March 25, 2022

Ms. Karen Cahill
Project Manager
NYSDEC Division of Environmental Remediation
615 Erie Boulevard
West Syracuse, New York 13204-2450

Re: Revised Analysis of Alternatives/Remedial Work Plan
800 Hiawatha Boulevard West, Syracuse, NY (Former Roth Steel Site)
NYSDEC BCP Site No. C734083

Dear Ms. Cahill:

On behalf of the Onondaga County Industrial Development Agency (OCIDA), JMT of New York, Inc. is submitting a Revised Analysis of Alternatives/Remedial Work Plan (AA/RWP) for the 800 Hiawatha Boulevard West (Former Roth Steel) Site in Syracuse, NY. This Revised AA/RWP is being submitted in response to New York State Department of Environmental Remediation (NYSDEC) Comment Letter dated December 21, 2021 and additional clarification provided in your email dated January 5, 2022. Primary changes to the Revised AA/RWP are related to the former proposed site use as an aquarium, which is no longer being considered.

An electronic copy of this document can be accessed by all letter recipients using the Mimecast link attached to this transmission. The R.P. Kinchen Central Library repository has also been provided a hard copy of this report.

If you have any questions on the content of this report, do not hesitate to contact me at 518-782-0882 or jciampa@jmt.com.

Sincerely,

JMT of New York, Inc.

John D. Ciampa, PG
Project Manager
Natural & Cultural Resources

Electronic Enclosure

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REVISED ANALYSIS OF ALTERNATIVES AND REMEDIAL WORK PLAN: BROWNFIELD CLEANUP PROGRAM

800 HIAWATHA BOULEVARD WEST, SYRACUSE, NEW YORK (FORMER ROTH STEEL SITE)

NYSDEC BCP SITE #C734083

Prepared for:
New York State Department of Environmental Conservation
Region 7
615 Erie Boulevard West
Syracuse, New York 13204-2400

Prepared by:
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Submitted: March 25, 2022

Project No: 16-S0140N

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I, Paul Adel, certify that I am currently a NYS registered professional engineer and that this Remedial Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

Certified by:

Paul Adel, P.E.

Professional Engineer

License Number: 075084

Paul M Adel
Signature

3/25/22
Date

1.0 INTRODUCTION

1.1 PROJECT AUTHORIZATION AND PURPOSE

This Revised Analysis of Alternatives/Remedial Work Plan (AA/RWP) for the Former Roth Steel Site has been prepared by JMT of New York, Inc. on behalf of Onondaga County Industrial Development Agency (OCIDA). A prior AA/RWP for the site was submitted on August 13, 2021 and indicated that the site could be developed as an aquarium. That use is no longer being considered. This Revised AA/RWP is being submitted to address NYSDEC December 21, 2021 comments. The Former Roth Steel Site is located at 800 Hiawatha Boulevard West in the City of Syracuse, Onondaga County, New York and initially consisted of approximately 23 acres of land. See Figure 1 for a general site location map. Roth Steel previously operated a scrap-metal processing facility at the Site since 1967 and abandoned the property in 2014 during the bankruptcy process. OCIDA purchased the property from the bankruptcy trustee on October 27, 2015. On behalf of OCIDA, a Brownfield Cleanup Program (BCP) application was submitted to NYSDEC by JMT (formerly Spectra) and accepted. A Brownfield Cleanup Agreement (BCA) was executed for the Site on January 21, 2016, with OCIDA being designated as a "volunteer". OCIDA subsequently submitted an amendment to the BCP application on April 13, 2021, that removed portions of the site from the BCP program. The amendment was deemed complete on April 27 and executed on August 24; it reduced the site size to 15.1 acres and completely removed one of the prior BCP subareas (Operable Unit 4). The Amendment also significantly reduced the size of prior Operable Unit 1. Operable Unit 2 was unchanged and OCIDA is proposing that Operable Unit 3 be expanded to the northwest for a distance of approximately 300 ft. The revised Operable Unit (OU) areas are shown on Figures 2 and 3.

This AA/RWP is prepared based upon the requirements in ECL 27-1411, 1413 and 1415; 6 NYCRR Part 375 and NYSDEC Technical Guidance for Site Investigation and Remediation (DER-10); and USEPA 40 CFR 761.61. The AA/RWP incorporates the findings of the Remedial Investigation conducted under the BCP by JMT. Those results were presented in a Remedial Investigation Report (RIR) that was initially submitted in March 2018 and subsequently revised in February 2019. NYSDEC conditionally approved the RIR on March 14, 2019. Prior to the RI, JMT also completed investigation activities as part of an Interim Remedial Measure (IRM), primarily related to the Onondaga Lake Trail Project, which crosses the northern part of the site. Those results were presented in a Self-Implementing Cleanup and Disposal Notification (SICDN) and the Revised IRM Work Plan, dated December 2016 and October 2016, respectively. As a result of

design changes to the Trail Project, revised IRM/SICDN plans were submitted in June 2019, September 2019, and June 2020. Remedial activities to allow construction of the Trail were approved by NYSDEC/USEPA and were implemented by OCDOT. A map showing the Trail Project confirmatory samples is included in Appendix A. In May 2021 a limited number of wells were sampled for emerging contaminants. The results are discussed in this report and summarized on Figure 11.

The purpose of the AA/RWP is to evaluate potential remedial measures and recommend a cleanup approach that is protective of human health and the environment, considering the future land use at the site. Since remedial activities for the Trail area (OU-3) have already been completed, this document will focus on remedial alternatives for OU-2 and the small remaining section of OU-1. This report includes discussions on the site history, nature/extent of contamination, remedial action objectives, current/reasonably anticipated land use, a qualitative exposure assessment, and an analysis of alternatives. Since OCIDA is a "volunteer" in the BCP, the remedial evaluation will consider onsite contamination. The Alternatives Analysis will evaluate BCP "Track 1" and "Track 4" remedies. Related plans for the recommended remedy (i.e., general work specifications, Health and Safety Plan, and QA/QC Plan) are also presented.

1.2 GENERAL SITE DESCRIPTION

Although this AA/RWP primarily focuses on the portions of OU-1 and OU-2 that remain in the BCP, some information is also included on the overall Roth property since it provides a broader understanding of physical features and past property usage. The entire former Roth property is approximately 23 acres in size, located at the southern end of Onondaga Lake. It is bounded by CSX Railroad Tracks to the northwest; the Metropolitan Wastewater Treatment Plant owned by Onondaga County to the north/northeast; Hiawatha Boulevard West to the east/southeast; and approximately 5 commercial businesses along State Fair Boulevard to the southwest (see Figures 1 and 2). The property has generally low topographic relief and ranges in elevation from approximately 370 to 375 feet. Regional surface water drainage is to the north-northwest towards Onondaga Lake. However, there is a broad low area in the central portion of the property (northwest of OU2) that collects surface water runoff and typically has "standing" water. The ground cover at the BCP portion of the Site is primarily unvegetated with dense, packed gravel or fill. Waste debris (Automotive Shredder Residue or ASR, metal fragments, plastic, glass, etc.) are present at the surface and in the subsurface within the remaining section of OU-1 and large portions of OU-2. The overall Roth property previously contained eight abandoned buildings, in varying

structural conditions and a railroad spur that is connected to an active rail line. Buildings 1 through 6 were located in OU-2. All eight buildings were demolished by OCIDA in Fall 2018, but the slabs remain.

OU-3 is a narrow strip of land located along the north boundary of the Site, immediately south of the Metropolitan Sewage Treatment Plant. It is approximately 1.7 acres in size and has been developed as part of the Onondaga Lake Trail. The Trail is primarily paved with bordering vegetative areas. The northwest section of the Trail on the Roth property contains a pedestrian bridge which rises to span the railroad tracks located just north of the property boundary.

1.3 HISTORICAL SITE USES AND SOURCES OF SITE CONTAMINATION

The Former Roth Steel metal recycling facility operated on the property from 1967 to 2014 in a commercial/industrial zoned area. The facility extracted ferrous and non-ferrous metals from scrap items, primarily automobiles. Vehicles and other scrap materials arrived onsite, were drained of fluids and shredded. The central and west parts of OU-2 were primarily used for vehicle and scrap metal storage. OU-3 was primarily used as a roadway, called Duke Drive. The section of OU-1 remaining in the BCP was undeveloped but partly contains a former ASR Disposal Cell.

1.4 CURRENT SITE USE

Roth Steel was the sole owner of the Site since 1967 until OCIDA's purchase from the bankruptcy trustee in October 2015. Most of the salvage operation equipment was removed prior to OCIDA's purchase. The Site is vacant and contains the eight former building slabs. It is surrounded by a locked fence, other than the northwest perimeter, which is bounded by an active rail-line. As stated previously, the northern strip of the Site (OU-3) is was developed as a pedestrian trail by Onondaga County DOT.

1.5 REMEDIAL ACTIVITIES CONDUCTED BY OCIDA

Since OCIDA purchased the property, it has proactively implemented several Interim Remedial Measures (IRMs) to reduce public and environmental risk. In August 2016, a locked fence was installed along Hiawatha Boulevard and a section of damaged fence along the northwest section of the property was repaired. In November 2015, JMT and its subcontractor (Action Technical Services) performed an initial IRM at the request of the NYSDEC, to consolidate and secure various 55-gallon liquid drums, assorted plastic containers, aerosol cans, paint cans, and abandoned automotive fuel/propane tanks. These inventoried materials were moved and secured

within Building 5, for eventual offsite disposal. The majority of these drums were randomly located throughout the OU-2 portion of the Site.

In addition, other liquid drums (water and oil) were moved from outside Buildings 1 and 2 into Building 5 for characterization and ultimately, off-site disposal. Those drums were moved by Paragon Environmental Services in June 2016 and included five partially filled oil drums (labeled as hydraulic oil) and one rainwater drum. In addition, a drum of suspected PCB capacitors, found in Building 4, was also removed from the site.

Between December 22, 2016 and January 23, 2017, Veolia transported these various waste materials to off-site disposal facilities. The majority of the wastes (hazardous and non-hazardous) were taken to the Veolia facility in West Carrollton, Ohio. The capacitors were taken to a U.S. Ecology facility in Belleville, Michigan. In total, 56 drums of "auto waste" liquids were removed, including three that were classified as hazardous waste. Removal also included one drum of mineral spirits, one lab pack of aerosol cans/paints and drilling waste generated by CHA in 2016 (trail-related geotechnical borings). The characterization and disposal of the above-described materials is discussed in a Revised IRM Work Plan (October 2016) and an IRM Completion Report (June 21, 2017).

The former buildings were demolished in Fall 2018 in accordance with plans approved by USEPA, NYSDEC, and NYSDOL. In addition, other miscellaneous drums (containing solids) found around the site (primarily in OU-2) were removed. The drums were characterized and sent for disposal at appropriate facilities. One drum contained hazardous solids (PCBs greater than 50 ppm). In addition, two bins from Building 4, containing apparent process waste (shredded metal and wire), had hazardous levels of cadmium. The drum with elevated PCBs and the two bins were removed from the site and sent for disposal as hazardous waste.

2.0 ENVIRONMENTAL INVESTIGATION SUMMARY

2.1 PREVIOUS ENVIRONMENTAL INVESTIGATIONS

Prior to JMT conducting the Remedial Investigation, the Former Roth Steel facility was subject to several investigations since 1968. These investigation activities were discussed in more detail in the Remedial Investigation Report and are briefly summarized below.

- **ASR Characterization Report (Baumgartner & Associates, 1993)**

  At the request of the NYSDEC, a study was conducted to investigate the chemical characteristics of ASR on the Roth Steel property. Two areas of concern were identified, referred to as ASR Waste Cells #1 and #2. As discussed in the RIR, analytical data from the 1993 investigation is suspect and is not included in this report. A portion of the ASR cells are beneath the pedestrian bridge in OU-3 and extend into a section of OU-1.

- **Limited Phase II Investigation (Passero Associates, 2007)**

  Passero Associates conducted a limited Phase II ESA to characterize the condition of soil and groundwater on the Roth Steel property. They installed five soil borings to investigate ASR Waste Cells #1 and #2. Additional borings were drilled in portions of OU-2 and OU-3.

- **Site Investigation Report (O'Brien & Gere, 2013)**

  On December 28, 2007, a consent order (D7-1015-11-04) between Roth Steel Corporation and NYSDEC was signed that required a study of ASR disposal Cells #1 and #2 and other portions of the Site. This work was carried out by Brown and Caldwell, AECOM, and O'Brien and Gere. A Site Investigation Report prepared by O'Brien & Gere (2013) summarized these activities.

Historic sample locations in the portion of the Roth Site that remains in the BCP, with symbols referenced to the specific study, are shown on Figure 4. This figure also contains sample locations that are located about 50 ft. west of the OU-2 boundary.

In addition to these studies, JMT and CHA separately completed testing in 2016, as summarized in the IRM Work Plan reports (July, September, October 2016). These investigations primarily focused on soil sampling within the two ASR Waste Cells and along the alignment of the

subsequently completed Lake Trail Extension in OU-3. Between 2018 and 2020, Barton & Loguidice and JMT (as part of the Canalway Trail Project) collected additional environmental samples for PCBs analysis. That data is contained within Appendix A.

2.2 BCP REMEDIAL INVESTIGATION AND PRE-REMEDIAL DESIGN SAMPLING

The Remedial Investigation included additional characterization of soil, groundwater, and soil vapor. The complete results for the entire Former Roth Steel Site are presented in the Revised Remedial Investigation Report, submitted to NYSDEC in February 2019. A summary of the RI results, primarily pertaining to the remaining BCP portions of the property is presented in Section 2.4. Although, some aspects of the groundwater investigation results will be discussed on a broader property-wide basis since groundwater is more regional in nature.

Subsequent to submittal of the Revised RIR, three test pits were also completed by JMT in February 2019 (at the request of DEC) to further assess a "free-product" zone encountered in OU-2 (south of Building 1). The result of this supplemental work is discussed in Section 2.4.1 and the test pit logs are presented in Appendix B.

2.3 STANDARDS, CRITERIA AND GUIDELINES

To evaluate the significance of the site investigation sampling results, it is useful to identify the applicable Standards, Criteria, and Guidelines (SCGs) for the Site. The SCGs identified are used to quantify the extent of contamination at the Site that may require remedial work based on the cleanup goals. The SCGs for soil and groundwater are as follows:

2.3.1 Soils SCGs

The SCGs for soil used in this RI are:

- 6NYCRR Subpart 375-6.8(b) Remedial Program Cleanup Objectives for Protection of Groundwater
- 6NYCRR Subpart 375-6.8(b) Remedial Program Cleanup Objectives for Protection of Public Health - Restricted Commercial Use
- 6NYCRR Subpart 375-6.8(b) Remedial Program Cleanup Objectives for Protection of Public Health - Restricted Industrial Use
- NYSDEC Commissioner Policy – 51 (CP 51) Supplemental Soil Cleanup Objectives (SSCOs) for Commercial/Industrial Use

- 40CFR Part 761.61 PCB Remediation Waste (TSCA, federal)

With regard to PCBs in soil, there are multiple established thresholds that are summarized below.

PCB Concentration (ppm)	Scenario	Regulatory Source
Less than 1	Surface soil (Commercial/Passive Recreational Use) High Occupancy Area (uncapped)	NYSDEC 6NYCRR 375-6 USEPA 40 CFR 761.61
1 to less than 10	Subsurface soil (Commercial/Passive Recreational Use) High Occupancy Area (TSCA Cap)	NYSDEC CP-51 USEPA 40 CFR 761.61
Less than 25	Industrial Use Low occupancy Area	NYSDEC 6NYCRR 375-6 USEPA 40 CFR 761.61
Less than 50	Low occupancy Area - fenced	USEPA 40 CFR 761.61
Less than 100	Low occupancy Area – fenced/TSCA cap	USEPA 40 CFR 761.61

Although USEPA would allow PCBs that exceed 50 ppm to remain onsite in a low occupancy area that is fenced and capped, NYSDEC has indicated that a cleanup level exceeding 50 ppm for a BCP site is generally not acceptable. However, PCBs exceeding 50 ppm in the subsurface were allowed to remain in a small section of the remediated trail in OU-3 due to critical infrastructure that could not be disturbed. Shallow excavation along with a TSCA-approved cap was implemented in this small area, due to extenuating circumstances.

2.3.2 Groundwater SCGs

The SCGs for groundwater use in this RI are:

- NYSDEC 6NYCRR Part 703.5 Water Quality Standards for Groundwater
- NYSDEC Technical and Operational Guidance Series 1.1.1 – Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations dated June 1998, and updated in January 1999, April 2000, and June 2004 (TOGS 1.1.1)

2.4 SUMMARY OF SOIL, GROUNDWATER, AND SOIL VAPOR ANALYTICAL RESULTS

2.4.1 Soil Quality

The following sub-sections discuss the laboratory results obtained from soil samples that have been collected in the remaining OU-1 and OU-2 portion of the BCP Site. For completeness purposes, the OU-3 data are contained on the tables and figures of this report but are not discussed or evaluated in detail since remediation for OU-3 has already been implemented.

This section is organized by contaminant type (i.e., PCBs, metals, VOCs/SVOCs). Data tables and maps have been prepared to support the discussion. Because there is a very large amount of PCBs/metals sampling data, the figures for those compounds were prepared using summary symbols rather than data "call-out" boxes. The symbols use circles that are color-coded to different thresholds, as shown on the map legend. The top half of the circular symbol represents the surface results (top 1 ft.) and the bottom half of the symbol represents the subsurface. If a sample interval extends from the surface to depths below 1 ft., it is generally treated as both a surface and subsurface sample. A solid green color indicates that the analytical results are less than the established regulatory thresholds for Commercial Use. Other colors indicate that certain concentration limits or future-use thresholds are exceeded, as explained in the map legend.

Tables 1, 2, 3, and 4 provide data for PCBs, metals, SVOCs, and VOCs, respectively. Summary maps for the analytical results are provided on Figures 5, 6, and 7.

PCBs

OU-1

PCBs were sampled at 6 locations in the remaining portion of OU-1 during the RI and previous investigations. In addition, six other samples were collected from the north sidewalls of trail-related excavations in April 2020. These samples immediately border OU-1. Five locations, (16) 2-4, B-32, Comp 1 B North - 1, 2, 3, had PCBs exceeding 1 ppm in the top 1 ft., with the highest concentration of 18.3 ppm at location (16) 2-4. PCBs were detected at concentrations exceeding 10 ppm in the subsurface at multiple locations. The highest individual PCB sample in OU-1 is 38.1 ppm (depth of 35-50 in.) at (16) 2-4. Sample locations exceeding 1 ppm in the surface or 10 ppm in the subsurface are shown in Figure 5.

OU-2

PCBs were sampled at 45 locations in OU-2 and within 50 feet west of the western OU-2 boundary during the RI and previous investigations. Ten locations (RI samples B-25, SS-1, TP-5; historical samples B-47, MW-10, B-38, B-18, B-16, B-48, and MW-11) had PCBs exceeding 1 ppm in the top 1 ft., with the highest concentration of 5.78 ppm at location MW-10/10A (0-2 ft.). Three locations ((17) B-19, (17) B-22, and P-17) detected PCBs exceeding 10 ppm in the subsurface. The highest individual PCB sample in OU-2 was 29.47 ppm (depth of 4 ft.) at P-17. Sample locations exceeding 1 ppm in the surface or 10 ppm in the subsurface are shown in Figure 5.

Metals

OU-1

Metals were sampled at 3 locations (B-31, B-32, and B-33) in OU-1 in 2007. B-32 and B-33 exceeded Commercial Use thresholds in the top 1-foot for copper, cadmium, or mercury. Industrial Use SCOs were not exceeded at these locations. There were no exceedances at B-31. See Figure 6.

OU-2

Metals were sampled at 42 locations in OU-2 and within 50 feet west of the western OU-2 boundary during the RI and previous investigations. Nineteen locations (RI samples SS-1, B-18, B-19, B-20, B-21, B-24, B-25, TP-2, TP-3, TP-4, TP-5; historical samples B-1, B-9, B-16, B-37, B-48, P-12, P-13, MW-10/10A) exceeded Commercial Use thresholds (see Figure 6). Seven of these (RI samples B-1, B-18, B-19; historical samples B-9, B-37, P-13, MW-10/10A) also exceeded Industrial Use thresholds. The most common compounds with exceedances were arsenic, cadmium, and copper. The highest metal concentrations were detected at historical sample location P-13/TP-13 (arsenic concentration of 28.4 ppm at a depth of 4 ft.); B-1 (cadmium concentration of 2140 ppm at a depth of 0-0.5 ft.), (lead concentration of 4650 ppm at a depth of 6-8 ft.); B-9 (mercury and zinc concentrations of 6.4 ppm and 21,400 ppm, respectively, at a depth of 4.5-5 ft.).

A TCLP metals test was completed during the RI at location (17) B-21, depth of 6-8 ft. This location was selected due to elevated lead and mercury that had been detected in MW-10 (6-8 ft.) in 2010. The TCLP results of 3.35 mg/L did not exceed the hazardous waste threshold of 5 mg/L.

VOCs and SVOCs

OU-1

VOCs have been sampled at four locations (P/BH-1 through 4) and two depths (0-4 ft. and 4-8 ft.) in and immediately adjacent to OU-1. No exceedances of Restricted Residential SCOs resulted. SVOCs were not sampled in this area.

OU-2

VOCs and SVOCs have been sampled at 43 and 42 locations, respectively, in OU-2. There were 13 sample locations (RI samples B-18, B-23, B-25, B-27, SS-4, TP-5; historical samples B-1, B-9, B-37, B-48, MW-10/10A, MW-11, BH-17) with Commercial Use SVOC exceedances. There were 12 sample locations (RI samples B-18, B-23, B-25, B-27, SS-4, TP-5; historical samples B-1, B-9, B-37, B-48, MW-10/10A, BH-17) with Industrial Use SVOC exceedances. The most common SVOC exceedances were PAHs. The location with highest concentrations of SVOCs was B-23 at a depth of 0-1 ft. (benzo-a-pyrene 10 ppm, benzo-a-anthracene 11 ppm, and benzo-b-fluoranthene 13 ppm). There were no commercial or industrial exceedances in VOCs. See Figure 7.

Soil – Miscellaneous Physical Observations

During the RI, free product was observed in test pit (17) B-20, located south of Building 1. This zone occurred between 2 to 8 ft. BGS. After the test pit was completed, JMT performed a ground penetrating radar (GPR) survey to search for a possible underground storage tank. No indications of a tank were observed in the GPR data. Soil samples collected from (17) B-20 were analyzed for PCBs, VOCs, SVOCs, metals, and included a Total Petroleum Hydrocarbon (TPH) Identification analysis. The TPH Identification test determined that the sample contained a mixture resembling gasoline and used motor oil. Although free product was observed in the test pit, laboratory results indicate that the soil concentrations of VOCs and SVOCs were below Restricted Residential Use standards. Additionally, PCB concentrations ranged from 0.08 ppm to 3.56 ppm (1-2 ft. depth), which is below the CP-51 “presumptive” remedy for Commercial Use soil cleanup objectives. All metals are also below Restricted Residential Use standards, except for copper (1520 ppm in 0-1 ft.), which is still below Industrial Use SCOs.

On February 28, 2019, three additional test pits were excavated near (17) B-20 (see Figure 4). (19) B-5 and (19) B-6 were excavated to 8 feet bgs, about 4 feet below the groundwater table. (19) B-4 was excavated to 5 feet bgs. The approximate pit dimensions were 6-feet long and 3-feet wide. A PID and visual/olfactory observations were used to screen the soil and determine whether contamination was present at each test pit.

(19) B-4 was completed upgradient of the original test pit. During excavation, free product was observed about 4 ft. BGS. Soil from this depth was screened with the PID and yielded a response of 260 ppm. The elevated PID response along with the physical observations indicates that the area upgradient of the original test pit is impacted by the petroleum contamination similar to (17) B-20.

Test pits (19) B-5 (NW of B-20) and (19) B-6 (SW of B-20) were completed downgradient of the original test pit. During both excavations, slight sheens were observed on groundwater but only a minimal petroleum odor was noted. PID responses from both test pits ranged to 0.2 ppm in (19) B-6 and 10 ppm in (19) B-5. The minimal PID responses and physical observations indicate that the area downgradient of (17) B-20 is not significantly impacted by petroleum.

2.4.2 Groundwater Flow and Quality

Groundwater Flow

Groundwater elevation data were collected from onsite wells in December 2017. Groundwater elevation was determined in 15 wells across the entire 23-acre Roth property. A groundwater elevation-contour map based on measurements for the entire Roth property was prepared by JMT. The groundwater contours are shown on Figures 8-10. Nine of the monitoring wells (MW-2A, MW-3R, MW-6, MW-8A, MW-9, MW-10A, MW-11, MW-13, and MW-14) remain in the BCP portion of the Site. Groundwater elevation in OU-1 is approximately 365 ft. above mean sea level (amsl) or about 10 ft. below ground surface (bgs). The elevation in OU-2 ranged from 368.33 to 369.93 ft. amsl, or 5.19 to 8.35 ft. bgs. Groundwater generally flows northwest towards Onondaga Lake. Downgradient groundwater quality in the BCP portion of the Site is measured primarily by MW-8A, 9, 13 and 14. Groundwater elevations are strongly influenced by the standing water that collects in the topographic low northwest of OU-2.

Groundwater Quality

During sample collection events prior to the RI, lab tests were conducted for PCBs, metals, VOCs, SVOCs, and glycols. Groundwater analytical data are contained in Tables 5 through 8, and any exceedances of 6 NYCRR Part 703 groundwater standards are shown on Figures 8-10.

PCBs

Since 2008, 39 groundwater samples have been collected from the portion of the Site remaining in the BCP boundary and tested for PCBs. Only three samples have had exceedances of the PCB Part 703 standard of 0.09 µg/L. Well locations with prior PCB exceedances include MW-3 (0.21 µg/L); MW-8 (4.8 µg/L); and MW-14 (0.49 µg/L). Those exceedances were obtained in samples collected between 2010 and 2012. See Figure 8.

Metals

As shown on Table 7A, all of the monitoring wells remaining in the BCP portion of the Site have recorded past exceedances for metals (inorganics). The most common exceedance is for sodium, which is not unexpected considering the presence of Solvay waste beneath the Site. Other frequently occurring metals include barium and iron. Less frequent exceedances occurred for mercury.

As part of the Remedial Investigation, groundwater samples collected from wells MW-2A, MW-3R, MW-6, MW-9, and MW-13 in December 2017, were analyzed for Target Analyte List (TAL) Metals. Similar to the historical results, all of the monitoring wells tested have exceedances for metals (see Table 7B and Figure 9). All wells showed exceedances in sodium, ranging from 182 mg/L (MW-8) to 696 mg/L (MW-10) compared to the standard of 20 mg/L. Barium exceedances are recorded in MW-2A (1.42 mg/L), MW-3R (1.43 mg/L) at concentrations slightly greater than the standard (1 mg/L). Iron exceedances are found in MW-2A (7.01 mg/L), MW-8A (4.4 mg/L), and MW-13 (0.318 mg/L) at concentrations greater than the standard of 0.3 mg/L.

The downgradient perimeter wells (MW-8A, 9, and 13) have metal exceedances only for iron and sodium.

VOCs and SVOCs

Thirty groundwater samples have been tested for VOCs/SVOCs from nine monitoring wells between 2008 and 2013. As shown on Table 6, the vast amount of SVOC compounds have been

non-detect. Phenols have been detected in six wells at concentrations exceeding the groundwater standard. Most of these exceedances occurred in 2008 and 2010.

Four groundwater samples, collected from wells MW-3R, MW-6, MW-9, and MW-13 in December 2017, were analyzed for VOCs during this Remedial Investigation. As shown on Table 8B and Figure 10, VOCs were detected above groundwater standards in MW-3R (benzene, ethyl benzene, methyl tert-butyl ether, o-xylene, toluene, and vinyl chloride), and MW-6 (benzene and methyl tert-butyl ether). Similar to historical results, these constituents are primarily related to gasoline compounds. The detected concentrations in 2017 were less than previous detections from the same wells. Downgradient monitoring wells MW-9 and MW-13 did not have any VOC exceedances.

Emerging Contaminants

Additional sampling for "emerging contaminants" was performed in wells MW2A, MW-3R, and MW-6 in May 2021 in accordance with the *Proposal for Sampling of Emerging Contaminants* submitted to NYSDEC in February 2021. Results were submitted to NYSDEC on July 19, 2021.

All three sampling locations (MW-2A, MW-3R and MW-6) had exceedances for 1,4-Dioxane, Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS), when compared to the NYSDEC/NYSDOH Standards (MCLs) (see Table 10 and Figure 11). PFOA was seen with concentrations ranging from 182 ng/L (MW-6) to 382 (MW-2A Duplicate), compared to the MCL of 10 ng/L. PFOS was detected with concentrations ranging from 220 ng/L (MW-3R) to 1560 ng/L (MW-2A Duplicate), compared to the MCL value of 10 ng/L. 1,4-Dioxane had concentrations ranging from 2.1 µg/L (MW-6) to 2.59 µg/L (MW-2A Dup), compared to the MCL of 1 µg/L.

MW-2A, which exhibited the highest concentrations, is near the upgradient edge of the site, next to Hiawatha Boulevard. There are no discrete piles of automobile shredder residue (ASR) near this well but since miscellaneous surface debris are present in the area, it is possible that groundwater quality in MW-2A could be affected by prior site operations. However, due to its upgradient location, it is also possible that contamination could be from off-site sources. Wells MW-3R (located farther downgradient, near the middle of the site) and MW-6 (located near the northern perimeter) exhibit similar concentrations of 1,4-Dioxane but concentrations of PFOS and PFOA are lower when compared to MW-2A.

The presence of groundwater quality impacts in these three wells is consistent with prior sampling results. As presented in the Remedial Investigation Report (RIR, February 2019), all three wells

had some groundwater quality exceedances for metals in the previous sampling event (December 2017). MW-3R and MW-6 also had exceedances for several volatile organic compounds during the same sampling round. As indicated in the RIR, groundwater is not consumed in the area since the City provides drinking water from other sources. In addition, there are no groundwater users downgradient of the site. As such, groundwater does not present a significant threat to human health.

2.4.3 Sub-Slab Vapor

A subsurface soil vapor investigation was conducted at the Site on February 14, 2018. Two points (VP-1 and VP-3) were sampled and analyzed for VOCs via USEPA Method TO-15. VP-1 was installed in Building 1 and VP-3 was installed in Building 4. Both locations were in OU-2, as shown on Figure 4. The soil vapor sample results are presented in Table 9.

3.0 ANTICIPATED FUTURE USE

With respect to soil quality, NYSDEC has established various thresholds for remediation program and Brownfield Cleanup sites, depending upon the future re-use of the site. The planned end-use for the remaining portions of the Roth Site at this time will primarily be as a parking lot for the Onondaga Lake Trail. This use may also include mobile food trucks or other vendors on a limited basis. The future parking area will be located in OU-2 and will be treated as a Commercial Use since it supports a "passive recreational" activity and could involve the sale of food or other commercial items.

Operable Unit	Size	Potential Use
1	0.4 acres	Vacant (Restricted Access)
2	13 acres	Parking Lot, Vacant (Commercial)
3	1.7 acres	Trail (Passive Recreational)

OU-2 is the largest area (13 acres) of the BCP portion of the Site. It borders West Hiawatha Boulevard for approximately 1350 ft. This operable unit will contain a parking lot and vacant areas. This will be treated as a Commercial Use.

OU-3 is a linear strip (1.7 acres) that includes the Onondaga Lake Trail. The Trail is considered to be a "passive" recreational use within the Brownfield Cleanup Program, which necessitated a cleanup to Commercial Use standards. The remediation for the entire Trail easement was approved by NYSDEC and USEPA as an IRM and Self-Implementing Cleanup Notification. Onondaga County DOT was the remedial party for the Trail and its construction/remedial implementation is complete.

The portion of OU-1 that remains in the BCP is a very small (0.4-acres) and isolated portion of the site. It will be fenced off and inaccessible.

4.0 QUALITATIVE EXPOSURE ASSESSMENT

A qualitative exposure assessment has been prepared to determine the potential exposure of humans and biota to contaminants from the BCP portion of the Site. This assessment considers the current Site conditions and use, as well as the reasonably-anticipated future use of the Site. This qualitative exposure assessment describes the current exposure setting, identifies current and reasonably foreseeable exposure pathways, and discusses contaminant fate and transport.

4.1 EXPOSURE SETTING

As previously described in this document, the Site is currently a vacant former industrial-use property. The current surrounding land uses include vacant property, commercial businesses, rail transport and waste-water treatment in an urban setting. Commercial/industrial businesses include CSX railroad tracks and the Onondaga County Metro Plant to the north; a metals plating facility, a vacant former tank manufacturing site, offices, and a used car dealership are located to the southeast (across from Hiawatha Boulevard West); and an automobile sales/repair shop, truck stop, motel, rubbish removal company, fencing contractor, and industrial waste storage facility are located to the southwest along State Fair Boulevard. Onondaga Lake is located immediately north of the CSX railroad tracks, on the north side of the Site.

