STUART OLVER HOLTZ SITE

MONROE COUNTY

TOWN OF HENRIETTA, NEW YORK

SITE MANAGEMENT PLAN

NYSDEC Site Number: 828079

Prepared for:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

625 Broadway, Albany, NY 12233

Prepared by:

URS Corporation

257 West Genesee Street, Suite 400

Buffalo, NY 14202

(716) 856-5636

Revisions to Final Approved Site Management Plan:

Revision No.	Date Submitted	Summary of Revision	NYSDEC Approval Date

MARCH 2019

STUART OLVER HOLTZ SITE
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CERTIFICATION STATEMENT

I, MARK LANG, certify that I am currently a NYS registered Professional Engineer as defined in 6 NYCRR Part 375 and that this Site Management 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) and that all activities were performed in full accordance with DER approved Work Plans and any DER-approved modifications.

_____ P.E.

MARCH 7, 2019 DATE

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List of Acronyms

bgs	below ground surface
CAMP	Community Air Monitoring Plan
C&D	Construction & Demolition
cm/sec	centimeters per second
COC	Certificate of Completion
DCA	Dichloroethane
DCE	Dichloroethene
DER	Division of Environmental Remediation
DOT	Department of Transportation
DWQC	Drinking Water Quality Council
EC	Engineering Control
EWP	Excavation Work Plan
FS	Feasibility Study
GZA	GZA GeoEnvironmental Inc.
HASP	Health and Safety Plan
IC	Institutional Control
ISCO	In-Situ Chemical Oxidation
Lozier	Lozier Architects and Engineers, Inc.
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYCRR	New York Codes, Rules and Regulations
PAH	Polyaromatic Hydrocarbon
PCB	Polychlorinated Biphenyls
PCE	Tetrachloroethene
PID	Photoionization Detector
PFAS	per- and polyfluoroalkyl substances
PFOA	Perfluorooctanonic acid
PFOS	Perfluorooctanesulfonic acid
PRR	Periodic Review Report
PSI	pounds per square inch
QAPP	Quality Assurance Project Plan
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RI	Remedial Investigation
ROD	Record of Decision
RP	Remedial Party
RSO	Remedial System Optimization
SBL	Section, Block, Lot
SCG	Standards, Criteria and Guidance
SCO	Soil Cleanup Objective
SMP	Site Management Plan
SOH	Stuart Olver Holtz
SPDES	State Pollutant Discharge Elimination System
TAGM	Technical and Administrative Guidance Memorandum
TAL	Target Analyte List
TCA	Trichloroethane
TCE	Trichloroethene
TCL	Target Compound List
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
URS	URS Corporation
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

ES EXECUTIVE SUMMARY

The following provides a brief summary of the controls implemented for the Site, as well as the inspections, monitoring, maintenance and reporting activities required by this Site Management Plan (SMP):

Site Identification: Site No. 828079, Stuart Olver Holtz Site

Institutional Controls (IC):	1. The property may be used for commercial or industrial use;
	2. All ICs must be implemented as specified in this SMP; the property may be used for**:** commercial or industrial use**;** all engineering controls (EC) must be operated and maintained as specified in this SMP**;** all ECs must be inspected at a frequency and in a manner defined in the SMP**;** the use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the New York State Department of Health (NYSDOH) or the Monroe Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department(s)**;** groundwater and other environmental or public health monitoring must be performed as defined in this SMP**;** data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP**;** all future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP**;** monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP**;** access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Notice**;** the potential for vapor intrusion must be evaluated for any buildings developed in the area within the site boundaries noted on Figure 2, and any potential impacts that are identified must be monitored or mitigated**.**
Engineering Controls:	1. Trees (Phytoremediation)

Inspections:	Frequency
. Site-Wide Inspection	Annually
. Trees	Annually
Monitoring:	
. Groundwater Monitoring Wells (See Table 6 for list)	Annually
Maintenance:	
1. Trees	As needed
Reporting:	
1. Inspection Report	Annually
2. Periodic Review Report	Every 5 years, or as otherwise determined by the Department

Further descriptions of the above requirements are provided in detail in the latter sections of this Site Management Plan.

1.0 INTRODUCTION

1.1 GENERAL

This Site Management Plan (SMP) is a required element of the remedial program for the Stuart Olver Holtz (SOH) Site located in the Town of Henrietta, New York (hereinafter referred to as the "Site"). See Figure 1. The Site is currently in the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program Site No. 828079 which is administered by New York State Department of Environmental Conservation (NYSDEC).

A figure showing the site location and boundaries of this site is provided in Figure 1. The boundaries of the site are more fully described in the metes and bounds site description that is part of the Environmental Easement which is provided in Appendix A.

After completion of the remedial work, some contamination was left at this site, which is hereafter referred to as "remaining contamination". Institutional and Engineering Controls (ICs and ECs) have been incorporated into the site remedy to control exposure to remaining contamination to ensure protection of public health and the environment. The Environmental Easement requires compliance with this SMP and all ECs and ICs placed on the site.

This SMP was prepared to manage remaining contamination at the site until the Environmental Easement is extinguished. This plan has been approved by the NYSDEC, and compliance with this plan is required by all responsible parties. This SMP may only be revised with the approval of the NYSDEC.

It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement, which is grounds for revocation of the Certificate of Completion (COC);

- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6 New York Codes, Rules and Regulations (NYCRR) Part 375 and the Environmental Easement for the site, and thereby subject to applicable penalties.

All reports associated with the site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State. A list of contacts for persons involved with the site is provided in Appendix B of this SMP.

This SMP was prepared by URS Corporation (URS), on behalf of NYSDEC, in accordance with the requirements of the NYSDEC's Division of Environmental Remediation (DER)-10 ("Technical Guidance for Site Investigation and Remediation"), dated May 2010, and the guidelines provided by the NYSDEC. This SMP addresses the means for implementing the ICs and/or ECs that are required by the Environmental Easement for the site.

1.2 REVISIONS

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring requirements, upgrades to or shut-down of a remedial system, post-remedial removal of contaminated sediment or soil, or other significant change to the site conditions. The NYSDEC will provide a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

1.3 NOTIFICATIONS

Notifications will be submitted by the property owner to the NYSDEC, as needed, in accordance with NYSDEC's DER – 10 for the following reasons:

- 60-day advance notice of any proposed changes in site use that are required under the terms of the Environmental Notice, 6 NYCRR Part 375 and/or Environmental Conservation Law.

- 7-day advance notice of any field activity associated with the remedial program.

- 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan.

- Notice within 48-hours of any damage or defect to the foundation, structures or Engineering Control (EC) that reduces or has the potential to reduce the effectiveness of an EC, and likewise, any action to be taken to mitigate the damage or defect.

- Verbal notice by noon of the following day of any emergency, such as a fire; flood; or earthquake that reduces or has the potential to reduce the effectiveness of ECs in place at the site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action submitted to the NYSDEC within 45 days describing and documenting actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the site or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser/Remedial Party has been provided with a copy of the Environmental Easement, and all approved work plans and reports, including this SMP.

- Within 15 days after the transfer of all or part of the site, the new owner's name, contact representative, and contact information will be confirmed in writing to the NYSDEC.

Table 1 on the following page includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in Appendix B.

Table 1: Notifications*

Name	**Contact Information**
George Momberger, NYSDEC Project Manager	(518) 402-9814/ george.momberger@dec.ny.gov
Scott Foti, NYSDEC Regional HW Engineer	(585) 226-5454/ scott.foti @dec.ny.gov
Kelly Lewandowski, NYSDEC Site Control	(518) 402-9543/ kelly.lewandowski@dec.ny.gov

* Note: Notifications are subject to change and will be updated as necessary.

2.0 SUMMARY OF INVESTIGATIONS AND REMEDIAL ACTIONS

2.1 SITE LOCATION AND DESCRIPTION

The site is located in Town of Henrietta, Monroe County, New York and is comprised of two parcels, identified as section, block, lot (SBL) numbers 161.15-1-4 and 161.15-1-5 on the Monroe County Tax Map. The site is an approximately 3.8-acre area and is bounded by Commerce Drive to the north, Ruby Gordon Furniture Store to the south, various commercial properties to the east, and Pullman Manufacturing to the west, as shown on Figure 2. The boundaries of the site are more fully described in Appendix A – Environmental Easement. The owner of the site parcel at the time of issuance of this SMP is:

SOH Acquiring Inc.; Richard Groth, RGroth5117@aol.com

2.2 PHYSICAL SETTING

2.2.1 Land Use

The Site consists of the following: a building foundation, driveway and areas of vegetation. The Site is zoned commercial/industrial and is currently vacant.

The properties adjoining the Site and in the neighborhood surrounding the Site primarily include commercial and industrial properties. The properties immediately south of the Site include commercial properties; the properties immediately north of the Site include commercial and industrial properties; the properties immediately east of the Site include commercial properties; and the properties to the west of the Site include commercial and industrial properties.

2.2.2 Geology

The overburden thickness at the SOH site ranges from 30 feet thick to 48.2 feet thick. Overburden layers at the site include: a fill layer, a glacial lacustrine layer, an upper till layer, and a lower till layer.

The SOH site is covered by a layer of fill material that is generally reworked silty sand mixed with some man-made debris. The fill layer ranges in thickness from 0.8 feet to 15.3 feet. Perched groundwater in the fill layer was noted in several borings and monitoring wells installed by GZA GeoEnvironmental, Inc. (GZA). Almost all soil borings and wells installed by URS encountered a seasonal high groundwater table, generally about 4-feet below grade.

The fill material directly overlies a lacustrine layer (or the upper till layer when the lacustrine layer is absent). The lacustrine layer is absent in the central portion of the building slab. The layer is also absent in the area adjacent to the southern edge of the slab where it may have been removed during grading prior to the construction of the SOH building. The lacustrine layer consists of interbedded clay and silt with some sand and gravel lenses. The lacustrine layer may have been deposited in glacial Lake Scottsville that covered the SOH site area.

The lacustrine layer overlies the upper till layer. The upper till layer ranges in thickness from 3.5 feet to 26 feet.

The upper till layer acts as the primary overburden aquifer at the site. The upper till is generally a fine to coarse-grained sand with a trace to some silt or clay and a trace of gravel. The compaction of the layer varies in some wells from very loose in the upper portion to very dense near the base of the unit. GZA has noted permeable sand strata within the upper till that are discontinuous laterally but provide zones of lateral groundwater flow. These permeable zones are noted by an absence or trace amounts of silt. The permeable zones are typically less than 10 feet thick.

The lower till is a very dense, fine to coarse sand and clayey silt that overlies shale bedrock. The lower till contains a greater percentage of silt and clay than the upper till. The lower till layer ranges in thickness from 4.0 feet to 24.2 feet.

The overburden layer covers the Vernon Shale bedrock. The Vernon shale bedrock erosional surface generally slopes to the northwest. The upper portion of the Vernon shale is very weathered and fissile. Groundwater is contained in the weathered, fractured portion of the upper Vernon Shale.

A fence diagram illustrating the site stratigraphy is shown in Figure 3. Site specific boring logs are provided in Appendix C.

2.2.3 Hydrogeology

The primary water-bearing overburden unit at the SOH site is the upper glacial till layer. A second, deeper, water-bearing aquifer is located in the uppermost highly weathered and fractured portion of the Vernon shale bedrock.

A lower permeability lacustrine clay and silt layer overlies the upper glacial till over most of the site. In areas where the lacustrine layer is sufficiently thick and clay-rich the upper till aquifer is a semi-confined unit. Wells in the western part of the site clearly show the confining effects of the lacustrine layer. In areas where the lacustrine layer is thin or absent, the water-bearing upper glacial till is bounded above by permeable fill material, and is unconfined. The upper glacial till is underlain by the lower glacial till unit which acts as an underlying low permeability layer.

Overburden monitoring wells onsite are screened within the water-bearing upper glacial till layer. Hydraulic conductivity of the overburden monitoring wells ranges from a minimum of 4.75 x 10-6 centimeters per second (cm/sec) to a maximum of 1.36 x 10-3 cm/sec. The average hydraulic conductivity of all overburden wells screened in the upper glacial till is approximately 2.27 x 10-4 cm/sec.

The water-bearing uppermost portion of the Vernon Formation shale bedrock is weathered and highly fractured. The bedrock aquifer is overlain by a low permeability lower glacial till layer. The piezometric surface elevation of the bedrock aquifer is located above the lower glacial till layer, which indicates a confined condition of the top of bedrock groundwater.

Bedrock monitoring wells are screened within the weathered Vernon Shale. Hydraulic conductivity of the bedrock monitoring wells ranges from a minimum of 2.46 x 10-5 cm/sec to a

maximum of 8.43 x 10-4 cm/sec. The average hydraulic conductivity of all bedrock wells is approximately 3.93 x 10-4.

Overburden groundwater flow is generally to the northwest, in the direction of the Genesee River. The bedrock groundwater surface shows a groundwater divide located in the vicinity of wells OW-7R and OW-2R. Groundwater in this area flows to the north-northeast or to the west.

An overburden groundwater contour map is shown in Figure 4 and a bedrock groundwater contour map is shown in Figure 5. Groundwater elevation data is provided in Table 2. Groundwater monitoring well construction diagrams are provided in Appendix D.

2.3 INVESTIGATION AND REMEDIAL HISTORY

The following narrative provides a remedial history timeline and a brief summary of the available project records to document key investigative and remedial milestones for the Site. Full titles for each of the reports referenced below are provided in Section 8.0 - References.

In 1986 an environmental site assessment was performed when SOH ownership was transferred to Metalade Inc. The site assessment confirmed the presence of soil and groundwater contamination at the site.

In 1987 Lozier Architects and Engineers, Inc. (Lozier) prepared a site assessment for the SOH site. Lozier installed three monitoring wells (MW-2, MW-3 and MW-5) that were completed in the overburden. Lozier also drilled two soil borings (B-1 and B-4). This work and the 1986 investigation determined the following:

- Groundwater flow in the overburden is generally toward the west-northwest.
- Volatile organic compounds (VOCs) were detected in soil samples collected from the southwest portion of the site, mainly in the vicinity of the drum storage area.
- VOCs were also detected in the groundwater in the southwest portion of the site.
- VOCs were detected in the two onsite water production wells located inside the building.

A generalized stratigraphy was determined from the drilling program: a re-worked sandy clay or silty clay fill layer overlying a low permeability glaciolacustrine clay overlying a sand, gravel and silt aquifer overlying a lower permeability, dense glacial till.

Around 1990, Ruby Gordon's applied for a NYSDEC permit to discharge their basement sump pump water to a nearby drainage ditch. The water was analyzed for VOCs as part of the permit requirements and VOCs were detected in the sump pump water.

In 1991, Haley and Aldrich of New York prepared a hydrogeologic investigation report for Ruby Gordon's and concluded that the elevated VOCs detected in their sump pump water had migrated from the SOH site. As a result of the investigation, the sump water is treated through an air stripper before being discharged to a Monroe County wastewater treatment facility.

In 1994, GZA started the field investigation phase of a remedial investigation (RI) at the SOH site. The purpose of the RI was "to confirm the presence of, and to the extent practical, delineate the lateral and vertical extent of contamination in order to establish a baseline for the selection and design of an appropriate remedial response".

The major RI activities included:

- A geophysical survey.
- A soil vapor survey.
- Test pits.
- Advancing 17 soil borings and installation of 11 overburden monitoring wells (OW-1S through OW-11S) and five bedrock wells (OW-1R, -2R, 3R, -4R and –7R).
- Developing the newly installed wells.
- Two rounds of groundwater sampling performed in July and October 1995.
- Performing in-situ hydraulic conductivity (slug) tests on the monitoring wells to determine hydraulic conductivity of the overburden and bedrock.

Other RI activities included sampling the SOH production wells, surface water and sediment sampling in the drainage swale, onsite surface soil sampling, catch basin/sump sediment sampling, and a private well survey. In addition, air monitoring was performed during intrusive activities.

GZA identified several probable source areas that included liquid waste drum storage areas near the southern and western property lines, spills resulting from the 1974 fire, chemical spills leaking into interior water supply wells, underground dry wells (crocks), concrete vaults, sumps, cracks in the flooring and waste lines. Analytical results from the soil sampling showed VOC contamination present in the soil at the surface, in the vadose zone and below the water table. Groundwater sampling analytical results showed the most contaminated portion of a plume to be present around well OW-7S.

GZA presented a more refined version of Lozier's stratigraphic model for the SOH site. GZA divided the glacial till underlying the glaciolacustrine clay into upper and lower till units. GZA installed five wells in the weathered bedrock aquifer and identified the bedrock as Vernon Formation shale.

GZA installed five bedrock monitoring wells in the uppermost weathered zone of the Vernon Formation shale. The borings were advanced by augering five to 13 feet into bedrock. A four-foot long core sample was taken from OW-1R. The site geologist examined the rock core and split spoon samples, noting the bedrock as severely weathered, gray, green, black, red brown or pink shale fragments with a minor clayey silt matrix. Fracturing was moderate to extensive. VOCs were also detected in the bedrock wells but at much lower concentrations than the overburden wells.

Based on the RI results, a Feasibility Study (FS) Report was prepared by GZA in 1996. GZA screened multiple technologies to select a remedial strategy for the site. Five site wide

remedial alternatives were developed and evaluated by GZA. NYSDEC selected a preferred alternative consisting of a short-term source area groundwater extraction near OW-7S, a down-gradient groundwater collection trench system adjacent to the Ruby Gordon basement and passive treatment of groundwater by zero-valence iron filings with eventual discharge to the publicly owned treatment works. In addition, the preferred alternative included isolation or excavation and offsite disposal of contaminated surface soils above standards, criteria and guidance (SCG) values.

The *Record of Decision (ROD)* prepared by the NYSDEC in 1997 outlined four goals for the SOH site:

- Eliminate to the extent practicable the potential for direct human or animal contact with site contaminants
- Reduce, control, or eliminate to the extent practicable the contamination within the soils and waste on site.
- Reduce, control, or eliminate to the extent practicable any further migration of contaminated groundwater from the site, including migration into the Ruby Gordon basement sumps.
- Provide to the extent practicable, for attainment of groundwater SCG values in the area affected by the site.

The ROD also included several actions connected with the SOH building including: removal of sediments from site sumps, catch basins and related piping for offsite disposal, decommissioning drainage lines or connections to and from the former SOH building, disconnecting the SOH interior bedrock wells, and regrading and restoring the excavated areas.

In 1999, IT Corporation (now known as Shaw Environmental, Inc.) prepared a Remedial Design Work Plan for the SOH site based on the results of the FS. NYSDEC had determined that additional site characterization was needed to design the preferred remedial alternative in the ROD. It was also determined that a more viable and cost-effective remedial alternative for the overburden groundwater contamination might exist. To that end, Shaw presented the Pre-Design Investigation Sampling and Analysis Work Plan in 2000 to further delineate the source area and find additional existing source areas. Shaw outlined a pilot field test for an in-situ permanganate chemical oxidation injection in the Addendum to the Remedial Design Work Plan. The pilot test was designed to evaluate the reduction of chlorinated solvents present in the upper till aquifer groundwater.

Shaw advanced 24 soil borings and collected 70 soil samples for VOC analysis near the center of the property around the SOH loading dock. Shaw installed three piezometers near the border of the property on the north (B1/PZ-3), west (B3/PZ-2), and south sides (B4/PZ-1). Shaw also installed eight pilot test injection wells (IPZ-1, -2, -3, IW-1, TW-1, -2, -3, and -4) in the vicinity of the loading dock.

Most of the soil samples analyzed had elevated VOC concentrations at depths of approximately 16 to 24 feet below ground surface (bgs), 30 feet bgs, and 38 to 40 feet bgs.

Trichloroethene (TCE) was the most prevalent VOC detected in the soil samples collected by Shaw. Detected concentrations ranged from 1 microgram per kilogram (µg/kg) up to 110,000 µg/kg at SB-3 (16-18 feet bgs). SB-3 is located about 60 feet northeast of monitoring well OW-7S and in close proximity to the loading dock.

Elevated concentrations of 1,1,1-trichloroethane (1,1,1-TCA) were detected in SB-18 at 18-20 feet bgs (20,000 µg/kg) and 22-24 feet bgs (1,100,000 µg/kg). SB-18 is located outside of the building foundation near the southern property boundary.

Based on the soil sampling analytical results, Shaw outlined a source area where samples exceeded NYSDEC's Technical and Administrative Guidance Memorandum (TAGM) 4046 soil cleanup objectives (NYSDEC, 1994). The source area measured approximately 110 feet by 160 feet in the loading dock area and extended under the former building slab.

Shaw collected a total of 15 surface soil samples in the vicinity of the drainage swale on the west side of the property. The samples were collected to further define the extent of surface contamination in this area identified in the RI/FS. The 1996 RI/FS identified total polyaromatic hydrocarbons (PAHs) as the chemical of concern in the surface soil. The 2000 samples were analyzed for metals and semivolatile organic compounds (SVOCs). Analytical results show that 14 of the samples exceed their respective TAGM 4046-soil cleanup objectives for SVOCs, specifically PAHs. Metals were detected above TAGM 4046 soil cleanup objectives in 12 soil samples.

Shaw also sampled sediments from a vault in the buffing room, a manhole outside the building connected to the city sanitary sewer, and from a sump/separator located inside the SOH facility. VOCs were detected above TAGM 4046 objectives in the three sediment samples collected.

At the request of Shaw, Larsen Engineers performed an underground line survey examining drain pipes and sewer lines at the SOH facility. A four-foot diameter sump/separator was identified in the shipping/receiving area near the loading dock. Approximately 10 to 12 feet of sediment had accumulated in the bottom. Analytical results from sediment collected from the sump suggested it might have been a point of discharge of VOCs to the overburden aquifer (Shaw, 2003).

Smoke tests confirmed that several sanitary sewer lines inside the SOH facility drain into the sump/separator.

In 2002, Shaw performed a soil gas survey to characterize conditions under the SOH building slab. A total of 28 borings were advanced in a grid pattern inside the building. The highest soil gas and soil VOC concentrations were detected in samples in close proximity to the sump/separator (Shaw, 2002).

In June and July 2000, a pilot field test was conducted to determine the feasibility of an in-situ chemical oxidation of chlorinated ethenes by injection of a permanganate solution (Perm-Ox) into the overburden.

Baseline groundwater samples were initially collected from the pilot test injection wells IW-1, IPZ-1, IPZ-2 and IPZ-3. Baseline groundwater samples were also collected from monitoring wells OW-7S and OW-7R. These samples were used to establish pre-injection groundwater conditions. TCE was the dominant VOC analyte detected in IW-1, IPZ-1, IPZ-2 and OW-7S. The highest TCE concentration was observed in IPZ-2 at 1,200,000 micrograms per liter (µg/L). Other prevalent VOCs noted by Shaw included: 1,1,1-TCA, 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), 1,2-dichloroethene (cis), 1,2-DCE (total), and methylene chloride.

The pilot test conducted in the source area involved injecting 720 gallons of 40% solution of sodium permanganate (NaMnO4) through wells IW-1, IPZ-2 and IPZ-3. Low permeability in the upper till aquifer in these wells prevented gravity feeding of the solution into the formation. With an injection pressure of 3 to 5 pounds per square inch (PSI), the permanganate solution was injected at a rate of 0.5 gallons per minute.

The first round of post-injection sampling was conducted eight weeks after injecting the permanganate. A second round of sampling was conducted approximately 13-15 weeks after the injection. Unreacted, purple colored permanganate was observed in each of the injection wells during both sampling events.

TCE concentrations decreased after the permanganate injection; however, less easily oxidized constituents, like methylene chloride and 1,1,1-TCA, increased after the injection. In spite of these increases, an overall 25 to 90% reduction of the initial contaminants mass/concentration was achieved during the pilot test field study.

After the pilot field test was completed, Shaw concluded that, in addition to permanganate injection, an in-situ carbon source injection would be needed to remove chlorinated ethanes from the groundwater. The pilot testing and additional investigation results were presented by Shaw in the Pre-Design Investigation Summary/ Focused Feasibility Study (FFS) in 2002.

In October 2005, the NYSDEC modified the remedy selected by the original ROD (NYSDEC, 2005) based on the site information supplied by Shaw's investigations in 2000 and 2002. The estimated cleanup time for the passive groundwater treatment alternative was 40 years (NYSDEC 2005). The department estimated the time required to implement the permanganate injection/ augmented bioremediation system as nine years. The in-situ chemical oxidation (ISCO) remedy when compared to the original remedy resulted in a savings of over $3 million.

NYSDEC amended the 1997 ROD with the following:

- Implementing a permanganate injection system to destroy the chlorinated ethenes in the overburden groundwater. Injection wells will be installed at the site perimeter downgradient of the contaminated ground water plume, at the source area, and within the plume.
- Implementing an augmented bioremediation system utilizing a carbon source such as molasses to destroy chlorinated ethanes.
- Conducting periodic long term groundwater monitoring to verify the effectiveness of the remedy.

- Constructing drainage improvements between Ruby Gordon and the SOH site to minimize groundwater recharge to the Ruby Gordon basement.
- Conducting soil gas and air sampling (indoor, ambient, and subslab) of relevant areas adjacent to the site.
- Imposing an institutional control in the form of an environmental easement that will require compliance with the approved site management plan.
- Restricting the use of groundwater as a source of potable water, without the necessary water quality treatment as determined by the New York State Department of Health (NYSDOH).
- Requiring the property owner to complete and submit to the NYSDEC a periodic certification.

In 2007, URS performed additional investigation work at the site to further delineate the source area defined in previous investigations. The results of the investigation were presented in the *Supplemental Investigation Report* (URS, 2009). The investigation included the following:

- Installation of 14 monitoring screened in the upper till aquifer.
- Installation of 18 borings to better define the source area in the southern portion of the building slab.
- Soil and groundwater sampling.
- Hydraulic conductivity testing.

The *Supplemental Investigation Report* concluded that the source area and the groundwater contaminant plume were larger than determined from previous studies. The extent of soil contamination and groundwater contamination determined from the investigation are shown on Figures 6 and 7, respectively.

The on-site building was demolished between November 2005 and January 2006. The building foundation remained in-place after the demolition and is still present on the site. During the demolition, building sumps were cleaned and drainage lines were removed as required by the ROD.

2.3.1 Remedial Activities from 2010 through 2015

2.3.1.1 Injection and Monitoring Well Construction

GeoLogic NY, Inc. was awarded a contract for site remediation in 2010 which included the construction of injection wells and monitoring wells and the injection of permanganate and molasses. Construction commenced in January of 2011 and included the installation of 37 2-inch diameter injection wells (SW-1 through SW-37) to a depth of 24 feet and two 2-inch diameter monitoring wells (MW-15 and MW-16) installed to depths of 24 and 30 feet, respectively. Construction was completed in March of 2011.

The injection wells were installed in the remediation treatment zone that was delineated based on data and VOC contours presented in the Supplemental Investigation Summary Report

issued by URS in April 2009. The remediation treatment zone was defined as all areas with total groundwater VOC concentrations greater than 50,000 µg/L. These areas are the red and pink areas shown on Figure 7. Injection well locations within the remediation treatment zone and monitoring wells located within and outside the remediation treatment zone are shown on Figure 8.

2.3.1.2 Remedial Injections 2011 – 2012

A 5% by weight solution of sodium permanganate was injected into the injection wells during three events as summarized below.

- The first injection of sodium permanganate solution was completed on April 1, 2011. A total of 33,326 gallons of sodium permanganate solution was injected into all 37 injection wells.
- The second injection of sodium permanganate solution was completed on August 16, 2011. This injection targeted areas where contaminant levels remained high. A total of 10,992 gallons of sodium permanganate solution was injected into thirteen injection wells. The injection wells included SW-5, SW-6, SW-7, SW-10, SW-12, SW-13, SW-16, SW-20, SW-29, SW-31, SW-34, SW-35 and SW-37.
- The third injection was completed on November 17, 2011. This injection event also targeted areas where contaminant levels were higher than surrounding areas. A total of 11,769 gallons of sodium permanganate solution was injected into nine injection wells and five monitoring wells. The injections wells included SW-6, SW-8, SW-9, SW-11, SW-16, SW-17, SW-20, SW-21 and SW-26. The monitoring wells included URS-03, URS-07, URS-09, URS-11 and URS-12.

A 10% by weight solution of molasses was injected into the 37 injection wells and ten monitoring wells between August 21 and 25, 2012. The monitoring wells included URS-01, URS-03, URS-07, URS-09, URS-11, URS-12, URS-15, OW-6S, OW-7S and MW-02. A total of 7,965 gallons of molasses solution was injected into these 47 wells.

2.3.1.3 Soil Vapor Intrusion Sampling

Soil vapor intrusion sampling was conducted at the Ruby Gordon Home Furnishing Furniture Store (Ruby Gordon) located 3737 Henrietta Road (adjacent to the site) in January 2013. Four sub-slab samples were to be collected at four locations in the Ruby Gordon basement using summa canisters. However this could not be accomplished as explained below.

Sampling activities were performed in accordance with the procedures outlined in Guidance for Evaluating Soil Vapor Intrusion in the State of New York issued by the New York State Department of Health. At the four locations selected for subslab soil vapor sampling, Teflon-lined polyethylene tubing was inserted through a hole drilled into the slab to access the sub slab vapor space. The tubing was sealed to the slab floor with modeling clay. The tubing was connected to a Gillian GilAir-5 air sample pump set at a rate of approximately 0.02 L/min. The pump outflow was connected to a 1 liter Tedlar bag. At each location, either water was drawn up into the tubing, or no vapor was being drawn causing the pump to fail. It was determined that there was insufficient vapor space beneath the subslab to collect subslab soil vapor samples because of

the high water table. It was agreed upon by the NYSDEC and the NYSDOH that only basement air samples would be collected inside the building.

There were several compounds detected in each of the indoor samples including tetrachloroethene and trichloroethene. Because subslab soil vapor samples could not be collected, the samples could not be evaluated in accordance with the New York State Department of Health guidance for evaluating soil vapor intrusion. Several sumps and standing water were observed in the basement during sampling. These could be sources of vapors. However, no elevated readings were recorded by the photoionization detector (PID) during the basement survey.

2.3.1.4 January 2014 Feasibility Study

The permanganate and molasses injections described above did improve groundwater quality at the site; however, some significant groundwater contamination remained at the site in the southern portion of the treatment zone that is shown on Figure 9. Consequently, the Department requested that URS prepare a Focused Feasibility Study to evaluate options for addition groundwater remediation activities at the site. The Focused Feasibility Study was submitted to the Department in January 2014.

From the feasible remedial technologies identified for the site, and based on direction by the NYSDEC, the following list of remedial alternatives was developed for the site:

Alternative 1 - No Further Action

Alternative 2 - In-Situ Chemical Oxidation (ISCO) and Augmented Bioremediation Using Wells

Alternative 3 – ISCO and Augmented Bioremediation Using Direct Push Injection

Alternative 4 - Excavation Using Sheet Pile and Ex-Situ Aeration

Alternative 5 – Excavation Using Sheet Pile and Off-site Disposal

Alternative 6 – Open-Cut Excavation and Ex-Situ Aeration

Alternative 7 – Open-Cut Excavation and Off-Site Disposal

Based on URS' evaluation and discussions with the NYSDEC, Alternative 3 was selected for the continued remediation of groundwater at the site. Alternative 3 included the injection of sodium permanganate and molasses using direct push methods, and excavation of contaminated surface soil and construction of a drainage swale that was included in the original remedy presented in the ROD. The implementation of Alternative 3 is described below.

After evaluating the remedial actions proposed in Alternative 3, and data from the January 21, 2014 groundwater sampling event, discussions between NYSDEC and URS led to the decision to inject molasses in the area of significant residual contamination located in the southern portion of the site as shown on Figure 9. Subsequently, URS issued Field Order No. 16 for the injection of molasses on March 26, 2014. The molasses was injected in this area by GeoLogic between May 13 and 23, 2014. Injection locations are shown on Figure 10. A total of 1,691 gallons of a 10% solution of molasses was injected into 51 locations within the target area using a direct push drill rig. The target injection interval was six to twenty-two feet bgs.

