Remedial Alternatives Analysis

NYSDEC BCP Site No. C828182

Location:

Eldre Corporation
1500 Jefferson Road & 55 Hofstra Road
Town of Henrietta
Monroe County, New York

Prepared for:

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Certification

I __Daniel P. Noll__________ certify that I am currently a NYS registered professional engineer and that this Remedial Alternatives Analysis 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).

081996	1.31.22	
NYS Professional Engineer #	Date	Signature

1 INTRODUCTION

This Remedial Alternatives Analysis (RAA) provides a summary of remedial alternatives evaluated and selects remedial actions to be implemented for the property located at 1500 Jefferson Road (zoned industrial) and 55 Hofstra Road (zoned commercial), located in the Town of Henrietta, Monroe County, New York, New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) Site #C828182. Hereinafter, this property will be referred to as "the Site." A Project Locus Map is included as Figure 1.

The remedial alternatives and actions were evaluated based on the data obtained during pre-BCP activities, and the Remedial Investigation (RI). This RAA summarizes the findings of the Remedial Investigation Report for the Site; however, the RI Report should be referenced for greater details on these activities and details on the nature and extent of impacts. The alternatives are compared and based on the use of the Site, the anticipated use of the site taking into account an environmental easement being recorded by the site owner, and the surrounding area.

The RI Report dated May 2018 was conditionally approved August 9, 2021. Appendix B of this report includes additional documentation that NYSDEC RI Report Conditional Approval requested be included in this RAA.

1.1 *Site Description and History*

The Site consists of four (4) contiguous tax parcels totaling approximately 6.72 acres, as summarized in the following table and shown on Figure 2.

Parcel Address (collectively the "Site")	Section No.	Block No.	Lot No.	Acreage
1500 Jefferson Road, Henrietta, NY 14623	162.08	1	27.11	1.82
1500 Jefferson Road, Henrietta, NY 14623			27.12	0.14
1500 Jefferson Road, Henrietta, NY 14623			27.21	1.46
55 Hofstra Road, Henrietta, NY 14623			24	3.30

The 1500 Jefferson Road parcels are improved with a ±97,250 square foot, split-level building that is primarily utilized for industrial/manufacturing purposes, with office space in the southern portion and manufacturing areas in northern portion of the building. This main manufacturing building (i.e., the "1500 Jefferson Road building") is comprised of four (4) separate additions. The 1500 Jefferson Road building has a concrete slab-on-grade foundation, with the exception of the southern portion of the structure, which has a basement underneath the office space. Asphalt-paved parking lots and driveways are located north, south, and east of the 1500 Jefferson Road building. There is limited vegetative cover on the 1500 Jefferson Road parcels, with the exception of a small grassy area on the southwestern portion of the parcels and some small landscaped areas near Jefferson Road.

The 55 Hofstra Road parcel is improved with a ±6,860 square foot building, and asphalt-paved parking lots and driveways surround this structure. This smaller building is not routinely occupied but used as a maintenance and storage building for the Site. There are some vegetated drainage swales on the southwestern portion of the 55 Hofstra Road parcel, as well as along its western and northern property lines. In addition, there is approximately 0.6 acres of vegetated area on the eastern portion of the 55 Hofstra Road parcel.

The Site is currently zoned for commercial (55 Hofstra Road parcel) and industrial uses (1500 Jefferson Parcels) and is located in an urban area of the Town of Henrietta.

The parcels comprising the Site are owned and operated by Mersen USA SPM Corp. ("Mersen"), formerly known as Mersen USA Rochester-NY Corp. and Eldre Corporation. A Site access agreement is in place between Mersen, Eldre, LaBella, and TRS Group, Inc. (TRS). According to Mersen, current manufacturing activities at the Site produce electrical components (i.e., bus bars), which require a sheet metal fabrication operation. The site formerly conducted metal plating operations with degreasing; however, that no longer occurs on-site. According to Mersen, the use of TCE at the Site was ceased in January 2015.

All of the properties immediately adjacent to the Site are industrial and commercial. The closest residential zoned property is approximately 0.3 miles to the east of the Site. The nearest agricultural use is approximately 1.25 miles to the north of the Site. The properties bordering the Site are summarized in the following table.

Direction From Site	Owner	Address	Property Usage
North	3131 Winton Road Assoc., LLC	3131 Winton Road	Wegmans Distribution Center
Northwest	Harris Communications	100 Hofstra Road	Undeveloped Land
South	1555 Jefferson Road, LLC	1555 Jefferson Road	Manufacturing
Southwest	Sugar Creek Stores, Inc.	1477 Jefferson Road	Retail Gasoline Station
East	Plaza at Win-Jef, LLC	1-37 Hofstra Road	Retail Plaza
East	Bowl A Roll, Inc.	1560 Jefferson Road	Bowling Alley, Commercial Retail
East	Atlantic Refining & Marketing Corp	1540 Jefferson Road	Retail Gasoline Station
East	1530 Jefferson Road, LLC	1530 Jefferson Road	NYSDOT Regional Headquarters
West	Harris Corporation (Formerly Xerox)	1400 Jefferson Road	Industrial*

* Parcel is in the State Superfund Program and is listed as a Class 4 Inactive Hazardous Waste Disposal Site (Site #828069). The impacts at the Site include chlorinated solvents (PCE, TCE, 1,1,1-TCA, 1,1-DCE, 1,1-DCA, Methylene Chloride and Vinyl Chloride).

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Based upon review of previous environmental documents, the Site was utilized as farmland until the 1950s, when the Site was first developed by Fannon Metal Industries. According to historical records, the property appears to have been shared with P&F Metal and Finishing during the late 1960s. There appears to be no readily available historical information regarding whether the former occupants of Site used hazardous chemicals or generated hazardous waste. Review of an aerial photograph of the Site dated 1970 identifies an apparent retention pond in the northwestern portion of the 1500 Jefferson Road Parcel with a potential drainage feature from the building to the pond area. These features also are present in aerial photographs dated 1961 and 1976.

Mr. Jack Erdle transferred the 1500 Jefferson Road property to Norma Erdle in 1974 and Norma transferred that property to Eldre Corporation in 2006. The County of Monroe Industrial Development Agency (COMIDA) transferred title to the 55 Hofstra Road Parcel to Eldre Corporation in late 2011. In November 2012, in a stock transaction, Eldre Corporation was sold to new ownership, but the company continued to own the Site. In 2016, Eldre Corporation changed its name to Mersen USA Rochester-NY, Corp. and in 2019 changed it to Mersen USA SPM Corp. The Site is currently owned and operated by Mersen USA SPM Corp, formerly known as Eldre Corporation and Mersen USA Rochester-NY Corp.

2 STANDARDS CRITERIA AND GUIDANCE

This section identifies the Standards, Criteria and Guidelines (SCGs) for this IRM. It should be noted that the SCGs are for comparison purposes and do not reflect the cleanup goals. The SCGs for soil, groundwater and soil gas/soil vapor for this IRM are provided below.

Soil SCGs

The SCGs for this IRM are:

- 6 NYCRR Subpart 375-6.8(a) Remedial Program Soil Cleanup Objectives (RPSCOs) for Unrestricted Use
- 6 NYCRR Subpart 375-6.8(b) Remedial Program Soil Cleanup Objectives (RPSCOs) for the Protection of Groundwater
- 6 NYCRR Subpart 375-6.8(b) RPSCOs for the Protection of Public Health –Industrial Use
- 6 NYCRR Subpart 375-6.8(b) RPSCOs for the Protection of Public Health –Commercial Use

Groundwater SCGs

The SCGs for groundwater used in this IRM are the 6 NYCRR Part 703 Groundwater Quality Standards.

Soil Gas and Vapor SCGs

Currently, no state regulatory (NYSDEC or New York State Department of Health (NYSDOH)) guidance values exist for soil gas.

Sub-Slab Soil Vapor and Indoor Air SCGs: The NYSDOH *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* dated October 2006 and all subsequent updates (including the USEPA Building Assessment and Survey Evaluation (BASE) Database (90th Percentile), in Appendix C of the NYSDOH document) is utilized for the SCG for soil vapor and indoor air.

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3 SUMMARY OF PREVIOUS INVESTIGATIONS AND INTERIM REMEDIAL MEASURES

3.1 Remedial Investigation

Pre-RI investigations are detailed in the RI Work Plan and RI Report. In accordance with the NYSDEC's conditional approval of the RI Report, pre-BCP groundwater data collected in October 2011 along with updated Figure 5 from the RI Report are included in Appendix B. Additional field logs that were not included in the RI Report are also included in Appendix B. The BCP RI fieldwork included advancing soil borings, installing temporary overburden groundwater monitoring wells, constructing permanent shallow and deep overburden groundwater monitoring wells at the Site, collecting surface soil samples from the Site, and conducting a SVI evaluation in the 1500 Jefferson Road building. RI groundwater sampling was conducted during several distinct events. The first round of groundwater sampling was conducted in May 2014 and a second round of groundwater sampling was conducted in September 2014. The following table indicates the total number of samples collected and analyzed during previous investigations.

Remedial Investigation Sample Summary

Sampled Media	Sample Quantities
Surface Soil Samples	13
Test Boring Soil Samples	97
Open Borehole Groundwater Samples	4
Permanent/Finished Monitoring Well Groundwater Samples	19
Temporary/Removed Monitoring Well Groundwater Samples	16
Sub-slab Soil Vapor/ Indoor Air/ Outdoor Air	12/ 16/ 2

Notes:
Test boring soil samples exclude PNOD and TOC samples which were collected for remedial design purposes.

Surface soil sample quantity includes total number of discrete sample locations; some samples were composited for analysis of parameters other than VOCs. One planned sub-slab soil vapor sample could not be collected due to water in the tubing during the attempted sample collection.

Although most soil and groundwater samples were submitted for analysis of volatile organic compounds (VOCs) only, select soil and groundwater samples collected during the RI were submitted for analysis of the following "full suite" laboratory parameters which include:

- United States Environmental Protection Agency (USEPA) Target Compound List (TCL) VOCs and tentatively identified compounds (TICs)
- USEPA TCL semi-volatile organic compounds (SVOCs) and TICs

- Target Analyte List (TAL) Metals and Cyanide
- Polychlorinated biphenyls (PCBs)
- Pesticides

The following summarizes the RI groundwater sampling results:

May 2014 Groundwater Sampling Results

The highest concentration of trichloroethene (TCE) (114 ppm) was reported in the groundwater sample collected from SB-225/MW-29. This temporary well was close (±9 feet) to SB-216/MW-20, the TCE-impacted well installed inside the northern portion of the 1500 Jefferson Road building. TCE was also reported at elevated concentrations (i.e., above the NYSDEC Part 703 Groundwater Standard) in the three other wells installed in this interior area of the Site (SB-223/MW-27, SB-224/MW-28, and SB-226/MW-30).

TCE was also reported at concentrations above the NYSDEC Part 703 Groundwater Standard in permanent well SB-230A/MW-33 (installed in the soil boring near the western property boundary that was observed to contain a lens of gravel) and in temporary well SB-232/MW-35 (installed near the northeastern corner of the 1500 Jefferson Road building, to the east of the loading dock's concrete pad). The groundwater sample collected from temporary well SB-232/MW-35 was also reported to contain tetrachloroethene (PCE) and methyl tert-butyl ether (MTBE) at concentrations of 90.3 and 85.2 ppb, respectively, above NYSDEC Part 703 Groundwater Standards.

Cis-1,2-dichloroethene was reported at concentrations above the NYSDEC Part 703 Groundwater Standard in interior wells SB-223/MW-27, SB-224/MW-28, and SB-226/MW-30, as well as exterior wells SB-230A/MW-33 and SB-232/MW-35. Trans-1,2-Dichloroethene was also reported at a concentration slightly above the NYSDEC Part 703 Groundwater Standard in the groundwater sample collected from exterior permanent well SB-230A/MW-33.

Vinyl chloride, another TCE degradation product, was reported at a concentration (25.3 ppb) slightly above the NYSDEC Part 703 Groundwater Standard (2 ppb) in interior well SB-224/MW-28.

No CVOCs were detected above laboratory detection limits in the groundwater sample collected from deep overburden well SB-233/MW-36.

September 2014 Groundwater Sampling Results

Most of the laboratory analytical results associated with the September 2014 Second Round of Groundwater Sampling are comparable to results obtained from prior rounds of groundwater sampling. The following exceptions should be noted:

- A reduction in the reported concentration of TCE in groundwater collected from interior well SB-222/MW-20, from 114 ppm in January 2014 to 25 ppm in September 2014;
- A reduction in the reported concentration of TCE in groundwater collected from interior well SB-216/MW-26, from 21.6 ppb in January 2014 to 3.7 ppb (i.e., below the NYSDEC Part 703 Groundwater Standard for TCE of 5 ppb) in September 2014;

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- A reduction in the reported concentration of TCE in groundwater collected from exterior well 230A/MW-33, from 87.3 ppb in May 2014 to 10 ppb in September 2014; and
- An increase in the reported concentration of TCE in groundwater collected from exterior deep well SB-233/MW-36, from “non-detect” in June 2014 to 6.1 ppb (in September 2014.

3.2 Remedial Alternatives Analysis Investigation

A RAA Investigation was completed in November 2017 in accordance with the RAA Investigation Work Plan dated August 2015 and approved by the NYSDEC in a letter dated October 23, 2015. This investigation was completed to assess remedial alternatives and further define the CVOC impacts for the purpose of developing a remedial design. In addition, two pilot tests were completed during the pre-remedial design phase as discussed in Section 3.4.

During the RAA investigation, overburden soil borings were completed to further define the vertical and horizontal extent of VOC impacts in the northern portion of the 1500 Jefferson Road building and to collect samples for total organic content (TOC) analysis for remedial design purposes. Two (2) interior (SB-235 and SB-236) and two (2) exterior (SB-234 and SB-237) soil borings were advanced to depths ranging from 30-31 ft bgs.

VOCs detected above the 6 NYCRR Part 375-6.8(a) RPSCOs for Unrestricted Use and 375-6.8(b) RPSCOs for Protection of Groundwater include TCE in SB-234 (12’), SB-235 (14’), SB-235 (18’), SB-235 (21.5’), Duplicate (SB-235 [21.5’]) and SB-236 (14’) and cis-1,2-dichloroethene in SB-235 (14’), Duplicate (SB-235 [21.5’]), and SB-235 (21.5’). The concentration of TCE in SB-236 (14’) was 1,620 ppm, which represents the greatest concentration of TCE in soil identified at the Site to date.

Eight (8) soil samples were also analyzed for TOC by Accutest Laboratories using ASTM method D2974 for remedial design purposes. TOC ranged from 0.2% to 16.2 % with an average (mean) of 8.2% and median of 9.2%.

In order to assist with remedial selection and design, falling head hydraulic conductivity slug testing was completed for select groundwater monitoring wells at the Site. Hydraulic conductivity was calculated for each well tested using AQTESOLV (version 4.5) software and the Bouwer and Rice (1976) Method. Hydraulic conductivity ranged from 1.7×10^{-7} to 2.9×10^{-5} feet/ second or 0.015 to 2.5 feet/day.

3.3 ISCO Pilot Test

During the pre-remedial design phase, two (2) pilot tests were implemented to evaluate the effectiveness of ISCO injections using pneumatic and hydraulic injection methods. Pneumatic injection methods were implemented in March 2018 in accordance with a *Pilot Test Work Plan* dated August 19, 2017. As documented in a *Pilot Test Work Plan Addendum* dated May 8, 2018, pneumatic injection methods were unsuccessful in achieving the uniform distribution of the oxidant; as such, hydraulic injection methods were tested in August 2018. The findings of each pilot test are summarized below:

<u>Pneumatic Injections</u>
The pneumatic injection pilot test was conducted on the northern exterior of the 1500 Jefferson Road Building and consisted of pneumatic enhancement of soils using nitrogen gas, followed by injection of a propant mixture consisting of water, sand, guar and a breaker enzyme to increase

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surface area by creating fractures in the subsurface silt and clay. Pneumatic enhancement and injection of the proppant mixture was completed in 3.5-foot (ft) vertical intervals at depths ranging from approximately 7.5 to 18-ft below ground surface (bgs) starting at the bottom of the injection point and working towards the ground surface. Packers were inflated above and below the injection nozzle in attempts to seal off the formation and isolate a 3.5-ft interval. Subsequently, 2-inch pre-packed injection wells were constructed, and sodium permanganate was pumped into the injection wells. Three (3) pneumatic injections were completed using pressures up to 200 pounds per square inch (psi) and a total of approximately 385 gallons of sodium permanganate was injected to the subsurface. All of the planned treatment chemical was distributed into the subsurface and daylighting of sodium permanganate did not occur. Structural monitoring was conducted in accordance with the Pilot Test Work Plan and movement of the building (walls, columns, floor) was not observed. Movement of exterior infrastructure including asphalt pavement and concrete pads beneath a HVAC unit and trash compactor was observed; however, all movement recorded was below the 0.5-inch action level as specified in the Pilot Test Work Plan.

A Geoprobe 6620DT was utilized to advance a series of nine (9) soil borings at varying distances from the injection wells to visually assess for distribution of the sodium permanganate as demonstrated by its purple color. Sodium permanganate was observed in two (2) of the nine (9) soil borings (SB-246 and SB-247) and was only observed in the highly conductive sand and gravel lenses.

The lack of proppant and sodium permanganate observed in the silt and clay indicates the pneumatic enhancement was unsuccessful in creating fractures within the tightly packed silt and clay. The pneumatic fracturing equipment required a minimum 3.5-ft injection interval and this entire vertical interval became pressurized. Based on the distribution of the treatment chemical into only the sand and gravel lenses, and based on discussions with the pneumatic injection contractor, because the sand and gravel lenses were present at a frequency greater than the thickness of the injection interval, the 3.5-ft interval was not made up to entirely silt and clay. This caused the pressure and treatment chemical to short-circuit into the sand and gravel lenses during each injection interval. Furthermore, the pneumatic injection equipment can reach pressures up to 600 psi; however, pressures up to only approximately 200 psi were achieved. This indicates the injection fluids short-circuited before higher pressures could be achieved. The sand and gravel lenses served as a preferential pathway for the proppant mixture and treatment chemical, which prevented pressures from building up to levels which would fracture the silt and clay material. Based on investigative work completed at the Site, the sand and gravel lenses are frequent but are inconsistent and vary in thickness and elevations; as such, the 3.5-ft pneumatic injection interval was too large to isolate intervals with only silt and clay which prevented sufficient pressures from building up to fracture the silt and clay.

<u>Hydraulic Injections</u>

In attempts to target smaller intervals for injection and isolate the silt and clay layers, hydraulic injection methods were tested in the 55 Hofstra Road parking lot. This location was selected to eliminate structural concerns and limit disruption to Site operations. A Geoprobe was used to advance a Geoprobe Systems® Pressure Activated Injection Probe to a depth of approximately 15-ft bgs. The diameter of the borehole is the same diameter as the injection probe which limits the void space around the tooling to prevent daylighting around the outside of the tooling and short circuiting into highly conductive zones. In addition, the narrow valve opening (1.5-inches) targets narrower intervals during injection.

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Four (4) injection points were completed at approximate 5- feet (ft) horizontal spacing to depths of approximately 15 ft below ground surface (bgs) using hydraulic injection methods.
Dyed water was injected in 0.5 to 1-ft intervals from approximately 15 to 8-ft bgs. A total of 204 gallons of water was injected (between 34 and 70 gallons per point). Water was injected at pressures up to approximately 80 psi. Based on an assumed 2.5-ft radius of influence, 10.9 gallons of water was placed per cubic yard of soil. The hydraulic injection method placed more material than the pneumatic injection method per volume of soil.

Three (3) soil borings were completed outside of the injection area and two (2) soil borings were completed between injection points. Dyed water was observed in water recovered from two (2) borings advanced between injection points. Dyed water was not observed in the water recovered from the three (3) borings advanced outside of the injection area. It should be noted that the dyed water was difficult to observe when mixed with the soil; as such, the soil samples obtained from the borings were inconclusive in determining the exact vertical distribution of the dyed water. Based on the findings of the hydraulic injection pilot test, this method is more effective than the pneumatic injection in distributing the treatment chemical, but would require horizontal spacing of approximately 5-ft.

3.4 Off-Site SVI

Off-site SVI testing was completed at the eastern adjacent property addressed as 1530 Jefferson Road. Following the assessment, NYSDEC/NYSDOH determined that no further action was warranted related to off-Site SVI and the data was provided to the adjacent property owner at the direction of NYSDEC/NYSDOH on July 27, 2021. Work was completed in accordance with the NYSDEC-approved Off-Site SVI Work Plan dated December 3, 2019 and the *NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York* dated October 2006 and subsequent updates. The building is currently utilized as offices for the New York State Department of Transportation (NYSDOT). Three (3) sub-slab and collocated indoor air samples as well as one (1) outdoor air sample were collected on November 19, 2020 over an 8-hour timeframe. Refer to Figure 3 for testing locations.

TCE, PCE, 1,1-dichloroethene, and vinyl chloride (which were the contaminants of concern at 1500 Jefferson Road) were not detected in any of the indoor air samples (IA-01, IA-02, and IA-03) collected. Several other VOCs were detected at a concentration higher than their respective laboratory method detection limits in the indoor air samples. However, the detected concentrations did not exceed applicable NYSDOH decision matrices / guidance values or the USEPA BASE Database 90th Percentile values. Additionally, compounds detected in the indoor air samples were also generally detected in the outdoor air (control) sample.

TCE was detected in two (2) of the sub-slab vapor samples collected (SS-02 and SS-03) at concentrations above laboratory method detection limits but below the applicable NYSDOH decision matrix value of 6 ug/m^3, and requires “no further action”. TCE was not detected in sub-slab vapor sample SS-01.