Municipal water and sewer are present at the Site and several sewer force mains and a water line are known to exist near the northern property boundary. The BCP portion of the Site is comprised of previously disturbed, un-vegetated land and vacant buildings. The land surface is generally compact gravel, bare soil, and contains miscellaneous debris (e.g., metal scrap, shredded cloth, plastic, etc.).

4.2 CURRENT AND FORESEEABLE EXPOSURE PATHWAYS

In evaluating the current and foreseeable exposure pathways for the Site, exposure potential is considered for: dermal contact with soil, surface water, and groundwater; ingestion of soil, surface water and groundwater; and inhalation of particulate matter and chemical vapors.

Based upon the exposure setting, including the physical nature of the Site and surrounding land uses, some exposure pathways are unlikely to be significant for current and foreseeable uses. Specifically, given the urban nature of the Site and the surrounding commercial/industrial setting,

it is unlikely that the Site will have an adverse impact on fish and wildlife, since significant habitat does not occur on the Site.

With regard to potential human exposure, there are no current site occupants or workers, so exposure potential is very limited. The vast majority of the Site is fenced with a locked gate. There are limited portions of the Site along the rail tracks (northwest boundary) that are not fenced.

Foreseeable exposure potential considers future site use, which will include Commercial Use (parking lot with potential mobile food vendors) and vacant land. In addition, less frequent future exposure could occur to periodic construction or utility workers. For these potential receptor groups, exposure may result from inhalation and dermal contact. In addition, a construction or utility worker might also be potentially exposed to soil by ingestion, in the event that good hygiene practices are not followed.

With respect to the USEPA TSCA criteria, the anticipated use for the site will primarily be "low occupancy", including vacant areas, parking areas, walkways, or vegetated areas where it is unlikely that an individual will be in a specific location for more than 335 hours per year or 6.7 hours per week (assuming 50 weeks per year). There could be some limited "high occupancy" use associated with mobile food trucks or other vendors.

With regard to potential human exposure, risk would be mitigated by implementing NYSDEC and USEPA approved remedial measures. These measures would include soil hot-spot excavation and installation of caps (i.e., soil/crushed stone cover, pavement, concrete) in select areas. Other physical site controls could be used, such as fencing in specific areas to restrict access. In addition, environmental easements (e.g., restrictions on excavation and groundwater use) would be established to further limit future exposure potential.

Although there are some contaminants in groundwater at the Site, municipal drinking water is available so future consumption of groundwater is unlikely. In addition, restrictions on groundwater usage, for any purpose, could be placed on the Site as a condition of future occupancy through the Brownfield Cleanup Program.

Vapors can potentially volatilize from contaminants in groundwater or soil. However, given the nature of past operations, site contaminants are primarily non-volatile metals and PCBs. Furthermore, no occupied buildings are currently planned for the BCP site.

4.3 PRELIMINARY EVALUATION OF FATE AND TRANSPORT

Various chemical constituents have been detected in the soil and groundwater beneath the Site. The primary compounds detected fall within two major chemical groups, polychlorinated biphenyls (PCBs) and metals. To a lesser extent, volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) are also found. The VOCs are generally consistent with gasoline or petroleum-related materials. Specific VOC constituents include benzene, ethylbenzene, naphthalene, toluene, xylene, and methyl tert-butyl ether (MTBE). Vinyl chloride is also present. VOCs are soluble in groundwater to varying degrees, with MTBE being the most soluble. VOCs also have a tendency to partition into the soil vapor and may move in the vadose zone from their original source area. Over time, many petroleum-related VOCs are subject to natural decomposition in the subsurface by biological and chemical processes. As discussed previously, VOCs were not detected in OU2 soil gas at concentrations that would present a health risk.

SVOCs include heavy hydrocarbons and a series of compounds known as polyaromatic hydrocarbons (PAHs). These compounds are also associated with coal ash and asphalt. SVOCs are found sporadically in the soil, primarily benzo(a)pyrene. SVOCs are generally not as soluble in groundwater and do not partition to soil vapor as readily as VOCs. SVOCs have a greater tendency to adhere to soil particles within the subsurface and groundwater exceedances for SVOCs at the site is limited to total phenols in some “older” data sets.

PCBs and metals are widespread at the Site and are the primary contaminants. In general, PCBs have a low solubility in water and tend to be adsorbed onto soil particles. In water, a small fraction of PCBs may become dissolved and be transported with groundwater. Recent groundwater samples have not detected PCBs. PCBs attached to soil can become airborne and transported with dust. Metals are soluble in water to varying degrees, depending on the particular inorganic compound, its molecular state, and the physical conditions of the groundwater (e.g., temperature, pH, dissolved oxygen, etc.). Primary metals in groundwater include sodium, iron, and to a lesser extent, barium and lead. Metals that are attached to soil particles can also become airborne as dust. Future risk associated with PCBs and metals within airborne dust will be mitigated by implementing NYSDEC-approved remediation measures (e.g., hot spot removal, capping).

4.4 POTENTIAL FOR OFF-SITE MIGRATION

The primary pathways for off-site migration include groundwater and surface water run-off. As previously discussed, groundwater generally flows in a northwest direction towards Onondaga

Lake. Downgradient groundwater quality for the BCP Site is primarily assessed at monitoring wells MW-8A, 9, and 13. At these locations, PCBs were not detected in the most recent 2016/2017 sampling event. The only constituents with groundwater standard exceedances in these perimeter wells during the most recent sampling were iron and sodium. Both of these constituents also exceeded the groundwater standard in MW-7, which is an upgradient well for the larger Roth property. Sodium is a primary by-product associated with Solvay waste, which is ubiquitous near Onondaga Lake. Iron is a common mineral found in soil and it is primarily a concern in groundwater due to its ability to stain plumbing fixtures and laundry. MW-6 along the perimeter of OU3 had slight exceedances of benzene (3.4 µg/L, compared to a 1 µg/L standard) and MTBE (11.6 µg/L, compared to a guidance value of 10 µg/L). These constituents are only slightly over standards and have decreased substantially at this location since 2008.

Regional surface water drainage in the vicinity of the Site is generally toward Onondaga Lake. However, the vast majority of the Site drains inward to a topographic low spot that contains ponded surface water for almost the entire year. This ponded area (just west of OU2) receives direct runoff from the areas of the Site that have the most elevated PCB and metal concentrations in soil. As such, the majority of runoff from the most impacted portions of the property collects onsite and either infiltrates to groundwater in the immediate area or evaporates in the warmer months.

Based on the groundwater/soil sampling results and physical observations at the Site, significant offsite migration of contaminants from the BCP Site is not apparent.

5.0 NEED FOR REMEDIATION AND PROPOSED CLEANUP TRACK

As discussed in Section 2.4, there are sections of the BCP Portions of the Former Roth Steel property that have contaminant concentrations exceeding NYSDEC and USEPA soil cleanup objectives. Therefore, Site remediation is necessary. The exceedances primarily occur for PCBs and metals, although there are less frequent and localized exceedances for SVOCs. In evaluating remedial options, contaminant concentrations, as well as potential future use are considered. The Brownfield Program allows for a Track 4, "Restricted Use" Cleanup using the soil cleanup objectives in 6 NYCRR Part 375-6.8(b) or site-specific cleanup objectives, that must be approved by NYSDEC. For purposes of this evaluation, the Restricted Use Soil Cleanup Objectives (SCOs) on Table 375-6.8(b) will be considered as well as NYSDEC Policy CP-51 and the PCB cleanup levels established by USEPA in 40CFR Part 761.61 (TSCA). A Track 4 "Restricted Use" Cleanup also allows for long-term institutional or engineering controls to help mitigate future environmental and public health risks. These controls, which will be discussed in subsequent sections of this report, include limitations on soil excavation and restrictions on groundwater use.

A Track 1 "Unrestricted Use" cleanup will also be evaluated in the Analysis of Alternatives.

5.1 SOIL

5.1.1 Operable Unit 1

OU-1 is approximately 0.4 acres in size. It is situated at the very northern boundary of the site and contains a portion of the former ASR disposal cells. It is anticipated that OU-1 will remain undeveloped with restricted access (i.e., fenced). Given this potential scenario, NYSDEC Industrial Use and USEPA "low occupancy" SCOs appear to be most applicable at this time. According to CP-51 and 40 CFR 761.61, a level of 25 ppm for PCBs is acceptable for both surficial and subsurface soils provided that access is limited, and individual occupancy is restricted to less than an average of 6.7 hours per week. That is the anticipated scenario for this area. Based on the existing sampling data, Industrial Use SCOs are not exceeded in the top 1 foot. However, at one location ((16)2-4) PCBs are 38 ppm at a subsurface depth of 35 to 50 inches. The approximate area of the 25 ppm exceedance is shown on Figure 12. It is estimated that the soil volume exceeding 25 ppm is approximately 200 cubic yards. There is some uncertainty with this estimate since the lateral extent is not fully defined, and no samples were collected between the depths of 12 to 35 inches.

5.1.2 Operable Unit 2

OU-2 is about 13 acres in size and is being evaluated for future Commercial Use. As such, a PCB SCO of 1 ppm for the top 1 foot of soil and 10 ppm for subsurface soil is acceptable, considering NYSDEC thresholds. This cleanup level also satisfies the USEPA threshold (25 ppm) for "low occupancy" areas in OU-2. Subsurface PCBs exceed 10 ppm at three locations (P-17, (17) B-19, (17) B-22). In total, about 600 cubic yards of soil exceed the 10 ppm threshold (see Figure 12).

Based on existing sampling data, it is estimated that about 7 acres of surface area in OU-2 exceed the Commercial Use thresholds in the top 1 foot due to PCBs, metals, or SVOCs.

5.2 GROUNDWATER

As discussed in Section 2.5, there are limited impacts to on-site groundwater and downgradient perimeter wells only have exceedances for iron and sodium. However, these two constituents also exceed groundwater standards at the upgradient well location for the overall site. Elevated sodium commonly occurs around Onondaga Lake due to the past disposal of solvay waste in the region. Iron is a common mineral found in groundwater and elevated levels primarily present concerns to plumbing fixtures and laundry. Groundwater is not consumed in the area since the city provides drinking water from other sources. In addition, there are no groundwater users downgradient of the site. As such, groundwater does not present a significant threat to human health, or the environment and active remedial measures do not appear to be warranted. Any future development at the Site will include a restriction on groundwater usage for any purpose.

5.3 SUBSURFACE VAPOR

The Remedial Investigation collected two samples in the northern and southern part of OU-2. Other than hexane, elevated VOCs were not detected in the vapor samples. Hexane was found in a slightly elevated concentration at both locations, compared to reference data gathered by USEPA from indoor air surveys of many buildings. NYSDOH has no established vapor guidance value for this compound. In addition, NYSDEC has no established soil or groundwater standards for hexane. Since no buildings are currently planned for future site use, vapor mitigation is not needed.

6.0 REMEDIAL ACTION OBJECTIVES (RAOS)

Remedial action objectives (RAOs) are general goals developed for the protection of human health and the environment. Identifying these objectives requires an assessment of the media of concern, potential migration pathways, exposure routes, and potential receptors. These objectives, along with the standards, criteria, and guidelines (SCGs) are used to evaluate remedial options to protect human health and the environment.

6.1 PROPOSED REMEDIAL ACTION OBJECTIVES (RAOS)

Below are the general RAOs for the BCP portion of the Former Roth Steel Site. These RAOs are based on generic RAOs established by NYSDEC for BCP sites. NYSDEC Guidance Document DER-10 4.1 (c) (1) states that RAOs should be established for the remedy selection process, (i) from the generic RAOs as identified by the remedial investigation; or (ii) by developing site-specific RAO(s), where the generic does not address a unique site condition. Site-specific conditions at the Roth Site were considered in developing the RAOs.

6.1.1 Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation exposure to contaminants volatilizing from soil at levels exceeding NYSDOH or USEPA guidelines.

RAOs for Environmental Protection

- Prevent migration of soil contaminants that would result in groundwater, surface water, or sediment contamination.
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

6.1.2 Soil Vapor

RAOs for Public Health Protection

- Mitigate potential impacts to human health resulting from soil vapor intrusion into buildings if concentrations exceed NYSDOH or USEPA guidance values (elevated vapor

levels were not observed during this Remedial Investigation). At this time, no buildings are planned for the site.

7.0 ANALYSIS OF ALTERNATIVES

7.1 INTRODUCTION

This Alternatives Analysis (AA) evaluates remedial measures to address environmental impacts at the remaining BCP portion of the Site (OU-1, OU-2). As previously indicated, a remedy has already been implemented for OU-3. The AA has been prepared based on 6 NYCRR 375 (Sections 1.8, 3.8) and applicable portions of NYSDEC guidance document DER-10. As discussed in the RIR and earlier sections of this report, environmental impacts at the Site consist mainly of PCBs, metals, and SVOCs in soil. Limited groundwater impacts are also present (metals, VOCs).

The AA process includes the identification and screening of potential response actions. Following the initial screening, a detailed evaluation of the most viable remedial measures is then conducted using the following criteria that are listed in 375-1.8 (f).

- Overall protection of public health and the environment;
- Compliance with Standards, Criteria and Guidelines (SCGs);
- Long-term effectiveness;
- Reduction of toxicity, mobility or volume through treatment;
- Short-term effectiveness;
- Implementability;
- Cost effectiveness;
- Community acceptance;
- Land use.

DER-10 guidance identifies the elements that are to be presented in the AA, including an introduction, site description/history, summary of the remedial investigation, exposure assessment, discussion of RAOs, general response actions, screening of technologies, detailed analysis of alternatives, and remedy recommendation. The first five of these elements have already been discussed in prior sections of this document, since they overlap with the requirements for the RWP. The identification of general response actions, screening of technologies, detailed analysis of alternatives, and a remedial recommendation are presented below.

7.2 GENERAL RESPONSE ACTIONS

Based on the results of the remedial investigation activities, PCBs, metals, and SVOCs exceed soil cleanup objectives for Commercial and Industrial Use. In addition, groundwater quality exceedances exist for metals, and to a more limited extent, VOCs. This section describes the potential response actions that are available to address these impacts.

7.2.1 Soil Response Actions

Treatment

Treatment can be applied to soils to alter the physical or chemical nature of the material and to reduce contaminant mass, mobility, or toxicity. Treatment can be accomplished *in situ* or *ex situ* and typically includes physical, chemical, or thermal processes. Examples of soil treatment for metals, PCBs, and SVOCs include thermal methods, solidification/stabilization, and soil flushing or washing.

Soil Washing/Flushing

Soil flushing is the extraction of contaminants from the soil with water or other suitable aqueous solutions. In-situ soil flushing is accomplished by passing the extraction fluid through in-place soils using an injection or infiltration process. Extraction fluids must be recovered from the underlying aquifer and, when possible, they are recycled. Extraction fluids from soil flushing will increase the mobility of the contaminants, so provisions must be made for subsurface recovery. Recovered groundwater and flushing fluids with the desorbed contaminants will need treatment to meet appropriate discharge standards prior to recycle or release to a wastewater treatment works or receiving waterbody. Treatment of the recovered fluids results in process sludges and residual solids, such as spent carbon and spent ion exchange resin, which must be appropriately treated before disposal. Air emissions of volatile contaminants from recovered flushing fluids may need to be collected and treated. Residual flushing additives injected in the soil may also be a concern.

Soil washing can also be an *ex-situ* process to remove contaminants. The process removes contaminants from soils by dissolving or suspending them in the wash solution. Alternatively, contaminants are concentrated into a smaller volume of soil through particle size separation and gravity separation. Complex mixtures of contaminants in the soil (such as a mixture of metals, nonvolatile organics, and SVOCs) and heterogeneous contaminant compositions throughout the soil mixture make it difficult to formulate a single suitable washing solution that will consistently and reliably remove the different types of contaminants. Soil washing is generally considered a

media transfer technology. The contaminated byproducts generated from soil washing require offsite disposal.

Thermal Treatment

Thermal methods are typically *ex-situ*. Incineration uses high temperatures, 870°C to 1,200°C to volatilize and combust (in the presence of oxygen) halogenated and other organics, including PCBs. Often, auxiliary fuels are employed to initiate and sustain combustion. The destruction and removal efficiency for properly operated incinerators exceeds the 99.99% requirement for hazardous waste and can be operated to meet the 99.9999% requirement for PCBs and dioxins. Off gases and combustion residuals generally require treatment. Another thermal treatment method is low temperature thermal desorption. This method is a physical separation process and is not designed to destroy organics. Wastes are heated to volatilize water and organic contaminants. These contaminants are driven from the soil and concentrated in off-gases that are then condensed, producing a high concentration waste that must be disposed of.

Solidification/Stabilization

Contaminant solidification and stabilization are processes that are utilized to prevent contaminants from leaching into the surrounding environment. Solidification is the process by which contaminants are bound into a single mass, which is less permeable keeps the contaminants from migrating. Stabilization of contaminants is completed via a chemical reaction that chemically alters the contaminates, making the chemical less susceptible to leaching. Typically, for both processes, a chemical binding agent is introduced into the zone of contamination by injection and/or subsurface (in-situ) or surficial (ex-situ) soil mixing. Subsurface soil mixing is usually completed with a large auger. Surficial soil mixing would require excavation of the contaminated material and using excavators or windrow machines to mix material together. Subsurface material that has been subjected to solidification or stabilization is typically left in place. However, in some instances it is excavated and incinerated to ensure that no leaching will occur. Similarly, soils remediated ex-situ could be incinerated.

Onsite treatment of soil would require the installation of large treatment systems and staging areas. *Ex situ* treatment of soils would also require extensive handling of the excavated soils which may generate significant air emissions, as well as increased risk of impacts to site workers, adjacent properties, and future trail walkers. Incineration commonly is not well-received by the public.

There is significant uncertainty about the effectiveness of treatment technologies because of the variability in soil characteristics and contamination types at the Roth site.

Treatment residuals from separation techniques will require treatment or disposal, which will add to the total project costs and may require permits. Due to these public health risks, and operational/effectiveness concerns, these treatment technologies will not be further considered at the site.

Containment/Capping

Containment with a cap is an engineering control that effectively isolates contaminated soil. Containment technologies provide protection of public health and the environment by reducing the mobility of contaminants and eliminating exposure. Caps in the form of pavement, building foundations, or 1 ft. of soil or crushed stone are appropriate. Caps for TSCA purposes have specific requirements (e.g., concrete must be 6 inches thick). Institutional controls may also be necessary for long-term effectiveness. This response action is retained.

Excavation and Offsite Disposal

This response action consists of the removal and offsite disposal of impacted soils. Excavation can be accomplished using conventional construction equipment and methods. Excavation would also require the replacement of soil with clean material from offsite sources. Crushed concrete from onsite building demolition activities could also be used to fill excavations, depending upon residual concentrations in the concrete. Excavation and offsite disposal are retained for soil response action.

Institutional Controls

Institutional controls are response actions that establish legal and administrative restrictions on future use. Types of institutional controls include access controls, environmental easements or deed restrictions, and established procedures for managing future ground-intrusive activities (e.g., Site Management Plan, Health and Safety Plans). Periodic certification may be required to document the continued effectiveness of the institutional controls. This response action is retained.

7.2.2 Groundwater Response Actions

Pump and Treat

This response action consists of the removal and treatment of groundwater. Extraction can be accomplished by installing a network of wells to pump water from the ground into a treatment

system. The above-ground treatment system is designed to treat for the known contaminants. The system discharges treated water to a permitted outfall.

Groundwater extraction systems require extensive operations and maintenance activities that may continue for many years without effectively improving groundwater quality. In general, metals and many organic contaminants have low solubility and prefer to adsorb onto soil particles rather than dissolve into groundwater. As such, pump and treat systems are limited by the mass-transfer rates of the compounds.

Since groundwater is not significantly impacted at the Site, nor is it used for drinking. A groundwater extraction system will not be further considered.

Enhanced Bioremediation

Enhanced bioremediation is the process of breaking down contaminants by chemical and biological processes. Remediation processes are conducted by injecting a solution into the contaminant zone in order to chemically remediate the contaminants while also providing a food source for the existing micro-organisms in the soil. The processes by which these organisms are naturally breaking down contaminants onsite will be enhanced by the injection solution. Because the system is setup to enhance the existing subsurface micro-biology, analyses are typically completed on the soil or groundwater to determine if there is existing bioremediation occurring onsite.

This strategy is typically used to remediate VOCs. Samples collected at the Site indicate that VOCs are not significantly elevated in soil and are relatively localized in groundwater. This technology is generally not applicable to PCBs and metals, which are the primary onsite contaminants. This treatment technology will not be further considered at the site.

Institutional Controls – Institutional controls are response actions that establish legal and administrative restrictions on future use. Types of institutional controls include access controls (e.g., restrictions on groundwater use), environmental easements or deed restrictions, and established procedures for managing future ground-intrusive activities (e.g., Site Management Plan, Health and Safety Plans). Municipal groundwater infrastructure is available to the Site which would prevent consumption of the Site's groundwater. Periodic certification may be required to document the continued effectiveness of the institutional controls. This response action is retained.

7.3 SUMMARY OF RETAINED RESPONSE ACTIONS

The table below summarizes the response actions retained for detailed remedial analysis.

Medium	Retained Response Actions
Soil	Excavation, Offsite Disposal, Capping, Institutional Controls
Groundwater	Institutional Controls

7.4 EVALUATION OF REMEDIAL ALTERNATIVES

This section presents the detailed evaluation of the retained remedial technologies discussed in the prior section. Each remedial alternative is evaluated against the nine criteria listed in 6 NYCRR Subpart 375-1.8(f) and Section 4.3 of DER-10.

7.4.1 Selection of Remedial Alternatives

Two alternatives will be presented to remediate environmental impacts at the Site. In accordance with the NYSDEC's Brownfield Cleanup Program requirements, one of these alternatives would achieve conditions necessary for Track 1 Unrestricted Use. The selected alternatives are:

- Alternative 1 – Restoration to Unrestricted Use (Track 1).
- Alternative 2 – Restoration to Commercial Use in OU-2 and Industrial Use in OU-1 (Track 4).

Alternative 1 would achieve Unrestricted Use through the excavation and offsite disposal of all surface and subsurface soil, as well as building slabs with PCB concentrations greater than 1 ppm, that exceeds the Part 375 Unrestricted Use criteria.

Alternative 2 would achieve Restricted Use criteria through a combination of capping and excavation, offsite disposal, institutional and engineering controls. Soils in the top 1 ft. that do not meet the Commercial Use SCOs in OU-2 would be covered with 1 ft. of soil, crushed stone, pavement or concrete. Subsurface soils deeper than 1 ft. with PCBs of 10 ppm or greater would be excavated from OU-2. In OU-1, surface soils do not exceed the Industrial Use SCOs, and capping is not necessary. Subsurface soils that exceed Industrial Use criteria would require excavation and offsite disposal. OU-1 will be fenced off and inaccessible. Building slabs in OU-2 with PCB concentrations of less than 1 ppm can be used as a cap, or crushed and used as backfill at the site. Building slabs with PCBs between 1 and 10 ppm could be crushed and placed onsite in

areas that are capped with pavement, concrete, or 1 ft. of clean soil/crushed stone. Building slabs with PCB concentrations greater than 10 ppm will be removed from the site. An environmental easement would establish protections and provide notice to properly limit potential human or environmental exposure to contaminants. These are discussed in Section 8.2 in greater detail.

7.4.2 Evaluation Criteria

The detailed evaluation of the remedial alternatives considers the following criteria, consistent with BCP regulation and guidance:

- Overall Protectiveness of Public Health and the Environment
- Compliance with SCGs
- Long-Term Effectiveness and Permanence
- Reduction of Toxicity, Mobility, or Volume of Contamination
- Short-Term Impacts and Effectiveness
- Implementability
- Cost Effectiveness
- Community acceptance
- Land Use

These criteria are further described below.

Overall Protectiveness of Public Health and the Environment

Protection of public health and the environment is evaluated on the basis of estimated reductions in the potential for both human and environmental exposure to contaminants for each remedial alternative. This is a "threshold" criterion that must be met. The evaluation focuses on whether a specific alternative achieves adequate protection under the conditions of the site's future use and how site risks are eliminated, reduced or controlled through the remedy. This factor evaluates the remedial alternative's ability to achieve the RAOs and overlaps with other evaluation criteria, particularly long-term effectiveness and permanence, short-term effectiveness, and compliance with SCGs.

Compliance with Standards, Criteria, and Guidance (SCGs)

This criterion is an evaluation of a remedial alternative's ability to comply with applicable environmental laws, regulations, standards, and guidance. The specific remedial alternatives for the Site were evaluated to determine whether the remedial alternative would achieve compliance with the SCGs listed in Section 2.3. This is also a "threshold" factor that must be met.

Long-Term Effectiveness and Permanence

This criterion evaluates the long-term effectiveness of the alternatives after implementation. If contamination remains onsite after the selected remedial alternative has been implemented, the following items are evaluated:

- The magnitude of the remaining risks to human health and the environment; and
- The adequacy of the engineering and institutional controls intended to limit the risk.

Reduction of Toxicity, Mobility, or Volume with Treatment

This criterion evaluates the alternative's ability to reduce the toxicity, mobility, and/or volume of contamination by treatment. Preference is given to remedial alternatives that permanently and significantly reduce the toxicity, mobility, or volume of the wastes, within the following hierarchy: destruction; separation or treatment; solidification or chemical fixation; and control and isolation.

Short-Term Impacts and Effectiveness

This criterion evaluates the potential short-term adverse impacts and risks of the remedial alternative upon the community, the workers, and the environment during remedy construction and/or implementation. Potential short-term impacts to be considered are dust generation, noise increased traffic and general nuisance conditions. The length of time needed to achieve the remedial objectives is estimated and included in the evaluation.

Implementability

This criterion evaluates the technical and administrative feasibility of implementing the remedial alternative. Technical feasibility includes the difficulties associated with the construction and the ability to monitor the effectiveness of the remedial alternative. Administrative feasibility includes the availability of the necessary personnel and material along with potential difficulties in

obtaining specific operating approvals, access for construction, permits, etc. for remedial alternative implementation.

Cost Effectiveness

This criterion includes an evaluation of the overall project. A remedy is cost-effective if its costs are proportioned to its overall effectiveness.

Community Acceptance

Community acceptance evaluates any issues and concerns that the community may have regarding each of the alternatives. Community acceptance will be gauged through the 45day statutorily required public comment period. Public comments will be considered by NYSDEC and incorporated into the final approval of the RWP.

Land Use

This criterion includes an evaluation of the current, intended and reasonably anticipated future use of the Site and its surroundings, as it relates to the remedial alternative, when unrestricted levels would not be achieved.

7.4.3 Evaluation of Remedial Alternatives

This section compares the alternatives using the evaluation criteria presented in Section 7.4.2. It considers whether an alternative satisfies the criteria, meets the minimum applicable standards and is suitable for the Site. After each individual factor, a summary statement is provided regarding the relative merits of Alternative 1 or 2, compared to that factor. At the end of the section, the most favorable alternative is identified.

Overall Protectiveness of Public Health and Environment

Alternative 1:

- Offers slightly greater overall protectiveness of public health and the environment than Alternative 2.
- Includes the removal of all impacted soil to restore the Site to conditions suitable for Unrestricted (residential) Use.
- Requires no institutional controls to address residual contamination at the site.

Alternative 2:

- Protective of public health and the environment under Restricted Use conditions.
- Exposure to contaminated soils eliminated by capping and excavation.
- Requires institutional controls (Site Management Plan, environmental easement) to address subsurface soil contamination and groundwater use.

Compliance with the SCGs

Alternative 1:

- Offers the greatest ability to comply with the SCGs. All contaminated soils in excess of SCOs for Protection of Groundwater and Protection of Human Health (residential use) would be removed.

Alternative 2:

- Full compliance with SCOs in the top 1 ft., those soils with the greatest exposure potential.
- Some residual contamination at depth (below 1 ft. or cap component). Limited exposure potential to soil, and groundwater cannot be used.

Long-Term Effectiveness and Permanence

Alternative 1:

- Provides long term effectiveness and permanence by achieving complete removal of contaminated media.

Alternative 2:

- Provides long-term effectiveness and permanence; however, requires engineering controls (cap system, site management plan) and institutional controls (environmental easements). Does not achieve complete site cleanup.

Reduction in Toxicity, Mobility, or Volume with Treatment

Alternative 1:

- Excavating and landfilling all impacted soils will not reduce the overall contaminant mass. Rather, the contaminated soils are transferred from onsite to an offsite location. This is a control and isolation technology.

Alternative 2:

- Similar to Alternative 1, Alternative 2 does not reduce the overall contaminant mass. Less soil will be taken offsite, and a cap will be placed. This is also a control and isolation technology.

Short-Term Impacts and Effectiveness

Alternative 1:

- Would create significant short-term impacts. Extensive soil excavation would cause construction traffic, noise, vibration, dust, and possible impacts to neighboring properties. Large quantities of fill would need to be trucked into the site to replace the excavated material.

Alternative 2:

- Less disruption and reduced short-term impacts to traffic, noise, vibration or dust will occur because the extent of excavation and offsite disposal will be significantly less. The time duration of the remedial activities for Alternative 2 is also less.

Implementability

Alternative 1:

a. Technical Feasibility

- While feasible to implement, this remedy would require the extensive use of excavation equipment and movement of trucks in/out of the site along Hiawatha Blvd. Valuable landfill space will also be consumed.

b. Administrative Feasibility

- Administrative obstacles would be relatively minor, and consistent with commonly employed remediation activities.

Alternative 2:

- This Alternative is technically feasible to implement and requires the use of fewer construction vehicles and resources. Less landfill space will be consumed than Alternative 1 and less backfill will be required at the site.

a. Administrative Feasibility

- Would require more administrative activities associated with the establishment of Environmental Restriction Easements (EREs). However, these controls are commonly used and not problematic to implement.

Community Acceptance

The RWP will be subject to public comment to more accurately gauge community acceptance. A few key community acceptance considerations are provided below.

Alternative 1:

- Achieves Unrestricted Use objectives
- Eliminates long-term potential health risks to community members interacting with site environment, without the use of engineering/institutional controls.
- Site remediation activities will be more disruptive.

Alternative 2:

- Will take less time to remediate the site
- Less disruptive remedy than Alternative 1 from a traffic, noise, vibration, and dust perspective

Cost Effectiveness

Alternative 1 would involve extensive excavation to achieve Unrestricted Use. Excavation would be required throughout the majority of OU-2, with excavation depths ranging from 2 to 10 feet (max. depth near B21/MW-10A). Approximately 50,000 cy of soil would need excavation and disposal from OU-2. The OU-1 area would require excavation to estimated depths ranging from 2 to 9.5 feet (max depth at (16) 2-4). The removal volume in OU-1 would be approximately 1830 cy, resulting in an OU-1/OU-2 combined soil removal volume of 51, 830 cy. Cost estimates below are based on the following assumed unit rates: 1.5 tons/cubic yard; non-hazardous soil (excavation, transport, disposal) $90/cubic yard; and backfill (purchase, spread) $35/cubic yard

- Excavation, offsite disposal, and backfill: 51,830 cy x $125 per cy = $6,478,750
- Excavation, crushing and offsite disposal of building slabs: $200,000
- Confirmatory Sampling Cost= $50,000 (~800 samples)
- Engineering Cost = $650,000 (10% of capital costs)
- Total Cost = $7.4 million

Alternative 2:

It is estimated that 200 cubic yards in OU-1 and 600 cubic yards in OU-2 will require excavation and offsite disposal at the unit rates provided above. In addition, about 7.1 acres would require a cap. Of this, 6.7 acres will be used for parking and will require a 1 ft. crushed stone layer. The other 0.4 acres will be capped with 1 ft. of soil. Proposed remediation areas are shown on Figure 12. A 1-ft. thick soil cap would cost about $57,000 per acre based on $35 per cubic yard and a 1-ft. thick crushed stone cap would cost about $75,000 per acre based on $46 per cubic yard.

Six former buildings in OU-2 were demolished in 2018, however, the floor slabs still remain. Prior to the demolition activity, PCB tests were made of the concrete floors and the results are listed on Table 11. As shown on that table, three of the former floor slabs (Building 3, 4, 5) had PCB levels less than 1ppm. As such, these slabs could be crushed and used on-site as unrestricted fill. Parts of the Building 3 and 5 slabs may also be left in place. The Building 2 slab has PCB levels that are between 2.3 and 6.4 ppm. This slab would need to be capped or alternatively, it could be crushed and used as backfill beneath a 1 ft. thick cap. Portions of the slabs of Buildings 1 and 6 had PCB levels greater than 10 ppm but less than 25 ppm. These sections of the former slabs could be broken up and used to backfill the proposed soil excavation area in OU-1, since the PCB concentrations are less than the Industrial Use cleanup level of 25 ppm. Alternatively, the concrete from these floor sections could be taken for offsite disposal. Remaining sections of the Buildings 1 and 6 slabs can be used on site as unrestricted fill (floor sections with PCB samples less than 1 ppm) or they may be capped in-place or used as fill below a cap (floor sections with PCBs less than 10 ppm).