On October 17, 2014, URS conducted a site walkover of the proposed area of surface soil excavation shown as Excavation Area B on Figure 11. URS prepared and submitted a photo log of the area to the NYSDEC. URS noted that overhead power lines ran throughout most of the proposed area and indicated that these lines would complicate excavation of soil in the area. Consequently, NYSDEC evaluated the results of the field investigation and previous soil data collected at the site from the two areas of proposed excavation. On November 21, 2014, NYSDEC issued a Memorandum presenting the results of its evaluation of the proposed excavation of surface soil. Based on this evaluation, excavation of contaminated surface soil from both Areas A and B was removed from the proposed remedial action.

2.3.1.5 Phytoremediation

At the request of NYSDEC, URS evaluated options for addressing drainage improvements to minimize groundwater migration to the adjacent Ruby Gordon property. The evaluation was presented in a Memorandum dated February 10, 2014. The options evaluated in the Memorandum included a drainage swale, a French drain, and poplar trees. Based on this evaluation, poplar trees were selected as the remediation technology to address drainage at the site because the tree roots would produce a hydraulic barrier and absorb contaminants, and because the trees would require little if any maintenance and are a green remediation technique. After further discussion, it was decided to use both poplar trees and willow trees for the phytoremediation.

After the area had been cleared and asphalt removed, fifteen polar trees were planted in the southern portion of the site upgradient of the Ruby Gordon property on October 15, 2015. Fifteen willow trees were planted on October 26, 2016. The proposed tree locations are shown on Figure 12.

2.3.1.6 Groundwater Monitoring from March 2011 through February 2015

After well installation was completed in March 2011, on-site groundwater monitoring wells were sampled on fifteen occasions as follows:

1. March 2011
2. June 2011
3. August 2011
4. October 2011
5. March 2012
6. October/November 2012
7. April/May 2013
8. January 2014
9. July 2014
10. August 2014
11. September 2014
12. October 2014
13. December 2014
14. January 2015
15. February 2015

The sampling events between March 2011 and January 2014 included many and various types of monitoring wells throughout the site located inside and outside of the remediation

treatment zone. Sampling events between July 2014 and February 2015 included sampling from just six wells (OW-7S, SW-32, SW-33, SW-36, SW-37 and URS-11) all located in or near the remediation treatment zone that was targeted by the molasses injection in May 2014 (see Figure 9).

A summary of the progress of remediation in the remediation treatment zone is provided in Figure 13. This figure includes data from March 2011 (before remedial activities began), June 2011 (following the first injection of sodium permanganate), May 2013 (after two additional sodium permanganate injections and one molasses injection were completed), January 2014 (just before molasses injections using direct push methods were implemented) and February 2015 (the most recent sampling event). The figure shows the concentrations of the chlorinated ethanes (1,1-DCA and 1,1,1-TCA) and the chlorinated ethenes (1,1-DCE, 1,2-DCE, TCE, PCE and VC).

The data in Figure 13 is summarized in Table 3. This table presents the combined total concentration of chlorinated alkanes and alkenes at the wells shown on Figure 13 on the last date of the five dates that each well was sampled. This table shows that the combined total concentration of chlorinated alkanes and alkenes was well below 50,000 µg/L at all wells located inside the remediation treatment zone except SW-32, SW-33 and SW-37 and wells URS-11 and OW-7S located just outside of the remediation treatment zone.

The following are interpretations of the data presented in Figure 13 and summarized on Table 3.

- Although many wells in the remediation treatment zone still have contaminant concentrations above groundwater standards, most wells have improved in groundwater quality and/or show acceptable concentrations of contaminants except for SW-32, SW-33 and SW-37. These are the only wells in the remediation treatment zone with total contaminant concentrations above 50,000 µg/L. These wells are shown on Figure 14.
- Contaminant concentrations mostly increased in the southern portion of the remediation treatment zone after injection of molasses by direct push methods. The increase in concentrations was likely caused by subsurface disturbance and consequent desorption of contaminants from soil resulting from the numerous injections in a relatively small area.
- Desorption of the contaminants from soil and subsequent migration of contamination to the west of the remediation treatment area has resulted in increased contamination at OS-7S. The concentration of 1,1,1-TCA in particular increased dramatically in this well after the direct push injections.
- There was no apparent migration of contamination to the south toward URS-11 after the direct push injections. Contaminant concentrations remained relatively stable in URS-11 after the direct push injections.

2.3.1.7 May 2018 Groundwater Monitoring for VOCs and Emerging Contaminants

Groundwater monitoring wells were sampled on May 2, 2018 for Target Compound List (TCL) VOCs and the emerging contaminant parameters of 1,4-dioxane and per- and polyfluoroalkyl substances (PFAS). Twenty-three monitoring wells were sampled for TCL VOCs. Seven monitoring wells (SW-32, SW-33, URS-02, URS-03, URS-05, URS-13 and URS-

15) were also sampled for PFAS and 1,4-dioxane. Monitoring well URS-09 was only sampled for PFAS analysis due to sample volume limitations. A sample could not be collected from URS-04 due to an obstruction just below the top of water.

Results from the May 2018 sampling event are provided in Table 4 and Figure 15 for the VOCs, and Table 5 and Figure 16 for the emerging contaminants. Figure 15 also includes VOC results from the last post-injection sampling at that location. Monitoring well locations that included emerging contaminant analyses were sampled using HydraSleeve SuperSleeve "No-Purge" groundwater samplers which are acceptable for PFAS sampling.

The analytical results for the May 2018 monitoring event are summarized as follows:

- The highest concentration of 1,1,1-TCA was detected in SW-32 (630,000 µg/L); the highest concentration of PCE was detected in URS-16 (2,600 µg/L), and the highest concentration of TCE was detected in URS-01 (780 µg/L).
- COCs with concentrations greater than 1,000 µg/L include 1,1,1-TCA, 1,1-DCA, cis-1,2-DCE, chloroethane, PCE, and vinyl chloride.
- Total VOCs exceeded 50,000 µg/L only at location SW-32 (720,000 µg/L). SW-32 is located in the treatment zone.
- Compared to historical results, concentrations of COCs decreased at most locations. Locations OW-04S, OW-06S, SW-33, URS-01, URS-03, URS-11, and URS-15 exhibited increased concentrations of degradation products compared to the previous sampling at those locations. 1,1,1-TCA and/or TCE concentrations increased an order of magnitude or more at locations OW-04S, URS-01, and URS-03.
- 1,4-Dioxane was detected in six of the eight locations sampled for this compound (SW-32, SW-33, URS-02, URS-03, URS-13 and URS-15). 1,4-dioxane concentrations exceeded Drinking Water Quality Council (DWQC) recommended screening level of 1 µg/L in 6 of 8 locations sampled). Concentrations ranged from 2.2 µg/L (URS-13) to 8,000 µg/L (SW-32). The two locations with highest concentrations, SW-32 and SW-33, are within the treatment zone. The next highest concentration was detected in downgradient well URS-02 (1,800 µg/L).

A potential source of 1,4-dioxane is from its use as a stabilizer for 1,1,1-TCA (USEPA, 2017). 1,1,1-TCA is a COC at this Site.

- PFASs were detected in every location sampled for emerging contaminants. Perfluorooctanesulfonic acid (PFOS) exceeded DWQC recommended screening level of 10 ng/L in 8 of 9 locations sampled. PFOS was detected above the USEPA Advisory Limit of 70 nanograms per liter (ng/L) only in URS-09 (187 ng/L). Perfluorooctanonic acid (PFOA) exceeded DWQC recommended screening level of 10 ng/L in 6 of 9 locations sampled. PFOA was detected above the USEPA Advisory Limit of 70 ng/L only in URS-13 (112 ng/L). Total PFOA plus PFOS in samples SW-33, URS-03, URS-08, URS-09, URS-13 and URS-15 exceeded the USEPA Advisory Limit of 70 ng/L with concentrations ranging from 72.6 (URS-03) to 192 ng/L (URS-09). The highest individual and total PFOA plus PFOS concentrations were detected in upgradient/sidegradient well

URS-09 and upgradient well URS-13. Total PFAS concentrations ranged from 48 to 618 ng/L and exceeded DWQC recommended screening level of 500 ng/L in URS-13 only. Two other non-PFOA/PFOS compounds exceeded the DWQC recommended screening level of 100 ng/L - perfluorohexanoic acid (PFHxA) and perfluoropentanoic acid (PFPA) in URS-13 only.

Potential sources of PFAS may be from historical operations at the Site which includes metal plating, and a major fire at the facility occurred in December 1974. Metals plating facilities and firefighting foams commonly used PFAS-containing formulations (ITRC, 2017).

2.4 REMEDIAL ACTION OBJECTIVES

The Remedial Action Objectives (RAOs) for the Site as listed in the Record of Decision dated March 31, 1997 are as follows:

- Eliminate to the extent practicable the potential for direct human or animal contact with site contaminants
- Reduce, control, or eliminate to the extent practicable the contamination within the soils and waste on site.
- Reduce, control, or eliminate to the extent practicable any further migration of contaminated groundwater from the site, including migration into the Ruby Gordon basement sumps.
- Provide to the extent practicable, for attainment of groundwater SCG values in the area affected by the site.

2.5 REMAINING CONTAMINATION

2.5.1 Soil

Soil samples were collected in 1994 as part of the RI. The RI identified several probable source areas that included liquid waste drum storage areas near the southern and western property lines, spills resulting from the 1974 fire, chemical spills leaking into interior water supply wells, underground dry wells (crocks), concrete vaults, sumps, cracks in the flooring and waste lines. Significant soil contamination (consisting mostly of chlorinated ethenes) was detected near the southern boundary at OW-6S, to the west at MW-02 and MW-05 and near the building at OW-7S and OW-7R.

Soil samples were collected again in 2000 as part of the Pre-Design Investigation. The soil samples were collected to further characterize the source area identified in the area of the former loading dock during the RI.

The Supplemental Investigation field work was completed in 2007 to further delineate the contamination source areas. The Supplemental Investigation showed soil contamination was present mainly in the southeastern portion of the site under or near the building foundation as shown on Figure 6.

A total of 75 subsurface soil samples were collected from 19 boring locations in southeastern portion of the site below or near the remaining building foundation in order to evaluate the effectiveness of subsurface injections of sodium permanganate and molasses. The samples were collected between March 2011 and May 2013. Sample depths ranged from 4 to 24 feet bgs.

Figure 17 shows the remaining VOC contamination in site soils. As shown on the figure, soil contamination remains in only two of the sample locations. Although these sampling locations are within the areas targeted by the recent groundwater remediation activities, remediating soil contamination was not the intent of the remedial action.

On November 21, 2014, NYSDEC issued a memorandum presenting a change to the proposed site remedy, eliminating the need for excavation and off-site disposal of PAH-contaminated surface soils both on and off site. A copy of this memorandum is included as Appendix E.

2.5.2 Groundwater

The major groundwater contaminants at the site include vinyl chloride, 1,1-DCE, methylene chloride, 1,1-DCA, cis-1,2-DCE, 1,1,1-TCA, TCE and PCE. Table 6 shows the groundwater analytical results for these contaminants from samples collected in April/May 2013. This was the first sampling event that occurred after the three injections of sodium permanganate in 2011 and the injection of molasses in 2012. Samples were collected from 54 wells. As shown on Table 6, all wells showed results that exceeded NYDEC groundwater standards. The results from April/May 2013 are shown on Figure 18.

Groundwater contamination remained high in the southern portion of the treatment zone after the permanganate and molasses injections. Consequently, molasses was injected by direct push methods in this area in May 2014 at the locations shown on Figure 10. Groundwater sampling concentrated on wells in this area after the molasses injection was completed. Wells in this area were sampled on 7 occasions between July 2014 and February 2015. Samples results for the sampling event in February 2015 are presented on Table 7. The results from February 2015 are also shown on Figure 18. The results from May 2018 are shown on Figure 15. The results show that there is still significant groundwater contamination in this area of the site.

PFAS and 1,4-dioxane contamination in groundwater was identified during the May 2018 sampling event. Results exceeded DWQC recommended screening levels in a majority of the wells sampled. The emerging contaminant results from May 2018 are shown on Table 5 and Figure 16.

3.0 INSTITUTIONAL AND ENGINEERING CONTROL PLAN

3.1 GENERAL

Since remaining contamination exists at the site, Institutional Controls (IC) and ECs are required to protect human health and the environment. This IC/EC Plan describes the procedures for the implementation and management of all IC/ECs at the site. The IC/EC Plan is one component of the SMP and is subject to revision by the NYSDEC.

This plan provides:

- A description of all IC/ECs on the site;
- The basic implementation and intended role of each IC/EC;
- A description of the key components of the ICs set forth in the Environmental Easement;
- A description of the controls to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of IC/ECs, such as the implementation of the Excavation Work Plan (EWP) (as provided in Appendix F) for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the site; and
- Any other provisions necessary to identify or establish methods for implementing the IC/ECs required by the site remedy, as determined by the NYSDEC.

3.2 INSTITUTIONAL CONTROLS

A series of ICs is required by the ROD to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination; and, (3) limit the use and development of the site to commercial/industrial uses only. Adherence to these ICs on the site is required by the Environmental Easement and will be implemented under this SMP. ICs identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement. The ICs will be implemented to the extent of the site boundaries, which are shown on Figure 2. These ICs are:

- The property may be used for: commercial or industrial use;
- All ECs must be operated and maintained as specified in this SMP;
- All ECs must be inspected at a frequency and in a manner defined in the SMP.
- The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Monroe Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department.

- Groundwater and other environmental or public health monitoring must be performed as defined in this SMP;
- Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP;
- All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP;
- Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP;
- Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement.
- The potential for vapor intrusion must be evaluated for any buildings developed in the area within the IC boundaries noted on Figure 2, and any potential impacts that are identified must be monitored or mitigated.
- Periodic monitoring of the indoor air and sumps at the Ruby Gordon building to confirm that the sump covers are in place.

3.3 ENGINEERING CONTROLS

3.3.1 Trees (Phytoremediation)

Trees have been planted near the southern border of the site to address drainage in this area and to reduce migration of groundwater contamination to the adjacent Ruby Gordon property. Fifteen poplar and fifteen willow trees have been planted in this area as shown on Figure 12. Procedures for the inspection of the trees are provided in the Monitoring and Sampling Plan included in Section 4.0 of this SMP. Procedures for the maintenance of the trees are provided in the Operation and Maintenance Plan included in Section 5.0 of this SMP.

3.3.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC DER-10.

Tree removal will not be permitted unless prior written approval is granted by the NYSDEC and the NYSDOH. In the event that monitoring data indicates that the trees may no longer be required, a proposal to removal the trees will be submitted by the remedial party to the NYSDEC and NYSDOH.

4.0 MONITORING AND SAMPLING PLAN

4.1 GENERAL

This Monitoring and Sampling Plan describes the measures for evaluating the overall performance and effectiveness of the remedy. This Monitoring and Sampling Plan may only be revised with the approval of the NYSDEC. Details regarding the sampling procedures, data quality usability objectives, analytical methods, etc. for all samples collected as part of site management for the site are included in the Quality Assurance Project Plan (QAPP) provided in Appendix G.

This Monitoring and Sampling Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., groundwater);
- Assessing compliance with applicable NYSDEC SCGs; and
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment;

To adequately address these issues, this Monitoring and Sampling Plan provides information on:

- Sampling locations, protocol and frequency;
- Information on all designed monitoring systems;
- Analytical sampling program requirements;
- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and
- Annual inspection and periodic certification.

Reporting requirements are provided in Section 7.0 of this SMP.

4.2 SITE-WIDE INSPECTION

Site-wide inspections will be performed at a minimum of once per year. Modification to the frequency or duration of the inspections will require approval from the NYSDEC. Site-wide inspections will also be performed after all severe weather conditions that may affect ECs or monitoring devices. During these inspections, an inspection form will be completed as provided in Appendix H – Site Management Forms. The form will compile sufficient information to assess the following:

- Compliance with all ICs, including site usage;
- An evaluation of the condition and continued effectiveness of ECs;
- General site conditions at the time of the inspection;
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection; and

- Confirm that site records are up to date.

Inspections of all remedial components installed at the site will be conducted. A comprehensive site-wide inspection will be conducted and documented according to the SMP schedule, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether ECs continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP and the Environmental Notice;
- Achievement of remedial performance criteria; and
- If site records are complete and up to date; and

Reporting requirements are outlined in Section 7.0 of this plan.

Inspections will also be performed in the event of an emergency. If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs that reduces or has the potential to reduce the effectiveness of ECs in place at the site, verbal notice to the NYSDEC must be given by noon of the following day. In addition, an inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the IC/ECs implemented at the site by a qualified environmental professional, as determined by the NYSDEC. Written confirmation must be provided to the NYSDEC within 7 days of the event that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

4.3 TREE INSPECTION

All trees will be inspected on an annual basis. Inspections shall comply with the requirements presented in Section 4.1 above. Unscheduled inspections may take place in the event of a severe weather event or emergency occurs.

4.4 GROUNDWATER MONITORING AND SAMPLING

Samples shall be collected from the groundwater on a routine basis. Sampling locations, required analytical parameters, and schedule are provided in Table 8 below. Modification to the frequency or sampling requirements will require approval from the NYSDEC.

Table 8 – Groundwater Sampling Requirements and Schedule

Sampling Location	Analytical Parameters VOCs (EPA Method 8260C) 1,4-Dioxane (EPA Method 8270C SIM) PFAS (EPA Method 537 modified)	Schedule
B1/PZ-3	X	Annually
B4/PZ-1	X	Annually
MW-5	X	Annually
OW-3S	X	Annually
OW-4S	X	Annually
OW-5S	X	Annually
OW-6S	X	Annually
OW-7S	X	Annually
SW-32	X	Annually
SW-33	X	Annually
SW-37	X	Annually
URS-01	X	Annually
URS-02	X	Annually
URS-03	X	Annually
URS-04	X	Annually
URS-05	X	Annually
URS-06	X	Annually
URS-08	X	Annually
URS-09	X	Annually
URS-11	X	Annually
URS-12	X	Annually
URS-13	X	Annually
URS-14	X	Annually
URS-15	X	Annually
URS-16	X	Annually

Detailed sample collection and analytical procedures and protocols are provided in Appendix I – Field Sampling Plan and Appendix G – QAPP.

Groundwater monitoring will be performed annually to assess the performance of the remedy. Modification to the frequency or sampling requirements will require approval from the NYSDEC.

The network of monitoring wells has been installed to monitor upgradient, on-site and downgradient groundwater conditions at the site. Table 9 below summarizes the wells identification number, as well as the purpose, location, depths, diameter and screened intervals of the wells. As part of the groundwater monitoring, 21 on-site wells and 4 downgradient wells are sampled to evaluate the effectiveness of the remedial system. Well locations are shown on Figure 8. Monitoring well construction diagrams are included in Appendix D.

Table 9 – Monitoring Well Construction Details

Monitoring Well ID	Well Location	Coordinates (longitude/ latitude)	Well Diameter (inches)	Elevation (above mean sea level)			
				Riser	Surface	Screen Top	Screen Bottom
B1/PZ-3	On-Site		2				
B4/PZ-1	On-Site		2				
MW-5	On-Site			530.31			
OW-3S	On-Site		4	527.25			
OW-4S	On-Site		4	531.81	530	515	505
OW-5S	On-Site		4	528.79	526.9	514.9	504.9
OW-6S	On-Site		4	531	529	520	515
OW-7S	On-Site	42.0622° N, 78.6740° W	4	527.51	528.1	502.6	497.6
SW-32	On-Site	43.8412° N, 78.6763° W	2	530.49	528.11	512.11	504.11
SW-33	On-Site	43.8413° N, 78.6763° W	2	533.62	531.33	515.33	507.33
SW-37	On-Site	43.8413° N, 78.6764° W	2	533.77	531.33	515.33	507.33
URS-01	On-Site	42.0619° N, 78.6740° W	2	529.93	527.47	513.47	503.47
URS-02	On-Site	42.0616° N, 78.6739° W	2	530.48	528	513	508
URS-03	On-Site	42.0621° N, 78.6735° W	2	536.20	527.78	518.28	508.28
URS-04	Downgradient	42.0621° N, 78.6728° W	2	526.21	526.60	513.60	505.60
URS-05	Downgradient	42.0609° N, 78.6734° W	2	524.26	524.63	497.63	487.63
URS-06	Downgradient	42.0612° N, 78.6741° W	2		525.40	511.40	506.40
URS-08	On-Site	42.0628° N,	2	533.99	531.53	521.53	511.23

Monitoring Well ID	Well Location	Coordinates (longitude/ latitude)	Well Diameter (inches)	Elevation (above mean sea level)			
				Riser	Surface	Screen Top	Screen Bottom
		78.6737° W					
URS-09	On-Site	42.0628° N, 78.6733° W	2	534.11	531.80	523.80	513.80
URS-11	On-Site	42.0623° N, 78.6741° W	2	534.51	531.90	519.90	509.90
URS-12	On-Site	42.0625° N, 78.6740° W	2	534.50	531.92	519.92	509.92
URS-13	Downgradient	42.0614° N, 78.6747° W	2	525.20	525.50	516.50	509.50
URS-14	On-Site	42.0619° N, 78.6734° W	2	529.74	526.82	517.82	507.82
URS-15	On-Site	43.8341° N, 78.6767° W	2	530.37	527.95	513.95	503.95
URS-16	On-Site	43.8406° N, 78.6760° W	2	531.25	528.66	513.66	503.66

If biofouling or silt accumulation occurs in the on-site and/or off-site monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced, if an event renders the wells unusable.

Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance.

The NYSDEC will be notified prior to any repair or decommissioning of any monitoring well for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent Periodic Review Report. Well decommissioning without replacement will be done only with the prior approval of the NYSDEC. Well abandonment will be performed in accordance with NYSDEC's guidance entitled "CP-43: Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells that are decommissioned because they have been rendered unusable will be replaced in kind in the nearest available location, unless otherwise approved by the NYSDEC.

The sampling frequency may only be modified with the approval of the NYSDEC. This SMP will be modified to reflect changes in sampling plans approved by the NYSDEC.

Deliverables for the groundwater monitoring program are specified in Section 7.0 – Reporting Requirements.

All sampling activities will be recorded in a field book and associated sampling log as provided in Appendix I – Field Sampling Plan. Other observations (e.g., groundwater monitoring well integrity, etc.) will be noted on the sampling log. The sampling log will serve as the inspection form for the monitoring network. Additional detail regarding` monitoring and sampling protocols are provided in the site-specific Field Sampling Plan provided as Appendix I of this document.

5.0 OPERATION AND MAINTENANCE PLAN

The site remedy does not rely on any mechanical systems, such as groundwater treatment systems, sub-slab depressurization systems or air sparge/soil vapor extraction systems to protect public health and the environment. However, poplar and willow trees have been planted as an engineering control to reduce contaminant migration off site and control on-site drainage. These trees require minimal maintenance. The trees shall be inspected annually and the trees will be pruned or removed and replaced, if necessary, as directed by the NYSDEC.

6.0 PERIODIC ASSESSMENTS/EVALUATIONS

6.1 CLIMATE CHANGE VULNERABILITY ASSESSMENT

Increases in both the severity and frequency of storms/weather events, an increase in sea level elevations along with accompanying flooding impacts, shifting precipitation patterns and wide temperature fluctuation, resulting from global climactic change and instability, have the potential to significantly impact the performance, effectiveness and protectiveness of a given site and associated remedial systems. Vulnerability assessments provide information so that the site and associated remedial systems are prepared for the impacts of the increasing frequency and intensity of severe storms/weather events and associated flooding.

No vulnerability assessments have been performed at the site to date. Monitoring wells are a major component of the remedy, but they are not very vulnerable to extreme weather events. Trees are vulnerable to severe weather. Trees will be inspected after sever weather events. Any damaged trees will be pruned or will be removed and replaced, if necessary. The site is not in a flood hazard area according to Monroe county flood map.

6.2 GREEN REMEDIATION EVALUATION

NYSDEC's DER-31 Green Remediation requires that green remediation concepts and techniques be considered during all stages of the remedial program including site management, with the goal of improving the sustainability of the cleanup and summarizing the net environmental benefit of any implemented green technology.

Transportation to and from the Site and use of consumables in relation to visiting the Site in order to conduct system checks and or collect samples and shipping samples to a laboratory for analyses have direct and/or inherent energy costs. The schedule and/or means of these periodic activities have been prepared so that these tasks can be accomplished in a manner that does not impact remedy protectiveness but reduces expenditure of energy or resources.

6.3 REMEDIAL SYSTEM OPTIMIZATION

A Remedial Site Optimization (RSO) study will be conducted any time that the NYSDEC or the remedial party requests in writing that an in-depth evaluation of the remedy is needed. An RSO may be appropriate if any of the following occur:

- The remedial actions have not met or are not expected to meet RAOs in the time frame estimated in the Decision Document;
- The management and operation of the remedial system is exceeding the estimated costs;
- The remedial system is not performing as expected or as designed;
- Previously unidentified source material may be suspected;
- Plume shift has potentially occurred;

- Site conditions change due to development, change of use, change in groundwater use, etc.;
- There is an anticipated transfer of the site management to another remedial party or agency; and
- A new and applicable remedial technology becomes available.

An RSO will provide a critique of a site's conceptual model, give a summary of past performance, document current cleanup practices, summarize progress made toward the site's cleanup goals, gather additional performance or media specific data and information and provide recommendations for improvements to enhance the ability of the present system to reach RAOs or to provide a basis for changing the remedial strategy.

7.0 REPORTING REQUIREMENTS

7.1 SITE MANAGEMENT REPORTS

All site management inspection, maintenance and monitoring events will be recorded on the appropriate site management forms provided in Appendix H. These forms are subject to NYSDEC revision.

All applicable inspection forms and other records, including media sampling data and system maintenance reports, generated for the site during the reporting period will be provided in electronic format to the NYSDEC in accordance with the requirements of Table 10 below and summarized in the Periodic Review Report.

Table 10: Schedule of Interim Monitoring/Inspection Reports

Task/Report	Reporting Frequency*
Inspection Report	Annually
Periodic Review Report	Every five years, or as otherwise determined by the Department

* The frequency of events will be conducted as specified until otherwise approved by the NYSDEC.

All interim monitoring/inspections reports will include, at a minimum:

- Date of event or reporting period;
- Name, company, and position of person(s) conducting monitoring/inspection activities;
- Description of the activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet);
- Type of samples collected (e.g., groundwater);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format);
- Any observations, conclusions, or recommendations; and

- A determination as to whether contaminant conditions have changed since the last reporting event.
- Routine maintenance event reporting forms will include, at a minimum:
- Date of event;
- Name, company, and position of person(s) conducting maintenance activities;
- Description of maintenance activities performed;
- Any modifications to the system;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet); and,
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

Non-routine maintenance event reporting forms will include, at a minimum:

- Date of event;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Description of non-routine activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

Data will be reported in digital format as determined by the NYSDEC. Currently, data is to be supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link:
http://www.dec.ny.gov/chemical/62440.html.

7.2 PERIODIC REVIEW REPORT

A Periodic Review Report (PRR) will be submitted to the Department beginning forty-eight (48) months after the first annual report is issued. After submittal of the initial Periodic Review Report, the next PRR shall be submitted after 5 years to the Department or at another frequency as may be required by the Department. In the event that the site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the site described in Appendix A - Environmental Easement. The report will be prepared in accordance with NYSDEC's DER-10 and submitted within 30 days of the end of each certification period. Media sampling results will also be incorporated into the Periodic Review Report. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the site.

- Results of the required annual site inspections and severe condition inspections, if applicable.
- All applicable site management forms and other records generated for the site during the reporting period in the NYSDEC-approved electronic format, if not previously submitted.
- A summary of any discharge monitoring data and/or information generated during the reporting period, with comments and conclusions.
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor, etc.), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends.
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted in digital format as determined by the NYSDEC. Currently, data is supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link: http://www.dec.ny.gov/chemical/62440.html.
- A site evaluation, which includes the following:
  - The compliance of the remedy with the requirements of the site-specific Remedial Action Work Plan (RAWP), ROD or Decision Document;
  - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;
  - Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring and Sampling Plan for the media being monitored;
  - Recommendations regarding any necessary changes to the remedy and/or Monitoring and Sampling Plan; and
  - Trends in contaminant levels in the affected media will be evaluated to determine if the remedy continues to be effective in achieving remedial goals as specified by the Decision Document.
  - The overall performance and effectiveness of the remedy.

7.2.1 Certification of Institutional and Engineering Controls

Following the last inspection of the reporting period, a qualified environmental professional or Professional Engineer licensed to practice in New York State will prepare, and include in the Periodic Review Report, the following certification as per the requirements of NYSDEC DER-10:

"*For each institutional or engineering control identified for the site, I certify that all of the following statements are true:*

- *The institutional control and/or engineering control employed at this site is unchanged from the date the control was put in place, or last approved by the Department of Environmental Remediation (DER);*

- *Nothing has occurred that would impair the ability of such control to protect public health and the environment;*

- *Nothing has occurred that would constitute a violation or failure to comply with any Site Management Plan for this control;*

- *Access to the site will continue to be provided to DER to evaluate the remedy, including access to evaluate the continued maintenance of this control; and*

- *If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document;*

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner/Remedial Party or Owner's/Remedial Party's Designated Site Representative] [I have been authorized and designated by all site owners/remedial parties to sign this certification] for the site."

7.3 CORRECTIVE MEASURES WORK PLAN

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control, a Corrective Measures Work Plan will be submitted to the NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the Corrective Measures Work Plan until it has been approved by the NYSDEC.

7.4 REMEDIAL SITE OPTIMIZATION REPORT

In the event that an RSO is to be performed (see Section 6.3), upon completion of an RSO, an RSO report must be submitted to the Department for approval. A general outline for the RSO report is provided in Appendix J. The RSO report will document the research/ investigation and data gathering that was conducted, evaluate the results and facts obtained, present a revised conceptual site model and present recommendations. RSO recommendations are to be implemented upon approval from the NYSDEC. Additional work plans, design documents, Health and Safety Plans (HASP), etc., may still be required to implement the recommendations, based upon the actions that need to be taken. A final engineering report and update to the SMP may also be required.

The RSO report will be submitted, in electronic format, to the NYSDEC Central Office, Regional Office in which the site is located, Site Control and the NYSDOH Bureau of Environmental Exposure Investigation.

8.0 REFERENCES

GZA GeoEnvironmental of New York, 1996. Remedial Investigation Report.

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IT Engineering of New York P.C., 1999. Remedial Design Work Plan, Stuart-Olver-Holtz, Henrietta, New York.

IT Engineering of New York P.C., 2000. Remedial Design Work Plan Addendum Perm-Ox Pilot Test, Stuart-Olver-Holtz, Henrietta, New York.

NYSDEC DER-10 – "Technical Guidance for Site Investigation and Remediation".

NYSDEC, 1997. Record of Decision Stuart Over-Holtz, Henrietta, NY.

NYSDEC, 1998. Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1. June 1998 (April 2000 addendum).

NYSDEC, 2005. Explanation of Significant Differences, Stuart Olver Holtz, Town of Henrietta, Monroe County, Site Registry No. 8-28-079

Shaw Environmental, Inc., 2002. Pre-Design Investigation Summary Focused Feasibility Study.

URS Corporation, 2009. Supplemental Investigation Report.