Freon 12 (dichlorodifluoromethane) was detected at a concentration of 15,000 ug/m^3 in sub-slab sample SS-02, significantly higher than in any other sample collected during this investigation. Freon 12 was one of the most common refrigerants and aerosol propellants until its manufacture was banned in the mid-1990s. However, recycled/recovered Freon 12 can still be purchased. Freon 12 is not a contaminant at 1500 Jefferson Road. The source of this elevated detection is unknown. It is notable that the concentration of

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Freon 12 detected in the co-located indoor air sample (IA-02) was 4.1 ug/m^3, below the USEPA BASE Database 90th Percentile value of 8.1 ug/m^3 for Freon 12.

Following the results of the off-Site SVI testing, NYSDEC and NYSDOH determined that no further action related to off-Site SVI investigation or mitigation was warranted as indicated in an email from NYSDEC on July 26, 2021.

3.5 Interim Remedial Measures

Two (2) Interim Remedial Measures (IRMs) have been completed at the Site and are summarized below. Refer to the individual reports for each IRM for details.

3.5.1 Sub-Slab Depressurization System (RAOC #1 and #2)

Soil vapor intrusion (SVI) testing was completed in 2017 which identified portions of the lower level of the 1500 Jefferson Road building which warranted mitigation in accordance with the *NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York* dated 2006 and subsequent updates ("NYSDOH Guidance"). A sub-slab depressurization system (SSDS) was installed in the northern portion of the lower level in accordance with the IRM Work Plan dated September 2016, NYSDEC conditional approval dated June 15, 2017, IRM Work Plan Addendum dated February 14, 2018, and associated NYSDEC conditional approval dated July 18, 2018. The SSDS was installed in 2018 and covers most of the lower level of the 1500 Jefferson Road building. Post-mitigation testing completed in April 2020 indicated one (1) location, the Tool Room on the lower level which resulted in "Identify Sources and Resample or Mitigate" in accordance with the NYSDOH Guidance. SVI samples collected from the remainder of the building resulted in "No Further Action".

3.5.2 Electrical Resistance Heating (RAOC #1)

An electrical resistance heating (ERH) system was installed in RAOC #1 to treat CVOCs in soil and groundwater. The ERH system was installed in accordance with the IRM Work Plan dated September 2019, NYSDEC conditional approval dated January 30, 2020 and revised work plan dated February 2020.

The ERH treatment area was installed across the entire oven room (approximately 40-ft by 40-ft) and north outside of the 1500 Jefferson Road building into the parking lot. The ERH system consisted of 19 electrodes (9 interior and 10 exterior) within the treatment area (approximately 2,700 sq. ft.) installed to depths of approximately 28-ft below finished floor with treatment occurring from 5 to 25-ft below finished floor (approximate 2,200 cubic yard treatment volume).

The ERH system operated from March 10, 2020 to May 11, 2020 at which point confirmatory sampling resulted in CVOCs below Unrestricted Use SCOs in soil and TCE below 500 ppb in groundwater. Baseline and confirmatory soil and groundwater results are summarized in the following tables:

ERH Baseline and Confirmatory Soil Results

Sample ID	Compound	Baseline October 2019 (ppm) (pre-ERH)	Confirmatory May 2020 (ppm) (ERH operating 52 days)	% reduction from ERH
SB-255-11-ft	Cis-1,2-DCE	3.4	ND (Duplicate 0.0006)	>99%
	PCE	2.2	ND	>99%
	TCE	15	0.00022 (Duplicate 0.00082)	>99%
SB-255-18ft	Cis-1,2-DCE	0.83	Not sampled*	NA**
	PCE	1.6	Not sampled*	NA**
	TCE	0.55	Not sampled*	NA**
SB-256-16ft/ SB-257-15ft	Cis-1,2-DCE	ND	ND	NA***
	PCE	1,600 (Duplicate 680)	ND	>99%
	TCE	30,000 (Duplicate 9,100)	0.0036	>99%
SB-257-19-20-ft/ 19.5-20ft	Cis-1,2-DCE	ND	ND	NA***
	PCE	0.073	ND	>99%
	TCE	4.8	ND	>99%
SB-258-9ft	Cis-1,2-DCE	0.82	0.00058	>99%
	PCE	0.34	ND	>99%
	TCE	29	0.0014	>99%
SB-258-12ft	Cis-1,2-DCE	0.24 (Duplicate 0.52)	ND	>99%
	PCE	1.9 (Duplicate 2.6)	ND	>99%
	TCE	28 (Duplicate 63)	0.00035	>99%
SB-260-11ft	Cis-1,2-DCE	0.028	ND	>99%
	PCE	ND	ND	NA***
	TCE	0.00047	ND	>99%
SB-260-16.5ft	Cis-1,2-DCE	0.14	ND	>99%
	PCE	ND	ND	NA***
	TCE	0.99	ND	>99%
SB-261-13ft	Cis-1,2-DCE	2.6	0.084	97%
	PCE	ND	ND	NA***
	TCE	0.072	0.022	69%
SB-261-21ft	Cis-1,2-DCE	0.49	Not sampled*	NA**
	PCE	ND	Not sampled*	NA**
	TCE	0.69	Not sampled*	NA

*Locations were not sampled due to melted macro-core liners; however, baseline concentrations were relatively low.
** Percent reduction was not calculated due to lack of confirmatory sample.
*** Baseline and confirmatory samples were both non-detect.

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ERH Baseline and Confirmatory Groundwater Results

Well ID	Compound	Baseline October 2019 (ppb) (pre-ERH)	Baseline January 2020 (ppb) (pre-ERH)	Confirmatory May 2020 (ppb) (ERH operating 52 days)	% reduction from ERH (greatest baseline concentration to May 2020)
MW-15-R*	Cis-1,2-DCE	95 (100 duplicate)	120	97 (Duplicate 97)	19%
	PCE	ND (ND duplicate)	ND	0.38 (Duplicate 0.38)	NA*
	TCE	130 (180 duplicate)	40	130 (Duplicate 140)	NA*
MW-20-R	Cis-1,2-DCE	6,200	9,500 (9,200 duplicate)	3.1	>99%
	PCE	3,100	1,800 (1,600 duplicate)	12	99%
	TCE	400,000	200,000 (190,000 duplicate)	350	>99%

** NA indicates concentrations were not reduced from the baseline sampling event. MW-15-R is in the location of the ISCO pilot test in which 385 gallons of sodium permanganate were injected into the subsurface in 2018 (i.e., prior to ERH baseline sampling). The relatively low ERH baseline concentrations are attributed to the sodium permanganate treatment which reduced the concentration of cis-1,2-DCE from 12,000 ppb in September 2014 to 95 ppb in October 2019 (99% reduction), PCE from 170 ppb in September 2014 to non-detect in October 2019 (>99% reduction), and TCE from 71,000 ppb in September 2014 to 130 ppb in October 2019 (>99% reduction). Because the ISCO pilot test had already reduced concentrations of these CVOCs by at least 99%, the ERH system did not further reduce these compounds in MW-15-R. The increases in concentrations from baseline to post-ERH are minor and the pre-ISCO concentrations in MW-15-R have been reduced by at least 99% overall.*

An estimated 330 lbs of TCE were removed and treated via the ERH system based on air samples collected from the influent and effluent of the carbon treatment vessels which were analyzed by a laboratory via USEPA Method TO-15. NYSDEC approved decommissioning of the system in May and the system was decommissioned in May and June 2020.

3.6 Conceptual Site Model

The RI Work Plan identified three (3) areas of concern at the Site, which the RI and RAA Investigation evaluated. Two (2) IRMs including source treatment via ERH and installation of a SSDS to mitigate the potential for SVI have been completed to address RAOCs identified during the RI and RAA Investigation. The Conceptual Site Model below summarizes the current Site conditions following the IRMs:

1. **RAOC #1 - Residual VOC Impacts in Soil and Groundwater Associated with Former Source Area (SB-226 and SB-236):**

The impacts within the northern portion of the 1500 Jefferson Road building appear to be associated with historic (pre-Eldre) operations based on the presence of a former retention pond identified in historical aerial photographs. The extent of impacts in the soil at significant concentrations pre-ERH were limited to beneath the structural fill materials as observed during previous investigations. The structural fill materials were installed at the Site as part of the 2000 building addition which removed soils above this area at that time.

An IRM consisting of installation and operation of an ERH system was completed in 2020 to remove the contaminant mass from the source area. The ERH system treated the approximately 2,700 square foot source area to depths up to 25-ft below finished floor. The ERH system resulted in a significant reduction of CVOCs in soil and groundwater to below Unrestricted Use and Protection of Groundwater SCOs in soil and below 500 ppb in groundwater. The ERH system operated for 62 days to a point of diminishing returns as evidenced by mass removal rates calculated from PID measurements and also air samples analyzed via TO-15. The ERH treatment is documented in a CCR/FER.

While the source of CVOCs has been reduced via ERH, residual groundwater impacts are present above the groundwater standard as shown on Figure 4A and Figure 4B. The removal of CVOCs in soil and groundwater is expected to result in further reductions of the CVOC plume in the future and will be monitored as detailed in the SMP.

The migration of CVOCs in dissolved phase groundwater from this source area is presumed to be influenced by the overall groundwater flow at the Site to the north and due to sand and gravel seams identified in numerous soil borings.

In addition, the sanitary sewer transects the site from the west to the northeast. The groundwater contouring presented in the RI Report indicates that the sanitary sewer influences the groundwater flow at the site in the uppermost portions of the water table. However, the data obtained through the RI do not indicate that contaminants migrate within the sanitary sewer bedding at significant concentrations. Although some migration via this pathway may occur, the lack of CVOCs in samples near the sanitary sewer (e.g., SB-201 and MW-32) and in soil and groundwater samples from beneath the invert of the sewer (and collected from between the sewers, SB-229/MW-2), indicate that this pathway does not represent a significant concern for downgradient impacts. Rather, CVOCs have been documented to be to the north and west of the sewer and it is presumed that the numerous seams of gravel/sand convey the CVOCs beneath the sewer line and to the north of the sewer.

Although the connectivity of the sand and gravel seams was not confirmed through direct testing, connections between these seams can be inferred from the contaminant distribution pattern and the number of seams identified supporting the likelihood that such sand and gravel seams provide preferential pathways for migration to the north and northwest consistent with the groundwater flow direction and the fact that the contaminants are migrating beyond the sanitary sewer. In addition, some migration of impacts with groundwater was also noted to the west presumably due to an elevator sump (refer to pre-IRM contaminant contours included in the RI Report). These interpretations were confirmed during the remedial design process by advancing soil borings during the RAA investigation to delineate CVOC impacts immediately adjacent to the oven room (refer to Section 3.2 for the RAA Investigation findings). Refer to Figure 4A and Figure 4B for the interpreted groundwater plume post-IRMs.

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2. RAOC #2 – VOC Impacts MW-12:

The source of CVOC impacts within this portion of the building are unknown; however, based on interviews with Eldre representatives, it is likely these are associated with historic operations prior to Eldre ownership since there are no known operations during Eldre ownership that utilized TCE in this area. The impacts appear centered around the area of MW-12 and extend to the north and northeast. Based upon available data this appears to be a separate source area from RAOC #1 as shown on Figure 4A. Specifically MW-22 was non-detect for chlorinated VOCs and is located between the source in the area of SB-226 and MW-12. The concentrations in this area are significantly lower than the SB-226 area and appear highly degraded (50% breakdown compounds).

3. RAOC #3 – Surface Soil Impacts:

Low levels of pesticides (SS-1 and SS-2 at 1500 Jefferson Road and C1 and C2 at 55 Hofstra Road), metals (SS-1, SS-2, SS-3 and SS-4 at 1500 Jefferson Road and C1, C2 and C3 at 55 Hofstra Road) and SVOCs (SS-2 at 1500 Jefferson Road and C1, C2, and C3 at 55 Hofstra Road) were identified in surface soil and are likely associated with historic operations (such as pesticide applications), fill materials (SVOCs) and/or naturally occurring conditions (metals). The soil samples collected at 1500 Jefferson Road do not indicate significant or site-wide impacts and with the exception of one sample (SS-2) are all below the 6 NYCRR Part 375-6.8(b) Industrial Use SCOs. All three (3) composite sample locations collected from 55 Hofstra Road exceed 6 NYCRR Part 375-6.8(b) Commercial Use SCOs for at least one (1) depth interval.

<u>MTBE From Off-Site NYSDEC Spill #9106071</u>

In addition to the RAOCs identified, it should be noted that MTBE has been detected in groundwater at the Site; however, the source of MTBE appears to be associated with an off-Site gasoline filling station located at 1540 Jefferson Road (NYSDEC Spill #9106071). This is supported by the following:

- <u>1990s Spill Remediation Work</u> - there is a significant amount of analytical data from the work completed in the late 1990s. Specifically, the prior investigation and remediation work completed in the late 1990s consisted of significant soil and groundwater sampling to assess and remediate petroleum impacts. As part of that work, all underground storage tanks (USTs), including the gasoline tank, were removed. None of the samples collected during the investigation or remediation work identified MTBE. This includes the following samples:
    - One (1) waste characterization sample - A sample of soils removed/disposed of was sampled and analyzed for VOCs (including MTBE), and MTBE was non-detect (refer to SAW Environmental October 19, 1999 Tank Closure, Disposal & Closure Report).
    - Eleven (11) confirmation samples – Confirmation samples were collected and analyzed for VOCs (including MTBE) from multiple excavations and none of the eleven (11) confirmation samples detected MTBE (refer to SAW Environmental October 19, 1999 Tank Closure, Disposal & Closure Report).
    - One (1) groundwater sample – A groundwater sample from a well (Micro Well B-1) installed in the approximate location of current well MW-2 was installed and sampled for VOCs (including MTBE) and this well was non-detect for MTBE (refer to SAW Environmental November 4, 1999 Letter).

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- In addition to the above, six (6) soil samples were also collected and analyzed during a July 1998 Phase II ESA by LaBella (completed prior to the SAW Environmental remedial work). These six (6) soil samples were analyzed for Total Petroleum Hydrocarbons and the laboratory provided a 'fingerprint' test. All six (6) samples identified lube oil and two (2) of these samples identified diesel fuel. None of the samples identified gasoline as a contaminant.

The above referenced reports were included in the BCP Application (Appendix E).

- 2011 Phase II ESA - during the Phase II ESA completed by Groundwater Sciences in 2011, numerous samples were analyzed for soil and groundwater, and none of the samples in proximity to the former USTs identified MTBE. Specifically, sixteen (16) soil samples were analyzed for VOCs (including MTBE) across the 55 Hofstra Parcel and 1500 Jefferson Parcel. Only two samples detected MTBE and the concentrations detected were estimated values below the method detection limit (MDL). These soil samples with estimated MTBE (SB-13 & SB-22) were up-gradient of the former petroleum UST areas. A sample from within the former petroleum UST areas (SB-14) did not detect MTBE. In addition, groundwater samples were also collected/analyzed for VOCs (including MTBE) across the two parcels, and MTBE was only detected in five (5) locations (SB-9, SB-22, MW-2, MW-5, & MW-10), which were south (up-gradient), southwest (cross-gradient) or southeast (cross-gradient) of the former petroleum UST areas. Importantly, MW-2, SB-9 and SB-22 locations are generally in the area of the October 1999 Micro Well B-1 sample which was non-detect in 1999 for MTBE; however, the samples in 2011 identified MTBE. This indicates that MTBE has migrated onto the Site sometime between 1999 and 2011, years after the tank removal work.

- Remedial Investigation – The remedial investigation work completed through the Brownfield Program did identify some MTBE in various monitoring wells; however, none of the samples were wells in proximity to the area of the former petroleum tanks, rather, the wells were in areas hydraulically cross-gradient (MW-5, MW-10 & MW-16) or up-gradient (MW-2) from the former petroleum tanks.

Furthermore, the source of MTBE was investigated in October 2019 in accordance with the IRM Work Plan for RAOC #1. Four (4) on-Site wells were sampled for NYSDEC Commissioner Policy (CP-51) list VOCs to assess MTBE concentrations in groundwater (MW-2, MW-5, MW-10, and MW-16). The wells used for ERH performance monitoring were also analyzed for MTBE; MTBE was non-detect in MW-15 and MW-20. Concentrations of MTBE detected during this sampling event compared to previous sampling are listed below:

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MTBE Concentrations in Groundwater on-Site

Monitoring Well	Approx. Distance (ft.) from UST Area	Direction from UST Area	2019 MTBE Concentration	Historical MTBE concentrations	
MW-2*	130	Up-Gradient	140 ppb	660 ppb (2014)	61 ppb (2013)
MW-5	270	Cross-Gradient	270 ppb	230 ppb (2014)	38 ppb (2013)
MW-10	150	Cross-Gradient	7.1 ppb	Not sampled 2014	44 ppb (2013)
MW-16	330	Cross-Gradient	46 ppb	22 ppb (2014)	16 ppb (2013)
MW-15	400	Cross-Gradient	Non-detect	Non-detect (2013-2014)	
MW-20	420	Cross-Gradient	Non-detect	Non-detect (2013-2014)	

* Approximate location of 1999 Micro Well B-1, which was non-detect for MTBE.

As noted above, the concentrations of MTBE were non-detect in the area of MW-2 in 1999; however, MTBE was detected at the Site after the UST removal work. This coupled with the fact that this area is up-gradient of the former petroleum use areas, provides multiple lines of evidence that the MTBE is due solely to an off-site source south of the eastern portion of the 55 Hofstra parcel that migrated onto the Site sometime between 1999 and 2011.

In addition to the above Site data, reports associated with NYSDEC Spill #9106071 at the gasoline filling station located at 1540 Jefferson Road were reviewed. Based on a review of the most recent available groundwater monitoring data obtained from a report submitted on behalf of Sonoco titled “Expanded Subsurface Investigation and Request for No Further Action” by Matrix Environmental Technologies Inc. (Matrix) dated May 1, 2001, MTBE was detected in four (4) of five (5) wells sampled at 1540 Jefferson Road. MTBE was detected at 1540 Jefferson Road up to 149 ppb. Based on a review of documents associated with Spill #9106071, the NYSDEC closed the spill in September 2001. It should be noted the existing underground storage tanks (USTs) are located on the west side of the 1540 Jefferson Road building and there were no monitoring wells installed immediately downgradient of the existing USTs. Furthermore, data have not been collected at 1540 Jefferson Road since 2001 and New York State banned the use of MTBE as a fuel additive in 2004. Refer to Figure 4A for locations of off-Site wells. Refer to Appendix B for data tables and laboratory report associated with the 2019 MTBE sampling. The presence of MTBE and other petroleum compounds is attributed to the adjacent gasoline filling station located at 1540 Jefferson Road. Based on the lack of source of MTBE on-Site, further action related to MTBE is not warranted and evaluation of remedial alternatives are not applicable to this Site.

The Conceptual Site Model is depicted on Figure 4A and Figure 4B.

3.7 Nature and Extent of Contamination

The cumulative investigative work performed during the pre-BCP investigations and the RI work and IRMs performed under the BCP identified the following areas that exceed the NYSDEC Part 375-6.8(b) Commercial Use (55 Hofstra Road), Industrial Use (1500 Jefferson Road) and Protection of Groundwater SCOs and/or Part 703 Groundwater Standards and thus require evaluation in the RAA. The RAOCs identified herein have been updated from the May 2018 RI Report following source area remediation and SSDS installation under IRMs. The CCR/FER should be referenced for details regarding IRMs.

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1. RAOC #1 - Residual VOC Impacts in Soil and Groundwater Associated with Former Source Area (SB-226 and SB-236) (1500 Jefferson Road): Residual CVOCs are present in groundwater in the source area following operation of the ERH system. CVOCs in groundwater are migrating north into the parking lot as shown on Figure 4A and Figure 4B. The greatest concentration of CVOCs within the former source area following ERH is 325 ppb in MW-20-R located beneath the oven room. CVOCs in groundwater in this area have been reduced by over 99% from pre-ERH conditions. The residual groundwater plume shown on Figure 4A and Figure 4B is based on post-ERH conditions within the former source area. Downgradient CVOC concentrations are anticipated to further decline over time due to the source area treatment completed in 2020. The lateral extent of the plume above 5 ppb is inferred based on data collected during the RI and IRM and known groundwater flow conditions determined during the RI. The vertical extent of the plume is up to 25-ft below finished floor or 22 ft bgs on the exterior of the building. A SSDS was installed in the northern portion of the 1500 Jefferson Road building to mitigate SVI in this area.
2. RAOC #2 - VOC Impacts MW-12 (1500 Jefferson Road): Chlorinated VOCs in groundwater are present near MW-12 at up to 1,314 ppb total CVOCs. These impacts appear to be a separate source from RAOC #1 and are limited in lateral extent as shown on Figure 4A. A SSDS was installed in the northern portion of the 1500 Jefferson Road building to prevent SVI in this area.
3. RAOC #3 - Miscellaneous Discrete Soil Areas (1500 Jefferson Road and 55 Hofstra Road): Surface soil samples with SVOCs above Part 375-6.8(b) Commercial Use SCOs at 55 Hofstra Road and above Part 375-6.8(b) Industrial Use SCOs at 1500 Jefferson Road (SS-2). Approximately 28,450 square feet of impacted surface soil is present up to 1-ft bgs. The SVOCs present in surface soil at the Site are also present in asphalt and the locations of surface soil impacts are adjacent to asphalt paved roadways and parking lots.

3.8 Qualitative Exposure Assessment

An on-Site and off-Site exposure assessment was completed during the RI and included in the RI Report dated May 2018. Since the exposure assessments were completed, source remediation and off-Site SVI testing have been completed which change the previous exposure assessments. Updated exposure assessments are as follows:

3.8.1 On-Site Exposure Assessment

Exposure pathways have been evaluated as to five (5) elements:

1. Source of Contamination – Two (2) sources of TCE (and associated breakdown compounds) have been identified at the Site during previous investigations:
    a. The primary source of TCE was located beneath the northernmost portion of the 1500 Jefferson Road building (SB-226 and SB-236). This source area was treated via ERH and residual CVOCs in soil and groundwater remain.
    b. A smaller secondary source is beneath the eastern-central portion of the 1500 Jefferson Road building and the asphalt parking lot to the north-northeast of the building. A groundwater sample collected from a temporary well (SB-232/MW-35) installed to the east of the loading dock's concrete pad contained TCE, PCE, and MTBE at concentrations above

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NYSDEC Part 703 Groundwater Standards. This area of TCE impact was also previously documented in groundwater samples collected from interior wells LB-2/MW-12 and SB-222/MW-26. This area (i.e., beneath the eastern-central portion of the 1500 Jefferson Road building) is considered a second TCE source area.

