Interim Remedial Measures Work Plan
RAOC #2- Stormwater Pond
Getinge USA Sales, LLC
BCP Site #C828192

Location:

1777 East Henrietta Road
Henrietta, New York 14623

Prepared for:

Getinge USA Sales, LLC
1777 East Henrietta Road
Henrietta, New York 14623

LaBella Project No. 2160339

April 2019
Revised August 2019

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Certification

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

081996	8/20/14	
NYS Professional Engineer #	Date	Signature

1.0 INTRODUCTION

LaBella Associates, D.P.C. ("LaBella") is submitting this Interim Remedial Measures (IRM) Work Plan on behalf of Getinge USA Sales, LLC (Getinge) for the parcel identified as 1777 East Henrietta Road, Town of Henrietta, Monroe County, New York, herein after referred to as the "Site." Refer to Figure 1 for a Site Location Map. The Site was entered into the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) in June 2016 as Site #C828192. This IRM Work Plan is for Remedial Area of Concern (RAOC) #2, the Stormwater Pond. This IRM Work Plan does not include remedial measures for RAOC #1 or RAOC #3; such will be provided under separate cover.

2.0 SITE DESCRIPTION AND HISTORY

2.1 *Site* Description *and Surrounding Properties*

The Site boundary is comprised of an approximately 34.90± acre tax parcel (SBL 162-10-1-1). Attached Figure 2 illustrates the location and surrounding area of the Site. Current Site features include a primarily metal clad masonry building ("Main Building") of approximately 259,032 square feet partially utilized for manufacturing and office space as well as a masonry building ("Northern Building") of approximately 27,700 square feet (sq. ft.) which is partially utilized for office space. The remaining area of the 34.90-acre property is covered by approximately 230,000 sq. ft. of asphalt parking lots and roadways as well as undeveloped wooded and grass lands situated primarily on the western portion of the Site. In addition, a stormwater detention pond is located in the northeastern corner of the property which receives a majority of the Site stormwater through stormwater collection drains and underground drainage conduits located around the facility. This pond does not continuously hold water.

The Site is bound by East Henrietta Road to the east, commercial properties to the west and north (various automotive repair facilities, hotels, retail, etc.), one (1) residential property to the west (which appears to be unoccupied) and I-390 to the south.

2.2 *Site* History

The Site appears to have been historically utilized for agricultural and residential purposes prior to 1955 and industrial purposes from approximately 1955 to present day. Based on the review of historical records, the Site has been utilized for the manufacture and distribution of medical supplies and equipment from at least 1955 to the early 2010s and is currently utilized as warehouse and office space by a medical supply and equipment company. Historical manufacturing operations reportedly included metal plating.

Based on the review of historical records, the majority of the Main Building was constructed in the 1950's with a small office addition constructed on the northeastern portion of the building in the 1960's. The eastern portion of the Northern Building appears to also have been constructed in the 1950's and was reportedly utilized as a wastewater treatment plant from approximately 1955 to approximately 1960, when the Site was connected to the municipal sewer system. The remainder of the current extent of the Northern Building appears to have been constructed in the 1980's.

A hotel has been located east of the Site (beyond East Henrietta Road) since at least 1988. The Interstate Route 390 (I-390) appears to have been developed in at least 1980 and is adjacent to the south of the Site. Material excavated during the construction of the adjacent I-390 on-ramp was reportedly placed on

the western portion of the Site at that time. The northern adjacent properties appear to have included a machine drilling company from at least 1960 until at least 1994, Harris Seeds and Plants from at least 1960 until at least 2005, various automobile repair facilities since at least 1966, a car wash from at least 1976 until at least 1983, and a hotel from approximately 2013 to the present day.

3.0 PREVIOUS INVESTIGATIONS

The following environmental reports exist for the Site:

- *Phase I Environmental Site Assessment (ESA),* completed by ENVIRON Corporation, (ENVIRON) April 1996;
- *Limited Phase II ESA,* completed by ENVIRON, April 1996*;*
- *Phase III ESA,* completed by ENVIRON, May 1996;
- *Detention Pond Investigation,* completed by Stantec, June 2013;
- *Phase I ESA,* completed by LaBella Associates, D.P.C. ("LaBella"), February 2014;
- *Phase II ESA,* completed by LaBella, April 2014;
- *Supplemental Phase II ESA Interim Data Package,* completed by LaBella, July 2014;
- *Supplemental Site Investigation,* completed by LaBella, December 2015;
- *Draft Remedial Investigation Report*, completed by LaBella, July 2018

3.1 Summary of Previous Investigations

Investigations have been conducted at the Site since 1996. Two (2) areas of chlorinated volatile organic compound (CVOC) impacts have been identified: 1) the former plating area within the Main Building; and, 2) the stormwater pond in the northeastern portion of the Site. The main contaminant of concern in both of these locations is trichloroethene (TCE).

Since the Site was entered into the BCP, a Remedial Investigation (RI) has been completed and an IRM was completed to install a sub-slab depressurization system within the Main Building. RI activities took place between September and December 2017 in accordance with the NYSDEC's Department of Environmental Remedial (DER)-10 (*Technical Guidance for Site Investigation and Remediation*) issued May 3, 2010 and with the RI Work Plan (RIWP) approved by the NYSDEC in a letter dated October 12, 2017.

A total of sixty-six (66) surface soil samples, twelve (12) subsurface soil samples (soil borings) and twenty-eight (28) groundwater samples were collected during the RI including several off-Site samples in the public right-of-way near RAOC #2.

Investigation activities completed to date under pre-BCP investigations and the RI have resulted in the following number of testing locations:

Summary of Cumulative Testing

Sample Type		ENVIRON Phase II ESA (1996)	ENVIRON Phase III ESA (1996)	Detention Pond Investigation (Stantec, 2013)	Phase II/ Interim Supp. Phase II ESA (LaBella, 2014-2015)	Supplemental Investigation (LaBella, 2015)	Remedial Investigation (LaBella, 2017)	TOTAL
Soil Borings	# Locations	12	1	8	11	35**	6	**63**
	# Samples	2	3	14	9	31	12	**71**
Soil Gas	# Locations	12	-	-	-	-	-	**12**
	# Samples	13	-	-	-	-	-	**13**
Test Pits	# Locations	-	-	-	10	-	-	**10**
	# Samples	-	-	-	3	-	-	**3**
Groundwater Monitoring Wells	# Locations	7	7	4	7	21	2	**48**
	# Samples	12	7	7	7*	21*	28*	**56**
Surface Water	# Locations	-	-	3	-	-	-	**3**
	# Samples	-	-	3	-	-	-	**3**
Surface Soil (0-2-inches bgs)	# Locations	-	-	-	-	-	22	**22**
	# Samples	-	-	-	-	-	33	**33**
Surface Soil (2-12-inches bgs)	# Locations	-	-	-	-	-	22	**22**
	# Samples	-	-	-	-	-	33	**33**
Sub-Slab Soil Vapor (Northern Building)	# Locations	-	-	-	-	-	3	**3**
	# Samples	-	-	-	-	-	3	**3**
Indoor Air (Northern Building)	# Locations	-	-	-	-	-	3	**3**
	# Samples	-	-	-	-	-	3	**3**

Notes:
Locations – refers to the total number of locations installed during the associated investigation
*Some samples were collected from monitoring wells installed during previous investigation
**Includes 10 MIP borings

Based on the results of the RI and pre-BCP investigations, the following Remedial Areas of Concerns (RAOCs) were identified in the July 2018 RI:

1. **RAOC #1 – TCE in Soil and Groundwater in the Former Plating Area**- TCE is present in soil and groundwater at concentrations that exceed the Soil and Groundwater SCGs for the Site, with the greatest concentrations (701,000 ppb in groundwater) detected in the former plating area (RI AOC #1). The on-Site source for TCE in groundwater in RAOC #1 appears to be a DNAPL plume. While historical degreasing operations are responsible for the use and discharge of TCE and the subsequent DNAPL, no specific discharge event or source has been identified for the DNAPL plume.

2. **RAOC #2- TCE in Groundwater near the Stormwater Retention Pond-** TCE is present in groundwater at concentrations that exceed the groundwater SCGs for the Site, with the greatest concentrations (4,160 ppm) detected in MW-1 immediately northwest of the stormwater retention pond. VOC impacts in groundwater in RAOC #2 appear to be sourced from the historical use of the Northern

Building as a wastewater treatment facility form the mid-1950's to 1960. The water treated in this Northern Building, which likely contained chlorinated VOCs, was discharged to the Stormwater Pond where the impacted water likely leached into the subsurface. Additional details regarding RAOC #2 are included in Section 7.1.

3. **RAOC #3- Benzo(a)pyrene in Surface Soil-** One (1) surface soil sample collected from the northern portion of the Site, north of the parking lot identified one (1) SVOC, benzo(a)pyrene at 1.1 ppm. This compound exceeds the Commercial Use SCO of 1.0 ppm for this compound. The sample was collected from 0-2-inches bgs and a sample collected from immediately below this location did not identify benzo(a)pyrene at detectable concentrations. The source of benzo(a)pyrene in this location is attributed to runoff from the adjacent asphalt parking lot which was recently stripped and replaced in summer 2017.

The subject of this IRM Work Plan is RAOC #2; TCE in Groundwater near the Stormwater Retention Pond. Other RAOCs will be addressed under separate cover. Refer to Figure 3 for locations of RAOCs. The RI Report has not yet been approved by the NYSDEC.

4.0 STANDARDS, CRITERIA AND GUIDELINES

This section identifies the Standards, Criteria and Guidelines (SCGs) for the Site. The SCGs identified are used in order to quantify the extent of contamination at the Site that requires remedial work based on the cleanup goal.

Soil SCGs:

- NYCRR Subpart 375-6 Remedial Program Soil Cleanup Objectives (RPSCOs) for the Protection of Groundwater;
- NYCRR Subpart 375-6 Remedial Program Soil Cleanup Objectives (RPSCOs) for Unrestricted Use;
- NYCRR Subpart 375-6 RPSCOs for the Protection of Public Health/Restricted Residential Use; and,
- NYCRR Subpart 375-6 RPSCOs for the Protection of Public Health/Commercial Use.

Groundwater SCGs:

- NYSDEC Part 703 Groundwater Standards; and,
- Technical and Operational Guidance Series (TOGS) 1.1.1 Water Quality Standards and Guidance Values.

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

5.0 SITE GEOLOGY AND HYDROGEOLOGY

5.1 *Geology*

Based on observations made during previous studies completed by LaBella and regional geologic mapping, the Site is generally underlain by glacial till of varying densities with select areas of anthropogenic shallow fill material.

In the central portion of the Site, the top 4-ft to 10-ft of material encountered generally consisted of low density brown sandy silt and clay with trace fine gravel. Apparent reworked native material was often observed in this layer as well as some fill (sand and gravel) likely associated with building construction.

Beneath the low density layer, a sandy unit of very dense, brown silt with trace clay/sand and trace fine gravel (varying by location) was encountered. The top of this high density layer was generally encountered between 10-ft and 12-ft bgs. The layer was found to be at least 10-ft to 20-ft deep, although boring refusal/termination typically occurred in this unit, so the bottom was not encountered in most locations.

The investigations also encountered medium density grey silty clay in several locations, sometimes overlying and sometimes underlying the dense silt layer.

In the two deep borings advanced at the Site (to top of bedrock), alternating layers of the high density brown silt and the medium density grey silty clay were observed to approximately 42-ft bgs, at which point a low density rose/brown/grey clay and silt layer was observed. This layer was approximately 10-ft in thickness and was underlain by a high density rose/brown sand and silty layer with coarse, medium, fine gravel. This dense sand/silt layer appears to be glacial till and was encountered just above bedrock.

Bedrock was encountered between 50-ft. and 60-ft. bgs in the central portion of the Site and is presumed to be part of the Vernon Formation (primarily greenish-grey shale interbedded with minor beds of dolostone and black shale) from the Upper Silurian period based on regional mapping and observations.