URS Corporation, 2013. Focused Feasibility Study

TABLES

TABLE 2
GROUNDWATER ELEVATION DATA

Well/Boring ID	Total Depth (ft)	Screen Interval (ft bgs)	Soil Sample Intervals	Ground Elevation (ft amsl)	Riser Elevation (datum)	August 28, 2007 Depth to Groundwater (below top of riser)	August 28,2007 Groundwater Elevation
URS-01	42	14'-24'	0-2', 18-20'	527.47	529.93	9.25	520.68
URS-02	26	15'-20'	2-4', 12-14', 16-18'	527.96	530.48	11.00	519.48
URS-03	42	9.5'-19.5'	2-4', 8-12', 14-16'	527.78	530.20	11.58	518.62
URS-04	24	13'-21'	2-4', 22-24'	526.50	526.21	11.50	514.71
URS-05	40	27'-37'	0-2', 12-14'	524.63	524.26	6.20	518.06
URS-06	22	14'-19'	0-2', 16-18', 20-22'	525.40	525.09	5.75	519.34
URS-07	46	10'-20'	2-4', 12-14'	531.43	533.90	15.18	518.72
URS-08	42	10'-20'	2-4', 24-26'	531.53	533.99	10.52	523.47
URS-09	42	8'-18'	2-4', 10-14', 22-24'	531.80	534.11	13.19	520.92
URS-10	40.6	10'-20'	2-4', 22-24'	531.40	533.52	9.52	524.00
URS-11	48.2	12'-22'	4-6', 8-10'	531.90	534.51	9.48	525.03
URS-12	46	12'-22'	4-5.5', 8-10', 16-18'	531.92	534.50	8.94	525.56
URS-13	24	9'-16'	2-4', 20-22'	525.49	525.18	4.80	520.38
URS-14	22	9'-19'	0-2', 20-22'	526.82	529.74	16.11	513.63
SB-1	30		2-4', 22-24'	531.79			
SB-2	30		2-4', 14-16'	531.77			
SB-3	30		2-4', 24-26'	531.79			
SB-4	30		2-4', 22-24'	531.82			
SB-5	30		2-4', 20-22'	531.80			
SB-6	30		2-4', 12-14'	531.78			
SB-7	30		2-4', 26-28'	528.55			
SB-8	30		1-2', 20-22'	531.81			
SB-9	30		0-2', 26-28'	531.78			

TABLE 2
GROUNDWATER ELEVATION DATA

Well/Boring ID	Total Depth (ft)	Screen Interval (ft bgs)	Soil Sample Intervals	Ground Elevation (ft amsl)	Riser Elevation (datum)	August 28, 2007 Depth to Groundwater (below top of reiser)	August 28,2007 Groundwate Elevation
SB-10	30		0-2', 24-26'	531.79			
SB-11	30		0-2', 20-22'	527.98			
SB-12	30		2-4', 14-16'	531.35			
SB-13	30		0-2', 26-28'	527.50			
SB-14	30		0-2', 20-22'	531.71			
SB-15	30		2-4', 12-14'	531.33			
SB-16	30		2-4', 20-22'	531.31			
SB-17	30		2-4', 26-28'	528.09			
SB-18	30		0-2', 10-12'	528.53			

TABLE 3
GROUNDWATER DATA SUMMARY

Sample Location	Sample Date	Total Concentration 1,1,1-TCA, 1,1-DCA, 1,1-DCE, 1,1-DCE, TCE, PCE and VC (µg/L)
SW-1	May 2013	195
SW-2	May 2013	958
SW-3	May 2013	2,290
SW-4	May 2013	801
SW-5	May 2013	310
SW-6	May 2013	2,173
SW-7	May 2013	1,694
SW-8	May 2013	870
SW-9	May 2013	946
SW-10	May 2013	2,447
SW-11	May 2013	2,305
SW-12	May 2013	432
SW-13	May 2013	1,822
SW-14	May 2013	440
SW-15	May 2013	8,576
SW-16	May 2013	515
SW-17	May 2013	1,740
SW-18	May 2013	200
SW-19	May 2013	1,653
SW-20	May 2013	2,347
SW-21	January 2014	1,253
SW-22	May 2013	327
SW-23	January 2014	16,810
SW-24	January 2014	20,410
SW-25	January 2014	6,774
SW-26	May 2013	2,954
SW-27	May 2013	809
SW-28	January 2014	1,918
SW-29	January 2014	3,107
SW-30	January 2014	4,790
SW-31	January 2014	3,570
SW-32	February 2015	1,280,000
SW-33	February 2015	1,073,490
SW-34	January 2014	4,307
SW-35	January 2014	330
SW-36	February 2015	22,900
SW-37	February 2015	85,300
URS-03	May 2013	151
URS-07	May 2013	1,162
URS-11	February 2015	57,260
URS-12	January 2014	58
OW-7S	February 2015	131,600

TABLE 4
GROUNDWATER VOC ANALYTICAL RESULTS MAY 2018
STUART OLVER HOLTZ SITE

Location ID			B1/PZ-03	B4/PZ-01	MW-05	OW-03S	OW-04S
Sample ID			B1/PZ-3	B4/PZ-01	MW-05	OW-3S	OW-04S
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			05/02/18	05/02/18	05/02/18	05/02/18	05/02/18
Parameter	**Units**	**Criteria***					
Volatile Organic Compounds							
1,1,1-Trichloroethane	UG/L	5		27	22		930
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	5					
1,1,2-Trichloroethane	UG/L	1		0.24 J			
1,1-Dichloroethane	UG/L	5		15	74	350	910
1,1-Dichloroethene	UG/L	5		5.8	8.5 J	41	240
1,2-Dichloroethane	UG/L	0.6		0.22 J			
1,2-Dichloroethene (cis)	UG/L	5		2.7	210	360	130
1,2-Dichloroethene (trans)	UG/L	5					
Chloroethane	UG/L	5		0.66 J			
Chloromethane	UG/L	5					
Methyl tert-butyl ether	UG/L	10			3.5 J		
Tetrachloroethene	UG/L	5			640	5.9 J	
Trichloroethene	UG/L	5		2.4	200	140	25
Vinyl chloride	UG/L	2					
Total Volatile Organic Compounds	UG/L	-	ND	54.02	1,158	896.9	2,235

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June 1998, Revised April 2000, Class GA.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

- - No Standard or guidance value.

Empty cell - Not detected. D - Result reported from a secondary dilution analysis. J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 4
GROUNDWATER VOC ANALYTICAL RESULTS MAY 2018
STUART OLVER HOLTZ SITE

Location ID			OW-05S	OW-06S	OW-06S	OW-07S	OW-07S
Sample ID			OW-5S	FD2-050218	OW-6S	FD1-050218	OW-7S
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			05/02/18	05/02/18	05/02/18	05/02/18	05/02/18
Parameter	**Units**	**Criteria***		Field Duplicate (1-1)		Field Duplicate (1-1)	
Volatile Organic Compounds							
1,1,1-Trichloroethane	UG/L	5	0.89 J				
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	5	1.5				
1,1,2-Trichloroethane	UG/L	1					
1,1-Dichloroethane	UG/L	5	14	26	28	1,400	1,300
1,1-Dichloroethene	UG/L	5	4.8				
1,2-Dichloroethane	UG/L	0.6					
1,2-Dichloroethene (cis)	UG/L	5	11	520	550	10,000	10,000
1,2-Dichloroethene (trans)	UG/L	5			9.4 J		
Chloroethane	UG/L	5					
Chloromethane	UG/L	5					
Methyl tert-butyl ether	UG/L	10					
Tetrachloroethene	UG/L	5		21	20		
Trichloroethene	UG/L	5	33	20	19	230 J	210
Vinyl chloride	UG/L	2		17	19	1,900	1,800
Total Volatile Organic Compounds	UG/L	-	65.19	604	645.4	13,530	13,310

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June 1998, Revised April 2000, Class GA.

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- - No Standard or guidance value.

Empty cell - Not detected. D - Result reported from a secondary dilution analysis. J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 4
GROUNDWATER VOC ANALYTICAL RESULTS MAY 2018
STUART OLVER HOLTZ SITE

Location ID			SW-32	SW-33	SW-37	URS-01	URS-02
Sample ID			SW-32	SW-33	SW-37	URS-01	URS-02
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			05/02/18	05/02/18	05/02/18	05/02/18	05/02/18
Parameter	**Units**	**Criteria***					
Volatile Organic Compounds							
1,1,1-Trichloroethane	UG/L	5	630,000		1,200	420	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	5				82	
1,1,2-Trichloroethane	UG/L	1					
1,1-Dichloroethane	UG/L	5	90,000	20,000 J	7,700	2,700 D	4.6
1,1-Dichloroethene	UG/L	5				160	
1,2-Dichloroethane	UG/L	0.6				5.7 J	
1,2-Dichloroethene (cis)	UG/L	5			6,200	3,700 D	
1,2-Dichloroethene (trans)	UG/L	5					
Chloroethane	UG/L	5		16,000 J		160	2.6 J
Chloromethane	UG/L	5					
Methyl tert-butyl ether	UG/L	10					7.4
Tetrachloroethene	UG/L	5					
Trichloroethene	UG/L	5				780	
Vinyl chloride	UG/L	2			2,700	1,500	
Total Volatile Organic Compounds	UG/L	-	720,000	36,000	17,800	9,507.7	14.6

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June 1998, Revised April 2000, Class GA.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

- - No Standard or guidance value.

Empty cell - Not detected. D - Result reported from a secondary dilution analysis. J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 4
GROUNDWATER VOC ANALYTICAL RESULTS MAY 2018
STUART OLVER HOLTZ SITE

Location ID			URS-03	URS-05	URS-06	URS-08	URS-11
Sample ID			URS-03	URS-05	URS-06	URS-08	URS-11
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			05/02/18	05/02/18	05/02/18	05/02/18	05/02/18
Parameter	**Units**	**Criteria***					
Volatile Organic Compounds							
1,1,1-Trichloroethane	UG/L	5	640			0.96 J	
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	5	140				
1,1,2-Trichloroethane	UG/L	1					
1,1-Dichloroethane	UG/L	5	210			1.0	6,100
1,1-Dichloroethene	UG/L	5	16				
1,2-Dichloroethane	UG/L	0.6					
1,2-Dichloroethene (cis)	UG/L	5	35				
1,2-Dichloroethene (trans)	UG/L	5					
Chloroethane	UG/L	5					22,000
Chloromethane	UG/L	5					400 J
Methyl tert-butyl ether	UG/L	10					
Tetrachloroethene	UG/L	5	5.1 J				
Trichloroethene	UG/L	5	37				
Vinyl chloride	UG/L	2	14				
Total Volatile Organic Compounds	UG/L	-	1,097.1	ND	ND	1.96	28,500

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June 1998, Revised April 2000, Class GA.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

- - No Standard or guidance value.

Empty cell - Not detected. D - Result reported from a secondary dilution analysis. J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 4
GROUNDWATER VOC ANALYTICAL RESULTS MAY 2018
STUART OLVER HOLTZ SITE

Location ID			URS-12	URS-13	URS-14	URS-15	URS-16
Sample ID			URS-12	URS-13	URS-14	URS-15	URS-16
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			05/02/18	05/02/18	05/02/18	05/02/18	05/02/18
Parameter	**Units**	**Criteria***					
Volatile Organic Compounds							
1,1,1-Trichloroethane	UG/L	5					
1,1,2-Trichloro-1,2,2-trifluoroethane	UG/L	5					
1,1,2-Trichloroethane	UG/L	1					
1,1-Dichloroethane	UG/L	5				640	260
1,1-Dichloroethene	UG/L	5				31	
1,2-Dichloroethane	UG/L	0.6					
1,2-Dichloroethene (cis)	UG/L	5				2,300 D	1,800
1,2-Dichloroethene (trans)	UG/L	5				120	
Chloroethane	UG/L	5				120	
Chloromethane	UG/L	5					
Methyl tert-butyl ether	UG/L	10		0.37 J			
Tetrachloroethene	UG/L	5					2,600
Trichloroethene	UG/L	5				13 J	630
Vinyl chloride	UG/L	2				2,000 D	95
Total Volatile Organic Compounds	UG/L	-	ND	0.37	ND	5,224	5,385

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June 1998, Revised April 2000, Class GA.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

- - No Standard or guidance value.

Empty cell - Not detected. D - Result reported from a secondary dilution analysis. J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 5
EMERGING CONTAMINANTS ANALYTICAL RESULTS
STUART OLVER HOLTZ SITE

Location ID				SW-32	SW-33	URS-02	URS-03	URS-05
Sample ID				SW-32	SW-33	URS-02	URS-03	URS-05
Matrix				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)				-	-	-	-	-
Date Sampled				05/02/18	05/02/18	05/02/18	05/02/18	05/02/18
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**					
Volatile Organic Compounds								
1,4-Dioxane	UG/L	1	-	8,000	3,400 J	1,800	62	
Per- and Polyfluoroalkyl Substances								
Perfluorobutanesulfonic acid (PFBS)	NG/L	100	-	8.49 NJ		2.29	0.96 J	1.36 J
Perfluorobutanoic acid (PFBA)	NG/L	100	-	98.5	64.8	14.6	8.85	63.7
Perfluorodecanoic acid (PFDA)	NG/L	100	-	2.26	1.21 J		3.39	
Perfluorododecanoic acid (PFDoA)	NG/L	100	-				1.65 J	
Perfluoro-1-heptanesulfonate (PFHPS)	NG/L	100	-	0.77 J	0.81 J		0.64 J	
Perfluoroheptanoic acid (PFHpA)	NG/L	100	-	12.0	18.7	2.50	4.88	1.65 J
Perfluorohexanesulfonic acid (PFHxS)	NG/L	100	-	3.56	4.95		2.43	
Perfluorohexanoic acid (PFHxA)	NG/L	100	-	37.7	73.8	6.97	9.45	2.52
Perfluorononanoic acid (PFNA)	NG/L	100	-	1.73 J	2.80	0.44 J	2.19 J	0.63 J
Perfluorooctane sulfonamide (FOSA)	NG/L	100	-				0.43 J	
Perfluorooctanesulfonic acid (PFOS)	NG/L	10	70	36.0	58.8	7.49	56.7	12.6
Perfluorooctanoic acid (PFOA)	NG/L	10	70	31.7	58.5	4.80	15.9	2.19
Perfluoropentanoic acid (PFPA)	NG/L	100	-	37.1	60.0	8.95	9.21	2.24
Perfluorotetradecanoic acid (PFTeA)	NG/L	100	-					
Perfluoroundecanoic acid (PFUnA)	NG/L	100	-					
Total Per- and Polyfluoroalkyl Substances	NG/L	500	-	269.81	344.37	48.04	116.68	86.89
Total PFOA and PFOS	NG/L	-	70	67.7	117.3	12.29	72.6	14.79

Criteria (1)- Recommended Screening Level - New York State Drinking Water Quality Council (DWQC), January 2019

Criteria (2)- USEPA Drinking Water Health Advisory (USEPA, May 2016)

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria (1)

Concentration Exceeds Criteria (2)

- - No Standard or guidance value.

J - The reported concentration is an estimated value. NJ - The reported results are tentative with a concentration at an estimated value.

U - Not detected above the reported quantitation limit. NA - Not Analyzed

Only Detected Results Reported.

TABLE 5
EMERGING CONTAMINANTS ANALYTICAL RESULTS
STUART OLVER HOLTZ SITE

Location ID				URS-08	URS-09	URS-13	URS-15
Sample ID				URS-08	URS-09	URS-13	URS-15
Matrix				Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)				-	-	-	-
Date Sampled				05/02/18	05/02/18	05/02/18	05/02/18
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**				
Volatile Organic Compounds							
1,4-Dioxane	UG/L	1	-		NA	2.2	89
Per- and Polyfluoroalkyl Substances							
Perfluorobutanesulfonic acid (PFBS)	NG/L	100	-	1.20 J	1.37 J	4.71	
Perfluorobutanoic acid (PFBA)	NG/L	100	-	18.9	7.75	64.6	34.2
Perfluorodecanoic acid (PFDA)	NG/L	100	-	5.64	1.44 J	11.4	0.70 J
Perfluorododecanoic acid (PFDoA)	NG/L	100	-			1.22 J	
Perfluoro-1-heptanesulfonate (PFHPS)	NG/L	100	-	1.0 J	1.13 J	2.02	0.95 J
Perfluoroheptanoic acid (PFHpA)	NG/L	100	-	11.5	2.30	71.0	18.5
Perfluorohexanesulfonic acid (PFHxS)	NG/L	100	-	2.79	3.01	9.27	4.58
Perfluorohexanoic acid (PFHxA)	NG/L	100	-	25.6	4.84	119	55.3
Perfluorononanoic acid (PFNA)	NG/L	100	-	2.93	0.83 J	36.4	2.07
Perfluorooctane sulfonamide (FOSA)	NG/L	100	-				
Perfluorooctanesulfonic acid (PFOS)	NG/L	10	70	65.6	187	51.4	46.0
Perfluorooctanoic acid (PFOA)	NG/L	10	70	25.9	5.12	112	33.8
Perfluoropentanoic acid (PFPA)	NG/L	100	-	25.6	2.08 J	133	49.0
Perfluorotetradecanoic acid (PFTeA)	NG/L	100	-				0.62 J
Perfluoroundecanoic acid (PFUnA)	NG/L	100	-			1.58 J	
Total Per- and Polyfluoroalkyl Substances	NG/L	500	-	186.66	216.87	617.6	245.72
Total PFOA and PFOS	NG/L	-	70	91.5	192.12	163.4	79.8

Criteria (1)- Recommended Screening Level - New York State Drinking Water Quality Council (DWQC), January 2019

Criteria (2)- USEPA Drinking Water Health Advisory (USEPA, May 2016)

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria (1)

Concentration Exceeds Criteria (2)

- - No Standard or guidance value.

J - The reported concentration is an estimated value. NJ - The reported results are tentative with a concentration at an estimated value.

U - Not detected above the reported quantitation limit. NA - Not Analyzed

Only Detected Results Reported.

Table 6

Groundwater Contamination April/May 2013

Groundwater Contaminant	Vinyl Chloride	1,1-DCE	Methylene Chloride	1,1-DCA	cis-1,2-DCE	1,1, 1-TCA	TCE	PCE
Groundwater Standard (1)	2	5	5	5	5	5	5	5
Well ID								
B4/PZ-01	6.5	81	2	160	32	350	19	1.8
MW-02	280	1500	280	11000	2400	3000		
OW-3S	49	100		690	380		450	220
OW-4S		1100	12	2000	460	5000	140	
OW-5S		39	4.5	96	91	25	230	
OW-6S	720			320	10000		240	1400
OW-7R		10	6.4	95	320	340	520	2.4
OW-7S	4800	280	1600	9200	33000		14000	
OW-11S				2.3	49	7.2	2.5	
SW-1	1.1	24		48	50	65	6	0.4
SW-2		260		300	88	160	150	
SW-3		200		280		710	1100	
SW-4		80		180	56	150	290	14
SW-5		58	1	66		150	35	0.94
SW-6		220		1600	35	300	18	
SW-7		74		1000		620		
SW-8				100	770			
SW-9	19			660	42	90	5.4	
SW-10		580		1100	25	720		
SW-11		220		1600	230	240	15	
SW-12	19	26		82	250	32	23	
SW-13	25	510		910	110	240	27	
SW-14				230			210	
SW-15	46		51	3200	2800	270	2100	
SW-16	6.4	26		85	300	20	78	
SW-17				470	770		500	
SW-18		58				200		
SW-19	20	54	16	200	1200	170	9.3	
SW-20	27	100		270	1600	130	220	

Table 6

Groundwater Contamination April/May 2013

Groundwater Contaminant	Vinyl Chloride	1,1-DCE	Methylene Chloride	1,1-DCA	cis-1,2-DCE	1,1, 1-TCA	TCE	PCE
Groundwater Standard (1)	2	5	5	5	5	5	5	5
Well ID								
SW-21		130		880	12000		780	
SW-22		16	9.6	20	81	210		
SW-23	150	620	150	1300	3700	3800	4400	34
SW-24	97	140	35	4000	9700		12000	15
SW-25		580		1200	8100	2300	5100	
SW-26	220	110	18	1200	190	1200	34	
SW-27			22	19	210	140	440	
SW-28				180	59000		650	
SW-29				18	5100	72	4900	
SW-30	340	930	170	1900	29000	4300	1500	
SW-31					730		5400	
SW-32		49000	49000	62000	3800	470000		
SW-33		880	270	6300	39000	2900	1300	
SW-34	160			150	18000		10000	
SW-35	410	130		480	23000	270	3700	
SW-36			98	25000	4500		98	
SW-37		200	120	10000	6300	1100	3000	
URS-01	24		17	910	29		14	
URS-03			11	88	10	39	14	
URS-07	27	35		1100				
URS-09	160	110		3400	46	610	16	9.8
URS-11		3700	3000	41000	1700	28000	750	
URS-12			63	39	3700		4500	
URS-15	290	520		1200	14000			
URS-16	49			180	1700		1100	3300

Note 1: NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwate Effluent Limitations. Class GA.

LEGEND

DCA-Dichloroethane PCE-Tetrachlorethene TCE-Trichloroethene

DCE-Dichlotoethene TCA-Trichloroethane

Table 7

Groundwater Contamination February 2015

Groundwater Contaminant	Vinyl Chloride	1,1-DCE	Methylene Chloride	1,1-DCA	cis-1,2-DCE	1,1, 1-TCA	TCE	PCE
Groundwater Standard (1)	2	5	5	5	5	5	5	5
Well ID								
OW-7S	5900	8900	1200	7000	35000	70000	4800	
SW-32		80000	130000	100000		1100000		
SW-33	7600	68000	14000	21000	5800	970000	780	310
SW-36	570			19000		1000		
SW-37	1900	1100		18000	52000	8500	3800	
URS-11		3200	6800	20000	4100	29000	960	

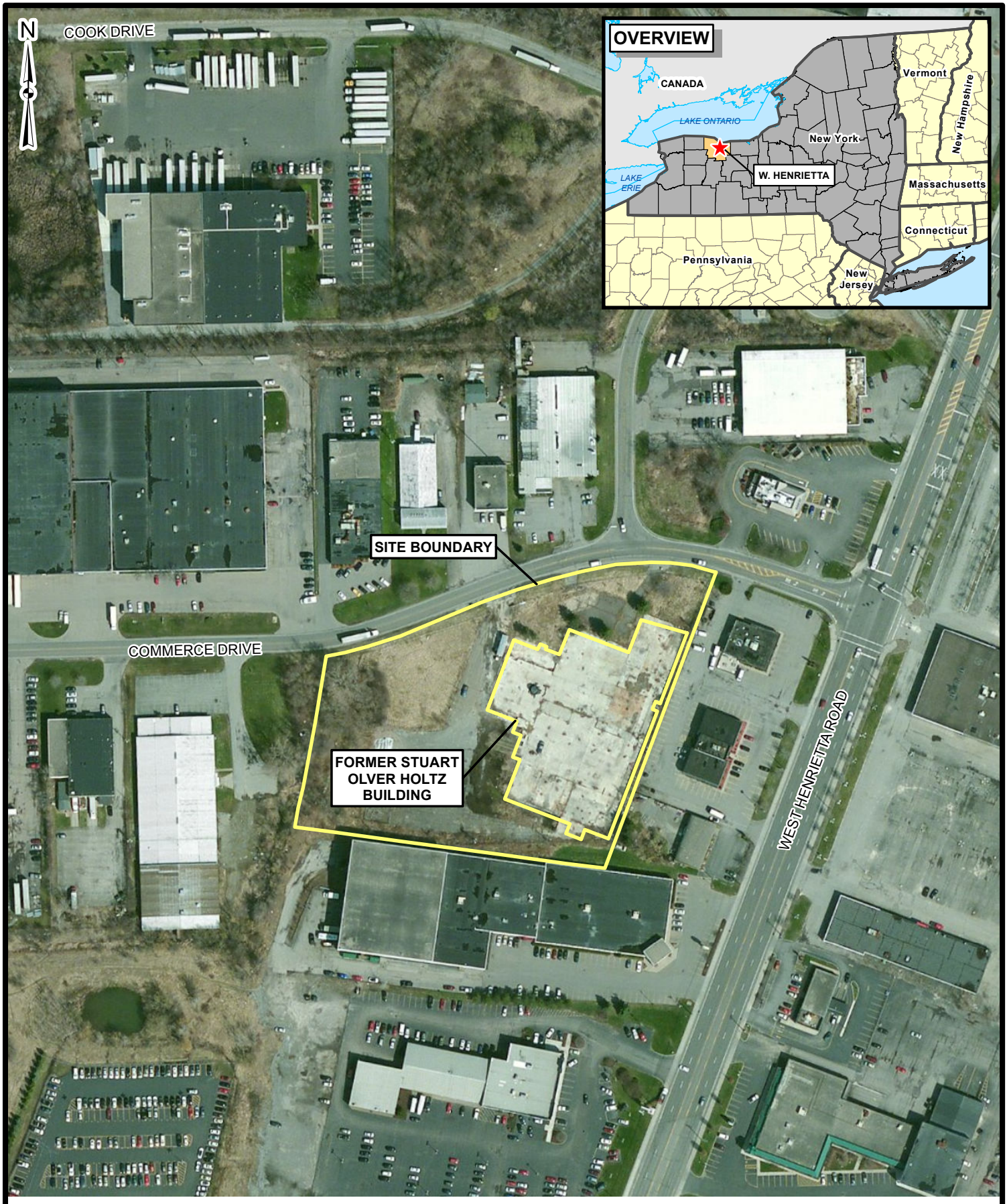
Note 1: NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwate Effluent Limitations. Class GA.

LEGEND

DCA-Dichloroethane PCE-Tetrachlorethene TCE-Trichloroethene

DCE-Dichlotoethene TCA-Trichloroethane

FIGURES



Source: ESRI World Imagery

200 0 200 Feet

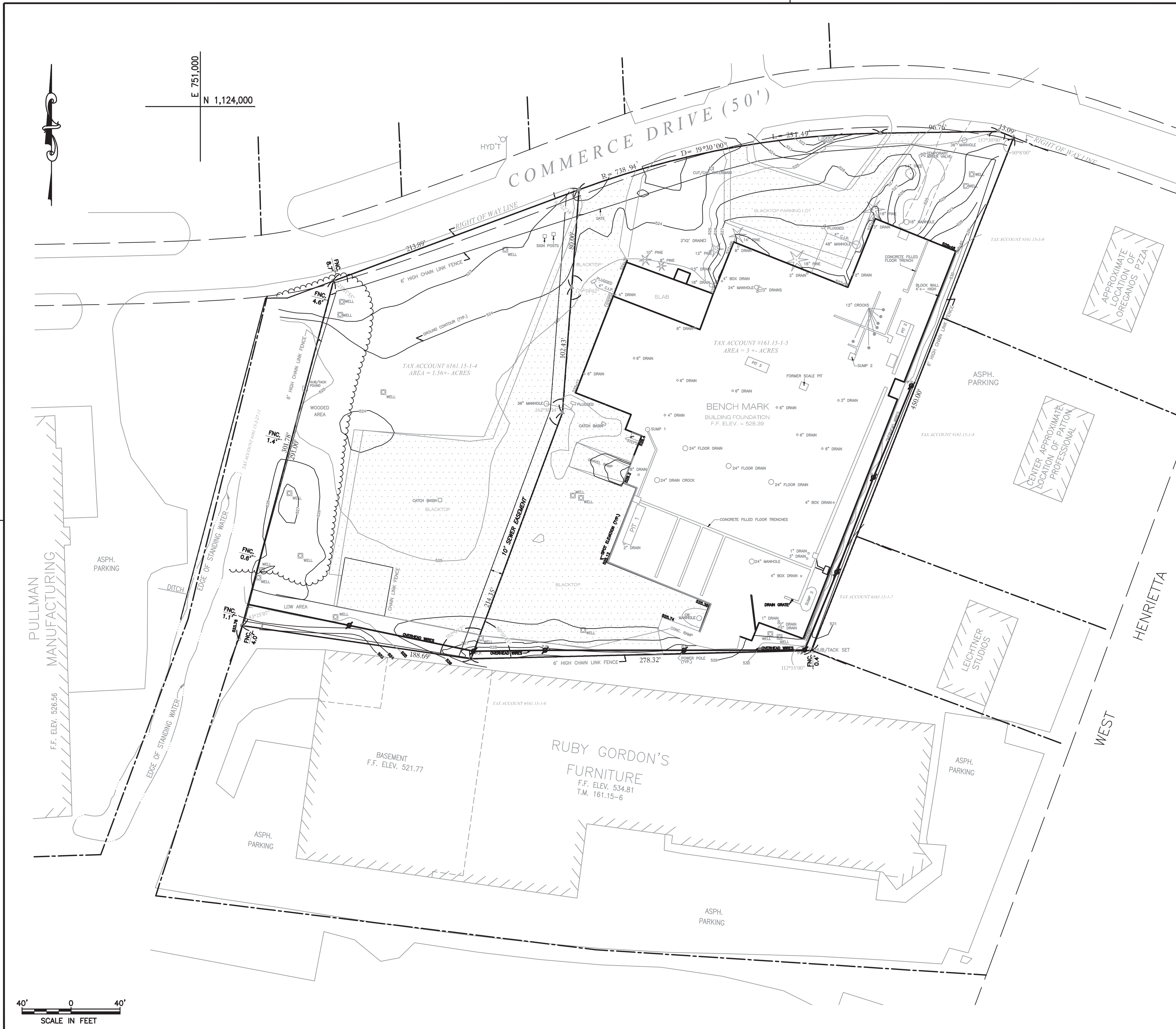
URS

STUART OLVER HOLTZ
SITE LOCATION

FIGURE 1

J:\Projects\11174465.00000\DB\GIS\SITE LOCATION.mxd 12/20/2016

PROJECT NO. SHEET NO.



J:\Projects\11174465.00000\CAD\DECEMBER 2016\FIGURE 2.dwg, FIGURE 2, 1:2, 12/20/2016, 1-EJH

NOTES:

1. THIS BASEMAP WAS DEVELOPED FROM A SURVEY PERFORMED ON FEBRUARY 22, 2000 AND PROVIDED BY IT CORP. AND AN ONSITE SURVEY PERFORMED ON MARCH 20, 2006 BY MARQUES AND ASSOCIATED, P.C.

