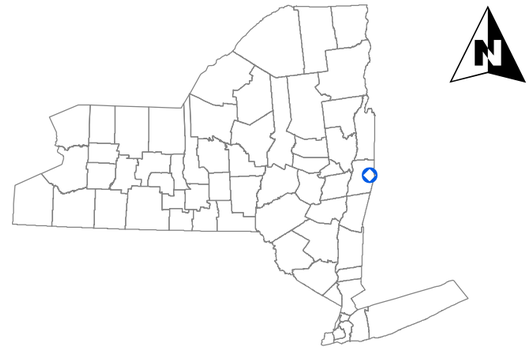
PHASE 2A REMEDIAL INVESTIGATION

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, NY 13212 * 315-451-9560

Plotted By: Sisson, Evan

Plot Date: 6/17/2022

Document Path: P:\Taconic\2022 IID\GIS\MXDs\Taconic Site Location Fig 1.mxd



Site Boundary
Inactive Drywell
Production Well Location

Utilities

Sanitary Sewer
Storm Ditch
Storm Sewer
Culvert
Natural Gas Tank
Pond
Leach Field
Fume Eliminators
Sludge Roll-off Storage Pad
Building Footprint
Tax Parcel Boundaries

0 250 500 1,000
Feet

FIGURE 2

TACONIC
Finding a better way

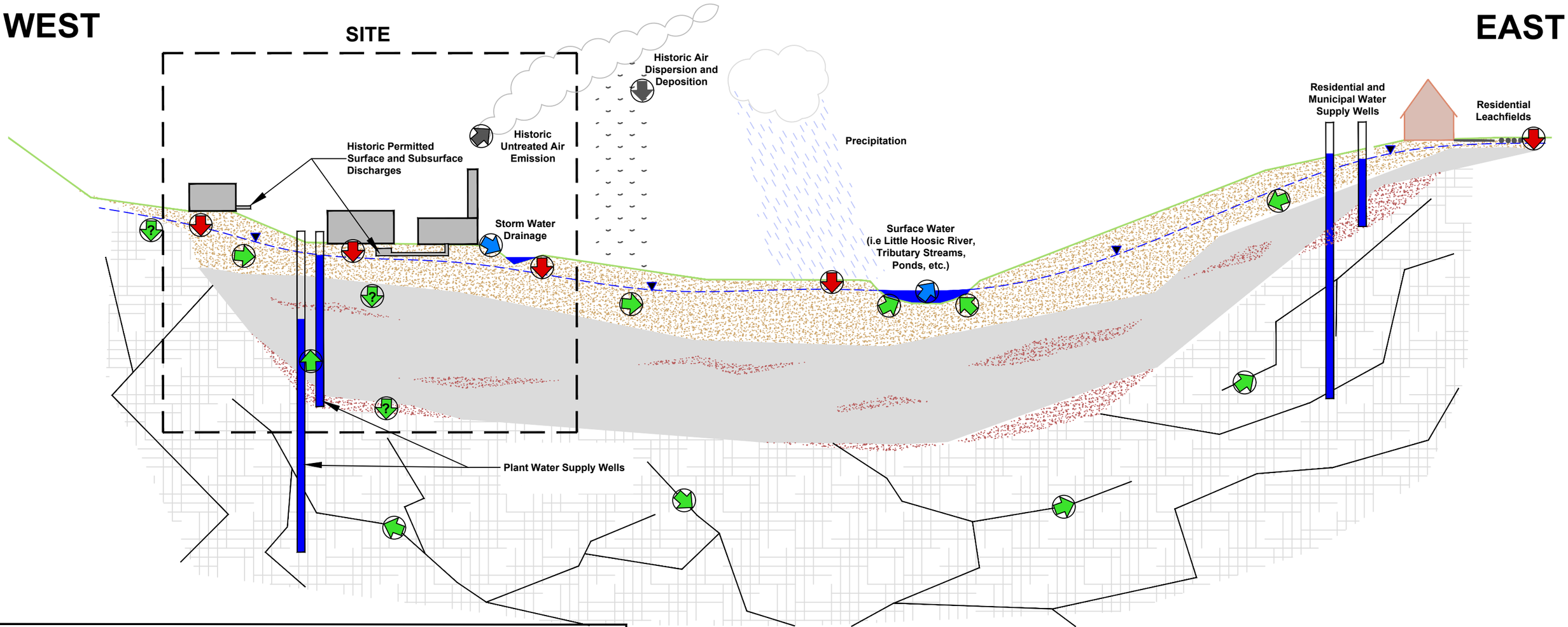
SITE PLAN AND SITE FEATURES

PHASE 2A REMEDIAL INVESTIGATION

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, NY 13212 * 315-451-9560

Plotted By: Sisson, Evan
Plot Date: 8/4/2022

Document Path: P:\Taconic\2022 IID\GIS\MXDs\Taconic Site Plan Fig 2.mxd



LEGEND

Geologic Units

- Upper Sand and Gravel
- Silt and Clay with Sand and Gravel Lenses
- Lower Sand and Gravel
- Fractured Bedrock