- Soil excavation (hot spot), offsite disposal, and backfill: 800 cy x $125 per cy = $100,000
- Soil Cap: 0.4 acres x $57, 000 = $23,000
- Crushed Stone Cap: 6.7 acres x $75,000 = $503,000
- Fencing for OU-1: $25 per linear ft. x 700 ft. = $18,000
- Building Foundation Processing/Removal: $150,000
- Confirmatory Sampling Cost = $6000 (100 Samples)
- Engineering, ERE Costs = $65,000
- Total Cost = $865,000

Land Use

Alternative 1:

- Site could theoretically be used for residential purposes subject to local zoning ordinance. Given the surrounding land uses, and the choice of alternate residential properties, it is unlikely that the Site would be used for residential purposes.

Alternative 2:

- The site is currently surrounded by commercial, industrial, and recreational (Lake Trail) uses.
- Future uses of the site that are commercial or recreational (cleanup goal for Alternative 2) would be consistent with the current surrounding uses.

7.4.4 Summary of Alternatives Comparison to Criteria

Evaluation Criteria	Substantially Meets Criteria	
	Yes	No/Questionable
Overall Protection of Human Health and the Environment	Alternatives1 & 2	
Compliance with Standards, Criteria, and Guidance (SCGs)	Alternatives1 & 2	
Short-Term Effectiveness and Impacts	Alternative 2	Alternative 1
Long-Term Effectiveness and Permanence	Alternative 1	Alternative 2
Reduction of Toxicity, Mobility, or Volume with Treatment		Alternatives 1 & 2
Implementability	Alternative 2	Alternative 1
Cost Effectiveness	Alternative 2	Alternative 1
Land Use	Alternatives* 1 & 2	
Notes: *Alternative 1 cleanup would allow residential use, which is not consistent with surrounding land use.		

7.5 SELECTED REMEDY

Each of the two alternatives meet the threshold RAOs for Protection of Public Health and compliance with SCGs. As discussed in the previous sections, Alternative 1 does not meet the

evaluation criteria (compared to Alternative 2) for implementability, cost effectiveness, or short-term effectiveness.

Neither Alternative reduces the toxicity, mobility or volume of contamination. Alternative 2 presents a readily implementable and cost-effective solution. It is the preferred alternative because it achieves the RAOs, is most implementable, further eliminates public exposure to contaminants, has a high probability of success, and is the least disruptive to the surrounding community.

The selected Track 4 remedy (Alternative 2) meets the criteria provided by the BCP program (most importantly the protection of public health and the environment) and allows future uses that are consistent with surrounding land uses. An easement to restrict groundwater use and soil disturbance will be in place at the Site that will be maintained with the selected remedy for the site.

8.0 ENGINEERING DESIGN AND IMPLEMENTATION

The selected remedy, Alternative 2, includes engineering and institutional controls. The engineering controls provide "hot-spot" soil removal and capping portions of the site with crushed stone, clean soil, and possibly concrete/asphalt sidewalks.

The institutional control measure consists of an environmental easement conforming to Article 71 Title 36 of ECL, with deed restrictions prohibiting use of groundwater. A Site Management Plan to control future soil disturbance will also be established.

8.1 ENGINEERING CONTROLS

8.1.1 Soil Cap / Cover System

Areas that exceed the Commercial Use SCOs in the top 1-ft. will be capped with one foot of clean soil or crushed stone, unless they are covered by the pavement or concrete. Figure 12 shows the proposed cap areas. As shown on that figure, a rectangular area just south of MW-10A already has a solid concrete surface that meets the capping requirement. The extent of the cap was determined by the sampling results plus the general observation of surface debris. In some areas a cap is proposed to cover surface debris even though it is not required, based on soil test results. Additional surface sampling (0 to 2 inches) may be needed to verify cap limits. Samples will be analyzed for PCBs, metals, and PAHs. Sampling locations will be coordinated with DEC and DOH.

The design criteria for soil capping are prescribed in guidance (Final Commissioners Policy CP-51 Soil Clean Up Guidance Section V.B.2). The guidance stipulates soil cap cover thickness (1 foot for Commercial Use) and the required capping soil quality (SCOs in 6NYCRR Table 375-6.8(b)). For material originating from off-site sources, the soil quality criteria will be met by complying with sections of DER-10 Section 5.4(e) that apply to off-site sources, including pre-screening any off-site source of fill material. All material that meets the SCOs is considered clean.

Prior to bringing any material on site, the "Request to Import/Reuse Fill or Soil" form will be completed and submitted to NYSDEC. As part of that process, OCIDA will work with NYSDEC to determine the necessity for chemical testing of the various materials. According to DER-10, it does not appear that any testing is required for crushed stone that is obtained from a New York State DOT certified source (per DER-10 Section 5.4 (e)(5)). Sampling is required for all imported soil used as backfill or cover material, including soil from a commercial supplier. Additionally, per NYSDEC guidance, soil imported to a site for use as cover or backfill must be tested for 1,4-dioxane and per- and polyfluorinated substances (PFAS).

8.1.2 Soil Excavation Areas

OU-1

Soil with a PCB concentration greater than the Industrial Use SCO of 25 ppm in OU-1 will be excavated. Soil at a depth of 35" to 50" bgs at boring (16) 2-4 exceeded this threshold. Initially, a 40 ft. by 40 ft. area centered at this sample location will be excavated. The upper interval of 0 to 12", which tested below 25 ppm for PCBs, will be removed and temporarily stockpiled on poly sheeting. Soil between 12" and 35" bgs will be considered to have a PCB concentration greater than 25 ppm, unless pre-excavation sampling confirms otherwise. Based on existing data, removed soil is non-hazardous waste and will be disposed of at a permitted solid-waste facility. Composite confirmatory samples will be collected from the side walls of the excavation. If necessary, additional lateral excavation will be undertaken to achieve the 25 ppm cleanup level. Bottom confirmatory samples are not necessary since prior sampling data has indicated that soil below 50" has a PCB concentration less than 25 ppm. The estimated removal volume, assuming a 3.5 ft. cut over a 1600 sq. ft. area, is about 200 cubic yards. The excavation will be backfilled with clean fill from off-site or on-site soil/crushed concrete having PCBs less than 25 ppm. All offsite backfill will be tested per DER-10 and NYSDEC PFAS Guidance.

OU-2

The PCB subsurface cleanup level of 10 ppm for Commercial Use was exceeded in three soil borings, B-19 (2-4'), B-22 (2-4'), and P-17 (4'). Pre-excavation samples may be collected above and below the depth range of exceedance in B-19 and P/BH-17 to establish the vertical exceedance boundaries. Alternatively, the soil will be considered to be greater than the 10 ppm threshold and will be removed. Based on existing data, the excavated soil is non-hazardous waste and will be disposed of at a permitted solid-waste landfill. Soil from 0 to 2' at B-22 is below 10 ppm; therefore, the upper interval can be excavated and placed back in the hole as backfill. Initially, a 40 ft. by 40 ft. area, centered at each of the three sample locations will be excavated. Composite confirmatory samples will be collected from the side walls of all three excavated areas and the bottoms of excavated areas from B-19 and P/BH-17. If necessary, additional vertical and lateral removal will be undertaken to achieve the 10 ppm cleanup level.

The estimated removal volume, assuming a 2 ft. cut over a 1600 sq. ft. area for B-22, and a 4 ft. cut over a 1600 sq. ft. area for both B-19 and P-17, is about 600 cubic yards. The excavations will be backfilled with clean fill from off-site or on-site soil/crushed concrete having PCBs less than 10 ppm. All offsite backfill will be tested per DER-10 and NYSDEC PFAS Guidance.

Prior to completing any remediation activities, a SICDN will be submitted to USEPA for approval under TSCA. The SICDN may be jointly submitted with a Final Remedial Workplan.

Construction activities will be performed by OSHA Hazwoper trained staff in appropriate PPE. The work will also be subject to a general excavation plan, which is provided in Appendix C.

Equipment Decontamination

Following the excavation activities, the contractor will decontaminate equipment that has contacted PCB containing material. An alternate decontamination method (as specified below) is being requested under 40 CFR 761.79 (h). Initially, this will include the physical removal/brushing (dry conditions) of any debris from excavator/buckets or arms. Following this step, there will be a wiping/wash step using cloths, potable water and a commercial detergent/cleaning agent such as "Simple Green" or "Alconox". All rags and residues will be containerized for proper offsite disposal. At the completion of these activities, representative portions of equipment (e.g., bucket, arm ends, treads, etc.) that potentially contacted PCB-containing material will have wipe tests performed for PCB analyses. Three wipe samples per equipment type will be tested. The equipment will be determined to be clean if the wipe tests are less than 10 µg per 100 cm^2. Materials that do not achieve this level will be decontaminated again until satisfactory results are obtained. If necessary, other decontamination fluids such as kerosene or terpene hydrocarbons may be used if a soap/detergent does not achieve the required results.

8.1.3 Vapor Control System

Based on the existing RI data, the need for vapor mitigation at this site has not been established and no buildings are currently planned. The potential for soil vapor intrusion (SVI) will be evaluated if future development plans change and a building is proposed.

8.2 INSTITUTIONAL CONTROLS

This RWP provides for the implementation of institutional controls and engineering controls for the Site. The non-physical and physical controls will provide the necessary protections and provide notice to properly limit potential human or environmental exposure to contaminants. Collectively, the controls include establishment of an environmental easement that will:

- Ensure that use of the Site is limited to Commercial Use in OU-2, Industrial Use in OU-1, and that the engineering controls, as described herein, remain in place;

- Ensure appropriate future use and that future property owners are aware of the existing conditions and restrictions at the BCP site;
- Include a restriction prohibiting use of groundwater;
- Include required notifications prior to commencement of site activities;
- Include notice of and information relating to an excavation work plan, identifying requirements in the event of any site activities that involve compromising the integrity of any part of the cap, exposing or disturbing soil beneath the cap, which will be included as part of the Site Management Plan;
- Conduct annual inspection and certification program requiring the owner to certify that the institutional and/or engineering controls are in place, have not been altered, and are still effective, which will be described in the Site Management Plan;
- The Site Management Plan will include a provision for the evaluation of the potential for SVI for any buildings constructed on the site, including a provision for implementing actions recommended to address exposures related to SVI.

9.0 REMEDIAL CONSTRUCTION ACTIVITIES

This RWP provides that remedial construction activities include pre-mobilization work such as obtaining any necessary permits, followed by mobilization, site preparation, traffic control, security, health and safety planning, air monitoring, and off-site transportation and disposal of waste. A description of the remedial construction activities are as follows.

9.1 CONSTRUCTION HEALTH AND SAFETY PLAN

A site-specific Health and Safety Plan (HASP) has previously been prepared and submitted for this site in the September 2016 Remedial Investigation Work Plan. All contractors and subcontractors performing work on the Site are required to comply with the requirements of this HASP and prepare their own activity-specific HASP.

9.2 COMMUNITY HEALTH AND SAFETY

9.2.1 Community Air Monitoring

The selected remedy includes a Community Air Monitoring Plan (CAMP) providing volatile organic compound and particulate monitoring during all ground intrusive remediation activities.

The Community Air Monitoring Program required to implement this remedy is provided in the General Excavation Plan (Appendix C).

9.2.2 Site Access and Traffic Control

See sections 3.0 and 6.0 of the HASP for information regarding site access and designation of responsibilities.

9.3 DATA QUALITY OBJECTIVES QUALITY AND ASSURANCE/QUALITY CONTROL PLAN

Analytical sampling will be used for confirmatory characterization of soils. Sampling will follow the QA/QC protocols presented in Appendix C of the September 2016 Remedial Investigation Work Plan. Samples will be tested using USEPA methods and reporting, along with the NYSDEC Analytical Services Protocol. All analytical data packages will be provided to NYSDEC in Category B (as defined by ASP) deliverable format as part of the Final Engineering Report.

9.4 STORMWATER POLLUTION PREVENTION PLAN

An Erosion and Sediment Control (ESC) Plan will be required to be prepared by the remedial contractor. The controls will be designed in accordance with New York State Standards and

Specifications for Erosion and Sediment Control. A stormwater pollution prevention plan (SWPPP) will also be prepared prior to submitting a Notice of Intent for coverage under the General Stormwater Permit for Construction Activity. The SWPPP will be prepared in accordance with the requirements of the general permit.

9.5 PERMITS

The construction contractor will obtain federal, state, and city permits, as necessary.

9.6 SITE PLANS AND AS-BUILT DRAWINGS

This RWP includes a scaled site map (Figure 12) showing the preliminary limits of the proposed remedial program. As-built drawings will be submitted showing the results of the construction activities as part of the Final Engineering Report (FER). The as-built drawings will show the final limits and elevations of excavations, vapor control system component locations (provided that a VCS is deemed necessary), and limits of backfill. Pre-excavation and confirmatory sampling results will also be provided in the FER.

9.7 SITE SECURITY, CONTROL, AND ACCESS

Site security, control, and access will be governed by the existing HASP.

9.8 EQUIPMENT AND MATERIAL STORAGE AND LAY DOWN AREAS

Storage of equipment and materials will be limited to the contractor lay down areas within the Site. These areas will be identified on future site development plans once a specific use and site design is developed.

9.9 PPE, EQUIPMENT AND PERSONNEL DECONTAMINATION PROCEDURES

The previously submitted HASP in the RIWP provides the general requirements for PPE, equipment and decontamination procedures. The remedial contractor will be required to supplement this with their own activity-specific HASP, along with PPE requirements.

9.10 VAPOR, ODOR, AND DUST CONTROLS

Vapor, odor, and dust controls are addressed in the existing HASP and General Excavation Plan (Appendix C). This RWP includes use of a community air monitoring plan throughout the duration of remedial activities that disturb potentially contaminated soil.

9.11 GROUNDWATER

If groundwater is removed during excavation, it will be sampled, collected and disposed of off-site in accordance with existing regulations, unless permission for onsite disposal is provided by NYSDEC.

9.12 UTILITY DESIGNATION

New York State rules and regulations govern utility mark-out completion. Dig Safely New York will be notified for utility mark out requests at least 72 hours prior to initiating excavation fieldwork. In addition, a review of any existing utility maps will be made prior to any ground disturbance.

10.0 REPORTING AND DOCUMENTATION

This RWP involves periodic progress reporting and maintenance of project records during remedial construction to enable involved parties (e.g., overseeing engineer and project managers) to track the project with respect to schedule and the requirements of the RWP. Additionally, after completion of remedial construction, an FER, including a comprehensive report of remedial action, will be prepared as described below.

10.1 MONTHLY PROGRESS REPORT

Monthly Progress Reports will be prepared and submitted after approval of the RWP, and remediation activities commence.

10.2 ON-SITE RECORD KEEPING/DOCUMENTATION

Throughout implementation of the remedial action, records are maintained by the construction contractor and/or engineer performing construction inspections to document activities completed on the Site.

10.3 FINAL ENGINEERING REPORT

The remedial activities completed pursuant to this RWP by OCIDA in OU-1 and OU-2 will be documented in a Final Engineering Report (FER). An FER for remedial activities performed in OU-3 will be prepared by OCDOT. The FER will include the following:

1. Description of remedial actions performed;
2. Deviations from the RWP, if any;
3. Copies of records maintained during the remediation;
4. Problems encountered during construction and their resolution;
5. A discussion on the quantification and listing of waste/contaminants treated or removed from the site;
6. Detailed “as-built” drawings showing the surveyed limits of the excavation, the locations of documentation samples, construction details;
7. Copies of all records documenting off-site disposal of waste material;
8. Documentation of sampling results;
9. A summary of visual soil screening results;

10. An estimate of the volume of excavated soil;
11. A summary of laboratory analytical results of soil stockpile sampling and a compilation of laboratory analytical data reports;
12. Documentation including photographs of excavation and cap area; and
13. The FER will include a certification by a Professional Engineer registered in New York State, stating that the work was implemented, and construction activities were completed in substantial conformance with this RWP and that the engineering and institutional controls are implemented according to state and local codes and regulations.

Additionally, the FER will document that the remedial objectives of the remedial program have been or will be achieved. All sampling results will be submitted to EQuIS and successfully loaded prior to approval of the final FER.

10.4 OPERATION, MAINTENANCE, AND MONITORING PLAN

An Operation, Maintenance and Monitoring (OM&M) Plan will be developed for the Site and included in the FER to provide procedures to be followed in order to properly manage any residual contamination left in place following completion of the remedial action. This will include inspection and maintenance of the implemented engineering controls and institutional controls. This plan will also include a section for management of future soil excavations and environmental compliance.

11.0 PROJECT MANAGEMENT

11.1 KEY PARTICIPANTS AND RESPONSIBILITIES

Key participants involved in the remediation and development of this Site under the Brownfield Cleanup Program include the following:

Key Participants	Primary Responsibilities
Site Owner: Onondaga County Industrial Development Agency (OCIDA)	Procure and direct contractors and consultants for design, remedial construction and site development in accordance with approved construction documents.
Regulatory Agencies: NYSDEC, NYSDOH, and USEPA	Regulatory oversight.
Environmental/Engineering Consultant	Provide environmental engineering planning and field oversight with respect to mass excavation and associated soil management activities. Oversee implementation and reporting for remediation and construction in accordance with development plans. Reporting, construction inspection, and record keeping, related to construction of any necessary vapor control system, and preparing the Final Engineering Report.
Primary Contractor and Subcontractors	Furnish labor, material, supplies, etc., for remedial construction and site development in accordance with approved plans.

11.2 PROJECT COMMUNICATION AND MANAGEMENT

This RWP provides that project meetings occur throughout the BCP Project to discuss work progress, plan upcoming activities for the work, and discuss any unanticipated site conditions encountered. The construction contractor's superintendent is required to attend project meetings, as well as the construction contractor's Health and Safety Officer and QA/QC Officer, when discussion of issues related to their responsibilities is required.

12.0 REFERENCES

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Spectra Environmental Group, Inc. "Revised BCP Application – 800 Hiawatha Boulevard West (former Roth Steel) Site BCP# C734083." Latham, New York. November 6, 2015.

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Passero Associates. "Phase II Environmental Site Assessment, Roth Steel Corporation, 800 Hiawatha Boulevard West, Syracuse, New York 13204." Rochester, New York. November 2007.

W.Z. Baumgartner & Associates, Inc. "Residue Characterization Report." Brentwood, Tennessee. December 1993.

Faltyn, N.E. Oil Contamination Study, Roth Steel Corp., Hiawatha Boulevard, Syracuse, New York. October 1968.

TABLES

Table 1A: Historical Soil Analytical Results - PCBs

PCBs	Soil Cleanup Objectives				Passero Associates (Correspond to "P Locations") October 2007													
	Restricted Residential	Commercial	Industrial	Hazardous Waste Criteria	BH-1 (0'-4')	BH-1 (4'-8')	BH-2 (0'-4')	BH-2 (4'-8')	BH-3 (0'-4')	BH-3 (4'-8')	BH-4 (0'-4')	BH-4 (4'-8')	BH-12 (0'-8')	TP-13 (4')	TP-14 (4')	BH-15 (7'-8')	TP-16	BH-17 (4')
Total PCBs	1	1	25	50	ND	ND	ND	ND	ND	ND	ND	ND	ND	**7.36**	**3.5**	ND	ND	**29.47***

PCBs	Soil Cleanup Objectives				O'Brien and Gere, June 2013 2008														
	Restricted Residential	Commercial	Industrial	Hazardous Waste Criteria	B01 (0'-0.5')	B06 (0.5'-1.0')	B08 (0'-0.5')	B09 (4.5'-5.0')	B10 (0.5'-1.0')	B12 (0'-0.5')	B13 (0.5'-1.0')	B15 (0'-0.5')	B16 (0.5'-1.0')	B18 (0.5'-1.0')	B19 (0'-0.5')	B22 (0'-0.5')	B24 (1.5'-2.0')	B27 (0'-0.5')	B29 (0'-0.5')
Total PCBs	1	1	25	50	0.513	0.586	0.6	0.203	0.6	0.54	0.236	0.364	**2.73**	**1.64**	0.67	0.334	**1.84**	0.97	0.179

PCBs	Soil Cleanup Objectives				O'Brien and Gere, June 2013 2010									
	Restricted Residential	Commercial	Industrial	Hazardous Waste Criteria	B37 (0' - 2')	B37 (2' - 4')	B37 (5' - 7')	B38 (0'-1')	B39 (0'-1')	B47 (0'-1')	B48 (0'-1')	MW-10 (0'-2')	MW-10 (6'-8')	MW-11 (0'-2')
Total PCBs	1	1	25	50	0.52	**3.4**	0.271	**1.9**	**15.2**	**2.1**	**3.2**	**5.78**	0.42	**1.05**

PCBs	Soil Cleanup Objectives				O'Brien and Gere, June 2013 2010		2011		
	Restricted Residential	Commercial	Industrial	Hazardous Waste Criteria	MW-11 (10'-12')	MW-13 (2'-4')	B31 (0'-1')	B32 (0' - 1')	B33 (0'-1')
Total PCBs	1	1	25	50	0.036	0.611	0.55	**2.09**	0.81 J

Notes:

1. All results in mg/kg or ppm.
2. **Bold Red** Concentration exceeds Restricted Residential and Commercial Soil Cleanup Objectives.
3. **Bold Red** Concentration exceeds Hazardous Waste Criteria for PCBs (50 ppm).
4. * Concentration exceeds Restricted Residential, Commercial, and Industrial Soil Cleanup Objectives.

Table 1A: Historical Soil Analytical Results - PCBs
May/June 2016 Sample Summary Table - Waste Cell Area

Boring #	Sample ID	Depth (in.)	DTW (in.)	Restricted Residential	Commercial	Industrial	Total PCBs (ppm)	Qual	Material Description
(16) 2-1	SS (16) 2-1	0-12		1	1	25	**6.19**	J	ASR & Sandy Soil
	2-1A	37-60					**173***	J	ASR & Sandy Soil
	2-1B	60-67					**6.91**		Gravel & Sandy Soil
	2-1C	74-84					**15.3**	J	Fill
	2-1D	86-100	▽90				**1.92**		ASR & Fill
	2-1E	100-120					0.0230	J	Solvay Waste
(16) 2-2	SS (16) 2-2	0-12		1	1	25	**12.5**		ASR & Sandy Soil
	2-2A	17-37					**96.6***		ASR & Sandy Soil
	2-2B	37-60					**44.4***		ASR & Sandy Soil
	2-2C	70-100	▽84				0.0314	J	Gravel & Fine Soil
	2-2D	100-120					0.0300	J	Fine Soil
	2-2E	120-134					0.0285	J	Gravel & Fine Soil
	2-2F	134-157					ND		Solvay Waste & Fill
	2-2G	157-170					ND		Solvay Waste
(16) 2-3	2-3A	40-60		1	1	25	**21.4**		ASR & Sandy Soil
	2-3B	70-80					0.0753	J	Gravel & Asphalt Residue
	2-3C	80-104	▽90				ND		Gravel & Fine Soil
	2-3D	104-120					ND		Fine Soil with Concretions
	2-3E	120-140					ND		Gravel & Fine Soil
	2-3F	140-160					ND		Fine Soil
	2-3G	160-180					0.0513	J	Solvay Waste
(16) 2-4	SS-2-4	0-12		1	1	25	**18.3**	(J)	ASR & Sandy Soil
	SS-2-4 DUP	0-12					**22.3**	(J)	ASR & Sandy Soil
	2-4A	35-50					**38.1***	J	ASR & Sandy Soil
	2-4B	50-60					0.309		Fine Soil with Concretions
	2-4C	95-110					**13.8**	J	ASR
	2-4D	110-120					0.980		Fine Soil
	2-4E	150-180	▽150				0.117	J	Fine Soil with Shells
	2-4F	180-186					0.207	J	Fine Soil with Shells
	2-4F Dup	180-186					0.263	J	Fine Soil with Shells

Table 1A: Historical Soil Analytical Results - PCBs
May/June 2016 Sample Summary Table - Waste Cell Area

Boring #	Sample ID	Depth (in.)	DTW (in.)	Restricted Residential	Commercial	Industrial	Total PCBs (ppm)	Qual	Material Description
(16) 2-13	2-13A	0-12		1	1	25	**1.06**	J	ASR & Sandy Soil
	2-13B	36-40					**2.11**		ASR & Sandy Soil
	2-13C	48-60					0.0346	U	ASR & Fine Soil
	2-13D	74-80	▽75				0.0461	U	ASR & Fine Soil
(16) 2-14	2-14A	0-12		1	1	25	0.364		Coarse Sand Only
	2-14B	45-48					**12.1**	J	ASR & Sandy Soil
	2-14C	48-60					**14.9**		ASR & Fine Soil
	2-14D	80-82	▽96				0.145	J	Sand & ASR

Notes:

1. Soil samples were collected between May 24 and June 9, 2016; Results reported in ppm (mg/kg).
2. **Bold Red** Value exceeds Restricted Residential and Commercial Soil Cleanup Objectives
3. **Bold Red** Value exceeds Hazardous Waste Criteria for PCBs (50 ppm)
4. * Value exceeds Restricted Residential, Commercial, and Industrial Soil Cleanup Objectives
5. ND: Non-Detect
6. DTW: Depth to groundwater
7. U: The compound was not detected at the indicated concentration.
8. J: Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL.
9. (J): Data qualified based on DUSR evaluation.

Table 1B: Remedial Investigation Soil Analytical Results - PCBs

LOCATION					(17) B-15				(17) B-17								(17) B-18				(17) B-19	
					1-2'		2-4'		0-1'		1-2'		2-4'		4-6'		6-8'		1-2'		2-3'		2-4'	
SAMPLING DATE(S)					11/2/2017				11/29/2017										11/2/2017				11/29/2017	
LAB SAMPLE ID					L1740260-01		L1740260-02		L1743779-07		L1743779-08		L1743779-09		L1743779-10		L1743779-11		L1740260-03		L1740260-04		L1743779-12	
SCOs	Prot. of GW	Restricted Residential	Commercial	Industrial	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Aroclor 1242	3.2	1	1	25	0.205		0.592		**8.54***		**7.61***		**3.57***		**2.11**		0.439	U	0.157	J	**1.66**		**6.44***	
Aroclor 1254	3.2	1	1	25	0.358		0.309		**6.57***	J	**5.27***		**1.31**		0.912		0.439	U	0.54		**1.53**		**5.1***	
Aroclor 1260	3.2	1	1	25	0.114		0.191		**1.28**	J	**1.57**	J	0.528	J	0.219	J	**2.18**		0.638		**1.46**		**1.18**	
PCBs, Total	3.2	1	1	25	0.677		**1.09**		**16.4***		**14.4***		**5.41***		**3.24***		**2.18**		**1.34**		**4.65***		**12.7***	

LOCATION					(17) B-20						(17) B-22									
					0-1'		1-2'		2-4'		4-6'		0-1'		1-2'		2-4'		4-6'		6-8'	
SAMPLING DATE(S)					11/2/2017				11/29/2017				10/31/2017									
LAB SAMPLE ID					L1740260-05		L1740260-06		L1743779-13		L1745867-01		L1739764-01		L1739764-02		L1739764-03		L1739764-04		L1739764-05	
SCOs	Prot. of GW	Restricted Residential	Commercial	Industrial	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Aroclor 1242	3.2	1	1	25	0.0369	U	**1.32**		0.0126	J	0.104		0.207	PJ	0.237		3.06	U	0.427	J	0.0539	U
Aroclor 1254	3.2	1	1	25	0.0417		**1.44**		0.0324	J	0.0649		0.316		0.282		3.06	U	0.285		0.0539	U
Aroclor 1260	3.2	1	1	25	0.039		0.593		0.0344	J	0.0668		0.214		0.208		**21.5***		0.82		0.0539	U
Aroclor 1268	3.2	1	1	25	0.0369	U	0.208	J	0.0409	U	0.0425	U	0.0361	U	0.0353	U	3.06	U	0.296		0.0539	U
PCBs, Total	3.2	1	1	25	0.0807		**3.56***		0.0794		0.236		0.737		0.727		**21.5***		**1.83**		0.0539	U

LOCATION					(17) B-23						(17) B-24						(17) B-25					
					0-1'		1-2'		2-4'		0-1'		1-2'		2-4'		0-1'		1-2'		2-4'	
SAMPLING DATE(S)					11/1/2017						11/1/2017						10/31/2017					
LAB SAMPLE ID					L1739969-17		L1739969-18		L1739969-19		L1739969-11		L1739969-12		L1739969-13		L1739764-20		L1739764-21		L1739764-22	
SCOs	Prot. of GW	Restricted Residential	Commercial	Industrial	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Aroclor 1242	3.2	1	1	25	0.0875		0.0427	U	0.0393	U	0.0667		0.14		0.0721	U	**2.3**		**3.3***		0.19	
Aroclor 1254	3.2	1	1	25	0.213		0.201		0.0706		0.107		0.316		0.0721	U	0.992		0.355	U	0.399	
Aroclor 1260	3.2	1	1	25	0.0912	J	0.269		0.0296	J	0.0368		0.085	J	0.953		0.527		**3.16**		0.686	
Aroclor 1268	3.2	1	1	25	0.0336	U	0.0427	U	0.0393	U	0.0351	U	0.036	U	0.0721	U	0.379	U	0.355	U	0.0357	U
PCBs, Total	3.2	1	1	25	0.392		0.47		0.1		0.211		0.541		0.953		**3.82***		**6.46***		**1.28**	

Table 1B: Remedial Investigation Soil Analytical Results - PCBs

LOCATION					(17) B-26								(17) B-27			
					0-1'		0-1' DUP 01		1-2'		2-4'		0-1'		1-2'		2-4'	
SAMPLING DATE(S)					10/31/2017								10/31/2017			
LAB SAMPLE ID					L1739764-06		L1739764-11		L1739764-07		L1739764-08		L1739764-14		L1739764-15		L1739764-16	
SCOs	Prot. of GW	Restricted Residential	Commercial	Industrial	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Aroclor 1242	3.2	1	1	25	0.0553	J	0.033	J	0.0562		0.0797		0.226		0.298		0.204	U
Aroclor 1254	3.2	1	1	25	0.0873		0.0566		0.0778		0.11		0.337		0.434		0.856	
Aroclor 1260	3.2	1	1	25	0.0591		0.0409		0.0718		0.203		0.157		0.235		**1.48**	
PCBs, Total	3.2	1	1	25	0.202		0.131		0.206		0.393		0.72		0.967		**2.34**	

LOCATION					(17) SS1		(17) SS-4		(17) SS-5		(17) TP-2				(17) TP-3		(17) TP-4		(17) TP-5				
					0-0.5"		0-2"		0-2"		0-1'		1-2'		2-4'		2-4'		1-2'		0-1'		1-2'		2-4'	
SAMPLING DATE(S)					11/30/2017		10/31/2017		11/1/2017		10/30/2017						10/30/2017		10/30/2017					
LAB SAMPLE ID					L1744014-10		L1739764-12		L1739969-25		L1739503-03		L1739503-04		L1739503-05		L1739503-06		L1739503-07		L1739503-08		L1739503-09		L1739503-10	
SCOs	Prot. of GW	Restricted Residential	Commercial	Industrial	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Aroclor 1242	3.2	1	1	25	0.533	J	0.0936		0.0241	J	0.414	J	0.755	J	0.242		**1.7**		0.927	PJ	**2.42**		**2.76**		0.931	
Aroclor 1254	3.2	1	1	25	0.706		0.388		0.0434		0.448		0.99		0.0418	U	**1.5**		0.708		**1.14**		**1.12**		0.911	
Aroclor 1260	3.2	1	1	25	0.279		0.113		0.0222	J	0.142	J	0.29		0.724		**1.89**		0.305		0.486		0.509		0.459	
Aroclor 1268	3.2	1	1	25	0.216	U	0.0356	U	0.0339	U	0.176	U	0.205	U	0.0418	U	0.196	U	0.185	U	0.193	U	0.199	U	0.177	U
PCBs, Total	3.2	1	1	25	**1.52**		0.595		0.0897		**1**		**2.04**		0.966		**5.09***		**1.94**		**4.05***		**4.39***		**2.3**	

Notes:

1. All detections shown in mg/kg or ppm.
2. **Bold Red** Concentration exceeds Restricted Residential and Commercial Soil Cleanup Objectives.
3. **Bold Red** Concentration exceeds Hazardous Waste level (50 ppm).
4. * Concentration exceeds Restricted Residential, Commercial, and Industrial Soil Cleanup Objectives.
5. * Concentration exceeds Protection of Groundwater Soil Cleanup Objectives.
6. Blue Validated Qualifier
7. If any constituent had an initial quantification of "E" (exceeds calibration range), the diluted re-analysis results are shown.