2. HORIZONTAL CONTROL IS BASED ON NEW YORK STATE PLANE COORDINATE SYSTEM NAD 83.

NO.	DATE	BY	PROJECT ARCH/ ENGR APPROVAL	DEPT. MGR/SUPR APPROVAL

REVISIONS

URS Corporation
77 Goodell Street, Buffalo, New York 14203
(716)856-5636 phone (716)856-2545 fax

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
625 BROADWAY
ALBANY, NEW YORK
12233

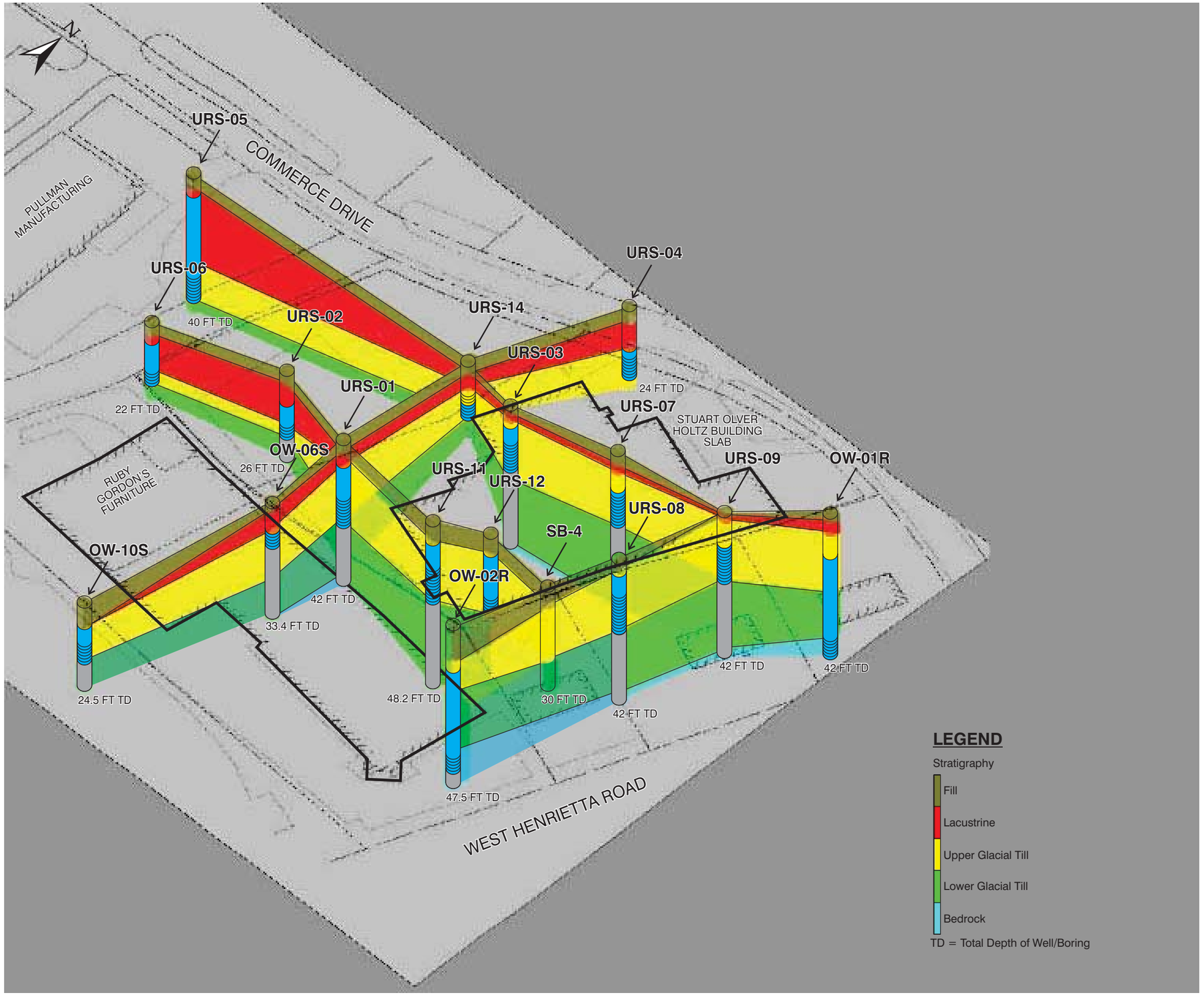
STUART OLVER HOLTZ SITE
TOWN OF HENRIETTA
MONROE COUNTY
SITE No. 8-28-079

REMEDIAL CONSTRUCTION

EXISTING SITE PLAN

SHEET TITLE

OWNER'S PROJECT NUMBER	PROJECT NUMBER 11174465
DATE DECEMBER 2016	SCALE AS SHOWN
DRAWN BY EJH	FIGURE 2
CHECKED BY JS	
ARCH/ENGR. CWP	DWG. NUMBER

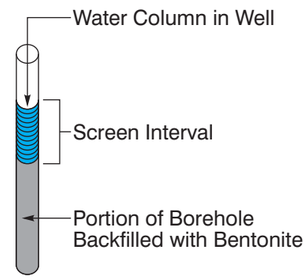


LEGEND

Stratigraphy

- Fill
- Lacustrine
- Upper Glacial Till
- Lower Glacial Till
- Bedrock

TD = Total Depth of Well/Boring



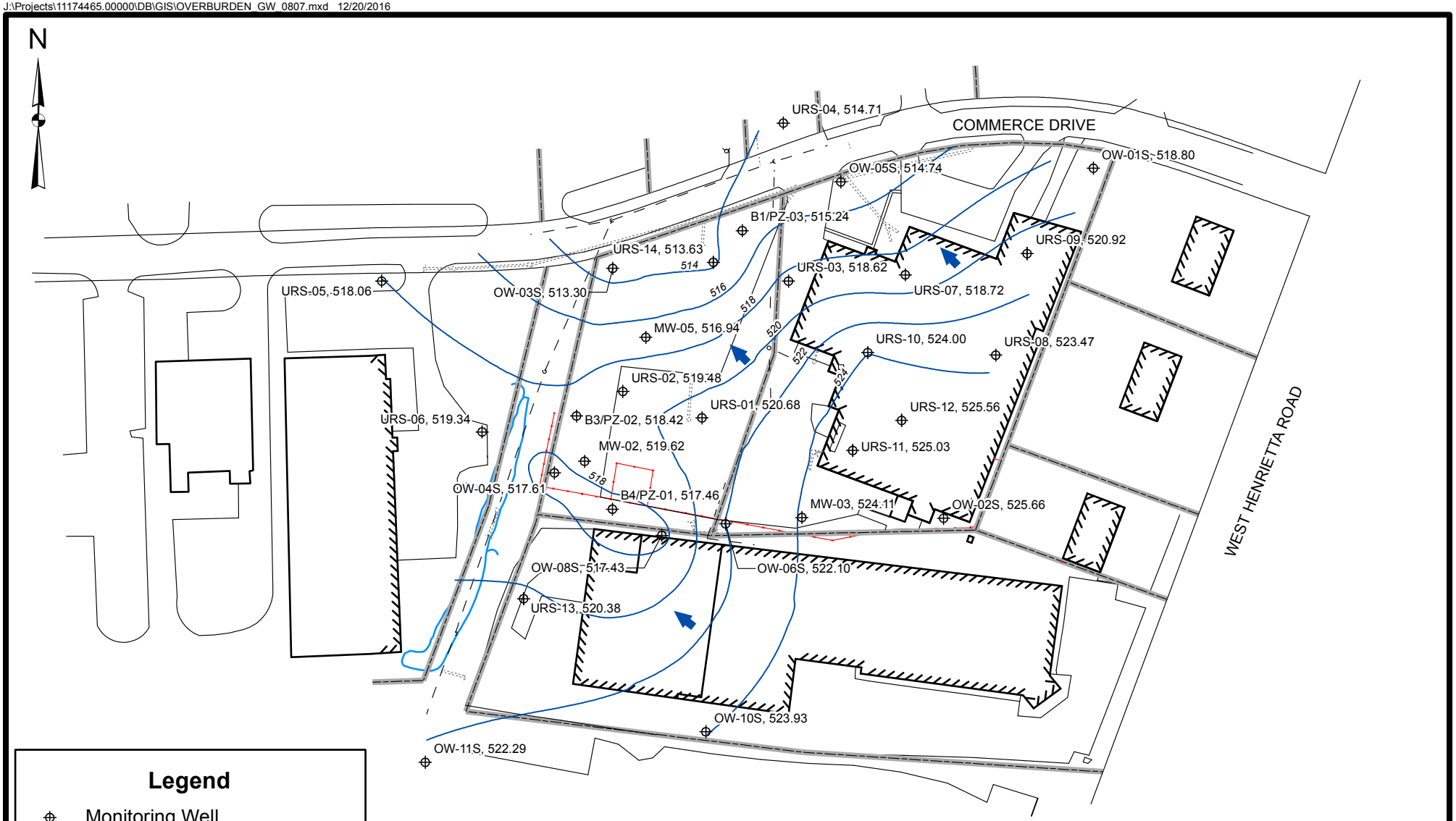
SITE STRATIGRAPHY FENCE DIAGRAM

URS

FIGURE 3

AG19848A-11174465-122016-GCM

J:\Projects\11174465.00000\DB\GIS\OVERBURDEN_GW_0807.mxd 12/20/2016

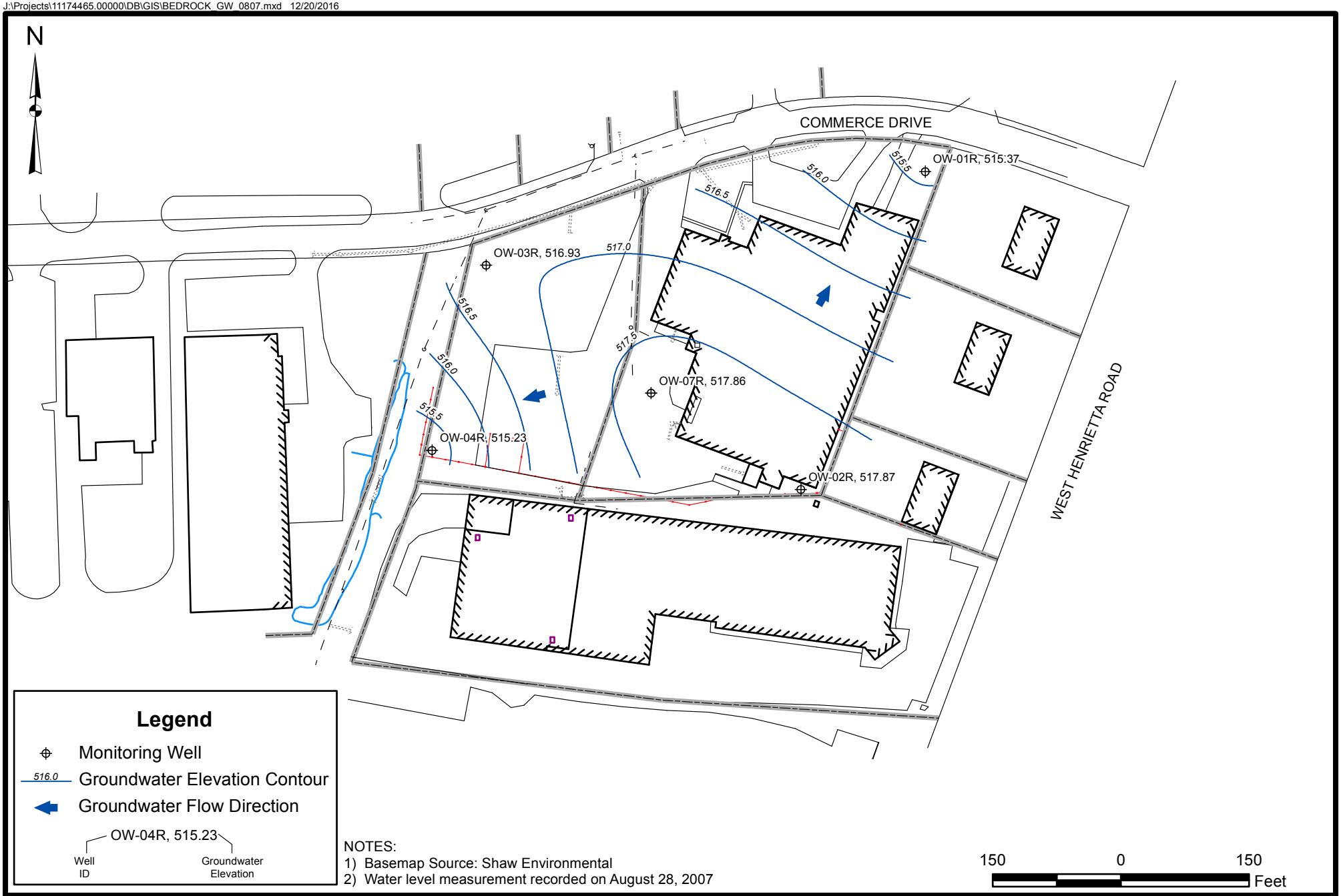


URS

STUART OLVER HOLTZ SITE
OVERBURDEN GROUNDWATER CONTOUR MAP, AUGUST 28, 2007

FIGURE 4

J:\Projects\11174465.00000\DB\GIS\BEDROCK_GW_0807.mxd 12/20/2016



URS

STUART OLVER HOLTZ SITE
BEDROCK GROUNDWATER CONTOUR MAP, AUGUST 28, 2007

FIGURE 5

N

E 751,000
N 1,124,000

COMMERCE DRIVE

COMMERCE DRIVE

HYD'T

GV

URS-04
14

OW-55

P1/PZ-3

OW-1S
OW-1R

URS-09

URS-05
26

OW-3S
OW-3R

30
URS-14

URS-03
100

53
URS-07

STUART OLVER HOLTZ
(DEMOLISHED)

500

MW-5

707
URS-10

12
URS-08

Shaw's
Source
Area

1,000
3,000

URS-02

B3/PZ-2
86

URS-01
10

252
2,742

258
95
916
89
109
1,151

OW-7R
OW-7S

2,000
12,000

URS-12

URS-06
24

URS-11
85
182
1,440

MW-2

41
96
2,749

SB-13
SB-14
SB-12
SB-10

558
4,158

SB-17
SB-15
SB-16

4,000
3,000
2,000
1,000
500

19
OW-2R

OW-LS(MW-2)

OW-4S
OW-4R

B4/PZ-1

OW-6S

OW-8S

MW-3
SB-18
239

OW-7S

PULLMAN
MANUFACTURING

DITCH

OW-9S

EDGE OF STANDING WATER

1.0
URS-13

RUBY GORDON'S
FURNITURE

ROAD

HENRIETTA

WEST

DRAINAGE
SWALE

B101-OW

OW-11S

OW-10S

LEGEND

50' 0 50'
SCALE IN FEET

FENCE
RIGHT OF WAY
PROPERTY LINE

500 = 500µg/KG
SHAW'S SOURCE AREA
SITE BOUNDARY
SOURCE AREA BASED ON 2007 INVESTIGATION
10 SUM OF VOCs DETECTED IN SOIL SAMPLES FROM SATURATED ZONE (MICROGRAMS/KILOGRAM)

URS-01 SUPPLEMENTAL INVESTIGATION OVERBURDEN MONITORING WELL
SB-14 SOIL BORING
MW-2 OVERBURDEN MONITORING WELL
B4/PZ-1 PIEZOMETER INSTALLED IN PREVIOUS INVESTIGATION
OW-1R BEDROCK MONITORING WELL

STUART OLVER HOLTZ SITE
TOTAL VOCs IN SOIL
2007

URS

FIGURE 6

AG19858A-11174465-122016-GCM

N

E 751,000
N 1,124,000

COMMERCE DRIVE

COMMERCE DRIVE

HYD'T

GV

URS-04
ND

OW-5S
1,851

B1/PZ-3
131

URS-14
453

OW-3S
1,011

OW-3R
7

URS-05
ND

URS-03
54,523

50,000

40,480
URS-07

50,000

10,000

1,000

LOW

289
URS-10

122,200

STUART OLVER HOLTZ
(DEMOLISHED)

URS-09
1,007

OW-1S
5

OW-1R
2

ND
URS-08

MW-5
182

URS-02
ND

B3/PZ-2
497

URS-01
254

5,786
OW-7R

OW-7S

90,905
URS-12

URS-11
47,169

URS-06
ND

MW-2
9,245

6,386

OW-4S
2

OW-4R

10,080

B4/PZ-1

OW-6S

MW-3

18,960

OW-8S

10,000

8,550

OW-LS(MW-2)
ND

OW-2R
36

OW-2S
134

ROAD

HENRIETTA

WEST

PULLMAN
MANUFACTURING

DITCH

OW-9S

EDGE OF STANDING WATER

7
URS-13

RUBY GORDON'S
FURNITURE

ND

1,000

1,000

B101-OW

OW-11S
1,512

OW-10S
4

LEGEND

50' 0 50'
SCALE IN FEET

ND — NON-DETECT
289 — TOTAL VOCs (µg/l)
FENCE
RIGHT OF WAY
PROPERTY LINE
1000 — VOC CONCENTRATION CONTOUR = µg/L

URS-01 — SUPPLEMENTAL INVESTIGATION OVERBURDEN MONITORING WELL
SB-14 — SOIL BORING
MW-2 — OVERBURDEN MONITORING WELL
B4/PZ-1 — PIEZOMETER INSTALLED IN PREVIOUS INVESTIGATION
OW-1R — BEDROCK MONITORING WELL

AG198598-11174465-122016-GCM

STUART OLVER HOLTZ SITE
TOTAL VOCs UPPER TILL AQUIFER
GROUNDWATER CONTAMINATION

URS

FIGURE 7

PROJECT NO. SHEET NO.

E 751,000
N 1,124,000

COMMERCE DRIVE (50')

HENRIETTA ROAD

WEST

PULLMAN MANUFACTURING

RUBY GORDON'S FURNITURE

LEICHTNER STUDIOS

APPROXIMATE LOCATION OF OREGANOS PIZZA

CENTER APPROXIMATE LOCATION OF PATTON PROFESSIONAL

TREATMENT ZONE

SEWER EASEMENT

OVERHEAD WIRES

EDGE OF STANDING WATER

DITCH

LOW AREA

GRAVEL RAMP

CONC. RAMP

BLACKTOP PARKING LOT

ASPH. PARKING

BLACKTOP

WOODED AREA

GATE

HYD'T

CATCH BASIN

CB

MANHOLE

36" MANHOLE

24" MANHOLE

18" MANHOLE

PLUGGED 4" C.I.P.

TEMPORARY WATER VALVE

HUB/TACK FOUND

WELL

URS-01
URS-02
URS-03
URS-04
URS-05
URS-06
URS-07
URS-08
URS-09
URS-10
URS-11
URS-12
URS-13
URS-14
URS-15
URS-16

OW-1S
OW-1R
OW-2R
OW-2S
OW-3S
OW-3R
OW-4S
OW-4R
OW-5S
OW-6S
OW-7R
OW-7S
OW-8S
OW-9S
OW-10S
OW-11S
OW-LS (MW-2)

MW-2
MW-3
MW-5

B1/PZ-3
B3/PZ-2
B4/PZ-1
B101-OW

IPZ-2

SW-1 SW-2 SW-3 SW-4 SW-5 SW-6 SW-7 SW-8 SW-9 SW-10 SW-11 SW-12 SW-13 SW-14 SW-15 SW-16 SW-17 SW-18 SW-19 SW-20 SW-21 SW-22 SW-23 SW-24 SW-25 SW-26 SW-27 SW-28 SW-29 SW-30 SW-31 SW-32 SW-33 SW-34 SW-35 SW-36 SW-37

LEGEND (THIS DWG.)

- EASEMENT LINE
- PROPERTY LINE
- NEW MONITORING WELL
- NEW SOURCE AREA INJECTION WELL
- EXISTING OVERBURDEN MONITORING WELL
- EXISTING BEDROCK MONITORING WELL
- EXISTING PIEZOMETER

40' 0 40'
SCALE IN FEET

NO.	DATE	BY	PROJECT ARCH / ENGR / MGR/SUPR ENGR APPROVAL APPROVAL

REVISIONS

URS Corporation
77 Goodell Street, Buffalo, New York 14203
(716)856-5636 phone (716)856-2545 fax

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
625 BROADWAY
ALBANY, NEW YORK
12233

STUART OLVER HOLTZ SITE
TOWN OF HENRIETTA
MONROE COUNTY
SITE No. 8-28-079

REMEDIAL CONSTRUCTION

WELL LOCATION MAP

SHEET TITLE

OWNER'S PROJECT NUMBER	PROJECT NUMBER 11174465
DATE JANUARY 2018	SCALE AS SHOWN
DRAWN BY RAL	FIGURE 8
CHECKED BY DMc	
ARCH/ENGR. CWP	DWG. NUMBER

J:\Projects\11174465.00000\CAD\DECEMBER 2016\FIGURE 8.dwg, FIGURE-8, 1:2, 1/22/2018, 1-RAL

PROJECT NO. SHEET NO.

E 751,000
N 1,124,000

COMMERCE DRIVE (50')

HYD'T

CATCH BASIN

36" MANHOLE

TEMPORARY WATER VALVE

OW-1S
WELL
OW-1R

OW-5S

BLACKTOP PARKING LOT

GATE

PLUGGED 4" CIP

18" MANHOLE

B1/PZ-3
WELL

BLACKTOP

SW-1 SW-2 SW-3 SW-4 SW-5 SW-6 SW-7 SW-8 SW-9 SW-10 SW-11 SW-12 SW-13 SW-14 SW-15 SW-16 SW-17 SW-18 SW-19 SW-20 SW-21 SW-22 SW-23 SW-24 SW-25 SW-26 SW-27 SW-28 SW-29 SW-30 SW-31 SW-32 SW-33 SW-34 SW-35 SW-36 SW-37

TREATMENT ZONE

PROPOSED TREATMENT ZONE FOR FFS ALTERNATIVE 3

APPROXIMATE LOCATION OF OREGANOS PZZA

CENTER APPROXIMATE LOCATION OF PATTON PROFESSIONAL

ASPH. PARKING

URS-01 URS-02 URS-03 URS-04 URS-05 URS-06 URS-07 URS-08 URS-09 URS-10 URS-11 URS-12 URS-13 URS-14 URS-15 URS-16

OW-3S
WELL
OW-3R

MW-5
WELL

HUB/TACK FOUND

WOODED AREA

B3/PZ-2
WELL

CATCH BASIN
BLACKTOP

IP2-2

OW-7R
WELL
OW-7S

SEWER EASEMENT

OW-4S
WELL
MW-2
WELL
OW-4R

LOW AREA

B4/PZ-1
WELL

OVERHEAD WIRES

OW-6S
WELL

OW-8S

MW-3
WELL

CB MANHOLE
CONC. RAMP

OW-2R
WELL
OW-2S

OW-LS (MW-2)

24" MANHOLE

ROAD

HENRIETTA

WEST

LEICHTNER STUDIOS

PULLMAN MANUFACTURING

EDGE OF STANDING WATER

DITCH

OW-9S

OW-10S

B101-OW

OW-11S

RUBY GORDON'S FURNITURE

ASPH. PARKING

40' 0 40'
SCALE IN FEET

LEGEND (THIS DWG.)

- 1,000 — VOC CONCENTRATION CONTOUR = ug/L
- EASEMENT LINE
- PROPERTY LINE
- MONITORING WELL
- SOURCE AREA INJECTION WELL
- EXISTING OVERBURDEN MONITORING WELL
- EXISTING BEDROCK MONITORING WELL
- EXISTING PIEZOMETER
- MONITORING WELL SAMPLED IN JANUARY 2014
- INJECTION WELL SAMPLED IN JANUARY 2014

NO.	DATE	BY	PROJECT MGR/ LEAD ENGR/ QA/QC ENGR APPROVAL APPROVAL

REVISIONS

URS Corporation
77 Goodell Street, Buffalo, New York 14203
(716)856-5636 phone (716)856-2545 fax

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
625 BROADWAY
ALBANY, NEW YORK
12233

STUART OLVER HOLTZ SITE
TOWN OF HENRIETTA
MONROE COUNTY
SITE No. 8-28-079

REMEDIAL CONSTRUCTION

TREATMENT ZONE FOR FFS ALTERNATIVE 3

SHEET TITLE

OWNER'S PROJECT NUMBER	PROJECT NUMBER 11174465
DATE JANUARY 2018	SCALE AS SHOWN
DRAWN BY RAL	FIGURE 9
CHECKED BY DMc	
ARCH/ENGR. CWP	DWG. NUMBER

J:\Projects\11174465.00000\CAD\DECEMBER 2016\FIGURE 9.dwg, FIGURE-9, 1:2, 1/22/2018, 1-RAL

N

SW-25

1 A B C D E F G

2

3

4

5

6

7

SW-28

SW-30

SW-29

SW-33

SW-34

SW-31

SW-32

OW-07S

URS-12

SW-36

SW-37

SW-35

URS-11

F8

G8

Legend

- Molasses Injection Point in May 2014
- Monitoring/Injection Well Sampled in January 2014
- Treatment Zone For Previous Injections
- Proposed Treatment Zone For FFS Alternative 3

20 0 20 Feet

STUART OLVER HOLTZ SITE
INJECTION POINT LOCATIONS

URS

FIGURE 10

J:\Projects\11174485.00000\DB\GIS\INJECTION POINT LOCATIONS.mxd 12/20/2016

PROJECT NO. SHEET NO.

E 751,000
N 1,124,000

COMMERCE DRIVE (50')

HYD'T
CATCH BASIN
36" MANHOLE
TEMPORARY WATER VALVE
WELL
BLACKTOP PARKING LOT
GATE
PLUGGED 4" C.I.P.
18" MANHOLE
BLACKTOP
4" C.I.P.
SLAB
24" MANHOLE
ASPH. PARKING
EXCAVATION AREA A
TP-4
TP-2
TP-1
SS-1
A1
A2
A3
A4
WOODED AREA
36" MANHOLE
PLUGGED
CATCH BASIN
SUMP 1
GRAVEL FRAME
CATCH BASIN
BLACKTOP
SEWER EASEMENT
24" MANHOLE
BLACKTOP
CB MANHOLE
CONC. RAMP
CENTER APPROXIMATE LOCATION OF PATTON PROFESSIONAL
LEICHTNER STUDIOS
PULLMAN MANUFACTURING
EDGE OF STANDING WATER
B1
DD-1
DITCH
DD-2
DD-3
SS-2
SS-3
SED-1
TP-6
B2
B3
B4
B5
B6
EXCAVATION AREA B
DD-4
DD-5
DD-6
DD-7
DD-8
DD-9
DD-10
DD-11
DD-12
DD-13
DD-14
DD-15
RUBY GORDON'S FURNITURE
ASPH. PARKING

40' 0 40'
SCALE IN FEET

LEGEND (THIS DWG.)

- TEST PIT
- SURFACE SOIL SAMPLE
- SEDIMENT SAMPLE
- (A1) EXCAVATION AREA CORNER GRID POINT
- AREA OF EXCAVATION

NO.	DATE	BY	PROJECT MGR/ DEPT. MGR/SUPR ENGR APPROVAL APPROVAL

REVISIONS

URS Corporation
77 Goodell Street, Buffalo, New York 14203
(716)856-5636 phone (716)856-2545 fax

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
625 BROADWAY
ALBANY, NEW YORK
12233

STUART OLVER HOLTZ SITE
TOWN OF HENRIETTA
MONROE COUNTY
SITE No. 8-28-079

REMEDIAL CONSTRUCTION

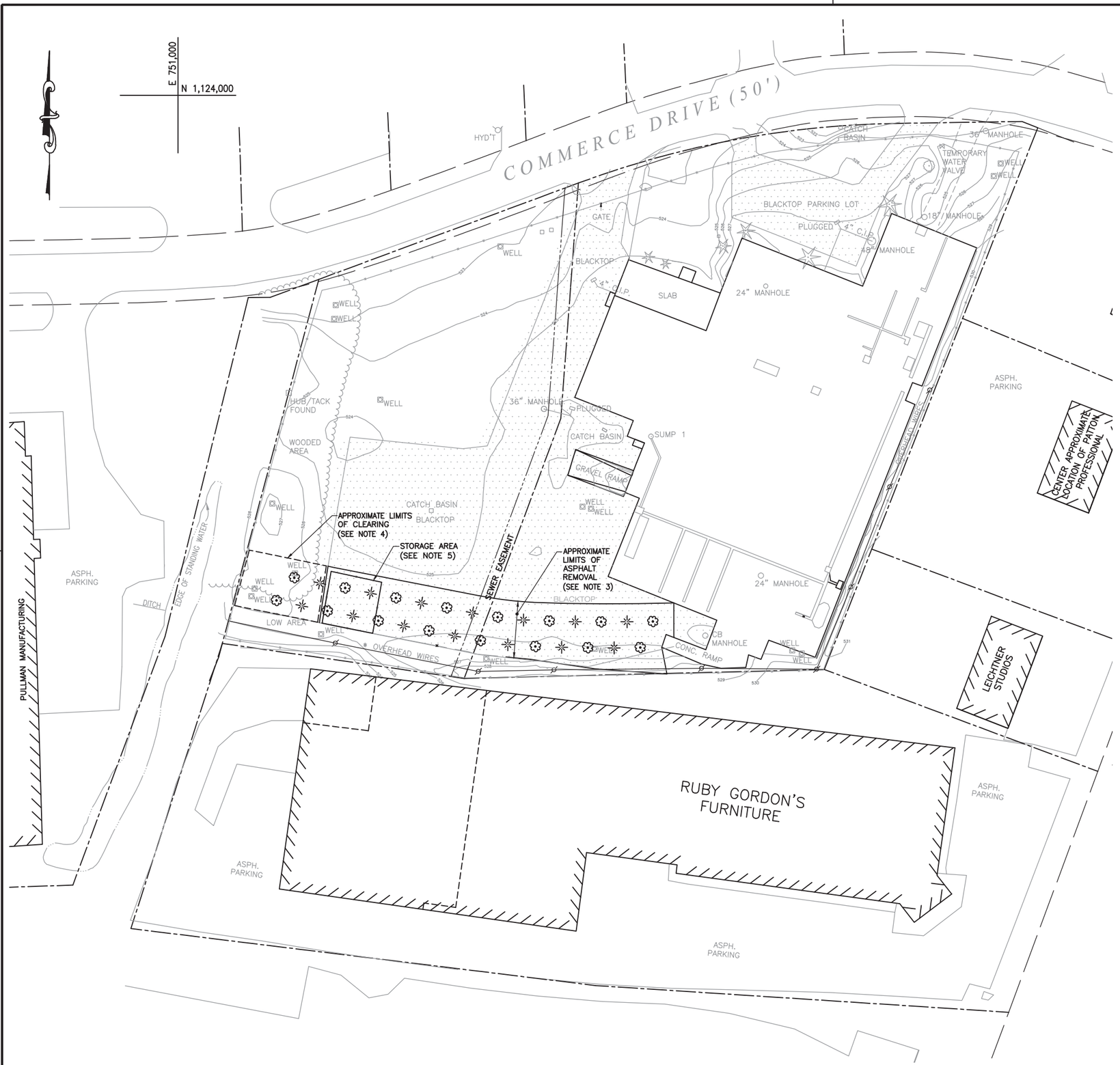
SOIL EXCAVATION PLAN

SHEET TITLE

OWNER'S PROJECT NUMBER	PROJECT NUMBER 11174465
DATE DECEMBER 2016	SCALE AS SHOWN
DRAWN BY EJH	FIGURE 11
CHECKED BY JS	
ARCH/ENGR. CWP	DWG. NUMBER

J:\Projects\11174465.00000\CAD\DECEMBER 2016\FIGURE 11.dwg, FIGURE 11, 1:2, 12/20/2016, 1-RMB

PROJECT NO. SHEET NO.