- Water Table

Potential Migration Pathways

- Historic Air Dispersion and Deposition
- Unsaturated Soil
- Surface/Stormwater
- Groundwater
- Potential Groundwater

Notes:
1. Diagram is thematic and not to scale.
2. View is down–valley to the approximate north
3. Migration routes and exposure pathways shown are preliminary subject to further investigations.

FIGURE 3

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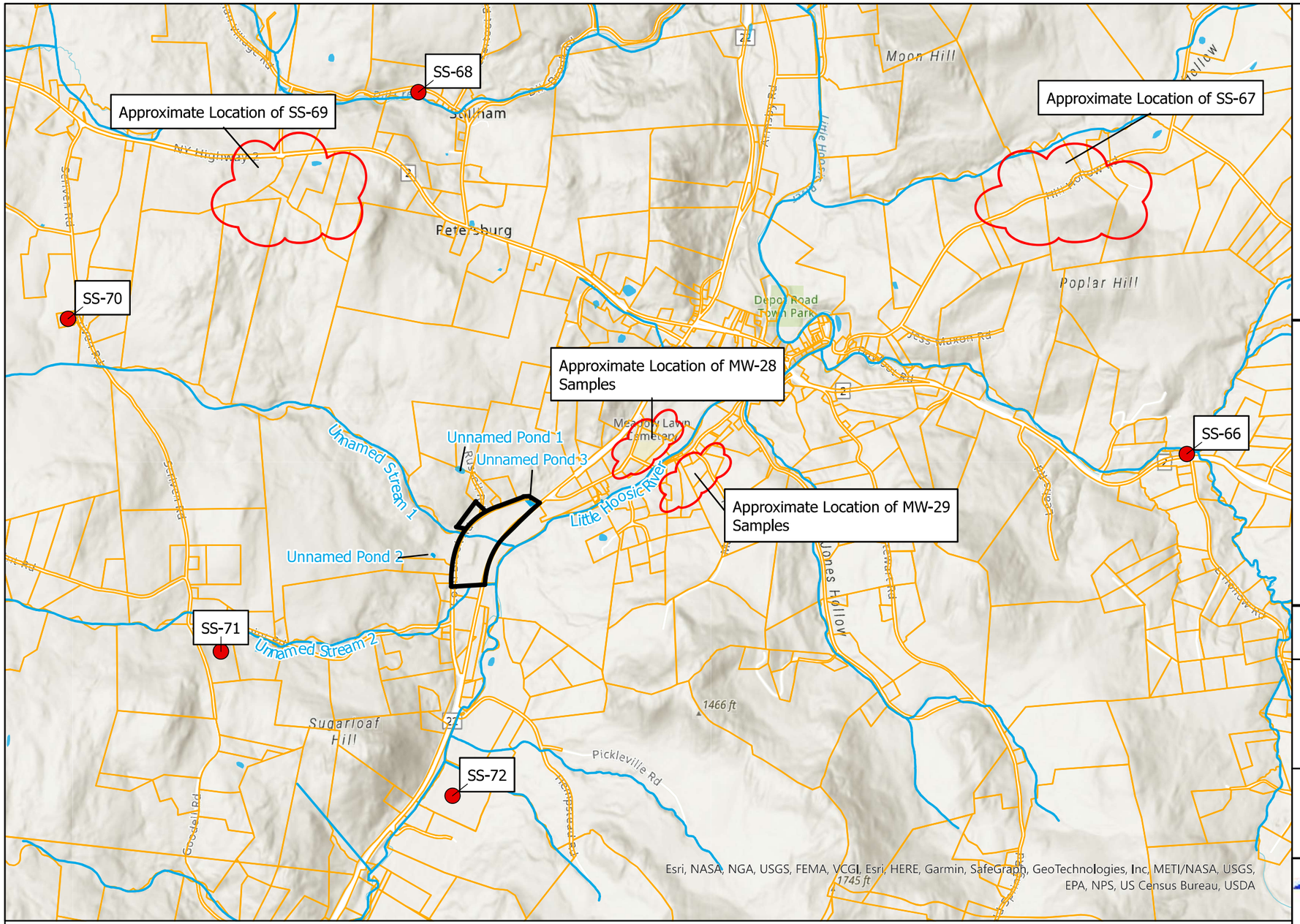
Preliminary Conceptual Site Model