The source of SVOCs in surface soil on-Site is unknown. Surface soil may migrate via erosion caused by wind or surface runoff from adjacent paved areas; however, due to the densely vegetated nature of the area with SVOCs in surface soil at 55 Hofstra Road, and the limited area of SVOCs in surface soil at 1500 Jefferson Road, SVOCs in on-Site surface soil are not anticipated to migrate off-Site.

2. Environmental Media and Transport Mechanisms – The source of the relatively localized areas of TCE has not been definitively connected to any current or known historic operations at the Site during Eldre Corporation operations. These areas may be associated with pre-Eldre site operations. Contaminants of concern are CVOCs, most notably TCE (and associated breakdown compounds) and the transport mechanism is migration with groundwater and soil vapor. A SSDS has been installed within the northern portion of the 1500 Jefferson Road building and post-mitigation SVI testing has indicated the SSDS is effective in mitigating SVI concerns. In addition, the source of CVOCs in the subsurface has been treated via ERH, thereby limiting soil and groundwater impacted with CVOCs.

   The source of SVOCs in surface soil on-Site is unknown. Surface soil may migrate via erosion caused by wind or surface runoff from adjacent paved areas; however, due to the densely vegetated nature of the area with SVOCs in surface soil at 55 Hofstra Road, and the limited area of SVOCs in surface soil at 1500 Jefferson Road, SVOCs in on-Site surface soil are not anticipated to migrate off-Site.

3. Point of Exposure – The source of TCE has been treated via ERH. In addition, a SSDS is installed and operating in the northern portion of the 1500 Jefferson Road building. Groundwater in the area is not used as a source of drinking water based on local ordinance and all surrounding properties are connected to a public water supply. As such, potential exposure to CVOCs is limited. The Excavation Work Plan (EWP) included in the SMP for the Site is to be followed during excavations to prevent exposures via direct contact and/or ingestion of soil and groundwater.

   SVOCs in surface soil could represent a point of exposure if the SMP is not followed. The EWP in the SMP is to be followed during all excavation work to limit exposure to contaminated media.

4. Route(s) of Exposure – Based upon the current data, the only current routes of potential exposure to CVOCs would be direct contact and/or ingestion of soil and groundwater in the event of unmanaged excavations at the affected portions of the Site, and inhalation of soil vapor. A SSDS is installed and operating in the northern portion of the 1500 Jefferson Road Building to prevent contaminated soil vapor from entering the building. Groundwater is not in use at the Site. The majority of the Site is covered by the footprint of buildings or pavement.

   With the exception of one surface soil sample (SS-2) at 1500 Jefferson Road, surficial soils at 1500 Jefferson Road did not detect contaminants above the NYSDEC Part 375-6 Industrial Use SCOs. The SVOCs identified in surface soil are not contaminants of concern in groundwater. The surface soil

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sample SS-2 was collected in a landscaped area adjacent to asphalt pavement. Surface soil samples collected from the northeastern portion of 55 Hofstra Road exceed NYCRR Part 375-6 Commercial Use SCOs for SVOCs. The EWP in the SMP is to be followed during all excavation work to limit exposure to contaminated media.

5. Receptor Population – Exposure to CVOCs has been reduced via source treatment and installation and operation of a SSDS. The only receptor population would be building occupants if the SSDS were to become nonoperational for a long period of time or workers that may come into contact with contaminated subsurface soil and/or groundwater (e.g., utility workers). The SSDS will continue to operate in accordance with the SMP.

Based on the assessments completed to date, there is no on-Site exposure to contaminated soil, groundwater, or soil vapor as long as the SMP, including the EWP and operation and maintenance of the SSDS, is implemented. As documented/reported in the July 19, 2021 letter to NYSDEC a slight indoor air exceedance was noted for the tool room for TCE. As indicated in that letter, all practical/reasonable actions have been taken to address the potential for SVI within the tool room and pre-mitigation testing indicated higher indoor air concentrations of TCE within the tool room than in the sub-slab vapor below the tool room.

3.8.2 Off-Site Exposure Assessment

The potential for off-site exposure pathways has been evaluated as five (5) elements:

1. Source of Contamination – As previously discussed, RI subsurface investigations have found two sources of TCE and its breakdown compounds at the Site
    a. The primary source of TCE was located beneath the northernmost portion of the 1500 Jefferson Road building (SB-226 and SB-236). This source area was treated via ERH.
    b. A smaller secondary source is beneath the eastern-central portion of the 1500 Jefferson Road building and the asphalt parking lot to the north-northeast of the building. A groundwater sample collected from a temporary well (SB-232/MW-35) installed to the east of the loading dock's concrete pad was reported to contain TCE, PCE, and MTBE at concentrations above NYSDEC Part 703 Groundwater Standards. This area of TCE impact was also previously documented in groundwater samples collected from interior wells LB-2/MW-12 and SB-222/MW-26. This area (i.e., beneath the eastern-central portion of the 1500 Jefferson Road building) is considered a second TCE source area.

    The source of SVOCs in surface soil on-Site is unknown.

2. Environmental Media and Transport Mechanisms – The source area of CVOCs on-Site has been treated via ERH; therefore, transport of elevated concentrations of CVOCs off-Site via groundwater from the source area is limited. Off-Site SVI testing completed at the eastern adjacent building located at 1530 Jefferson Road in November 2020 did not identify levels of VOCs that warranted further action in accordance with the NYSDOH Guidance Document. The 1530 Jefferson Road building is the closest off-Site building to the former source area on-Site. Based on the off-Site SVI evaluation completed, elevated concentrations of VOCs are not migrating off-Site.

Due to the densely vegetated nature of the area with SVOCs in surface soil at 55 Hofstra Road, and the limited area of SVOCs in surface soil at 1500 Jefferson Road, SVOCs in on-Site surface soil are not anticipated to migrate off-Site.

3. Point of Exposure – Based on the limited migration of contaminants off-Site evidenced by off-Site SVI testing resulting in no further action in accordance with the NYSDOH Guidance Document, and the restrictions on groundwater use at the Site and local ordinance restricting the use of groundwater off-Site, there are no off-Site points of exposure to VOCs. Furthermore, adjacent properties are improved with asphalt parking lots in the areas closest to the Site. Groundwater in the area is not used as a source of drinking water.

   Due to the lack of ability to migrate off-Site, there is no off-Site exposure concern from on-Site SVOCs in surface soil.

4. Route of Exposure – Off-Site SVI testing did not identify TCE, PCE, 1,1-dichloroethene, or vinyl chloride (which were the contaminants of concern at 1500 Jefferson Road) in any of the indoor air samples. Based on the lack of SVI identified off-Site, there does not appear to be a route of exposure.

   Due to the lack of ability to migrate off-Site, there is no off-Site exposure concern from on-Site SVOCs in surface soil.

5. Receptor Population – Based on the lack of routes of exposure, there is no receptor population off-Site.

Based on the results of off-Site SVI testing completed at 1530 Jefferson Road (i.e., the closest off-Site building to the former on-Site source area) in 2020, no further action related to SVI is warranted off-Site. In addition, the source of CVOCs in soil and groundwater on-Site has been treated via ERH which has significantly reduced the concentrations of CVOCs in the subsurface. The reduction of CVOCs in the subsurface on-Site reduces the likelihood for elevated CVOCs to migrate off-Site. Surface soil is not anticipated to be transported off-Site from on-Site as long as the EWP in the SMP is followed during excavation work. There is no off-Site exposure to on-Site contaminants.

3.9 Geology & Hydrology

Information on the geologic and hydrogeologic conditions presented herein are based upon previous environmental investigations of the Site and the subsurface investigations performed as part of the RI and pre-remedial design. Subsurface investigation methods have primarily included direct-push soil borings, rotary drill rig soil borings, and the installation of 1-inch and 2-inch diameter groundwater monitoring wells. Most subsurface investigation work has been limited to approximately 20 feet bgs, and investigations have been limited to the overburden soil formation beneath the Site. SB-233 extended to 34 ft. bgs, SB-234 and SB-237 extended to 30 ft. bgs, SB-235 and SB-236 extended to 31 ft. bgs and SB-241 extended to 25 ft. bgs.

Interior soil borings beneath the northernmost portion of the 1500 Jefferson Road building encountered a thick layer of sub-slab structural fill material (gravel with some sand) immediately below the concrete floor slab to approximately 8 to 9 feet below the finished floor elevation. Native soils, generally silty clay and clayey silt soils with lesser amounts of sand and/or gravel were encountered beneath the apparent sub-slab

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structural fill material in these soil borings. Interior soil borings that were completed to the south and within an older portion of the 1500 Jefferson Road building did not encounter this thick layer of sub-slab structural fill material; rather, native soils were generally encountered between 1.5 and 3 feet beneath the finished floor elevation.

Beneath exterior asphalt pavement areas, soil borings have documented a layer of Sand and Gravel fill material that varies from approximately 1 to 4 feet in thickness. Underlying this fill material, native material consist of generally silty clay and clayey silt soils with lesser amounts of sand and/or gravel.

Several interior and exterior soil borings encountered a lens of gravel and/or sand at depths greater than 9 feet bgs. A layer of sand with lesser amount of silt and gravel has been found in some soil borings at depths between 15 and 20 feet bgs. In addition, several soil borings have noted a clay layer between 5 and 6 feet bgs.

The 2011 GSC investigation included installation of ten overburden groundwater monitoring wells and these wells indicated that groundwater beneath the Site generally flows to the north-northwest.

Groundwater contour maps have been generated as part of the RI using static water level data collected from accessible wells on the following dates:

- On June 27, 2014, static water levels were collected from fifteen (15) exterior and eight (8) interior groundwater monitoring wells; and
- On November 24, 2014, static water levels were collected from sixteen (16) exterior and eight (8) interior groundwater monitoring wells.

The June 2014 static water level data indicated groundwater generally flowing to the north-northeast at the Site; however, there is some influence on the groundwater flow by the sanitary sewer that bisects the Site. There are two sewer lines that cross the Site in a generally west-southwest to east-northeast orientation. Based on the available data, the sewer piping, and more likely the bedding material around the piping, influences groundwater flow at the Site. Based upon available mapping, instrument survey elevations, and field measurements, the invert elevations of the deeper sewer piping are at an elevation of ±490.75 feet to 490.15 feet, whereas groundwater elevations in the area of the sewer are modeled to be approximately +/- 497 feet in the area of the sewer. However, the groundwater elevation measured at MW-2 (located near the sanitary sewer) was substantially lower than the other wells located away from the sanitary sewer; which indicates that the sanitary sewer influences groundwater. To further evaluate this, a second groundwater contour map was developed that includes utilizing the invert elevations of the sewer manholes (i.e., assuming that the inverts are the groundwater elevation). Based on this assessment, additional contours were developed which show groundwater in the northern portion of the Site flowing south towards the sanitary sewer and south of the sewer groundwater flowing north towards the sewer (i.e., the sewer acting as a linear feature). The uppermost groundwater flow in the area of the sewer is to the northeast (i.e., groundwater above the sewer/bedding).

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4. OBJECTIVES

The objective of this RAA is to identify, evaluate and select remedies to address the contamination identified by the RI, as summarized in Section 3. As defined in NYSDEC DER-10 (Section 4.0) and DER-31, remedial alternatives will be evaluated based on the following criteria:

1. Overall Protection of Public Health and the Environment: This criterion is an evaluation of the ability of each alternative or the remedy to protect public health and the environment during or subsequent to implementation of the alternative.

2. Compliance with SCGs: This criterion evaluates whether the remedial alternative will ultimately result in compliance with the applicable, relevant or appropriate SCGs, to the extent practicable.

3. Long-Term Effectiveness and Permanence: This criterion evaluates if the remedy is effective and permanent in the long-term after implementation (e.g., potential rebound). In the event that residual impacts will remain as part of the alternative, then the risks and adequacy/reliability of the controls are also evaluated.

4. Reduction of Toxicity, Mobility, or Volume with Treatment: This criterion is an evaluation of the ability of an alternative or remedy to reduce the toxicity, mobility and volume of site contamination. In addition, the reversibility of the contaminant destruction or treatment is evaluated.

5. Short-Term Impact and Effectiveness: This criterion is an evaluation of the potential short-term adverse environmental impacts and human exposures during construction and/or implementation of an alternative or remedy.

6. Implementability: This criterion evaluates the remedial alternative based on its suitability, implementability at the specific site, and availability of services and materials that will be required.

7. Cost: This criterion evaluates the capital, operation, maintenance, and monitoring costs for the remedial alternative. The estimated costs are presented on a present worth basis.

8. Land Use: This criterion is an evaluation of the current, intended and reasonably anticipated future use of the Site and its surroundings, as it relates to an alternative or remedy, when unrestricted levels would not be achieved. The Land Use Evaluation is included as Appendix A.

9. Community Acceptance: A summary of the public participation program completed as part of the project. In addition, any public comments concerns and overall perception are addressed as part of the criteria.

10. Green Remediation: This criterion considers all environmental effects of remedy implementation and incorporates alternatives that minimize the environmental footprint of cleanup actions.

The public participation work completed to date has included the initial public notice as part of the BCP Application and RI Work Plan. These public notices have not resulted in any comments from the public. As such, each alternative will be evaluated based on if the alternative would likely be acceptable to the community. If any public comments are received, these will be addressed.

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5. REMEDIAL ACTION OBJECTIVES

Remedial action objectives (RAOs) are medium-specific objectives for the protection of public health and the environment and are developed based on contaminant-specific standards, criteria, and guidance (SCGs) established by NYSDEC and/or NYSDOH. The following have been defined for this Site based on the current, intended and reasonably anticipated future use of the Site and its surroundings. An assessment of future use was completed based on requirements of Part 375 1.8(f)(9) and is provided in Appendix A.

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Prevent the discharge of contaminants to surface water.
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation exposure to contaminants volatilizing from soil

RAOs for Environmental Protection

- Prevent migration of 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.

Surface Water

RAOs for Public Health Protection

- Prevent ingestion of water impacted by contaminants.
- Prevent contact or inhalation of contaminants from impacted water bodies.
- Prevent surface water contamination which may result in fish advisories.

RAOs for Environmental Protection

- Restore surface water to ambient water quality criteria for the contaminant of concern.
- Prevent impacts to biota from ingestion/direct contact with surface water causing toxicity and impacts from bioaccumulation through the marine or aquatic food chain.

Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

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6. DEVELOPMENT OF REMEDIAL ALTERNATIVES

This section develops the remedial alternatives being considered for addressing the Remedial AOCs (RAOCs) identified for the Site. Based on a regulatory requirement for assessing Unrestricted Use the evaluation of alternatives will be combined for select RAOCs and other impacts will be evaluated separately. Specifically, the following RAOCs are included in the assessment:

1. RAOC #1- Residual VOC Impacts in Soil and Groundwater Associated with Former Source Area (SB-226 and SB-236): Chlorinated VOCs in soil and groundwater in the source area (i.e., SB-226 and SB-236) and migrating north in the parking lot. The source area impacts including SB-226 and SB-236 have been treated during an IRM which involved operation of an ERH system.
2. RAOC #2- VOC Impacts MW-12: Chlorinated VOCs in groundwater near MW-12.
3. RAOC #3- Surface Soil Impacts: Surface soil samples with SVOCs above Part 375-6.8(b) Commercial Use SCOs at 55 Hofstra Road and above Part 375-6.8(b) Industrial Use SCOs at 1500 Jefferson Road.

The current and proposed site uses are commercial for 55 Hofstra Road and industrial for 1500 Jefferson Road. The current and proposed uses were considered in evaluating and selecting remedial alternatives.

6.1 Evaluation of Alternatives

This alternatives analysis evaluates remedial alternatives for each RAOC. Since the alternatives are evaluated separately for each AOC, there are some tasks which overlap each analysis (e.g., institutional controls, reports, etc.). The alternatives are evaluated separately initially but the total cost and scope is included for the final remedy (refer to Section 9). Two (2) IRMs have already been completed and the evaluation provided below accounts for existing Site conditions post-IRMs. The following technologies were evaluated for use at the Site post-IRMs.

a. *Unrestricted Use Impacted Soil Removal:* This technology involves the removal and disposal of soils with impacts above Unrestricted Use SCOs. Excavated soil would be characterized for off-Site disposal and confirmatory soil samples would be collected in accordance with DER-10. The excavation would continue contingent upon confirmatory soil samples resulting in concentrations below Unrestricted Use SCOs. Excavations would be backfilled with clean imported material upon receipt of confirmatory samples below Unrestricted Use SCOs. In addition, in order to address residual contamination in groundwater, this alternative would also include substantial dewatering and include placing an amendment into the saturated zone backfill interval to provide further treatment in order to meet the SCGs for groundwater within five (5) years. It should be noted that the source of MTBE is off-site (refer to Section 3.6) and thus MTBE remediation is not included herein.

b. *On-Site Management:* This "technology" would include following a SMP to be developed for the Site which would include an EWP and Health and Safety Plan (HASP). This method would not include active remediation beyond the IRMs that were already completed successfully, but rather management to ensure that the locations of residual contamination are known and any disturbance of these materials would be done in accordance with the SMP. On-Site management would control future Site use and protect against human exposure to impacted

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soil and/or groundwater remaining on-site at levels above Unrestricted Use SCOs. The SMP would include continued operation and monitoring of the SSDS to mitigate soil vapor intrusion issues.

c. *Long-Term Groundwater Monitoring:* Under this alternative, periodic groundwater monitoring of select wells would be completed to assess concentrations of VOCs as well as select biodegradation indicators and groundwater quality parameters which act as proxies for attenuation progress. In addition, an environmental easement and development of a SMP including EWP and HASP would be implemented to control future Site use and protect against human exposure to soil and groundwater containing VOCs above the SCGs for the Site. The SMP would include continued operation and monitoring of the SSDS to mitigate soil vapor intrusion issues.

d. *Cover/ Cap:* This technology involves installing a 1-ft cover and/or a cap in areas of impacted surface soil as an engineering control. The cover/ cap would be managed in accordance with a SMP and inspected on a regular basis.

6.1.1 Unrestricted Use Alternative

<u>RAOC #1, #2, and #3 Alternative 1 –Unrestricted Use Impacted Soil Removal (BCP Track 1-Unrestricted Use Cleanup):</u> As required by the NYSDEC, an alternative assessing Unrestricted Use for the Site was assessed. A majority of the source area impacts have been remediated to below Unrestricted Use SCOs during ERH operation; however, there are discrete areas where soil samples exceed Unrestricted Use SCOs as shown on Figure 5. Alternative #1 includes excavating all material that exceeds Unrestricted Use SCOs. For this alternative, RAOC #1, #2, and #3 would be combined. The proposed excavation areas shown on Figure 5 were determined based on soil samples that resulted in compounds above Unrestricted Use SCOs and for RAOC #1, the assumption that there are likely areas between known/documented samples that would require removal to address the Unrestricted Use SCOs and to remove residual contamination in groundwater through significant dewatering. The mass removal in RAOC #1 would also allow for placement of an amendment (e.g., reducing or oxidizing treatment chemicals) to provide further treatment for any residual contamination, including MTBE. It is anticipated that between the mass soil removal, dewatering, amendment placement and NYSDEC pursuing the off-site source, that MTBE impacts in groundwater would also be addressed by this alternative. Calcium and iron detections are widespread, naturally occurring, and do not pose a threat to human health or the environment at the levels detected; as such, calcium and iron exceedances would not be removed and are not included on Figure 5. Nine (9) soil samples exceeded Unrestricted Use SCOs after ERH operation; LB-2/MW-12 (acetone), SB-229 (acetone), SB-230A (acetone, TCE), SB-231 (acetone), SB-232 (acetone), SB-239 (cis-,12-dichloroethene), SB-258 (acetone), SB-260 (acetone), and SB-261 (acetone). As noted above, these locations would be removed under this alternative in addition to areas of groundwater impacts. In addition to the RAOC #1 and #2, RAOC #3 includes several surface soil samples with one (1) or more compounds that exceed Unrestricted Use SCOs. Surface soil sample locations at 1500 Jefferson Road and 55 Hofstra Road would be removed to 1 foot bgs under this alternative.

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This alternative includes excavation of a total of approximately 45,000 square feet to depths ranging from 0 to 16.5-ft bgs to meet Unrestricted Use SCOs. It is estimated that a total of approximately 20,000 tons of soil would be disposed of as non-hazardous via contained-in determination. The excavation would include removing a section of the sewer system and providing a pump around in order to complete the soil removal work. Confirmatory soil samples would be collected in accordance with DER-10. Soil will be removed until confirmatory soil samples are below Unrestricted Use SCOs (disregarding calcium and iron). It is anticipated that up to 250,000 gallons of groundwater would be removed from the excavations, treated using activated carbon, and discharged to the sanitary sewer pending permit issuance. In addition this alternative assumes utilizing an amendment for placing in RAOC #1. Although the specific amendment would require further evaluation, for the purposes of this analysis, it is assumed that 100,000 lbs of zero-valent iron would be placed within the backfill of RAOC #1. This alternative is infeasible for interior locations exceeding Unrestricted Use SCOs. This alternative is represented on Figure 5. Alternative 1 applies to all RAOCs and additional technologies for each RAOC area described below.

6.1.2 RAOC #1 Residual VOC Impacts in Soil and Groundwater Associated with Former Source Area (SB-226 and SB-236) - Restricted Use Alternatives:

In addition to the Unrestricted Use cleanup (Alternative 1), Long-term groundwater monitoring and on-Site management were evaluated for RAOC #1.

<u>Alternative 2 – Long-Term Groundwater Monitoring (BCP Track 4- Restricted Use Cleanup, Industrial):</u> Under this alternative, seven (7) groundwater monitoring wells (MW-3, MW-6-R, MW-15-R, MW-18, MW-20-R, MW-27, MW-36) would be sampled and analyzed for VOCs to assess total VOC concentrations as well as select biodegradation indicators and groundwater quality parameters which act as proxies for attenuation progress. Wells may be sampled semi-annually for up 5 years, and annually for up to 5 additional years. This alternative would include institutional controls (Environmental Easement and SMP) to manage impacts long term.