LEGEND:

- PROPOSED POPULAR TREE PLANTING LOCATION
- PROPOSED WILLOW TREE PLANTING LOCATION

dbh DIAMETER AT BREAST HEIGHT

PLANTING SCHEDULE		
SPECIES	SIZE/CONTAINER	QUANTITY
POPULUS HYBRID	1" dbh/BARE ROOT	15
SALIX NIGRA	1" dbh/BARE ROOT	15

NO.	DATE	BY	PROJECT MGR/ DEPT. MGR/SUPR ENGR APPROVAL APPROVAL

REVISIONS

URS Corporation
77 Goodell Street, Buffalo, New York 14203
(716)856-5636 phone (716)856-2545 fax

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

625 BROADWAY
ALBANY, NEW YORK
12233

STUART OLVER HOLTZ SITE
TOWN OF HENRIETTA
MONROE COUNTY
SITE No. 8-28-079

REMEDIAL CONSTRUCTION

TREE PLANTING PLAN

SHEET TITLE

OWNER'S PROJECT NUMBER	PROJECT NUMBER
	11174465
DATE: DECEMBER 2016	SCALE: AS SHOWN
DRAWN BY: EJH	FIGURE 12
CHECKED BY: JS	
ARCH/ENGR.: CWP	DWG. NUMBER

J:\Projects\11174465.00000\CAD\DECEMBER 2016\FIGURE 12.dwg, FIGURE 12, 1:2, 12/20/2016, 1-RAL

N

SW-04	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	170	NS	NS
1,1-Dichloroethane	NS	NS	190	NS	NS
1,1-Dichloroethene	NS	NS	61	NS	NS
1,2-Dichloroethene (cis)	NS	NS	55	NS	NS
Tetrachloroethene	NS	NS	15	NS	NS
Trichloroethene	NS	NS	290	NS	NS
Vinyl chloride	NS	NS	ND	NS	NS

SW-09	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	90	NS	NS
1,1-Dichloroethane	NS	NS	660	NS	NS
1,1-Dichloroethene	NS	NS	130	NS	NS
1,2-Dichloroethene (cis)	NS	NS	42	NS	NS
Tetrachloroethene	NS	NS	ND	NS	NS
Trichloroethene	NS	NS	5.4	NS	NS
Vinyl chloride	NS	NS	19	NS	NS

SW-13	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	ND	240	NS	NS
1,1-Dichloroethane	NS	ND	82	NS	NS
1,1-Dichloroethene	NS	ND	510	NS	NS
1,2-Dichloroethene (cis)	NS	ND	110	NS	NS
Tetrachloroethene	NS	10000	ND	NS	NS
Trichloroethene	NS	ND	27	NS	NS
Vinyl chloride	NS	ND	25	NS	NS

SW-12	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	32	NS	NS
1,1-Dichloroethane	NS	NS	82	NS	NS
1,1-Dichloroethene	NS	NS	26	NS	NS
1,2-Dichloroethene (cis)	NS	NS	250	NS	NS
Tetrachloroethene	NS	NS	ND	NS	NS
Trichloroethene	NS	NS	23	NS	NS
Vinyl chloride	NS	NS	19	NS	NS

SW-15	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	270	42	NS
1,1-Dichloroethane	NS	NS	3200	2600	NS
1,1-Dichloroethene	NS	NS	160	130	NS
1,2-Dichloroethene (cis)	NS	NS	2800	3100	NS
Tetrachloroethene	NS	NS	ND	ND	NS
Trichloroethene	NS	NS	2100	510	NS
Vinyl chloride	NS	NS	46	ND	NS

URS-03	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	18000	21000	39	NS	NS
1,1-Dichloroethane	3600	5000	88	NS	NS
1,1-Dichloroethene	1000	ND	ND	NS	NS
1,2-Dichloroethene (cis)	5300	ND	10	NS	NS
Tetrachloroethene	ND	ND	ND	NS	NS
Trichloroethene	9400	ND	14	NS	NS
Vinyl chloride	300	ND	ND	NS	NS

SW-16	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	20	NS	NS
1,1-Dichloroethane	NS	NS	85	NS	NS
1,1-Dichloroethene	NS	NS	26	NS	NS
1,2-Dichloroethene (cis)	NS	NS	300	NS	NS
Tetrachloroethene	NS	NS	ND	NS	NS
Trichloroethene	NS	NS	78	NS	NS
Vinyl chloride	NS	NS	6.4	NS	NS

SW-19	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	170	NS	NS
1,1-Dichloroethane	NS	NS	200	NS	NS
1,1-Dichloroethene	NS	NS	54	NS	NS
1,2-Dichloroethene (cis)	NS	NS	1200	NS	NS
Tetrachloroethene	NS	NS	ND	NS	NS
Trichloroethene	NS	NS	9.3	NS	NS
Vinyl chloride	NS	NS	20	NS	NS

SW-23	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	3800	4800	NS
1,1-Dichloroethane	NS	NS	1300	1400	NS
1,1-Dichloroethene	NS	NS	660	710	NS
1,2-Dichloroethene (cis)	NS	NS	3600	7300	NS
Tetrachloroethene	NS	NS	35	ND	NS
Trichloroethene	NS	NS	4400	2300	NS
Vinyl chloride	NS	NS	150	ND	NS

SW-20	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	310	130	NS	NS
1,1-Dichloroethane	NS	180	270	NS	NS
1,1-Dichloroethene	NS	ND	100	NS	NS
1,2-Dichloroethene (cis)	NS	20	1400	NS	NS
Tetrachloroethene	NS	20	ND	NS	NS
Trichloroethene	NS	100	220	NS	NS
Vinyl chloride	NS	ND	27	NS	NS

SW-17	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	ND	NS	NS	NS
1,1-Dichloroethane	NS	NS	470	NS	NS
1,1-Dichloroethene	NS	NS	ND	NS	NS
1,2-Dichloroethene (cis)	NS	NS	770	NS	NS
Tetrachloroethene	NS	NS	ND	NS	NS
Trichloroethene	NS	NS	500	NS	NS
Vinyl chloride	NS	NS	ND	NS	NS

SW-24	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	ND	ND	NS
1,1-Dichloroethane	NS	NS	2700	2000	NS
1,1-Dichloroethene	NS	NS	140	260	NS
1,2-Dichloroethene (cis)	NS	NS	6000	18000	NS
Tetrachloroethene	NS	NS	15	ND	NS
Trichloroethene	NS	NS	8200	150	NS
Vinyl chloride	NS	NS	97	ND	NS

SW-21	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	ND	ND	NS
1,1-Dichloroethane	NS	NS	880	1200	NS
1,1-Dichloroethene	NS	NS	130	ND	NS
1,2-Dichloroethene (cis)	NS	NS	10000	53	NS
Tetrachloroethene	NS	NS	ND	ND	NS
Trichloroethene	NS	NS	780	ND	NS
Vinyl chloride	NS	NS	ND	ND	NS

SW-25	3/11	6/11	4/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	30000	2700	1600	NS
1,1-Dichloroethane	NS	ND	1200	1600	NS
1,1-Dichloroethene	NS	ND	580	110	NS
1,2-Dichloroethene (cis)	NS	ND	7200	2600	NS
Tetrachloroethene	NS	ND	ND	ND	NS
Trichloroethene	NS	ND	5700	34	NS
Vinyl chloride	NS	ND	ND	830	NS

GW-07S	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	ND	ND	70000
1,1-Dichloroethane	NS	NS	9200	7800	7000
1,1-Dichloroethene	NS	NS	280	ND	8900
1,2-Dichloroethene (cis)	NS	NS	29000	8300	35000
Tetrachloroethene	NS	NS	ND	ND	ND
Trichloroethene	NS	NS	15000	420	4800
Vinyl chloride	NS	NS	4800	24000	5900

SW-26	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	1200	NS	NS
1,1-Dichloroethane	NS	NS	1200	NS	NS
1,1-Dichloroethene	NS	NS	110	NS	NS
1,2-Dichloroethene (cis)	NS	NS	190	NS	NS
Tetrachloroethene	NS	NS	ND	NS	NS
Trichloroethene	NS	NS	34	NS	NS
Vinyl chloride	NS	NS	220	NS	NS

SW-32	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	410000	530000	700000	1100000
1,1-Dichloroethane	NS	45000	62000	130000	100000
1,1-Dichloroethene	NS	ND	49000	11000	80000
1,2-Dichloroethene (cis)	NS	ND	3800	ND	ND
Tetrachloroethene	NS	ND	ND	ND	ND
Trichloroethene	NS	ND	ND	ND	ND
Vinyl chloride	NS	ND	ND	ND	ND

SW-10	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	720	NS	NS
1,1-Dichloroethane	NS	NS	1150	NS	NS
1,1-Dichloroethene	NS	NS	580	NS	NS
1,2-Dichloroethene (cis)	NS	NS	25	NS	NS
Tetrachloroethene	NS	NS	ND	NS	NS
Trichloroethene	NS	NS	22	NS	NS
Vinyl chloride	NS	NS	ND	NS	NS

SW-05	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	2000	150	NS	NS
1,1-Dichloroethane	NS	ND	66	NS	NS
1,1-Dichloroethene	NS	ND	58	NS	NS
1,2-Dichloroethene (cis)	NS	ND	ND	NS	NS
Tetrachloroethene	NS	1000	0.94	NS	NS
Trichloroethene	NS	ND	35	NS	NS
Vinyl chloride	NS	ND	ND	NS	NS

URS-07	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	940	6000	ND	NS	NS
1,1-Dichloroethane	76	520	1100	NS	NS
1,1-Dichloroethene	330	1400	35	NS	NS
1,2-Dichloroethene (cis)	ND	ND	ND	NS	NS
Tetrachloroethene	ND	ND	ND	NS	NS
Trichloroethene	62	ND	ND	NS	NS
Vinyl chloride	ND	ND	27	NS	NS

SW-06	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	300	NS	NS
1,1-Dichloroethane	NS	NS	1600	NS	NS
1,1-Dichloroethene	NS	NS	220	NS	NS
1,2-Dichloroethene (cis)	NS	NS	35	NS	NS
Tetrachloroethene	NS	NS	ND	NS	NS
Trichloroethene	NS	NS	18	NS	NS
Vinyl chloride	NS	NS	ND	NS	NS

SW-01	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	65	NS	NS
1,1-Dichloroethane	NS	NS	48	NS	NS
1,1-Dichloroethene	NS	NS	24	NS	NS
1,2-Dichloroethene (cis)	NS	NS	50	NS	NS
Tetrachloroethene	NS	NS	0.4	NS	NS
Trichloroethene	NS	NS	6	NS	NS
Vinyl chloride	NS	NS	1.1	NS	NS

SW-02	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	160	NS	NS
1,1-Dichloroethane	NS	NS	300	NS	NS
1,1-Dichloroethene	NS	NS	260	NS	NS
1,2-Dichloroethene (cis)	NS	NS	88	NS	NS
Tetrachloroethene	NS	NS	ND	NS	NS
Trichloroethene	NS	NS	150	NS	NS
Vinyl chloride	NS	NS	ND	NS	NS

SW-07	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	620	NS	NS
1,1-Dichloroethane	NS	NS	1000	NS	NS
1,1-Dichloroethene	NS	NS	74	NS	NS
1,2-Dichloroethene (cis)	NS	NS	ND	NS	NS
Tetrachloroethene	NS	NS	ND	NS	NS
Trichloroethene	NS	NS	110	NS	NS
Vinyl chloride	NS	NS	ND	NS	NS

SW-03	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	710	NS	NS
1,1-Dichloroethane	NS	NS	280	NS	NS
1,1-Dichloroethene	NS	NS	200	NS	NS
1,2-Dichloroethene (cis)	NS	NS	ND	NS	NS
Tetrachloroethene	NS	NS	ND	NS	NS
Trichloroethene	NS	NS	1100	NS	NS
Vinyl chloride	NS	NS	ND	NS	NS

SW-08	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	ND	NS	NS
1,1-Dichloroethane	NS	NS	100	NS	NS
1,1-Dichloroethene	NS	NS	ND	NS	NS
1,2-Dichloroethene (cis)	NS	NS	770	NS	NS
Tetrachloroethene	NS	NS	ND	NS	NS
Trichloroethene	NS	NS	ND	NS	NS
Vinyl chloride	NS	NS	ND	NS	NS

SW-11	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	240	NS	NS
1,1-Dichloroethane	NS	NS	1600	NS	NS
1,1-Dichloroethene	NS	NS	220	NS	NS
1,2-Dichloroethene (cis)	NS	NS	230	NS	NS
Tetrachloroethene	NS	NS	ND	NS	NS
Trichloroethene	NS	NS	15	NS	NS
Vinyl chloride	NS	NS	ND	NS	NS

SW-14	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	ND	ND	NS	NS
1,1-Dichloroethane	NS	ND	230	NS	NS
1,1-Dichloroethene	NS	ND	ND	NS	NS
1,2-Dichloroethene (cis)	NS	ND	ND	NS	NS
Tetrachloroethene	NS	ND	ND	NS	NS
Trichloroethene	NS	ND	210	NS	NS
Vinyl chloride	NS	ND	ND	NS	NS

SW-18	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	200	NS	NS
1,1-Dichloroethane	NS	NS	ND	NS	NS
1,1-Dichloroethene	NS	NS	ND	NS	NS
1,2-Dichloroethene (cis)	NS	NS	ND	NS	NS
Tetrachloroethene	NS	NS	ND	NS	NS
Trichloroethene	NS	NS	ND	NS	NS
Vinyl chloride	NS	NS	ND	NS	NS

SW-22	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	210	NS	NS
1,1-Dichloroethane	NS	NS	20	NS	NS
1,1-Dichloroethene	NS	NS	16	NS	NS
1,2-Dichloroethene (cis)	NS	NS	81	NS	NS
Tetrachloroethene	NS	NS	ND	NS	NS
Trichloroethene	NS	NS	ND	NS	NS
Vinyl chloride	NS	NS	ND	NS	NS

SW-28	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	ND	ND	NS
1,1-Dichloroethane	NS	NS	180	180	NS
1,1-Dichloroethene	NS	NS	ND	ND	NS
1,2-Dichloroethene (cis)	NS	NS	58000	500	NS
Tetrachloroethene	NS	NS	ND	ND	NS
Trichloroethene	NS	NS	650	38	NS
Vinyl chloride	NS	NS	ND	1200	NS

SW-27	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	140	NS	NS
1,1-Dichloroethane	NS	NS	19	NS	NS
1,1-Dichloroethene	NS	NS	ND	NS	NS
1,2-Dichloroethene (cis)	NS	NS	210	NS	NS
Tetrachloroethene	NS	NS	ND	NS	NS
Trichloroethene	NS	NS	440	NS	NS
Vinyl chloride	NS	NS	ND	NS	NS

SW-29	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	72	ND	NS
1,1-Dichloroethane	NS	NS	18	ND	NS
1,1-Dichloroethene	NS	NS	ND	ND	NS
1,2-Dichloroethene (cis)	NS	NS	4000	2500	NS
Tetrachloroethene	NS	NS	ND	ND	NS
Trichloroethene	NS	NS	4100	27	NS
Vinyl chloride	NS	NS	ND	580	NS

SW-31	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	ND	ND	NS
1,1-Dichloroethane	NS	NS	ND	ND	NS
1,1-Dichloroethene	NS	NS	ND	ND	NS
1,2-Dichloroethene (cis)	NS	NS	730	450	NS
Tetrachloroethene	NS	NS	ND	ND	NS
Trichloroethene	NS	NS	5400	120	NS
Vinyl chloride	NS	NS	ND	3000	NS

URS-12	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	ND	ND	ND	ND	NS
1,1-Dichloroethane	ND	ND	39	16	NS
1,1-Dichloroethene	ND	ND	ND	ND	NS
1,2-Dichloroethene (cis)	6800	8200	3700	25	NS
Tetrachloroethene	ND	ND	ND	ND	NS
Trichloroethene	48000	46000	4500	11	NS
Vinyl chloride	ND	ND	ND	22	NS

SW-35	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	270	ND	NS
1,1-Dichloroethane	NS	NS	480	330	NS
1,1-Dichloroethene	NS	NS	130	ND	NS
1,2-Dichloroethene (cis)	NS	NS	25000	ND	NS
Tetrachloroethene	NS	NS	ND	ND	NS
Trichloroethene	NS	NS	370	ND	NS
Vinyl chloride	NS	NS	410	ND	NS

SW-34	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	ND	55	NS
1,1-Dichloroethane	NS	NS	150	130	NS
1,1-Dichloroethene	NS	NS	ND	12	NS
1,2-Dichloroethene (cis)	NS	NS	14000	1000	NS
Tetrachloroethene	NS	NS	ND	ND	NS
Trichloroethene	NS	NS	9400	210	NS
Vinyl chloride	NS	NS	160	2900	NS

SW-37	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	1100	200	8500
1,1-Dichloroethane	NS	NS	10000	26000	18000
1,1-Dichloroethene	NS	NS	200	440	1100
1,2-Dichloroethene (cis)	NS	NS	6300	5400	52000
Tetrachloroethene	NS	NS	ND	ND	ND
Trichloroethene	NS	NS	3000	ND	3800
Vinyl chloride	NS	NS	ND	340	1900

SW-33	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	1400000	2900	2700	970000
1,1-Dichloroethane	NS	55000	6300	4100	21000
1,1-Dichloroethene	NS	ND	880	ND	68000
1,2-Dichloroethene (cis)	NS	ND	39000	ND	5800
Tetrachloroethene	NS	ND	ND	ND	310
Trichloroethene	NS	ND	1300	ND	780
Vinyl chloride	NS	ND	ND	14000	7600

SW-30	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	4300	180	NS
1,1-Dichloroethane	NS	NS	1900	3700	NS
1,1-Dichloroethene	NS	NS	930	ND	NS
1,2-Dichloroethene (cis)	NS	NS	31000	390	NS
Tetrachloroethene	NS	NS	ND	ND	NS
Trichloroethene	NS	NS	1500	110	NS
Vinyl chloride	NS	NS	340	410	NS

URS-11	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	3700	1000	28000	22000	29000
1,1-Dichloroethane	34000	51000	41000	31000	20000
1,1-Dichloroethene	ND	ND	3700	1700	3200
1,2-Dichloroethene (cis)	2700	2000	1700	3800	4100
Tetrachloroethene	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	750	980	960
Vinyl chloride	800	ND	ND	ND	ND

SW-36	3/11	6/11	5/13	1/14	2/15
VOCs:					
1,1,1-Trichloroethane	NS	NS	ND	6500	1000
1,1-Dichloroethane	NS	NS	26000	19000	21000
1,1-Dichloroethene	NS	NS	ND	380	200
1,2-Dichloroethene (cis)	NS	NS	4500	21000	ND
Tetrachloroethene	NS	NS	ND	ND	ND
Trichloroethene	NS	NS	98	14000	ND
Vinyl chloride	NS	NS	ND	420	730

COMMERCE DRIVE

Ruby Gordon's Furniture

Legend

- Monitoring Well
- Target Remediation Area

NOTES:
NS - Not Sampled
ND - Not Detected
Units - µg/L

80 0 80 Feet

STUART OLVER HOLTZ GROUNDWATER ANALYTICAL RESULTS (2011-2015)

URS

FIGURE 13

J:\Projects\11784\6\20005\GIS\GROUNDWATER ANALYTICAL (2011-2015).mxd 3/3/2016

PROJECT NO. SHEET NO.

E 751,000
N 1,124,000

COMMERCE DRIVE (50')

HENRIETTA ROAD

WEST

PULLMAN MANUFACTURING

LEGEND (THIS DWG.)

- EASEMENT LINE
- PROPERTY LINE
- NEW MONITORING WELL
- NEW SOURCE AREA INJECTION WELL
- EXISTING OVERBURDEN MONITORING WELL
- EXISTING BEDROCK MONITORING WELL
- EXISTING PIEZOMETER
- TOTAL VOC CONCENTRATION APPROXIMATELY 50,000–100,000 µg/L
- TOTAL VOC CONCENTRATION APPROXIMATELY 1,000,000–1,500,000 µg/L

TREATMENT ZONE

APPROXIMATE LOCATION OF OREGANOS PZA

CENTER APPROXIMATE LOCATION OF PATTON PROFESSIONAL

LEICHTNER STUDIOS

RUBY GORDON'S FURNITURE

ASPH. PARKING

BLACKTOP PARKING LOT

BLACKTOP

WOODED AREA

LOW AREA

GRAVEL RAMP

CONC. RAMP

CATCH BASIN

DITCH

EDGE OF STANDING WATER

SEWER EASEMENT

OVERHEAD WIRES

HYD'T

GATE

PLUGGED 4" CIP

36" MANHOLE

24" MANHOLE

18" MANHOLE

CB MANHOLE

TEMPORARY WATER VALVE

HUB/TACK FOUND

40' 0 40'
SCALE IN FEET

NO.	DATE	BY	PROJECT ASSOC./ LEAD / MGR/SUPR ENGR APPROVAL APPROVAL

REVISIONS

URS Corporation
77 Goodell Street, Buffalo, New York 14203
(716)856-5636 phone (716)856-2545 fax

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
625 BROADWAY
ALBANY, NEW YORK
12233

STUART OLVER HOLTZ SITE
TOWN OF HENRIETTA
MONROE COUNTY
SITE No. 8–28–079

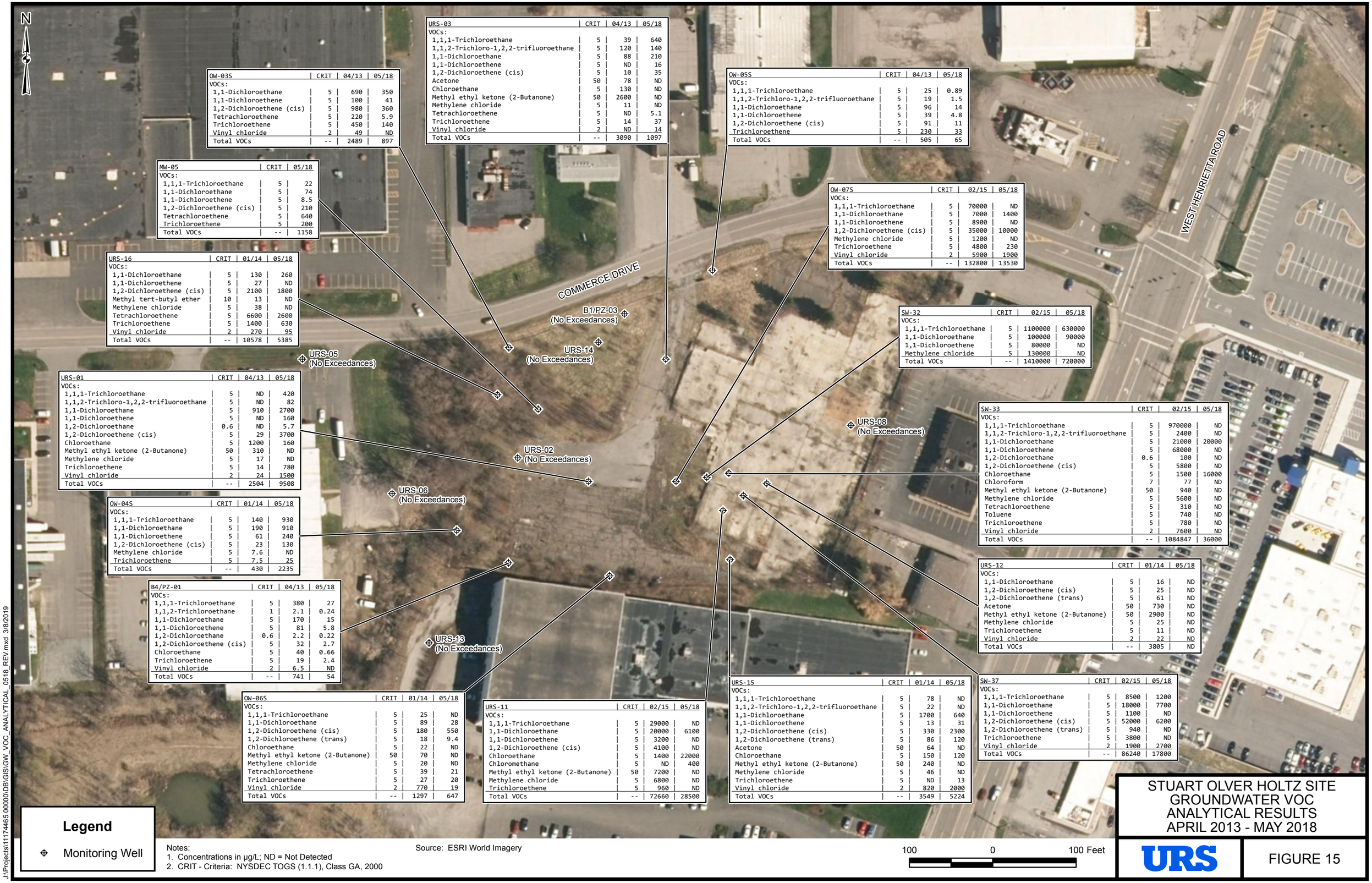
REMEDIAL CONSTRUCTION

WELLS ABOVE 50,000 µg/L VOCs

SHEET TITLE

OWNER'S PROJECT NUMBER	PROJECT NUMBER 11174465
DATE JANUARY 2018	SCALE AS SHOWN
DRAWN BY RAL	FIGURE 14
CHECKED BY DMc	
ARCH/ENGR. CWP	DWG. NUMBER

J:\Projects\11174465.00000\CAD\DECEMBER 2016\FIGURE 14.dwg, FIGURE-14, 1:2, 12/20/2016, 1-RAL



OW-03S	CRIT	04/13	05/18
VOCs:			
1,1-Dichloroethane	5	690	350
1,1-Dichloroethene	5	100	41
1,2-Dichloroethene (cis)	5	980	360
Tetrachloroethene	5	220	5.9
Trichloroethene	5	450	140
Vinyl chloride	2	49	ND
Total VOCs	--	2489	897

URS-03	CRIT	04/13	05/18
VOCs:			
1,1,1-Trichloroethane	5	39	640
1,1,2-Trichloro-1,2,2-trifluoroethane	5	120	140
1,1-Dichloroethane	5	88	210
1,1-Dichloroethene	5	ND	16
1,2-Dichloroethene (cis)	5	10	35
Acetone	50	78	ND
Chloroethane	5	130	ND
Methyl ethyl ketone (2-Butanone)	50	2600	ND
Methylene chloride	5	11	ND
Tetrachloroethene	5	ND	5.1
Trichloroethene	5	14	37
Vinyl chloride	2	ND	14
Total VOCs	--	3090	1097

OW-05S	CRIT	04/13	05/18
VOCs:			
1,1,1-Trichloroethane	5	25	0.89
1,1,2-Trichloro-1,2,2-trifluoroethane	5	19	1.5
1,1-Dichloroethane	5	96	14
1,1-Dichloroethene	5	39	4.8
1,2-Dichloroethene (cis)	5	91	11
Trichloroethene	5	230	33
Total VOCs	--	505	65

MW-05	CRIT	05/18
VOCs:		
1,1,1-Trichloroethane	5	22
1,1-Dichloroethane	5	74
1,1-Dichloroethene	5	8.5
1,2-Dichloroethene (cis)	5	210
Tetrachloroethene	5	640
Trichloroethene	5	200
Total VOCs	--	1158

OW-07S	CRIT	02/15	05/18
VOCs:			
1,1,1-Trichloroethane	5	70000	ND
1,1-Dichloroethane	5	7000	1400
1,1-Dichloroethene	5	8900	ND
1,2-Dichloroethene (cis)	5	35000	10000
Methylene chloride	5	1200	ND
Trichloroethene	5	4800	230
Vinyl chloride	2	5900	1900
Total VOCs	--	132800	13530

URS-16	CRIT	01/14	05/18
VOCs:			
1,1-Dichloroethane	5	130	260
1,1-Dichloroethene	5	27	ND
1,2-Dichloroethene (cis)	5	2100	1800
Methyl tert-butyl ether	10	13	ND
Methylene chloride	5	38	ND
Tetrachloroethene	5	6600	2600
Trichloroethene	5	1400	630
Vinyl chloride	2	270	95
Total VOCs	--	10578	5385

SW-32	CRIT	02/15	05/18
VOCs:			
1,1,1-Trichloroethane	5	1100000	630000
1,1-Dichloroethane	5	100000	90000
1,1-Dichloroethene	5	80000	ND
Methylene chloride	5	130000	ND
Total VOCs	--	1410000	720000

URS-01	CRIT	04/13	05/18
VOCs:			
1,1,1-Trichloroethane	5	ND	420
1,1,2-Trichloro-1,2,2-trifluoroethane	5	ND	82
1,1-Dichloroethane	5	910	2700
1,1-Dichloroethene	5	ND	160
1,2-Dichloroethane	0.6	ND	5.7
1,2-Dichloroethene (cis)	5	29	3700
Chloroethane	5	1200	160
Methyl ethyl ketone (2-Butanone)	50	310	ND
Methylene chloride	5	17	ND
Trichloroethene	5	14	780
Vinyl chloride	2	24	1500
Total VOCs	--	2504	9508

SW-33	CRIT	02/15	05/18
VOCs:			
1,1,1-Trichloroethane	5	970000	ND
1,1,2-Trichloro-1,2,2-trifluoroethane	5	2400	ND
1,1-Dichloroethane	5	21000	20000
1,1-Dichloroethene	5	68000	ND
1,2-Dichloroethane	0.6	100	ND
1,2-Dichloroethene (cis)	5	5800	ND
Chloroethane	5	1500	16000
Chloroform	7	77	ND
Methyl ethyl ketone (2-Butanone)	50	940	ND
Methylene chloride	5	5600	ND
Tetrachloroethene	5	310	ND
Toluene	5	740	ND
Trichloroethene	5	780	ND
Vinyl chloride	2	7600	ND
Total VOCs	--	1084847	36000

OW-04S	CRIT	01/14	05/18
VOCs:			
1,1,1-Trichloroethane	5	140	930
1,1-Dichloroethane	5	190	910
1,1-Dichloroethene	5	61	240
1,2-Dichloroethene (cis)	5	23	130
Methylene chloride	5	7.6	ND
Trichloroethene	5	7.5	25
Total VOCs	--	430	2235

URS-12	CRIT	01/14	05/18
VOCs:			
1,1-Dichloroethane	5	16	ND
1,2-Dichloroethene (cis)	5	25	ND
1,2-Dichloroethene (trans)	5	61	ND
Acetone	50	730	ND
Methyl ethyl ketone (2-Butanone)	50	2900	ND
Methylene chloride	5	25	ND
Trichloroethene	5	11	ND
Vinyl chloride	2	22	ND
Total VOCs	--	3805	ND

B4/PZ-01	CRIT	04/13	05/18
VOCs:			
1,1,1-Trichloroethane	5	380	27
1,1,2-Trichloroethane	1	2.1	0.24
1,1-Dichloroethane	5	170	15
1,1-Dichloroethene	5	81	5.8
1,2-Dichloroethane	0.6	2.2	0.22
1,2-Dichloroethene (cis)	5	32	2.7
Chloroethane	5	40	0.66
Trichloroethene	5	19	2.4
Vinyl chloride	2	6.5	ND
Total VOCs	--	741	54

OW-06S	CRIT	01/14	05/18
VOCs:			
1,1,1-Trichloroethane	5	25	ND
1,1-Dichloroethane	5	89	28
1,2-Dichloroethene (cis)	5	180	550
1,2-Dichloroethene (trans)	5	18	9.4
Chloroethane	5	22	ND
Methyl ethyl ketone (2-Butanone)	50	70	ND
Methylene chloride	5	20	ND
Tetrachloroethene	5	39	21
Trichloroethene	5	27	20
Vinyl chloride	2	770	19
Total VOCs	--	1297	647

URS-11	CRIT	02/15	05/18
VOCs:			
1,1,1-Trichloroethane	5	29000	ND
1,1-Dichloroethane	5	20000	6100
1,1-Dichloroethene	5	3200	ND
1,2-Dichloroethene (cis)	5	4100	ND
Chloroethane	5	1400	22000
Chloromethane	5	ND	400
Methyl ethyl ketone (2-Butanone)	50	7200	ND
Methylene chloride	5	6800	ND
Trichloroethene	5	960	ND
Total VOCs	--	72660	28500

URS-15	CRIT	01/14	05/18
VOCs:			
1,1,1-Trichloroethane	5	78	ND
1,1,2-Trichloro-1,2,2-trifluoroethane	5	22	ND
1,1-Dichloroethane	5	1700	640
1,1-Dichloroethene	5	13	31
1,2-Dichloroethene (cis)	5	330	2300
1,2-Dichloroethene (trans)	5	86	120
Acetone	50	64	ND
Chloroethane	5	150	120
Methyl ethyl ketone (2-Butanone)	50	240	ND
Methylene chloride	5	46	ND
Trichloroethene	5	ND	13
Vinyl chloride	2	820	2000
Total VOCs	--	3549	5224

SW-37	CRIT	02/15	05/18
VOCs:			
1,1,1-Trichloroethane	5	8500	1200
1,1-Dichloroethane	5	18000	7700
1,1-Dichloroethene	5	1100	ND
1,2-Dichloroethene (cis)	5	52000	6200
1,2-Dichloroethene (trans)	5	940	ND
Trichloroethene	5	3800	ND
Vinyl chloride	2	1900	2700
Total VOCs	--	86240	17800

Legend

⌖ Monitoring Well

Notes:
1. Concentrations in µg/L; ND = Not Detected
2. CRIT - Criteria: NYSDEC TOGS (1.1.1), Class GA, 2000