Qualifiers (Q):

J: Below quantitation limit, estimated concentration. J values are applied to the individual aroclor, but not to the total PCB value.
P: The RPD between the results for the two columns exceeds the method-specified criteria.
U: Result below detection limit; the method reporting limit is shown.

Table 1C: Trail Analytical Results - PCBs

Trail Sample Locations								
Sample Location	**Date**	**Depth (feet)**	**Protection of Groundwater**	**Restricted Residential**	**Commercial**	**Industrial**	**Total PCBs**	
(19) B-1	2/2019	0-1	3.2	1	1	25	0.534	
		1-2	3.2	1	1	25	0.5	
		2-4	3.2	1	1	25	0.532	
		4-6	3.2	1	1	25	0.179	J
		6-8	3.2	1	1	25	0.519	
B18-4	08/2018	0-1	3.2	1	1	25	**3.99***	
		0-1 DUP	3.2	1	1	25	**3.71***	
		1-2	3.2	1	1	25	**2.51**	
		3.5-4	3.2	1	1	25	**2.51**	
		5-6	3.2	1	1	25	**41.9***	
		7.5-8	3.2	1	1	25	**35.2***	
(19) B-2	2/2019	3-5	3.2	1	1	25	0.759	
		5-7	3.2	1	1	25	0.0379	J
B18-5	08/2018	2-3	3.2	1	1	25	**2.51**	
MW-13A	2/2019	0-1	3.2	1	1	25	6.55	
MW-13	2010	2-4	3.2	1	1	25	0.611	
(19) B-3	2/2019	0-1	3.2	1	1	25	**3.08**	
		1-2	3.2	1	1	25	**3.64***	
		2-3	3.2	1	1	25	**1.53**	
SB-2	04/2016	0-2	3.2	1	1	25	ND	
		12-14	3.2	1	1	25	ND	
SB-3	04/2016	6-8	3.2	1	1	25	ND	
SB-3A	2/2019	0-1	3.2	1	1	25	0.65	
SB-4	04/2016	10-12	3.2	1	1	25	ND	
SB-4A	2/2019	0-1	3.2	1	1	25	0.13	J
SB-5	04/2016	2-4	3.2	1	1	25	ND	
SB-5A	2/2019	0-1	3.2	1	1	25	0.327	
SB-6	04/2016	0-2	3.2	1	1	25	0.00866 J	
SB-6A	2/2019	2-3	3.2	1	1	25	0.226	
		4-5	3.2	1	1	25	ND	
SB-7	04/2016	3-5	3.2	1	1	25	0.0421 J	
SB-7A	2/2019	0-1	3.2	1	1	25	0.0787	J
SB-8	04/2016	3-5	3.2	1	1	25	ND	
SB-8A	2/2019	0-1	3.2	1	1	25	0.0975	J
SB-9	04/2016	3-5	3.2	1	1	25	ND	
SB-9A	2/2019	0-1	3.2	1	1	25	0.0521	J
SB-10	04/2016	3-5	3.2	1	1	25	0.0816 J	
SB-10A	2/2019	0-1	3.2	1	1	25	0.11	J
		0-1 DUP	3.2	1	1	25	0.117	J
SB-11	04/2016	3-5	3.2	1	1	25	ND	
SB-11A	2/2019	0-1	3.2	1	1	25	0.0758	J
SB-12	04/2016	3-5	3.2	1	1	25	ND	
SB-12A	2/2019	0-1	3.2	1	1	25	0.0451	J
		0-1 DUP	3.2	1	1	25	0.0622	J
SB-13	04/2016	5-10	3.2	1	1	25	ND	
SB-13A	2/2019	0-1	3.2	1	1	25	0.0498	J
		2-3	3.2	1	1	25	0.0587	
Pier 5-2 Grab	3/2020	3	3.2	1	1	25	0.0723	J
Pier 6 side-N Comp.	3/2020	5	3.2	1	1	25	0.215	J
Comp. 2C-North	4/2020	3	3.2	1	1	25	11.6*	J
Comp. 1B-North-3	4/2020	1	3.2	1	1	25	1.53	J
Comp. 1B-North-2	4/2020	1	3.2	1	1	25	12.1*	
Grab 1B-North-1	4/2020	1	3.2	1	1	25	9.54*	J

Notes:

1. All results in mg/kg or ppm.
2. **Bold Red** Concentration exceeds Restricted Residential and Commercial Soil Cleanup Objectives.
3. **Bold Red** Concentration exceeds Hazardous Waste Criteria for PCBs (50 ppm).
4. * Concentration exceeds Restricted Residential, Commercial, and Industrial Soil Cleanup Objectives.
5. * Concentration exceeds Protection of Groundwater Soil Cleanup Objectives.

Table 2A: Historical Soil Analytical Results - Metals (Revised)

Passero Associates, October 2007 (Corresponds with "P" locations)								
METALS	Soil Cleanup Objectives			October 2007				
	Restricted Residential	Commercial	Industrial	BH-12 (0-8')	TP-13 (4')	TP-14 (4')	BH-17 (4')	BH-15 (7-8')
Arsenic	16	16	16	--	**28.4***	--	--	---
Barium	400	400	10,000	**3080**	--	--	--	---
Cadmium	4.3	9.3	60	--	**22.5**	**5.33**	**7.38**	---
Chromium	110	400	800	**140**	**360**	**197**	**152**	---
Copper	270	270	10,000	---	---	---	---	---
Lead	400	1000	3,900	**534**	**2440**	--	**762**	---
Mercury	0.81	2.8	5.7	--	**3.68**	--	**1.01**	---
Nickel	310	310	10,000	---	---	---	---	---
Zinc	10,000	10,000	10,000	---	---	---	---	---

				O'Brien and Gere, June 2013												
METALS	Soil Cleanup Objectives			2008												
	Restricted Residential	Commercial	Industrial	B01 (0-0.5')	B06 (0.5-1.0')	B08 (0-0.5')	B09 (4.5-5.0')	B10 (0.5-1.0')	B12 (0-0.5')	B13 (0.5-1.0')	B15 (0-0.5')	B16 (0.5-1.0')	B18 (0.5-1.0')	B19 (0-0.5')	B22 (0-0.5')	B24 (1.5-2.0')
Arsenic	16	16	16	---	---	---	**26.1***	---	---	---	---	---	---	---	---	---
Barium	400	400	10,000	---	---	---	**3010**	---	---	---	---	---	---	---	---	---
Cadmium	4.3	9.3	60	**2140***	---	---	**23.6**	---	---	---	---	**11**	---	---	---	---
Chromium (hex)	110	400	800	---	---	---	**208**	---	---	**185**	---	---	---	---	---	---
Copper	270	270	10,000	---	---	---	---	---	---	---	---	**5460**	---	---	---	---
Lead	400	1000	3,900	---	---	---	**1690**	---	---	---	---	---	---	**830**	---	---
Mercury	0.81	2.8	5.7	---	---	---	**6.4***	---	---	**2.38**	---	**2.2**	---	---	---	---
Nickel	310	310	10,000	---	---	---	---	---	---	---	---	---	---	---	---	---
Zinc	10,000	10,000	10,000	---	---	---	**21400***	---	---	---	---	---	---	---	---	---

				O'Brien and Gere, June 2013																
METALS	Soil Cleanup Objectives			2008		2011			2010											
	Restricted Residential	Commercial	Industrial	B27 (0-0.5')	B29 (0-0.5')	B31 (0-1')	B32 (0-1')	B33 (0-1')	B37 (2-4')	B37 (5-7')	B38 (0-1')	B39 (0-1')	B46 (0-1')	B46 Dup (0-1')	B48 (0-1')	MW-10 (0-2')	MW-10 (6-8')	MW-11 (0-2')	MW-10 (10-12')	MW-13 (2-4')
Arsenic	16	16	16	---	---	---	---	---	---	**16.1***	---	---	---	---	---	---	---	---	---	---
Barium	400	400	10,000	---	---	---	---	---	**481**	**564**	---	**406**	**417**	**466**	**430**	---	---	---	---	---
Cadmium	4.3	9.3	60	---	---	---	---	**22.3**	**4.34**	---	**4.94**	**22.9**	**32.2**	**32.7**	**7.80**	**10.1**	---	---	---	---
Chromium (hex)	110	400	800	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Copper	270	270	10,000	---	---	---	**472**	---	**506**	**473**	---	**513**	**1070**	**735**	**1290**	**363**	**4840**	---	---	---
Lead	400	1000	3,900	---	---	---	---	---	**639**	**650**	**873**	**1130**	**1050**	**1050**	**645**	---	**4650***	---	---	---
Mercury	0.81	2.8	5.7	---	---	---	---	**2.9**	---	---	**0.913**	**2.39**	**2.64**	**3.77**	**1.33**	**1.06**	**5.74***	---	---	**3.88**
Nickel	310	310	10,000	---	---	---	---	---	---	**320**	---	---	---	---	---	---	---	---	---	---
Zinc	10,000	10,000	10,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

1. Exceedances shown; all results in mg/kg or ppm.
2. ^ - Instrument related quality control exceeded the control limits
3. **Bold Red** Concentration exceeds Restricted Residential Soil Cleanup Objectives.
4. **Bold Red** Concentration exceeds both Restricted Residential and Commercial Soil Cleanup Objectives.
5. * Concentration exceeds Restricted Residential, Commercial, and Industrial Soil Cleanup Objectives.
6. Only constituents with exceedances of Restricted Residential, Comercial, and/or Industrial Soil Cleanup Objectives are shown.
7. --- Concentration is below Soil Cleanup Objectives.
8. There are no exceedances in B31 or B36 and are therefore not shown.

Table 2B: Remedial Investigation Soil Analytical Results - Metals
(mg/kg or ppm)

LOCATION					(17)B-18		(17) B-19		(17) B-20		(17) B-21				(17) B-22		(17) B-23	
					2-3'		2-4'		0-1'		4-6'		6-8'	8-10'	0-1'		0-1'	
SAMPLING DATE					11/2/2017		11/29/2017		11/2/2017		12/1/2017				10/31/2017		11/1/2017	
LAB SAMPLE ID					L1740260-04		L1743779-12		L1740260-05		L1744164-01		L1744164-02	L1744164-03	L1739764-01		L1739969-17	
Total Metals	Prot. of GW	Restricted Residential	Commercial	Industrial	Results	Q	Results	Q	Results	Q	Results	Q	Results Q	Results Q	Results	Q	Results	Q
Aluminum, Total	NS	NS	NS	NS	6980		3660		4350		-		-	-	2670		1420	
Antimony, Total	NS	NS	NS	NS	48.7		8.05	J	4.29	J	-		-	-	1.15	J	1.11	J
Arsenic, Total	16	16	16	16	**16.8***	*	**16.4***	*	4.57		-		-	-	5.95		5.1	
Barium, Total	820	400	400	10000	339		228	J	89.6		-		-	-	130		76.5	
Beryllium, Total	47	72	590	2700	0.365	J	0.335	J	0.233	J	-		-	-	0.434	U	0.425	U
Cadmium, Total	7.5	4.3	9.3	60	**10.8***	*	**27.2***	*	2.96		-		-	-	2.64		2.86	
Calcium, Total	NS	NS	NS	NS	275000		156000		481000		-		-	-	235000		225000	
Chromium, Total	NS	NS	NS	NS	498		178		42		-		-	-	37.2		15.3	
Cobalt, Total	NS	NS	NS	NS	23.5		10.1	J	5.98		-		-	-	5.45		5.13	
Copper, Total	1720	270	270	10000	**1490**		**473**		**1520**		-		-	-	157		188	
Iron, Total	NS	NS	NS	NS	226000		73700		12800		-		-	-	17900		8400	
Lead, Total	450	400	1000	3900	**731***	*	**444**		376		**889***	*	**1780*** *	**1020*** *	137		105	
Magnesium, Total	NS	NS	NS	NS	32600		11300	J-	32400		-		-	-	17000		10300	
Manganese, Total	2000	2000	10000	10000	1780		527		413		-		-	-	330		298	
Mercury, Total	0.73	0.81	2.8	5.7	**1.3***	*	**1.5***	*	0.2		0.41		**3.4*** *	**0.86*** *	0.25		0.18	
Nickel, Total	130	310	310	10000	**348***	*	96.8	J	61.8		-		-	-	30.6		19.2	
Potassium, Total	NS	NS	NS	NS	880		388	J	775		-		-	-	557		384	
Selenium, Total	4	180	1500	6800	0.481	J	**4.59***	*	1.09	J	-		-	-	0.738	J	0.484	J
Silver, Total	8.3	180	1500	6800	1.89		1.54		0.707	J	-		-	-	0.538	J	0.85	U
Sodium, Total	NS	NS	NS	NS	649		183	J-	304		-		-	-	207		267	
Thallium, Total	NS	NS	NS	NS	2.82		0.45	J-	1.79	U	-		-	-	1.74	U	1.7	U
Vanadium, Total	NS	NS	NS	NS	36.5		14.2		18.6		-		-	-	16.1		8.57	
Zinc, Total	2480	10000	10000	10000	2160		2160		259		-		-	-	566		188	

Table 2B: Remedial Investigation Soil Analytical Results - Metals
(mg/kg or ppm)

LOCATION					(17) B-24				(17) B-25		(17) B-26		(17) B-27				(17) SS-1		(17) SS-4		(17) SS-5	
					0-1'		5-6'		0-1'		0-1'		0-1'		2 1/2'		0-2"		0-2"		0-2"	
SAMPLING DATE					11/1/2017				10/31/2017		10/31/2017		10/31/2017				11/30/2017		10/31/2017		11/1/2017	
LAB SAMPLE ID					L1739969-11		L1739969-16		L1739764-20		L1739764-06		L1739764-14		L1739764-19		L1744014-10		L1739764-12		L1739969-25	
Total Metals	**Prot. of GW**	**Restricted Residential**	**Commercial**	**Industrial**	**Results**	**Q**	**Results**	**Q**	**Results**	**Q**	**Results**	**Q**	**Results**	**Q**	**Results**	**Q**	**Results**	**Q**	**Results**	**Q**	**Results**	**Q**
Aluminum, Total	NS	NS	NS	NS	1370		4820		4990		2180		1670		3830		4030		3290		1330	
Antimony, Total	NS	NS	NS	NS	4.21	U	5.3	U	2.79	J	4.37	U	1.15	J	4.09	U	5.92	J	0.369	J	0.465	J
Arsenic, Total	16	16	16	16	2.6		9.59		13.8		3.33		4.1		5.52		4.43	J	5.04		3.27	
Barium, Total	820	400	400	10000	34.5		132		**430**		63.9		75.5		91.9		169		71.2		39.3	
Beryllium, Total	47	72	590	2700	0.421	U	0.191	J	0.131	J	0.437	U	0.406	U	0.09	J	0.074	UJ	0.114	J	0.415	U
Cadmium, Total	7.5	4.3	9.3	60	0.548	J	2		**8.36***		0.813	J	2.34		1.1		4		2.58		0.673	J
Calcium, Total	NS	NS	NS	NS	230000		13300		142000		267000		272000		173000		186000		191000		211000	
Chromium, Total	NS	NS	NS	NS	12		44.7		215		12.1		25.1		10.9		77.7	J	84.9		13.6	
Cobalt, Total	NS	NS	NS	NS	2.33		7.32		16.6		2.45		3.65		5.36		8.45		5.75		2.77	
Copper, Total	1720	270	270	10000	67.1		**286**		**581**		35.7		94.7		33.4		**384**		176		258	
Iron, Total	NS	NS	NS	NS	7780		71700		124000		7360		13900		9460		41200	J	26000		6550	
Lead, Total	450	400	1000	3900	37.2		38.7		**972***		27.9		98.5		80.9		**439**	J	120		40.8	
Magnesium, Total	NS	NS	NS	NS	17200		2040		13200		35000		18800		40100		25100	J-	15000		15000	
Manganese, Total	2000	2000	10000	10000	265		450		1340		157		223		439		508		322		231	
Mercury, Total	0.73	0.81	2.8	5.7	0.14		0.2		0.68		0.15		0.4		0.13		**1.1***		0.29		0.07	
Nickel, Total	130	310	310	10000	10.2		54.3		107		10.8		32		13.5		71	J	35.8		17.3	
Potassium, Total	NS	NS	NS	NS	295		683		536		343		341		791		558		342		298	
Selenium, Total	4	180	1500	6800	1.68	U	1.26	J	2.89		1.75	U	0.584	J	0.605	J	2.13	U	0.702	J	0.341	J
Silver, Total	8.3	180	1500	6800	0.842	U	1.06	U	0.788	J	0.874	U	0.812	U	0.817	U	0.563	J	0.272	J	0.831	U
Sodium, Total	NS	NS	NS	NS	165	J	391		731		223		189		197		242		162	J	165	J
Thallium, Total	NS	NS	NS	NS	1.68	U	2.12	U	1.51	J	1.75	U	1.62	U	1.63	U	2.13	U	1.76	U	1.66	U
Vanadium, Total	NS	NS	NS	NS	13.7		18.3		20.8		21.8		10.8		10.9		17	J	67.2		30.4	
Zinc, Total	2480	10000	10000	10000	98.6		343		1200		132		331		56.4		1090	J	682		158	

Table 2B: Remedial Investigation Soil Analytical Results - Metals
(mg/kg or ppm)

LOCATION					(17) TP-2				(17) TP-3				(17) TP-4		(17) TP-5			
					0-1'		2-4'		0-0.5"		2-4'		1-2'		0-1'		2-4'	
SAMPLING DATE					10/30/2017				11/29/2017		10/30/2017		10/30/2017		10/30/2017			
LAB SAMPLE ID					L1739503-03		L1739503-05		L1743779-21		L1739503-06		L1739503-07		L1739503-08		L1739503-10	
Total Metals	Prot. of GW	Restricted Residential	Commercial	Industrial	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Aluminum, Total	NS	NS	NS	NS	4210		2830		-		4200		3930		6110		3750	
Antimony, Total	NS	NS	NS	NS	4.33	U	5.16	U	-		5	U	4.63	U	48.4	U	4.35	U
Arsenic, Total	16	16	16	16	4.67		9.75		-		11.7		8.2		15.9		8.99	
Barium, Total	820	400	400	10000	120		193		-		**464**		143		292		167	
Beryllium, Total	47	72	590	2700	0.165	J	0.103	J	-		0.14	J	0.056	J	0.126	J	0.07	J
Cadmium, Total	7.5	4.3	9.3	60	3.21		4.03		**4.34**		**14.7***		**8.67***		**15***		**7.56***	
Calcium, Total	NS	NS	NS	NS	252000		265000		-		50300		156000		139000		185000	
Chromium, Total	NS	NS	NS	NS	13.6		24.5		-		138		67.8		347		1220	
Cobalt, Total	NS	NS	NS	NS	5.72		4.03		-		12.3		7.87		24.7		19.5	
Copper, Total	1720	270	270	10000	49.4		**1990***		-		**1240**		**606**		**670**		**639**	
Iron, Total	NS	NS	NS	NS	14000		13900		-		85300		90500		183000		72300	
Lead, Total	450	400	1000	3900	39.2		**425**		-		**672***		**409**		**609***		351	
Magnesium, Total	NS	NS	NS	NS	16900		10800		-		6460		11200		14200		21100	
Manganese, Total	2000	2000	10000	10000	433		216		-		431		597		1350		696	
Mercury, Total	0.73	0.81	2.8	5.7	0.38		0.52		-		**1.4***		**1.6***		**1.9***		**2.1***	
Nickel, Total	130	310	310	10000	21.3		33.8		-		**178***		64.7		**244***		**587***	
Potassium, Total	NS	NS	NS	NS	509		428		-		423		318		646		450	
Selenium, Total	4	180	1500	6800	1.09	J	1.63	J	-		2.07		0.389	J	2.37		1.15	J
Silver, Total	8.3	180	1500	6800	0.866	U	0.589	J	-		1.93		6.94		2.1		1.01	
Sodium, Total	NS	NS	NS	NS	192		242		-		1170		184	J	413		333	
Thallium, Total	NS	NS	NS	NS	0.424	J	0.362	J	-		0.78	J	0.593	J	1.56	J	1.74	U
Vanadium, Total	NS	NS	NS	NS	11.1		12.1		-		29.2		15.2		27.9		29.2	
Zinc, Total	2480	10000	10000	10000	215		508		-		1630		1350		1290		860	

Notes:

1. All detections shown in mg/kg or ppm.
2. **Bold Red** Concentration exceeds Restricted Residential Soil Cleanup Objectives.
3. **Bold Red** Concentration exceeds both Restricted Residential and Commercial Soil Cleanup Objectives.
4. * Concentration exceeds Restricted Residential, Commercial, and Industrial Soil Cleanup Objectives.
5. * Concentration exceeds Protection of Groundwater Soil Cleanup Objectives.
7. If any constituent had an initial quantification of "E" (exceeds calibration range), the diluted re-analysis results are shown.
8. NS Not Specified
9. Blue Validated Qualifier

Qualifiers (Q):

J: Below quantitation limit, estimated concentration
U: Result below detection limit; the method reporting limit is shown.

Table 2B: Remedial Investigation Soil Analytical Results - TCLP Metals (mg/L or ppm)

LOCATION		(17) B-21	
		6-8'	
SAMPLING DATE		12/1/2017	
LAB SAMPLE ID		L1745765-03	
TCLP Metals	**Regulatory Limits**	**Results**	**Q**
Arsenic	5	-	
Barium	100	-	
Cadmium	1	-	
Chromium	5	-	
Lead	5	3.35	
Mercury	0.2	-	

Notes:

1. All detections shown in mg/L.
2. - Indicates that the sample was not analyzed for the constituent.

Qualifiers (Q):

J: Below quantitation limit, estimated concentration

U: Result below detection limit; the method reporting limit is shown.

Table 2C: Trail Analytical Results - Metals

CHA Trailways, April 2016								
METALS	Soil Cleanup Objectives			April 2016				
	Restricted Residential	Commercial	Industrial	SB-3	SB-7	SB-10	SB-11	SB-13
				6-8'	3-5'	3-5'	3-5'	5-10'
Arsenic	16	16	16	---	---	---	---	---
Barium	400	400	10,000	---	---	---	---	**1600**
Cadmium	4.3	9.3	60	---	---	---	---	---
Chromium (hex)	110	400	800	---	---	---	---	---
Copper	270	270	10,000	---	---	---	---	---
Lead	400	1000	3,900	---	---	---	---	---
Mercury	0.81	2.8	5.7	**3.5**	**3.2**	**3.4**	**5.5**	**3.3**
Nickel	310	310	10,000	---	---	---	---	---
Zinc	10,000	10,000	10,000	---	---	---	---	---

Source: O'Brien and Gere, September 2013

Notes:

1. Exceedances shown; all results in mg/kg or ppm.
2. ^ - Instrument related quality control exceeded the control limits
3. **Bold Red** Concentration exceeds Restricted Residential Soil Cleanup Objectives.
4. **Bold Red** Concentration exceeds both Restricted Residential and Commercial Soil Cleanup Objectives.
5. * Concentration exceeds Restricted Residential, Commercial, and Industrial Soil Cleanup Objectives.
6. Only constituents with exceedances of Restricted Residential, Comercial, and/or Industrial Soil Cleanup Objectives are shown.
7. --- Concentration is below Soil Cleanup Objectives.
8. There are no exceedances in B31 or B36 and are therefore not shown.

Table 3A: Historical Soil Exceedances - SVOCs

SVOCs	Soil Cleanup Objectives			October 2007			2008					2010	
	Restricted Residential	Commercial	Industrial	TP-14 (4')	TP-16	BH-17 (4')	B01 (0-0.5')	B09 (4.5-5.0')	B10 (0.5-1.0')	B13 (0.5-1.0')	B16 (0.5-1.0')	B37 (2-4')	B37 (5-7')
Benzo (a) anthracene	1	5.6	11	**1.040**	**7.750**	**2.990**	**3 J**	--	--	--	--	**4.7**	**1.3 J**
Benzo (a) pyrene	1	1	1.1	--	**5.19***	**1.43***	***3.4 J**	***1.4 J**	--	--	--	***3.7**	***1.2 J**
Benzo (b) fluoranthene	1	5.6	11	--	**4.670**	**1.910**	**5.3**	--	**1.1 J**	**1.3 J**	**1.1 J**	**3.5**	**1.2 J**
Benzo (k) fluoranthene	3.9	56	110	--	**3.930**	--	--	--	--	--	--	--	--
Chrysene	3.9	56	110	--	**6.080**	--	--	--	--	--	--	--	--
Dibenz[a,h]anthracene	0.33	0.56	1.1	--	**0.638**	--	--	--	--	--	--	**0.6 J**	--
Indeno (1,2,3-cd) pyrene	0.5	5.6	11	--	**2.360**	**1.070**	**1.8 J**	**0.53 J**	--	--	--	--	**0.62 J**

SVOCs	Soil Cleanup Objectives			2010				
	Restricted Residential	Commercial	Industrial	B48 (0-1')	MW-10 (6-8')	MW-11 (0-2')	MW-11 (10-12')	MW-13 (2-4')
Benzo[a]anthracene	1	5.6	11	**2.6**	**3.5**	**5**	**1.2**	--
Benzo[a]pyrene	1	1	1.1	***2.3**	***3.1**	***3.8**	--	--
Benzo[b]fluoranthene	1	5.6	11	**2.7**	**3.7**	**4.5**	--	**1.1 J**
Benzo (k) fluoranthene	3.9	56	110	--	--	--	--	--
Chrysene	3.9	56	110	--	**5.5**		--	--
Dibenz[a,h]anthracene	0.33	0.56	1.1	**0.41 J**	**0.59 J**	**0.58 J**	--	--
Indeno[1,2,3-cd]pyrene	0.5	5.6	11	**1.2 J**	**1.7 J**	**1.9**	--	**0.55 J**

Notes:

1. Exceedances shown; all results in mg/kg or ppm.
2. **Bold Red** Concentration exceeds Restricted Residential Soil Cleanup Objectives.
3. **Bold Red** Concentration exceeds both Restricted Residential and Commercial Soil Cleanup Objectives
4. * Concentration exceeds Restricted Residential, Commercial and Industrial Soil Cleanup Objectives.
5. Only Constituents with Exceedances of Restricted Residential, Comercial, and/or Industrial Soil Cleanup Objectives are Shown.
6. The October 2007 Passero samples with the "BH" and "TP" prefixes correspond to the "P" sample locations on Figure 6.
7. -- Concentration is below Soil Cleanup Objectives.

Table 3B: Remedial Investigation Soil Analytical Results - SVOCs
(mg/kg or ppm)

LOCATION					(17) B-18		(17) B-20				(17) B-22		(17) B-23			
					2-3'		4-6'		4-6' DUP		0-1'		0-1'		0-1' DUP	
SAMPLING DATE					11/2/2017		11/29/2017				10/31/2017		11/2/2017			
LAB SAMPLE ID					L1740260-04		L1743779-14		L1743779-16		L1739764-01		L1740260-16		L1740260-13	
SVOCs	Prot. of GW	Restricted Residential	Commercial	Industrial	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
2,4-Dimethylphenol	NS	NS	NS	NS	0.58	J	0.24	U	0.22	U	0.18	U	1.7	U	1.8	U
2-Methylnaphthalene	NS	NS	NS	NS	0.88	J	0.58	J	1.6	J	0.059	J	0.45	J	0.56	J
2-Methylphenol	0.33	100	500	1000	0.28	J	0.24	U	0.22	U	0.18	U	1.7	U	1.8	U
3-Methylphenol/4-Methylphenol	0.33	100	500	1000	**2.1***		0.34	U	0.062	J	0.26	U	2.5	U	2.6	U
Acenaphthene	98	100	500	1000	2.8		0.19	U	0.086	J	0.061	J	0.41	J	0.52	J
Acenaphthylene	107	100	500	1000	0.74	U	0.048	J	0.18		0.37		4.6		5.1	
Acetophenone	NS	NS	NS	NS	0.92	U	0.24	U	0.22	U	0.032	J	1.7	U	1.8	U
Anthracene	1000	100	500	1000	4.6		0.048	J	0.2		0.36		5.6		6.4	
Benzaldehyde	NS	NS	NS	NS	1.2	U	0.31	U	0.29	U	0.24	U	2.3	U	2.4	U
Benzo(a)anthracene	1	1	5.6	11	**6.9***		0.1	J	0.45	J	0.65		**11***		**11***	
Benzo(a)pyrene	22	1	1	1.1	**5.4***		0.095	J	0.46	J	0.77		**10***		**11***	
Benzo(b)fluoranthene	1.7	1	5.6	11	**7.1***		0.13	J	0.58	J	0.99		**13***		**13***	
Benzo(ghi)perylene	1000	100	500	1000	3.2		0.072	J	0.32		0.81		6.2		6.5	
Benzo(k)fluoranthene	1.7	3.9	56	110	**2.5***		0.044	J	0.18		0.34		**4.2***		**4.2***	
Biphenyl	NS	NS	NS	NS	2.1	U	0.54	U	0.5	U	0.42	U	4	U	4.1	U
Bis(2-ethylhexyl)phthalate	NS	NS	NS	NS	18		0.19	J	0.19	J	1.6		1.7	U	1.8	U
Butyl benzyl phthalate	NS	NS	NS	NS	0.92	U	0.24	U	0.22	U	0.25		1.7	U	1.8	U
Caprolactam	NS	NS	NS	NS	0.92	U	0.24	U	0.22	U	0.18	U	1.7	U	1.8	U
Carbazole	NS	NS	NS	NS	2.2		0.24	U	0.034	J	0.097	J	0.62	J	0.77	J
Chrysene	1	3.9	56	110	**6.3***		0.11	J	0.46	J	0.7		**9.3***		**9.8***	
Di-n-butylphthalate	NS	NS	NS	NS	0.92	U	0.24	U	0.22	U	0.044	J	1.7	U	1.8	U
Dibenzo(a,h)anthracene	1000	0.33	0.56	1.1	**0.83**		0.14	U	0.077	J	0.16		**2***		**2***	
Dibenzofuran	210	59	350	1000	1.6		0.24	U	0.07	J	0.051	J	0.88	J	1.1	J
Diethyl phthalate	NS	NS	NS	NS	0.92	U	0.24	U	0.058	J	0.18	U	1.7	U	1.8	U
Dimethyl phthalate	NS	NS	NS	NS	0.81	J	0.24	U	0.22	U	0.13	J	1.7	U	1.8	U
Fluoranthene	1000	100	500	1000	17		0.21	J	0.84		1.2		20		22	
Fluorene	386	100	500	1000	2.9		0.048	J	0.17	J	0.088	J	2.6		3.1	
Indeno(1,2,3-cd)pyrene	8.2	0.5	5.6	11	3.7		0.072	J	0.31		0.73		**7.3**		**7.6**	
Naphthalene	12	100	500	1000	0.87	J	0.34	J	0.82	J	0.076	J	0.5	J	0.57	J
Phenanthrene	1000	100	500	1000	16		0.16	J	0.6	J	0.61		13		16	
Phenol	0.33	100	500	1000	0.92	U	0.24	U	0.22	U	0.18	U	1.7	U	1.8	U
Pyrene	1000	100	500	1000	13		0.2	J	0.75	J	1.1		18		19	

Table 3B: Remedial Investigation Soil Analytical Results - SVOCs
(mg/kg or ppm)