Observations in the northeastern portion of the Site (i.e., RAOC #2) were generally limited to the low density sandy layer in the top 12-ft and 20-ft bgs, with the exception of boring SBMW2017-05, which was advanced in the lowest portion of this area and actually off-site. The high density brown silt layer was encountered in this boring at a depth of approximately 12-ft bgs, underlying the low density sandy layer. RAOC #2 is topographically the lowest portion of the Site.

Apparent gravel seams were encountered in two areas of the Site; one seam approximately 2.5-ft thick in boring LBA-GP-08 (RAOC #1) and one seam approximately 0.5-ft thick in boring B-9 (RAOC #2). Apparent suspect odors and PID readings above background were noted in both of these seams. A geologic cross section of the stormwater pond area developed during the RI is included as Figure 5. Refer to Figure 4 for cross section location.

5.2 *Hydrogeology*

Groundwater at the Site has generally been identified between depths of 2 and 14-ft bgs in the “shallow” overburden wells and between 17 and 21-ft bgs in the “deep” overburden wells (wells DW2015-01 and DW2015-02 in RAOC #1). Static water levels in RAOC #2 have been identified between 5.0 and 6.2 ft bgs. The high density brown silt layer appears to be acting as a confining layer, separating shallow and deep aquifers at the Site. The top of the high density silt layer was generally encountered between 10-ft and 12-

ft at the Site. All wells at the Site have been screened in the shallow aquifer with the exception of the two (2) deep wells (DW2015-01 and DW2015-02) completed as part of the 2015 Supplemental Site Investigation. Note that although static water levels in the deep wells were generally "shallow" (i.e., between 17-ft and 21-ft bgs), these wells are screened at depths between 37.0-ft and 52.0-ft and 43.2-ft and 58.2-ft, respectively, indicating the "shallow" static water levels in these wells are potentiometric surfaces created by head pressures in the wells.

As part of the pre-BCP 2015 Supplemental Site Investigation hydraulic conductivity testing was completed in three (3) wells in RAOC #1. Hydraulic conductivities in RAOC #1 ranged from 5.54×10^{-5} to 7.99×10^{-6} feet per second (ft/sec) in deep overburden wells and was calculated to be 4.66×10^{-7} ft/sec in shallow overburden wells. Hydraulic conductivity was not measured proximate to RAOC #2.

Groundwater elevation studies were conducted by Environ in 1996, Stantec in 2013 and during the RI. Two (2) rounds of static water levels were collected during the RI in November 2017 and May 2018. Groundwater at the Site generally flows towards the northeast.

6.0 OBJECTIVES

The objectives of this IRM are to:

- Reduce the concentrations of CVOCs in groundwater in RAOC #2.
- Prevent potential off-Site migration of CVOCs emanating from RAOC #2.

To meet the objectives, in-situ chemical reduction (ISCR) is planned. Reducing chemicals will be injected via direct-push methods proximate to and downgradient of the stormwater pond.

7.0 PLANNED INTERIM REMEDIAL MEASURE

7.1 Summary of RAOC #2 Impacts

Laboratory analytical data from groundwater samples collected from this RAOC indicated CVOCs exceeded Groundwater Standards. The source of VOCs in this RAOC is likely attributed to the former stormwater pond into which wastewater was reportedly discharged from approximately 1955 until 1960 when the Site was connected to the municipal sewer system. Groundwater flow modeling shows groundwater flowing northeast throughout the Site, including within RAOC #2. Concentrations of TCE in groundwater in this RAOC have fluctuated over years ranging from 2,700 ppb in 2013, 580 ppb in 2014 to 4,160 ppb in 2017. The contaminants of concern in this area are TCE and its breakdown products.

Analytical data from the RI and pre-BCP investigations show an apparent plume of VOCs in groundwater that is largely concentrated on the northeastern side of the stormwater pond, and does not extend significantly to the west or south (refer to Figure 4). A pre-BCP investigation conducted in 2013 consisted of the installation of several monitoring wells (MW-12 through MW-15) to delineate impacts associated with the stormwater pond. TCE was not detected in MW-12 to the south or in MW-15 to the west of the pond.

During the RI, groundwater samples collected from SBMW2017-06 downgradient (northeast) of the stormwater pond across East Henrietta Road did not detect TCE or other compounds above Groundwater Standards. TCE was detected in SBMW2017-06 at 2.7 ppb. Groundwater collected from SBMW2017-05

(also downgradient to the stormwater pond) did detect TCE (27 ppb) slightly above the Groundwater Standard. Wells SBMW2017-05 and SBMW2017-06 are both located off-Site, immediately downgradient of the stormwater pond. Based on the low-level detections of CVOCs in these off-Site wells, significant off-Site migration of contaminants does not appear to be occurring. The extent of impacts associated with this RAOC is approximately 20,000-square feet to depths up to approximately 20-ft bgs.

7.2 Selected Technology: In-Situ Chemical Reduction

The selected interim remedial technology for RAOC #2 is in-situ chemical reduction (ISCR) via injection of a reducing agent to reduce CVOC concentrations in groundwater and assumed soil contamination based on concentrations of CVOCs in groundwater. This approach will also include enhanced bio-stimulation to promote biological reductive dechlorination. It is anticipated this IRM will constitute as the final remedy for RAOC #2 in conjunction with institutional controls to be detailed in a Site Management Plan.

Remediation of RAOC #2 will consist of up to 50 direct push injection points at horizontal spacing of approximately 5 to 8-ft. Injection zones will be positioned perpendicular to groundwater flow (i.e., southeast-northwest). The inferred source area of impacts in RAOC #2 is the northern side of the stormwater pond. Due to the steep slope of the pond, direct push injection points will be advanced along the slope of the stormwater pond on the downgradient (i.e., northeastern) side proximate to MW-1 which has historically had the greatest concentrations of CVOCs in groundwater associated with this RAOC. In addition, injections will be completed approximately 20-30 feet downgradient northeast) of the stormwater pond to act as a permeable reactive barrier (PRB). The PRB acts as a barrier to contaminants while allowing groundwater to flow through. Approximate injection point locations are shown on Figure 4. Vegetation will need to be cleared in order to access the treatment area. Injection points shown are approximate and subject to change based on Site conditions. Any significant changes required will be communicated to the NYSDEC prior to implementation.

An EPA Inventory of Injection Wells form will be completed and sent to EPA. A copy of the EPA approval will be sent to NYSDEC prior to implementation.

7.2.1 Baseline Groundwater Sampling

Prior to injections, a round of baseline groundwater sampling will be conducted for RAOC #2 wells. The following wells will be monitored (refer to Figure 4 for well locations):

- MW-1
- MW-13
- SBMW2017-05
- SBMW2017-06
- SBMW2015-05

Wells will be sampled using low-flow techniques and water quality parameters will be recorded at 5 minute intervals. Samples will be collected once the parameters have stabilized as noted below:

- Water level drawdown (<0.3')
- Temperature (+/- 3%)
- pH (+/- 0.1 unit)
- Dissolved oxygen (+/- 10%)
- Specific conductance (+/- 3%)
- Oxidation reduction potential (+/- 10 millivolts)
- Turbidity (+/- 10%, <50 NTU for metals)

Once parameters have stabilized, a sample will be collected from each well for analysis of USEPA Target Compound List (TCL) VOCs including tentatively identified compounds (TICs) via USEPA Method 8260. One (1) matrix spike/ matrix spike duplicate (MS/MSD), blind duplicate, and trip blank will be collected and analyzed for TCL VOCs and TICs for each shipment of samples.

Note that MW-13, initially installed as part of a pre-BCP investigation in 2013, could not be located during the RI. MW-13 will be re-installed for monitoring purposes. The well will be installed in the same general location with the same general construction as former well MW-13. The well will be installed to approximately 14.5-ft bgs with 10-ft of 1-inch diameter 0.010 slot screen. The 2013 well construction log is included as Appendix 5. The well will be developed by purging three (3) well volumes and allowed to stabilize for a minimum of 48-hours prior to sampling.

7.2.2 Treatment Chemical

The selected injection chemical is GeoForm™ Extended Release by PeroxyChem. GeoForm™ is a biochemical reagent specifically designed to generate reactive iron sulfide minerals and includes a source of sulfate, a source of ferrous iron, and electron donor to establish sulfate reducing conditions. GeoForm™ is expected to provide an extended reactive life of 5-10 years. Approximately 24,000 lbs of GeoForm™ will be injected. Based on the longevity of the treatment chemical, one (1) application is planned. Refer to Appendix 1 for additional product information.

A bacteria, dehalococcoides (DHC), will also be injected to promote biodegradation of CVOCs. A total of approximately 15 liters of DHC Inoculm will be injected. The DHC Inoculum will contain at least 5 x 10^{10} colony-forming units per liter (cfu/L) and will be mixed with the GeoForm™ solution.

7.2.3 Injection Method

The selected injection method is direct-push hydraulic injections using a Geoprobe Systems® Pressure Activated Injection Probe. Procedures are summarized below:

- GeoForm™ will be mixed to form a slurry with 25% solids using a ratio of approximately 50 lbs GeoForm™ to 18 gallons of water. The slurry will be mixed in temporary storage containers (55-gallons drums or similar). The percent solids may be altered during the injection program based on infiltration rates.
- A Geoprobe will be used to advance a Geoprobe Systems® Pressure Activated Injection Probe to a depth of approximately 20-ft bgs in each injection location. The injection probe has an internal valve that only opens when pressure is applied to prevent back-flow of injection materials through the inside of the tooling and also keeps soil out of the tooling during advancement. Refer to Appendix 2 for a specification sheet for the equipment. The diameter of the borehole will be the same diameter as the injection probe which will limit 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) will target narrower intervals during injection.
- The injection chemical will be injected into the formation. Refer to Appendix 1 for treatment chemical information including a Safety Data Sheet. It is assumed up to 480 lbs of GeoForm™, 172 gallons of water, and 300 mL of DHC Inoculum will be injected per point. Detailed records will be made and maintained regarding injection material at each injection point.
- The pressure capacity of the injection equipment is up to 1,300 psi, but the expected range to be utilized is approximately 150-500 psi. Pressures utilized will be recorded for each interval.

- The injection probe will be raised in approximate 0.5 to 1-ft intervals and the treatment chemical will be injected at each interval. This process will be repeated from 20-ft bgs to the depth of groundwater (approximately 7-ft bgs).
- All injection points and soil borings will be filled with grout following completion.

7.3 Post-Remedial Monitoring

Three (3) months and six (6) months following completion of the injections, groundwater monitoring will be conducted. The following wells will be monitored (refer to Figure 4 for well locations):

- MW-1
- MW-13*
- SBMW2017-05
- SBMW2017-06
- SBMW2015-05

**As described in Section7.2.1, well MW-13 will be replaced as part of the baseline sampling task.*

Wells will be sampled using low-flow techniques and water quality parameters will be recorded at 5 minute intervals. Samples will be collected once the parameters have stabilized as noted below:

- Water level drawdown (<0.3')
- Temperature (+/- 3%)
- pH (+/- 0.1 unit)
- Dissolved oxygen (+/- 10%)
- Specific conductance (+/- 3%)
- Oxidation reduction potential (+/- 10 millivolts)
- Turbidity (+/- 10%, <50 NTU for metals)

Once parameters have stabilized, a sample will be collected from each well for analysis of USEPA TCL VOCs including TICs via USEPA Method 8260. One (1) MS/MSD, blind duplicate, and trip blank will be collected and analyzed for TCL VOCs and TICs for each shipment of samples.

Two (2) rounds of post-remedial groundwater monitoring are included as part of this work plan; any additional long-term monitoring requirements will be determined following the planned post-remedial monitoring and specified in the Site Management Plan.

7.4 Quality Control Plan

LaBella's Quality Control Plan included in the Remedial Investigation Work Plan will be followed during implementation of this IRM.