<u>Alternative 3 – On-Site Management (BCP Track 4- Restricted Use Cleanup, Industrial):</u> Under this alternative, soil samples with concentrations above Unrestricted Use SCOs would remain in place. A SMP would be developed and implemented for any future subsurface work to protect against human exposure. Routine inspections, monitoring, and reporting would be required.

6.1.3 RAOC #2 VOC Impacts MW-12 - Restricted Use Alternatives

In addition to the Unrestricted Use cleanup (Alternative 1), long-term groundwater monitoring and on-site management were evaluated for RAOC #2.

<u>Alternative 2 – Long-Term Groundwater Monitoring (BCP Track 4- Restricted Use Cleanup, Industrial):</u> Under this alternative, two (2) groundwater monitoring wells (MW-12 and MW-26) would be sampled and analyzed for VOCs to assess total VOC concentrations as well as select biodegradation indicators and groundwater quality parameters which act as proxies for attenuation progress. Wells would be sampled semi-annually for up 5 years, and annually for up to 5 additional years. This alternative would include institutional controls (Environmental Easement and SMP) to manage impacts long term.

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<u>Alternative 3 – On-Site Management (BCP Track 4- Restricted Use Cleanup, Industrial):</u> Under this alternative, soil samples with concentrations above Unrestricted Use SCOs would remain in place. A SMP would be developed and implemented for any future subsurface work to protect against human exposure. Routine inspections, monitoring, and reporting would be required.

6.1.4 RAOC #3 Surface Soil Impacts - Restricted Use Alternatives

In addition to the Unrestricted Use cleanup (Alternative 1), site-wide cover/ cap and management, and on-site management were evaluated for RAOC #3.

<u>Alternative 2– Site-Wide Cover/ Cap and Management (BCP Track 4- Restricted Use Cleanup, Commercial/ Industrial):</u> The Site has existing cover in the form of buildings, asphalt pavement and concrete sidewalks covering a majority of the Site. This alternative would add a 1-ft cover/cap across the areas of impacted surface soil at 55 Hofstra Road and 1500 Jefferson Road: the areas of SS-2 on 1500 Jefferson Road and C1-S & -D, C2-S & -D, C3-S & -D on 55 Hofstra Road as required per NYSDEC's comment letter on the Draft RAA (comment #11). Surface soil at 55 Hofstra Road would be covered with 1-ft of imported material (e.g., crushed stone) and impacted surface soil in the location of SS-2 at 1500 Jefferson Road would be removed to 1-ft bgs and backfilled with 1-ft of imported material (e.g., topsoil). All imported material will be approved by NYSDEC. Installation of the cover/ cap would require clearing of brush/ small trees but larger trees may remain in place. This alternative would include institutional controls (Environmental Easement and SMP) to manage impacts long term. Refer to Figure 6 for this alternative.

<u>Alternative 3 – On-Site Management (BCP Track 4- Restricted Use Cleanup, Industrial):</u> Under this alternative, soil samples with concentrations above Unrestricted Use SCOs would remain in place. A SMP would be developed and implemented for any subsurface work to protect against human exposure. Routine inspections, monitoring, and reporting would be required.

7 DEVELOPMENT OF REMEDIAL ALTERNATIVES

Remedial technologies detailed in section 6 were evaluated for remedial alternatives for the Site based on the following criteria with the exception of community acceptance which cannot be evaluated at this time prior to initiating a public comment period. Note that although the SCGs determined in the RI report indicate Unrestricted Use SCOs are applicable, it is anticipated that land use will remain industrial (1500 Jefferson Road) and commercial (55 Hofstra Road).

a) Protection of human health and the environment
b) Compliance with SCGs
c) Reduction of toxicity, mobility, or volume
d) Short-term effectiveness
e) Long-term effectiveness
f) Implementability
g) Cost
h) Land use
i) Community acceptance
j) Green remediation

7.1 RAOC #1, #2, and #3 Unrestricted Use Cleanup

Alternative 1 – Unrestricted Use Impacted Soil Removal (BCP Track 1- Unrestricted Use Cleanup)

Description

Under this alternative, subsurface soils in locations that exceed Unrestricted Use SCOs would be excavated and disposed of off-Site in accordance with applicable regulations. Excavation areas are shown on Figure 5 and total approximately 45,000 square feet. This alternative would include significant shoring, removal and replacement of the sanitary sewer and associated dewatering to support the excavation work. Excavations would continue until confirmatory soil samples meet Unrestricted Use SCOs. Depths of excavations would range from 1 to 16.5-ft bgs. It is estimated that a total of approximately 20,000 tons of non-hazardous material would be disposed of off-Site. Water that accumulates in the excavations would be pumped to a temporary storage tank, treated with activated carbon, characterized, and discharged to the sanitary sewer pending permit issuance. This analysis assumes up to 250,000 gallons of water would be collected and discharged to the sanitary sewer via a permit. Long-term groundwater monitoring would not be required beyond 5 years. In addition, an amendment of zero-valent iron would be placed in the backfill of the excavation within the saturated zone.

Assessment

This alternative would be protective to human health and the environment because soil and groundwater concentrations would meet Unrestricted Use SCOs and Groundwater Quality Standards, respectively. This alternative would result in a reduction in toxicity, mobility and the volume of contaminants in soil and groundwater by removing the contaminant mass. Concentrations of VOCs are expected to remain below SCGs in the long term due to mass removal.

This alternative would comply with SCGs for the Site and be consistent with the proposed industrial land use. Implementing this alternative would be extremely difficult for many reasons, including but not limited to disruption of building operations, partial building demolition, and shallow groundwater depths which would require substantial continuous dewatering. Due to the emissions caused from significant use of trucks to transport impacted material and long-term use of heavy machinery on-Site, as well as contributions of impacted soil to landfills, this alternative is not considered "green". The implementation of this alternative is expected to take 3 months.

To comply with all SCGs at the Site by excavating impacted material, a partial building demolition would be required due to the source area located at the 1500 Jefferson Road building; this is not practical or economical. Implementing this alternative is not feasible and is the most costly alternative; and is therefore, not a viable alternative. The cost for this alternative is summarized below. A detailed cost summary is included in Table 1.

Estimated Capital Cost .... $ 4,216,005
Operation and Maintenance Costs (30 years) $0
Estimated Total Present Worth Cost .... $ 4,216,005

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7.2 RAOC #1: SB-226 & SB-236 Area

Alternative 2 – Long-Term Groundwater Monitoring (BCP Track 4- Commercial/ Industrial Use Cleanup)

Description
Under this alternative seven (7) existing groundwater monitoring wells (MW-3, MW-6-R, MW-15-R, MW-18, MW-20-R, MW-27, MW-36) would be sampled and analyzed for VOCs and monitored natural attenuation (MNA) parameters semiannually for 5 years and annually for VOCs only for 5 additional years. VOC samples will be collected via PDBs. MNA parameters will be collected following PDB collection. Institutional controls and engineering controls would be in place to manage residual impacts long term (refer to Section 9).

Assessment

This alternative would be protective to human health and the environment in the long-term because concentrations of contaminants are expected to continue to decline. This RAOC is beneath the Site building and; therefore, human exposure is not a concern as long as the floor slab is undamaged and engineering controls are put in place (refer to Section 9). ERH has already been implemented for this RAOC which, coupled with long-term groundwater monitoring, will result in a reduction in toxicity, mobility, and volume of contaminants in this location in the long term. This alternative is not anticipated to provide significant harm to the environment and is considered "green".

This alternative would be cost effective and easy to implement due to the lack of ground intrusive work and negligible disruptions to Site operations.

The cost for this alternative is summarized below and includes 10 years of groundwater monitoring. A detailed cost summary is included in Table 2. Costs include groundwater monitoring for both RAOC #1 and RAOC #2.

Estimated Capital Cost $0
Operation and Maintenance Costs (30 years) $92,693
Estimated Total Present Worth Cost.. $92,693

Alternative 3 – On-Site Management (BCP Track 4- Commercial/ Industrial Use Cleanup)

Description
Under this alternative, a SMP would be developed including ICs and ECs to manage impacts in place. The SMP would include procedures to following during subsurface work to minimize exposure. The SMP would require routine inspections/ certifications to confirm ICs and ECs are effective. There would also be an environmental easement for the Site.

Assessment

This alternative is protective to human health and the environment in the short-term and long-term by providing protective measures to be followed. This alternative would not be complaint with SCGs because it would not reduce concentrations of contaminants that currently exceed SCGs. This alternative would not reduce toxicity, mobility, or volume of contaminants. This alternative is easy to implement, cost effective, and "green".

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The cost for this alternative is summarized below and includes 30 years of inspections/ certifications. A detailed cost summary is included in Table 3. Costs include on-Site management for RAOC #1, RAOC #2, and RAOC #3.

Estimated Capital Cost $0
Operation and Maintenance Costs (30 years) $129,608
Estimated Total Present Worth Cost..$129,608

7.3 RAOC #2: MW-12 VOC Area

Alternative 2 – Long-Term Groundwater Monitoring (BCP Track 4- Commercial/ Industrial Use Cleanup)

Description

Under this alternative two existing groundwater monitoring wells (MW-12 and MW-26) would be sampled and analyzed for VOCs and MNA parameters. The wells would be sampled semiannually for 5 years and annually for VOCs only thereafter until it is agreed upon by NYSDEC that sampling can be discontinued. VOC samples will be collected via PDBs. MNA parameters will be collected following PDB collection. Institutional controls and engineering controls would be in place to manage residual impacts long term (refer to Section 9).

Assessment

This alternative would be protective to human health and the environment in the long-term because concentrations of contaminants are expected to decline. This RAOC is beneath the Site building and, therefore, human exposure is not a concern as long as the floor slab is undamaged and engineering controls are put in place (refer to Section 9). TCE was not detected above laboratory MDLs in soil samples collected from the location of MW-12 (LB-2 at 3.5 feet and LB-2 at 10.5 feet) during the RI. One VOC, acetone, was detected at levels above Unrestricted Use SCOs. Due to the use of acetone in laboratory analysis, the detection of acetone in these soil samples is not a concern; therefore, this alternative would be compliant with soil SCGs. TCE detected in MW-12 decreased from 1,000 ppb in January 2013 to 380 ppb in September 2014. MNA is expected to result in a decrease of TCE in groundwater in this location and, therefore, result in a reduction in toxicity, mobility, and volume of contaminants in this location in the long term. This alternative is not anticipated to provide significant harm to the environment and is considered "green".

This alternative would be cost effective and easy to implement due to the lack of ground intrusive work and negligible disruptions to Site operations.

The cost for this alternative is summarized below and includes 10 years of groundwater monitoring. A detailed cost summary is included in Table 2. Costs include groundwater monitoring for both RAOC #1 and RAOC #2.

Estimated Capital Cost $0
Operation and Maintenance Costs (30 years) $92,693
Estimated Total Present Worth Cost.. $92,693

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Alternative 3 – On-Site Management (BCP Track 4- Commercial/ Industrial Use Cleanup)

Description
Under this alternative, a SMP would be developed including ICs and ECs to manage impacts in place. The SMP would include procedures to follow during subsurface work to minimize exposure. The SMP would require routine monitoring to confirm ICs and ECs are effective. There would also be an environmental easement for the Site.

Assessment

This alternative is protective to human health and the environment in the short-term and long-term by providing protective measures to be followed. This alternative would not be complaint with SCGs because it would not reduce concentrations of contaminants that currently exceed SCGs. This alternative would not reduce toxicity, mobility, or volume of contaminants. This alternative is easy to implement, cost effective, and “green”.

The cost for this alternative is summarized below and includes 30 years of inspections/ certifications. A detailed cost summary is included in Table 3. Costs include on-Site management for RAOC #1, RAOC #2, and RAOC #3.

Estimated Capital Cost $0
Operation and Maintenance Costs (30 years) $129,608
Estimated Total Present Worth Cost $129,608

7.4 RAOC #3: Surface Soil Impacts

Alternative 2 – Cover/ Cap (BCP Track 4- Commercial/ Industrial Use Cleanup)

Description
A site-wide cover/ cap would be constructed. In addition to the existing cover areas (building, asphalt, concrete), a cover would be placed over the surface soil impacts at 1500 Jefferson Road and 55 Hofstra Road as an engineering control. Imported material at 55 Hofstra Road would meet Commercial Use SCOs and imported material at 1500 Jefferson Road would meet Industrial Use SCOs.

Surface soil at 55 Hofstra Road would be covered with 1-ft of imported material (e.g., crushed stone) approved by NYSDEC. The installation of the cover/cap would initially require clearing of brush/trees across the entire area and the subsequently completing some limited grading to prepare the area for placing a demarcation layer and then cover material. The removed trees would be chipped and removed from the Site. Tree root balls would remain on-site.

Surface soil in the location of SS-2 at 1500 Jefferson Road would be removed to 1-ft bgs and backfilled with 1-ft imported material (e.g., topsoil) approved by NYSDEC. Due to the existence of a large tree throughout this area of removal, it is anticipated that the removal will occur utilizing ‘air knife’/vacuum extraction equipment. A demarcation layer will be placed beneath the newly installed cover system; however, due to the tree in proximity to SS-2, the extent of the demarcation layer in this area may be limited. Soil removed from 1500 Jefferson Road will be disposed of off-Site or, if approved by NYSDEC, beneath the cover system constructed at 55 Hofstra.

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Under this alternative, engineering and institutional controls including development of an SMP would be implemented to minimize potential exposures and also control Site use. The SMP would include procedures for properly handling and disposing of impacted material in areas of surface soil impacts should these areas be disturbed in the future.

Assessment

This alternative would be protective to human health and the environment by providing engineering and institutional controls to manage subsurface material that is disturbed in the future. Engineering and institutional controls would limit potential human exposure to contaminants. One SVOC, benzo(a)pyrene, was detected in surface soil samples at levels above Industrial Use SCOs at 1500 Jefferson Road. This alternative would not be compliant with SCGs for this one sample location.

This alternative would be effective in the short-term and long-term due to the implementation of engineering and institutional controls. This alternative would be cost effective and easy to implement. In addition, it would not disturb Site operations. This alternative is not anticipated to provide significant harm to the environment and is considered "green".

The cost for this alternative based on the assumed areas is summarized below and includes 30 years of inspections/ certifications. A detailed cost summary is included in Table 4.

Estimated Capital Cost $141,664
Operation and Maintenance Costs (30 years) $129,608
Estimated Total Present Worth Cost $271,272

Alternative 3 – On-Site Management (BCP Track 4- Commercial/ Industrial Use Cleanup)

Description
Under this alternative, a SMP would be developed including ICs and ECs to manage impacts in place. The SMP would include procedures to following during subsurface work to minimize exposure. The SMP would require routine inspections/ certifications to confirm ICs and ECs are effective. There would also be an environmental easement for the Site.

Assessment

This alternative is protective to human health and the environment in the short-term and long-term by providing protective measures to be followed. This alternative would not be complaint with SCGs because it would not reduce concentrations of contaminants that currently exceed SCGs. This alternative would not reduce toxicity, mobility, or volume of contaminants. This alternative is easy to implement, cost effective, and "green".

The cost for this alternative is summarized below and includes 30 years of inspections/ certifications. A detailed cost summary is included in Table 3. Costs include on-Site management for RAOC #1, RAOC #2, and RAOC #3.

Estimated Capital Cost $0
Operation and Maintenance Costs (30 years) $129,608
Estimated Total Present Worth Cost $129,608

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8 COMPARATIVE EVALUATION OF ALTERNATIVES AND RECOMMENDED ACTIONS

The following table compares the remedial alternatives proposed for each RAOC and presents the recommended action for each RAOC.

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Comparison of Remedial Alternatives and Selection Criteria

	Protection of Human Health and the Environment	Achievement of SCGs(1)	Long-Term Effectiveness and Performance	Reduction of Toxicity, Mobility and Volume	Minimize Short-Term Impacts	Ease of Implementation	Cost-Effective	Appropriate based on Future Anticipated Land Use	Green Remediation
RAOC #1: Residual VOC Impacts in Soil and Groundwater Associated with Former Source Area (SB-226 and SB-236)									
Alternative 1: Unrestricted Use Impacted Soil Removal	X	X	X	X	X				
Alternative 2: Long-term Groundwater Monitoring	X	X		X		X	X	X	X
Alternative 3: On-Site Management	X		X			X		X	X
RAOC #2: VOC Impacts MW-12									
Alternative 1: Unrestricted Use Impacted Soil Removal	X	X	X	X	X				
Alternative 2: Long-term Groundwater Monitoring	X	X		X		X	X	X	X
Alternative 3: On-Site Management	X		X			X	X	X	X
RAOC #3: Surface Soil Impacts									
Alternative 1: Unrestricted Use Impacted Soil Removal	X	X	X	X	X				
Alternative 2: Cover/ Cap	X	X	X	X	X	X		X	X
Alternative 3: On-Site Management	X		X			X	X	X	X

Bold underlined font denotes selected alternative

(1) Achievement of SCGs is based on institutional controls and engineering controls. Alternatives that are not anticipated to meet SCGs without additional measures are not identified as achieving SCGs.

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The recommended remedial actions are further summarized below:

- *RAOC #1*- **Residual VOC Impacts in Soil and Groundwater Associated with Former Source Area (SB-226 and SB-236)*:*** Alternative 2 & 3 – Long-term Groundwater Monitoring and On-Site Management
- ***RAOC #2: VOC Impacts MW-12:*** Alternative 2 & 3 – Long-term Groundwater Monitoring and On-Site Management
- ***RAOC #3: Surface Soil:*** Alternative 2 – Cover/ Cap

Combined costs for the selected alternates are included on Table 6 which includes 30 years of monitoring. The overall remedial strategy for the Site is discussed in Section 9.

9 RECOMMENDED REMEDIAL ALTERNATIVES

Based on the analysis in Section 7, this section summarizes the overall proposed remedial strategy for the Site.

RAOC #1– Residual VOC Impacts in Soil and Groundwater Associated with Former Source Area (SB-226 and SB-236): Long-Term Groundwater Monitoring & On-Site Management (Track 4 – Industrial)

Two (2) IRMs have already been implemented for this RAOC (ERH and an SSDS) which have reduced concentrations of VOCs in the subsurface and reduced exposure. An SMP will be developed which will specify ICs and ECs for the Site including groundwater monitoring for up to 10 years, and monitoring of the SSDS. This alternative is the most effective and economically viable option for the final remedy for RAOC #1.

RAOC #2– VOC Impacts MW-12: Long-Term Groundwater Monitoring & On-Site Management (Track 4 – Industrial)

One (1) IRM has already been implemented for this RAOC (SSDS) which has reduced exposure. An SMP will be developed which will specify ICs and ECs for the Site including groundwater monitoring for up to 10 years, and monitoring of the SSDS. This alternative is the most effective and economically viable option for the final remedy for RAOC #2.

RAOC #3– Surface Soil: Cover/ Cap (Track 4 – Industrial – 1500 Jefferson Road and Commercial – 55 Hofstra Road)

A 1-ft cover/ cap (e.g., crushed stone) will be installed over the surface soil impacts at 55 Hofstra Road. Surface soil impacts in the location of SS-2 at 1500 Jefferson Road will be removed to 1-ft bgs and backfilled with imported material (e.g., topsoil).

9.1 Engineering Controls

Engineering controls are warranted to protect building occupants from soil-vapor intrusion (SVI). A sub-slab depressurization system (SSDS) was installed in the northern portion of the 1500 Jefferson Road building to mitigate soil vapors that may enter the building through the floor slab. The SSDS is currently operating, and inspection and routine monitoring will be specified in the SMP.

9.2 Institutional Controls

Imposition of an institutional control in the form of an environmental easement for the controlled property that:

- Requires the remedial party or site owner to complete and submit to the NYSDEC a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- Restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH;
- Requires compliance with the NYSDEC approved SMP which will address potential future subsurface excavations and SVI.