LOCATION					(17) B-24		(17) B-25				(17) B-26		(17) B-27			
					0-1'		0-1'		46"		0-1'		0-1'		2 1/2'	
SAMPLING DATE					11/1/2017		10/31/2017				10/31/2017		10/31/2017			
LAB SAMPLE ID					L1739969-11		L1739764-20		L1739764-25		L1739764-06		L1739764-14		L1739764-19	
SVOCs	Prot. of GW	Restricted Residential	Commercial	Industrial	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
2,4-Dimethylphenol	NS	NS	NS	NS	0.72	U	0.19	U	0.18	U	0.18	U	0.17	U	0.17	U
2-Methylnaphthalene	NS	NS	NS	NS	0.86	U	0.047	J	0.24		0.22	U	0.04	J	0.43	
2-Methylphenol	0.33	100	500	1000	0.72	U	0.19	U	0.18	U	0.18	U	0.17	U	0.031	J
3-Methylphenol/4-Methylphenol	0.33	100	500	1000	1	U	0.066	J	0.038	J	0.26	U	0.25	U	0.094	J
Acenaphthene	98	100	500	1000	0.58	U	0.022	J	0.27		0.15	U	0.02	J	0.38	U
Acenaphthylene	107	100	500	1000	0.58	U	0.11	J	0.39		0.15	U	0.15		1.3	
Acetophenone	NS	NS	NS	NS	0.72	U	0.072	J	0.18	U	0.024	J	0.17	U	0.12	J
Anthracene	1000	100	500	1000	0.43	U	0.13		0.91		0.11	U	0.14		2.2	
Benzaldehyde	NS	NS	NS	NS	0.95	U	0.22	J	0.24	U	0.24	U	0.23	U	0.23	U
Benzo(a)anthracene	1	1	5.6	11	0.21	J	0.3		**1.6***		0.029	J	0.2		**7R***	
Benzo(a)pyrene	22	1	1	1.1	0.4	J	0.36		**1.5***		0.15	U	0.22		**6.4R***	
Benzo(b)fluoranthene	1.7	1	5.6	11	0.43		0.59		**1.9***		0.04	J	0.33		**8.7R***	
Benzo(ghi)perylene	1000	100	500	1000	0.3	J	0.37		0.94		0.027	J	0.2		4.5	
Benzo(k)fluoranthene	1.7	3.9	56	110	0.12	J	0.16		0.6		0.11	U	0.1		**3.3***	
Biphenyl	NS	NS	NS	NS	1.6	U	0.43	U	0.061	J	0.42	U	0.39	U	0.12	J
Bis(2-ethylhexyl)phthalate	NS	NS	NS	NS	0.72	U	0.7		0.33		0.18	U	3.1		0.17	U
Butyl benzyl phthalate	NS	NS	NS	NS	0.72	U	0.19	U	0.18	U	0.18	U	0.36		0.17	U
Caprolactam	NS	NS	NS	NS	0.72	U	0.081	J	0.18	U	0.18	U	0.17	U	0.17	U
Carbazole	NS	NS	NS	NS	0.72	U	0.039	J	0.28		0.18	U	0.17	U	0.8	
Chrysene	1	3.9	56	110	0.24	J	0.32		**1.6***		0.03	J	0.27		**6.8R***	
Di-n-butylphthalate	NS	NS	NS	NS	0.72	U	0.19	U	0.18	U	0.18	U	0.17	U	0.17	U
Di-n-octylphthalate	NS	NS	NS	NS	0.72	U	0.19	U	0.18	U	0.18	U	0.17	U	0.17	U
Dibenzo(a,h)anthracene	1000	0.33	0.56	1.1	0.43	U	0.083	J	0.25		0.11	U	0.043	J	**1.3***	
Dibenzofuran	210	59	350	1000	0.72	U	0.03	J	0.28		0.18	U	0.17	U	0.4	
Diethyl phthalate	NS	NS	NS	NS	0.72	U	0.19	U	0.18	U	0.18	U	0.17	U	0.17	U
Dimethyl phthalate	NS	NS	NS	NS	0.72	U	0.35		0.18	U	0.18	U	0.17	U	0.17	U
Fluoranthene	1000	100	500	1000	0.32	J	0.48		3.2		0.054	J	0.32		11R	
Fluorene	386	100	500	1000	0.72	U	0.19	U	0.48		0.18	U	0.04	J	0.71	
Indeno(1,2,3-cd)pyrene	8.2	0.5	5.6	11	0.28	J	0.36		0.95		0.026	J	0.18		4.9	
Naphthalene	12	100	500	1000	0.72	U	0.061	J	0.47		0.18	U	0.035	J	0.94	
Phenanthrene	1000	100	500	1000	0.23	J	0.25		2.9		0.031	J	0.2		5.9	
Phenol	0.33	100	500	1000	0.72	U	0.053	J	0.12	J	0.18	U	0.17	U	0.17	U
Pyrene	1000	100	500	1000	0.4	J	0.44		2.8		0.05	J	0.51		8.7R*	

Table 3B: Remedial Investigation Soil Analytical Results - SVOCs
(mg/kg or ppm)

LOCATION					(17) SS-4		(17) SS-5		(17) TP-5	
					2-6"		2-6"		0-1'	
SAMPLING DATE					10/31/2017		11/1/2017		10/30/2017	
LAB SAMPLE ID					L1739764-13		L1739969-26		L1739503-08	
SVOCs	Prot. of GW	Restricted Residential	Commercial	Industrial	Results	Q	Results	Q	Results	Q
2-Methylnaphthalene	NS	NS	NS	NS	0.082	J	0.22	U	2.4	U
3-Methylphenol/4-Methylphenol	0.33	100	500	1000	0.27	U	0.27	U	**0.83***	J
Acenaphthene	98	100	500	1000	0.063	J	0.15	U	0.3	J
Acenaphthylene	107	100	500	1000	1.1		0.058	J	1.6	U
Acetophenone	NS	NS	NS	NS	0.077	J	0.18	U	2	U
Anthracene	1000	100	500	1000	0.99		0.073	J	0.96	J
Benzaldehyde	NS	NS	NS	NS	0.25	U	0.24	U	2.6	U
Benzo(a)anthracene	1	1	5.6	11	0.94		0.11		**1.8***	
Benzo(a)pyrene	22	1	1	1.1	**1.6***		0.19		**1.8***	
Benzo(b)fluoranthene	1.7	1	5.6	11	**2.4***		0.23		**2.6***	
Benzo(ghi)perylene	1000	100	500	1000	1.6		0.21		1.4	J
Benzo(k)fluoranthene	1.7	3.9	56	110	0.51		0.073	J	0.78	J
Biphenyl	NS	NS	NS	NS	0.43	U	0.42	U	4.5	U
Bis(2-ethylhexyl)phthalate	NS	NS	NS	NS	2.1		0.54			
Butyl benzyl phthalate	NS	NS	NS	NS	0.09	J	0.18	U	9.2	
Carbazole	NS	NS	NS	NS	0.1	J	0.024	J	0.34	J
Chrysene	1	3.9	56	110	0.98		0.15		**1.9***	
Di-n-butylphthalate	NS	NS	NS	NS	0.14	J	0.18	U	2	U
Dibenzo(a,h)anthracene	1000	0.33	0.56	1.1	0.35		0.044	J	0.37	J
Dibenzofuran	210	59	350	1000	0.059	J	0.18	U	0.19	J
Dimethyl phthalate	NS	NS	NS	NS	0.19		0.18	U	1.7	J
Fluoranthene	1000	100	500	1000	1.4		0.22		3.9	
Fluorene	386	100	500	1000	0.14	J	0.18	U	0.36	J
Indeno(1,2,3-cd)pyrene	8.2	0.5	5.6	11	1.5		0.15		1.4	J
Naphthalene	12	100	500	1000	0.099	J	0.18	U	0.24	J
Phenanthrene	1000	100	500	1000	0.45		0.13		2.2	
Pyrene	1000	100	500	1000	1.9		0.22		3.9	

Notes:

1. All detections shown in mg/kg or ppm.
2. **Bold Red** Concentration exceeds Restricted Residential Soil Cleanup Objectives.
3. **Bold Red** Concentration exceeds both Restricted Residential and Commercial Soil Cleanup Objectives.
4. * Concentration exceeds Restricted Residential, Commercial, and Industrial Soil Cleanup Objectives.
5. * Concentration exceeds Protection of Groundwater Soil Cleanup Objectives.
6. If any constituent had an initial quantification of "E" (exceeds calibration range), the diluted re-analysis results are shown with an "R" qualifier (for re-analysis).
7. NS Not Specified
8. Blue Validated Qualifier

Qualifiers (Q):

J: Below quantitation limit, estimated concentration
U: Result below detection limit; the method reporting limit is shown.

Table 4: Remedial Investigation Soil Analytical Results - VOCs
(mg/kg or ppm)

LOCATION					(17) B-18		(17) B-20				(17) B-22[1]	
					2-3'		4-6'		4-6' DUP		0-1'	
SAMPLING DATE					11/2/2017		11/29/2017				10/31/2017	
LAB SAMPLE ID					L1740260-04		L1743779-14		L1743779-16		L1739764-01	
VOCs	Prot. of GW	Restricted Residential	Commercial	Industrial	Results	Q	Results	Q	Results	Q	Results	Q
1,2,4-Trichlorobenzene	NS	NS	NS	NS	0.02	J	0.32	U	0.42	U	0.0045	U
1,2,4-Trimethylbenzene	3.6	52	190	380	2		0.26	J	0.24	J	0.0045	U
1,2-Dichlorobenzene	1.1	100	500	1000	0.31	U	0.026	J	0.022	J	0.0045	U
1,3,5-Trimethylbenzene	8.4	52	190	380	0.63		0.11	J	0.11	J	0.00016	J
1,3-Dichlorobenzene	2.4	49	280	560	0.31	U	0.014	J	0.42	U	0.0045	U
1,4-Dichlorobenzene	1.8	13	130	250	0.31	U	0.32	U	0.42	U	0.0045	U
2-Butanone	0.12	100	500	1000	**4.6***		0.63	U	0.84	U	0.0091	U
Acetone	0.05	100	500	1000	**1.6***		0.63	U	0.84	U	0.012	J+
Benzene	0.06	4.8	44	89	**0.093***		**0.39***		**0.42***		0.00091	U
Bromomethane	NS	NS	NS	NS	0.12	U	0.13	U	0.17	U	0.0018	U
Carbon disulfide	NS	NS	NS	NS	0.62	U	0.63	U	0.84	U	0.0091	U
Chlorobenzene	1.1	100	500	1000	0.062	U	0.063	U	0.084	U	0.00091	U
Cyclohexane	NS	NS	NS	NS	0.064	J	4		5.1		0.018	U
Ethylbenzene	1	41	390	780	**1.6***		0.96	J	0.5	J	0.00091	U
Isopropylbenzene	NS	NS	NS	NS	0.34		1.6		1.3		0.00091	U
Methyl Acetate	NS	NS	NS	NS	0.26	J	1.3	U	1.7	U	0.018	U
Methyl cyclohexane	NS	NS	NS	NS	0.074	J	6		7		0.0036	U
Methyl tert butyl ether	0.93	100	500	1000	0.12	U	0.13	U	0.17	U	0.0018	U
Methylene chloride	0.05	100	500	1000	**0.2***	J	0.63	U	0.84	U	0.0091	U
n-Butylbenzene	12	100	500	1000	0.092		3		2.4		0.00091	U
n-Propylbenzene	3.9	100	500	1000	0.52		**7.3***		**5.2***		0.00091	U
Naphthalene	12	100	500	1000	1.7		2.6		1.3		0.00013	J
o-Xylene	NS	NS	NS	NS	2.1		0.049	J	0.052	J	0.0018	U
p-Isopropyltoluene	NS	NS	NS	NS	0.17		0.16		0.12		0.00052	J
p/m-Xylene	NS	NS	NS	NS	4		0.36		0.36		0.0018	U
sec-Butylbenzene	11	100	500	1000	0.07		1.1		0.95		0.00091	U
Styrene	NS	NS	NS	NS	12		0.13	U	0.17	U	0.0018	U
tert-Butylbenzene	5.9	100	500	1000	0.31	U	0.026	J	0.027	J	0.0045	U
Tetrachloroethene	1.3	19	150	300	0.038	J	0.063	U	0.084	U	0.00091	U
Toluene	0.7	100	500	1000	**2.5***		0.068	J	0.067	J	0.00018	J+
Trichlorofluoromethane	NS	NS	NS	NS	19	U	0.32	U	0.42	U	0.00073	J+

Table 4: Remedial Investigation Soil Analytical Results - VOCs
(mg/kg or ppm)

LOCATION					(17) B-23		(17) B-23		(17) B-24		(17) B-25	
					0-1'		0-1' (DUP 02)		0-1'		0-1'	
SAMPLING DATE					11/1/2017						10/31/2017	
LAB SAMPLE ID					L1739969-17		L1739969-27		L1739969-11		L1739764-20	
VOCs	Prot. of GW	Restricted Residential	Commercial	Industrial	Results	Q	Results	Q	Results	Q	Results	Q
1,2,4-Trimethylbenzene	3.6	52	190	380	0.0054	U	0.00035	J	0.0005	J	0.0049	U
1,3,5-Trimethylbenzene	8.4	52	190	380	0.0054	U	0.00016	J	0.00024	J	0.0049	U
2-Butanone	0.12	100	500	1000	0.0071	J	0.0037	J	0.011	U	0.0098	U
Acetone	0.05	100	500	1000	0.034		0.022		0.011	U	0.0098	U
Benzene	0.06	4.8	44	89	0.00032	J	0.00029	J	0.00032	J	0.00098	U
cis-1,2-Dichloroethene	0.25	100	500	1000	0.00043	J	0.00065	J	0.0011	U	0.00098	U
Cyclohexane	NS	NS	NS	NS	0.00082	J	0.00051	J	0.023	U	0.02	U
Ethylbenzene	1	41	390	780	0.0011	U	0.00079	U	0.00035	J	0.00098	U
Methyl cyclohexane	NS	NS	NS	NS	0.0014	J	0.0009	J	0.00039	J	0.0039	U
Naphthalene	12	100	500	1000	0.00039	J	0.00035	J	0.00044	J	0.0049	U
o-Xylene	NS	NS	NS	NS	0.0022	U	0.0016	U	0.00044	J	0.002	U
p/m-Xylene	NS	NS	NS	NS	0.0022	U	0.0016	U	0.00042	J	0.002	U
Toluene	0.7	100	500	1000	0.00031	J	0.0012	U	0.00028	J	0.0015	U
Vinyl chloride	0.02	0.9	13	27	0.0022	U	0.00031	J	0.0023	U	0.002	U

Table 4: Remedial Investigation Soil Analytical Results - VOCs
(mg/kg or ppm)

LOCATION					(17) B-25		(17) B-26		(17) B-27			
					46"		0-1'		0-1'		2 1/2'	
SAMPLING DATE					10/31/2017							
LAB SAMPLE ID					L1739764-25		L1739764-06		L1739764-14		L1739764-19	
VOCs	Prot. of GW	Restricted Residential	Commercial	Industrial	Results	Q	Results	Q	Results	Q	Results	Q
1,2,4-Trimethylbenzene	3.6	52	190	380	0.00074	J	0.004	U	0.0025	J	2.7	
1,3,5-Trimethylbenzene	8.4	52	190	380	0.0003	J	0.004	U	0.0014	J	1.1	
2-Butanone	0.12	100	500	1000	0.029		0.0081	U	0.0088	U	0.56	U
Acetone	0.05	100	500	1000	**0.17***		0.0029	J	0.026		0.56	U
Benzene	0.06	4.8	44	89	0.00064	J	0.00081	U	0.00022	J	0.056	U
Bromomethane	NS	NS	NS	NS	0.0029	U	0.0016	U	0.0018	U	0.11	
Carbon disulfide	NS	NS	NS	NS	0.0044	J	0.0081	U	0.00098	J	0.56	U
Cyclohexane	NS	NS	NS	NS	0.029	U	0.016	U	0.00086	J	0.079	J
Ethylbenzene	1	41	390	780	0.0015	U	0.00081	U	0.00086	J	0.083	
Isopropylbenzene	NS	NS	NS	NS	0.0015	U	0.00081	U	0.00029	J	0.04	J
Methyl Acetate	NS	NS	NS	NS	0.0041	J	0.016	U	0.018	U	1.1	U
Methyl cyclohexane	NS	NS	NS	NS	0.0013	J	0.0032	U	0.002	J	0.21	J
Methyl tert butyl ether	0.93	100	500	1000	0.0029	U	0.0016	U	0.0018	U	0.0089	J
n-Butylbenzene	12	100	500	1000	0.0015	U	0.00081	U	0.00088	U	0.25	
n-Propylbenzene	3.9	100	500	1000	0.0015	U	0.00081	U	0.00037	J	0.23	
Naphthalene	12	100	500	1000	0.0097		0.004	U	0.0016	J	3.6	
o-Xylene	NS	NS	NS	NS	0.0029	U	0.0016	U	0.0019		0.28	
p-Isopropyltoluene	NS	NS	NS	NS	0.00056	J	0.00026	J	0.00022	J	0.055	J
p/m-Xylene	NS	NS	NS	NS	0.0029	U	0.0016	U	0.0014	J	0.34	
sec-Butylbenzene	11	100	500	1000	0.0015	U	0.00081	U	0.0002	J	0.072	
Styrene	NS	NS	NS	NS	0.0029	U	0.0016	U	0.00036	J	0.11	U
Tetrachloroethene	1.3	19	150	300	0.0015	U	0.00081	U	0.00029	J	0.056	U
Toluene	0.7	100	500	1000	0.00047	J	0.00018	J	0.00067	J	0.044	J

Table 4: Remedial Investigation Soil Analytical Results - VOCs
(mg/kg or ppm)

LOCATION					(17) SS-4		(17) SS-5		(17) TP-5		MW3R	
					2-6"		2-6"		0-1'		6-8'	
SAMPLING DATE					11/1/2017				10/30/2017		12/1/2017	
LAB SAMPLE ID					L1739764-13		L1739969-26		L1739503-08		L1744164-04	
VOCs	Prot. of GW	Restricted Residential	Commercial	Industrial	Results	Q	Results	Q	Results	Q	Results	Q
1,2,4-Trichlorobenzene	NS	NS	NS	NS	0.0067	U	0.0056	U	0.019	J	0.3	U
1,2,4-Trimethylbenzene	3.6	52	190	380	0.0067	U	0.0056	U	0.12	J	**8.3***	
1,2-Dichlorobenzene	1.1	100	500	1000	0.0067	U	0.0056	U	0.33	U	0.3	U
1,3,5-Trimethylbenzene	8.4	52	190	380	0.0067	U	0.0056	U	0.049	J	0.38	
1,4-Dichlorobenzene	1.8	13	130	250	0.0067	U	0.0056	U	0.33	U	0.014	J
2-Butanone	0.12	100	500	1000	0.013	U	0.011	U	**0.22***	J	0.6	U
Acetone	0.05	100	500	1000	0.0038	J	0.011	U	**0.25***	J	0.6	U
Benzene	0.06	4.8	44	89	0.0013	U	0.0011	U	0.032	J	**1.8***	
Carbon disulfide	NS	NS	NS	NS	0.013	U	0.011	U	0.09	J	0.6	U
Chlorobenzene	1.1	100	500	1000	0.0013	U	0.0011	U	0.066	U	0.06	U
Cyclohexane	NS	NS	NS	NS	0.027	U	0.022	U	1.3	U	1.2	U
Ethylbenzene	1	41	390	780	0.0013	U	0.0011	U	0.26		**1.5***	
Isopropylbenzene	NS	NS	NS	NS	0.0013	U	0.0011	U	0.042	J	1.4	
Methyl Acetate	NS	NS	NS	NS	0.027	U	0.022	U	0.28	J	1.4	
Methyl cyclohexane	NS	NS	NS	NS	0.0053	U	0.0045	U	0.056	J	2.8	
Methyl tert butyl ether	0.93	100	500	1000	0.0027	U	0.0022	U	0.13	U	0.061	J
Methylene chloride	0.05	100	500	1000	0.013	U	0.011	U	0.66	U	0.6	U
n-Butylbenzene	12	100	500	1000	0.0013	U	0.0011	U	0.018	J	1.7	
n-Propylbenzene	3.9	100	500	1000	0.0013	U	0.0011	U	0.038	J	**4.3***	
Naphthalene	12	100	500	1000	0.00048	J	0.0056	U	0.27	J	3.5	
o-Xylene	NS	NS	NS	NS	0.0027	U	0.0022	U	0.28		0.75	
p/m-Xylene	NS	NS	NS	NS	0.0027	U	0.0022	U	0.4		3.5	
sec-Butylbenzene	11	100	500	1000	0.0013	U	0.0011	U	0.066	U	0.69	
Styrene	NS	NS	NS	NS	0.0027	U	0.0022	U	0.3		0.12	U
tert-Butylbenzene	5.9	100	500	1000	0.0067	U	0.0056	U	0.33	U	0.3	U
Tetrachloroethene	1.3	19	150	300	0.0013	U	0.0011	U	0.066		0.06	U
Toluene	0.7	100	500	1000	0.002	U	0.0017	U	0.21		**0.99***	

Notes:

1. All detections shown in mg/kg or ppm.
2. **Bold Red** Concentration exceeds Restricted Residential Soil Cleanup Objectives.
3. **Bold Red** Concentration exceeds both Restricted Residential and Commercial Soil Cleanup Objectives.
4. * Concentration exceeds Restricted Residential, Commercial, and Industrial Soil Cleanup Objectives.
5. * Concentration exceeds Protection of Groundwater Soil Cleanup Objectives.
6. - Analyte not sampled for
7. If any constituent had an initial quantification of "E" (exceeds calibration range), the diluted re-analysis results are shown.
8. NS Not Specified
9. Blue Validated Qualifier
10. [1] A re-analysis of this sample occurred. Initial results are reported due to a QC exceedance in the re-analyzed sample.

Qualifiers (Q):

J: Below quantitation limit, estimated concentration
U: Result below detection limit; the method reporting limit is shown.

Table 5: Groundwater Analytical Results - PCBs

PCBs	Groundwater Standard (Part	September 28, 2007				October 11, 2007
		GW-1	GW-2	GW-3	GW-4	GW-15
Total PCBs	0.09	U	U	U	**4.11**	U

Source: Passero Associates, October 2007 (The Passero sample prefixes "GW" correspond to the "P" location on the Figure 9)

PCBs	Groundwater Standard (Part	MW-1		MW-2			MW-3				MW-3R	MW-4			MW-5	
		Aug 2008	Jul 2010	Aug 2008	Jul 2010	Feb 2013	Aug 2008	Jul 2010	Jul 2012	Feb 2013	Dec 2017	Aug 2008	Jul 2010	Jul 2010 D	Aug 2008	Sep 2008 D
Total PCBs	0.09	U	U	U	U	U	U	U	**0.21 J**	U	U	0.0003 J	U	U	U	U

PCBs	Groundwater Standard (Part	MW-6						MW-7						MW-8					MW-8A
		Aug 2008	Jul 2010	Jul 2012	Feb 2013	Dec 2017	Dec 2017	Sep 2008	Jul 2010	Jul 2012	Jul 2012	Feb 2013	Dec 2017	Sep 2008	Sep 2008	Jul 2010	Jul 2012	Feb 2013	May 2016
Total PCBs	0.09	U	U	U	U	U	U	0.0006	**0.73**	**1.4**	**0.72**	U	U	U	U	U	**4.8**	U	U

PCBs	Groundwater Standard (Part	MW-9						MW-10			MW-11		
		Sep 2008	Jul 2010	Jul 2012	Feb 2013	May 2016	Dec 2017	Jul 2010	Jul 2012	Feb 2013	Jul 2010	Jul 2012	Feb 2013
Total PCBs	0.09	U	U	U	U	U	U	U	U	U	U	U	U

PCBs	Groundwater Standard (Part	MW-13				MW-14			MW-16
		Jul 2010	Jul 2012	Feb 2013	Dec 2017	Jul 2012	Feb 2013	Feb 2013	Feb 2013
Total PCBs	0.09	U	U	U	U	**0.49**	U	U	U

Source: O'Brien and Gere, June 2013

Notes:

1. All Results in ug/L (ppb)
2. U: Result under detection limit.
3. **Bold Red** Concentration exceeds NYSDEC Part 703 Water Quailty Standard for Ambient Groundwater
4. D: Indicates duplicate sample
5. F: Indicates filtered sample
6. R: Indicates replacement well

Qualifiers:

U Result below the detection limit

J Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL. The concentration given is an approximate value.

Table 6: Historical Groundwater Analytical Results - SVOCs

SVOCs	Groundwater Standard (Part 703)	MW-1		MW-2			MW-3				MW-4			MW-5		MW-6				MW-7					MW-8				
		Aug 2008	Jul 2010	Aug	Jul 2010	Feb 2013	Aug 2008	Jul 2010	Jul 2012	Feb 2013	Aug 2008	Jul 2010	Jul 2010 D	Aug 2008[4]	Sep 2008 D	Aug 2008	Jul 2010	Jul 2012	Feb 2013	Sep 2008	Jul 2010	Jul 2012	Jul 2012 D	Feb 2013	Sep 2008	Sep 2008 D	Jul 2010	Jul 2012	Feb 2013
Total Phenols	1	**5** J	U	**2** J	U	U	**62**	**13.9**	U	U	**22**	**9.68** J	**10.3** J	**9**	**15.5**	**21**	**7.6** J	U	U	U	U	U	U	U	0.8	0.4	U	U	U
2,4-Dinitrotoluene	5	U	U	U	U	U	U	U	U	U	U	U	U	**5**	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2,6-Dinitrotoluene	5	U	U	U	U	U	U	U	U	U	U	U	U	**5**	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2-Chloronaphthalene	5	U	U	U	U	U	U	U	U	U	U	U	U	**5**	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2-Nitroaniline	5	U	U	U	U	U	U	U	U	U	U	U	U	**10**	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3,3'-Dichlorobenzidine	5	U	U	U	U	U	U	UJ	U	U	U	U	U	**5**	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3-Nitroaniline	5	U	U	U	U	U	U	U	U	U	U	U	U	**10**	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4-Chloroaniline	5	U	U	U	U	U	U	U	U	U	U	U	U	**5**	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4-Nitroaniline	5	U	U	U	U	U	U	U	U	U	U	U	U	**10**	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Bis(2-chloroethoxy)methane	5	U	UJ	U	UJ	U	U	U	U	U	U	UJ	UJ	**5**	U	U	UJ	U	U	U	UJ	U	U	U	U	U	UJ	U	U
Bis(2-chloroethyl)ether	1	U	UJ	U	UJ	U	U	U	U	U	U	UJ	UJ	**5**	U	U	UJ	U	U	U	UJ	U	U	U	U	U	UJ	U	U
Bis(2-ethylhexyl) phthalate	5	U	U	U	U	U	U	U	U	U	U	U	U	**5**	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Hexachlorobenzene	0.04	U	U	U	U	U	U	U	U	U	U	U	U	**5**	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Hexachlorobutadiene	0.5	U	U	U	U	U	U	U	U	U	U	U	U	**5**	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Hexachlorocyclopentadiene	5	U	U	U	U	U	U	UJ	U	U	U	U	U	**5**	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Hexachloroethane	5	U	U	U	U	U	U	U	U	U	U	U	U	**5**	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Nitrobenzene	0.4	U	U	U	U	U	U	U	U	U	U	U	U	**5**	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

SVOCs	Groundwater Standard (Part 703)	MW-9				MW-10			MW-11			MW-13			MW-14			MW-16
		Sep 2008	Jul 2010	Jul	Feb 2013	Jul 2010	Jul 2012	Feb 2013	Jul 2010	Jul 2012	Feb 2013	Jul 2010	Jul 2012	Feb 2013	Jul 2012	Feb 2013	Feb 2013	Feb 2013
Total Phenols	1	**3** J	U	U	U	**41**	U	U	**8.4** J	U	U	U	U	U	U	U	U	U
2,4-Dinitrotoluene	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2,6-Dinitrotoluene	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2-Chloronaphthalene	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2-Nitroaniline	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3,3'-Dichlorobenzidine	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3-Nitroaniline	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4-Chloroaniline	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4-Nitroaniline	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Bis(2-chloroethoxy)methane	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Bis(2-chloroethyl)ether	1	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Bis(2-ethylhexyl) phthalate	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Hexachlorobenzene	0.04	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Hexachlorobutadiene	0.5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Hexachlorocyclopentadiene	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Hexachloroethane	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Nitrobenzene	0.4	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

Source: O'Brien and Gere, June 2013

Notes:

1. Exceedances shown; all results in ug/L (ppb)
2. U: Result under detection limit.
3. **Bold Red** Concentration exceeds NYSDEC Part 703 Water Quailty Standard for Ambient Groundwater
4. The listed results for MW-5 (August 2008) were taken from OBG summary tables. The reported values are suspect but the original lab report was not available.

Qualifiers:

J Below quantitation limit, estimated concentration
B Analyte found in associated blank.

Table 7A: Historical Groundwater Analytical Results - Metals

Metals	Groundwater Standard (Part 703)	MW-1		MW-2			MW-3				MW-4			MW-5	
		Aug 2008	Jul 2010	Aug 2008	Jul 2010	Feb 2013	Aug 2008	Jul 2010	Jul 2012	Feb 2013	Aug 2008	Jul 2010	Jul 2010 D	Aug 2008	Sep 2008 D
Antimony	0.003	U	U	U	U	U	U	U	U	U	U	U	U	**0.0055**	**0.0055**
Arsenic	0.025	0.008	U	U	U	U	0.0041 B	U	**0.026**	0.0084 J	0.0049 B	U	U	0.0037	0.0037
Barium	1	**1.98**	**1.09**	0.616	**1.67**	**1.9**	**2.39**	**1.94**	0.94 B	0.64	**1.29**	0.223	0.231	**1.7**	**1.7**
Cadmium	0.005	U	U	U	U	U	U	U	U	U	U	U	U	0.0027	0.0027
Copper	0.2	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Iron	0.3	**1.19**	**1.99** J	**1.64**	**9.22** J	**8.6**	**0.333**	**1.13** J	0.12 B	0.074	**0.355**	0.035 J	0.023 J	**16.4**	**16.6**
Lead	0.025	0.0052	U	0.0084	0.0036	U	0.018	U	0.0033	U	0.0051	U	U	0.0067	0.0081
Manganese	0.3	0.0262	**0.315**	0.0204	0.0501	0.033	0.0076	0.0775	0.0026 J	0.0047	0.0086	0.0003 J	0.0002 J	0.138	0.139
Mercury	0.0007	U	0.0001 J	U	0.0001 J	U	**0.0017**	0.0002	U	U	U	U	U	0.00012	0.00012
Selenium	0.01	U	U	U	U	U	U	U	U	U	U	U	U	0.0061	0.0061
Sodium	20	**432**	**180** J	**189**	**228** J	**208**	**328**	**229** J	**353** B	**564**	**174**	**225** J	**234** J	**300**	**312**

Metals	Groundwater Standard (Part 703)	MW-6				MW-7					MW-8				
		Aug 2008	Jul 2010	Jul 2012	Feb 2013	Sep 2008	Jul 2010	Jul 2012	Jul 2012 D	Feb 2013	Sep 2008	Sep 2008 D	Jul 2010	Jul 2012	Feb 2013
Antimony	0.003	U	**0.02**	U	U	U	U	U	U	U	**0.0055**	**0.0055**	U	U	U
Arsenic	0.025	U	0.01	U	U	U	U	U	U	U	U	U	U	U	U
Barium	1	0.169	0.245	0.18 B	0.22	**1.29**	**3.15**	0.063 B	0.62	0.7	0.0646	0.0657	0.0408	0.038 B	0.058
Cadmium	0.005	U	U	U	U	0.0012	**0.0064**	0.0047	0.0044	0.00	0.00033	0.00033	U	U	U
Copper	0.2	0.002 B	0.0044 J	U	0.0069 J	0.0791	**0.243**	**0.24**	**0.21**	0.027	0.0013	0.0013	0.0029 J	U	0.0046 J
Iron	0.3	0.19	U	0.21 B	0.022 J	**9.8**	**16.9** J	**6.3** B	**6.4**	**2.5**	**1.69**	**1.63**	0.096 J	0.06 B	**0.71**
Lead	0.025	U	U	0.0065	U	**0.0479**	**0.239**	**0.15**	**0.14**	0.022	0.0029	0.0029	U	U	U
Manganese	0.3	0.0115	0.0008 J	0.0028	0.0004 J	0.211	0.239	0.086	0.085	0.065	0.188	0.183	0.0264	0.016 B	0.22
Mercury	0.0007	**0.001**	0.0003	**0.00085**	**0.00081**	**0.00148** B	**0.0007**	0.00015 J	0.00014 J	U	0.00012	0.00012	0.0001 J	U	U
Selenium	0.01	U	U	U	U	U	U	U	U	U	0.0061	0.0061	U	U	U
Sodium	20	**262**	**214** J	**312**	**310**	**126**	**209** J	**124**	**127**	**96.7**	**182**	**190**	**203** J	**201** B	**204**

Metals	Groundwater Standard (Part 703)	MW-9				MW-10			MW-11			MW-13		
		Sep 2008	Jul 2010	Jul 2012	Feb 2013	Jul 2010	Jul 2012	Feb 2013	Jul 2010	Jul 2012	Feb 2013	Jul 2010	Jul 2012	Feb 2013
Antimony	0.003	U	U	U	U	**0.0076** J	U	U	U	U	U	U	U	U
Arsenic	0.025	U	U	U	U	0.0154	U	U	U	U	U	U	U	U
Barium	1	0.0936	0.108	0.088 B	0.087	**1.7600**	0.89 B	**1.3**	0.576	0.07 B	0.61	0.0496	U	0.063
Cadmium	0.005	U	U	U	U	U	0.0006 J	U	U	U	U	U	U	U
Copper	0.2	U	0.0024 J	U	0.0035 J	0.0032 J	0.0018 J	0.0056 J	0.0047 J	U	0.0025 J	0.0045	U	0.0028 J
Iron	0.3	0.0736	0.042 J	0.071 B	0.044 J	0.0700 J	**2.1** B	**3**	**2.03** J	0.24 B	**1.7**	0.246 J	U	0.14
Lead	0.025	U	U	U	U	0.0072	U	0.0086	0.0115	0.0039 J	U	0.0049 J	U	U
Manganese	0.3	0.0036 B	0.0009 J	0.00094 JB	U	0.0035	0.053 B	0.041	0.0707	0.02 B	0.11	0.0209	U	0.038
Mercury	0.0007	**0.00467**	**0.0009**	0.00036	0.0006	0.0001 J	U	U	U	U	U	0.0006	U	U
Selenium	0.01	U	U	U	U	U	U	U	U	U	U	U	U	U
Sodium	20	**246**	**264** J	**214** B	**287**	**696** J	**480** B	**474**	**287** J	**288** B	**243**	**251** J	U	**200**

Metals	Groundwater Standard (Part 703)	MW-14			MW-16
		Jul 2012	Feb 2013	Feb 2013 D	Feb 2013
Antimony	0.003	U	U	U	U
Arsenic	0.025	U	U	U	0.018
Barium	1	U	0.05	0.05	**2.6**
Cadmium	0.005	U	U	U	0.0013
Copper	0.2	U	0.0049 J	0.0032 J	0.012
Iron	0.3	U	U	U	**5.6**
Lead	0.025	U	U	U	**0.041**
Manganese	0.3	U	U	U	0.17
Mercury	0.0007	U	U	U	U
Selenium	0.01	U	U	**0.01** J	U
Sodium	20	U	**217**	**222**	**380**

Source: O'Brien and Gere, June 2013

Notes:

1. Exceedances shown; all results in mg/L (ppm)
2. U: Result under detection limit.
3. **Bold Red** Concentration exceeds NYSDEC Part 703 Water Quailty Standard for Ambient Groundwater

Qualifiers:

J Below quantitation limit, estimated concentration

B Analyte found in associated blank.