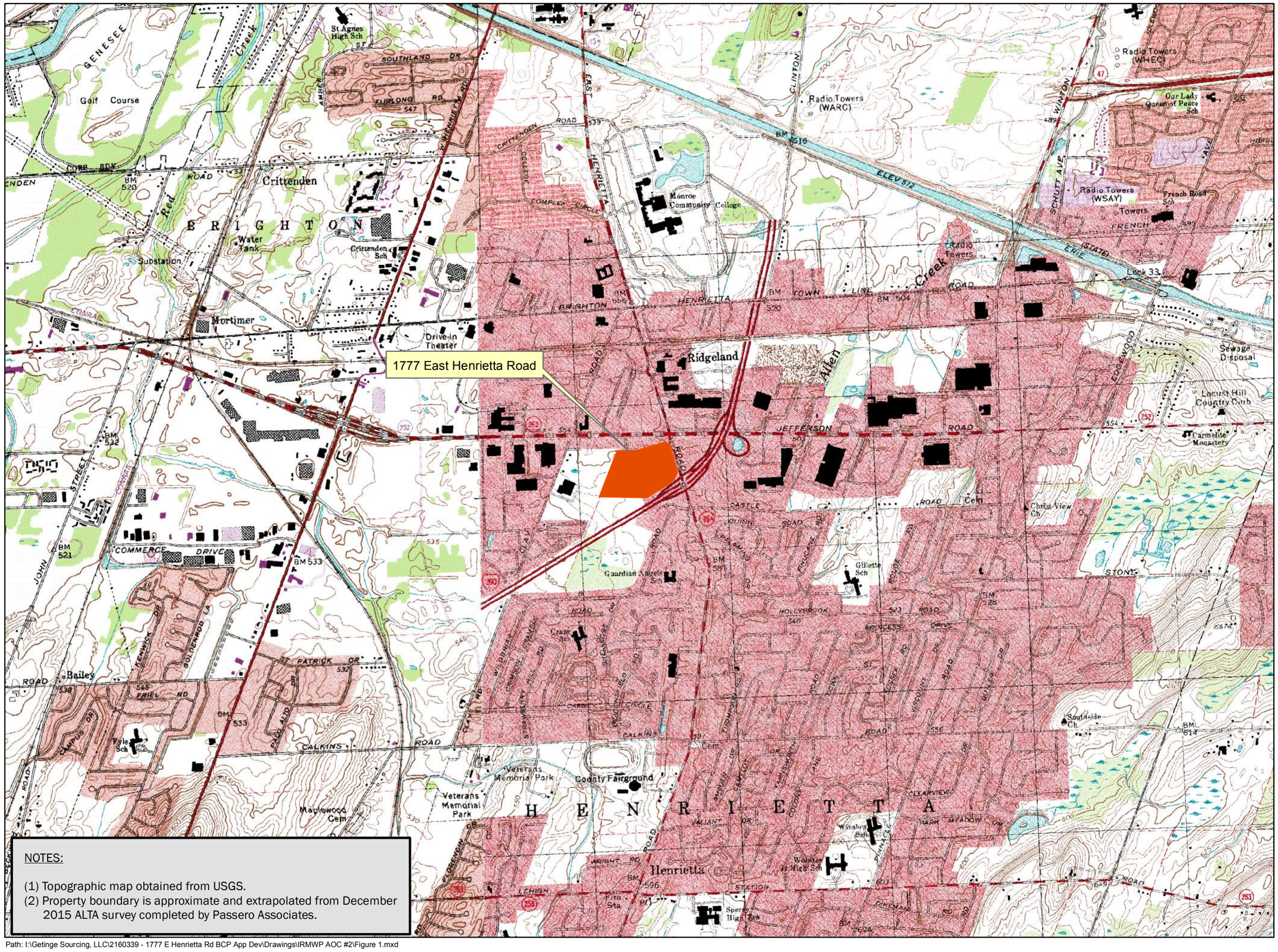
7.5 Health and Safety and Community Air Monitoring

The Health and Safety Plan (HASP) included as Appendix 3 will be implemented for this work. The NYSDOH Generic Community Air Monitoring Program (CAMP) included as Appendix 4 will be implemented for this work. The CAMP will include continuous upwind and downwind monitoring for VOCs and particulates during all ground intrusive work.

7.6 IRM-Derived Waste

All soil and groundwater generated during this IRM will be containerized on-Site and characterized for disposal in accordance with applicable regulations.

FIGURES



NOTES:

(1) Topographic map obtained from USGS.
(2) Property boundary is approximate and extrapolated from December 2015 ALTA survey completed by Passero Associates.

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INTERIM REMEDIAL MEASURES WORK PLAN
RAOC#2
STORMWATER POND

1777 EAST HENRIETTA ROAD
HENRIETTA, NY 14623
NYSDEC BCP #C828192

PROJECT LOCUS MAP

N
W E
S

0 1,000 2,000
Feet
1 inch = 2,000 feet

Intended to print as 11" x 17".

2160339

FIGURE 1

Path: I:\Getinge Sourcing, LLC\2160339 - 1777 E Henrietta Rd BCP App Dev\Drawings\IRMWP AOC #2\Figure 1.mxd

Path: I:\Getinge Sourcing, LLC\2160339 - 1777 E Henrietta Rd BCP App Dev\Drawings\IRMWP AOC #2\Figure 2 - Site Map.mxd

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INTERIM REMEDIAL MEASURES WORK PLAN
RAOC#2
STORMWATER POND

1777 EAST HENRIETTA ROAD
HENRIETTA, NY 14623
NYSDEC BCP #C828192

SITE LOCATION MAP

N
W
E
S

0 50 100 200

1 inch = 200 feet

Intended to print as 11" x 17".

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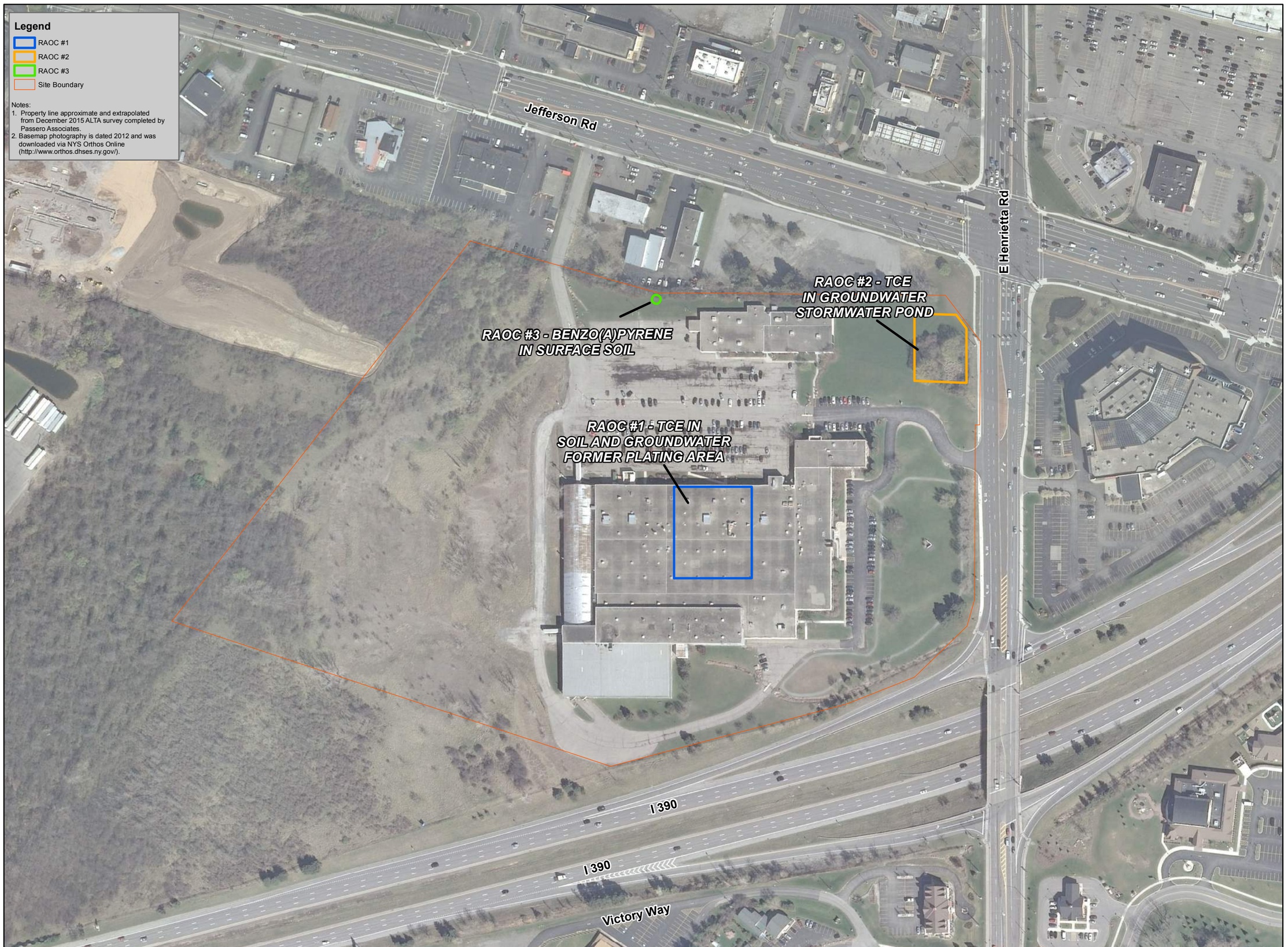
FIGURE 2



Path: I:\Getinge Sourcing, LLC\2160339 - 1777 E Henrietta Rd BCP App Dev\Drawings\IRMWP AOC #2\Figure 3 - Remedial AOCs.mxd

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INTERIM REMEDIAL MEASURES WORK PLAN RAOC#2 STORMWATER POND

1777 EAST HENRIETTA ROAD
HENRIETTA, NY 14623
NYSDEC BCP #C828192

REMEDIAL AREAS OF CONCERN (RAOCs)

N
W
E
S

0 50 100 200

1 inch = 200 feet

Intended to print as 11" x 17".