9.2.1 Site Management

A SMP will be prepared which includes the following:

- An Engineering and Institutional Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:
    - Engineering Controls: SSDS discussed in Section 9.1
    - Institutional Controls: Environmental Easement discussed in Section 9.2
- An EWP which details the provisions for management of future excavations in areas of remaining contamination;
- Descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
- Provisions for the management and inspection of the identified engineering controls;
- Maintaining site access controls and NYSDEC notification; and
- The steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

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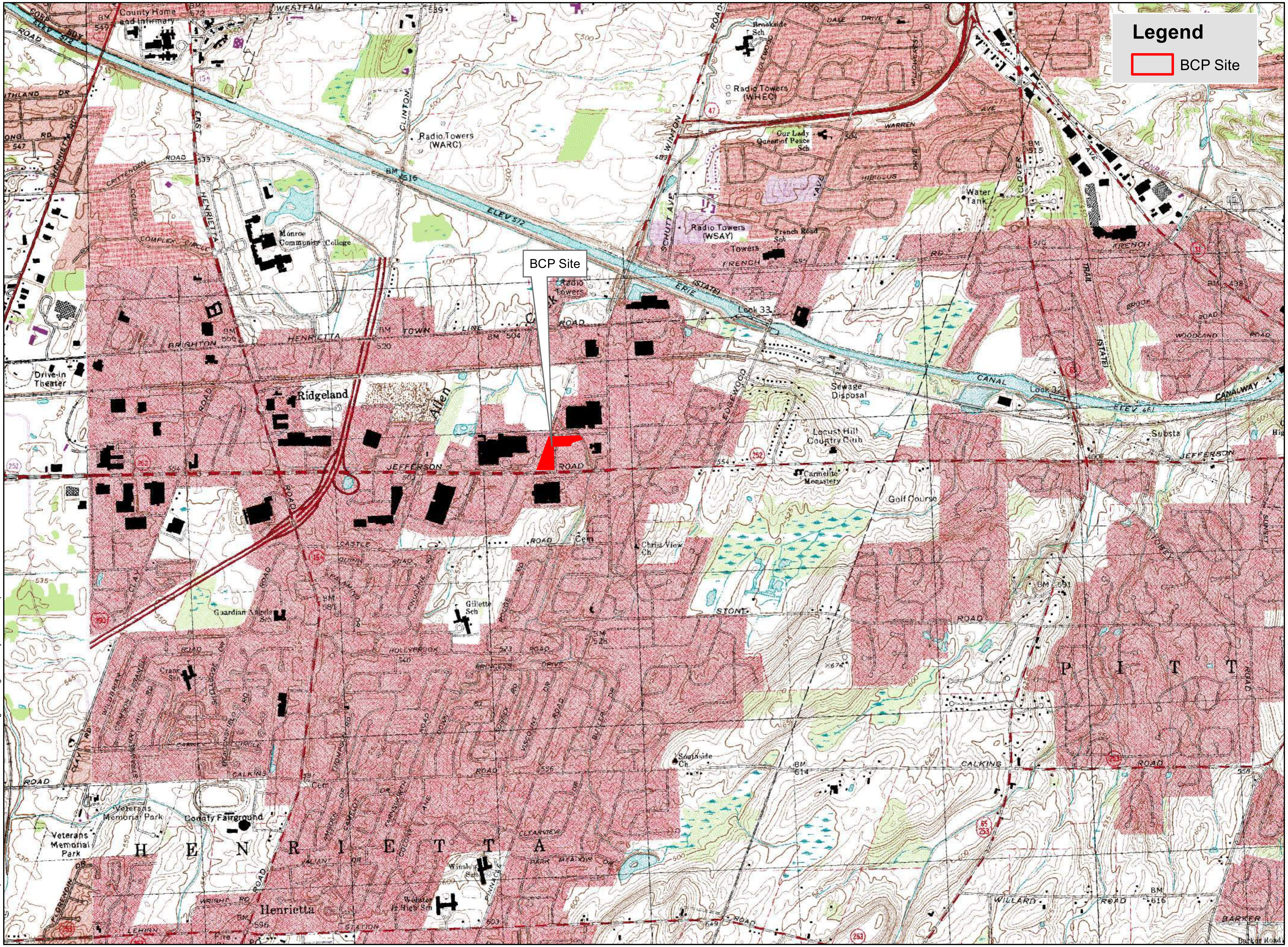
FIGURES



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1500 JEFFERSON ROAD
AND 55 HOFSTRA ROAD

REMEDIAL ALTERNATIVES
ANALYSIS

Project Locus Map

N
W E
S

0 2,000 Feet

1 inch = 2,000 feet

212721.02

FIGURE 1

Path: I:\Eldre Corporation\212721.01 - BCP Removal Phase\Drawings\RAA\Figure 1- Project Locus Map.mxd

Path: I:\Eldre Corporation\212721.01 - BCP Removal Phase\Drawings\RAA\Figure 2.mxd

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1500 JEFFERSON ROAD
AND 55 HOFSTRA ROAD

REMEDIAL ALTERNATIVES
ANALYSIS

BCP Site and
Surrounding Parcels

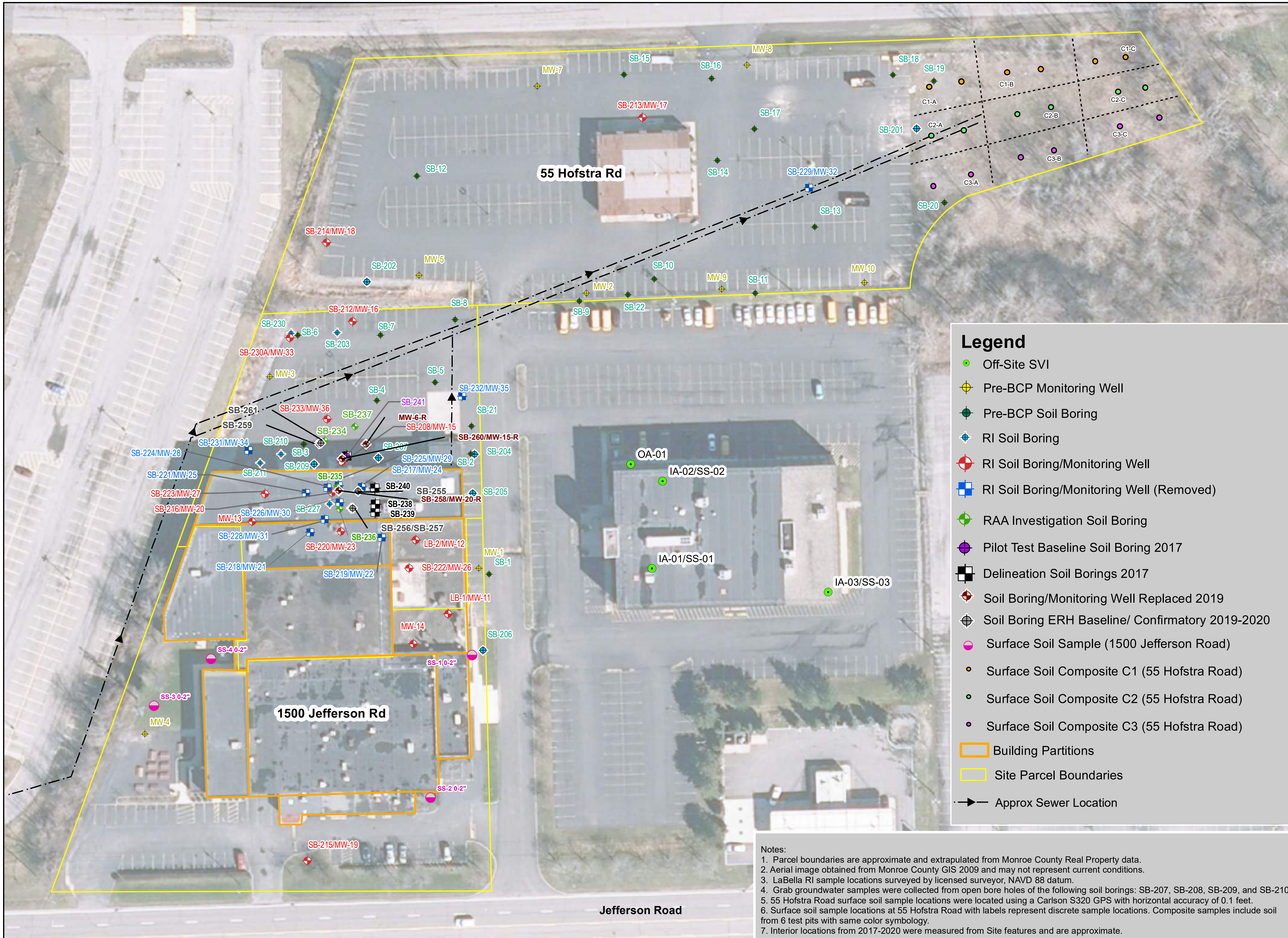
N
W E
S

0 75 150 Feet

1 inch = 150 feet

212721.02

FIGURE 2



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ELDRE CORPORATION
BCP SITE C828182

1500 JEFFERSON ROAD
AND 55 HOFSTRA ROAD

REMEDIAL ALTERNATIVES
ANALYSIS

Cumulative Testing
Locations

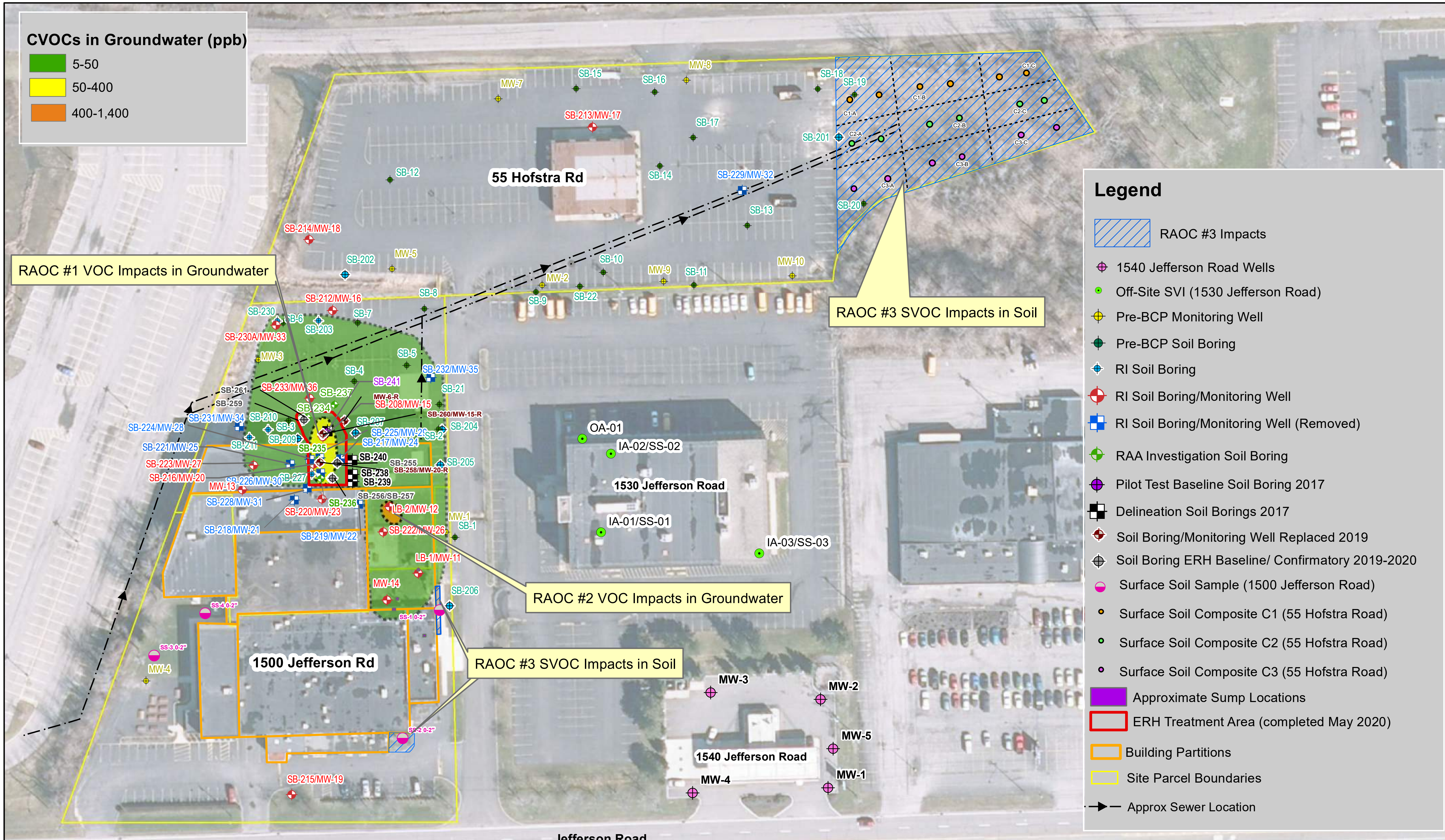
N
W E
S

0 40 80
Feet

1 inch = 80 feet
Intended to print as 11" x 17".

212721.02

FIGURE 3



Notes:
1. Parcel boundaries are approximate and extrapulated from Monroe County Real Property data.
2. Aerial image obtained from Monroe County GIS 2009 and may not represent current conditions.
3. LaBella RI sample locations surveyed by licensed surveyor, NAVD 88 datum.
4. Interior locations from 2017-2021 were measured from Site features and are approximate.
5. Concentrations result from the sum of all detected chlorinated volatile organic compounds and tentatively identified compounds.
6. Groundwater data includes post-ERH groundwater results where available within the treatment area (MW-15-R and MW-20-R) as well as most recent data from wells outside of the ERH treatment area (i.e., pre-ERH data from 2014 and 2019).
7. The RAOC #2 plume (MW-12) was not sampled post-ERH; as such, the modeling for this area uses September 2014 data.
8. Concentrations in ug/L or parts per billion (ppb).
9. Off-site CVOC data was not collected.
10. Dashed lines indicate the contours were devloped manually and not using a modeling software.
11. Off-site well locations at 1540 Jefferson Road obtained from Matrix report dated May 1, 2001 and are associated with off-Site NYSDEC Petroleum Spill.
12. Refer to Figure 4B for RAOC #1 details.

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ELDRE CORPORATION
BCP SITE C828182

1500 JEFFERSON ROAD
AND 55 HOFSTRA ROAD

REMEDIAL ALTERNATIVES
ANALYSIS

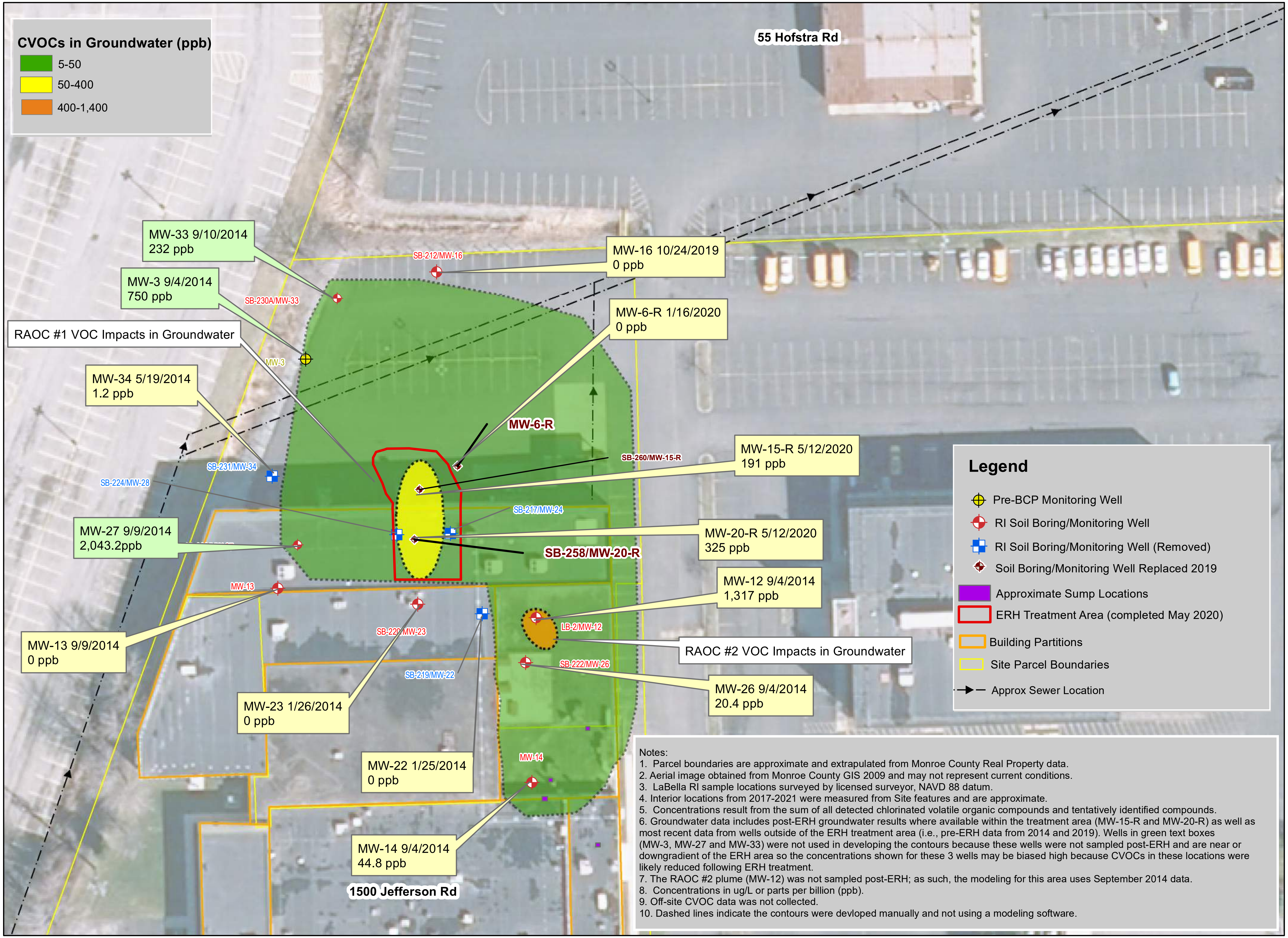
Conceptual Site Model
Post-IRMs
(Entire Site)

1 inch = 100 feet
Intended to print as 11" x 17".

212721.02

FIGURE 4A

Path: I:\Eldre Corporation\212721.01 - BCP Removal Phase\Drawings\RAA\Figure 4 updated after ERH revised.mxd



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ELDRE CORPORATION
BCP SITE C828182

1500 JEFFERSON ROAD
AND 55 HOFSTRA ROAD

REMEDIAL ALTERNATIVES
ANALYSIS

Conceptual Site Model
Post-IRMs
(RAOC #1 and RAOC #2)

N
W E
S

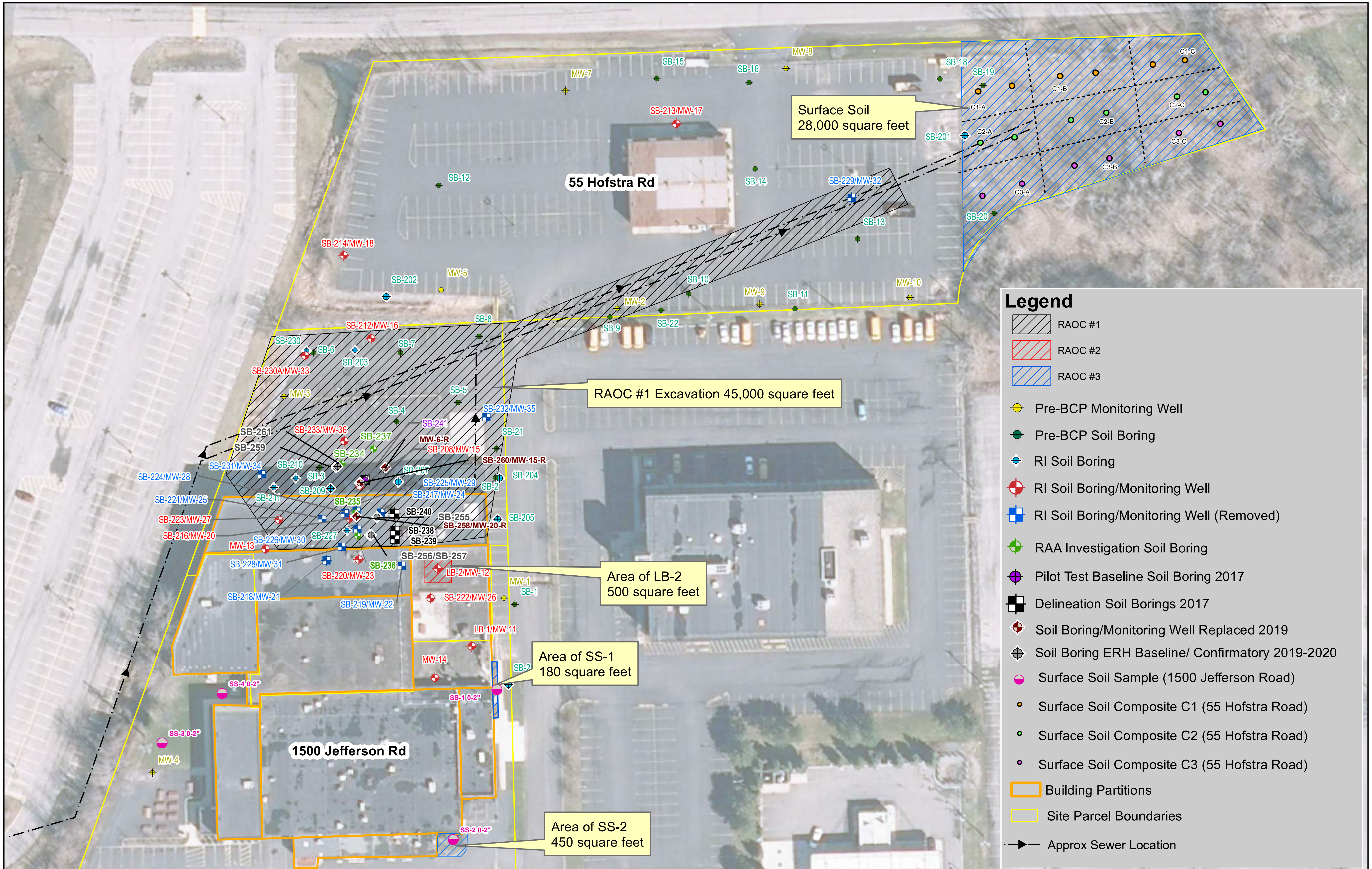
1 inch = 50 feet

Intended to print as 11" x 17".

212721.02

FIGURE 4B

Path: I:\Eldre Corporation\212721.01 - BCP Removal Phase\Drawings\RAA\Figure 4B updated after ERH.mxd



Notes:
1. Parcel boundaries are approximate and extrapulated from Monroe County Real Property data.
2. Aerial image obtained from Monroe County GIS 2009 and may not represent current conditions.
3. LaBella RI sample locations surveyed by licensed surveyor, NAVD 88 datum.
4. Grab groundwater samples were collected from open bore holes of the following soil borings: SB-207, SB-208, SB-209, and SB-210.
5. 55 Hofstra Road surface soil sample locations were located using a Carlson S320 GPS with horizontal accuracy of 0.1 feet.
6. Surface soil sample locations at 55 Hofstra Road with labels represent discrete sample locations. Composite samples include soil from 6 test pits with same color symbology.
7. Interior locations from 2017-2020 were measured from Site features and are approximate.