Table 7B: Remedial Investigation Groundwater Analytical Results - Metals
(mg/L or ppm)

Sample ID		MW-2A		MW-2A (DUP1)		MW-3R		MW-6		MW-7		MW-8A		MW-9		MW-9		MW-13		MW-16	
Lab Sample Number		**I6833-01**		**I6833-02**		**I7053-02**		**I6833-04**		**I6833-09**		**H3312-03**		**H3312-02**		**I6833-08**		**I6833-07**		**I6833-10**	
Sampling Date		**12/6/2017**		**12/6/2017**		**12/20/2017**		**12/7/2017**		**12/7/2017**		**5/25/2016**		**5/25/2016**		**12/7/2017**		**12/7/2017**		**12/7/2017**	
Constituent	**Groundwater Standard (Part 703)**	**Results**	**Q**	**Results**	**Q**	**Results**	**Q**	**Results**	**Q**	**Results**	**Q**	**Results**	**Q**	**Results**	**Q**	**Results**	**Q**	**Results**	**Q**	**Results**	**Q**
Aluminum	NS	0.0398	J	0.0178	J	0.0125	U	0.0125	U	0.121		0.0595		0.0171	J	0.0125	U	0.314		0.0678	
Arsenic	0.025	0.00708	J	0.00728	J	0.00306	J	0.0025	U	0.0025	U	0.00566	J	0.01	U	0.0025	U	0.00252	J	0.0131	
Barium	1	**1.33**		**1.42**		**1.43**		0.162		0.645		0.0513		0.0914		0.101		0.0294	J	0.364	
Cadmium	0.005	0.00075	U	0.00075	U	0.00075	U	0.00075	U	0.00075	U	0.003	U	0.003	U	0.00075	U	0.000705	J	0.00132	J
Calcium	NS	51.5		54.7		1040		450		80.1		52.1		519		579		31.7		12.2	
Chromium	0.05	0.00589		0.0086		0.0126		0.00282	J	0.00598		0.00202	J	0.005	U	0.00991		0.0041	J	0.00521	
Copper	0.2	0.0025	U	0.00204	J	0.0025	U	0.00256	J	0.0103		0.01	U	0.01	U	0.0025	U	0.0025	U	0.00763	J
Iron	0.3	**6.54**		**7.01**		0.0587		0.0519		**1.99**		**4.04**		0.0407	J	0.0823		**0.318**		**0.477**	
Lead	0.025	0.00561	J	0.00647		0.0015	U	0.00283	J	0.0139		0.006	U	0.006	U	0.00198	J	0.0095		**0.0428**	
Magnesium	NS	17.2		18.3		0.25	U	0.4	J	19.7		20.1		0.157	J	0.25	U	5.44		3.9	
Manganese	0.3	0.0468		0.0504		0.0025	U	0.0025	U	0.132		0.168		0.01	U	0.0025	U	0.0285		0.0127	
Mercury	0.0007	0.0001	U	0.0001	U	0.000497		0.000277		0.0001	U	0.0002	U	0.00111		0.000277		0.000322		0.0001	U
Nickel	0.1	0.00513	J	0.00841	J	0.0148	J	0.005	U	0.00844	J	0.00467	J	0.02	U	0.00515	J	0.00593	J	0.0188	J
Potassium	NS	52.6		56.1		42.1		27.2		12.9		24.7		27.9		31.7		14.4		27.1	
Sodium	20	**209**		**222**		**344**		**207**		**49.2**		**181**	N	**234**	N	**259**		**91.5**		**328**	
Vanadium	NS	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005		0.02	U	0.005	U	0.005	U	0.0162	J
Zinc	NS	0.00537	J	0.00768	J	0.0189	J	0.0107	J	0.095		0.005		0.02	U	0.005	U	0.315		0.0383	

Notes:

1. All values reported in mg/L.
2. **Bold Red** Concentration exceeds NYSDEC Part 703 Water Quailty Standard for Ambient Groundwater
3. NS Not Specified
4. Blue Validated Qualifier

Qualifiers (Q):

U: Result below the detection limit; the method reporting limit is shown.

J: Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL. The

N: Indicates the spiked sample recovery is not within control limits.

Table 8A: Historical Groundwater Analytical Results - VOCs

VOCs	Groundwater Standard (Part 703)	Sep 2007			
		GW-1	GW-2	GW-3	GW-4
1,1,2-Trichloroethane	1	U	U	U	U
1,2-Dibromo-3-chloropropane	0.04	U	U	U	U
1,2-Dichloroethane	0.6	U	U	U	U
1,2-Dichloropropane	1	U	U	U	U
Benzene	1	U	U	U	**2.01**
Chloroethane	5	U	U	U	U
Total Dichloropropene	0.4	U	U	U	U
Ethylbenzene	5	U	U	U	U
Isopropylbenzene	5	U	U	U	U
Methyl tert-Butyl Ether	10	U	U	U	U
Methylene Chloride	5	U	U	U	U
Styrene	5	U	U	U	U
Toluene	5	U	U	U	U
Trichlorofluoromethane	5	U	U	U	4.99
Vinyl chloride	2	U	U	U	U
Xylenes, total	5	U	U	U	U

VOCs	Groundwater Standard (Part 703)	Oct 2007		
		GW-12	GW-15	GW-19
1,1,2-Trichloroethane	1	U	U	U
1,2-Dibromo-3-chloropropane	0.04	U	U	U
1,2-Dichloroethane	0.6	U	U	U
1,2-Dichloropropane	1	U	U	U
Total Dichloropropene	0.4	U	U	U
Benzene	1	U	U	**44.4**
Chloroethane	5	U	U	U
Ethylbenzene	5	U	U	**17.7**
Isopropylbenzene	5	U	U	U
Methyl tert-Butyl Ether	10	5.36	3.71	86.9
Methylene Chloride	5	U	U	U
Styrene	5	U	U	U
Toluene	5	U	U	**220**
Trichlorofluoromethane	5	U	U	U
Vinyl chloride	2	U	U	U
Xylenes, total	5	U	U	**88**

Source: Passero Associates, October 2007 (The Passero sample prefixes "GW" correspond to the "P" location on the Figure 11)

VOCs	Groundwater Standard (Part 703)	MW-1		MW-2			MW-3				MW-4			MW-5		MW-6			
		Aug 2008	Jul 2010	Aug 2008	Jul 2010	Feb 2013	Aug 2008	Jul 2010	Jul 2012	Feb 2013	Aug 2008	Jul 2010	Jul 2010 D	Aug 2008	Sep 2008 D	Aug 2008	Jul 2010	Jul 2012	Feb 2013
1,1,2-Trichloroethane	1	U	U	U	UJ	U	U	U	U	U	U	U	U	**1**	U	U	U	U	U
1,2-Dibromo-3-chloropropane	0.04	U	UJ	U	UJ	U	U	UJ	U	U	U	UJ	UJ	**1**	U	U	UJ	U	U
1,2-Dichloroethane	0.6	U	U	U	U	U	**0.94** J	U	U	U	U	U	U	**1**	U	U	U	U	U
1,2-Dichloropropane	1	U	U	U	U	U	U	U	U	U	U	U	U	**1**	U	U	U	U	U
Total Dichloropropene	0.4	U	U	U	U	U	U	U	U	U	U	U	U	**2**	U	U	U	U	U
Benzene	1	**3.9**	0.85 J	**1.7**	0.58 J	U	**12**	**90**	**130**	**570**	**2.6** J	**2.0**	**1.9**	0.7 J	0.68 J	U	**2.3**	**8.1** J	**7.8**
Chloroethane	5	U	U	U	U	U	U	U	U	U	U	U	U	1	U	U	U	U	U
Ethylbenzene	5	0.92 J	0.98 J	U	U	U	**12**	**5.0**	**150**	**250**	**6**	2.6	2.6	0.59 J	0.57 J	1.8	U	U	U
Isopropylbenzene	5	U	U	U	U	U	U	U	U	**12**	U	0.85 J	0.86 J	1	U	U	U	U	U
Methyl tert-Butyl Ether	10	**110**	1.7	**24**	**17**	**14**	**80**	**13**	**67**	**93**	**24**	**26**	**27**	**25**	**25**	**32**	9.5	**21**	**23**
Methylene Chloride	5	U	U	U	U	U	U	**52**	U	U	U	U	U	1	U	U	U	U	U
Styrene	5	U	U	U	U	U	U	U	U	U	U	U	U	1	U	U	U	U	U
Toluene	5	1.2	U	U	U	U	**7.3**	**71**	**500**	**610**	**16**	**11**	**11**	1.1	0.1 J	4.7	1.4	U	4.9 J
Trichlorofluoromethane	5	U	U	U	U	U	U	U	U	U	U	U	U	1	U	U	U	U	U
Vinyl chloride	2	1.1	U	U	U	U	**2.7**	1.4	U	**18**	**10**	**9.5**	**10**	1	U	0.98 J	U	U	U
Xylenes, total	5	4.9	U	U	U	U	**56**	**29**	**680**	**930**	**33**	**15**	**15**	3.9	3.7	**7.4**	2.7	U	**5.6** J

Table 8A: Historical Groundwater Analytical Results - VOCs

VOCs	Groundwater Standard (Part 703)	MW-7					MW-8					MW-9				MW-10			MW-11
		Sep 2008	Jul 2010	Jul 2012	Jul 2012 D	Feb 2013	Sep 2008	Sep 2008 D	Jul 2010	Jul 2012	Feb 2013	Sep 2008	Jul 2010	Jul 2012	Feb 2013	Jul 2010	Jul 2012	Feb 2013	Jul 2010
1,1,2-Trichloroethane	1	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	UJ	U	U
1,2-Dibromo-3-chloropropane	0.04	U	UJ	U	U	U	U	U	UJ	U	U	U	UJ	U	U	UJ	U	U	UJ
1,2-Dichloroethane	0.6	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1,2-Dichloropropane	1	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Total Dichloropropene	0.4	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Benzene	1	U	0.79 J	U	U	U	U	U	U	U	U	U	U	U	U	**7.5**	**2.9** J	U	0.96 J
Chloroethane	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Ethylbenzene	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	**6.4**	U	U	U
Isopropylbenzene	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Methyl tert-Butyl Ether	10	U	0.58 J	U	U	0.33 J	1.8 J	1.8 J	2.6	2.1 J	2.5	1.2 J	2.5	1.7 J	2.8	**38**	**24**	**18** J	3.8
Methylene Chloride	5	**8.2** B	U	U	U	U	**5.4**	**9.1** B	U	U	U	**5.4** B	U	U	U	U	U	U	U
Styrene	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	2.9	U	U	U
Toluene	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	**12**	3.4 J	U	U
Trichlorofluoromethane	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Vinyl chloride	2	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Xylenes, total	5	U	U	U	U	U	U	U	U	U	U	U	U	U	U	**20**	4.1 J	U	U

VOCs	Groundwater Standard (Part 703)	MW-11		MW-13			MW-14			MW-16
		Jul 2012	Feb 2013	Jul 2010	Jul 2012	Feb 2013	Jul 2012	Feb 2013	Feb 2013 D	Feb 2013
1,1,2-Trichloroethane	1	U	U	UJ	UJ	U	U	U	U	U
1,2-Dibromo-3-chloropropane	0.04	U	U	U	U	U	U	U	U	U
1,2-Dichloroethane	0.6	U	U	U	U	U	U	U	U	U
1,2-Dichloropropane	1	U	U	U	U	U	U	U	U	U
Total Dichloropropene	0.4	U	U	U	U	U	U	U	U	U
Benzene	1	U	U	0.61 J	U	U	U	**1.2**	**1.2**	U
Chloroethane	5	U	U	0.61 J	U	U	U	U	U	U
Ethylbenzene	5	U	U	U	U	U	U	U	U	U
Isopropylbenzene	5	U	U	U	U	U	U	U	U	U
Methyl tert-Butyl Ether	10	**11**	2.7 J	9.6	4.3 J	4.3	**12**	**13**	**13**	**64**
Methylene Chloride	5	U	U	U	U	U	U	U	U	U
Styrene	5	U	U	U	U	U	U	U	U	U
Toluene	5	U	U	U	U	U	U	U	U	U
Trichlorofluoromethane	5	U	U	U	U	U	U	U	U	U
Vinyl chloride	2	U	U	U	U	U	U	1.4	1.4	U
Xylenes, total	5	U	U	U	U	U	U	U	U	U

Source: O'Brien and Gere, June 2013

Notes:

1. Exceedances shown; all results in ug/L (ppb)
2. U: Result under detection limit.
3. **Bold Red** Concentration exceeds NYSDEC Part 703 Water Quailty Standard for Ambient Groundwater

Qualifiers:

J Below quantitation limit, estimated concentration
B Analyte found in associated blank.

Table 8B: Remedial Investigation Groundwater Analytical Results - VOCs
(µg/L or ppb)

Sample ID		MW-3R		MW-6		MW-6 (DUP2)		MW-7		MW-9		MW-13	
Lab Sample Number		I7053-02		I6833-04		I6833-03		I6833-09		I6833-08		I6833-07	
Sampling Date		12/20/2017		12/7/2017		12/7/2017		12/7/2017		12/7/2017		12/7/2017	
Constituent	Groundwater Standard (Part 703)	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
1,2-Dichlorobenzene	3	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
1,4-Dichlorobenzene	3	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
2-Butanone	NS	9.8		2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
4-Methyl-2-Pentanone	NS	1.7	J	1	U	1	U	1	U	1	U	1	U
Acetone	NS	51.6		6.3		1.4	J	2	J	7.4		1.4	J
Benzene	1	**25.5**		**3.4**	J	0.2	U	0.2	U	0.2	U	0.2	U
Chlorobenzene	5	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Chloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	5	0.58	J	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Cyclohexane	NS	1.8	J	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Ethyl Benzene	5	**19.7**		0.9	J	0.2	U	0.2	U	0.2	U	0.2	U
Isopropylbenzene	5	1.6		0.2	J	0.2	U	0.2	U	0.2	U	0.2	U
m/p-Xylenes	NS	56.9		2.2		0.4	U	0.4	U	0.4	U	0.4	U
Methyl tert-butyl Ether	10	**39.8**		**11.6**	J	0.5	U	0.5	U	0.5	U	0.5	U
Methylcyclohexane	NS	3.8		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Methylene Chloride	5	0.2	U	0.41	J	0.33	J	0.29	J	0.2	U	0.24	J
o-Xylene	5	**22.8**		1.2		0.2	U	0.2	U	0.2	U	0.2	U
Styrene	5	0.2	U	0.28	J	0.2	U	0.2	U	0.2	U	0.2	U
Toluene	5	**40.6**		1.8	J	0.2	U	0.2	U	0.2	U	0.2	U
Trichloroethene	5	0.28	J	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Vinyl Chloride	2	**2.9**		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U

Notes:

1. Table shows detections; detections reported in µg/L.
2. **Bold Red** Concentration exceeds NYSDEC Part 703 Water Quailty Standard for Ambient Groundwater
3. NS Not Specified
4. Blue Validated Qualifier

Qualifiers (Q):

U: The compound was not detected at the indicated concentration.

J: Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL. The concentration given is an approximate value.

Table 9: Remedial Investigation Sub-Slab Vapor Results

LOCATION		VP-1		VP-3		VP-3 DUP	
SAMPLING DATE		2/14/2018					
LAB SAMPLE ID		L1805293-03		L1805293-01		L1805293-02	
VOCs	EPA 2001 BASE 95th Percentile Indoor Air	Results	Q	Results	Q	Results	Q
1,2,4-Trimethylbenzene	13.7	0.983	U	1.04		1.11	
2-Butanone	13.5	1.47	U	2.52		1.47	U
Acetone	120.2	36.3	J	13		11.4	
Benzene	12.5	6.87		3.67		3.87	
Carbon disulfide	6.4	3.64		2.13		2.27	
Cyclohexane	NS	42.3		7.4		7.74	
Dichlorodifluoromethane	32.9	3.4		14		14.6	
Ethyl Alcohol	NS	17.6		9.42	U	9.42	U
Heptane	NS	39.5		18.7		20.1	
iso-Propyl Alcohol	NS	2.14		1.23	U	1.23	U
n-Hexane	15.2	**70.8**		**49**		**52.9**	
p/m-Xylene	28.5	1.74	U	1.74	U	1.76	
Tetrachloroethene	25.4	1.36	U	7.39		7.46	
Toluene	70.8	5.65		4.11		4.15	
Trichloroethene	6.5	1.07	U	2.06		2.12	
Trichlorofluoromethane	54	2.18		1.12	U	1.12	U

Notes:

1. Table shows detections only; results reported in µg/m^3
2. Analysis: TO-15
3. Data is compared to EPA 2001 Building Assessment and Survey Evaluation Database 95th Percentile (EPA 2001 Base) for Indoor and Outdoor Air (per NYSDOH Guidance).
4. **Bold Red:** Represents an exceedance of the 95th percentile of the EPA 2001 Base
5. Blue: Validated Qualifier
6. NS: No Standard

Table 10: Emerging Contaminants Groundwater Results

LOCATION			MW-2A		MW-2A (DUPLICATE)		MW-3R		MW-6		FIELD BLANK		EQUIPMENT BLANK	
SAMPLING DATE			5/21/2021											
	NY MCL	Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
1,4 Dioxane by 8270D-SIM														
1,4-Dioxane	1	µg/l	2.37		2.59		2.41		2.1		0.144	U	0.144	U
Perfluorinated Alkyl Acids by Isotope Dilution														
Perfluorobutanoic Acid (PFBA)		ng/l	116		135		80.1		52.8		1.8	U	1.81	U
Perfluoropentanoic Acid (PFPeA)		ng/l	176	J	190	J	122		79.5		1.8	U	1.81	U
Perfluorobutanesulfonic Acid (PFBS)		ng/l	39.9		36.3		31.9		37		1.8	U	1.81	U
Perfluorohexanoic Acid (PFHxA)		ng/l	174	J	193	J	134		90.2		0.439	J	0.41	J
Perfluoroheptanoic Acid (PFHpA)		ng/l	80.9		88.1		63.6		52		1.8	U	1.81	U
Perfluorohexanesulfonic Acid (PFHxS)		ng/l	187		193		135		93.5		1.8	U	1.81	U
Perfluorooctanoic Acid (PFOA)	10	ng/l	334		382		199		182		1.8	U	1.81	U
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)		ng/l	56.9	J	59.6	J	58.6	J	45.8		1.8	U	1.81	U
Perfluoroheptanesulfonic Acid (PFHpS)		ng/l	19.4		22		6.17		7.31		1.8	U	1.81	U
Perfluorononanoic Acid (PFNA)		ng/l	21		23.5		10.8		12.2		1.8	U	1.81	U
Perfluorooctanesulfonic Acid (PFOS)	10	ng/l	1510	D	1560	D	220		444		1.8	U	1.81	U
Perfluorodecanoic Acid (PFDA)		ng/l	0.544	J	0.562	J	2.3		1.53	J	1.8	U	1.81	U
Perfluorooctanesulfonamide (FOSA)		ng/l	1.82	U	1.84	U	0.97	JF	1.86	U	1.8	U	1.81	U
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)		ng/l	1.82	U	1.84	U	1.2	JF	1.86	U	1.8	U	1.81	U
PFOA/PFOS, Total		ng/l	1840		1940		419		626		1.8	U	1.81	U

Notes:

1. Maximum Concentration Level (MCL) based on Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS), June 2021.
2. Yellow Highlight - Concentration exceeds NY MCL
3. D: Concentration of analyte was quantified from diluted analysis.
4. U - Not detected at the reported detection limit for the sample. Reporting level is listed.
5. JF - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
6. J - Estimated Value. The target analyte concentration is below the quantintation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL)
7. Data qualifiers in black were provided by the laboratory, data qualifiers in red were provided by the Data Validation Firm (Alpha Geoscience)

TABLE 11: BUILDING FLOOR SAMPLES			
Building 1			
Sample ID	**Location**	**PCBs**	**Material Description**
F1-3	Floor	24.9	Concrete
F1-5	Floor	20.4	Concrete
F1-6	Floor	ND	Concrete

Building 2			
Sample ID	**Location**	**PCBs**	**Material Description**
F2-2	Floor	2.3	Concrete
F2-3	Floor	6.4	Concrete
F2-4	Floor	2.7	Concrete
F2-6	Floor	4.2	Concrete
F2-8	Floor	2.8	Concrete

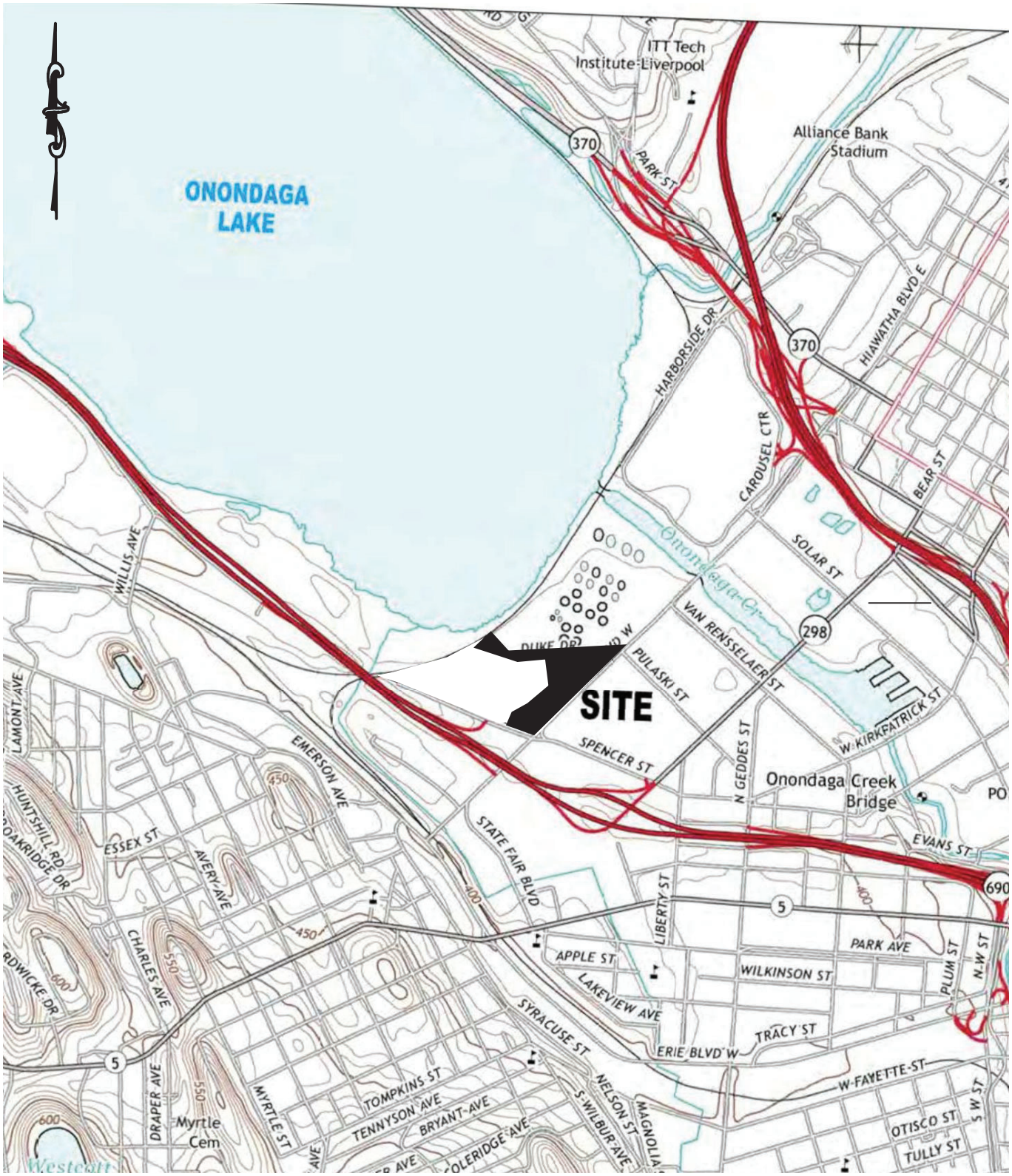
Building 3			
Sample ID	**Location**	**PCBs**	**Material Description**
F3-1	Floor	ND	Concrete
F3-2	Floor	ND	Concrete
F3-6	Floor	ND	Concrete

Building 4			
Sample ID	**Location**	**PCBs**	**Material Description**
F4-1	Floor	ND	Concrete
F4-2	Floor	0.52	Concrete
F4-3	Floor	0.71	Concrete

Building 5			
Sample ID	**Location**	**PCBs**	**Material Description**
F5-1	Floor	0.9 J	Concrete
F5-4	Floor	0.27 J	Concrete

Building 6			
Sample ID	**Location**	**PCBs**	**Material Description**
F6-1	Floor	5.6	Concrete
F6-2	Floor	6.8	Concrete
F6-4	Floor	2.4	Concrete
F6-7	Floor	12	Concrete
F6-8	Floor	0.82	Concrete

FIGURES



REF.: USGS - SYRACUSE WEST (NY) QUAD., 2013

19 British American Blvd.,Latham, New York 12110
P: (518) 782-0882 F: (518) 782-0973 www.jmt.com

Site Location Map

800 Hiawatha Boulevard Site

Syracuse, New York

CITY OF SYRACUSE ONONDAGA CO., NY

PROJ. #:	16140	DATE:	06/08/2021	SCALE:	NTS	DWG. NO.	RIR	FIGURE	1

LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- ELEVATED PORTION OF WALKING TRAIL
- GROUND LEVEL PORTION OF WALKING TRAIL
- BCP BOUNDARY

0 100 200

1"=200'

Note:
The buildings were removed in 2018. Only slabs remain.

JMT
19 British American Blvd.,Latham, New York 12110
P: (518) 782-0882 F: (518) 782-0973 www.jmt.com

Aerial Site Map

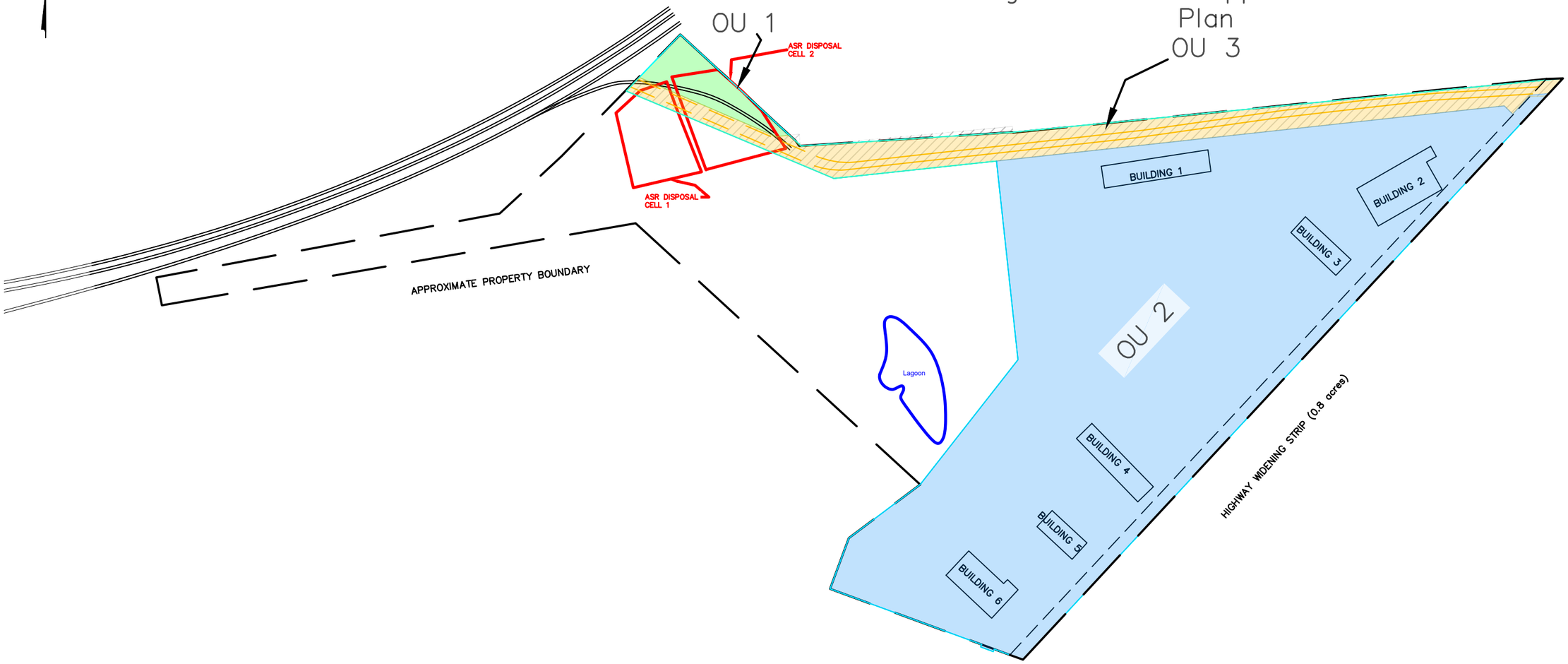
800 Hiawatha Blvd

Syracuse, New York

CITY OF SYRACUSE ONONDAGA CO., NY

PROJ. No.:	16140	DATE:	2/23/21	SCALE:	1"=200'	DWG. NO.	RIR	FIGURE	2

Onondaga Lake Trail–Approved Remediation Plan



LEGEND

BCP SITE

OPERABLE UNIT 1 (0.4 ACRES)

OPERABLE UNIT 2 (13 ACRES)

OPERABLE UNIT 3 (1.7 ACRES)

APPROVED REMEDIATION PLAN

0 100' 200'

1"=200'

Note:
The buildings were removed in 2018. Only slabs remain.