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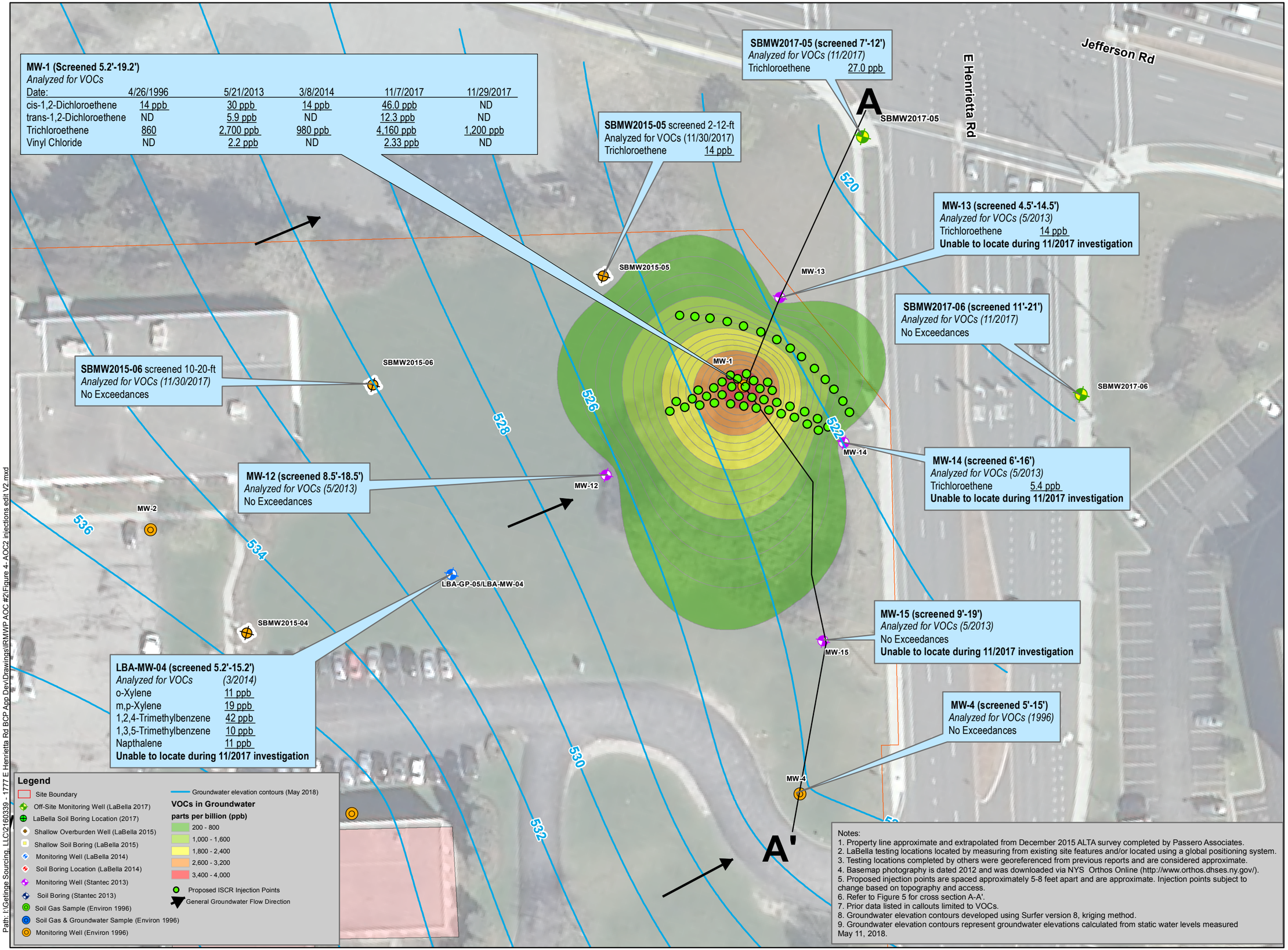
FIGURE 3



Path: I:\Getinge Sourcing, LLC\2160339 - 1777 E Henrietta Rd BCP App Dev\Drawings\IRMWP AOC #2\Figure 4- AOC2 injections edit V2.mxd

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INTERIM REMEDIAL MEASURES WORK PLAN
RAOC#2
STORMWATER POND

1777 EAST HENRIETTA ROAD
HENRIETTA, NY 14623
NYSDEC BCP #C828192

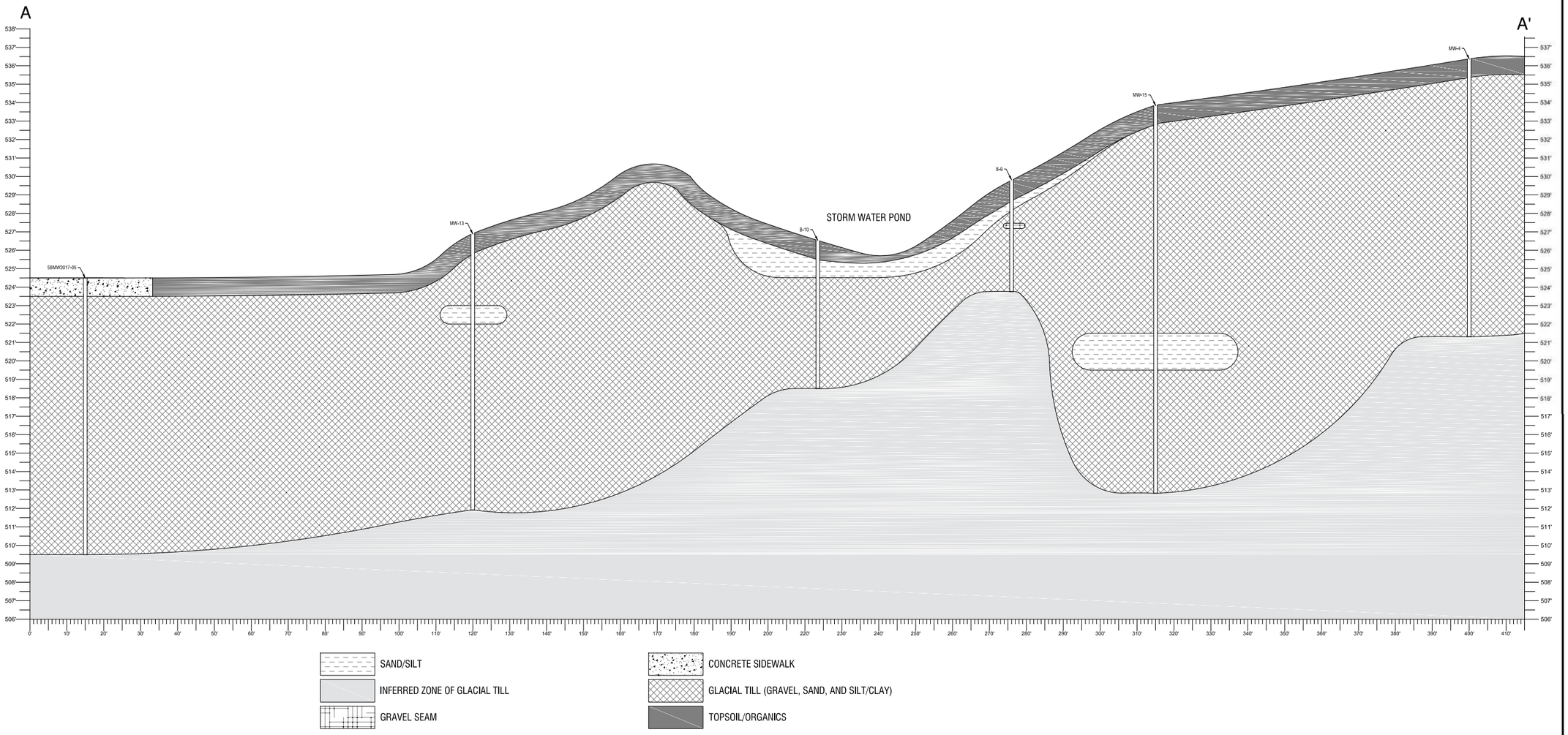
RAOC #2
Interim Remedial Measure-
In-SItu Chemical Reduction

N
W E
S

0 40
1 inch = 50 feet
Intended to print as 11 x 17

2160339

FIGURE 4



NO.	REVISION	BY	DATE

LaBella
Powered by partnership

PROJECT/CLIENT
INTERIM REMEDIAL MEASURES
WORK PLAN RAOC #2
STORMWATER POND
GETINGE SOURCING, LLC

DRAWING TITLE
CONCEPTUAL SITE MODEL
CROSS SECTION A-A'

DESIGNED BY: AE
DRAWN BY: BRP
REVIEWED BY: AE
ISSUED FOR: FINAL
DATE: FEBRUARY, 2018

PROJECT/DRAWING NUMBER
2160339

FIGURE 5

APPENDIX 1

GeoForm™ Extended Release Information

SAFETY DATA SHEET
GeoForm™ Extended Release

SDS # : GEOS
Revision date: 2018-04-18
Format: NA
Version 1

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier

Product Name GeoForm™ Extended Release

Recommended use of the chemical and restrictions on use

Recommended Use: Remediation of contaminated soil and groundwater

Restrictions on Use Use as recommended by the label.

Manufacturer/Supplier

PeroxyChem LLC
2005 Market Street
Suite 3200
Philadelphia, PA 19103
267/422-2400 (General Information)
sdsinfo@peroxychem.com (E-Mail General Information)

Emergency telephone numbers

For leak, fire, spill or accident emergencies, call:
1 800 / 424 9300 (CHEMTREC - U.S.A.)
1 703 / 527 3887 (CHEMTREC - Collect - All Other Countries)
1 303/ 389-1409 (Medical - U.S. - Call Collect)

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the 2015 Workplace Hazardous Materials Information System (WHMIS)

Combustible dust

GHS Label elements, including precautionary statements

EMERGENCY OVERVIEW

Warning

Hazard Statements
May form combustible dust concentrations in air

Precautionary Statements - Prevention

Keep away from all ignition sources including heat,sparks and flame.
Keep container closed and grounded.
Prevent dust accumulations to minimize explosion hazard.

Hazards not otherwise classified (HNOC)
No hazards not otherwise classified were identified.

Other Information
CONTAINMENT HAZARD: Any vessel that contains wet product must be vented due to potential pressure build up from gases.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	CAS-No	Weight %
iron salt	Proprietary	15 - 20
Iron	7439-89-6	40 - 50
Trade secret	Proprietary	< 3
Organic amendment	Proprietary	20 - 30%

4. FIRST AID MEASURES

Eye Contact — Rinse thoroughly with plenty of water, also under the eyelids. If irritation persists, call a physician.

Skin Contact — Wash off with warm water and soap. In the case of skin irritation or allergic reactions see a physician.

Inhalation — Remove person to fresh air. If breathing is difficult or if discomfort occurs and persists, obtain medical attention.

Ingestion — Clean mouth with water and afterwards drink plenty of water. Get medical attention if symptoms occur.

Most important symptoms and effects, both acute and delayed — Inhalation of dust in high concentration may cause irritation of respiratory system.

Indication of immediate medical attention and special treatment needed, if necessary — Treat symptomatically

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media Carbon dioxide (CO_2). Dry chemical. Water spray. Foam.

Specific Hazards Arising from the Chemical Fine dust dispersed in air, in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

Flammable properties Not combustible

Hazardous Combustion Products Oxides of sulfur. Carbon monoxide.

Explosion data
Sensitivity to Mechanical Impact Not sensitive.
Sensitivity to Static Discharge Fine dust dispersed in air, in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

Protective equipment and precautions for firefighters As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions Avoid dust formation. Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Avoid contact with eyes. Use personal protective equipment. For personal protection see Section 8.

Other For further clean-up instructions, call PeroxyChem Emergency Hotline number listed in Section 1 "Product and Company Identification" above.

Environmental Precautions Local authorities should be advised if significant spillages cannot be contained.

Methods for Containment Maintain good housekeeping practices to avoid accumulation of settled dust, especially on overhead surfaces. Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry.

Methods for cleaning up Pick up and transfer to properly labeled containers. Take precautionary measures against static discharges. Avoid wetting dust and clean up as a dry powder with appropriate PPE for handling dry dusty materials; store in containers that keep material dry, segregated but allow to vent. The waste may be recovered and recycled.

7. HANDLING AND STORAGE

Handling Avoid contact with eyes. Avoid breathing dust. Wear personal protective equipment. Refer to Section 8. Minimize dust generation and accumulation. Keep away from open flames, hot surfaces and sources of ignition. Dry powdered material can build static electricity when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmosphere.

Storage Store in a well-ventilated place. Keep cool. Keep away from open flames, hot surfaces and sources of ignition. Any vessel that contains wet product must be vented due to potential pressure build up from gases.

Incompatible products Oxidizing agents Strong acids Strong bases Oxidizing agents. Strong acids. Strong bases.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines .

Chemical name	ACGIH TLV	OSHA PEL	NIOSH	Mexico
iron salt	TWA: 1 mg/m^3	-	-	-

salt	TWA: 10 mg/m³	-	-	-

Chemical name	British Columbia	Quebec	Ontario TWAEV	Alberta
iron salt	TWA: 1 mg/m³	TWA: 1.0 mg/m³	TWA: 1 mg/m³	TWA: 1 mg/m³
salt	-	-	TWA: 10 mg/m³ inhalable	-

Appropriate engineering controls

Engineering measures Provide appropriate exhaust ventilation at places where dust is formed. Use grounding and bonding of dry handling equipment for pneumatics or free falling powder during processing in enclosed systems. Use only appropriately classified electrical equipment and powered industrial trucks. and.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Whenever airborn dust concentrations are high, appropriate protective eyewear, such as mono-goggles, should be worn to prevent eye contact.