PHASE 2 REMEDIAL INVESTIGATION

136 COONBROOK ROAD, PETERSBURGH, NEW YORK 12138



N

Tax Parcels
Proposed Soil Location
Site Boundary

Notes:

1. Proposed soil locations are approximate and may be adjusted based on field conditions and/or property access agreements.

0 0.23 0.45 0.9 1.35 1.8
Miles

FIGURE 4

PROPOSED UNSATURATED SOIL SAMPLING LOCATIONS

PHASE 2C REMEDIAL INVESTIGATION

TACONIC
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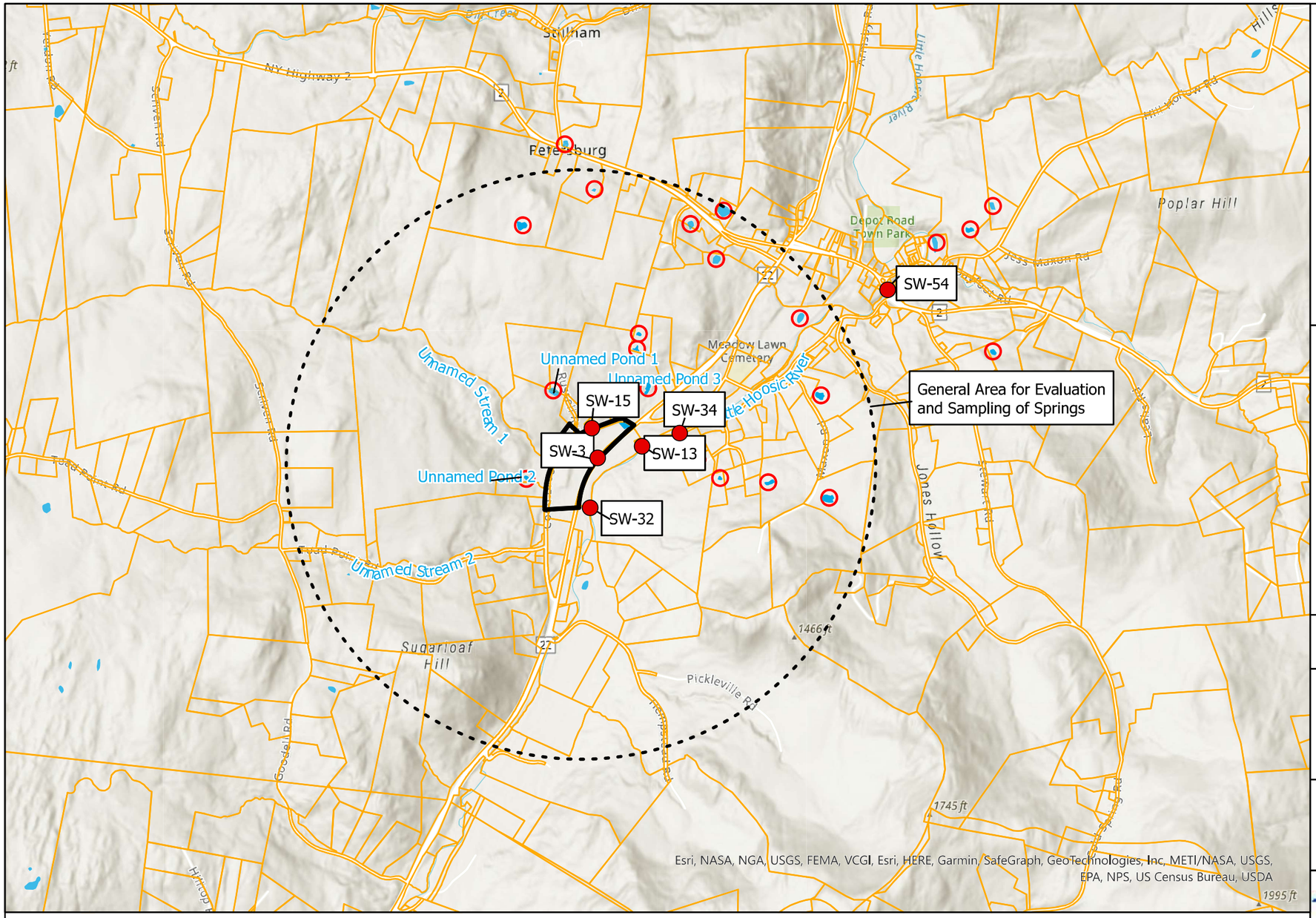
Taconic, Inc.
136 Coonbrook Rd.
Petersburgh, NY 12138

NYSDEC Site No. 442047



0 0.28 0.55 1.1 1.65 2.2 Miles

N

Legend

- Surface Water for Proposed TAL Metals Sampling
- Local Ponds for Proposed PFAS Sampling
- Tax Parcels
- Site Boundary

Notes:

1. General locations for pond sampling are indicated. Final locations and number of pond samples will depend on field conditions and property access agreements. 6 to 8 samples are proposed.

2. Approximately 4 to 6 samples from local springs are planned. Locations and number of samples will depend on field conditions and property access agreements.