Source: ESRI World Imagery

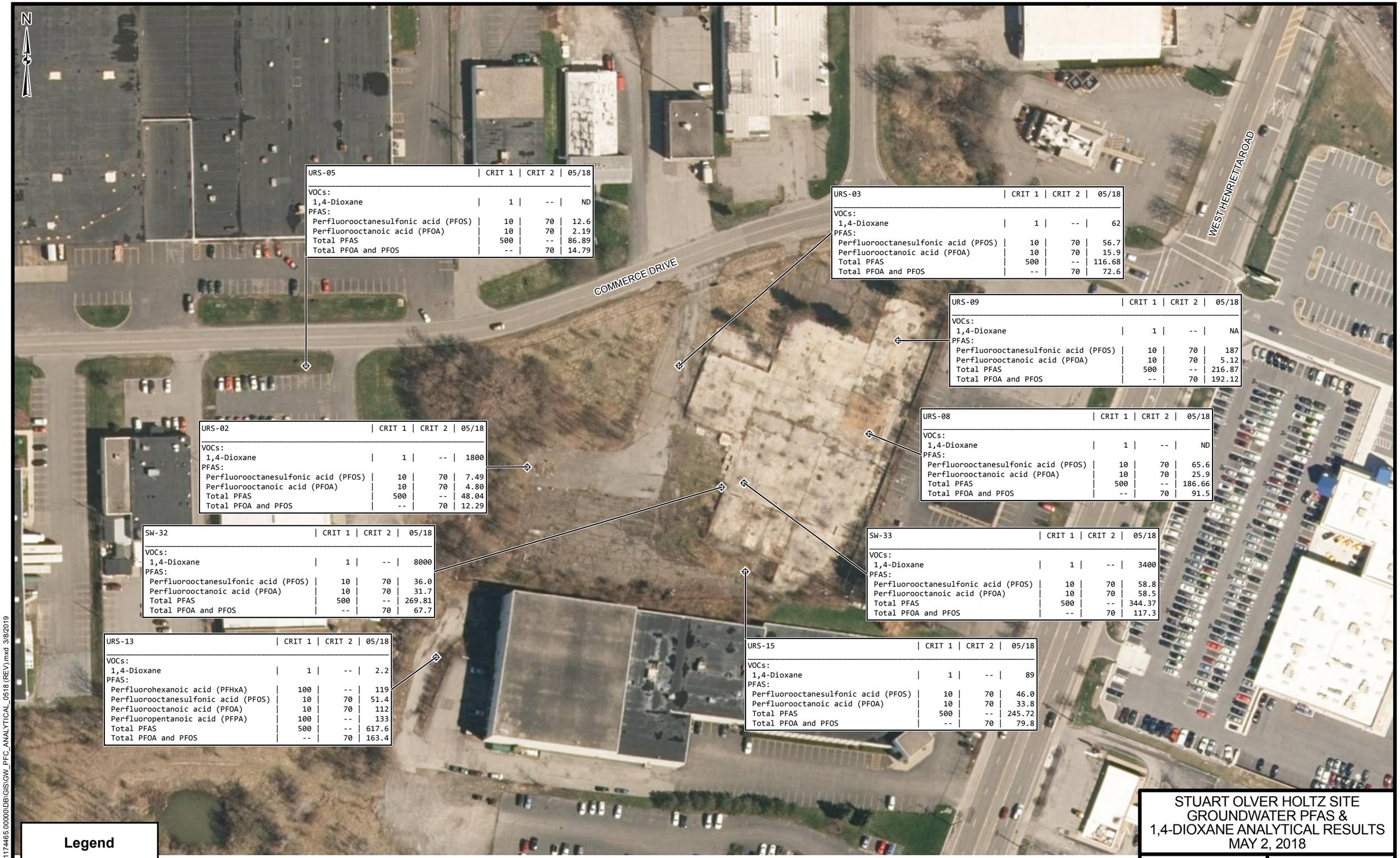
100 0 100 Feet

STUART OLVER HOLTZ SITE GROUNDWATER VOC ANALYTICAL RESULTS APRIL 2013 - MAY 2018

URS

FIGURE 15

J:\Projects\11174465.00000\DB\GIS\GW_VOC_ANALYTICAL_0518_REV.mxd 3/8/2019



URS-05	CRIT 1	CRIT 2	05/18
VOCs:			
1,4-Dioxane	1	--	ND
PFAS:			
Perfluorooctanesulfonic acid (PFOS)	10	70	12.6
Perfluorooctanoic acid (PFOA)	10	70	2.19
Total PFAS	500	--	86.89
Total PFOA and PFOS	--	70	14.79

URS-03	CRIT 1	CRIT 2	05/18
VOCs:			
1,4-Dioxane	1	--	62
PFAS:			
Perfluorooctanesulfonic acid (PFOS)	10	70	56.7
Perfluorooctanoic acid (PFOA)	10	70	15.9
Total PFAS	500	--	116.68
Total PFOA and PFOS	--	70	72.6

URS-09	CRIT 1	CRIT 2	05/18
VOCs:			
1,4-Dioxane	1	--	NA
PFAS:			
Perfluorooctanesulfonic acid (PFOS)	10	70	187
Perfluorooctanoic acid (PFOA)	10	70	5.12
Total PFAS	500	--	216.87
Total PFOA and PFOS	--	70	192.12

URS-02	CRIT 1	CRIT 2	05/18
VOCs:			
1,4-Dioxane	1	--	1800
PFAS:			
Perfluorooctanesulfonic acid (PFOS)	10	70	7.49
Perfluorooctanoic acid (PFOA)	10	70	4.80
Total PFAS	500	--	48.04
Total PFOA and PFOS	--	70	12.29

URS-08	CRIT 1	CRIT 2	05/18
VOCs:			
1,4-Dioxane	1	--	ND
PFAS:			
Perfluorooctanesulfonic acid (PFOS)	10	70	65.6
Perfluorooctanoic acid (PFOA)	10	70	25.9
Total PFAS	500	--	186.66
Total PFOA and PFOS	--	70	91.5

SW-32	CRIT 1	CRIT 2	05/18
VOCs:			
1,4-Dioxane	1	--	8000
PFAS:			
Perfluorooctanesulfonic acid (PFOS)	10	70	36.0
Perfluorooctanoic acid (PFOA)	10	70	31.7
Total PFAS	500	--	269.81
Total PFOA and PFOS	--	70	67.7

SW-33	CRIT 1	CRIT 2	05/18
VOCs:			
1,4-Dioxane	1	--	3400
PFAS:			
Perfluorooctanesulfonic acid (PFOS)	10	70	58.8
Perfluorooctanoic acid (PFOA)	10	70	58.5
Total PFAS	500	--	344.37
Total PFOA and PFOS	--	70	117.3

URS-13	CRIT 1	CRIT 2	05/18
VOCs:			
1,4-Dioxane	1	--	2.2
PFAS:			
Perfluorohexanoic acid (PFHxA)	100	--	119
Perfluorooctanesulfonic acid (PFOS)	10	70	51.4
Perfluorooctanoic acid (PFOA)	10	70	112
Perfluoropentanoic acid (PFPA)	100	--	133
Total PFAS	500	--	617.6
Total PFOA and PFOS	--	70	163.4

URS-15	CRIT 1	CRIT 2	05/18
VOCs:			
1,4-Dioxane	1	--	89
PFAS:			
Perfluorooctanesulfonic acid (PFOS)	10	70	46.0
Perfluorooctanoic acid (PFOA)	10	70	33.8
Total PFAS	500	--	245.72
Total PFOA and PFOS	--	70	79.8

Legend

⌖ Monitoring Well

Notes: 1. 1,4 Dioxane in µg/L; PFAS in ng/L
2. ND - Not Detected; NA - Not Analyzed
Source: ESRI World Imagery

Criteria:
CRIT 1 - Recommended Screening Level - New York State Drinking Water Quality Control (DWQC), January 2019
CRIT 2 - USEPA Drinking Water Health Advisory (USEPA, May 2016)

100 0 100 Feet

STUART OLVER HOLTZ SITE GROUNDWATER PFAS & 1,4-DIOXANE ANALYTICAL RESULTS MAY 2, 2018

URS

FIGURE 16

J:\Projects\11174465.00000\DB\GIS\GW_PFC_ANALYTICAL_0518 (REV).mxd 3/8/2019

N

COMMERCE DRIVE

OW-05S
OW-01R
URS-14
TP-03
URS-03
PB-08A
PB-03A
PB-03B
PB-03C
URS-09
URS-07
SB-01 (1994)
PB-07A
PB-02A
PB-02B
PB-02C
TP-02
TP-04
SB-01 (2000)
PB-06A
URS-10
URS-08
PB-15A
SS-01
TP-01
SB-03 (2000)
SB-02 (2000)
PB-14A
PB-18A
SB-16 (2000)
SB-04 (2000)
SB-05 (2000)
PB-05A
PB-01A
PB-01B
PB-01C
SBX-06
SB-01
PB-19A
PB-12A
SB-06 (2000)
PB-04A
URS-02
URS-01
OW-07S
PB-16A
URS-12
SB-05
SB-06
SB-02
PB-11A
SB-03
OW-07R
PB-17A
SB-07 (2000)
SB-17 (2000)
SB-20
TP-05
SB-08 (2000)
SB-07
SB-19
URS-11
SB-04
SB-09 (2000)
SB-08
SB-08 (1994)
PB-09A
PB-10A
SB-10A
SB-11
SB-09
OW-04S
SB-11 (2000)
SB-15 (2000)
SB-10
OW-04R
SB-12 (2000)
SB-13
SB-14
SB-12
SS-03
SB-17
OW-02S
SED-04
OW-06S
SB-15
SB-16
TP-06
SB-04 (1994)
SB-18

PB-13A (16' - 16')| CRIT 1 | CRIT 2 | 4/13
VOCs:
Trichloroethene | 200000 | 400000 | 480000

SB-18 (2000) (22' - 24')| CRIT 1 | CRIT 2 | 6/00
VOCs:
1,1,1-Trichloroethane | 500000 | 1000000 | 1100000

Legend

- Soil Sampling Location

Location ID — Depth — Criteria — Date
PB-13A (16' - 16')| CRIT 1 | CRIT 2 | 4/13
VOCs:
Trichloroethene | 200000 | 400000 | 480000
Parameter — Concentration (µg/kg)

NOTES:
1.) CRIT 1 - 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Protection of Public Health, Commercial, including CP-51 Table 1, Effective 12/2/10.
2.) CRIT 2 - 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Protection of Public Health, Industrial, including CP-51 Table 1, Effective 12/2/10.
3.) Complete soil details provided in Appendix L.

50 0 50 Feet

STUART OLVER HOLTZ SITE
REMAINING SOIL CONTAMINATION

URS

FIGURE 17

J:\Projects\11174465.00000\DB\GIS\HISTORICAL SOIL SAMPLING.mxd 3/8/2019

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URS-03	CR	4/13
VOCs:		
1,1,1-Trichloroethane	5	39
1,1,2-Trichloro-1,2,2-trifluoroethane	5	120
1,1-Dichloroethane	5	88
1,2-Dichloroethene (cis)	5	10
Acetone	50	78
Chloroethane	5	130
Methyl ethyl ketone (2-Butanone)	50	2600
Methylene chloride	5	11
Trichloroethene	5	14

SW-16	CR	4/13
VOCs:		
1,1,1-Trichloroethane	5	20
1,1,2-Trichloro-1,2,2-trifluoroethane	5	32
1,1-Dichloroethane	5	85
1,1-Dichloroethene	5	26
1,2-Dichloroethene (cis)	5	300
Trichloroethene	5	78
Vinyl chloride	2	6.4

SW-13	CR	4/13
VOCs:		
1,1,1-Trichloroethane	5	240
1,1-Dichloroethane	5	910
1,1-Dichloroethene	5	510
1,2-Dichloroethane	0.6	9.9
1,2-Dichloroethene (cis)	5	110
Acetone	50	170
Methyl ethyl ketone (2-Butanone)	50	1000
Trichloroethene	5	27
Vinyl chloride	2	25

OW-05S	CR	4/13
VOCs:		
1,1,1-Trichloroethane	5	25
1,1,2-Trichloro-1,2,2-trifluoroethane	5	19
1,1-Dichloroethane	5	96
1,1-Dichloroethene	5	39
1,2-Dichloroethene (cis)	5	91
Trichloroethene	5	230

SW-04	CR	5/13
VOCs:		
1,1,1-Trichloroethane	5	170
1,1,2-Trichloro-1,2,2-trifluoroethane	5	74
1,1-Dichloroethane	5	190
1,1-Dichloroethene	5	81
1,2-Dichloroethene (cis)	5	54
Acetone	50	100
Methyl ethyl ketone (2-Butanone)	50	6400
Tetrachloroethene	5	15
Trichloroethene	5	290

SW-02	CR	5/13
VOCs:		
1,1,1-Trichloroethane	5	160
1,1-Dichloroethene	5	300
1,1-Dichloroethene	5	260
1,2-Dichloroethene (cis)	5	88
Acetone	50	480
Methyl ethyl ketone (2-Butanone)	50	30000
Trichloroethene	5	150

SW-17	CR	5/13
VOCs:		
1,1-Dichloroethane	5	470
1,2-Dichloroethene (cis)	5	770
Acetone	50	490
Methyl ethyl ketone (2-Butanone)	50	28000
Trichloroethene	5	500

SW-09	CR	5/13
VOCs:		
1,1,1-Trichloroethane	5	90
1,1,2-Trichloro-1,2,2-trifluoroethane	5	29
1,1-Dichloroethane	5	660
1,1-Dichloroethene	5	130
1,2-Dichloroethene (cis)	5	42
Methyl ethyl ketone (2-Butanone)	50	230
Trichloroethene	5	5.4
Vinyl chloride	2	19

SW-05	CR	5/13
VOCs:		
1,1,1-Trichloroethane	5	150
1,1,2-Trichloro-1,2,2-trifluoroethane	5	27
1,1-Dichloroethane	5	66
1,1-Dichloroethene	5	58
1,2-Dichloroethene (cis)	5	17
Trichloroethene	5	35

SW-19	CR	4/13
VOCs:		
1,1,1-Trichloroethane	5	170
1,1,2-Trichloro-1,2,2-trifluoroethane	5	720
1,1-Dichloroethane	5	200
1,1-Dichloroethene	5	54
1,2-Dichloroethene (cis)	5	1200
Methyl ethyl ketone (2-Butanone)	50	990
Methylene chloride	5	16
Trichloroethene	5	9.3
Vinyl chloride	2	20

SW-15	CR	4/13
VOCs:		
1,1,1-Trichloroethane	5	270
1,1,2-Trichloro-1,2,2-trifluoroethane	5	3800
1,1-Dichloroethane	5	3200
1,1-Dichloroethene	5	160
1,2-Dichloroethene (cis)	5	2800
Methyl ethyl ketone (2-Butanone)	50	14000
Methylene chloride	5	51
Trichloroethene	5	2100
Vinyl chloride	2	46

SW-12	CR	4/13
VOCs:		
1,1,1-Trichloroethane	5	32
1,1,2-Trichloro-1,2,2-trifluoroethane	5	38
1,1-Dichloroethane	5	82
1,1-Dichloroethene	5	26
1,2-Dichloroethene (cis)	5	250
Trichloroethene	5	23
Vinyl chloride	2	19

SW-01	CR	5/13
VOCs:		
1,1,1-Trichloroethane	5	65
1,1-Dichloroethene	5	48
1,1-Dichloroethene	5	24
1,2-Dichloroethene (cis)	5	50
Trichloroethene	5	6

SW-06	CR	5/13
VOCs:		
1,1,1-Trichloroethane	5	300
1,1-Dichloroethene	5	1600
1,1-Dichloroethene	5	220
1,2-Dichloroethene	0.6	12
1,2-Dichloroethene (cis)	5	35
Acetone	50	200
Methyl ethyl ketone (2-Butanone)	50	1100
Trichloroethene	5	18

SW-20	CR	4/13
VOCs:		
1,1,1-Trichloroethane	5	130
1,1,2-Trichloro-1,2,2-trifluoroethane	5	30
1,1-Dichloroethane	5	270
1,1-Dichloroethene	5	100
1,2-Dichloroethene (cis)	5	1600
Trichloroethene	5	220
Vinyl chloride	2	27

SW-03	CR	5/13
VOCs:		
1,1,1-Trichloroethane	5	710
1,1-Dichloroethane	5	280
1,1-Dichloroethene	5	200
Methyl ethyl ketone (2-Butanone)	50	5400
Trichloroethene	5	1100

OW-03S	CR	4/13
VOCs:		
1,1-Dichloroethane	5	690
1,1-Dichloroethene	5	100
1,2-Dichloroethene (cis)	5	980
Tetrachloroethene	5	220
Trichloroethene	5	450
Vinyl chloride	2	49

URS-09	CR	5/13
VOCs:		
1,1,1-Trichloroethane	5	610
1,1-Dichloroethane	5	2800
1,1-Dichloroethene	5	110
1,2-Dichloroethene (cis)	5	46
Chloroethane	5	970
Methyl ethyl ketone (2-Butanone)	50	270
Tetrachloroethene	5	9.8
Trichloroethene	5	16
Vinyl chloride	2	180

SW-07	CR	5/13
VOCs:		
1,1,1-Trichloroethane	5	420
1,1-Dichloroethene	5	1000
1,1-Dichloroethene	5	74
Methyl ethyl ketone (2-Butanone)	50	4800

SW-23	CR	4/13
VOCs:		
1,1,1-Trichloroethane	5	3800
1,1,2-Trichloro-1,2,2-trifluoroethane	5	11000
1,1-Dichloroethane	5	1300
1,1-Dichloroethene	5	660
1,2-Dichloroethene (cis)	5	3700
Methyl ethyl ketone (2-Butanone)	50	980
Methylene chloride	5	150
Tetrachloroethene	5	35
Trichloroethene	5	4400
Vinyl chloride	2	150

SW-08	CR	5/13
VOCs:		
1,1-Dichloroethane	5	100
1,2-Dichloroethene (cis)	5	770
Acetone	50	140
Chloroethane	5	13
Methyl ethyl ketone (2-Butanone)	50	2100

URS-16	CR	4/13
VOCs:		
1,1-Dichloroethane	5	180
1,2-Dichloroethene (cis)	5	1700
Tetrachloroethene	5	3300
Trichloroethene	5	1100
Vinyl chloride	2	49

URS-07	CR	5/13
VOCs:		
1,1-Dichloroethane	5	1100
1,1-Dichloroethene	5	35
Acetone	50	140
Methyl ethyl ketone (2-Butanone)	50	1600
Vinyl chloride	2	27

SW-24	CR	4/13
VOCs:		
1,1,2-Trichloro-1,2,2-trifluoroethane	5	2100
1,1-Dichloroethane	5	2700
1,1-Dichloroethene	5	140
1,2-Dichloroethene (cis)	5	6000
Acetone	50	330
Carbon disulfide	40	63
Dichlorodifluoromethane	5	420
Methyl ethyl ketone (2-Butanone)	50	35000
Methylene chloride	5	35
Tetrachloroethene	5	15
Toluene	5	20
Trichloroethene	5	8200
Vinyl chloride	2	97

SW-21	CR	5/13
VOCs:		
1,1-Dichloroethane	5	880
1,1-Dichloroethene	5	130
1,2-Dichloroethene (cis)	5	10000
Methyl ethyl ketone (2-Butanone)	50	13000
Trichloroethene	5	780

SW-10	CR	5/13
VOCs:		
1,1,1-Trichloroethane	5	720
1,1-Dichloroethane	5	1100
1,1-Dichloroethene	5	580
1,2-Dichloroethane	0.6	9.2
1,2-Dichloroethene (cis)	5	25
Methyl ethyl ketone (2-Butanone)	50	640
Trichloroethene	5	22

URS-01	CR	4/13
VOCs:		
1,1-Dichloroethane	5	910
1,2-Dichloroethene (cis)	5	19
Chloroethane	5	1200
Methyl ethyl ketone (2-Butanone)	50	310
Methylene chloride	5	17
Trichloroethene	5	14
Vinyl chloride	2	24

SW-11	CR	5/13
VOCs:		
1,1,1-Trichloroethane	5	240
1,1-Dichloroethane	5	1600
1,1-Dichloroethene	5	220
1,2-Dichloroethene (cis)	5	230
Methyl ethyl ketone (2-Butanone)	50	130
Trichloroethene	5	15

SW-14	CR	5/13
VOCs:		
1,1-Dichloroethane	5	230
Methyl ethyl ketone (2-Butanone)	50	11000
Trichloroethene	5	210

MW-02	CR	4/13
VOCs:		
1,1,1-Trichloroethane	5	3000
1,1-Dichloroethane	5	11000
1,1-Dichloroethene	5	1500
1,2-Dichloroethene (cis)	5	2400
Chloroethane	5	690
Methylene chloride	5	280
Vinyl chloride	2	280

SW-25	CR	4/13
VOCs:		
1,1,1-Trichloroethane	5	2700
1,1,2-Trichloro-1,2,2-trifluoroethane	5	1600
1,1-Dichloroethane	5	1200
1,1-Dichloroethene	5	580
1,2-Dichloroethene (cis)	5	7200
1,2-Dichloroethene (trans)	5	720
Methyl ethyl ketone (2-Butanone)	50	20000
Trichloroethene	5	5700

SW-22	CR	5/13
VOCs:		
1,1,1-Trichloroethane	5	210
1,1-Dichloroethane	5	20
1,1-Dichloroethene	5	16
1,2-Dichloroethene (cis)	5	81
Acetone	50	390
Methyl ethyl ketone (2-Butanone)	50	1200
Methylene chloride	5	9.6

OW-04S	CR	4/13
VOCs:		
1,1,1-Trichloroethane	5	6000
1,1,2-Trichloro-1,2,2-trifluoroethane	1	9.3
1,1-Dichloroethane	5	2400
1,1-Dichloroethene	5	1400
1,2-Dichloroethane	0.6	7.4
1,2-Dichloroethene (cis)	5	460
1,2-Dichloroethene (trans)	5	15
Methylene chloride	5	12
Trichloroethene	5	140

B4/9S-01	CR	4/13
VOCs:		
1,1,1-Trichloroethane	5	380
1,1,2-Trichloroethane	1	2.1
1,1-Dichloroethane	5	170
1,1-Dichloroethene	5	81
1,2-Dichloroethane	0.6	2.2
1,2-Dichloroethene (cis)	5	32
Chloroethane	5	40
Trichloroethene	5	19
Vinyl chloride	2	6.5

SW-27	CR	5/13
VOCs:		
1,1,1-Trichloroethane	5	140
1,1-Dichloroethene	5	19
1,2-Dichloroethene (cis)	5	210
Acetone	50	840
Methyl ethyl ketone (2-Butanone)	50	27000
Methylene chloride	5	22
Trichloroethene	5	440

OW-04S	CR	4/13
VOCs:		
1,1,1-Trichloroethane	5	6000
1,1,2-Trichloro-1,2,2-trifluoroethane	1	9.3
1,1-Dichloroethane	5	2400
1,1-Dichloroethene	5	1400
1,2-Dichloroethane	0.6	7.4
1,2-Dichloroethene (cis)	5	460
1,2-Dichloroethene (trans)	5	15
Methylene chloride	5	12
Trichloroethene	5	140

OW-07R	CR	4/13
VOCs:		
1,1,1-Trichloroethane	5	340
1,1,2-Trichloro-1,2,2-trifluoroethane	5	15
1,1-Dichloroethane	5	95
1,1-Dichloroethene	5	10
1,2-Dichloroethene (cis)	5	320
Chloroethane	5	24
Methylene chloride	5	6.4
Trichloroethene	5	500

SW-29	CR	5/13
VOCs:		
1,1,1-Trichloroethane	5	72
1,1-Dichloroethene	5	18
1,2-Dichloroethene (cis)	5	4000
1,2-Dichloroethene (trans)	5	77
Acetone	50	290
Methyl ethyl ketone (2-Butanone)	50	2500
Trichloroethene	5	4100

SW-28	CR	5/13
VOCs:		
1,1-Dichloroethane	5	180
1,2-Dichloroethene (cis)	5	58000
1,2-Dichloroethene (trans)	5	200
Methyl ethyl ketone (2-Butanone)	50	1600
Trichloroethene	5	650

OW-07S	CR	4/13	2/15
VOCs:			
1,1,1-Trichloroethane	5	ND	70000
1,1-Dichloroethane	5	9200	7000
1,1-Dichloroethene	5	280	8900
1,2-Dichloroethene (cis)	5	29000	35000
Chloroethane	5	100	ND
Methyl ethyl ketone (2-Butanone)	50	780	ND
Methylene chloride	5	1600	1200
Trichloroethene	5	15000	4800
Vinyl chloride	2	4800	5900

SW-26	CR	5/13
VOCs:		
1,1,1-Trichloroethane	5	1200
1,1,2-Trichloro-1,2,2-trifluoroethane	5	45
1,1-Dichloroethane	5	1200
1,1-Dichloroethene	5	110
1,2-Dichloroethene (cis)	5	190
Chloroethane	5	240
Methylene chloride	5	18
Trichloroethene	5	34
Vinyl chloride	2	220

SW-31	CR	5/13
VOCs:		
1,2-Dichloroethene (cis)	5	730
Methyl ethyl ketone (2-Butanone)	50	3200
Trichloroethene	5	5400

SW-34	CR	5/13
VOCs:		
1,1-Dichloroethane	5	150
1,2-Dichloroethene (cis)	5	14000
Acetone	50	380
Methyl ethyl ketone (2-Butanone)	50	7300
Trichloroethene	5	9400
Vinyl chloride	2	140

OW-06S	CR	4/13
VOCs:		
1,1-Dichloroethane	5	320
1,2-Dichloroethene (cis)	5	9200
Methyl ethyl ketone (2-Butanone)	50	2400
Tetrachloroethene	5	1400
Trichloroethene	5	240
Vinyl chloride	2	720

SW-36	CR	5/13	2/15
VOCs:			
1,1,1-Trichloroethane	5	ND	1000
1,1,2-Trichloro-1,2,2-trifluoroethane	5	ND	330
1,1-Dichloroethane	5	26000	21000
1,1-Dichloroethene	5	ND	200
1,2-Dichloroethene (cis)	5	4500	ND
Chloroethane	5	ND	6200
Methyl ethyl ketone (2-Butanone)	50	4400	ND
Methylene chloride	5	98	ND
Trichloroethene	5	98	ND
Vinyl chloride	2	ND	730

SW-37	CR	5/13	2/15
VOCs:			
1,1,1-Trichloroethane	5	1100	8500
1,1-Dichloroethane	5	10000	18000
1,1-Dichloroethene	5	200	1100
1,2-Dichloroethene (cis)	5	6300	52000
1,2-Dichloroethene (trans)	5	ND	940
Methyl ethyl ketone (2-Butanone)	50	780	ND
Methylene chloride	5	120	ND
Toluene	5	51	ND
Trichloroethene	5	3000	3800
Vinyl chloride	2	ND	1900

SW-30	CR	5/13
VOCs:		
1,1,1-Trichloroethane	5	4300
1,1,2-Trichloro-1,2,2-trifluoroethane	5	490
1,1-Dichloroethane	5	1900
1,1-Dichloroethene	5	930
1,2-Dichloroethene (cis)	5	31000
Methyl ethyl ketone (2-Butanone)	50	420
Methylene chloride	5	170
Trichloroethene	5	1500
Vinyl chloride	2	340

URS-11	CR	5/13	2/15
VOCs:			
1,1,1-Trichloroethane	5	28000	29000
1,1-Dichloroethane	5	41000	20000
1,1-Dichloroethene	5	3700	3200
1,2-Dichloroethene (cis)	5	1700	4100
Chloroethane	5	ND	1400
Methyl ethyl ketone (2-Butanone)	50	ND	7200
Methylene chloride	5	3000	6800
Trichloroethene	5	750	960

URS-15	CR	4/13
VOCs:		
1,1-Dichloroethane	5	1200
1,1-Dichloroethene	5	520
1,2-Dichloroethene (cis)	5	13000
Vinyl chloride	2	290

SW-33	CR	5/13	2/15
VOCs:			
1,1,1-Trichloroethane	5	2900	970000
1,1,2-Trichloro-1,2,2-trifluoroethane	5	ND	2400
1,1-Dichloroethane	5	6300	21000
1,1-Dichloroethene	5	880	48000
1,2-Dichloroethene	0.6	ND	1700
1,2-Dichloroethene (cis)	5	39000	5800
Chloroethane	5	ND	1500
Chloroform	7	ND	77
Methyl ethyl ketone (2-Butanone)	50	ND	940
Methylene chloride	5	270	5600
Tetrachloroethene	5	ND	310
Toluene	5	ND	740
Trichloroethene	5	1300	780
Vinyl chloride	2	ND	7600

SW-35	CR	5/13
VOCs:		
1,1,1-Trichloroethane	5	270
1,1,2-Trichloro-1,2,2-trifluoroethane	5	240
1,1-Dichloroethane	5	480
1,1-Dichloroethene	5	130
1,2-Dichloroethene (cis)	5	25000
Trichloroethene	5	3700
Vinyl chloride	2	410

URS-12	CR	5/13
VOCs:		
1,1-Dichloroethane	5	39
1,2-Dichloroethene (cis)	5	3700
Acetone	50	780
Methyl ethyl ketone (2-Butanone)	50	9300
Methylene chloride	5	63
Trichloroethene	5	4500

OW-11S	CR	5/13
VOCs:		
1,1,1-Trichloroethane	5	7.2
1,2-Dichloroethene (cis)	5	49
Methyl tert-butyl ether	10	120

OW-04S	CR	4/13
VOCs:		
1,1,1-Trichloroethane	5	6000
1,1,2-Trichloro-1,2,2-trifluoroethane	1	9.3
1,1-Dichloroethane	5	2400
1,1-Dichloroethene	5	1400
1,2-Dichloroethane	0.6	7.4
1,2-Dichloroethene (cis)	5	460
1,2-Dichloroethene (trans)	5	15
Methylene chloride	5	12
Trichloroethene	5	140

SW-32	CR	5/13	2/15
VOCs:			
1,1,1-Trichloroethane	5	530000	1100000
1,1-Dichloroethane	5	42000	100000
1,1-Dichloroethene	5	49000	80000
1,2-Dichloroethene (cis)	5	3800	ND
Methylene chloride	5	49000	130000
Toluene	5	2000	ND

COMMERCE DRIVE

Ruby Gordon's Furniture

WEST HENRIETTA ROAD

Legend

- Monitoring Well
- Target Remediation Area

NOTES:
ND - Not Detected
Units - µg/L
CR - Criteria - NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June 1998, Revised April 2000, Class GA.

80 0 80 Feet

STUART OLVER HOLTZ REMAINING GROUNDWATER CONTAMINATION

URS

FIGURE 18

J:\Projects\1171485.0000\DB\GIS\REMAINING GROUNDWATER ANALYTICAL.mxd 3/8/2019

APPENDIX A – ENVIRONMENTAL EASEMENT

700 Crossroads Building
2 State Street, Rochester, New York 14614
P 585.987.2800 F 585.454.3968

Writer's Telephone Number: 585.987.2810
Writer's Fax Number: 585.987-2910
Email: dobrien@woodsoviatt.com

WOODS OVIATT GILMAN LLP
ATTORNEYS
woodsoviatt.com

1900 Main Place Tower
Buffalo, New York 14202
P 716.248.3200 F 716.854.5100

January 22, 2019

Via Federal Express

Bradford D. Burns, Senior Attorney
NYS Department of Environmental Conservation
Office of General Counsel
625 Broadway, 14th Floor
Albany, New York 12233-1500

JAN 23 2019

Re: 39 Commerce Drive

Dear Mr. Burns:

I am attaching a copy of the recorded easement with the recording stamp affixed by the Monroe County Clerk's Office. Please note that the easement was recorded on January 11, 2019.

I am also sending a copy to the Town of Henrietta via Certified Mail, Return Receipt Requested and, as soon as I have confirmation of the Town's receipt of my letter and its copy of the easement, I will send that proof along to you.

Thank you for your attention to this matter.

Very truly yours,

WOODS OVIATT GILMAN LLP

Donald W. O'Brien, Jr., Esq.

Please direct responses to Rochester Office

DOB/dob
Enclosure

cc: Richard F. Groth *(w/encl. via email)*

MONROE COUNTY CLERK'S OFFICE

THIS IS NOT A BILL. THIS IS YOUR RECEIPT.

Receipt # 1930566

Book Page D 12135 0045

No. Pages: 10

Instrument: EASEMENT AGREEMENT

Control #: 201901110938
Ref #: TT0000011081

Date: 01/11/2019

Time: 2:09:46 PM

Return To:
BOX 93

MARSH, JOSEPH C
PEOPLE OF THE STATE OF NEW YORK,

PEOPLE OF THE STATE OF NEW YORK,

Recording Fee	$26.00	
Pages Fee	$45.00	
State Fee Cultural Education	$14.25	
State Fee Records Management	$4.75	Employee: JM
TP-584 Form Fee	$5.00	
Total Fees Paid:	$95.00	

State of New York

MONROE COUNTY CLERK'S OFFICE
WARNING – THIS SHEET CONSTITUTES THE CLERKS ENDORSEMENT, REQUIRED BY SECTION 317-a(5) & SECTION 319 OF THE REAL PROPERTY LAW OF THE STATE OF NEW YORK. DO NOT DETACH OR REMOVE.