Skin and Body Protection Wear suitable protective clothing. Protective shoes or boots.

Hand Protection Protective gloves

Respiratory Protection Whenever dust in the worker's breathing zone cannot be controlled with ventilation or other engineering means, workers should wear respirators or dust masks approved by NIOSH/MSHA, EU CEN or comparable organization to protect against airborne dust.

Hygiene measures Clean water should be available for washing in case of eye or skin contamination. Remove and wash contaminated clothing before re-use. Do not eat, drink or smoke when using this product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Brown Powder
Physical State	Solid
Color	Brown
Odor	No information available
Odor threshold	No information available
pH	6 - 8
Melting point/freezing point	No information available
Boiling Point/Range	No information available
Flash point	No information available
Evaporation Rate	No information available
Flammability (solid, gas)	Combustible material
Flammability Limit in Air	
Upper flammability limit:	No information available
Lower flammability limit:	No information available
Vapor pressure	No information available
Vapor density	No information available
Density	No information available
Specific gravity	No information available
Water solubility	Insoluble in water
Solubility in other solvents	No information available
Partition coefficient	No information available
Autoignition temperature	No information available
Decomposition temperature	No information available
Viscosity, kinematic	Not applicable (Solid)

Viscosity, dynamic	Not applicable
Explosive properties	Low level dust explosion hazard
Oxidizing properties	Not applicable
Molecular weight	No information available
Bulk density	0.92 g/cm³ (loose) / 1.13 g/cm³ (tapped)

10. STABILITY AND REACTIVITY

Reactivity None under normal use conditions.

Chemical Stability Stable under recommended storage conditions.

Possibility of Hazardous Reactions Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Product may form by-products during processing which can be toxic or potentially explosive such as hydrogen, hydrogen sulfide and carbon monoxide.

Hazardous polymerization Hazardous polymerization does not occur.

Conditions to avoid Heat, flames and sparks.

Incompatible materials Oxidizing agents. Strong acids. Strong bases.

Hazardous Decomposition Products Thermal decomposition can lead to release of irritating and toxic gases and vapors: Hydrogen sulfide Hydrogen gas, Sulfur oxides, Carbon oxides (COx),

11. TOXICOLOGICAL INFORMATION

Product Information

Product does not present an acute toxicity hazard based on known information.

Serious eye damage/eye irritation Product dust may cause mechanical eye irritation.
Skin corrosion/irritation Minimally irritating.

Chemical name	LD50 Oral	LD50 Dermal	LC50 Inhalation	NOAEL Oral Value
Iron (7439-89-6)	98600 mg/kg (Rat)			
Trade secret ()	= 5680 mg/kg (Rat)		> 22 mg/L (Rat) 1 h	
Trade secret ()	= 8500 mg/kg (Rat)			
Viscosity modifier ()	6770 mg/kg (Rat)			

Information on toxicological effects

Symptoms No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical name	ACGIH	IARC	NTP	OSHA
Trade secret		Group 3		

IARC (International Agency for Research on Cancer) *Group 3 - Not classifiable as to its carcinogenicity to humans*

Mutagenicity No known mutagenic or teratogenic effects.

Reproductive toxicity This product does not contain any known or suspected reproductive hazards.

STOT - single exposure No information available.
STOT - repeated exposure No information available.

Aspiration hazard No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Chemical name	Toxicity to algae	Toxicity to fish	Toxicity to Microorganisms	Toxicity to daphnia and other aquatic invertebrates
Iron		96 h LC50: = 13.6 mg/L (Morone saxatilis) static		
Trade secret		96 h LC50: 220 - 460 mg/L (Leuciscus idus) static		24 h LC50: = 330 mg/L (Psammechinus miliaris)

Persistence and degradability The organic components are biodegradable and can be expected to contribute to BOD. Biodegradability does not pertain to inorganic substances.

Bioaccumulation Bioaccumulation is unlikely.

Mobility No information available.

Other Adverse Effects None known.

13. DISPOSAL CONSIDERATIONS

Waste disposal methods This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional, or local regulations for additional requirements. Recovery/recycling recommended.

Contaminated Packaging Dispose of in accordance with local regulations.

14. TRANSPORT INFORMATION

DOT NOT REGULATED

TDG NOT REGULATED

15. REGULATORY INFORMATION

U.S. Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories
This product is not subject to reporting under the Emergency Planning and Community Right-to-Know rule.

Clean Water Act
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA/EPCRA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

US State Regulations

U.S. State Right-to-Know Regulations
This product contains the following substances regulated under state Right-to-Know laws:

Chemical name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
salt					X
Trade secret			X		

California Proposition 65
This product does not contain any Proposition 65 chemicals

CANADA

Environmental Emergencies
This product contains no substances listed under Canada's Environmental Emergency regulations.

Canadian National Pollutant Release Inventory
This product contains no substances reportable under Canada's National Pollutant Release Inventory regulations.

International Inventories

Component	TSCA (United States)	DSL (Canada)	EINECS/ELINCS (Europe)	ENCS (Japan)	China (IECSC)	KECL (Korea)	PICCS (Philippines)	AICS (Australia)	NZIoC (New Zealand)
iron salt (15 - 20)								X	X
Iron 7439-89-6 (40 - 50)	X	X	X		X	X	X	X	X
Trade secret (< 3)	X	X	X	X	X	X	X	X	X
Organic amendment (NF)		X	X		X		X	X	X
salt (NF)					X		X	X	X
Trade secret	X	X	X	X	X	X	X	X	X

(NF)									

Mexico

Mexico - Grade Minimum risk, Grade 0

16. OTHER INFORMATION

NFPA	**Health Hazards** 1	**Flammability** 1	**Stability** 0	**Special Hazards** -
HMIS	**Health Hazards** 1	**Flammability** 1	**Physical hazard** 0	**Special precautions** -

Revision date: 2018-04-18
Revision note No information available

Disclaimer

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Prepared By:

PeroxyChem

End of Safety Data Sheet

GeoForm™ BIOGEOCHEMICAL REAGENT EXTENDED RELEASE

PeroxyChem

Demand Calculations

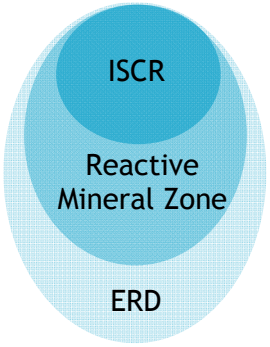
16-Aug-2018

Customer:	**LaBella**	**Prepared by:**	
Contact:	**Gillen**	**John Valkenburg, PE**	
Site Location:	**Henrietta, NY**	**1-517-669-5400**	
Proposal Number:	**CRM 21122**	**John.Valkenburg@peroxychem.com**	

PRODUCT OVERVIEW

GeoForm™ is a biogeochemical reagent specifically designed to generate reactive iron sulfide minerals in situ. GeoForm™ includes the key building blocks needed, including a source of sulfate, a source of ferrous iron and electron donor to establish sulfate reducing conditions.

GeoForm™ is promoting multiple synergistic pathways for reduction of chlorinated compounds including ISCR, ERD and reactive mineral formation. It will also serve to immobilize many heavy metals via reductive precipitation and adsorption. The GeoForm™ Extended Release formulation provides an extended reactive life of 5-10 years or more.



SITE INFORMATION / ASSUMPTIONS

	Value	Unit	Comment
Treatment Area Dimensions:			
Width of targeted zone (perpendicular to gw flow)	385	ft	customer supplied
Length of targeted zone (parallel to gw flow)	8	ft	customer supplied
Depth to top of treatment zone	6	ft bgs	customer supplied
Treatment zone thickness	14	ft	customer supplied
Treatment volume	43,120	ft3	calculated value
Total Porosity	35	%	default value
Groundwater volume	15,092	ft3	calculated value
Soil bulk density	110	lbs/ft3	default value
Soil mass	2,372	ton	calculated value
Transport characteristics:			
Treatment time / design life for one application	2	years	default value
Linear groundwater flow velocity	5	ft/year	calculated value
Distance of inflowing gw over design life	10	ft	calculated value
Effective porosity for groundwater flow	10	%	default value
Volume of water passing region over design life	5423	ft3	calculated value
Soil type	low permeability		customer supplied
Fraction organic carbon in soil, foc	0.010		estimated value

CONTAMINANTS OF CONCERN (COCs)

Constituent	GW (mg/L)	Soil* (mg/kg)	Total Mass** (lb)
TCE	20	4	44.6

*Unless provided, sorbed concentrations of CVOCs were roughly estimated based on expected groundwater concentrations, foc and Koc values. For a more refined estimate, it is recommended that actual values be verified via direct sampling of the targeted treatment interval. Demand from metals in soil was not included unless provided.

**The total COC mass was estimated based on concentrations in soil and groundwater within the targeted area plus expected contributions from inflowing groundwater over the projected design life.

GEOCHEMICAL DATA

Competing Electron Acceptors	GW (mg/L)	
Dissolved oxygen	2	customer provided
Nitrate (as N)	0	customer provided
Manganese (dissolved)*	10	default value
Iron (III)*	10	default value
Sulfate	0	customer provided

*An estimated projection of dissolved concentrations of Mn and Fe following ERD/ISCR were used to estimate H demand from the reduction of oxidized Fe and Mn minerals (typically only a portion of actual soil concentrations will be reduced).

ORP (mV)	60	
pH	6.8	

STOICHIOMETRIC DEMAND CALCULATIONS

The minimum GeoForm requirements were calculated based on Stoichiometric hydrogen and sulfate requirements from COCs and competing electron acceptors in soil and groundwater.

	GW (mg/L)	Soil (mg/kg)
Reagent Demand from COCs	23.6	4.7
Demand from Competing Electron Acceptors	20.7	0.0
Total Reagent Demand	44.3	4.7
Reagent Demand from Soil within Targeted Area	22.4	lb
Reagent Demand from GW within Targeted Area	41.7	lb
Reagent Demand from Influx over Design Life	15.0	lb
Total Estimated Reagent Demand	79.1	lb

GEOFORM EXTENDED RELEASE RECOMMENDED APPLICATION RATE

The Stoichiometric demand for the targeted area was calculated using available data presented above, noting that the Stoichiometric demand represents minimum requirements and require a complete geochemical data set to be calculated accurately. Therefore, the resulting EHC Metals dosing required to meet the estimated Stoichiometric hydrogen and sulfate demand was compared to our minimum guidelines for the selected type of application, selecting the higher number.

Application type: Injection PRB

	Value	Unit
Application rate to meet H2 and SO4 demand	<0.01	% by soil mass
Minimum recommended application rate for PRB*	0.5	% by soil mass
Recommended GeoForm ER application rate	0.50	% by soil mass
Mass of GeoForm ER required	23,716	lbs
Mass of GeoForm reagent per bag	50	lbs
Number of bags required	475	bags
Mass GeoForm ER (rounded up based on bag size)	23,750	lbs

*Our general recommended minimum guideline for the proposed application exceeds the dose rate required based on hydrogen demand calculations and was therefore used for the purpose of this dosing calculation.

OPTIONAL DHC INOCULANT

Although not typically required for ISCR, DHC inoculants have shown to improve removal kinetics, in particular for potential daughter products such as cis-DCE and VC. The DHC will be added after GeoForm application, once favorable redox conditions (ORP < -75 mV, DO <0.2 mg/L, pH between 6 and 8.5) have been attained. The DHC inoculant will contain at least 5 x10E10 cfu/L of live bacteria including high numbers of dehalococcoides species with known abilities to biodegrade DCE. The target density of DHC cells in the treated aquifer is 1x10E6 cfu/L.

	Value	Unit
Dechlorinating consortium concentration in inoculant	1.00E+06	DHC/L
Design final concentration after dilution in aquifer	9.00E+00	L
Volume of Inoculant Required	9	L

*Note: The minimum shipping volume of 15 L (one small keg) exceeds the calculated requirement, and was therefore used in the quotation below.