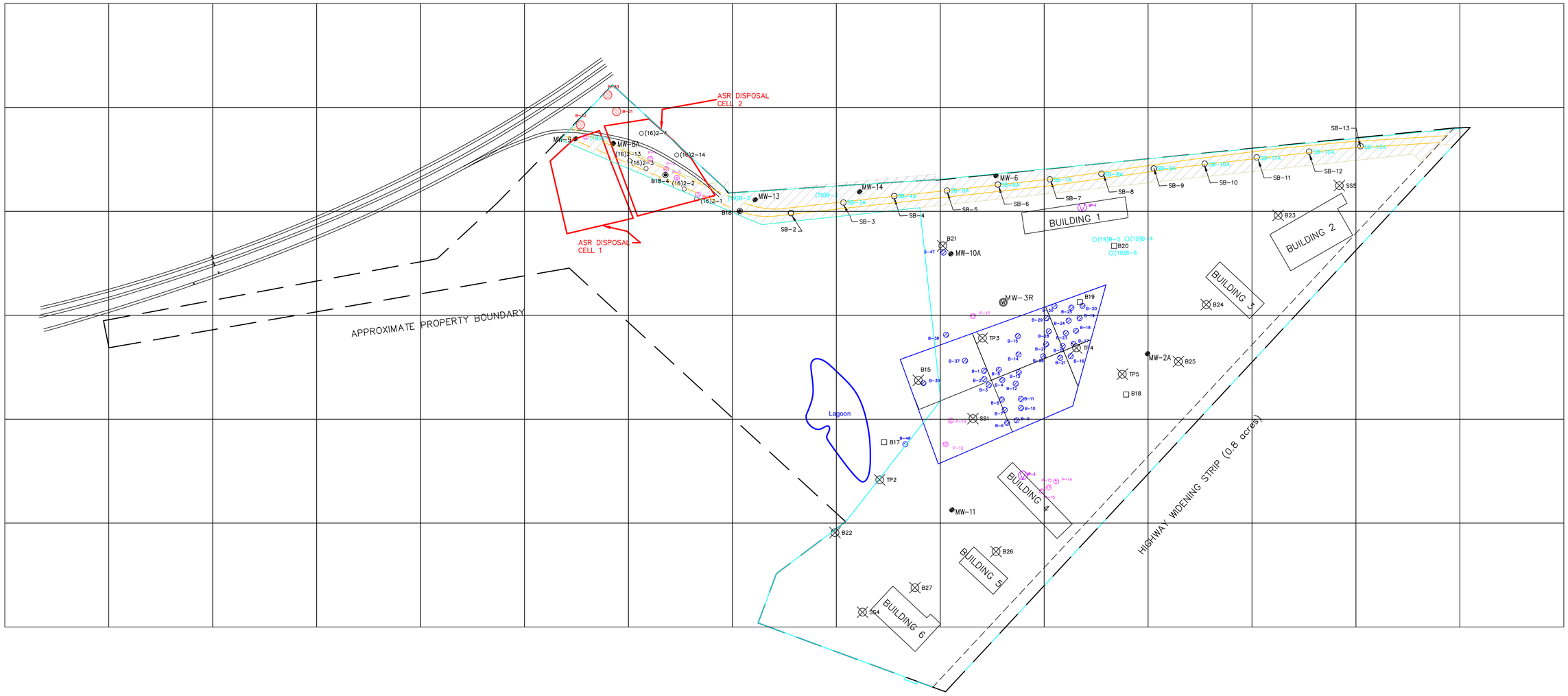
JMT

19 British American Blvd.,Latham, New York 12110
P: (518) 782-0882 F: (518) 782-0973 www.jmt.com

BCP Site and Operable Units
800 Hiawatha Blvd
Syracuse, New York

CITY OF SYRACUSE ONONDAGA CO., NY

PROJ. No.:	16140	DATE:	2/18/21	SCALE:	1"=200'	DWG. NO.	RWP	FIGURE	3



LEGEND

- APPROXIMATE WASTE CELL LOCATIONS
- BAUMGARTNER WASTE CELL SAMPLE LOCATIONS
- PASSERO SAMPLE LOCATIONS
- BROWN AND CALDWELL SAMPLE LOCATIONS
- AECOM SAMPLE LOCATIONS
- O'BRIEN AND GERE SAMPLE LOCATIONS
- FATLYN SOIL TEST BORINGS
- VAPOR POINT SAMPLE LOCATION (2018)
- CLOUGH HARBOR and ASSOCIATES SAMPLE LOCATIONS (SB 1 – SB 13)
- JMT SAMPLE LOCATIONS (2017; B prefix denotes Boring and TP prefix denotes Test Pit)
- JMT SAMPLE LOCATIONS (2017; Originally proposed as Boring but completed as Test Pit)
- GEOTECHNICAL BORINGS (2016 and 2018)
- JMT SAMPLE LOCATIONS (2019)
- MONITORING WELL
- 200' SAMPLING GRID
- 150' SAMPLING GRID
- TRAIL AREA – APPROVED REMEDIATION AREA
- ELEVATED PORTION OF WALKING TRAIL
- GROUND LEVEL PORTION OF WALKING TRAIL
- BCP SITE BOUNDARY

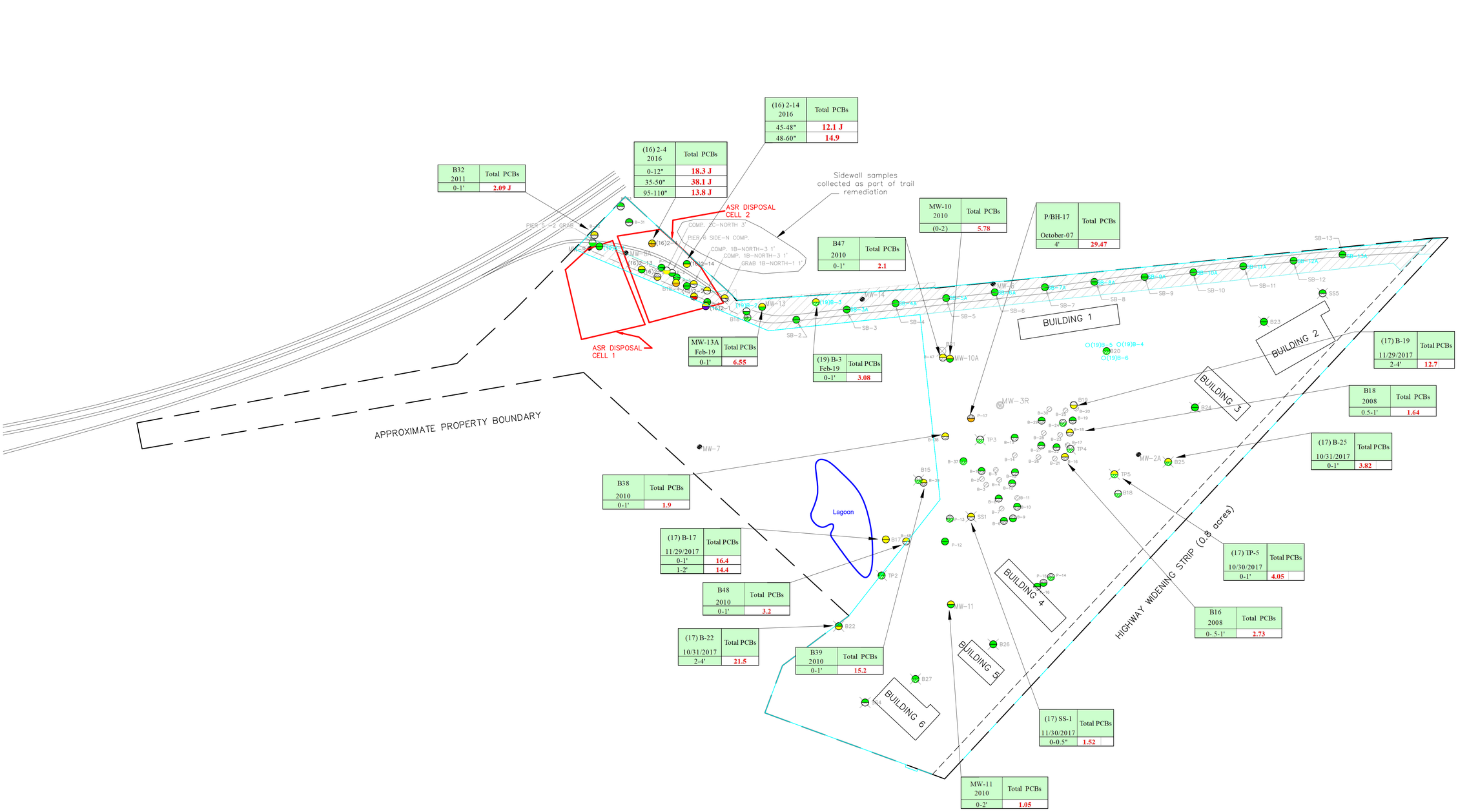
NOTES:
1. All historic sample locations are approximate.
2. The 2017 Remedial Investigation sample locations have the nomenclature (17)[Sample Number] in the RIR text and data tables. The (17) prefix was omitted from this map for clarity.
3. The buildings were removed in 2018. Only slabs remain.

0 50 100
1"=100'

19 British American Blvd.,Latham, New York 12110
P: (518) 782-0882 F: (518) 782-0973 www.jmt.com

SAMPLING LOCATIONS
800 Hiawatha Blvd
Syracuse, New York
CITY OF SYRACUSE ONONDAGA CO., NY

PROJ. No.:	16140	DATE:	2/23/21	SCALE:	1"=100'	DWG. NO.	RIR	FIGURE	4



LEGEND

- APPROXIMATE WASTE CELL LOCATIONS
- PASSERO SAMPLE LOCATIONS
- BROWN AND CALDWELL SAMPLE LOCATIONS
- AECOM SAMPLE LOCATIONS
- O'BRIEN AND GERE SAMPLE LOCATIONS (PNOV)
- FATLYN SOIL TEST BORINGS
- CLOUGH HARBOR and ASSOCIATES SAMPLE LOCATIONS (SB 1 – SB 13)
- JMT SAMPLE LOCATIONS (2017; B prefix denotes Boring and TP prefix denotes Test Pit)
- JMT SAMPLE LOCATIONS (2017; Originally proposed as Boring but completed as Test Pit)
- GEOTECHNICAL BORINGS (2016 and 2018)
- PROPERTY BOUNDARY
- BCP OPERABLE UNIT BOUNDARIES
- PROPOSED ELEVATED TRAIL
- PROPOSED GROUND-LEVEL TRAIL
- MONITORING WELL

SURFACE PCB CONCENTRATIONS (TOP FOOT)
- <1 ppm
- 1-<25 ppm
- 25-<50 ppm
- 50-<100 ppm
- ≥100 ppm

SUBSURFACE PCB CONCENTRATIONS (BELOW 1 FOOT)
- <1 ppm
- 1-<10 ppm
- 10-<25 ppm
- 25-<50 ppm
- 50-<100 ppm
- >100 ppm

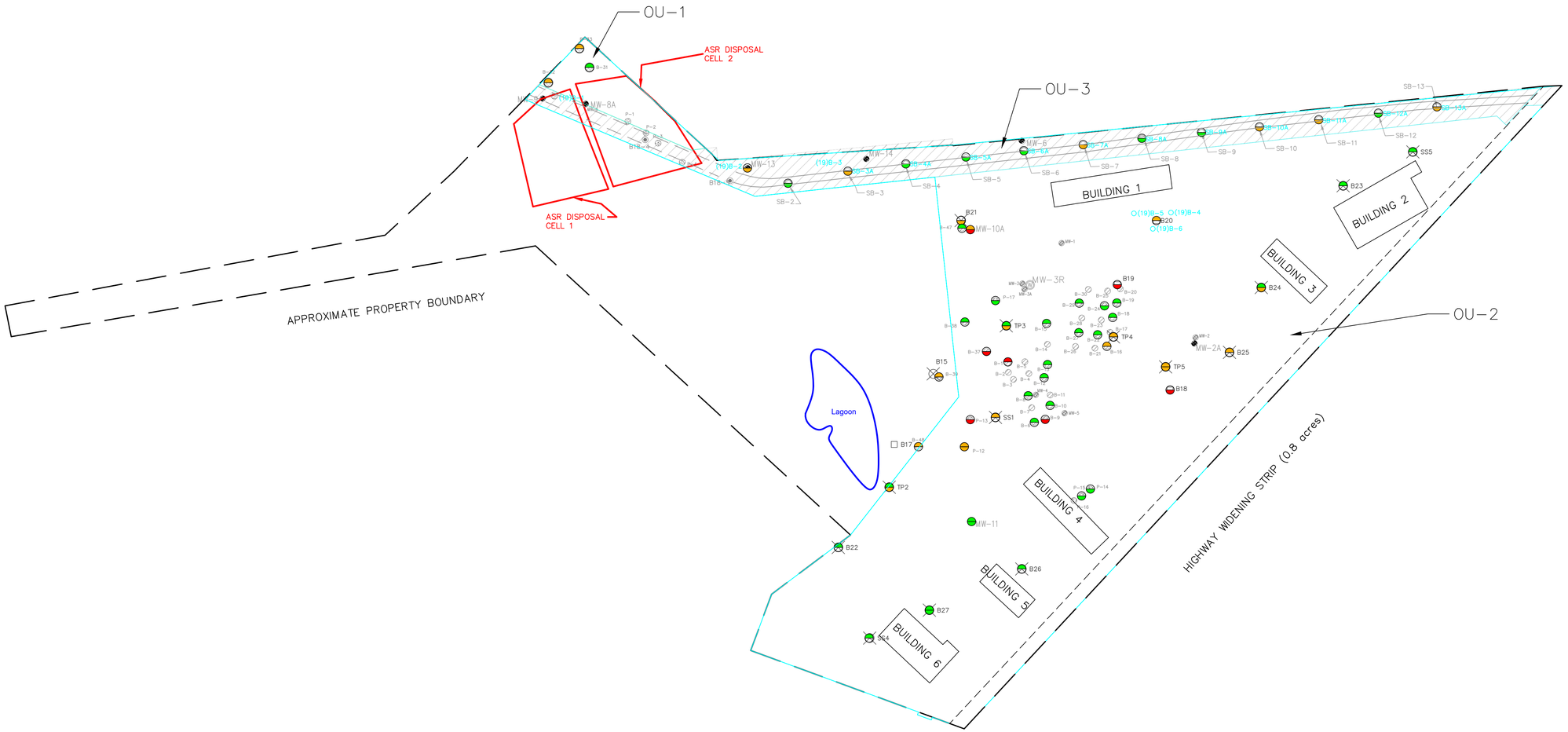
NOTES:
1. All historic sample locations are approximate.
2. The 2017 Remedial Investigation sample locations have the nomenclature (17)[Sample Number] in the RIR text and data tables. The (17) prefix was omitted from this map for clarity.
3. All depths are in feet unless otherwise noted.
4. The buildings were removed in 2018. Only slabs remain.

0 50 100
1"=100'

JMT
19 British American Blvd .,Latham, New York 12110
P: (518) 782-0882 F: (518) 782-0973 www.jmt.com

PCB Concentrations in Soil
800 Hiawatha Blvd
Syracuse, New York
CITY OF SYRACUSE ONONDAGA CO., NY

PROJ. No.:	16140	DATE:	3/2/21	SCALE:	1"=100'	DWG. NO.	RWP	FIGURE	5



LEGEND

- APPROXIMATE WASTE CELL LOCATIONS
- PASSERO SAMPLE LOCATIONS
- BROWN AND CALDWELL SAMPLE LOCATIONS
- AECOM SAMPLE LOCATIONS
- O'BRIEN AND GERE SAMPLE LOCATIONS (PNOV)
- FATLYN SOIL TEST BORINGS
- CLOUGH HARBOR and ASSOCIATES SAMPLE LOCATIONS (SB 1 – SB 13)
- JMT SAMPLE LOCATIONS (2017; B prefix denotes Boring and TP prefix denotes Test Pit)
- JMT SAMPLE LOCATIONS (2017; Originally proposed as Boring but completed as Test Pit)
- GEOTECHNICAL BORINGS (2016 and 2018)
- BCP OPERABLE UNIT BOUNDARIES
- PROPOSED ELEVATED TRAIL
- PROPOSED GROUND-LEVEL TRAIL
- MONITORING WELL

METALS CONCENTRATIONS 0–1 FOOT BGS
- No Exceedance
- Exceeds Commercial Soil Cleanup Objectives
- Exceeds Industrial Soil Cleanup Objectives

METALS CONCENTRATIONS >1 FOOT BGS
- No Exceedance
- Exceeds Commercial Soil Cleanup Objectives
- Exceeds Industrial Soil Cleanup Objectives

0 50 100
1"=100'

NOTES:
1. All historic sample locations are approximate.
2. The 2017 Remedial Investigation sample locations have the nomenclature (17)[Sample Number] in the RIR text and data tables. The (17) prefix was omitted from this map for clarity.
3. The buildings were removed in 2018. Only slabs remain.

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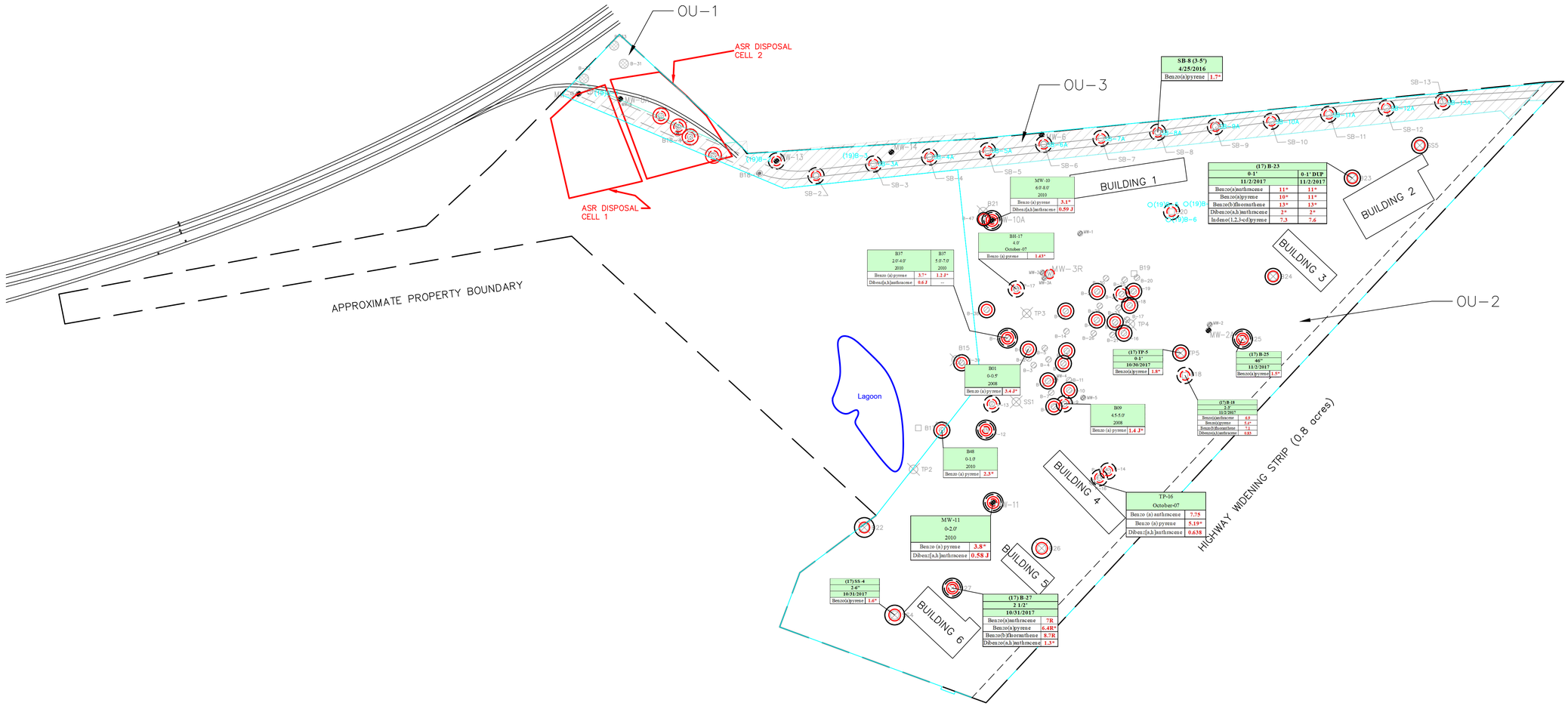
Metals Concentrations in Soil
800 Hiawatha Blvd
Syracuse, New York

CITY OF SYRACUSE — ONONDAGA CO., NY

PROJ. No.:	16140	DATE:	3/5/21	SCALE:	1"=100'	DWG. NO.	RWP	FIGURE	6



LEGEND

- APPROXIMATE WASTE CELL LOCATIONS
- PASSERO SAMPLE LOCATIONS
- BROWN AND CALDWELL SAMPLE LOCATIONS
- AECOM SAMPLE LOCATIONS
- O'BRIEN AND GERE SAMPLE LOCATIONS
- FATLYN SOIL TEST BORINGS
- CLOUGH HARBOR and ASSOCIATES SAMPLE LOCATIONS (SB 1 – SB 13)
- JMT SAMPLE LOCATIONS (2017; B prefix denotes Boring and TP prefix denotes Test Pit)
- JMT SAMPLE LOCATIONS (2017; Originally proposed as Boring but completed as Test Pit)
- GEOTECHNICAL BORINGS (2016 and 2018)

- BCP OPERABLE UNIT BOUNDARIES
- PROPOSED ELEVATED TRAIL
- PROPOSED GROUND-LEVEL TRAIL

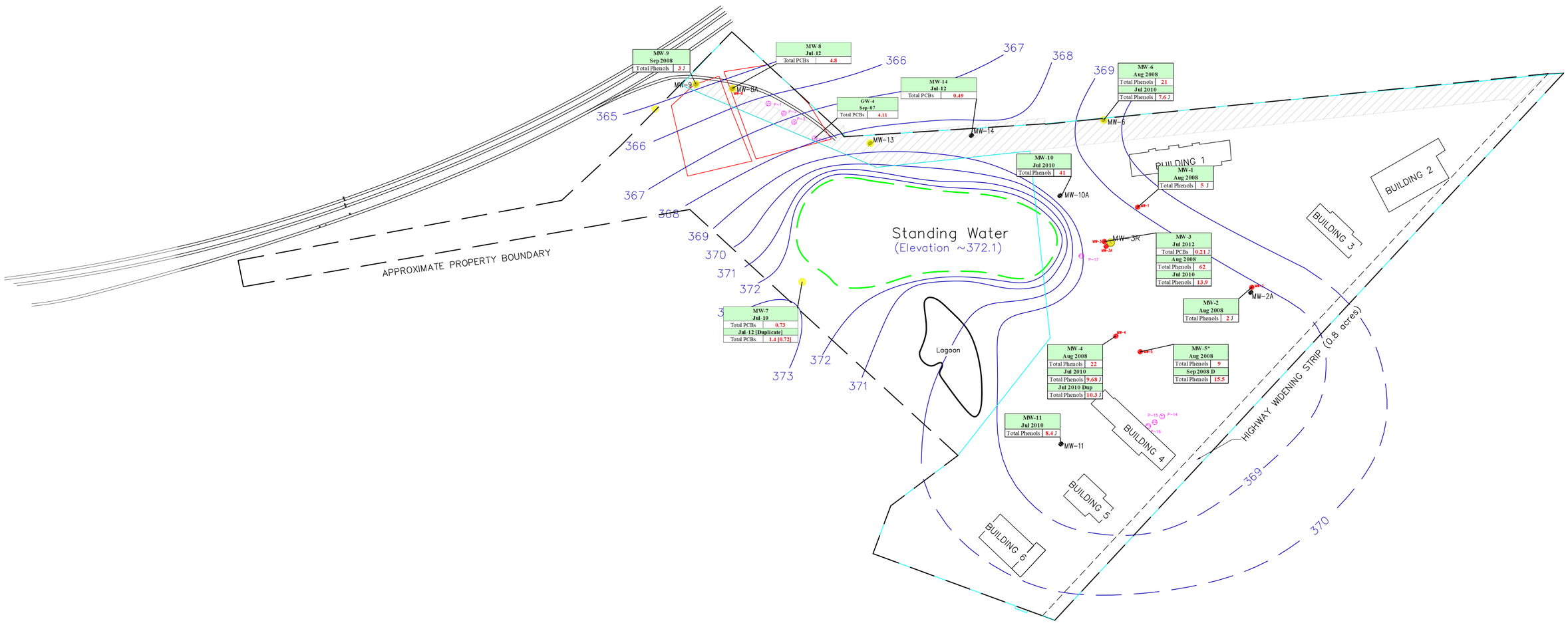
- MONITORING WELL
- 12.2 CONCENTRATION EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVES
- 28.0* CONCENTRATION EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
- SVOCs SAMPLES COLLECTED FROM SOIL DEEPER THAN 1FT BGS
- SVOCs SAMPLES COLLECTED FROM SOIL LESS THAN 1FT BGS
- VOCs SAMPLES COLLECTED FROM SOIL DEEPER THAN 1FT BGS
- VOCs SAMPLES COLLECTED FROM SOIL LESS THAN 1FT BGS

NOTES:
1. All historic sample locations are approximate.
2. The 2017 Remedial Investigation sample locations have the nomenclature (17)[Sample Number] in the RIR text and data tables. The (17) prefix was omitted from this map for clarity.
3. Only exceedance values are shown.
4. Sample results are in mg/kg (ppm).
5. The buildings were removed in 2018. Only slabs remain.
6. Results shown for sample locations within the historic ASR Cell Areas and the BCP Operable Units. Results are also shown within 50 feet of the BCP Operable Unit boundaries for potential remedial design purposes.

JMT
19 British American Blvd.,Latham, New York 12110
P: (518) 782-0882 F: (518) 782-0973 www.jmt.com

Soil VOCs and SVOCs Exceedances
800 Hiawatha Blvd
Syracuse, New York
CITY OF SYRACUSE ONONDAGA CO., NY

PROJ. No.:	16140	DATE:	3/5/21	SCALE:	1"=100'	DWG. NO.	RWP	FIGURE	7



LEGEND

- ASR DISPOSAL CELL LOCATIONS
- PROPERTY BOUNDARY
- GROUNDWATER CONTOUR (ft. above mean sea level)
- APPROXIMATE EXTENT OF STANDING WATER
- PASSERO SAMPLE LOCATIONS
- EXISTING GROUNDWATER MONITORING WELL
- MONITORING WELL – DAMAGED OR MISSING
- 12.2 CONCENTRATION EXCEEDS NYSDEC PART 703 WATER QUALITY STANDARDS FOR AMBIENT GROUNDWATER
- PCB SAMPLED FOR BUT NON-DETECT (2016/2017)
- BCP SITE BOUNDARY

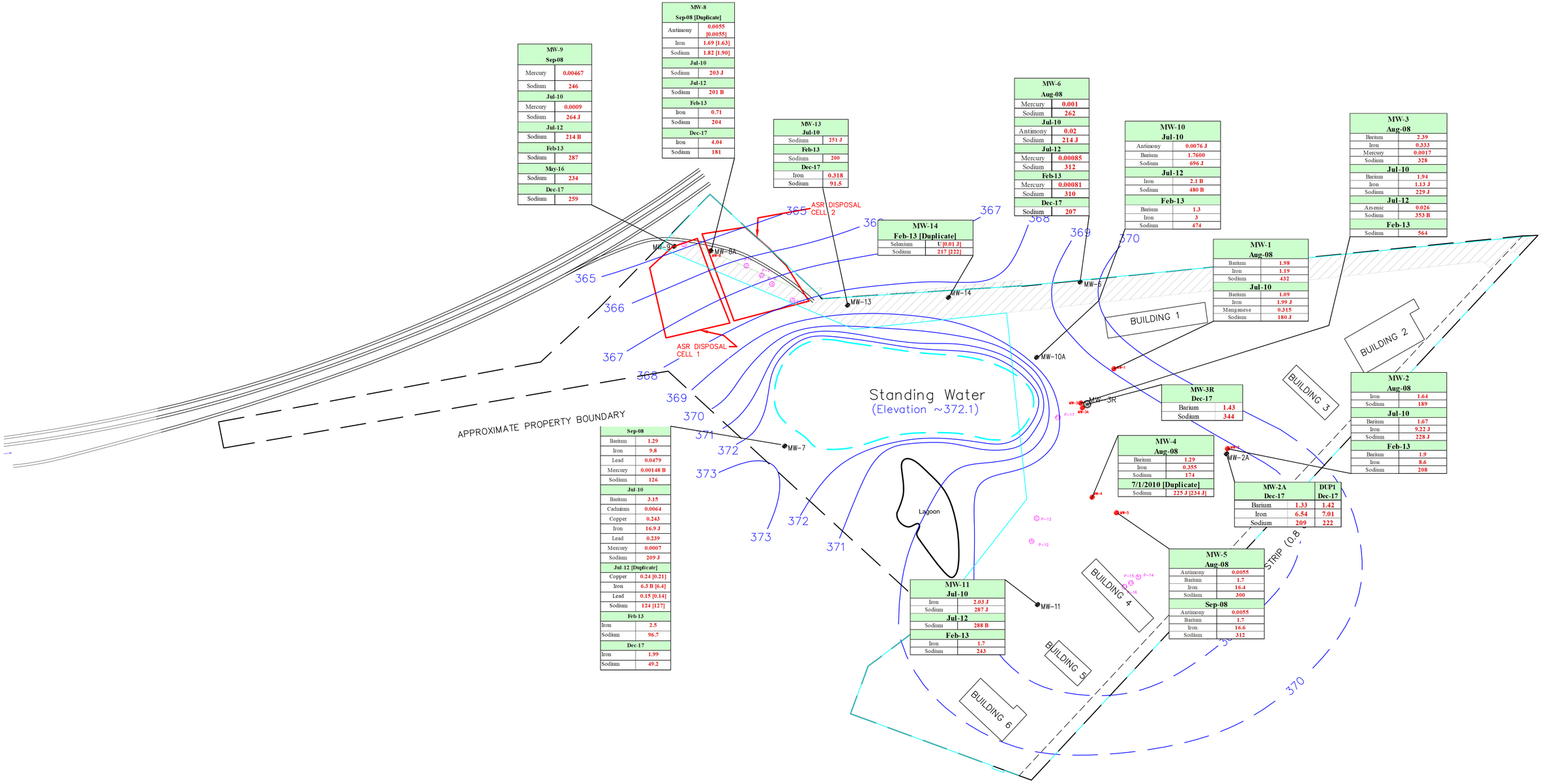
NOTES:
1. All historic sample locations are approximate.
2. Sample results are in ug/L (ppb)
3. *The Draft Site Investigation Report (O'Brien & Gere, June 2013) lists several SVOC exceedances but the data are suspect.
4. The buildings were removed in 2018. Only slabs remain.

0 50 100
1"=100'

19 British American Blvd.,Latham, New York 12110
P. (518) 782-0882 F: (518) 782-0973 www.jmt.com

GROUNDWATER PCB AND SVOC EXCEEDANCES
800 Hiawatha Blvd
Syracuse, New York
CITY OF SYRACUSE ONONDAGA CO., NY

PROJ. No.:	16140	DATE:	3/12/2021	SCALE:	1"=100'	DWG. NO.	RWP	FIGURE	8



LEGEND

- ASR DISPOSAL CELL LOCATIONS
- PROPERTY BOUNDARY
- GROUNDWATER CONTOUR (ft. above mean sea level)
- APPROXIMATE EXTENT OF STANDING WATER
- PASSERO SAMPLE LOCATIONS
- EXISTING GROUNDWATER MONITORING WELL
- MONITORING WELL – DAMAGED OR MISSING
- 12.2 CONCENTRATION EXCEEDS NYSDEC PART 703 WATER QUALITY STANDARDS FOR AMBIENT GROUNDWATER

NOTES:
1. All historic sample locations are approximate.
2. Sample results are in ug/L (ppb).
3. The buildings were removed in 2018. Only slabs remain.
4. Results shown for sample locations within the historic ASR Cell Areas and the BCP Operable Units. Results are also shown within 50 feet of the BCP Operable Unit boundaries for potential remedial design purposes.