Consideration: $1.00

ADAM J BELLO

MONROE COUNTY CLERK

201901110938 01/11/2019 02:09:46 PM D 12135 0046

County: Monroe Site No: 828079
Bay 93 DOB

ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36
OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

THIS INDENTURE made this 2nd day of January, 20 19 between Owner(s) Joseph C. Marsh, having a mailing address of 33 Tobey Court, Pittsford, New York 14534, County of Monroe, State of New York (the "Grantor"), and The People of the State of New York (the "Grantee"), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

WHEREAS, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

WHEREAS, Grantor, is the owner of real property located at the address of 39 Commerce Drive in the Town of Henrietta, County of Monroe and State of New York, known and designated on the tax map of the County Clerk of Monroe as tax map parcel numbers: Section 161.15 Block 1 Lot 5, being the same as that property conveyed to Grantor by deed dated October 4, 2018 and recorded in the Monroe County Clerk's Office in Liber and Page 12092/0248.

WHEREAS, Grantor, is the owner of real property located at the address of Commerce Drive in the Town of Henrietta, County of Monroe and State of New York, known and designated on the tax map of the County Clerk of Monroe as tax map parcel numbers: Section 161.15 Block 1 Lot 4, being the same as that property conveyed to Grantor by deed dated October 4, 2018 and recorded in the Monroe County Clerk's Office in Liber and Page 12092/0023.

WHEREAS, the property subject to this Environmental Easement (the "Controlled Property") comprises approximately 4.386 +/- acres, and is hereinafter more fully described in the

Land Title Survey dated April 18, 2017 prepared by John E. McIntosh, III, L.L.S. of McIntosh & McIntosh, P.C., which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of public health and the environment and to achieve the requirements for remediation established for the Controlled Property until such time as this Environmental Easement is extinguished pursuant to ECL Article 71, Title 36; and

NOW THEREFORE, in consideration of the mutual covenants contained herein Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement")

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements to be listed in a Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property and run with the land. To the extent there are any inconsistencies between the SMP and this Easement, the terms of the SMP shall control. The below institutional controls are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property in a manner specified below.

A. The following institutional controls shall be implemented by Grantors:

(1) The Controlled Property may be used for:

Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv)

(2) Grantor and subsequent Site owners shall ensure that the Environmental Easement remains in place and effect.

(3) Grantor shall ensure that the use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Monroe County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department. Grantor shall adhere to the institutional controls required by the Environmental Easement, including the prohibition of the use of groundwater underlying the property without treatment rendering it safe for intended use; the prohibition of raising livestock or producing

animal products for human consumption; and the prohibition of installation of a basement beneath on-site structures.

(4) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP. The current use of the property at the time of the execution of this easement is as vacant land, and will be an acceptable use under the SMP.

(5) Upon the Department's written request with reasonable advance notice, Grantor and subsequent Site owners shall submit a written statement certifying that:

(1) the institutional and engineering controls at the property:

(i) are in-place;

(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved by the NYSDEC and that all institutional controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such institutional control to protect the public health and environment;

(iv) that Grantor has taken no action which removes, alters or disturbs the existing engineering controls at the Controlled Property.

(2) the owner will continue to allow the Department access to such real property to evaluate institutional and engineering controls;

(3) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such institutional controls;

(4) the information presented is accurate and complete.

(6) Grantor and subsequent Site owners shall notify the Department of changes of Site use and/or ownership.

(7) Grantor and subsequent Site owners shall report emergencies to the Department and other appropriate authorities.

(8) Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this Environmental Easement.

(9) The Controlled Property shall not be used for Residential or Restricted Residential purposes as defined in 6NYCRR 375-1.8(g)(2)(i) and (ii), and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

(10) Grantor shall obtain an up-to-date version of the SMP from:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, New York 12233
Phone: (518) 402-9553

(11) Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

(12) Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the Environmental Conservation Law.

(13) Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

(14) Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner, at reasonable times and with reasonable notice to Grantor to assure compliance with the above-stated restrictions.

(15) Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

(1) Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;
(2) The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

B. All Engineering Controls shall be operated and maintained by Grantee as specified in the Site Management Plan (SMP);

(1) Grantee shall develop, install, operate, inspect, monitor and maintain the on-site and off-site engineering control(s) including any further investigations and implementation of a selected remedy. All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP by Grantee;

County: Monroe Site No: 828079

(2) Grantee shall annually submit to Grantor a written statement certifying that:

(1) the engineering controls employed at such site:

(i) are in-place;

(ii) are unchanged from the previous certification, or identify any changes to the controls employed at the Site.

(3) Grantee shall prepare periodic review reports evaluating institutional and engineering controls; and

(4) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed by Grantee as defined in the SMP. Grantee shall operate, maintain, monitor, inspect, and prepare reports evaluating mechanical or physical components of the remedy; and

(5) Grantee shall decommission Site monitoring wells at an appropriate time to be determined by the Department.

(6) Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner, at reasonable times and with reasonable notice to Grantor to assure compliance with the above-stated restrictions.

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If Grantor or its successors violates the institutional controls of this Environmental Easement, or takes any action to remove, alter or disturb any of the engineering controls placed on the Controlled Property, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement regarding Grantor's obligations. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be

deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to:	Site Number: 828079 Office of General Counsel NYSDEC 625 Broadway Albany New York 12233-5500
With a copy to:	Site Control Section Division of Environmental Remediation NYSDEC 625 Broadway Albany, NY 12233

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail and return receipt requested. The Parties may provide for other means of receiving and communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

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County: Monroe Site No: 828079

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

Signature: _____

Print Name: Joseph C. Marsh

Date: 12/11/18

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF ~~Yates~~ Monroe)

On the 11th day of December, in the year 2018, before me, the undersigned, personally appeared Joseph C. Marsh, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

_____
Notary Public - State of New York
YATES COUNTY
NO. 02OB4750856
MY COMMISSION EXPIRES
6/18/2022

201901110938 01/11/2019 02:09:46 PM D 12135 0053

County: Monroe Site No: 828079

THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting By and Through the Department of Environmental Conservation as Designee of the Commissioner,

By: _____
Michael J. Ryan, Director
Division of Environmental Remediation

Grantee's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF ALBANY)

On the 2nd day of January, in the year 2019 before me, the undersigned, personally appeared Michael J. Ryan, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public - State of New York

David J. Chiusano
Notary Public, State of New York
No. 01CH5032146
Qualified in Schenectady County
Commission Expires August 22, 2022

County: Monroe Site No: 828079

SCHEDULE "A" PROPERTY DESCRIPTION

ALL THAT TRACT OR PARCEL OF LAND situate in the Town of Henrietta, County of Monroe, State of New York and being part of Town Lot 8, Fifth Range, Township 12, Range 7, bounded and described as follows:

THE POINT OF BEGINNING of which is described by commencing at a point in the west line of West Henrietta Road where it is intersected by the southerly line of the premises conveyed to the Rochester and Honeoye Valley Railroad company by deed recorded in the Monroe County Clerk's Office in Liber 487 of Deeds at Page 125 which point is also the intersection of the north line of premises conveyed to Kheel Associates Inc. by deed recorded in the Monroe County Clerk's Office in Liber 3033 of Deeds at Page 22 with the west line of West Henrietta Road;

RUNNING THENCE: S-21°-30'-00"-W, along the west side of West Henrietta Road, a distance of 391.40 feet to a point;

RUNNING THENCE: N–68°-22'-00"-W, along the south line of Commerce Drive, a distance of 217.00 feet to the Point or Place of Beginning of the parcel herein described;

RUNNING THENCE: S-21°-30'-00"-W, a distance of 450.00 feet to a point;

RUNNING THENCE: S-88°-35'-00"-W, a distance of 278.32 feet to a point;

RUNNING THENCE: N-81°-44'-57"-W, a distance of 188.69 feet to a point;

RUNNING THENCE: N-14°-49'-56"-E, a distance of 291.01 feet to a point on the south line of Commerce Drive;

RUNNING THENCE: N–69°-38'-00"-E, along the south line of Commerce Drive, a distance of 213.85 feet to a point of curvature;

RUNNING THENCE: Northeasterly, along a curve to the right having a radius of 738.94 feet and along the south line of Commerce Drive, a distance of 251.94 feet to a point of tangency;

RUNNING THENCE: N-89°-08'-00"-E, along the south line of Commerce Drive, a distance of 96.76 feet to the POINT OR PLACE OF BEGINNING, containing 4.386 Acres, be the same, more or less.

SUBJECT to easements, rights of way and restrictions of record.

BEING AND INTENDED to be lands conveyed to Soh Acquiring, Inc. by deeds recorded in the Monroe County Clerk's Office in Liber 9232 of Deeds at Page 679 and in Liber 9232 of Deeds at Page 685.

STUART–OLIVER–HOLTZ ENVIRONMENTAL EASEMENT AREA DESCRIPTION
NYS DEC SITE NO. 828079

ALL THAT TRACT OR PARCEL OF LAND situate in the Town of Henrietta, County of Monroe, State of New York and being part of Town Lot 8, Fifth Range, Township 12, Range 7, bounded and described as follows:
THE POINT OF BEGINNING of which is described by commencing at a point in the west line of West Henrietta Road where it is intersected by the southerly line of the premises conveyed to the Rochester and Honeoye Valley Railroad company by deed recorded in the Monroe County Clerk's Office in Liber 487 of Deeds at Page 125 which point is also the intersection of the north line of premises conveyed to Kheel Associates Inc. by deed recorded in the Monroe County Clerk's Office in Liber 3033 of Deeds at Page 22 with the west line of West Henrietta Road;
RUNNING THENCE: S–21°–30'–00"–W, along the west side of West Henrietta Road, a distance of 391.40 feet to a point;
RUNNING THENCE: N 68°–22'–00"–W, along the south line of Commerce Drive, a distance of 217.00 feet to the Point or Place of Beginning of the parcel herein described;
RUNNING THENCE: S–21°–30'–00"–W, a distance of 450.00 feet to a point;
RUNNING THENCE: S–88°–35'–00"–W, a distance of 278.32 feet to a point;
RUNNING THENCE: N–81°–44'–57"–W, a distance of 188.69 feet to a point;
RUNNING THENCE: N–14°–49'–56"–E, a distance of 291.01 feet to a point on the south line of Commerce Drive;
RUNNING THENCE: N 69°–38'–00"–E, along the south line of Commerce Drive, a distance of 213.85 feet to a point of curvature;
RUNNING THENCE: Northeasterly, along a curve to the right having a radius of 738.94 feet and along the south line of Commerce Drive, a distance of 251.94 feet to a point of tangency;
RUNNING THENCE: N–89°–08'–00"–E, along the south line of Commerce Drive, a distance of 96.76 feet to the POINT OR PLACE OF BEGINNING, containing 4.386 Acres, be the same, more or less.
SUBJECT to easements, rights of way and restrictions of record.
BEING AND INTENDED to be lands conveyed to Soh Acquiring, Inc. by deeds recorded in the Monroe County Clerk's Office in Liber 9232 of Deeds at Page 679 and in Liber 9232 of Deeds at Page 685.

COOK DRIVE

COMMERCE DRIVE (VARYING WIDTHS)

POINT OF BEGINNING

N–89°–00'–00"–E DEED
N–89°–08'–00"–E
96.76' DEED & MEAS.

R=738.94', L=251.94' DEED= 251.94' MEAS.

S–68°–22'–00"–E
13.09' DEED & MEAS.

230.49' DEED
N–68°–22'–00"–W 217.00' DEED

S–69°–38'–00"–W 213.89' DEED= 213.85' MEAS.
N–69°–38'–00"–E

FORMER WEST R.O.W. LINE OF WEST HENRIETTA ROAD
(VARYING WIDTHS)
S–21°–30'–00"–W 391.40' DEED TO SOUTH LINE ROCHESTER AND HONEOYE VALLEY RAILROAD COMPANY L–487, P–125
AND NORTH LINE KHEEL ASSOCIATES INC. L–3033, P–22

N–14°–49'–56"–E 291.01' MEAS.
S–14°–49'–56"–W 290.94' DEED

N–04°–14'–29"–E 102.43' DEED
N–20°–24'–15"–E 214.85' DEED
N–04°–15'–27"–E 80.00' DEED

S–21°–30'–00"–W 450.00' DEED & MEAS.

S–81°–44'–57"–E 188.69' DEED & MEAS.

S–88°–35'–00"–W 278.32' DEED & MEAS.

REPUTED OWNER
SOH ACQUIRING, INC.
L–9232, P–685
SBL NO. 161.15–1–4

REPUTED OWNER
SOH ACQUIRING, INC.
L–9232, P–679
SBL NO. 161.15–1–5

4.386± Ac.
COMBINED PARCELS

REPUTED OWNER
JANICE McKENZIE LLC
L–9785, P–531

REPUTED OWNER
MUSTAFA G. EVIRGEN
L–11548, P–145

REPUTED OWNER
RAMA GUPTA
L–11541, P–385

REPUTED OWNER
3755 WEST HENRIETTA ROAD LLC
L–11165, P–484

REPUTED OWNER
3737 WEST LLC
L–11202, P–38

WEST HENRIETTA ROAD (VARYING WIDTHS)

EX. CONC. MON.
EX. REBAR 0.3' N.W.
EX. REBAR
EX. REBAR 0.10' SOUTH 0.16' WEST
SET REBAR W/CAP
SET REBAR W/CAP
SET TIMBER SPIKE 2.7' S.E.
EX. REBAR W/CAP
EX. REBAR 0.32' SOUTH 0.38' EAST
SET REBAR W/CAP

TEL. M.H. 4.4' S.E.
TEL. M.H. 6.5' SOUTH
TEL. M.H. 2.0' SOUTH
UTIL. M.H.
SAN. M.H.
SAN. M.H.
SAN. M.H.
G.V. 2.7' S.E.
G.V. 5.8' S.E.
G.V. 3.2' S.E.

C.B. 5.8' S.E.
C.B. 1.8' SOUTH
MON. WELL OW–3S
EX. MAG NAIL 0.29' NORTH 0.13' WEST
GATE POST 19.5' S.E.
GATE POST 20.5' S.E.
GATE
OH. LINK FENCE
CH. LINK FENCE
FENCE COR. 9.3' SOUTH
FENCE COR. 6.9' N.W.
FENCE COR. 8.6' S.E. 4.5' EAST
FENCE COR. 4.3' NORTH 1.2' EAST
FENCE COR. 0.5' NORTH
FENCE COR. 0.1' WEST
FENCE COR. 1.9' S.E.
FENCE COR. 1.8' S.E.
FENCE 0.4' EAST
FENCE 0.1' NORTH
EDGE OF PAVEMENT
EDGE OF CONC. SLAB
ASPHALT
ASPHALT DRIVE
GRAVEL DRIVE
DRIVE 0.6' NORTH
ASPHALT 1.2' SOUTH
ASPHALT 0.73' NORTH 0.30' WEST
ASPHALT 3.6' S.E.
ASPHALT 1.9' S.E.
SLAB 3.03' NORTH
CONC. SLAB
CONC. PAD W/UTILITY APPAR.
LOW CONC. BLOCK WALL
STOCKADE FENCE
GUY WIRE 3.3' NORTH
GUY WIRE 0.5' S.E.
GUY WIRE
6" WELL CASING 3.7' S.W.
CONC. BLOCK BUILDING
4 QUARD POSTS
P.P. RTC–P1F
P.P. 1E1
P.P. RTC–P1B 0.5' NORTH
P.P. RGE/RTC –P10 3.1' N.W.
P.P. RGE 1D1 0.2' N.W.
P.P. RGE 1C1 3.9' N.W.
P.P. RTC–P1B 0.6' WEST
P.P. RGE 1C 3.7' N.W.
P.P. W/LIGHT 1E 3.4' NORTH
L.P. 3.2' S.E.
OE&T
OE
OT
OH. LINK FENCE

LEGEND

- OT — OVERHEAD TELEPHONE
- OE&T — OVERHEAD ELECTRIC & TELEPHONE
- OE — OVERHEAD ELECTRIC
- x — FENCE
- MONITORING WELL
- L.P. — LIGHT POLE
- P.P. — POWER POLE
- C.B. — CATCH BASIN
- UTIL. M.H. — UTILITY M.H.
- SAN. M.H. — SANITARY MANHOLE
- G.V. — GAS VALVE
- PROPERTY/EASEMENT BOUNDARY

NOTES:
1) FOR REFERENCE SEE TOWN OF HENRIETTA TAX MAP NO. 161.15
2) FOR REFERENCE SEE MAP PREPARED BY SMITH & DENLUCK (NOT RECORDED)
3) NUMEROUS MONITORING WELLS EXIST AT THE SITE AND ONLY THOSE LOCATED IN THE NEAR PROXIMITY OF THE PROPERTY LINES WERE SHOWN.

THE ENGINEERING AND INSTITUTIONAL CONTROLS FOR THIS EASEMENT ARE SET FORTH IN THE SITE MANAGEMENT PLAN (SMP). A COPY OF THE SMP MUST BE OBTAINED BY ANY PARTY WITH AN INTEREST IN THE PROPERTY. THE SMP CAN CAN BE OBTAINED FROM NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION, DIVISION OF ENVIRONMENTAL REMEDIATION, SITE CONTROL SECTION, 625 BROADWAY, ALBANY, NY 12233 OR AT DERWEB@GW.DEC.STATE.NY.US.

THIS PROPERTY IS SUBJECT TO AN ENVIRONMENTAL EASEMENT HELD BY THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION PURSUANT TO TITLE 36 OF ARTICLE 71 OF THE NEW YORK ENVIRONMENTAL CONSERVATION LAW

APRIL 18, 2017 — DATE OF MAP OR PLAT
JOHN E. McINTOSH, III — LICENSE NO. 49928 — L.S.

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

NYS DEC SITE NO. 828079 STUART–OLIVER–HOLTZ
SITE ADDRESS: 39 COMMERCE DRIVE

McINTOSH & McINTOSH, P.C.
CONSULTING ENGINEERS, LAND SURVEYORS, PLANNERS
LOCKPORT, NEW YORK PHONE 433–2535
BUFFALO, NEW YORK PHONE 625–8360

NOTE: THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE AND IS SUBJECT TO ANY STATE OF FACTS THAT MAY BE REVEALED BY AN EXAMINATION OF SUCH.

NOTE: UNAUTHORIZED ALTERATION OR ADDITION TO THIS SURVEY IS A VIOLATION OF SECTION 7209, PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

RESURVEY	REVISION

SURVEY OF PART OF LOT–8, R.–5, TWP.–12, R.–7
LOCATION: TOWN OF HENRIETTA, MONROE COUNTY, NEW YORK
JOB No. M–4359 | SCALE: 1"= 30' | DATE: APRIL 18, 2017
DRAWN | COMP. | DESC. | CHECKED

APPENDIX B – LIST OF SITE CONTACTS

APPENDIX B – LIST OF SITE CONTACTS

Name	Phone/Email Address
SOH Acquiring, Inc. (Richard Groth), Owner	[phone] RGroth5117@aol.com
[Remedial Party]	[phone] [email address]
[Qualified Environmental Professional]	[phone] [email address]
George Momberger, NYSDEC Project Manager	(518) 402-9814 george.momberger@dec.ny.gov
Scott Foti, NYSDEC Regional HW Engineer	(585) 226-5454/ scott.foti @dec.ny.gov
Kelly Lewandowski, NYSDEC Site Control	(518) 402-9543/ kelly.lewandowski@dec.ny.gov

APPENDIX C – BORING LOGS

URS Corporation

TEST BORING LOG

PROJECT:	Stuart-Olver-Holtz
CLIENT:	NYSDEC
BORING CONTRACTOR:	Nothnagle Drilling Company
GROUNDWATER:	Approx 6' BGS

					CAS.	SAMPLER	CORE	TUBE
DATE	TIME	LEVEL	TYPE	TYPE	HSA	Split Spoon		
				DIA.	4.25"	2-inch		
				WT.		140#		
				FALL		30"		
				* Photoionization Detector				

BORING NO:	URS-11
SHEET:	1 of 2
JOB NO.:	11174465.00002
BORING LOCATION:	See Map
GROUND ELEVATION:	See Map
DATE STARTED:	2/5/2007
DATE FINISHED:	2/6/2007
DRILLER:	Steve Loranty
GEOLOGIST:	Kevin J. McGovern
REVIEWED BY:	Tim Burmeier

DEPTH FEET	STRATA	SAMPLE "S" NO.	SAMPLE "N" NO.	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	DESCRIPTION CONSIST HARD	DESCRIPTION MATERIAL	USCS	PID* (PPM)	REMARKS
1		1	36	NA 8 / 28 40	15%	Brown	Dense to Medium Dense	0'-0.5': CONCRETE 0.5'-6': FILL - Coarse-medium-fine Sand and fine Gravel, grading towards Silt and coarse to fine Gravel		0.0	Dry, No Odor
		2	13	12 7 / 6 7	45%					0.0	
5		3**	20	8 9 / 11 17	25%					3.1	Slight Odor Btw 4'-6' BGS
		4	18	12 10 / 8 7	60%			6'-14': Fine SAND, some Silt, trace to some coarse Sand and fine Gravel (UGT)	SM	27.0	Wet @ 6' BGS No Odor
10		5***	30	11 12 / 18 20	35%					123.0	
		6	34	6 16 / 18 23	40%					42.0	
14		7	30	7 12 / 18 30	75%					36.0	
15		8#	46	13 28 / 18 22	80%	Brownish Gray		14'-16': Medium-fine SAND, some to trace coarse Sand and coarse-fine Gravel (UGT)	SW	17.0	
		9	52	10 24 / 28 42	65%	Reddish Gray	Very Dense	16'-22': Silty fine SAND, some medium Sand, some to trace coarse Sand and fine Gravel (UGT) 18'-20': Trace medium Sand	SM	0.4	
20		10	28	19 3 / 25 35	65%		Medium Dense			0.4	
22		11	83	20 37 / 46 61	75%		Very Dense	20'-22': Trace coarse Sand and fine Gravel, no medium Sand		0.3	
24		12	69	15 36 / 33 62	90%	Gray		22'-24': Medium to fine SAND, some coarse Sand and fine to coarse Gravel (UGT)	SW	0.4	
25		13	>100	17 46 / 100/ 0.4'	40%	Brownish Gray		24'-28': Fine SAND and SILT, some to trace coarse Sand and fine Gravel (LGT)	SM	0.2	
28		14	117	24 50 / 67 78	100%			28'-30': Trace medium Sand and coarse Gravel		15.0	
30		15	33	3 5 / 28 36	60%		Dense to Medium Dense	28'-32': Medium to fine SAND, some to silt, trace coarse Sand and fine Gravel	SW	83.0	
32		16	21	4 8 / 13 15	50%	Brown w/ Dk Staining		30'-32': No Silt, coarse Sand or fine Gravel		54.0	Odor Present @ 30' BGS
		17	>100	64 100/ 0.5'	35%	Gray	Very Dense	32'-38': Silty fine SAND, some to trace coarse Sand and fine Gravel (LGT)	SM	34.0	
35		18	>100	100/ 0.5'	20%					15.0	

Comments: Boring advanced with Truck-mounted CME-85 equipped with 4 1/4-inch ID hollow stem auger and a 2-inch dia. 2-foot long split spoon sampler

NA = Not Applicable

LAC = Lacustrine, UGT = Upper Glacial Till, LGT = Lower Glacial Till

WoH = Weight of Hammer, WoR = Weight of Rod

PROJECT NO.	11174465.00002
BORING NO.	URS-11
** - Sampled (4'-6') for TCL VOCs (8260B)	
*** - Sampled (8'-10') for TCL VOCs (8260B)	

URS Corporation

TEST BORING LOG

PROJECT:	Stuart-Olver-Holtz
CLIENT:	NYSDEC
BORING CONTRACTOR:	Nothnagle Drilling Company
GROUNDWATER:	Approx 6' BGS

DATE	TIME	LEVEL	TYPE	TYPE	CAS.	SAMPLER	CORE	TUBE
				DIA.	4.25"	2-inch		
				WT.		140#		
				FALL		30"		
				* Photoionization Detector				

BORING NO:	URS-11
SHEET:	2 of 2
JOB NO.:	11174465.00002
BORING LOCATION:	See Map
GROUND ELEVATION:	See Map
DATE STARTED:	2/5/2007
DATE FINISHED:	2/6/2007
DRILLER:	Steve Loranty
GEOLOGIST:	Kevin J. McGovern
REVIEWED BY:	Tim Burmeier

DEPTH FEET	STRATA	SAMPLE "S" NO.	SAMPLE "N" NO.	SAMPLE BLOWS PER 6"	SAMPLE REC% RQD%	DESCRIPTION COLOR	DESCRIPTION CONSIST HARD	DESCRIPTION MATERIAL	USCS	PID* (PPM)	REMARKS
36		18	>100	100/ 0.6'	20%	Gray	Hard	32'-38': Silty fine SAND, some to trace coarse Sand and fine Gravel (LGT)	SM	15.0	Wet, Odor Present
		19	>100	100/ 0.6'	15%					24.0	
40		20	>100	77 100/ 0.6'	35%			38'-42': SILT, some fine-coarse Gravel, trace fine-medium-coarse Sand (LGT)	ML	6.7	
		21	>100	38 100/ 0.4'	35%			42': Rock Chips in Shoe		7.2	
45		22	>100	26 100/ 0.4'	20%	Reddish Brown		42'-46': Fine sandy SILT, some to trace coarse Sand and fine Gravel (LGT)		2.5	No Odor
		23	>100	20 100/ 0.6'	20%					7.5	
48		24	>100	100/0.4'	10%	Pink		46'-48.2': Coarse-medium-fine SAND and fine Gravel (LGT)	SW	0.2	
49		25	>100	100/ 0.2'	0%			Top of Rock @ 48.2' BGS, End of Boring		NA	
50											

Comments: Boring advanced with Truck-mounted CME-85 equipped with 4 1/4-inch hollow stem augers and 2-foot long, 2-inch diameter, split-spoon sampler

NA = Not Applicable

LAC = Lacustrine, UGT = Upper Glacial Till, LGT = Lower Glacial Till

WoH = Weight of Hammer, WoR = Weight of Rod

PROJECT NO.	11174465.00002
BORING NO.	URS-11

URS Corporation

TEST BORING LOG

PROJECT:	Stuart-Olver-Holtz
CLIENT:	NYSDEC
BORING CONTRACTOR:	Nothnagle Drilling Company
GROUNDWATER:	Approx 5.5' BGS

DATE	TIME	LEVEL	TYPE	TYPE	CAS.	SAMPLER	CORE	TUBE
				DIA.	4.25"	2-inch		
				WT.		140#		
				FALL		30"		
				* Photoionization Detector				

BORING NO:	URS-12
SHEET:	1 of 2
JOB NO.:	11174465.00002
BORING LOCATION:	See Map
GROUND ELEVATION:	See Map
DATE STARTED:	2/7/2007
DATE FINISHED:	2/8/2007
DRILLER:	Steve Loranty
GEOLOGIST:	Kevin J. McGovern
REVIEWED BY:	Tim Burmeier

DEPTH FEET	STRATA	SAMPLE "S" NO.	SAMPLE "N" NO.	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	DESCRIPTION CONSIST HARD	DESCRIPTION MATERIAL	USCS	PID* (PPM)	REMARKS
1		1	5	NA NA / 5 7	38%			0'-1.2': CONCRETE		0.3	Moist, No Odor
		2	6	3 3 / 3 8	75%	Reddish Brown to Brown	Loose	1.2'-5.5': FILL - Silt, some medium-fine Sand 2'-4': Dark staining w/ trace coarse gravel		9.2	
5		3**	34	7 8 / 26 21	75%	Gray	Dense to Medium Dense	5.5'-6': Coarse-medium-fine SAND and fine GRAVEL		82.0	Odor (4'-6')
		4	17	7 8 / 9 10	75%	Brown		6'-14': Medium-fine to fine SAND, some to trace coarse Sand and fine-coarse Gravel (UGT)	SW	56.0	Wet @ 5.5' BGS No Odor
10		5***	26	9 11 / 15 20	80%					253.0	
		6	62	9 26 / 36 46	75%		Very Dense			121.0	
		7	55	11 18 / 37 34	70%					142.0	
15		8	61	19 25 / 36 31	60%			14'-24': Medium-fine to fine SAND, some to trace coarse Sand and fine-coarse Gravel, some to trace silt (UGT)	SM	84.4	
		9#	70	19 28 / 42 77	65%					52.6	
20		10	>100	22 40 / 100/ 0.4'	50%					49.0	
		11	62	20 40 / 22 71	65%	Gray Brown				1.8	
24		12	>100	28 100/ 0.3'	0%					NA	
25		13	>100	13 32 / 97/ 0.5'	60%			24'-32': Fine SAND and SILT, some coarse Sand and fine-coarse Gravel, trace medium Sand (LGT)	SM	1.1	
		14	>100	47 100/ 0.6'	15%	Reddish Gray Brown				1.2	
30		15	>100	32 100/ 0.4'	15%					0.9	
32		16	>100	46 100/ 0.4'	15%					1.0	
34		17	48	27 30 / 18 100/ 0.3'	100%		Dense	32'-34': Medium-fine SAND,	SW	1.2	
35		18	>100	46 55	50%		Hard	34'-42': SILT and fine SAND, Con't...	SM	2.0	

Comments: Boring advanced with Truck-mounted CME-85 equipped with 4 1/4-inch ID hollow stem auger and a 2-inch dia. 2-foot long split spoon sampler

NA = Not Applicable

LAC = Lacustrine, UGT = Upper Glacial Till, LGT = Lower Glacial Till

WoH = Weight of Hammer, WoR = Weight of Rod

PROJECT NO. 11174465.00002

BORING NO. URS-12

** - Sampled (4'-5.5') for TCL VOCs (8260B)

*** - Sampled (8'-10') for TCL VOCs (8260B)

- Sampled (16'-18') for Natural Oxidant Demand

URS Corporation

TEST BORING LOG

BORING NO:	URS-12
SHEET:	2 of 2
JOB NO.:	11174465.00002
BORING LOCATION:	See Map
GROUND ELEVATION:	See Map
DATE STARTED:	2/7/2007
DATE FINISHED:	2/8/2007
DRILLER:	Steve Loranty
GEOLOGIST:	Kevin J. McGovern
REVIEWED BY:	Tim Burmeier

PROJECT: Stuart-Olver-Holtz
CLIENT: NYSDEC
BORING CONTRACTOR: Nothnagle Drilling Company
GROUNDWATER: Approx 6' BGS

DATE	TIME	LEVEL	TYPE	TYPE	CAS.	SAMPLER	CORE	TUBE
				DIA.	4.25"	2-inch		
				WT.		140#		
				FALL		30"		
				* Photoionization Detector				

DEPTH FEET	STRATA	SAMPLE "S" NO.	SAMPLE "N" NO.	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	DESCRIPTION CONSIST HARD	DESCRIPTION MATERIAL	USCS	PID* (PPM)	REMARKS
36		18	>100	100/ 0.3'	50%	Reddish Gray Brown	Hard	34'-42': SILT and fine SAND, some coarse Sand and fine Gravel (LGT)	SM	2.0	Wet, No Odor
		19	>100	100/ 0.4'	15%					1.2	
		20	115	38 48 / 67 94	35%					1.2	
40		21	>100	39 61 / 100/ 0.3'	35%					1.2	
		22	66	19 24 / 42 19	20%			42'-45.5': SILT, some coarse-fine Sand and coarse-fine Gravel (LGT)	MH	1.2	
45		23	56	9 19 / 37 100/ 0.1'	20%					1.1	
46								45.5'-46': Weathered Shale			
		24	>100	100/ 0.05'	0%			Top of Rock @ 46' BGS, End of Boring		NA	
50											

Comments: Boring advanced with Truck-mounted CME-85 equipped with 4 1/4-inch hollow stem augers and 2-foot long, 2-inch diameter, split-spoon sampler

NA = Not Applicable

LAC = Lacustrine, UGT = Upper Glacial Till, LGT = Lower Glacial Till

WoH = Weight of Hammer, WoR = Weight of Rod

PROJECT NO.	11174465.00002
BORING NO.	URS-12

URS Corporation

TEST BORING LOG

BORING NO:	URS-13
SHEET:	1 of 1
JOB NO.:	11174465.00002
BORING LOCATION:	See Map
GROUND ELEVATION:	See Map
DATE STARTED:	3/7/2007
DATE FINISHED:	3/7/2007
DRILLER:	Steve Loranty
GEOLOGIST:	Kevin J. McGovern
REVIEWED BY:	Tim Burmeier