INSTALLATION

GeoForm Extended Release is supplied as a dry powder which can be mixed with soil or slurried in water. Installation techniques vary widely depending on the application. For example, the powder can be directly mixed into the soil using deep soil mixing equipment or placed into an open excavation where prior soil removal has been conducted. A slurry can be made and the mixture can be injected into the subsurface using techniques such as injection through direct push rods or hydraulic fracturing. Injection through fixed wells is not recommended given that the product does not dissolve in water. If application via wells or injection networks were to be the preferred installation method at your site, we instead recommend an evaluation of our soluble GeoForm reagent. **Review and follow guidance in the appropriate Safety Data Sheet (SDS) with all workers prior to use.**

GeoForm Slurry Preparation:

The GeoForm ER slurry can been prepared in a variety of ways, including using paddle mixers. However, particularly for larger projects, PeroxyChem recommends having a mechanical mixing system available on site. In general we recommend continuous mixing in smaller batches (<100 USG / 400 L) to avoid settling of solids at the bottom. For example Chem Grout's high pressure mixing and injection units are ideal for continuous preparation and injection of GeoForm ER.

The amount of water to prepare the GeoForm slurry could be varied depending on the desired injection volume and slurry properties. When applied via direct injection, normally a concentration of between 25 and 35% is targeted. The below table shows the amount of water needed per 50-lb / 25-kg bag depending on the targeted concentration and the resulting total injection volumes and percent pore fill (injection volume to total pore volume). Note that a thinner slurry will promote permeation into more permeable formations, whereas a more concentrated/more viscous slurry will promote fracturing and horizontal propagation into more fine-grained formations.

Target concentration (% solids):	**25%**	**30%**	**35%**
Mass GeoForm per bag (lbs)	50	50	50
Volume water per bag (USG)	18.0	14.0	11.1
Volume slurry per bag (lbs)	22.0	18.0	15.2
Total mass GeoForm (lbs)	23,750	23,750	23,750
Total volume water (USG)	8,539	6,641	5,286
Total injection volume (USG)	10,427	8,546	7,206
Injection volume to total pore volume	9.2%	7.6%	6.4%

INSTALLATION (continued)

Injection recommendations (can be altered):

The GeoForm slurry can be injected into the ground in a variety of ways including direct injection and hydraulic/pneumatic fracturing. The injection spacing will be determined based on the radius of influence and soil acceptance for the given application method, lithology and depth. Assuming installation via direct push injections and a radius of influence (ROI) of 5 to 8 ft (1.7 to 2.5 m), an injection spacing of 10 to 15 ft (3 to 5 m) is normally applied. For injection PRB applications, a closer spacing is normally recommended to create some overlap or the PRB may be made up of multiple off-set injection lines to improve contact.

Unless specified by the consultant, the below recommendations was based on our experience from other similar lithologies and considers both the estimated ROI and the estimated soil acceptance (maximum injection volume per vertical foot for lithology and depth) using direct injection. However, please note that actual ROI and soil acceptance can vary widely and are also highly influenced by the injection method employed (slurry viscosity, injection pressures and flow rates). **Therefore, PLEASE NOTE that the construction estimates presented below can be readily modified in the field as required (for example, the density of the slurry can be changed to modify the total injection volume or the injections spacing could be altered based in installation technology).**

	Value	Unit	Comment
Total GeoForm mass	23,750	lbs	calculated value
Concentration of GeoForm slurry to inject	30%	by weight	can be altered
Total volume of water required	6,640	U.S. gallons	calculated value
Approximate volume of slurry to inject	8,668	U.S. gallons	calculated value
Number of lines for PRB	1	lines	
Injection spacing within lines	8	ft	customer provided
Number of injection points	49	locations	calculated value
Mass Reagent per injection point	485	lbs	calculated value
Mass Reagent per vertical foot	35	lbs	calculated value
Injection volume to total pore space volume	7.7%	by volume	calculated value

APPENDIX 2

Geoprobe Systems® Equipment Information

Geoprobe Systems®
ENVIRONMENTAL • GEOTECHNICAL • GEOTHERMAL • EXPLORATION

E-Specs

Geoprobe® GP350 Grout System

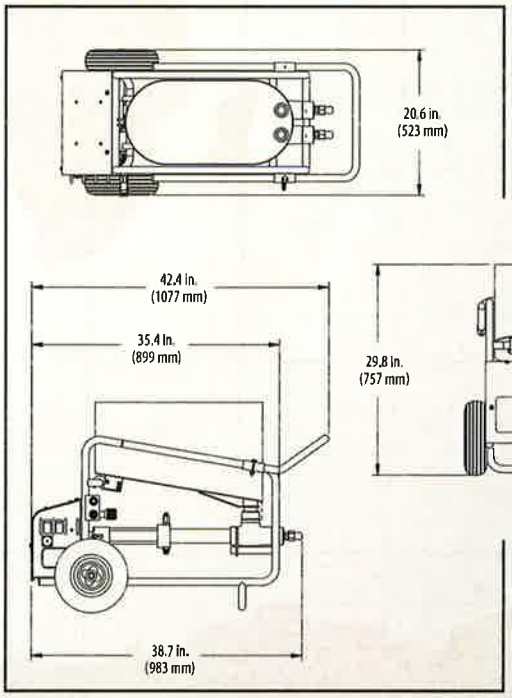
The GP350 Grout/Injection Machine offers the same pumping and injection features as the GP300 grout machine in a smaller, very mobile package. The machine was designed for the injection of remediation materials or for bottom-up grouting through small diameter probe holes. The GP350 is also capable of delivering standard ASTM grout mixes, and, based on the power source, provides operating pressures up to 1,300 psi with a maximum flow rate of 5 gpm. The machine operates using auxiliary hydraulics so is adaptable for use with multiple Geoprobe® machines.

- Small, light-weight package
- Designed for Injection of Remediation Materials
- Grout Probe Holes from the Bottom Up
- High Pressure enables Grouting by Small Tremie Tubes
- Easy to Disassemble for Cleanup
- Dual Reciprocating-type Piston Pumps
- Few Replaceable (wear) Parts
- Operates on Auxiliary Hydraulics
- Use with Multiple Geoprobe® Units
- Speed Control on Injection Machine
- Optional Viton seals for pumping harsh Remediation Materials

GP350 Specifications

Weight (without grout)	145 lb	66 kg
Height	29.8 in	757 mm
Width	20.6 in	523 mm
Length	38.7 in	983 mm
Hopper Capacity	12.75 gal	48.3 L
Hopper Capacity (3 in. freeboard)	9.5 gal	36 L
Pump Displacement	13 cu. in.	213 mL
Pump Pressure Rating*	1,300 psi	89 bar
Pump Flow Rate*	0-5 gpm	0-18.9 Lp

*Dependant on Hydraulic Power Source.



Weighing less than 150 lb., the GP350 can be loaded by two people and can be easily maneuvered around a project site by one field person.

1835 Wall Street • Salina, KS 67401 | 1-800-436-7762 | geoprobe.com

Geoprobe Systems®
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Product Sheet

Pressure Activated Injection Probe

The patented Pressure-Activated Injection Probe allows for either top-down or bottom-up injection methods. Its four (4) port, 360 degree injection design, also ensures accurate placement of remediation materials.

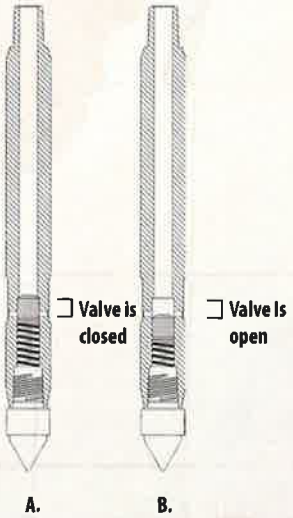
Pressure-Activated Injection Probe

manufactured under U.S. Patent 6604579

- ***Patent Protected Check Valve Injection System***
  - -Keeps soil out of the ID of the tool string during advancement and retraction
  - -Helps prevent back-flow of injection materials through the ID of the tool string
  - -Valve opens at approximately 100 psi for injection
- ***Reliable Cost-Effective Injection***
  - -No Expendable points to leave in the ground
  - -Easy cleaning and simple replacement parts
  - -Works with many injection materials
  - -Can be uses with multiple pump configurations (Geoprobe® GP300, GP350, GP800, & GS2250)

Geoprobe® Injection Probe in action. Four-Port, 360 degree horizontal injection for top-down or bottom-up injection

Pressure-Activated Injection Probe: How it Works



A. Internal valve is closed when positive pressure is not present. This prevents soil from entering tool string during advancement. It also prevents injection material from flowing back through the injection tool and up the tool string ID.

B. Internal valve is open when positive pressure is present. This allows material to flow out into the formation.

Injection Probe Assemblies & Parts:

1.25 in. Injection Probe

-(18735) Pressure Activated Inj Probe 1.25 In.

1.25 in. Replacement Parts

-(AT1245) 1.25 in. Solid Drive Point
-(18892) Injection Probe Replacement Spring
-(18434) Injection Probe Check Valve Kit
-(AT1250R) O-Ring for 1.25 in. point

1.5 in. Injection Probe

-(21479) Pressure Activated Injection Probe

1.5 in. Replacement Parts

-(21519) 1.5 in. Solid Drive Point
-(18892) Injection Probe Replacement Spring
-(18434) Injection Probe Check Valve Kit
-(15389) O-Ring for 1.5 in. point

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APPENDIX 3

Health and Safety Plan

Site Health and Safety Plan

Location:

1777 East Henrietta Road
Henrietta, New York

Prepared For:

Getinge USA Sales, LLC
1777 East Henrietta Road
Henrietta, New York 14623

LaBella Project No. 2160339

April 2019

Table of Contents

SITE HEALTH AND SAFETY PLAN

Project Title:	1777 East Henrietta Road - Brownfield Cleanup Program
Project Number:	2160339
Project Location (Site):	1777 East Henrietta Road, Henrietta, New York 14623
Project Manager:	Jennifer Gillen, LaBella Associates, DPC
Site Safety Supervisor:	To Be Determined
Site Contact:	Mr. Tom Marlowe, Getinge USA Sales LLC
Safety Director:	David Engert, LaBella Associates, DPC
Proposed Date(s) of Field Activities:	To Be Determined
Site Conditions:	34.90 acres; Current Site features include a 259,032 square feet primarily metal clad masonry building and a 27,700 square feet. The remaining area of the 34.90 acre property is covered by approximately 230,000 square feet of asphalt parking lots and roadways as well as undeveloped wooded and grassy lands situated primarily on the western portion of the Site.
Site Environmental Information Provided By:	▪ *Phase I Environmental Site Assessment (ESA),* completed by ENVIRON Corporation, (ENVIRON) April 1996; ▪ *Limited Phase II ESA,* completed by ENVIRON, April 1996*;* ▪ *Phase III ESA,* completed by ENVIRON, May 1996; ▪ *Laboratory Analysis Report,* completed by Life Science Laboratories, June 2005 ▪ *Analytical Report,* completed by Paradigm Environmental Services, January 2013 ▪ *Detention Pond Investigation,* completed by Stantec, June 2013 ▪ *Phase I ESA,* completed by LaBella Associates, D.P.C. (“LaBella”), February 2014; ▪ *Phase II ESA,* completed by LaBella, April 2014; and, ▪ *Supplemental Phase II ESA Interim Data Package,* completed by LaBella, July 2014 ▪ *Supplemental Site Investigation,* completed by LaBella, December 2015 ▪ *Draft Remedial Investigation*, completed by LaBella, May 2018
Air Monitoring Provided By:	LaBella Associates, DPC
Site Control Provided By:	LaBella Associates, DPC