FIGURE 5

PROPOSED SURFACE WATER SAMPLING LOCATIONS

PHASE 2C REMEDIAL INVESTIGATION

TACONIC
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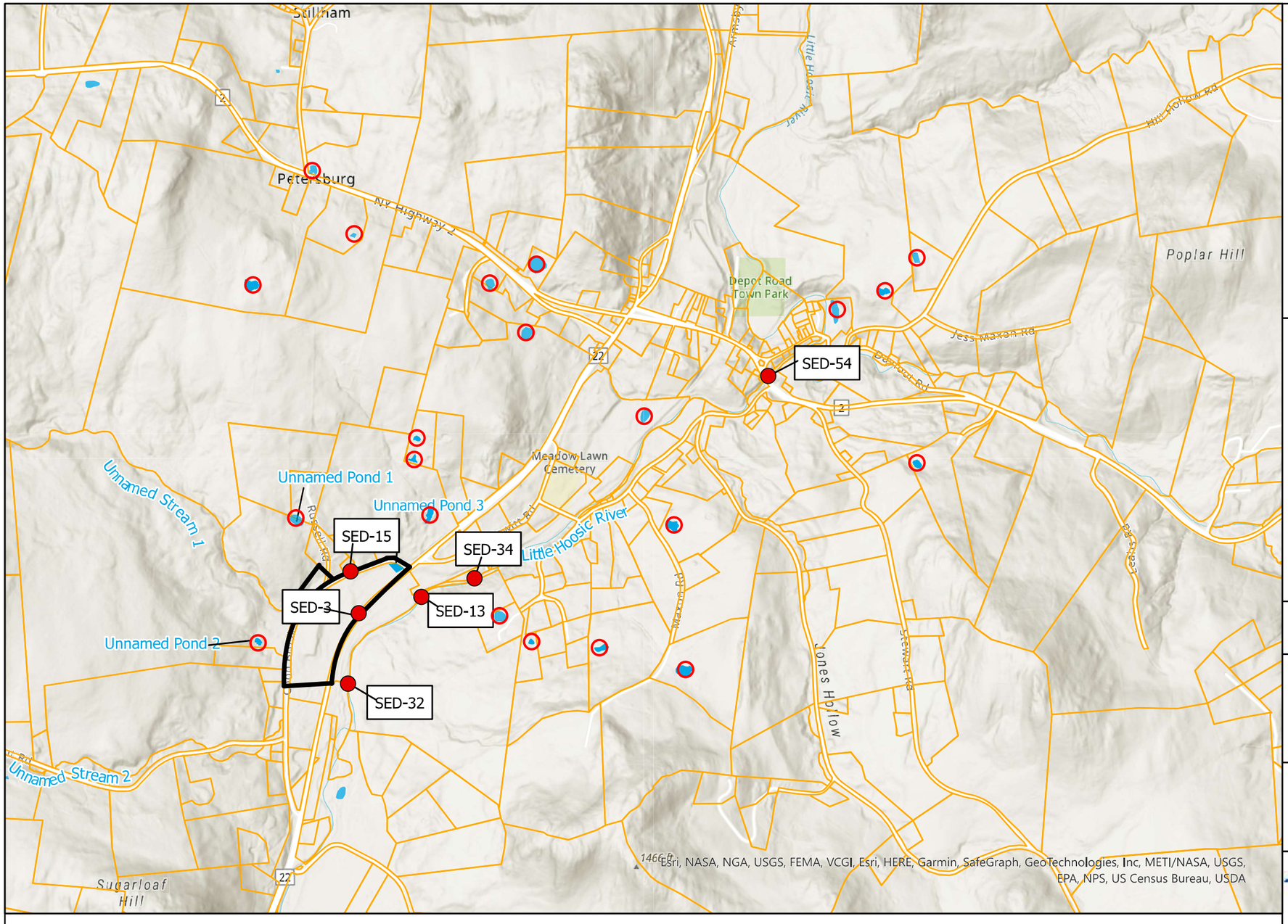
Taconic, Inc.
136 Coonbrook Rd.
Petersburgh, NY 12138

NYSDEC Site No. 442047



N

- Sediment Location for Proposed TAL Metals Sampling
- Local Ponds for Proposed PFAS Sampling
- Tax Parcels
- Site Boundary

Notes:

1. General locations for pond sampling are indicated. Final locations and number of pond samples will depend on field conditions and property access agreements.
6 to 8 samples are proposed.