0 50 100
1"=100'

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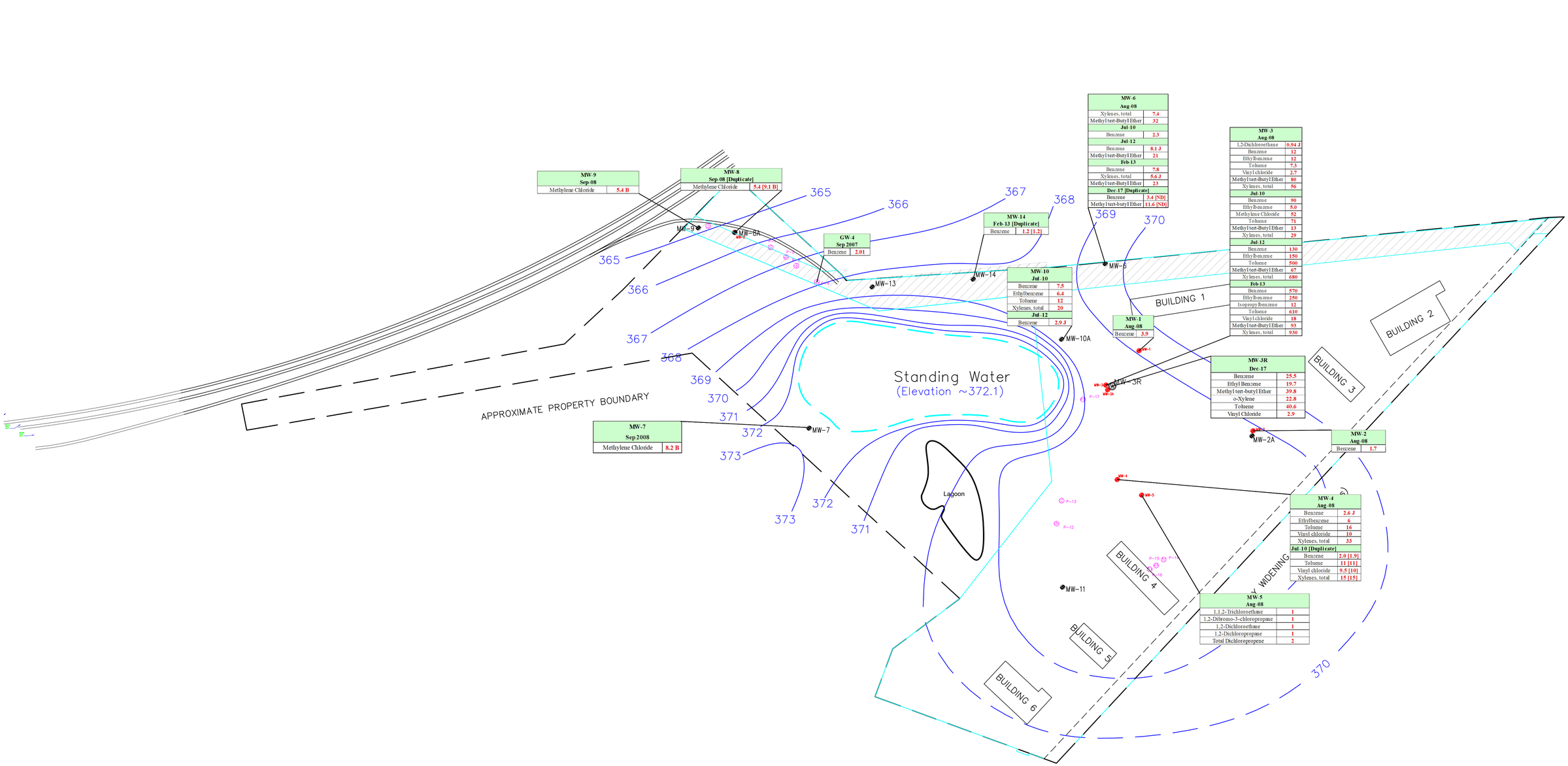
GROUNDWATER METALS EXCEEDANCES
800 Hiawatha Blvd
Syracuse, New York

CITY OF SYRACUSE ONONDAGA CO., NY

PROJ. No.:	16140	DATE:	4/9/21	SCALE:	1"=100'	DWG. NO.	RWP	FIGURE	9



LEGEND

- ASR DISPOSAL CELL LOCATIONS
- PROPERTY BOUNDARY
- GROUNDWATER CONTOUR (ft. above mean sea level)
- APPROXIMATE EXTENT OF STANDING WATER
- PASSERO SAMPLE LOCATIONS
- EXISTING GROUNDWATER MONITORING WELL
- MONITORING WELL – DAMAGED OR MISSING
- 12.2 CONCENTRATION EXCEEDS NYSDEC PART 703 WATER QUALITY STANDARDS FOR AMBIENT GROUNDWATER

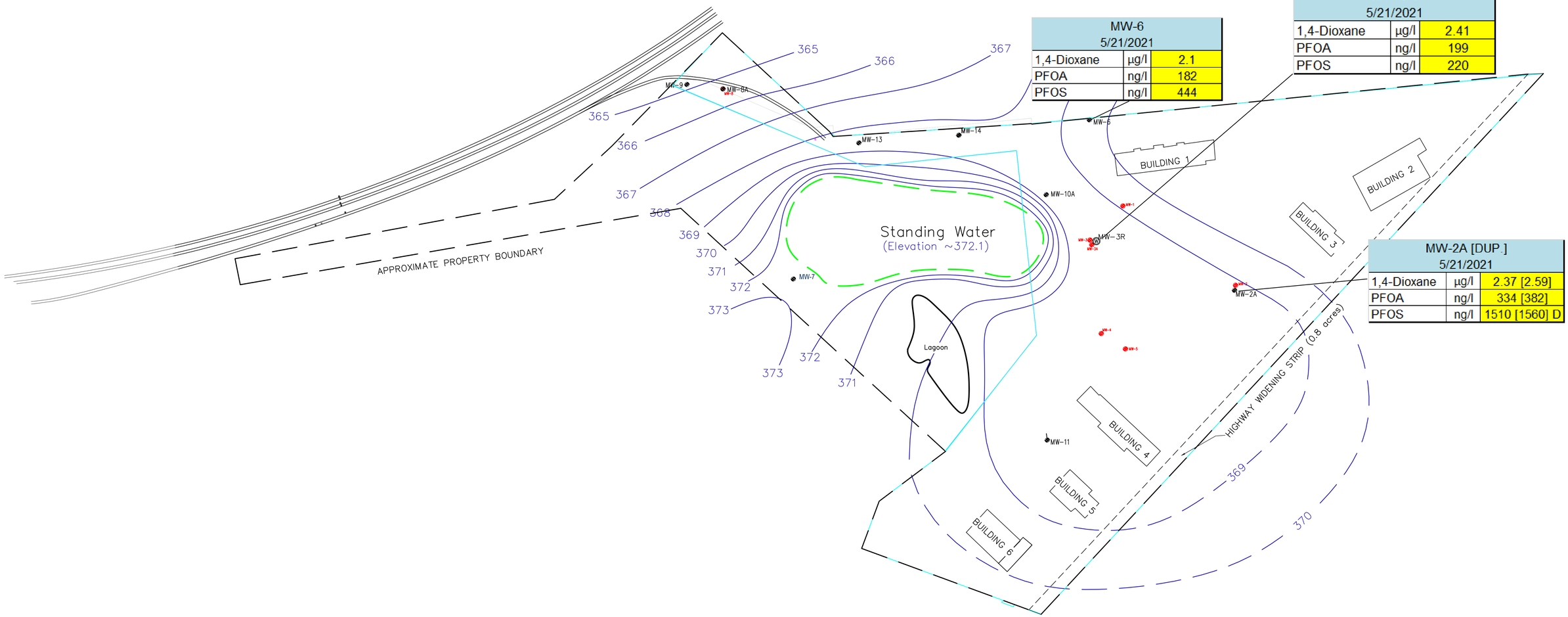
NOTES:
1. All historic sample locations are approximate.
2. Sample results are in ug/L (ppb).
4. The buildings were removed in 2018. Only slabs remain.
5. Results shown for sample locations within the historic ASR Cell Areas and the BCP Operable Units. Results are also shown within 50 feet of the BCP Operable Unit boundaries for potential remedial design purposes.

0 50 100
1"=100'

19 British American Blvd.,Latham, New York 12110
P: (518) 782-0882 F: (518) 782-0973 www.jmt.com

GROUNDWATER VOC EXCEEDANCES
800 Hiawatha Blvd
Syracuse, New York
CITY OF SYRACUSE ONONDAGA CO., NY

PROJ. No.:	DATE:	SCALE:	DWG. NO.	FIGURE
16140	4/9/21	1"=100'	RWP	10



LEGEND

- PROPERTY BOUNDARY
- GROUNDWATER CONTOUR (ft. above mean sea level) - Based on December 2017 data
- APPROXIMATE EXTENT OF STANDING WATER (Fall 2017)
- EXISTING GROUNDWATER MONITORING WELL
- MONITORING WELL – DAMAGED OR MISSING
- AMMENDED BCP SITE BOUNDARY

NOTES:
1. All historic sample locations are approximate.
2. The buildings were removed in 2018. Only slabs remain.
3. Yellow highlight indicates NY MCL exceedance.

0 50 100
1"=100'

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P: (518) 782-0882 F: (518) 782-0973 www.jmt.com

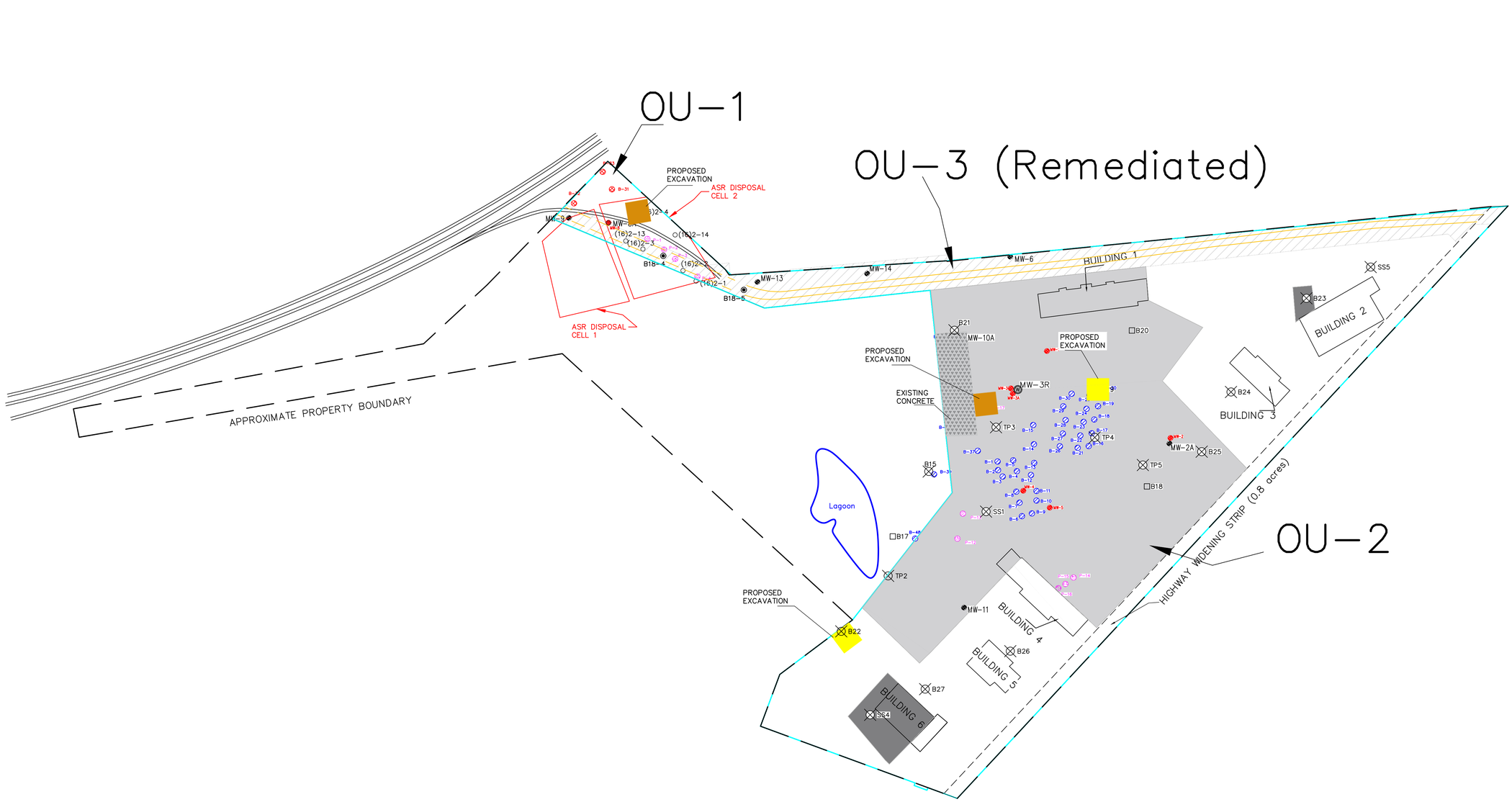
GROUNDWATER EMERGING CONTAMINANT EXCEEDANCES

800 Hiawatha Blvd

Syracuse, New York

CITY OF SYRACUSE ONONDAGA CO., NY

PROJ. No.:	16140	DATE:	7/1/2021	SCALE:	As Shown	DWG. NO.	RWP	FIGURE	11



LEGEND

- APPROXIMATE WASTE CELL LOCATIONS
- PASSERO SAMPLE LOCATIONS
- BROWN AND CALDWELL SAMPLE LOCATIONS
- AECOM SAMPLE LOCATIONS
- O'BRIEN AND GERE SAMPLE LOCATIONS
- CLOUGH HARBOR and ASSOCIATES SAMPLE LOCATIONS (SB 1 – SB 13)
- JMT SAMPLE LOCATIONS (2017; B prefix denotes Boring and TP prefix denotes Test Pit)
- JMT SAMPLE LOCATIONS (2017; Originally proposed as Boring but completed as Test Pit)
- GEOTECHNICAL BORINGS (2016 and 2018)

- PROPERTY BOUNDARY
- BCP BOUNDARY
- OU–3 REMEDIATED AREA
- MONITORING WELL
- PROPOSED CRUSHED STONE CAP
- PROPOSED SOIL CAP
- EXISTING CONCRETE

MAXIMUM PCB CONCENTRATIONS[1] (OU–1, OU–2)

- PCBs BETWEEN 10 PPM AND 25 PPM
- PCBs BETWEEN 25 AND 50 PPM

NOTES:

1. The range of PCB concentrations represent the maximum value detected at the sample locations within the color–shaded areas.
2. The buildings were removed in 2018. Only slabs remain.

0 50 100
1"=100'

19 British American Blvd.,Latham, New York 12110
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PROPOSED REMEDIATION AREAS
800 Hiawatha Blvd
Syracuse, New York

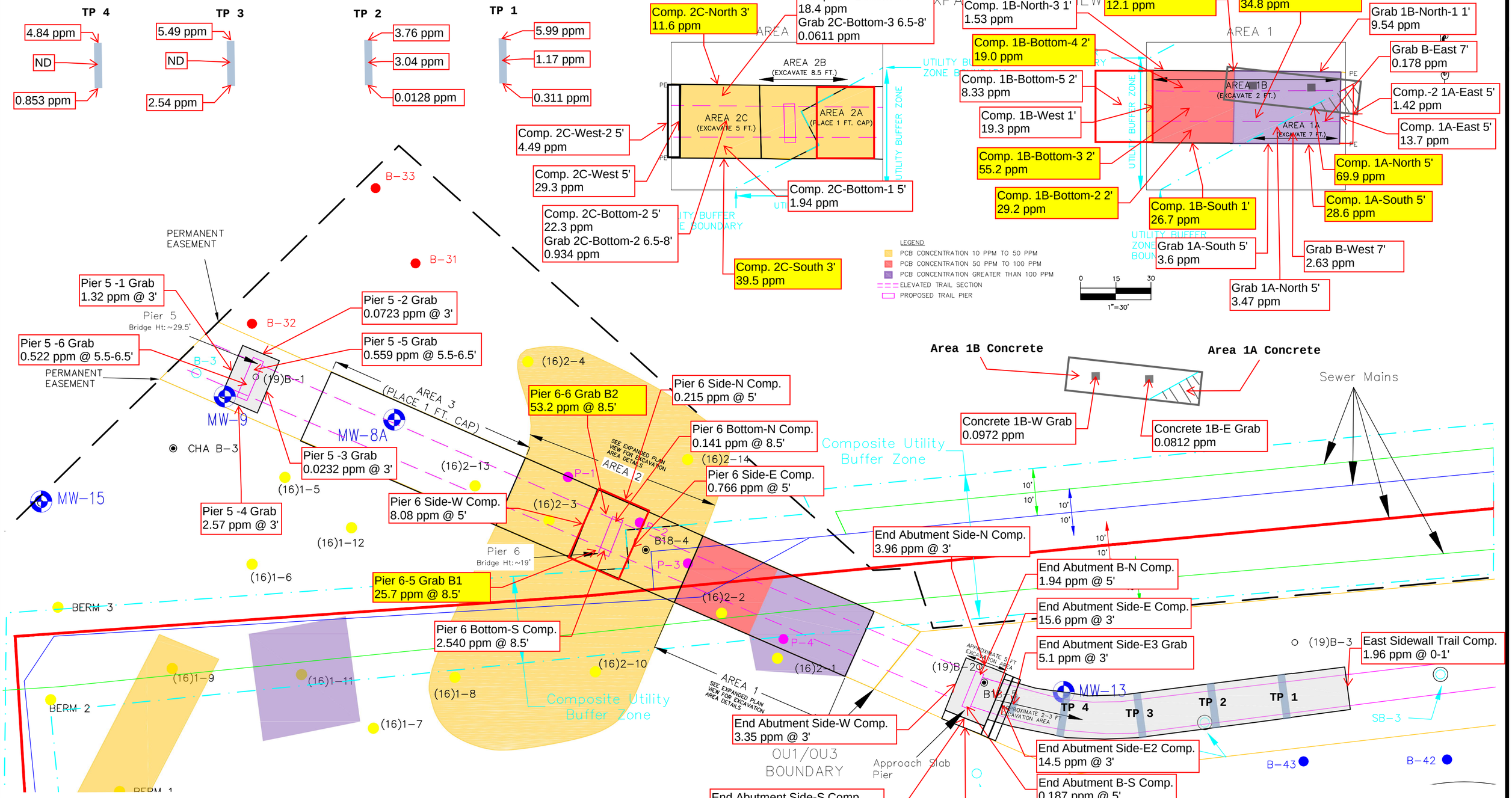
CITY OF SYRACUSE ONONDAGA CO., NY

PROJ. No.:	16140	DATE:	1/17/2021	SCALE:	1"=100'	DWG. NO.	RIR	FIGURE	12

APPENDIX A

ONONDAGA LAKE TRAIL SAMPLE SUMMARY

Approach Test Pit North and South Sidewall and Bottom Grab Samples @ el: 370' (approximately @ 3')



LEGEND

- PASSERO SAMPLE LOCATIONS
- BROWN AND CALDWELL SAMPLE LOCATIONS
- AECOM SAMPLE LOCATIONS
- WASTE CELL SAMPLE LOCATIONS (Spectra, May/June 2016)
- CLOUGH HARBOR and ASSOCIATES SAMPLE LOCATIONS (2016)
- BARTON and LOGUIDICE SAMPLE LOCATIONS (2018)
- JMT SAMPLE LOCATIONS (FEBRUARY 2019)
- MONITORING WELL – EXISTING

- PROPERTY BOUNDARY
- PROPOSED TRAIL (ELEVATED SECTION IS DASHED)
- PROPOSED TRAIL PIER
- TRAIL–RELATED EXCAVATION AREA (REQUIRED FOR CONSTRUCTION, NOT REMEDIATION)
- PERMANENT EASEMENT (PE)
- 36" FORCE MAIN (APPROXIMATELY 4.5 TO 5 FT. DEEP AT TRAIL EASEMENT CROSSING)
- 24" FORCE MAIN (APPROXIMATELY 6 FT. DEEP AT TRAIL EASEMENT CROSSING)
- 12" FORCE MAIN (APPROXIMATELY 5 FT. DEEP AT TRAIL EASEMENT CROSSING)

- 10 FT. BUFFER FOR 36" MAIN
- 10 FT. BUFFER FOR 24" MAIN
- 10 FT. BUFFER FOR 12" MAIN
- COMPOSITE UTILITY BUFFER ZONE

MAXIMUM PCB CONCENTRATIONS
- PCBs BETWEEN 10 PPM AND 50 PPM
- PCBs BETWEEN 50 AND 100 PPM
- PCBs GREATER THAN 100 PPM

0 15 30
1"=30'

NOTES:
1. SEE EXPANDED PLAN VIEW FOR EXCAVATION AREAS 1 AND 2 DETAILS

JMT
19 British American Blvd.,Latham, New York 12110
P: (518) 782-0882 F: (518) 782-0973 www.jmt.com

Proposed Trail Pier Excavation Areas
800 Hiawatha Blvd
Syracuse, New York
CITY OF SYRACUSE ONONDAGA CO., NY

PROJ. No.:	16140	DATE:	9/26/19	SCALE:	1"=30'	DWG. NO.	SICDNS	FIGURE	7

APPENDIX B
SUPPLEMENTAL TEST PITS

TEST PIT LOG

Test Pit ID: (19) B-4

Project Name:	Roth Steel BCP Site	**Project No:**	16-S0140N-001
Client Name:	OCIDA	**Date:**	2/28/2019
Location:	800 Hiawatha Blvd. West, Syracuse, NY	**Logged By:**	J. Krikorian
Weather/Temp:	-5°F, overcast	**Checked By:**	Y. Winters
Drilling Co:	NYEG Drilling Inc./Paragon	**Depth:**	8'
Driller:	Rick	**Equipment:**	sk-140SR Excavator
Date Started:	2/28/2019	**Method:**	Excavator
Date Ended:	2/28/2019		

Depth	Recovery	PID (ppm)	DESCRIPTIVE LOG color, grain size and amount, texture, moisture DEPOSITIONAL UNIT outwash, till, lacustrine, muck, fill	REMARKS
0-5'	--	0.2	0-2' Dark brown sand and gravel	
		50	2-4' Brown sand and some silt and gravels, fill material	
		260	4-5' Dark brown sand and gravel, asphalt layers	Strong odor and sheen on water

Additional Comments:

TEST PIT LOG

Test Pit ID: (19) B-5

Project Name:	Roth Steel BCP Site	**Project No:**	16-S0140N-001
Client Name:	OCIDA	**Date:**	2/28/2019
Location:	800 Hiawatha Blvd. West, Syracuse, NY	**Logged By:**	J. Krikorian
Weather/Temp:	-5°F, overcast	**Checked By:**	Y. Winters
Drilling Co:	NYEG Drilling Inc./Paragon	**Depth:**	8'
Driller:	Rick	**Equipment:**	sk-140SR Excavator
Date Started:	2/28/2019	**Method:**	Excavator
Date Ended:	2/28/2019		

Depth	Recovery	PID (ppm)	DESCRIPTIVE LOG color, grain size and amount, texture, moisture DEPOSITIONAL UNIT outwash, till, lacustrine, muck, fill	REMARKS
0-8'	-	0.2	0-2' Dark brown sand and gravel	Slight petroleum odor
		0.1	2-4' Brown sand and some silt and gravels, fill material	Asphalt at bottom
		0	4-5' Brown sand and gravel, asphalt layers	Asphalt odor
		0.1	5-8' Dark brown sand and fill material	No odor

Additional Comments:

TEST PIT LOG

Test Pit ID: (19) B-6

Project Name:	Roth Steel BCP Site	**Project No:**	16-S0140N-001
Client Name:	OCIDA	**Date:**	2/28/2019
Location:	800 Hiawatha Blvd. West, Syracuse, NY	**Logged By:**	J. Krikorian
Weather/Temp:	-5°F, overcast	**Checked By:**	Y. Winters
Drilling Co:	NYEG Drilling Inc./Paragon	**Depth:**	8'
Driller:	Rick	**Equipment:**	sk-140SR Excavator
Date Started:	2/28/2019	**Method:**	Excavator
Date Ended:	2/28/2019		

Depth	Recovery	PID (ppm)	DESCRIPTIVE LOG color, grain size and amount, texture, moisture DEPOSITIONAL UNIT outwash, till, lacustrine, muck, fill	REMARKS
0-8'	-	10.1	0-2' Dark brown sand and gravel	Slight petroleum odor
		2	2-3' Brown sand and some silt and gravels, fill material	No odor
		1.5	3-7' Dark brown to dark gray sand and silt, fill material	No odor, slight sheen on water
		2	7-8' Gray to brown sand and gravel	No odor, slight sheen on water

Additional Comments:

APPENDIX C
GENERAL EXCAVATION PLAN

GENERAL EXCAVATION PLAN

1.0 INTRODUCTION

This General Excavation Plan is being prepared to guide soil excavation work that will be conducted under the Remedial Work Plan. The purpose of this plan is to present procedures to manage the excavation of materials that may be contaminated. These procedures will reduce the potential for migration of contaminated materials, ensure that these materials are managed/disposed of properly, and that site workers are protected from potential exposure.

2.0 NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter contaminated subsurface material, a Site representative will notify the New York State Department of Environmental Conservation Region 7 office at:

Division of Environmental Remediation
NYSDEC Region 7
615 Erie Blvd. West
Syracuse, NY 13204

This notification will include the following:

- A description of the work to be performed, including the location and areal extent, plans for site restoration, intrusive elements or structures to be installed in the subsurface, estimated volumes of contaminated soil to be excavated;
- A summary of environmental conditions anticipated in the work areas, including the nature of contaminants of concern expected to be encountered;
- A schedule for the work, detailing the start and completion of all intrusive work;
- A statement that the work will be performed in compliance with CFR 1910.120, along with a copy of the contractor's health and safety plan; and
- Identification of disposal plans for excavated materials.

3.0 SOIL SCREENING FIELD METHODS

Visual, olfactory and/or instrument-based soil screening will be performed by a qualified professional during all excavations into known or potentially contaminated materials. A photo-ionization detection (PID) will be used to monitor air quality in the immediate vicinity of the excavation. The PID readings will be utilized to verify organic vapor concentrations and document whether respiratory protection is warranted for onsite workers. The field screening will be in addition to the monitoring requirements for the Community Air Monitoring Plan (CAMP), which is attached to this plan. If any petroleum contaminated soils are encountered, NYSDEC will be

notified within 2 hours of discovery. In addition, petroleum impacted materials will be separately stockpiled on polyethylene (poly) sheeting and will also be covered by poly at the end of the day. Sampling of the petroleum impacted soils will be completed to assess disposal alternatives.

4.0 GENERAL EXCAVATION PROCEDURES

This section presents general procedures for conducting soil excavations.

Since excavation activities can present unique hazards, added control measures to include the following are warranted:

a. Prior to conducting ground disturbance activities, "Dig Safe NY" and the Onondaga County Sewer/Water Authority will be contacted to identify and mark-out any known utilities. If warranted, additional investigation using non-destructive geophysical methods, such as ground penetrating radar, may also be conducted. Excavations will avoid subsurface utilities to the extent possible. If the utilities cannot be avoided, additional control measures such as hand-digging or air knife/vacuum excavation procedures will be utilized.

b. Precautions will be taken when positioning equipment with respect to the presence of known buried objects. Where possible, power to underground electrical lines should be turned off while excavation activities are in process or until the area is secure from entrance of personnel.

c. Heavy equipment, vehicles and construction materials will not be staged within the footprint of Waste Cells 1 and 2. Ground disturbance of the waste cells will be minimized to the extent possible.

d. Controlled digging will be performed under careful observation of an oversight inspector who has clear communication with the equipment operator. The inspector will be alert to notice the presence of (unknown) buried objects by visual inspection or metal detection surveyance of the immediate excavation area.

e. In the event an excavation becomes a confined space, appropriate actions will be implemented to ensure safety of Site personnel, and excavating personnel will be advised if confined space conditions become present. According to OSHA, a confined space can be defined as the following:

    - A space that has limited or restricted means for entry or exit, and is not designed for continuous employee occupancy; and

- Included but not limited to underground vaults, tanks, storage bins, manholes, pits, silos, process vessels, and pipelines.

Site personnel should not enter any excavation unless a PID and LEL are present to monitor the ambient air.

f. OSHA provisions regarding shoring and sloping of trench sides may apply. Personnel must be aware of provisions under 29 CFR 1926 (See Table 1 below, Maximum Allowable Slopes from 29CFR 1926 Subpart P Appendix B provided by OSHA), regarding slope stability. Excavation side walls shall not be approached unless a stable slope has been established.

TABLE 1

MAXIMUM ALLOWABLE SLOPES

SOIL OR ROCK TYPE	MAXIMUM ALLOWABLE SLOPES (H:V)[1] FOR EXCAVATIONS LESS THAN 20 FEET DEEP[3]
Stable Rock	Vertical (90º)
Type A[2]	3/4:1 (53º)
Type B	1:1 (45º)
Type C	1 ½:1 (34º)

Footnote 1: Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal. Angles have been rounded off.

Footnote 2: A short-term maximum allowable slope of 1/2H:1V (63º) is allowed in excavations in Type A soil that are 12 feed (3.67 m) or less in depth. Short-term maximum allowable slopes for excavations greater than 12 feet (3.67 m) in depth shall be 3/4H:1V (53º).

Footnote 3: Sloping or benching for excavations greater than 20 feet deep shall be designed by a registered professional engineer.

Soil Types

Type A: Cohesive soils with an unconfined, compressive strength of 1.5 ton per square foot (tsf) or greater. Soil examples include clay, silty clay, sandy clay, and clay loam.

Type B: Cohesive soils with an unconfined, compressive strength greater than 0.5 tsf, but less than 1.5 tsf; or granular cohesionless soils including angular gravel, silt, silt loam, sandy loam.

Type C: Cohesive soils with an unconfined compressive strength of 0.5 tsf or less; or granular soils including gravel, sand, and loamy sand; or submerged soil or soil from which water is freely seeping; or submerged rock that is not stable.

g. Excavations should be inspected daily for evidence of cracks, slides or scaling. Inspection should be more frequent if it is raining.

h. Site personnel shall keep a safe distance from heavy equipment near the sides of excavations. If use of equipment is required to work near the edge of an excavation, a warning system must be put in place (hand signals, cones, barricades, etc.).

i. Means of egress for employees working in excavations are necessary if excavations are 4 feet deep or greater (e.g., steps, ladders, ramped side slopes).

j. Excavations should be back filled as soon as possible upon completion of work. Prior to backfilling, a geosynthetic fabric will be placed at the base of the excavation and along the sidewalls to provide a physical demarcation.

5.0 SOIL DISPOSAL OFF-SITE

If excavated soil is known to contain PCBs at concentrations of 50 ppm or greater, it will be disposed of off-site as TSCA/RCRA regulated material and will be transported and disposed in accordance with all local, State and Federal regulations. If excavated soil is known to contain PCBs at concentrations of less than 50 ppm, it may be disposed of off-site as NYSDEC permitted solid waste landfills. Regulated material and will be transported and disposed in accordance with all local, State and Federal regulations.

Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements). All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

6.0 SOIL REUSE ONSITE

Excavated material with PCB concentrations less than 10 ppm and greater then 1 ppm, may be used as on site fill providing it is placed beneath a minimum of one foot of clean soil, asphalt or concrete. Clean soil is defined in this plan as any soil that does not exceed the 6 NYCRR Part 375-6 Soil Cleanup objectives for a restricted commercial use.

7.0 GROUNDWATER MANAGEMENT

Groundwater depth at the site was encountered at depths generally ranging from 5.5 ft. to 7.5 ft. For the most part, the zones with PCBs exceeding 10 ppm are located within the unsaturated zone (i.e., above the groundwater table). However, it is possible that groundwater could be encountered during the excavation activities. If groundwater is encountered in small quantities, the excavation will continue and the removed soil will be staged next to the excavation in a manner that allows groundwater to drain back into the excavation. If necessary, groundwater may need to be pumped into drums (or other appropriate containers) to facilitate soil removal to target depths. If groundwater rapidly returns and prevents continued excavation, or the excavation sidewalls become unstable, DEC will be advised, and a mutually agreeable decision will be made regarding the need to continue excavation. Any containerized groundwater will be sampled for PCBs and metals (at a minimum) to determine disposal options.

8.0 COMMUNITY AIR MONITORING PLAN AND DUST CONTROL

The details of the Community Air Monitoring Plan are provided in the attached CAMP. Air monitoring locations will be determined on a case by case basis. Monitoring of particulates will be stationed at the perimeter of the work area or where there may be a sensitive receptor, (i.e., public contact). Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

Dust suppression measures during invasive on-site work are provided in the attached CAMP.

Attachment D-1
Community Air Monitoring Plan (CAMP)

Overview

A Community Air Monitoring Plan (CAMP) establishes real-time monitoring for designated areas when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminants as a direct result of work activities that disturb potentially contaminated soils. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities do not spread contamination off-site through the air.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the work area may be necessary. Based on extensive soil sampling data at the former Roth Steel site, VOCs are not constituents of concern for the proposed IRM Work Plan activities. While VOC monitoring will be performed as part of worker-safety monitoring (as specified in the Health and Safety Plan), additional VOC monitoring for the CAMP is not warranted.

Continuous health and safety monitoring (using a hand-held PID) will be performed for intrusive activities that include soil/waste excavation and handling.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the work zone at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all soil/waste disturbance work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate

levels do not exceed 150 mcg/m3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m3 above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m3 of the upwind level and in preventing visible dust migration.
3. All readings will be recorded and will be available for NYSDEC, NYSDOH and County Health personnel to review.

Fugitive Dust and Particulate Monitoring

The following fugitive dust suppression and particulate monitoring measures will be employed during intrusive and soil/waste handling activities:

1. Reasonable fugitive dust suppression techniques will be employed during site activities which may generate fugitive dust;
2. Particulate monitoring will be employed during excavation, the handling of waste or contaminated soil, or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities will also include the unloading, grading, or placement of clean fill. These control measures will not be considered necessary for those activities involving clean fill; and
3. Particulate monitoring will be performed using real-time particulate monitors and will monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:
    a) Objects to be measured: Dust, mists or aerosols;
    b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
    c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
    d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
    e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
    f) Particle Size Range of Maximum Response: 0.1-10;

g) Total Number of Data Points in Memory: 10,000;

h) Logged Data: Each data point with average concentration, time/date and data point number;

i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;

j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;

k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;

l) Operating Temperature: -10 to 50o C (14 to 122o F); and

m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there will be appropriate Quality Assurance/Quality Control (QA/QC). QA/QC measures will include: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative, this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level will be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques will be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures will include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded, work will stop and NYSDEC will be notified. The notification will include a description of the control measures implemented to prevent further exceedances.

6. It is recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. Since there may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level, it is appropriate to rely on visual

observation. If dust is observed leaving the working site, additional dust suppression techniques will be employed.

7. The following techniques will be used for controlling the generation and migration of dust during remediation activities, as warranted:

   Applying water on haul roads;

   a) Wetting equipment and excavation faces;

   b) Spraying water on buckets during excavation and dumping;

   c) Hauling materials in properly tarped containers;

   d) Restricting vehicle speeds to 10 mph or less;

   e) Covering excavated areas and material after excavation activity ceases; and

   f) Reducing the excavation size and/or number of excavations.

8. The evaluation of weather conditions is also important for fugitive dust control. When extreme wind conditions make dust control ineffective, remedial actions may need to be suspended.