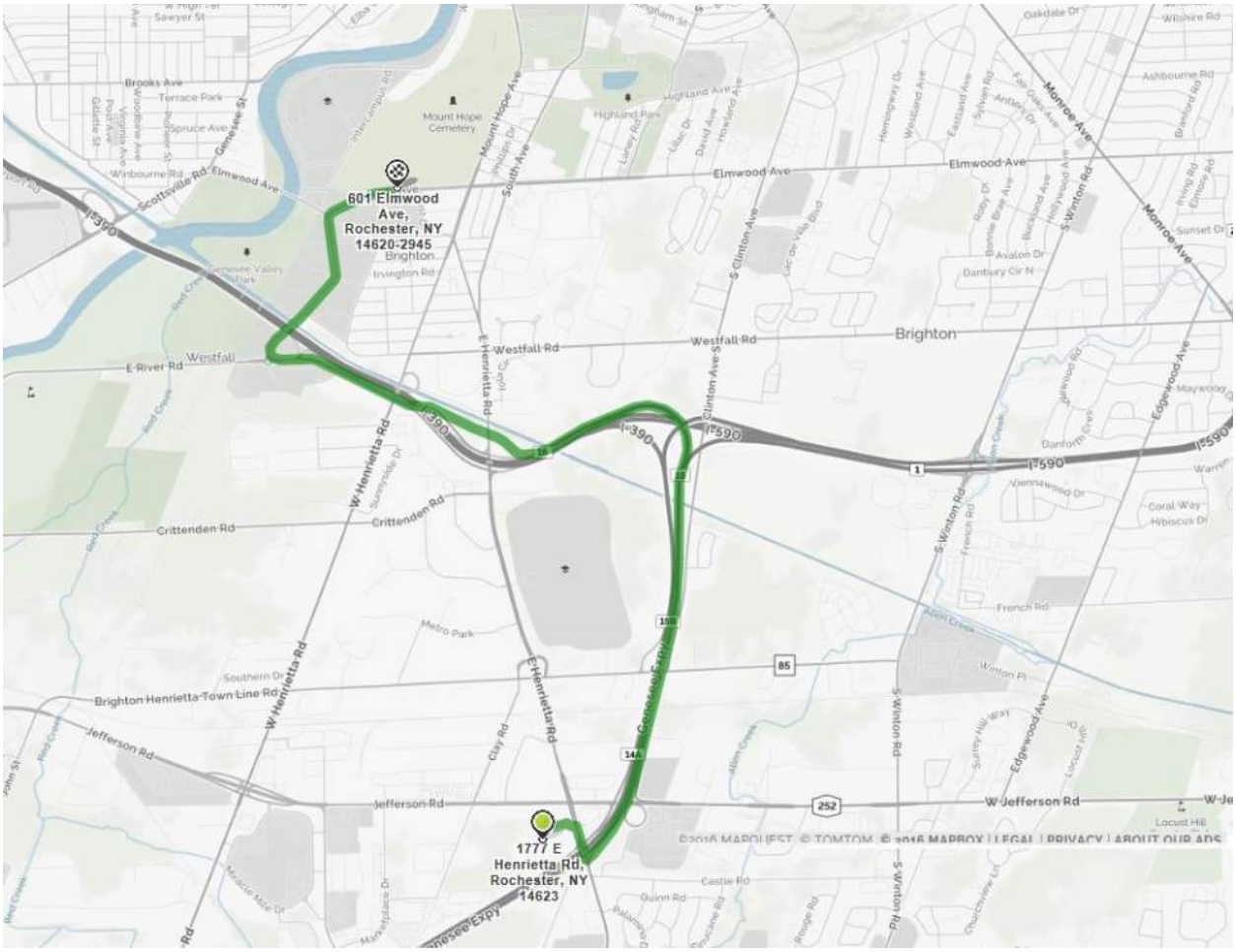
EMERGENCY CONTACTS

	Name	Phone Number
Ambulance:	As Per Emergency Service	911
Hospital Emergency:	Strong Memorial Hospital	(585) 275-2100
Poison Control Center:	Finger Lakes Poison Control	716-275-5151
Police (local, state):	Monroe County Sheriff	911
Fire Department:	Henrietta Fire District	911
Site Contact:	Mr. Tom Marlowe	585-272-5399
Agency Contact:	NYSDEC – Todd Caffoe NYSDOH – Sara Bogardus	585-226-5350 518-402-7860
Project Manager:	Jennifer Gillen	585-295-6648
Site Safety Supervisor:	To Be Determined	To Be Determined
Safety Director	David Engert	585-295-6630

MAP AND DIRECTIONS TO THE MEDICAL FACILITY - STRONG MEMORIAL HOSPITAL

Total Est. Time: 8 minutes **Total Est. Distance:** 5.1 miles

1:	Turn RIGHT onto EAST HENRIETTA ROAD/NY-15A	0.15 miles
2:	Merge onto I-390 N via ramp on the left	2.57 miles
3:	Take the NY-15A/E Henrietta Rd Exit 16	0.69 miles
4:	Stay STRAIGHT to go onto E River Road	0.52 miles
5:	Turn RIGHT onto Kendrick Road	0.74 miles
6:	Turn RIGHT onto Elmwood Avenue	0.33 miles
5:	End at **601 Elmwood Avenue** Rochester, NY 14642	



1.0 Introduction

The purpose of this Health and Safety Plan (HASP) it to provide guidelines for responding to potential health and safety issues that may be encountered during chemical injections at 1777 East Henrietta Road in the Town of Henrietta, Monroe County, New York (the Site). This HASP only reflects the policies of LaBella Associates D.P.C. The requirements of this HASP are applicable to LaBella personnel at the work site. It is the responsibility of each sub-consultant and sub-contractor to follow their own company HASP. This document's project specifications should be consulted for guidance in preventing and quickly abating any threat to human safety or the environment. The provisions of the HASP were developed in general accordance with 29 CFR 1910 and 29 CFR 1926 and do not replace or supersede any regulatory requirements of the USEPA, NYSDEC, OSHA or and other regulatory body.

2.0 Responsibilities

This HASP presents guidelines to minimize the risk of injury to project personnel, and to provide rapid response in the event of injury. The HASP is applicable only to activities of approved LaBella personnel. It is the responsibility of LaBella employees to follow the requirements of this HASP, or HASPs specific to individual activities, and all applicable company safety procedures.

3.0 Activities Covered

The activities covered under this HASP are limited to the following:

- Implementation of chemical injections including but not limited to:
  - Mixing of treatment chemical (GeoForm™) with water
  - Injection of treatment chemical slurry
  - Collection of samples
- Performance Monitoring

4.0 Work Area Access and Site Control

Site control during the project will be the responsibility of LaBella. LaBella will have primary responsibility for maintaining a safe work area for all activities conducted by LaBella personnel. Such work area controls will consist of:

- Temporary fencing.
- Air monitoring.
- Use of Personal Protective Equipment (PPE).

5.0 Potential Health and Safety Hazards

This section lists some potential health and safety hazards that project personnel may encounter at the project site and some actions to be implemented by approved personnel to control and reduce the associated risk to health and safety. This is not intended to be a complete listing of any and all potential health and safety hazards. New or different hazards may be encountered as site environmental and site work conditions change. The suggested actions to be taken under this plan are not to be substituted for good judgment on the part of project personnel. At all times, the Site Safety Officer has responsibility for site safety and his instructions must be followed.

5.1 Hazards Due to Heavy Machinery and Equipment

Potential Hazard:
Heavy machinery including trucks, drilling rigs, trailers, etc. will be in operation at the site. The presence of such equipment presents the danger of being struck or crushed. Use caution when working near heavy machinery.

Protective Action:
Make sure that operators are aware of your activities, and heed operator's instructions and warnings. Wear bright colored clothing and walk safe distances from heavy equipment. A hard hat, safety glasses and steel toe shoes are required.

5.2 Excavation Hazards

Potential Hazard:
Excavations and trenches can collapse, causing injury or death. Edges of excavations can be unstable and collapse. Toxic and asphyxiant gases can accumulate in confined spaces and trenches. Excavations that require working within the excavation will require air monitoring in the breathing zone (refer to Section 9.0).

Excavations left open create a fall hazard which can cause injury or death.

Protective Action:
Personnel must receive approval from the Project Manager to enter an excavation for any reason. Subsequently, approved personnel are to receive authorization for entry from the Site Safety Officer. Approved personnel are not to enter excavations over 4 feet in depth unless excavations are adequately sloped. Additional personal protective equipment may be required based on the air monitoring.

Personnel should exercise caution near all excavations at the site as it is expected that excavation sidewalls will be unstable. Do not proceed closer than 3 feet to an unsupported or non-sloped excavation side wall.

Fencing and/or barriers accompanied by "no trespassing" signs should be placed around all excavations when left open for any period of time when work is not being conducted.

5.3 Cuts, Punctures and Other Injuries

Potential Hazard:
In any excavation or construction work site there is the potential for the presence of sharp or jagged edges on rock, metal materials, and other sharp objects. Serious cuts and punctures can result in loss of blood and infection.

Protective Action:
The Project Manager is responsible for making First Aid supplies available at the work site to treat minor injuries. The Site Safety Officer is responsible for arranging the transportation of authorized on-site personnel to medical facilities when First Aid treatment in not sufficient. Do not move seriously injured workers. All injuries requiring treatment are to be reported to the Project Manager. Serious injuries are to be reported immediately to the Site Safety Officer.

5.4 Injury Due to Exposure of Chemical Hazards

Potential Hazards:
Contaminants identified in testing locations at the Site include various volatile organic compounds (VOCs), primarily chlorinated VOCs. Volatile organic vapors, chlorinated solvents or other chemicals may be encountered during subsurface activities at the project work site. Inhalation of high concentrations of volatile organic vapors can cause headache, stupor, drowsiness, confusion and other health effects. Skin contact can cause irritation, chemical burn, or dermatitis. GeoForm™ Extended Release powder can develop dust which is a respiratory concern. The Safety Data Sheet is included as Appendix 1 of the IRM Work Plan.

Protective Action:
The presence of organic vapors may be detected by their odor and by monitoring instrumentation. Approved employees will not work in environments where hazardous concentrations of organic vapors are present. Air monitoring will be performed in accordance with the NYSDOH Generic CAMP. Personnel are to leave the work area whenever PID measurements of ambient air exceed 25 ppm consistently for a 5 minute period. In the event that sustained total volatile organic compound (VOC) readings of 25 ppm is encountered personnel should upgrade personal protective equipment to Level C (refer to Section 8.0) and an Exclusion Zone should be established around the work area to limit and monitor access to this area (refer to Section 6.0). Personnel handling and mixing GeoForm™ should attempt to prevent generating dust. A dust mask may be worn when mixing or transferring GeoForm™ between containers to prevent inhalation. GeoForm™ spilled to the ground in excess should be picked up using a shovel and placed in a container.

5.5 Treatment Chemical Dust Hazards

Potential Hazards:
The treatment chemical to be utilized for this IRM is GeoForm™ Extended Release. This chemical will be in powder form prior to mixing as directed in the IRM Work Plan. As such, significant accumulations of this powder in the air can represent a respiratory concern as well as an explosion hazard. The Safety Data Sheet is included as Appendix 1 of the IRM Work Plan.

Protective Action:
Personnel handling and mixing GeoForm™ should attempt to prevent generating dust. At minimum, a dust mask will be worn when mixing or transferring GeoForm™ between containers to prevent inhalation. When present in powder/dust form, the material should also be kept away from all ignition sources including heat, sparks and flame. Containers of the chemical should be kept closed and grounded and dust accumulations should be prevented to minimize the explosion hazard. GeoForm™ spilled to the ground in excess should be picked up using a shovel and placed in a container.

5.6 Injuries Due to Extreme Hot or Cold Weather Conditions

Potential Hazards:
Extreme hot weather conditions can cause heat exhaustion, heat stress and heat stroke or extreme cold weather conditions can cause hypothermia.