0 0.15 0.3 0.6 0.9 1.2 Miles

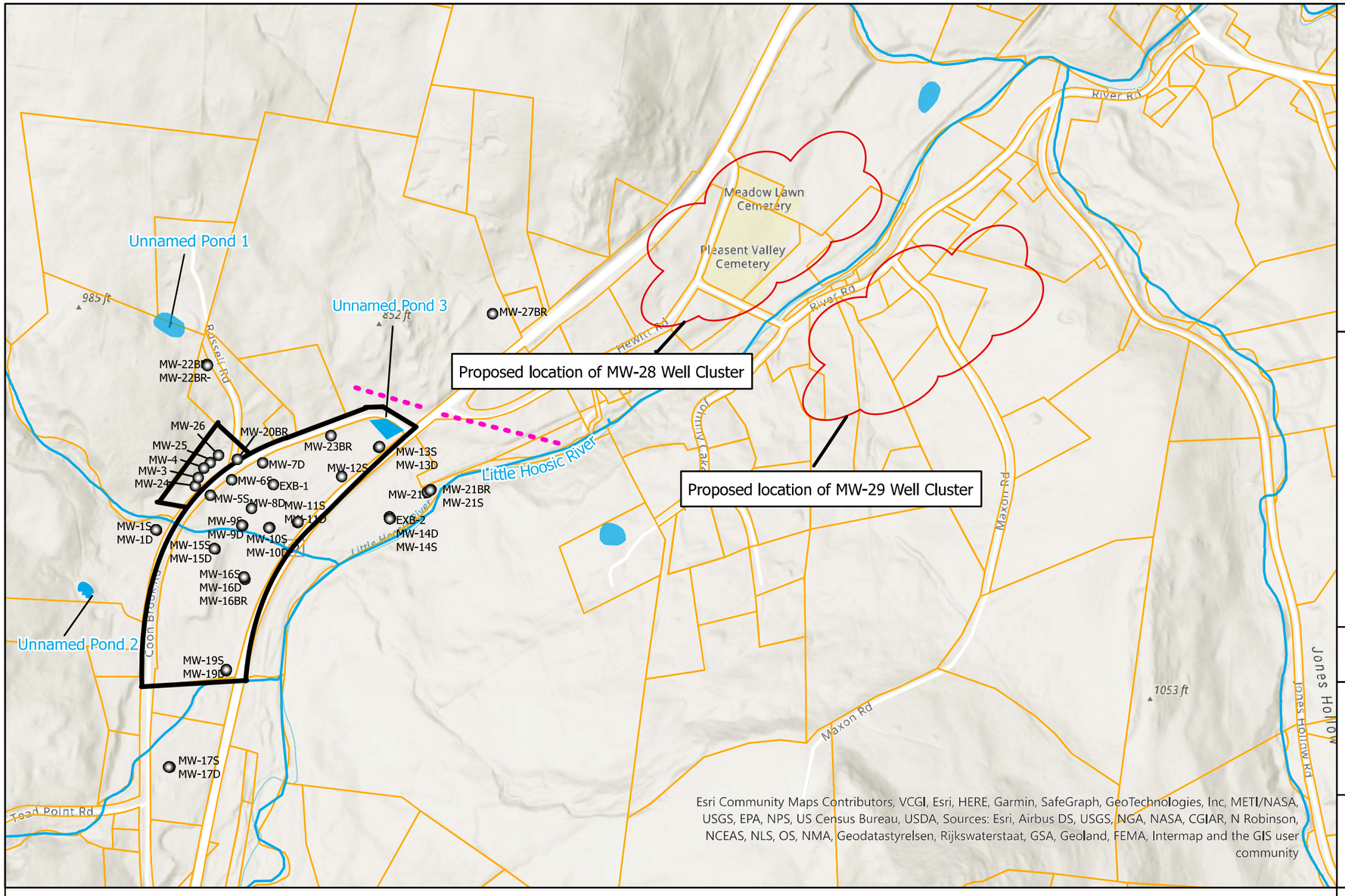
FIGURE 6

PROPOSED SEDIMENT SAMPLING LOCATIONS

PHASE 2C REMEDIAL INVESTIGATION

Taconic, Inc.
136 Coonbrook Rd.
Petersburgh, NY 12138

NYSDEC Site No. 442047



N

Existing Monitoring Wells
Tax Parcels
Site Boundary
Shallow Bedrock Outcrop

Notes:

1. General locations for proposed well clusters are indicated. Final locations will depend on property access agreements.

0 0.050.1 0.2 0.3 0.4 Miles

FIGURE 7

PROPOSED GROUNDWATER MONITORING WELL LOCATIONS

PHASE 2C REMEDIAL INVESTIGATION

TACONIC
Finding a better way

Taconic, Inc.
136 Coonbrook Rd.
Petersburgh, NY 12138

NYSDEC Site No. 442047