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ELDRE CORPORATION
BCP SITE C828182

1500 JEFFERSON ROAD
AND 55 HOFSTRA ROAD

REMEDIAL ALTERNATIVES
ANALYSIS

RAOC #1, #2, #3:
ALTERNATIVE 1
UNRESTRICTED USE
IMPACTED
SOIL REMOVAL

N W E S

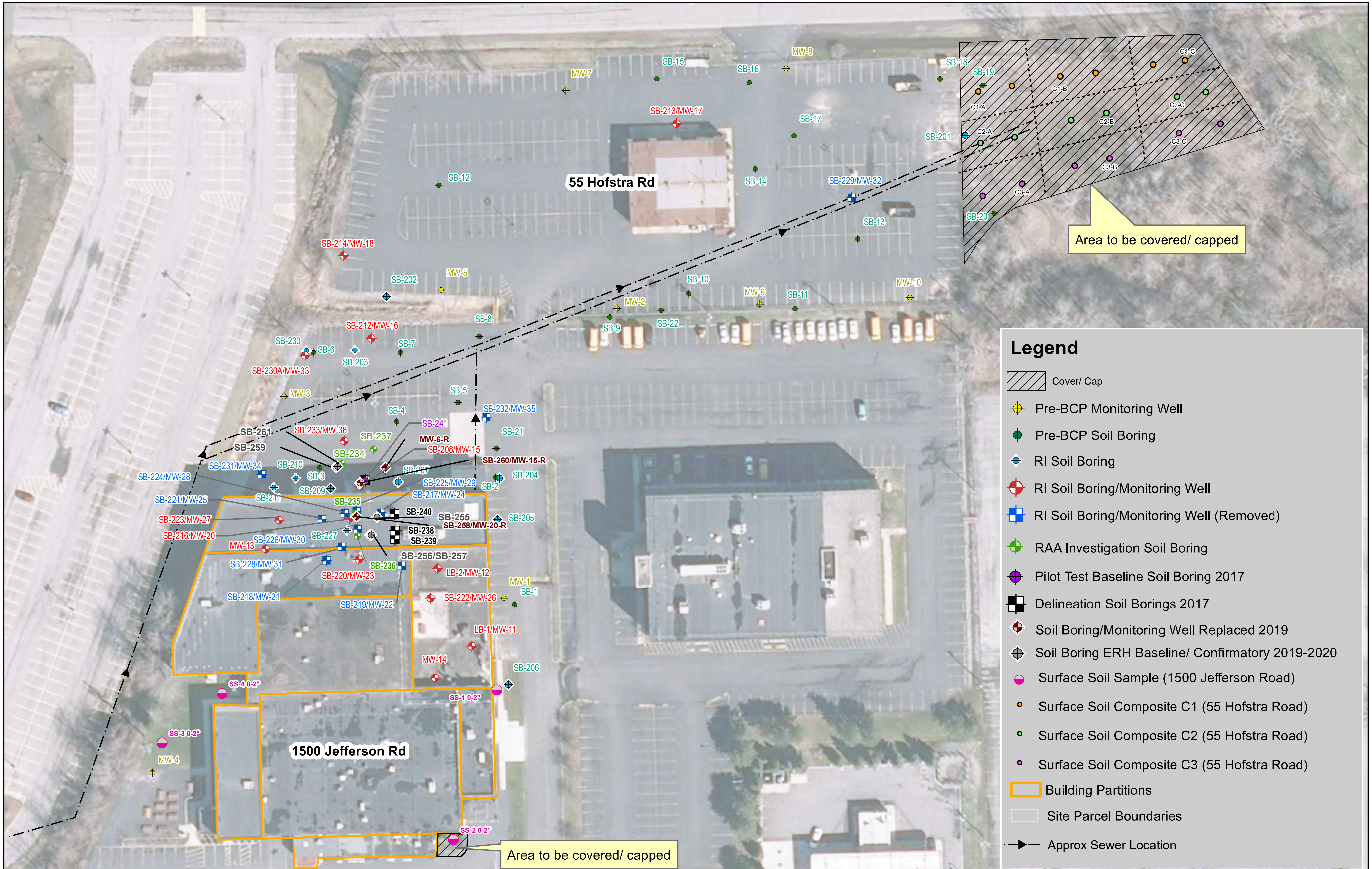
0 40 80
Feet

1 inch = 80 feet
Intended to print as 11" x 17".

212721.02

FIGURE 5

Path: I:\Eldre Corporation\212721.01 - BCP Removal Phase\Drawings\RAA\Figure 5 updated after ERH.mxd



Notes:
1. Parcel boundaries are approximate and extrapulated from Monroe County Real Property data.
2. Aerial image obtained from Monroe County GIS 2009 and may not represent current conditions.
3. LaBella RI sample locations surveyed by licensed surveyor, NAVD 88 datum.
4. Grab groundwater samples were collected from open bore holes of the following soil borings: SB-207, SB-208, SB-209, and SB-210.
5. 55 Hofstra Road surface soil sample locations were located using a Carlson S320 GPS with horizontal accuracy of 0.1 feet.
6. Surface soil sample locations at 55 Hofstra Road with labels represent discrete sample locations. Composite samples include soil from 6 test pits with same color symbology.
7. Interior locations from 2017-2020 were measured from Site features and are approximate.

Path: I:\Eldre Corporation\212721.01 - BCP Removal Phase\Drawings\RAA\Figure 6- RAOC 3 Alt 2 Cover cap updated after ERH REVISED DEC COMMENTS.mxd

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ELDRE CORPORATION
BCP SITE C828182

1500 JEFFERSON ROAD
AND 55 HOFSTRA ROAD

REMEDIAL ALTERNATIVES
ANALYSIS

RAOC #3:
ALTERNATIVE 2
CAP/ COVER

N
W E
S

0 40 80
Feet

1 inch = 80 feet

Intended to print as 11" x 17".

212721.02

FIGURE 6

TABLES

Table 1
RAOC #1, #2, and #3- Alternative 1 - Unrestricted Use Impacted Soil Removal

Capital Cost	Unit Rate	Units	Qty	Subtotal
Reporting				
Remedial Design Work Plan	$ 10,000	LS	1	$ 10,000
Site Management Plan	$ 6,000	LS	1	$ 6,000
Final Engineering Report	$ 10,000	LS	1	$ 10,000
Monthly Progress Reports	$ 750	ea	6	$ 4,500
Contained-In Determination	$ 1,500	LS	1	$ 1,500
Subcontractor Fees				
Mobilization/ Demobilization	$ 5,000	LS	1	$ 5,000
Topo Survey 55 Hofstra Rd	$ 3,000	LS	1	$ 3,000
Brush/ Tree Clearing 55 Hofstra Rd	$ 11,500	LS	1	$ 11,500
Demarcation Layer	$ 5,000	LS	1	$ 5,000
Temporary Building for Ovens	$ 100,000	LS	1	$ 100,000
Relocate Ovens	$ 20,000	LS	1	$ 20,000
Design/ Structural Analysis	$ 60,000	LS	1	$ 60,000
Exterior Wall and Interior Slab Removal	$ 25,000	LS	1	$ 25,000
Excavation	$ 1,000,000	LS	1	$ 1,000,000
Construction of Temporary Staging for Soil	$ 10,000	LS	1	$ 10,000
Structural Monitoring Setup	$ 4,520	LS	1	$ 4,520
Structural Engineer Site Visits	$ 920	week	4	$ 3,680
Survey Crew	$ 1,350	day	20	$ 27,000
Transportation and disposal of non-hazardous soil & concrete	$ 50	ton	20,000	$ 1,000,000
Dewatering Storage	$ 2,000	tank/month	12	$ 24,000
Sewer Use	$ 0.10	gallon	20,000	$ 2,000
Sewer Replacement	$ 100,000	LS	1	$ 100,000
Sewer Pump Around	$ 1,500	day	15	$ 22,500
Carbon Treatment for Water	$ 8,500	drum	2	$ 17,000
Dewatering Pumping	$ 500	day	30	$ 15,000
Structural Backfill and Compaction	$ 35	ton	20000	$ 700,000
Zero valent iron backfill amendment	$ 0.70	lb	100,000	$ 70,000
Decommission/ Reinstall Wells	$ 5,000	LS	1	$ 5,000
Building Restoration	$ 40,000	LS	1	$ 40,000
Parking Lot Restoration	$ 4	sf	5,000	$ 20,000
Tax				$ 269,792
Professional Services				
Project Manager	$ 110	hr	45	$ 4,950
Project Engineer	$ 80	hr	90	$ 7,200
Technician	$ 65	hr	450	$ 29,250
Equipment Rental	$ 10,350	month	1	$ 10,350
Laboratory Analytical				
VOCs (confirmatory)	$ 150	ea	20	$ 3,000
SVOCs, Metals, Pesticides, PCBs (confirmatory)	$ 750	ea	20	$ 15,000
Waste Characterization (discrete total VOCs)	$ 150	ea	5	$ 750
Waste Characterization (TCLP)	$ 600	ea	5	$ 3,000
Waste Characterization (water)	$ 600	ea	1	$ 600
Contingency (15%)				*$ 549,914*
Total Capital Cost				$ 4,216,005

Assumptions:

Includes excavation of all areas of soil exceeding Unrestricted Use SCOs. Excavation limits to be determined based on confirmatory soil sampling.
Excavation costs include shoring
Dewatering assumes 250,000 gallons of water will be generated.
Present worth analysis based on 3% interest rate over estimated project timeframe
Estimated 20,000 tons non-hazardous for disposal
Laboratory analytical includes data validation
Equipment rental includes interior and exterior air monitoring stations.
Assumes long-term groundwater monitoring would not be required.

Table 2
RAOC #1 & #2- Alternative 2 - Long-Term Groundwater Monitoring

Operation and Maintenance		Annual Cost	Present Worth
Post-remediation Groundwater Sampling			
Years 1-5 Semi-Annual			
Equipment	$	1,000	-
Professional Services	$	4,500	-
Laboratory Analysis	$	2,400	-
Reporting	$	4,000	-
Contingency (15%)	$	1,785	-
Total Annual Cost Years 1-5	$	13,685	$62,673
Years 6-10 Annual			
Equipment	$	500	-
Professional Services	$	2,000	-
Laboratory Analysis	$	1,200	-
Reporting	$	2,000	-
Contingency (15%)	$	855	-
Total Annual Cost Years 6-10	$	6,555	$30,020
Operation and Maintenance Cost (10 Years)		$	92,693

Assumptions:

Long-term monitoring assumes semi-annually years 1-5 for VOCs and MNA parameters, then annually years 6-10 for VOCs only.

Includes sampling 9 wells. PDBs will be used for VOC sample collection and low-flow sampling will be used for MNA parameters.

Present worth analysis based on 3% interest rate over estimated project timeframe

Laboratory analytical includes data validation

Table 3
RAOC #1, #2, & #3- Alternative 3 - On-Site Management

Operation and Maintenance		Annual Cost	Present Worth
Annual Inspection			
	On-Site Inspection	$ 750	-
	Periodic Review Report	$ 5,000	-
	Contingency (15%)	$ 863	-
	Total Annual Cost Years 1-30	$ 6,613	$129,608
Operation and Maintenance Cost (30 Years)			$ 129,608

Assumptions:
Present worth analysis based on 3% interest rate over estimated project timeframe

Table 4

RAOC #3- Alternative 2 - Cap/ Cover

Capital Cost	Unit Rate	Units	Qty	Present Worth
Subcontractor				
Topo Survey (Pre and Post- Cover)	$ 5,000	LS	1	$ 5,000
Private Uility Locate	$ 1,100	LS	1	$ 1,100.00
Labor				
Project Manager	$ 85	Hours	24	$ 2,028
Foreman	$ 72	Hours	150	$ 10,725
CDL Equip. Operator	$ 52	Hours	300	$ 15,600
Laborer	$ 46	Hours	50	$ 2,275
Equipment/ Materials				
LVE/PPE	$ 1	LS	524	$ 524
1/2 ton Pickup Truck	$ 15.00	Hours	16	$ 240
3/4 Ton Pickup Truck	$ 18.45	Hours	240	$ 4,428
1 Ton Pickup Truck	$ 23.10	Hours	120	$ 2,772
Flat bed trailer > 5 ton capacity	$ 28.00	Hours	16	$ 448
Dump truck	$ 40.00	Hours	16	$ 640
Chain Saw	$ 11.00	Hours	40	$ 440
320 Excavator Rental	$ 7,217	Month	1	$ 7,217.10
299 Skid Steer Rental	$ 3,742	Month	1	$ 3,742.20
320 Excavator Mobilization	$ 330	Each	2	$ 660.00
Wood Chipper Rental	$ 1,705	Week	1	$ 1,705.00
10k Roller Rental	$ 1,604	Week	1	$ 1,603.80
Site Equipment Fuel	$ 4	Gal	300	$ 1,155.00
Topsoil Delivered (1500 Jefferson)	$ 40	ton	35	$ 1,400
CR2 stone delivered (55 Hofstra)	$ 18	Ton	1650	$ 29,040.00
Rip Rap Delivered	$ 30	Ton	100	$ 2,970.00
C&D Rolloff	$ 440	Each	2	$ 880.00
C&D Disposal	$ 66	Ton	40	$ 2,640.00
Mirafi Fabric (demarcation)	$ 319	Roll	4	$ 1,276.00
Silt Fence	$ 39	Roll	6	$ 231.00
Professional Services				
Project Manager	$ 110	hour	20	$ 2,200
Project Engineer	$ 80	hour	40	$ 3,200
Technician	$ 65	hour	200	$ 13,000
Analytical (Topsoil)				
VOCs	$ 150	ea	9	$ 1,350
SVOCs, PCBs, Pesticides, Metals	$ 750	ea	3	$ 2,250
PFAS	$ 450	ea	3	$ 1,350
Equipment				
Air Monitoring	$ 1,100	week	4	$ 4,400
Contingency (15%)				*$ 19,274*
			Total Capital Cost	**$ 141,664**

Operation and Maintenance		Annual Cost	Present Worth
Annual Inspection			-
On-Site Inspection		$ 750	-
Periodic Review Report		$ 5,000	-
	Contingency (15%)	$ 863	
	Total Annual Cost Years 1-30	$ 6,613	$129,608
Operation and Maintenance Cost (30 Years)			**$ 129,608**
Total Capital Cost + Operation and Maintenance (30 years)			**$ 271,272**

Assumptions:

55 Hostra Rd - 28,000 square feet (0.65-acre) area to be covered with 1 foot (~1,040 cubic yards) of crushed stone exempt from chemial testing.

1500 Jefferson Rd - 450 square feet area to be removed to 1-ft below ground surface and backfilled with imported clean topsoil tested per DER-10.

Laboratory analytical includes data validation

No confirmatry sampling will be required.

Assumes 1 40-yard roll-off of debris (e.g., tires, wood pallets, etc.)

Includes topo survey at 55 Hofstra Road prior to and after cover placement to document 1 foot cover.

Tree in the location of SS-2 to remain in place.

Table 5
Summary of Selected Alternatives (RAOC #1, #2, & #3)

Capital Cost (Cap/ Cover)		Unit Rate	Units	Qty		Present Worth
Subcontractor						
Topo Survey (Pre and Post- Cover)	$	5,000	LS	1	$	5,000
Private Uility Locate	$	1,100	LS	1	$	1,100.00
Labor						
Project Manager	$	85	Hours	24	$	2,028
Foreman	$	72	Hours	150	$	10,725
CDL Equip. Operator	$	52	Hours	300	$	15,600
Laborer	$	46	Hours	50	$	2,275
Equipment/ Materials						
LVE/PPE	$	1	LS	524	$	524
1/2 ton Pickup Truck	$	15.00	Hours	16	$	240
3/4 Ton Pickup Truck	$	18.45	Hours	240	$	4,428
1 Ton Pickup Truck	$	23.10	Hours	120	$	2,772
Flat bed trailer > 5 ton capacity	$	28.00	Hours	16	$	448
Dump truck	$	40.00	Hours	16	$	640
Chain Saw	$	11.00	Hours	40	$	440
320 Excavator Rental	$	7,217	Month	1	$	7,217.10
299 Skid Steer Rental	$	3,742	Month	1	$	3,742.20
320 Excavator Mobilization	$	330	Each	2	$	660.00
Wood Chipper Rental	$	1,705	Week	1	$	1,705.00
10k Roller Rental	$	1,604	Week	1	$	1,603.80
Site Equipment Fuel	$	4	Gal	300	$	1,155.00
Topsoil Delivered (1500 Jefferson)	$	40	ton	35	$	1,400
CR2 stone delivered (55 Hofstra)	$	18	Ton	1650	$	29,040.00
Rip Rap Delivered	$	30	Ton	100	$	2,970.00
C&D Rolloff	$	440	Each	2	$	880.00
C&D Disposal	$	66	Ton	40	$	2,640.00
Mirafi Fabric (demarcation)	$	319	Roll	4	$	1,276.00
Silt Fence	$	39	Roll	6	$	231.00
Professional Services						
Project Manager	$	110	hour	20	$	2,200
Project Engineer	$	80	hour	40	$	3,200
Technician	$	65	hour	200	$	13,000
Analytical (Topsoil)						
VOCs	$	150	ea	9	$	1,350
SVOCs, PCBs, Pesticides, Metals	$	750	ea	3	$	2,250
PFAS	$	450	ea	3	$	1,350
Equipment						
Air Monitoring	$	1,100	week	4	$	4,400
Contingency (15%)					*$*	*19,274*
				Total Capital Cost	**$**	**141,664**

Operation and Maintenance				Annual Cost	Present Worth
Annual Inspection (RAOC #1, #2, and #3)					
	On-Site Inspection	$	750	-	
	Periodic Review Report	$	5,000	-	
	Contingency (15%)	$	863	-	
	Total Annual Cost Years 1-30	$	6,613	$129,608	
	Annual Inspection Cost (30 Years)			**$ 129,608**	

			Annual Cost	Present Worth
Post-remediation Groundwater Sampling (RAOC #1 and #2)				
	Years 1-5 Semi-Annual			
	Equipment	$	1,000	-
	Professional Services	$	4,500	-
	Laboratory Analysis	$	2,400	-
	Reporting	$	4,000	-
	Contingency (15%)	$	1,785	-
	Total Annual Cost Years 1-5	$	13,685	$62,673
	Years 6-10 Annual			
	Equipment	$	500	-
	Professional Services	$	2,000	-
	Laboratory Analysis	$	1,200	-
	Reporting	$	2,000	-
	Contingency (15%)	$	855	-
	Total Annual Cost Years 6-10	$	6,555	$30,020
	Groundwater Monitoring Cost (10 Years)			**$ 92,693**

Total Operation and Maintenance (30 years) **$ 222,301**

Assumptions:
Long-term monitoring assumes semi-annually years 1-5 for VOCs and MNA parameters, then annually years 6-10 for VOCs only.
Includes sampling 9 wells. PDBs will be used for VOC sample collection and low-flow sampling will be used for MNA parameters.
Present worth analysis based on 3% interest rate over estimated project timeframe
Laboratory analytical includes data validation

APPENDIX A

Land Use Evaluation

APPENDIX A

LAND USE EVALUATION

The below reasonably anticipated future land use evaluation has been completed for the Site based on the 16 consideration criteria identified in the DER-10 Technical Guidance for Site Investigation and Remediation. These criteria and how they apply to the Site are summarized below.

1. ***Current use and historical and/or recent development patterns****:* The Site is currently zoned for commercial (55 Hofstra Road) and industrial (1500 Jefferson Road) and is located in an urban area. Industrial and commercial properties border the Site on all sides. A listed Class 4 Inactive Hazardous Waste Disposal Site (Site #828069) borders the Site to the west. The Site has been used for industrial purposes since the 1960s.

2. ***Applicable zoning laws****:* The Site is currently zoned commercial (55 Hofstra Road) and industrial (1500 Jefferson Road) and is located in an urban area. Industrial and commercial properties border the Site on all sides. As such, redevelopment of the Site for restricted residential purposes is not anticipated based on applicable zoning laws. It is not anticipated that 1500 Jefferson Road will be zoned as commercial due to historic and current uses for industrial purposes.

3. ***Brownfield Opportunity Areas****:* The Brownfield Opportunity Area (BOA) Program provides municipalities and community based organizations with assistance to complete revitalization plans and implementation strategies for areas or communities affected by the presence of brownfield sites, and site assessments for strategic brownfield sites. The Site is not currently located within a BOA.

4. ***Consistency of proposed use with applicable land-use plans formally adopted by a municipality****:* The Site does not fall within any areas covered by applicable land-use plans such as a local waterfront revitalization plan (LWRP) or community master plans and as such significant re-zoning of the property is unlikely.

5. ***Proximity to real property currently utilized for residential use and to urban, commercial, industrial, agricultural and recreational areas****:* Properties in the vicinity of the Site are currently being utilized for commercial and industrial purposes. The nearest residential zoned property is approximately 0.3 miles to the east of the Site and the nearest agricultural use land is approximately 1.25 miles to the north of the Site.

6. ***Any written or oral comments submitted by members of the public on the proposed use as part of citizen participation activities***: Comments have not been received from the public associated with concerns regarding future Site use.

7. ***Environmental justice concerns***: The Site and surrounding properties have historically been utilized for industrial and/or commercial purposes. The Site is currently utilized for commercial and industrial purposes; as such, future use of the Site is not anticipated to cause or increase a disproportionate burden on the community (i.e., the reasonably anticipated future use of the Site is commercial (55

Hofstra Road) and industrial (1500 Jefferson Road) and is unlikely to pose an environmental justice concern).

8. ***Federal or state land-use designations:*** There are no federal or state land-use designations.

9. ***Population growth patterns and projections***: The Site is currently used for commercial and manufacturing purposes and as such, future use of the Site for commercial and industrial purposes is not anticipated to disrupt population growth patterns and projections by significantly affecting opportunities for residential or commercial growth.

10. ***Accessibility to existing infrastructure***: The Site is located in an urban area and surrounded by numerous utilities (gas, electric, sewer, water, etc.). In addition, the Site is already tied into these utilities. As such, the existing infrastructure appears to be more than adequate to support the reasonably anticipated future use of the Site for restricted residential and commercial purposes.

11. ***Proximity of the Site to important cultural resources***: Designated historical sites are not located within 1000-ft. of the Site and the Site is already heavily developed. As such, the reasonably anticipated future use of the Site is unlikely to affect important cultural resources.

12. ***Proximity of Site to important federal, state or local natural resources***: The Genesee River is located approximately 5 miles to the west of the Site. No other natural resources including wildlife refuges, wetlands, or critical habitats of endangered or threatened species are known to exist in the vicinity. As such, the reasonably anticipated future use of the Site is unlikely to affect any important federal, state or local natural resources.