Protective Action:
Precaution measures should be taken such as dress appropriately for the weather conditions

and drink plenty of fluid. If personnel should suffer from any of the above conditions, proper techniques should be taken to cool down or heat up the body and taken to the nearest hospital if needed.

5.7 Potential High Pressure Equipment Failure

Potential Hazards:
During injection work, high pressure pumps will be utilized with associated piping/ tubing. Failure of the equipment and/or materials (e.g., fittings) could result in a high pressure burst of the treatment chemical.

Protective Action:
Equipment will be checked for defects or wear and any materials/ equipment with suspect conditions will be replaced/ repaired. In addition, LaBella will be aware of the location of such equipment and will observe the work from a safe distance as much as possible. The use of proper PPE will also reduce potential issues should an incident occur.

6.0 Work Zones

In the event that conditions warrant establishing various work zones (i.e., based on hazards - Section 5.4), the following work zones should be established:

Exclusion Zone (EZ):
The EZ will be established in the immediate vicinity and adjacent downwind direction of site activities that elevate breathing zone VOC concentrations to unacceptable levels based on field screening. These site activities include contaminated soil excavation and soil sampling activities. If access to the site is required to accommodate non-project related personnel then an EZ will be established by constructing a barrier around the work area (yellow caution tape and/or construction fencing). The EZ barrier shall encompass the work area and any equipment staging/soil staging areas necessary to perform the associated work. The contractor(s) will be responsible for establishing the EZ and limiting access to approved personnel. LaBella will not enter the EZ unless deemed necessary to do so. Depending on the condition for establishing the EZ, access to the EZ may require adequate PPE (e.g., Level C).

Contaminant Reduction Zone (CRZ):
The CRZ will be the area where personnel entering the EZ will don proper PPE prior to entering the EZ and the area where PPE may be removed. The CRZ will also be the area where decontamination of equipment and personnel will be conducted as necessary.

7.0 Decontamination Procedures

Upon leaving the work area, approved personnel shall decontaminate footwear as needed. Under normal work conditions, detailed personal decontamination procedures will not be necessary. Work clothing may become contaminated in the event of an unexpected splash or spill or contact with a contaminated substance. Minor splashes on clothing and footwear can be rinsed with clean water. Heavily contaminated clothing should be removed if it cannot be rinsed with water. Personnel assigned to this project should be prepared with a change of clothing whenever on site.

8.0 Personal Protective Equipment

Generally, site conditions at this work site require level of protection of Level D or modified Level D. However, air monitoring will be conducted to determine if up-grading to Level C PPE is required (refer to Section 9.0). Descriptions of the typical safety equipment associated with Level D and Level C are provided below:

Level D:
Hard hat, safety glasses, rubber nitrile sampling gloves, steel toe construction grade boots, etc.

Level C:
Level D PPE and full or ½-face respirator and tyvek suit (if necessary). [*Note: Organic vapor cartridges are to be changed after each 8-hours of use or more frequently.*]

9.0 Air Monitoring

According to 29 CFR 1910.120(h), air monitoring shall be used to identify and quantify airborne levels of hazardous substances and health hazards in order to determine the appropriate level of employee protection required for personnel working onsite. Air monitoring will consist at a minimum of the procedure listed below. Air monitoring instruments will be calibrated and maintained in accordance with the manufacturer's specifications.

The Air Monitor will utilize a photoionization detector (PID) to screen the ambient air in the work areas (drilling, excavation, soil staging, and soil grading areas) for total Volatile Organic Compounds (VOCs) and a DustTrak tm Model 8520 aerosol monitor or equivalent for measuring particulates. Work area ambient air will generally be monitored in the work area and downwind of the work area. Air monitoring of the work areas and downwind of the work areas will be performed at least every 60 minutes using a PID and the DustTrak meter.

If sustained PID readings of greater than 25 ppm are recorded in the breathing zone, either personnel are to leave the work area until satisfactory readings are obtained or approved personnel may re-enter the work areas wearing at a minimum a ½ face respirator with organic vapor cartridges for an 8-hour duration (i.e., upgrade to Level C PPE). Organic vapor cartridges are to be changed after each 8-hour use or more frequently, if necessary. If PID readings are sustained, in the work area, at levels above 50 ppm for a 5 minute average, work will be stopped immediately until safe levels of VOCs are encountered or additional PPE will be required (i.e., Level B).

If downwind PID measurements reach or exceed 25 ppm consistently for a 5 minute period downwind of the work area, PID readings will be taken within the buildings (if occupied) on Site to ensure that the vapors are not penetrating any occupied building and effecting the personnel working within. If the PID measurements reach or exceed 25 ppm within the nearby buildings, the personnel should be evacuated via a route in which they would not encounter the work area. The building should then be ventilated until the PID measurements within the building are at or below background levels. It should be noted that the site buildings are currently vacant.

10.0 Emergency Action Plan

In the event of an emergency, employees are to turn off and shut down all powered equipment and leave the work areas immediately. Employees are to walk or drive out of the Site as quickly as

possible and wait at the assigned 'safe area'. Follow the instructions of the Site Safety Officer.

Employees are not authorized or trained to provide rescue and medical efforts. Rescue and medical efforts will be provided by local authorities.

11.0 Medical Surveillance

Medical surveillance will be provided to all employees who are injured due to overexposure from an emergency incident involving hazardous substances at this site.

12.0 Employee Training

Personnel who are not familiar with this site plan will receive training on its entire content and organization before working at the Site.

Individuals involved with the fieldwork must be 40-hour OSHA HAZWOPER trained with current 8-hour refresher certification.

Table 1
Exposure Limits and Recognition Qualities

Compound	PEL-TWA (ppm)(b)(d)	TLV-TWA (ppm)(c)(d)	STEL	LEL (%)(e)	UEL (%)(f)	IDLH (ppm)(g)(d)	Odor	Odor Threshold (ppm)	Ionization Potential
Acetone	750	500	NA	2.15	13.2	20,000	Sweet	4.58	9.69
Anthracene	0.2	0.2	NA	NA	NA	NA	Faint aromatic	NA	NA
Benzene	1	0.5	5	1.3	7.9	3000	Pleasant	8.65	9.24
Benzo (a) pyrene (coal tar pitch volatiles)	0.2	0.1	NA	NA	NA	700	NA	NA	NA
Benzo (a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo (b) Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo (g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo (k) Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	NA	NA	NA	NA	NA	NA	NA	NA	10.88
Carbon Disulfide	20	1	NA	1.3	50	500	Odorless or strong garlic type	0.096	10.07
Chlorobenzene	75	10	NA	1.3	9.6	2,400	Faint almond	0.741	9.07
Chloroform	50	2	NA	NA	NA	1,000	ethereal odor	11.7	11.42
Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethylene	200	200	NA	9.7	12.8	400	Acrid	NA	9.65
1,2-Dichlorobenzene	50	25	NA	2.2	9.2		Pleasant		9.07
Ethylbenzene	100	100	NA	1	6.7	2,000	Ether	2.3	8.76
Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	NA	NA	NA	5	15	NA	NA	NA	12.98
Methylene Chloride	500	50	NA	12	23	5,000	Chloroform-like	10.2	11.35
Naphthalene	10, Skin	10	NA	0.9	5.9	250	Moth Balls	0.3	8.12
n-propylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethane	NA	NA	NA	NA	NA	NA	Sweet	NA	NA
Toluene	100	100	NA	0.9	9.5	2,000	Sweet	2.1	8.82
Trichloroethylene	100	50	NA	8	12.5	1,000	Chloroform	1.36	9.45
1,2,4-Trimethylbenzene	NA	25	NA	0.9	6.4	NA	Distinct	2.4	NA
1,3,5-Trimethylbenzene	NA	25	NA	NA	NA	NA	Distinct	2.4	NA
Vinyl Chloride	1	1	NA	NA	NA	NA	NA	NA	NA
Xylenes (o,m,p)	100	100	NA	1	7	1,000	Sweet	1.1	8.56
Metals									
Arsenic	0.01	0.2	NA	NA	NA	100, Ca	Almond	NA	NA
Cadmium	0.2	0.5	NA	NA	NA	NA	NA	NA	NA
Chromium	1	0.5	NA	NA	NA	NA	NA	NA	NA
Lead	0.05	0.15	NA	NA	NA	700	NA	NA	NA
Mercury	0.05	0.05	NA	NA	NA	28	Odorless	NA	NA
Selenium	0.2	0.02	NA	NA	NA	Unknown	NA	NA	NA
Other									
Asbestos	0.1 (f/cc)	NA	1.0 (f/cc)	NA	NA	NA	NA	NA	NA

(a) Skin = Skin Absorption

(b) OSHA-PEL Permissible Exposure Limit (flame weighted average, 8-hour): NIOSH Guide, June 1990

(c) ACGIH – 8 hour time weighted average from Threshold Limit Values and Biological Exposure Indices for 2003

(d) Metal compounds in mg/m3

(e) Lower Exposure Limit (%)

(f) Upper Exposure Limit (%)

(g) mmediately Dangerous to Life or Health Level: NIOSH Guide, June 1990

Notes:

1. All values are given in parts per million (PPM) unless otherwise indicated
2. Ca = Possible Human Carcinogen, no IDLH information

APPENDIX 4

NYSDOH Generic CAMP

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

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

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. “Periodic” monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

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

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

APPENDIX 5

MW-13 Well Construction Log

Stantec

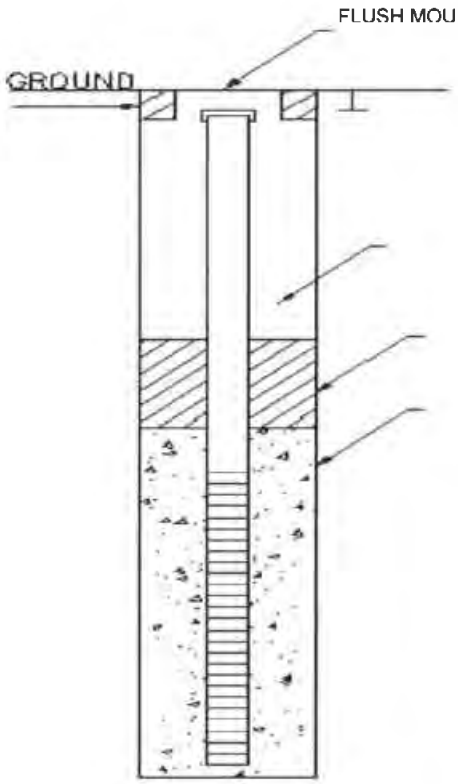
OVERBURDEN MONITORING WELL

DESIGN DETAILS

PROJECT NAME Getinge
PROJECT NUMBER 190500772
CLIENT Getinge
LOCATION 1777 E. Henrietta Rd
Rochester, NY

HOLE DESIGNATION **MW-13**
DATE COMPLETED 5/14/2013
DRILLING METHOD Geoprobe
SUPERVISOR S. Reynolds Smith

NOTE:
ALL DIMENSIONS ARE
BELOW GROUND SURFACE (BGS)



SURFACE SEAL TYPE flushmount

RISER RECESS ____ ft

WELL CASING
ANNULUS BACKFILL
TYPE: ____
SEAL TYPE: bentonite

TOP OF SEAL @ 0 ft

BOTTOM OF SEAL @ 3 ft

PACK TYPE:
SAND, SIZE ____

TOP OF SCREEN @ 4.5 ft

BOTTOM OF SCREEN @ 14.5 ft

BOTTOM OF HOLE @ 15 ft

SCREEN TYPE: CONTINUOUS SLOT X PERFORATED ____ LOUVRE ____ OTHER ____

SCREEN MATERIAL: STAINLESS STEEL ____ PVC _x_ OTHER ____

SCREEN LENGTH: 10 ft SCREEN DIAMETER 1 in SCREEN SLOT SIZE: 0.010

WELL CASING MATERIAL: PVC WELL CASING DIAMETER: 1 in

HOLE DIAMETER: 2"