13. ***Potential vulnerability of groundwater to contamination that might migrate from the Site:*** According to the Monroe County Water Authority, drinking water in Monroe County is mainly supplied from Lake Ontario, with contributions from Canadice Lake, and Hemlock Lake. As such, while a low potential exists that contaminated groundwater from the Site could migrate to Lake Ontario via the Genesee River, the potential for such contaminants from the Site to contribute to detectable levels in drinking water is minute due to the large volume of water involved. As such, the anticipated cleanup to industrial conditions does not pose a drinking water threat.

14. ***Proximity to floodplains:*** Floodplains are not present at the Site. As such, the anticipated cleanup does not pose a threat to surface waters.

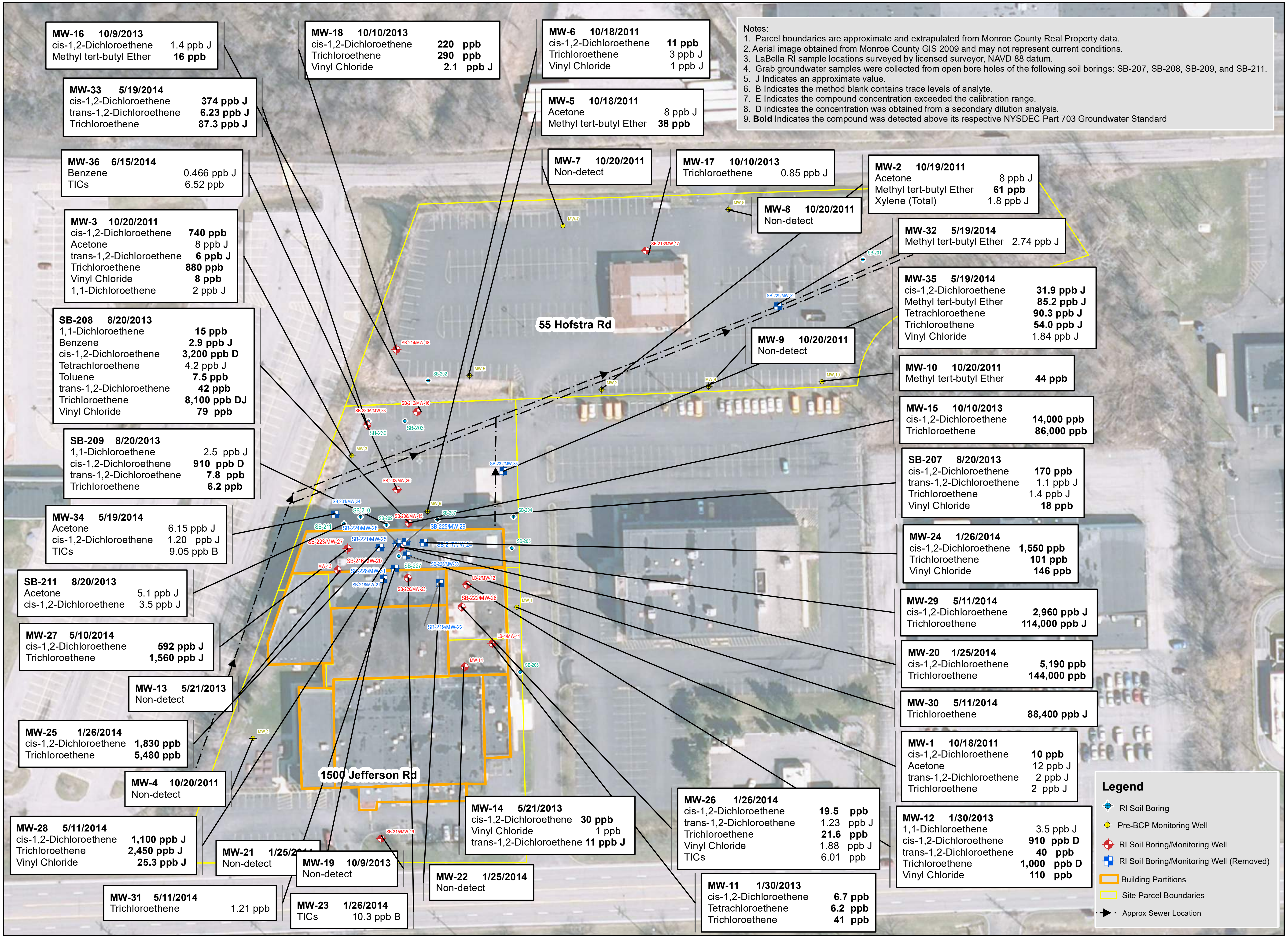
15. ***Geography and Geology***: According to the 7.5-minute New York quadrangle USGS Map, the Site consists of slightly sloping land to the north. According to the U.S. Department of Agriculture, Monroe County Soil Survey obtained from the NRCS website, soils at the Site consist mainly of loamy till derived mainly from limestone, sandstone, and shale. During investigations at the Site, a fill material consisting primarily of gravel with some sand was encountered to depths generally ranging between 8 feet and 9 feet below ground surface beneath and to the north of the 1500 Jefferson Road building. Native soils encountered beneath the fill material consisted of a layer of sand with lesser amounts of silt and gravel. Several borings have noted a clay layer between 5 and 6 feet below ground surface. Bedrock was encountered within the test borings at approximately 20 feet below ground surface. The geography and geology of the Site are consistent with the reasonably anticipated future use of the Site.

16. *Current institutional controls applicable to the Site*: No institutional controls are currently in place at the Site that would affect redevelopment options.

Based on the above evaluation of the current, intended and reasonably anticipated future use of the Site and surrounding area, a cleanup to industrial use standards does not appear to pose additional environmental or human health risks.

APPENDIX B

Supplemental Remedial Investigation Documentation



LaBella
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ELDRE CORPORATION
BCP SITE C828182

1500 JEFFERSON ROAD
AND 55 HOFSTRA ROAD

VOCs Detected
in Groundwater Samples
Collected October 2011
through June 2014

N
W E
S

0 50 100
Feet

1 inch = 100 feet
Intended to print as 11" x 17".

212721

FIGURE 5

Table 1 (1 of 1)
Eldre Corporation
1500 Jefferson Road and 55 Hofstra Road, Henrietta New York
NYSDEC BCP Site #C828182
LaBella Project No. 212721.02
Summary of Petroleum-Related Volatile Organic Compounds in Groundwater
Results in micrograms per liter (ug/L) or parts per billion (ppb)

Sample ID	NYCRR Part 703 Groundwater Standards	MW-10-102419	MW-16-102419	MW-2-102519	MW-5-102519
Sample Collection Date		10/24/2019	10/24/2019	10/25/2019	10/25/2019
Volatile Organic Compounds					
Benzene	1	<0.16	<0.16	<0.16	<0.4
Toluene	5	<0.7	<0.7	<0.7	<1.8
Ethylbenzene	5	<0.7	<0.7	<0.7	<1.8
Methyl tert butyl ether	10	7.1 J	46 J	140 DJ	270 J
p/m-Xylene	5	<0.7	<0.7	<0.7	<1.8
o-Xylene	5	<0.7	<0.7	<0.7	<1.8
n-Butylbenzene	5	<0.7	<0.7	<0.7	<1.8
sec-Butylbenzene	5	<0.7	<0.7	<0.7	<1.8
tert-Butylbenzene	5	<0.7	<0.7	<0.7	<1.8
Isopropylbenzene	5	<0.7	<0.7	<0.7	<1.8
p-Isopropyltoluene	5	<0.7	<0.7	<0.7	<1.8
Naphthalene	10	<0.7	<0.7	<0.7	<1.8
n-Propylbenzene	5	<0.7	<0.7	<0.7	<1.8
1,3,5-Trimethylbenzene	5	<0.7	<0.7	<0.7	<1.8
1,2,4-Trimethylbenzene	5	<0.7	<0.7	<0.7	<1.8
Total VOCs	NL	7.1	46	420	270

Notes:
VOC analysis by United States Environmental Protection Agency (USEPA) Method 8260
"<" - Indicates compound was not detected above the indicated laboratory method detection limits (MDLs)
D indicates result from a dilution
J – Estimated value
NA / NL = Not Applicable / Not Listed
Yellow highlighted type indicates that the constituent was detected at a concentration above the NYCRR Part 703 Groundwater Quality Standard.
TICs = tentatively identified compounds
Total VOCs is the sum of all detected VOCs including TICs
Red font indicates a change made in the DUSR.

LaBella
Powered by partnership.

Soil Chemistry Data - Phase II Soil Borings
Eldre Corp.
DRAFT

			Location:	SB-2	SB-2(B)	SB-3	SB-5	SB-6	SB-7	SB-9	SB-10	SB-11	SB-13	SB-14	SB-15	SB-16	SB-17	SB-18	SB-21	SB-22
			Depth:	12-14'	2-4'	15-16'	1.3-2.0'	10.5-11.0'	1.3-1.8'	4.0-4.5'	14.0-14.5'	10.0-10.5'	7.0-7.5'	10-11'	9.0-9.5'	12.0-12.5'	11-12'	7.0-7.5'	6.0-6.5'	0-2'
			Lab ID:	6413423	6413422	6413427	6413424	6413428	6413420	6413426	6413412	6413411	6413417	6413413	6413414	6413415	6413418	6413416	6413425	6413419
Parameter	**Units**	**Ind SCO**	**GW SCO**																	
Volatile Organic Compounds																				
Acetone	ug/kg	1,000,000	50		120	ND	310	52	63	26	ND	17 J	10 J	8 J	19 J	ND	ND	13 J	68	ND
2-Butanone	ug/kg	1,000,000	120		27	ND	64	9 J	11	ND	ND	ND	ND	ND	ND	ND	ND	ND	11 J	ND
n-Butylbenzene	ug/kg	1,000,000	12,000		ND	ND	ND	ND	ND	14	ND	ND	ND	ND	ND	ND	ND	ND	ND	54 J
sec-Butylbenzene	ug/kg	1,000,000	11,000		ND	ND	ND	ND	ND	12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	ug/kg	NS	NS		2 J	3 J	3 J	ND	1 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	2 J	ND
cis-1,2-Dichloroethene	ug/kg	1,000,000	250		1 J	210	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	ug/kg	1,000,000	190		1 J	1 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/kg	NS	NS		2 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl Tertiary Butyl Ether	ug/kg	1,000,000	930		ND	ND	ND	ND	ND	ND	ND	ND	2 J	ND	ND	ND	ND	ND	2 J	ND
Methylene Chloride	ug/kg	1,000,000	50		4 J	4 J	ND	4 J	3 J	5 J	12	5 J	9	2 J	16	ND	ND	6	15	ND
n-Propylbenzene	ug/kg	1,000,000	3,900		7	ND	ND	ND	ND	2 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ug/kg	NS	NS		ND	ND	ND	ND	ND	9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/kg	1,000,000	700		1 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ug/kg	400,000	470		ND	ND	ND	ND	ND	ND	1 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	ug/kg	13,000	20		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3 J	ND
Semivolatile Organic Compounds																				
Acenaphthene	ug/kg	1,000,000	98,000	ND			ND										ND		ND	890
Acenaphthylene	ug/kg	1,000,000	107,000	ND			ND										ND		ND	48 J
Anthracene	ug/kg	1,000,000	1,000,000	ND			7 J										ND		ND	1,100
Benzo(a)anthracene	ug/kg	11,000	1,000	ND			37										ND		6 J	3,700
Benzo(a)pyrene	ug/kg	1,100	22,000	ND			48										ND		6 J	3,800
Benzo(b)fluoranthene	ug/kg	11,000	1,700	4 J			82										ND		10 J	5,900
Benzo(g,h,i)perylene	ug/kg	1,000,000	1,000,000	ND			35										ND		5 J	2,800
Benzo(k)fluoranthene	ug/kg	110,000	1,700	ND			29										ND		ND	2,300
Chrysene	ug/kg	110,000	1,000	4 J			57										ND		10 J	4,300
Dibenz(a,h)anthracene	ug/kg	1,100	1,000,000	ND			9 J										ND		ND	720
Fluoranthene	ug/kg	1,000,000	1,000,000	7 J			120										ND		23	11,000
Fluorene	ug/kg	1,000,000	386,000	ND			ND										ND		ND	570
Indeno(1,2,3-cd)pyrene	ug/kg	11,000	8,200	ND			35										ND		5 J	2,600
Naphthalene	ug/kg	1,000,000	12,000	ND			5 J										ND		ND	200
Phenanthrene	ug/kg	1,000,000	1,000,000	ND			51										ND		11 J	6,800
Pyrene	ug/kg	1,000,000	1,000,000	5 J			95										ND		19 J	8,200
Metals																				
Arsenic	mg/kg	16	16	38.9			6.05										3.74		6.15	4.94
Barium	mg/kg	10,000	820	32.9			113										29.3		291	29.2
Cadmium	mg/kg	60	8	0.512 J			1.01										0.424 J		0.958	0.638
Chromium	mg/kg	6,800	NS	8.54			23.4										7.81		29.4	9.96
Lead	mg/kg	3,900	450	5.95			16.5										4.00		10.3	10.3
Mercury	mg/kg	6	1	ND			0.0225 J										ND		0.0101 J	0.0188 J

Only parameters with at least one detection are listed.
All samples were collected from 9/19/2011 to 9/20/2011.
ug/kg = micrograms per kilogram (dry weight)
mg/kg = milligrams per kilogram (dry weight)
NS = Not specified
ND = Not detected
J = Estimated value below limit of quantitation

Ind SCO = Soil Cleanup Objective for Industrial Use, from 6 NYCRR Subpart 375-6: Table 375-6.8(b)
GW SCO = Soil Cleanup Objective protective of groundwater, from 6 NYCRR Subpart 375-6: Table 375-6.8(b)

Soil Chemistry Data - Phase III Monitoring Wells
Eldre Corp.
DRAFT

			Location:	**MW-1**	**MW-1**	**MW-1**	**MW-2**	**MW-3**	**MW-4**	**MW-5**	**MW-6**	**MW-6**	**MW-6**	**MW-7**	**MW-8**	**MW-9**	**MW-10**
			Depth:	5-7'	10-12'	15-17'	15-17'	15-17'	15-17'	15-17'	5-7'	10-12'	15-17'	15-17'	15-17'	15-17'	15-17'
			Lab ID:	6445368	6445369	6445370	6445375	6445379	6445381	6445374	6445371	6445372	6445373	6445377	6445378	6445380	6445382
Parameter	**Units**	**Ind SCO**	**GW SCO**														
Methyl Tertiary Butyl Ether	ug/kg	1,000,000	930	ND	ND	ND	52 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ug/kg	400,000	470	ND	ND	ND	ND	520	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	ug/kg	1,000,000	250	ND	ND	ND	ND	290	ND	ND	ND	ND	ND	ND	ND	ND	ND

Only SW-846 Method 8260B parameters with at least one detection are listed.
All samples were collected from 10/17/2011 to 10/20/2011.
ug/kg = micrograms per kilogram
ND = Not detected
J = Estimated value below limit of quantitation
Ind SCO = Soil Cleanup Objective for Industrial Use, from 6 NYCRR Subpart 375-6: Table 375-6.8(b)
GW SCO = Soil Cleanup Objective protective of groundwater, from 6 NYCRR Subpart 375-6: Table 375-6.8(b)

Groundwater Chemistry Data - Phase II Soil Borings (no purging)
Eldre Corp.
DRAFT

Parameter	Units	NYSGQS	SB-1	SB-9	SB-16	SB-18	SB-22
		Date:	09/20/11	09/20/11	09/19/11	09/19/11	09/20/11
		Lab ID:	6413432	6413433	6413429	6413430	6413431
Acetone	ug/l	50	11 J	ND	11 J	7 J	ND
Benzene	ug/l	1	0.6 J	0.9 J	ND	ND	1 J
cis-1,2-Dichloroethene	ug/l	5	**17**	**28**	ND	ND	ND
trans-1,2-Dichloroethene	ug/l	5	5	ND	ND	ND	ND
Methyl Tertiary Butyl Ether	ug/l	10*	ND	5 J	ND	ND	**60**
Tetrachloroethene	ug/l	5	ND	3 J	ND	ND	ND
Toluene	ug/l	5	**15**	0.8 J	3 J	ND	5
Trichloroethene	ug/l	5	2 J	**47**	ND	ND	ND
Vinyl Chloride	ug/l	2	ND	**6**	ND	ND	ND
m+p-Xylene	ug/l	5	ND	ND	ND	ND	2 J

Only SW-846 Method 8260B parameters with at least one detection are listed.
ug/l - micrograms per liter
ND = Not detected
J = Estimated value below limit of quantitation
NYSGQS = New York State Groundwater Quality Standard, from 6 NYCRR Part 703.
* Guidance Value
Bold typeface indicates that the parameter was detected at a concentration greater than the NYSGQS or guidance value.

Groundwater Chemistry Data - Phase III Monitoring Wells
Eldre Corp.
DRAFT

		Location:	**MW-1**	**MW-2**	**MW-2**	**MW-3**	**MW-4**	**MW-5**	**MW-6**	**MW-7**	**MW-8**	**MW-9**	**MW-10**
		Date:	10/18/11	10/19/11	10/19/11	10/20/11	10/20/11	10/18/11	10/18/11	10/19/11	10/20/11	10/20/11	10/20/11
		Lab ID:	6445347	6445348	6445349	6447011	6445350	6445345	6445346	6445344	6445343	6445351	6447012
Parameter	**Units**	**NYSGQS**			(Dupl.)								
Trichloroethene	ug/l	5	2 J	ND	ND	**880**	ND	ND	3 J	ND	ND	ND	ND
cis-1,2-Dichloroethene	ug/l	5	**10**	ND	ND	**740**	ND	ND	**11**	ND	ND	ND	ND
trans-1,2-Dichloroethene	ug/l	5	2 J	ND	ND	**6**	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	ug/l	2	ND	ND	ND	**8**	ND	ND	1 J	ND	ND	ND	ND
1,1-Dichloroethene	ug/l	5	ND	ND	ND	2 J	ND	ND	ND	ND	ND	ND	ND
Acetone	ug/l	50	12 J	8 J	8 J	8 J	ND	8 J	ND	ND	ND	ND	ND
Methyl Tertiary Butyl Ether	ug/l	10*	ND	**58**	**61**	ND	ND	**38**	ND	ND	ND	ND	**44**
m+p-Xylene	ug/l	5	ND	1 J	1 J	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	ug/l	5	ND	0.8 J	0.8 J	ND	ND	ND	ND	ND	ND	ND	ND

Only SW-846 Method 8260B parameters with at least one detection are listed.
ug/l - micrograms per liter
ND = Not detected
J = Estimated value below limit of quantitation
NYSGQS = New York State Groundwater Quality Standard, from 6 NYCRR Part 703.
* Guidance Value
Bold typeface indicates that the parameter was detected at a concentration greater than the NYSGQS or guidance value.

LABELLA Associates, P.C.

300 STATE STREET, ROCHESTER, NY
PH: (585) 454-6110

GROUNDWATER SAMPLING FORM

WELL I.D. MW-36 (deep well)

Project Name: 1500 Jefferson Rd
Project No.: 212721
Location: Eldre Corp. BCP Site
Sampled By: K R Miller
~~2/21/2012~~ June 15, 2014
Weather: Sunny 75-80' F

PURGE VOLUME CALCULATION

Well Diameter: 2 Inch
Static Water Level: 5.50' Feet BTOC
Depth of Well: ~33.60 Feet BTOC
Single Well Volume: 0.0 -Gallons

PURGE & SAMPLING METHOD

☐ Bailer - Type: ~~PVC~~
Sampling Device: ~~Dedicated Bailer~~
☒ Pump - Type: QED 1.75" Bladder
Pump Rate: 0.2 l/min

FIELD PARAMETER MEASUREMENTS

Time	Gallons Purged	pH	Temp (oC)	Conductivity (mS/cm)	Turbidity (NTU)	DO %	W/L Comments	ORP mV
13:30	Begin						5.60' BTOC	
13:45	3l	7.29	16.08	1.82	---	6.4	5.80'	-129
13:55	5l	7.29	16.16	1.82	329	6.1	5.75	-129
14:00	6l	7.28	16.14	1.82	1000 *	5.8	5.7	-129
14:05	7l	7.23	16.27	1.82	849	5.5	5.7	-128
14:10	8l	7.22	16.32	1.82	763	5.3	5.7	-129
14:15	9l	7.23	16.37	1.82	700	5.2	5.7	-130
14:20	10l	7.24	16.33	1.81	618	5.3	5.7	-131
14:25	11l	7.25	16.34	1.81	535	5.3	5.7	-132

Total ~~0.0 Gallons~~ Purged ~3 gal
Purge Start Time: 13:30
Purge End Time: 14:25

WELL SAMPLING

Sample I.D. MW-36 sample time = 14:30
No. of Containers:

Sampled For:
☐ VOCs - 8260B NYSDEC STARS
☐ SVOCs - 8270C NYSDEC STARS Only
☐ VOCs - 8260B NYSDEC STARS Only
☐ ~~Total /~~ Dissolved RCRA Metals
☐ Pesticides
☐ Other

OBSERVATIONS:

No evidence of LNAPL or DNAPL using rental Heron oil/water interface w/l meter (Fondrentals FA00068)
pump set ~ 31' BTOC (mid-screen)
* measured turbidity seems high - purge water begins brown/turbid but clears up quickly

Well Volume (1" well) = 0.0408 gal/ft.	Well Volume (4" well) = 0.65 gal/ft.
Well Volume (2" well) = 0.163 gal/ft.	Well Volume (3" well) = 0.367 gal/ft.

LABELLA Associates, P.C.

300 STATE STREET, ROCHESTER, NY
PH: (585) 454-6110

GROUNDWATER ~~SAMPLING~~ Development FORM

WELL I.D. MW-36 (deep well)

Project Name: Elbre BCP
Location: 1500 Jefferson Rd
Sampled By: K R Miller
Weather: Sunny 79° F

Project No.: 212721

~~2/21/2012~~ June 1, 2014

PURGE VOLUME CALCULATION

Well Diameter: 2 ~~1~~ -Inch
Depth of Well: ~~±~~ 33 Feet

Static Water Level: 5.30 Feet
Single Well Volume: 4.5 ~~0.0~~ -Gallons

PURGE & SAMPLING METHOD

☐ ~~Bailer - Type: PVC~~
~~Sampling Device: Dedicated Bailer~~

☐ Pump - Type whale pump w/ poly tubing
Pump Rate:

FIELD PARAMETER MEASUREMENTS

Time	Gallons Purged	pH	Temp (oC)	Conductivity (mS/cm)	Turbidity (NTU)		Comments

Total 0.0 Gallons Purged   Purge Start Time: Purge End Time:

WELL SAMPLING

Sample I.D.
No. of Containers:

Sampled For:
☐ VOCs - 8260B NYSDEC STARS
☐ SVOCs - 8270C NYSDEC STARS Only
☐ VOCs - 8260B NYSDEC STARS Only
☐ ~~Total /~~ Dissolved RCRA Metals
☐ Pesticides
☐ Other

OBSERVATIONS:

Purged ± 30 gallons, water starts very turbid (brown) and becomes slightly less turbid during purging

Well Volume (1" well) = 0.0408 gal/ft.	Well Volume (4" well) = 0.65 gal/ft.
Well Volume (2" well) = 0.163 gal/ft.	Well Volume (3" well) = 0.367 gal/ft.

GROUNDWATER SCIENCES CORPORATION

GEOLOGIC LOG: MW-1

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	***Mersen - Rochester***	DRILLING CO.:	***Parratt Wolfe, Inc.***
SITE LOCATION:	***1500 Jefferson Road, Rochester, NY***	DRILLER:	***Mark Eaves***
JOB NO.:	***11007.01***	RIG TYPE:	***Ingersoll-Rand A-300 HSA***
LOGGED BY:	***DLR***	DRILLING METHOD:	***Hollow Stem Auger***
DATE DRILLED:	***10/17/11***	DEVELOPMENT DATE:	***10/17/11***
		LOCATION:	***East Side of Eldre Building***

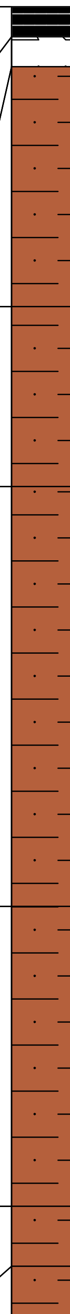
NOTES: Samples collected at 5'-7', 10'-12' and 15'-17' below grade for lab analysis

ELEVATION:

GEOLOGIC FORMATION:

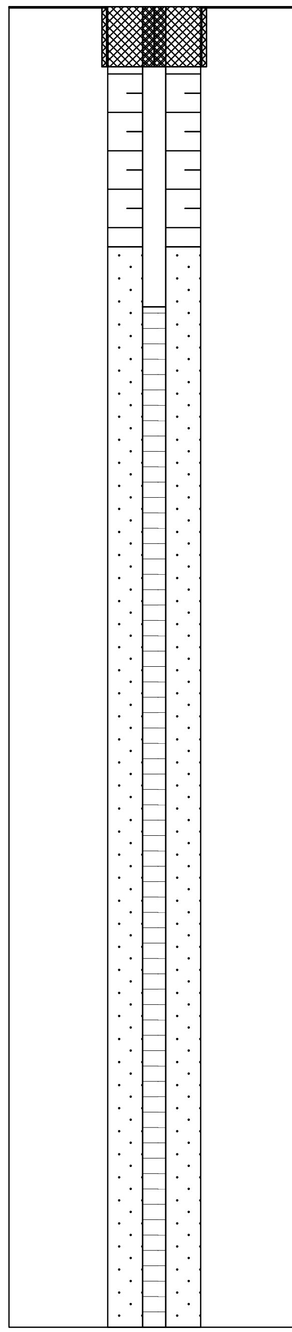
DEPTH FEET	CUM. BLOWN YIELD	SAMP. #	LITHOLOGY
0			ASPHALT: Asphalt
			FILL: Brown, damp, loose, fine to medium grained Sand with some Silt. FILL
			SILT: Brown, Damp, semi-dense, SILT; little fine-grained Sand; trace Gravel.
		(5'-7')	SILT: Brown, damp, semi-dense SILT; little fine-grained Sand; trace Gravel. [Split-Spoon sample collected at 5'-7'; PID= 0.0ppm]
10		(10'-12')	SILT: Gray, damp, semi-dense, SILT; little fine-grained Sand; trace Gravel. [Split-Spoon sample collected at 10'-12'; PID = 0.0]
		(15-'17')	SILT: Grayish-brown to Brown, damp-wet; semi-dense to dense; SILT with little Clay and fine-grained Sand; trace Gravel. [Split-Spoon sample collected at 15'-17'; PID = 0.0ppm]
20			SILT: Brown, damp-wet; semi-dense to dense; SILT with little Clay and fine-grained sand; trace Gravel.
			SILT: Brown, wet; semi-dense to dense; SILT with little Clay and fine-grained Sand; trace Gravel.

GRAPHIC



DEPTH FEET: 0, 10, 20

WELL CONSTRUCTION



WELL CONSTRUCTION DETAILS

8" dia. Flush-to-grade surface completion: 8" diameter manhole set in 18" diameter circular concrete pad.

2" dia. PVC riser (+0.5'-5')

2" locking compression cap

8" dia. HSA borehole (0'-22')

Bentonite chip annular seal (1'-4')

#00N Sand pack (4'-22')

2" dia. PVC 10-slot screen (5'-22')

GROUNDWATER SCIENCES CORPORATION

GEOLOGIC LOG: MW-2

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	***Mersen - Rochester***	DRILLING CO.:	***Parratt Wolfe, Inc.***
SITE LOCATION:	***1500 Jefferson Road, Rochester, NY***	DRILLER:	***Mark Eaves***
JOB NO.:	***11007.01***	RIG TYPE:	***Ingersol-Rand A-300 HSA***
LOGGED BY:	***DLR***	DRILLING METHOD:	***Hollow Stem Auger***
DATE DRILLED:	***10/18/11***	DEVELOPMENT DATE:	***10/18/11***
		LOCATION:	***North of Grass Strip- North of DOT Building***

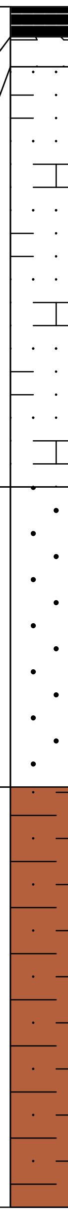
NOTES: Sample collected at 15-'17' below grade for lab analysis

ELEVATION:

GEOLOGIC FORMATION:

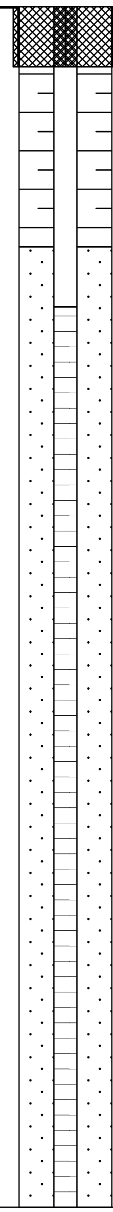
DEPTH FEET	CUM. BLOWN YIELD	SAMP. #	LITHOLOGY
0			ASPHALT: Asphalt
			FILL: Brown, damp, loose, Sand and Gravel; FILL
		(5'-7')	SILT AND CLAY: Brown, damp, dense, SILT with CLAY, trace fine-grained Sand. [Split-Spoon sample collected at 5'-7'; PID=0.0ppm]
10		(10'-12')	SAND: Brown, wet-saturated (saturated at 10'), loose, fine-grained SAND with some Silt; little Gravel; little Clay.[Split-Spoon collected at 10'-12'; PID= 0.0ppm]
20		(15'-17')	SILT: Brown, saturated, semi-loose, SILT with little Clay; trace fine-grained Sand and Gravel. [Split-Spoon sample collected at 15'-17'; PID=0.0ppm]

GRAPHIC



DEPTH FEET: 0, 10, 20

WELL CONSTRUCTION



WELL CONSTRUCTION DETAILS

8" dia. flush-to -grade surface completion: 8" diameter manhole set in 18" diameter circular concrete pad

2" dia. PVC riser (+0.5'-5')

8" dia. HSA borehole (0'-20')

Bentonite chip annular seal (1'-4')

#00N Sand pack (4'-20')

GROUNDWATER SCIENCES CORPORATION

GEOLOGIC LOG: MW-3

PROJECT INFORMATION

PROJECT: ***Mersen - Rochester***

SITE LOCATION: ***1500 Jefferson Road, Rochester, NY***

JOB NO.: ***11007.01***

LOGGED BY: ***DLR***

DATE DRILLED: ***10/19/11***

DRILLING INFORMATION

DRILLING CO.: ***Parratt Wolfe, Inc.***

DRILLER: ***Mark Eaves***

RIG TYPE: ***Ingersol-Rand A-300 HSA***

DRILLING METHOD: ***Hollow Stem Auger***

DEVELOPMENT DATE: ***10/19/11***

LOCATION: ***West property line near wetland and north of Eldre building***

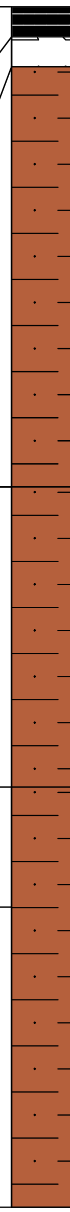
NOTES: Sample collected at 15'-17' below grade for lab analysis.

ELEVATION:

GEOLOGIC FORMATION:

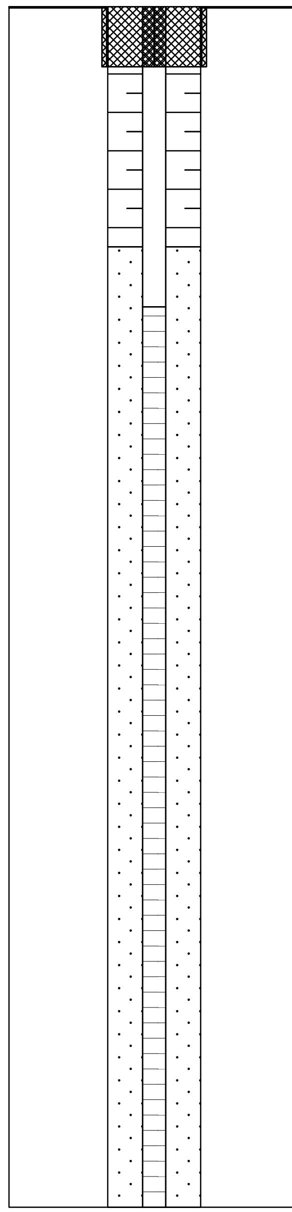
DEPTH FEET	CUM. BLOWN YIELD	SAMP. #	LITHOLOGY
0			ASPHALT: Asphalt
			FILL: Brown, damp, loose, Sand and Gravel; FILL
		(5'-7')	SILT: Brown, damp, semi-loose, SILT with little Clay, trace to little Gravel. [Split-Spoon sample collected at 5'-7'; PID=0.0ppm]
10		10'-12')	SILT: Brown, damp-wet, dense, SILT with little to some Clay; trace to little Gravel . (Split-Spoon sample collected at 10'-12'; PID=0.0ppm)
		(15'-17')	SILT: Brown, wet-saturated, dense, SILT with some Clay; trace fine-grained Sand and Gravel. (Split-Spoon sample collected at 15'-17'; PID=0.0ppm]
20			

GRAPHIC



DEPTH FEET: 0, 10, 20

WELL CONSTRUCTION



WELL CONSTRUCTION DETAILS

8" dia. flush-to-grade surface completion: 8" diameter manhole set in 18" diameter circular concrete pad.

2" locking compression cap

2" dia. PVC riser (0.5'-5')

8" dia. HSA borehole (0'-20')

Bentonite chip annular seal (1'-4')

#00N Sand pack (4'-20')

2" dia. PVC 10-slot screen (5'-20')

GROUNDWATER SCIENCES CORPORATION

GEOLOGIC LOG: MW-4

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	***Mersen - Rochester***	DRILLING CO.:	***Parratt Wolfe, Inc.***
SITE LOCATION:	***1500 Jefferson Road. Rochester, NY***	DRILLER:	***Mark Eaves***
JOB NO.:	***11007.01***	RIG TYPE:	***Ingersol-Rand A-300 HSA***
LOGGED BY:	***DLR***	DRILLING METHOD:	***Hollow Stem Auger***
DATE DRILLED:	***10/20/11***	DEVELOPMENT DATE:	***10/20/11***
		LOCATION:	***Near SW corner of Eldre Building***

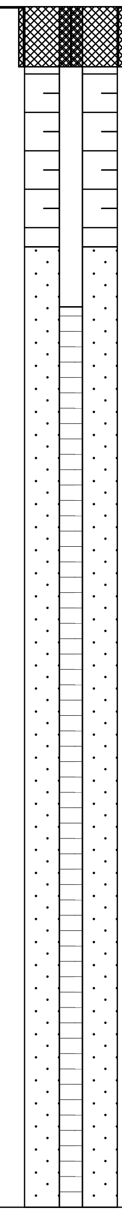
NOTES: Sample collected at 15'-17' below grade for lab analysis

ELEVATION:

GEOLOGIC FORMATION:

DEPTH FEET	CUM. BLOWN YIELD	SAMP. #	LITHOLOGY
0			ASPHALT: Asphalt
			FILL: Brown, damp, loose, fine-grained Sand and Gravel; little Silt; FILL
			SILT: Brown, damp, semi-dense, SILT with some Clay, trace fine-grained Sand.
		(5'-7')	SILT: Brown, damp, semi-dense, SILT with little Clay; trace to little Gravel and fine-grained Sand. [Split-Spoon sample collected at 5'-7'; PID=0.0]
10		(10'-12')	SILT: Brown, Light brown, damp-wet, semi-dense, SILT with some Clay; trace Gravel and fine-grained Sand. (Saturated at 14') [Split-Spoon sample collected at 10'-12'; PID=0.0]
		(15'-17')	SAND: Grey, wet-saturated, loose to semi-loose, fine-grained SAND with little Silt; trace Gravel. [Split-Spoon collected at 15'-17'; PID=0.0]
20			

GRAPHIC	DEPTH FEET	WELL CONSTRUCTION	WELL CONSTRUCTION DETAILS
	0		8" dia. flush-to-grade surface completion: 8" diameter manhole set in 18" diameter circular concrete pad.
			2" locking compression cap
			2" dia. PVC riser (0.5'-5')
			8" dia. HSA borehole (0'-20')
	10		Bentonite chip annular seal (1'-4')
			#00N Sand pack (4'-20')
			2" dia. PVC 10-slot screen (5'-20')
	20		



GROUNDWATER SCIENCES CORPORATION

GEOLOGIC LOG: MW-5

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	*Mersen - Rochester*	DRILLING CO.:	*Parratt Wolfe, Inc.*
SITE LOCATION:	*1500 Jefferson Road, Rochester, NY*	DRILLER:	*Mark Eaves*
JOB NO.:	*11007.01*	RIG TYPE:	*Ingersol-Rand A-300 HSA*
LOGGED BY:	*DLR*	DRILLING METHOD:	*Hollow Stem Auger*
DATE DRILLED:	*10/18/11*	DEVELOPMENT DATE:	*10/18/11*
		LOCATION:	*Near Wetland North or Eldre Building*

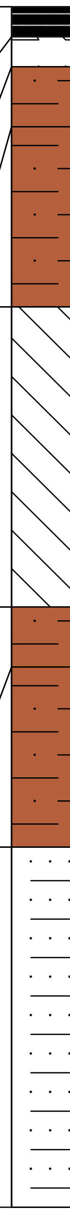
NOTES: Sample collected at 15'-17' below grade for lab analysis

ELEVATION:

GEOLOGIC FORMATION:

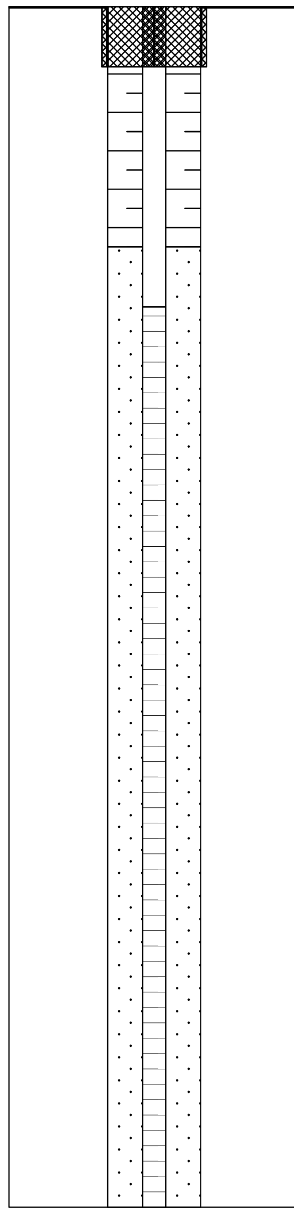
DEPTH FEET	CUM. BLOWN YIELD	SAMP. #	LITHOLOGY
0			ASPHALT: Asphalt
			FILL: Brown, damp, loose, Sand and Gravel; FILL
			SILT: Brown, damp, semi-dense, SILT with some Clay; race fine-grained Sand.
			SILT: Brown, damp, dense, SILT with some Clay; trace fine-grained Sand.
		(5'-7')	CLAY: Brown, damp, dense to semi-dense, CLAY with some Silt; trace fine-grained Sand. [Split-Spoon sample collected at 5'-7'; PID=0.0ppm]
10		(10'-12')	SILT: Brown, damp, dense, SILT swith some Clay; trace fine-grained Sand and Gravel. [Split-Spoon sample collected at 10'-12'; PID=0.0ppm]
			SILT: Brown, dense, wet, SILT with some Clay; trace fine-grained Sand.
		(15'-17')	SAND AND SILT: Brown, semi-loose, wet- saturated, SILT and fine-grained SAND with little Gravel; trace Clay. (Wet at 20') [Split-Spoon sample collected at 15'-17'; PID=0.0ppm]
20			

GRAPHIC



DEPTH FEET: 0, 10, 20

WELL CONSTRUCTION



WELL CONSTRUCTION DETAILS

8" dia. flush-to-grade surface completion: 8" diameter manhole set in 18" diameter circular concrete pad.

2" locking compression cap

2" dia. PVC riser (0.5'-5')

8" dia. HSA borehole (0'-20')

Bentonite chip annular seal (1'-4')

#00N Sand pack (4'-20')

2" dia. PVC 10-slot screen (5'-20')

GROUNDWATER SCIENCES CORPORATION

GEOLOGIC LOG: MW-6

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	***Mersen - Rochester***	DRILLING CO.:	***Parratt Wolfe, Inc.***
SITE LOCATION:	***1500 Jefferson Road, Rochester, NY***	DRILLER:	***Mark Eaves***
JOB NO.:	***11007.01***	RIG TYPE:	***Ingersol-Rand A-300 HSA***
LOGGED BY:	***DLR***	DRILLING METHOD:	***Hollow Stem Auger***
		DEVELOPMENT DATE:	***10/17/11***
DATE DRILLED:	***10/17/11***	LOCATION:	***North or Eldre Building***

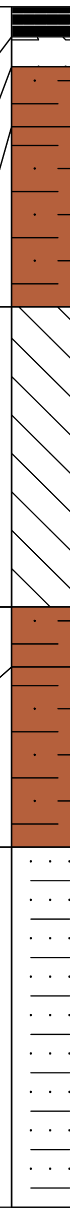
NOTES: Sample collected at 5'-7', 10'-12' and 15'-17' below grade for lab analysis

ELEVATION:

GEOLOGIC FORMATION:

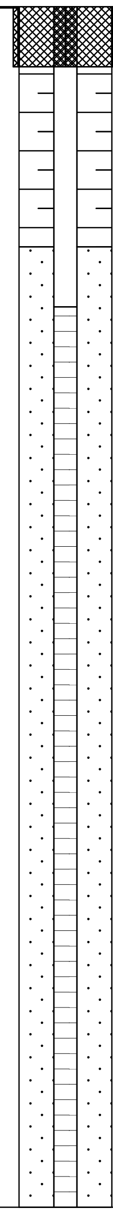
DEPTH FEET	CUM. BLOWN YIELD	SAMP. #	LITHOLOGY
0			ASPHALT: Asphalt
			FILL: Brown, damp, loose, Sand and Gravel, FILL
			SILT: Brown, damp, semi-dense, SILT with some Clay; trace fine-grained Sand.
			SILT: Brown, damp, dense, SILT with some Clay; trace fine-grained Sand.
		(5'-7')	CLAY: Brown, damp, dense to semi-dense, CLAY with some Silt; trace fine-grained Sand. [Split-Spoon sample collected at 5'-7'; PID=0.0ppm]
10			SILT: Brown, damp, dense, SILT swith some Clay; trace fine-grained Sand and Gravel.
		(10'-12')	SILT: Brown, dense, wet, SILT with some Clay; trace fine-grained Sand. [Split-Spoon sample collected at 10'-12'; PID=0.0ppm]
		(15'-17')	SAND AND SILT: Brown, semi-loose, wet- saturated, SILT and fine-grained SAND with little Gravel; trace Clay. (Wet at 20') [Split-Spoon sample collected at 15'-17'; PID=0.0ppm]
20			

GRAPHIC



DEPTH FEET: 0, 10, 20

WELL CONSTRUCTION



WELL CONSTRUCTION DETAILS

8" dia. flush-to-grade surface completion: 8' diameter manhole set in 18" diameter circular concrete pad

2" locking compression cap

2" dia. PVC riser (0.5'-5')

8" dia. HSA borehole (0'-20')

Bentonite chip annular seal (1'-4')

#00N Sand pack (4'-20')

2" dia. PVC 10-slot screen (5'-20')