PROJECT: Stuart-Olver-Holtz
CLIENT: NYSDEC
BORING CONTRACTOR: Nothnagle Drilling Company
GROUNDWATER: Approx 4' BGS

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	CORE	TUBE
TYPE	HSA	Split Spoon		
DIA.	4.25"	2-inch		
WT.		140#		
FALL		30"		

* Photoionization Detector

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	CONSIST HARD	MATERIAL	USCS	PID* (PPM)	REMARKS
1		1	4	1 2	45%	Brown	Very Loose	0'-0.5': TOPSOIL 0.5'-2': FILL - Medium-fine Sand		0.0	Moist, No Odor
2				2 2							
		2**	8	1 3	95%	Reddish Brown	Stiff	2'-8': Clayey SILT (LAC)	ML	0.0	
				5 7							
5		3	9	1 3	75%					0.0	Wet @ 4' BGS
				6 14							No Odor
		4	15	3 6	80%			6'-8': fine sand partings		0.0	
8				9 14							
		5	6	2 3	75%		Loose	8'-10.5': Clayey fine SAND, some Silt and medium-coarse sand and fine Gravel (UGT)	SC	0.0	
10				3 4							
11		6#	33	9 12	70%	Reddish Grey Brown	Dense	10.5'-16': Medium-fine SAND, some coarse Sand and fine-coarse Gravel (UGT)	SW	0.0	
				21 27							
		7#	49	15 21	75%			12'-16': no coarse Gravel, trace Silt		0.0	
				28 36							
15		8	13	5 6	25%		Medium Dense			0.0	
16				7 8							
		9	48	12 20	65%		Dense	16'-24': Fine SAND, some Silt, trace medium-coarse Sand (LGT)	SM	0.0	
				28 32							
		10	42	9 16	90%			18'-20': trace fine-coarse Gravel		0.3	
20				26 30							
		11***	56	18 24	90%		Very Dense	21.7'-22': Medium-fine SAND seam, w/ some Silt and Gravel		1.5	
				32 33							
		12	60	12 30	75%					0.6	
24				30 24							
25								End of Boring @ 24' BGS			
30											
35											

Comments: Boring advanced with Truck-mounted CME-85 equipped with 4 1/4-inch ID hollow stem auger and a 2-inch dia. 2-foot long split spoon sampler

NA = Not Applicable

LAC = Lacustrine, UGT = Upper Glacial Till, LGT = Lower Glacial Till

WoH = Weight of Hammer, WoR = Weight of Rod

PROJECT NO. 11174465.00002
BORING NO. URS-13

** - Sampled (2'-4') for TCL VOCs (8260B), TCL SVOCs(8270C), TAL Metals, CN, PCBs + Pesticides

*** - Sampled (20'-22') for TCL VOCs (8260B), TCL SVOCs (8270C), TAL Metals, CN, PCBs+ Pesticides

URS Corporation

TEST BORING LOG

BORING NO:	URS-14
SHEET:	1 of 1
JOB NO.:	11174465.00002
BORING LOCATION:	See Map
GROUND ELEVATION:	See Map
DATE STARTED:	2/23/2007
DATE FINISHED:	2/23/2007
DRILLER:	Steve Loranty
GEOLOGIST:	Kevin J. McGovern
REVIEWED BY:	Tim Burmeier

PROJECT: Stuart-Olver-Holtz
CLIENT: NYSDEC
BORING CONTRACTOR: Nothnagle Drilling Company
GROUNDWATER: Approx 4' BGS

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	CORE	TUBE
TYPE	HSA	Split Spoon		
DIA.	4.25"	2-inch		
WT.		140#		
FALL		30"		

* Photoionization Detector

DEPTH FEET	STRATA	SAMPLE "S" NO.	SAMPLE "N" NO.	BLOWS PER 6"	REC% RQD%	COLOR	CONSIST HARD	MATERIAL	USCS	PID* (PPM)	REMARKS
1		1**	5	1 2 / 3 4	30%	Brown	Loose	0'-0.5': TOPSOIL 0.5'-4': FILL - Gravel and Silt		31.3	Moist, No Odor
4		2	7	2 4 / 3 5	50%	Dark Brown		2'-4': Silt, some Clay		18.2	
5		3	15	3 7 / 8 13	45%	Reddish Brown	Very Stiff	4'-8': Clayey SILT (LAC)	ML	50.0	Wet @ 4' BGS No Odor
8		4	17	3 6 / 11 12	75%					21.6	
10		5	15	3 6 / 9 17	55%		Medium Dense	8'-17': SILT and fine SAND, some coarse-medium Sand and fine Gravel (UGT)	ML/ SM	55.6	
		6#	16	6 8 / 8 8	50%			10'-12': trace coarse Gravel		51.9	
		7#	7	WoH 3 / 4 11	65%		Loose	12'-14': some coarse Gravel		84.0	
15		8	10	4 5 / 5 15	40%			14'-17': no coarse Gravel		72.0	
17		9	45	10 20 / 25 50/ 0.4'	55%		Very Dense			77.0	
20		10	89	14 41 / 48 56	75%			17'-22': Silty fine SAND, some coarse-medium Sand and coarse-fine Gravel (LGT)	SM	99.0	
22		11***	79	11 30 / 49 50/ 0.4'	65%					43.8	
25								End of Boring @ 22' BGS			
30											
35											

Comments: Boring advanced with Truck-mounted CME-85 equipped with 4 1/4-inch ID hollow stem auger and a 2-inch dia. 2-foot long split spoon sampler

NA = Not Applicable

LAC = Lacustrine, UGT = Upper Glacial Till, LGT = Lower Glacial Till

WoH = Weight of Hammer, WoR = Weight of Rod

PROJECT NO. 11174465.00002

BORING NO. URS-14

** - Sampled (0'-2') for TCL VOCs + TICs (8260B)

*** - Sampled (-20'-22') for TCL VOCs + TICs (8260B)

URS Corporation

TEST BORING LOG

PROJECT:	Stuart-Olver-Holtz
CLIENT:	NYSDEC
BORING CONTRACTOR:	Nothnagle Drilling Company
GROUNDWATER:	Approx 4' BGS

	CAS.	SAMPLER	CORE	TUBE
TYPE	HSA	Split Spoon		
DIA.	4.25"	2-inch		
WT.		140#		
FALL		30"		

DATE	TIME	LEVEL	TYPE

* Photoionization Detector

BORING NO:	URS-08
SHEET:	1 of 2
JOB NO.:	11174465.00002
BORING LOCATION:	See Map
GROUND ELEVATION:	See Map
DATE STARTED:	2/14/2007
DATE FINISHED:	2/15/2007
DRILLER:	Steve Loranty
GEOLOGIST:	Kevin J. McGovern
REVIEWED BY:	Tim Burmeier

DEPTH FEET	STRATA	SAMPLE "S" NO.	SAMPLE "N" NO.	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	DESCRIPTION CONSIST HARD	DESCRIPTION MATERIAL	USCS	PID* (PPM)	REMARKS
1		1	6	NA 2 / 4 4	25%	Medium Brown	Loose	0'-0.8': Concrete		0.5	Moist, No Odor
								0.8'-4': FILL - Silt and Clay and fine-coarse Gravel		0.6	
4		2**	13	4 6 / 7 8	70%		Medium Dense				
5		3	25	4 8 / 17 19	40%			4'-8.5': Medium-fine SAND, trace to some coarse Sand and fine Gravel (UGT)	SW	0.6	Wet @ 4' BGS No Odor
		4	27	8 12 / 15 25	80%					0.7	
		5#	54	15 26 / 28 40	60%	Reddish Grey Brown	Very Dense	8.5'-10': Silty fine SAND, some fine Gravel and coarse Sand, trace coarse Gravel and medium Sand (UGT)	SM	0.1	
10		6#	73	6 36 / 37 50	50%			10'-12': Fine SAND, some Silt and medium Sand, some to trace fine Gravel/coarse Sand (UGT)		0.1	
		7	45	12 16 / 29 41	60%	Grey Brown	Dense	12'-22': Medium-fine SAND (UGT)	SW	0.1	
15		8	>100	19 50/ 0.4'	35%	Reddish Grey Brown	Very Dense	14'-22': some coarse Sand and fine Gravel		0.2	
		9	>100	10 41 / 50/ 0.3'	50%			17'-20': some Silt and coarse Gravel		0.4	
		10	53	11 20 / 33 42	65%			18'-20': no Silt		0.6	
20		11	73	12 33 / 40 46	75%			20'-22': Grading to fine SAND, some -trace Silt, trace fine Gravel and Coarse Sand		0.9	
22		12	>100	20 40 / 50/0.3'	45%			22'-30': Medium-fine SAND, some coarse Sand and fine Gravel, trace coarse Gravel and Silt (LGT)		0.6	
25		13***	>100	26 44 / 50/ 0.4'	55%			26'-30: some coarse Gravel		1.2	
		14	>100	32 50/ 0.4'	30%					0.4	
		15	>100	28 50/ 0.3'	25%					0.6	
30		16	>100	22 100/ 0.4'	30%			30'-38': SILT and fine SAND, some coarse Sand and coarse-fine Gravel (LGT)	SM/ ML	0.2	
		17	>100	53 100/ 0.4'	30%					0.5	
35		18	>100	100/ 0.6'	15%					0.7	

Comments: Boring advanced with Truck-mounted CME-85 equipped with 4 1/4-inch ID hollow stem auger and a 2-inch dia. 2-foot long split spoon sampler

NA = Not Applicable

LAC = Lacustrine, UGT = Upper Glacial Till, LGT = Lower Glacial Till

WoH = Weight of Hammer, WoR = Weight of Rod

PROJECT NO.	11174465.00002
BORING NO.	URS-08

** - Sampled (2'-4') for TCL VOCs (8260B)

*** - Sampled (24'-26') for TCL VOCs (8260B)

URS Corporation

TEST BORING LOG

PROJECT:	Stuart-Olver-Holtz
CLIENT:	NYSDEC
BORING CONTRACTOR:	Nothnagle Drilling Company
GROUNDWATER:	Approx 6' BGS

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	CORE	TUBE
TYPE	HSA	Split Spoon		
DIA.	4.25"	2-inch		
WT.		140#		
FALL		30"		

* Photoionization Detector

BORING NO:	URS-08
SHEET:	2 of 2
JOB NO.:	11174465.00002
BORING LOCATION:	See Map
GROUND ELEVATION:	See Map
DATE STARTED:	2/14/2007
DATE FINISHED:	2/15/2007
DRILLER:	Steve Loranty
GEOLOGIST:	Kevin J. McGovern
REVIEWED BY:	Tim Burmeier

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	CONSIST HARD	MATERIAL	USCS	PID* (PPM)	REMARKS
36		18	>100	100/ 0.6'	15%	Reddish Grey Brown	Very Dense	30'-38': SILT and fine SAND, some coarse Sand and coarse-fine Gravel (LGT)	SM/ ML	0.7	Wet, No Odor
		19	>100	28 / 50/ 0.2'	42 / 35%					0.5	
38											
		20	>100	31	50/ 0.4' / 25%	Grey Brown		38'-40': Fine SAND and coarse-fine GRAVEL some to trace medium-coarse Sand and Silt (LGT)	SW/ GW	0.4	
40											
		21	>100	28	50/ 0.4' / 30%		Hard	40'-42': Weathered Shale, Top of Rock		0.8	
42											
		22	>100	50/ 0.2'	5%			End of Boring @ 42' BGS		NA	
45											
50											

Comments: Boring advanced with Truck-mounted CME-85 equipped with 4 1/4-inch hollow stem augers and 2-foot long, 2-inch diameter, split-spoon sampler

NA = Not Applicable

LAC = Lacustrine, UGT = Upper Glacial Till, LGT = Lower Glacial Till

WoH = Weight of Hammer, WoR = Weight of Rod

** - Collected Sample (U 11174465.00002

BORING NO. URS-08

URS Corporation

TEST BORING LOG

BORING NO:	URS-09
SHEET:	1 of 2
JOB NO.:	11174465.00002
BORING LOCATION:	See Map
GROUND ELEVATION:	See Map
DATE STARTED:	2/16/2007
DATE FINISHED:	2/16/2007
DRILLER:	Steve Loranty
GEOLOGIST:	Kevin J. McGovern
REVIEWED BY:	Tim Burmeier

PROJECT: Stuart-Olver-Holtz
CLIENT: NYSDEC
BORING CONTRACTOR: Nothnagle Drilling Company
GROUNDWATER: Approx 6' BGS

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	CORE	TUBE
TYPE	HSA	Split Spoon		
DIA.	4.25"	2-inch		
WT.		140#		
FALL		30"		

* Photoionization Detector

DEPTH FEET	STRATA	"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	COLOR	CONSIST HARD	MATERIAL	USCS	PID* (PPM)	REMARKS
1		1	3	NA 1	30%			0'-0.8': Concrete		0.2	Moist, No Odor
2				2 3		Red Brown	Soft	0.8'-2': Clayey SILT (LAC)	ML		
		2**	12	6 7	35%	Medium Brown	Medium Dense	2'-10': Medium-fine SAND, some coarse Sand and coarse-fine Gravel, trace Silt	SW	89.7	
				5 4							
5		3	3	1 2	0%		Very Loose	(UGT) 4'-6': No recovery		NA	
				1 2							
		4	23	5 11	55%		Medium Dense to Dense	6'-8': no Silt and coarse Gravel		7.2	Wet @ 6' BGS No Odor
				12 16							
		5	27	18 13	60%			8'-10': some coarse Gravel		68.0	
10				14 21							
		6#	44	9 22	50%			10'-12': Silty fine SAND, some coarse Sand and fine Gravel, trace medium Sand (UGT)	SM	3.2	
				22 50							
		7#	35	7 17	75%			12'-14': Fine SAND, some coarse-medium Sand and fine Gravel, trace to some Silt		2.7	
14				18 30							
15		8	25	8 12	60%			14'-20': Medium-fine SAND, some coarse Sand and fine Gravel, trace coarse Gravel (UGT)	SW	12.8	
				13 24							
		9	29	9 12	50%			16'-20': no coarse Gravel		12.1	
				17 21							
		10	66	6 18	60%		Very Dense	18'-20': some to trace coarse Sand and fine Gravel		50.1	
20				48 49							
		11	>100	12 46	55%			20'-38': Medium-fine SAND, some coarse Sand and fine-coarse Gravel (LGT)		74.0	
22				50/ 0.4'							
		12***	55	30 29	70%					214.0	
				26 50/ 0.2'							
25		13	>100	15 28	55%	Red Brown				66.0	
				50/ 0.3'							
		14	>100	36 50/ 0.4'	55%	Medium Brown				1.2	
		15	>100	50/ 0.4'	15%					2.4	
30											
		16	>100	38 50/ 0.4'	25%	Red Brown		30'-32': some Silt		0.1	
		17	51	30 34	100%					32.0	
				17 45				33'-34.5': no Gravel, trace coarse Sand			
35		18	>100	49 45	60%					0.4	

Comments: Boring advanced with Truck-mounted CME-85 equipped with 4 1/4-inch ID hollow stem auger and a 2-inch dia. 2-foot long split spoon sampler

NA = Not Applicable

LAC = Lacustrine, UGT = Upper Glacial Till, LGT = Lower Glacial Till

WoH = Weight of Hammer, WoR = Weight of Rod

PROJECT NO. 11174465.00002
BORING NO. URS-09

** - Sampled (2'-4') for TCL VOCs(8260B)

*** - Sampled (22'-24') for TCL VOCs (8260B)

- Sampled (10'-14') for Natural Oxidant Demand

URS Corporation

TEST BORING LOG

PROJECT:	Stuart-Olver-Holtz
CLIENT:	NYSDEC
BORING CONTRACTOR:	Nothnagle Drilling Company
BORING NO:	URS-09
SHEET:	2 of 2
JOB NO.:	11174465.00002
BORING LOCATION:	See Map
GROUND ELEVATION:	See Map
DATE STARTED:	2/16/2007
DATE FINISHED:	2/16/2007
DRILLER:	Steve Loranty
GEOLOGIST:	Kevin J. McGovern
REVIEWED BY:	Tim Burmeier

GROUNDWATER: Approx 6' BGS

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	CORE	TUBE
TYPE	HSA	Split Spoon		
DIA.	4.25"	2-inch		
WT.		140#		
FALL		30"		

* Photoionization Detector

DEPTH FEET	STRATA	SAMPLE "S" NO.	SAMPLE "N" NO.	BLOWS PER 6"	REC% RQD%	COLOR	CONSIST HARD	DESCRIPTION MATERIAL	USCS	PID* (PPM)	REMARKS
36		18	>100	50/ 0.2'	60%	Red Brown	Very Dense	20'-38': Medium-fine SAND, some coarse Sand and fine-coarse Gravel (LGT)	SW	0.4	Wet, No Odor
38		19	>100	33 50/ 0.4'	50%					7.9	
40		20	>100	50 50/ 0.3'	25%			38'-40': Silty fine SAND, some coarse-fine Gravel and coarse Sand (LGT)	SM	0.7	
42		21	>100	49 50/ 0.3'	15%	Greenish Grey		40'-42': Coarse-fine GRAVEL, some Silt, Weathered Shale, Top of Rock	GW	0.4	
45								End of Boring @ 42' BGS			
50											

Comments: Boring advanced with Truck-mounted CME-85 equipped with 4 1/4-inch hollow stem augers and 2-foot long, 2-inch diameter, split-spoon sampler

NA = Not Applicable

LAC = Lacustrine, UGT = Upper Glacial Till, LGT = Lower Glacial Till

WoH = Weight of Hammer, WoR = Weight of Rod

** - Collected Sample (U 11174465.00002

BORING NO. URS-09

URS Corporation

TEST BORING LOG

BORING NO:	URS-01
SHEET:	1 of 2
JOB NO.:	11174465.00002
BORING LOCATION:	See Map
GROUND ELEVATION:	See Map
DATE STARTED:	2/20/2007
DATE FINISHED:	2/20/2007
DRILLER:	Steve Loranty
GEOLOGIST:	Kevin J. McGovern
REVIEWED BY:	Tim Burmeier

PROJECT: Stuart-Olver-Holtz
CLIENT: NYSDEC
BORING CONTRACTOR: Nothnagle Drilling Company
GROUNDWATER: Approx 4' BGS

DATE	TIME	LEVEL	TYPE	TYPE	CAS.	SAMPLER	CORE	TUBE
				DIA.	4.25"	2-inch		
				WT.		140#		
				FALL		30"		

* Photoionization Detector

DEPTH FEET	STRATA	"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	COLOR	CONSIST HARD	MATERIAL	USCS	PID* (PPM)	REMARKS
1		1**	50	48 36 / 14 5	50%		Very Dense	0'-0.5': Asphalt 0.5'-4': FILL - Gravel Subbase		0.4	Moist, No Odor
4		2	7	2 3 / 4 4	60%	Dk. Stained / Dk. Olive	Loose	3'-4': medium-fine Sand		0.0	
5		3	8	2 3 / 5 6	60%	Reddish Brown		4'-7.9': SILT and CLAY (LAC)	ML/ CL	14.4	Wet @ 4' BGS No Odor
8		4	19	5 8 / 11 12	95%		Medium Dense	6'-7.9': trace fine Gravel		14.1	
10		5	11	3 5 / 6 6	55%	Medium Brown		7.9'-16': Medium-fine SAND, some coarse-fine Gravel and coarse Sand (UGT)	SW	53.0	
		6#	16	2 6 / 10 11	55%			8'-10': no coarse Gravel, some Silt		24.0	
		7#	10	2 3 / 7 6	50%	Reddish Grey Brown		10'-12': trace Silt		13.6	
15		8	42	12 16 / 26 40	50%		Dense to Very Dense	12'-14': no coarse Gravel		597.0	
16		9	57	26 26 / 31 52	70%			16'-18': Silty fine SAND, some medium-coarse Sand and fine-coarse Gravel (UGT)	SM	2187.0	
20		10***	39	18 23 / 16 21	65%			18'-20': Medium-fine SAND, some Silt and coarse Sand and fine-coarse Gravel (UGT)		3800.0	
22		11	50	14 23 / 27 28	50%			20-22.5': Silty fine SAND, some coarse Sand and fine Gravel, some to trace medium Sand and coarse Gravel (UGT)		0.0	
24		12	48	6 20 / 28 31	55%	Med. Brown		22.5'-24': Fine SAND with Silt Partings		72.0	
25		13	48	11 25 / 23 22	65%	Reddish Grey Brown		24'-32': Silty medium-fine SAND, some coarse Sand and coarse-fine GRAVEL (LGT)	SM/ SW	30.0	
		14	88	15 40 / 48 51	60%					1022.0	
30		15	44	10 18 / 26 24	80%					820.0	
32		16	43	8 20 / 23 20	60%					1583.0	
34		17	18	8 8 / 10 11	60%		Medium Dense	32'-34': Medium-fine SAND, some coarse Sand and fine-coarse Gravel, trace Silt	SW	48.0	
35		18	20	5 9	75%			34'-39': Silty medium-fine SAND,	SM	732.0	

Comments: Boring advanced with Truck-mounted CME-85 equipped with 4 1/4-inch 4.25" ID hollow stem auger and a 2-inch dia. 2-foot long split spoon sampler

NA = Not Applicable

LAC = Lacustrine, UGT = Upper Glacial Till, LGT = Lower Glacial Till

WoH = Weight of Hammer, WoR = Weight of Rod

PROJECT NO. 11174465.00002
BORING NO. URS-01

** - Sampled (0'-2') for TCL VOCs (8260B)

*** - Sampled (18'-20') for TCL VOCs (8260B)

URS Corporation

TEST BORING LOG

PROJECT:	Stuart-Olver-Holtz
CLIENT:	NYSDEC
BORING CONTRACTOR:	Nothnagle Drilling Company
GROUNDWATER:	Approx 4' BGS

					CAS.	SAMPLER	CORE	TUBE
DATE	TIME	LEVEL	TYPE	TYPE	HSA	Split Spoon		
				DIA.	4.25"	2-inch		
				WT.		140#		
				FALL		30"		
				* Photolonization Detector				

BORING NO:	URS-01
SHEET:	2 of 2
JOB NO.:	11174465.00002
BORING LOCATION:	See Map
GROUND ELEVATION:	See Map
DATE STARTED:	2/20/2007
DATE FINISHED:	2/20/2007
DRILLER:	Steve Loranty
GEOLOGIST:	Kevin J. McGovern
REVIEWED BY:	Tim Burmeier

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"		REC% RQD%	DESCRIPTION COLOR	CONSIST HARD	MATERIAL	USCS	PID* (PPM)	REMARKS
36		18	20	11	12	75%	Reddish Grey Brown	Medium Dense	34'-39': Silty medium-fine SAND, some medium-coarse Sand and fine Gravel, some-trace coarse Gravel (LGT)	SM	732.0	Wet, No Odor
		19	20	6	9	50%					15.0	
				11	9							
		20	8	2	3	45%			39'-40": Coarse-fine GRAVEL, some to		1.5	
40				5	7		Grey		trace coarse-medium Sand, Weathered Shale	GW		
42		21	>100	13	29	50%	Dark Grey	Very Dense	40'-42': Weathered Shale, Top of Rock		0.4	
				50/ 0.3								
45									End of Boring @ 42' BGS			

Comments: Boring advanced with Truck-mounted CME-85 equipped with 4 1/4-inch hollow stem augers and 2-foot long, 2-inch diameter, split-spoon sampler

NA = Not Applicable

LAC = Lacustrine, UGT = Upper Glacial Till, LGT = Lower Glacial Till

WoH = Weight of Hammer, WoR = Weight of Rod

** - Collected Sample (U 11174465.00002

BORING NO. URS-01

URS Corporation

TEST BORING LOG

BORING NO:	URS-02
SHEET:	1 of 1
JOB NO.:	11174465.00002
BORING LOCATION:	See Map
GROUND ELEVATION:	See Map
DATE STARTED:	2/20/2007
DATE FINISHED:	2/21/2007
DRILLER:	Steve Loranty
GEOLOGIST:	Kevin J. McGovern
REVIEWED BY:	Tim Burmeier

PROJECT: Stuart-Olver-Holtz
CLIENT: NYSDEC
BORING CONTRACTOR: Nothnagle Drilling Company
GROUNDWATER: Approx 4' BGS

DATE	TIME	LEVEL	TYPE	TYPE	CAS.	SAMPLER	CORE	TUBE
				DIA.	4.25"	2-inch		
				WT.		140#		
				FALL		30"		

* Photoionization Detector

DEPTH FEET	STRATA	SAMPLE "S" NO.	SAMPLE "N" NO.	BLOWS PER 6"	REC% RQD%	COLOR	CONSIST HARD	MATERIAL	USCS	PID* (PPM)	REMARKS
1		1	15	10 7 / 8 7	55%	Md. Brown Olive	Loose to Medium Dense	0'-0.1: Asphalt 0.1'-4': FILL - Medium-fine Sand, some fine Gravel and coarse Sand 2'-4': trace coarse Sand and Gravel		0.0	Moist, No Odor
4		2**	8	3 4 / 4 4	50%					0.4	
5		3	6	2 3 / 3 6	50%	Reddish Brown	Medium Stiff to Stiff	4'-16': SILT and CLAY (LAC)	ML/ CL	0.0	Wet @ 4' BGS No Odor
		4	12	3 5 / 7 7	60%					0.0	
10		5	21	4 10 / 11 16	35%		Very Stiff			0.0	
		6	23	9 11 / 12 12	100%					318.0	
		7	6	2 3 / 3 5	75%		Medium Stiff to Soft			1.4	
15		8	3	1 2 / 1 2	0%			14'-16': No Recovery		NA	
		9#	2	WoH 1 / 1 1	50%	Medium Brown	Very Loose to Loose	16'-19.5': Medium-fine SAND, some coarse Sand and fine Gravel and Silt (UGT)	SW	224.0	
19		10***	9	1 1 / 8 20	75%					491.0	
		11	>100	33 44 / 50/ 0.3'	35%	Reddish Grey Brown	Very Dense	19.5'-26': Silty fine SAND, some fine Gravel and coarse Sand (LGT) 22'-26': some coarse Gravel	SM	0.1	
		12	>100	32 50/ 0.1'	20%					0.0	
25		13	>100	50/ 0.5'	10%					0.0	
26								End of Boring @ 26' BGS			
30											
35											

Comments: Boring advanced with Truck-mounted CME-85 equipped with 4 1/4-inch 4.25" ID hollow stem auger and a 2-inch dia. 2-foot long split spoon sampler

NA = Not Applicable

LAC = Lacustrine, UGT = Upper Glacial Till, LGT = Lower Glacial Till

WoH = Weight of Hammer, WoR = Weight of Rod

PROJECT NO. 11174465.00002

BORING NO. URS-02

** - Sampled (2'-4') for TCL VOCs (8260B), TCL SVOCs(8270C), TAL Metals, CN, PCBs + Pesticides

*** - Sampled (12'-14') for TCL VOCs (8260B), TCL SVOCs (8270C), TAL Metals, CN, PCBs+ Pesticides

- Sampled (16'-18') for Natural Oxidant Demand

URS Corporation

TEST BORING LOG

PROJECT:	Stuart-Olver-Holtz
CLIENT:	NYSDEC
BORING CONTRACTOR:	Nothnagle Drilling Company
GROUNDWATER:	Approx 4' BGS

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	CORE	TUBE
TYPE	HSA	Split Spoon		
DIA.	4.25"	2-inch		
WT.		140#		
FALL		30"		

* Photoionization Detector

BORING NO:	URS-03
SHEET:	1 of 2
JOB NO.:	11174465.00002
BORING LOCATION:	See Map
GROUND ELEVATION:	See Map
DATE STARTED:	2/19/2007
DATE FINISHED:	2/19/2007
DRILLER:	Steve Loranty
GEOLOGIST:	Kevin J. McGovern
REVIEWED BY:	Tim Burmeier

DEPTH FEET	STRATA	SAMPLE "S" NO.	SAMPLE "N" NO.	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	DESCRIPTION CONSIST HARD	DESCRIPTION MATERIAL	USCS	PID* (PPM)	REMARKS
1		1	19	30 14	25%			0'-0.2': Asphalt		19.0	Moist, No Odor
2				5 7		Brown	Medium Dense	0.2'-2': FILL - Silt and Sand			
		2**	9	3 4	15%	Reddish Brown	Stiff	2'-4': SILT and CLAY, some coarse-fine Gravel and medium-coarse Sand (LAC)	ML/ CL	112.0	
4				5 4							
5		3	16	3 7	45%		Medium Dense	4'-10': SILT and fine SAND, some coarse Sand and coarse-fine Gravel, trace medium Sand (UGT)	ML/ SM	131.0	Wet @ 4' BGS
				9 9				6'-8': no coarse Gravel			No Odor
		4	28	9 12	30%					360.0	
				16 17				8'-10': no medium Sand			
		5#	21	6 10	75%	Medium Brown				263.0	
10				11 12							
		6#	9	9 5	65%		Loose	10'-16': Medium-fine SAND, some Silt and coarse Sand and fine Gravel (UGT)	SW	178.0	
				4 3				12'-14': trace Silt			
		7	8	1 3	60%					9.2	
				5 6				14'-16': no Silt			
15		8***	19	4 9	55%		Medium Dense to Dense			>9999	
16				10 13							
		9	37	10 16	55%			16'-21.5': Fine SAND, some coarse Sand and fine Gravel, trace medium Sand and coarse Gravel (UGT)	SP	77.0	
				21 38							
		10	33	8 11	50%					9800.0	
20				22 27							
21		11	25	6 10	50%					260.0	
22				15 25							
		12	>100	21 50/ 0.3'	20%	Reddish Brown	Very Dense	21.5'-32': Silty fine SAND, some coarse Sand and fine-coarse Gravel (LGT)	SM	5.5	
25		13	>100	41 50/ 0.1'	20%			24'-26': no coarse Gravel		1.4	
		14	>100	32 50/ 0.4'	30%			26'-30': trace medium Sand		1.0	
		15	68	13 33	80%					387.0	
30				35 50							
		16	>100	21 43	50%					1.0	
32				50/ 0.4'							
		17	54	14 16	60%			32'-40': Medium-fine SAND, some fine-coarse Gravel and coarse Sand, trace Silt (LGT)	SW	1996.0	
				38 46							
35		18	>100	11 42	53%					0.6	

Comments: Boring advanced with Truck-mounted CME-85 equipped with a 4.25" ID hollow stem auger and a 2-inch dia. 2-foot long split spoon sampler

NA = Not Applicable

LAC = Lacustrine, UGT = Upper Glacial Till, LGT = Lower Glacial Till

WoH = Weight of Hammer, WoR = Weight of Rod

PROJECT NO.	11174465.00002
BORING NO.	URS-03

** - Sampled (2'-4') for TCL VOCs (8260B)

*** - Sampled (14'-16') for TCL VOCs (8260B)

- Sampled (8'-12') for Natural Oxidant Demand

URS Corporation

TEST BORING LOG

PROJECT:	Stuart-Olver-Holtz
CLIENT:	NYSDEC
BORING CONTRACTOR:	Nothnagle Drilling Company
GROUNDWATER:	Approx 6' BGS

DATE	TIME	LEVEL	TYPE	TYPE	CAS.	SAMPLER	CORE	TUBE
				DIA.	4.25"	2-inch		
				WT.		140#		
				FALL		30"		
				* Photolonization Detector				

BORING NO:	URS-03
SHEET:	2 of 2
JOB NO.:	11174465.00002
BORING LOCATION:	See Map
GROUND ELEVATION:	See Map
DATE STARTED:	2/19/2007
DATE FINISHED:	2/19/2007
DRILLER:	Steve Loranty
GEOLOGIST:	Kevin J. McGovern
REVIEWED BY:	Tim Burmeier

DEPTH FEET	SAMPLE STRATA	"S" NO.	"N" NO.	BLOWS PER 6"		REC% RQD%	DESCRIPTION COLOR	CONSIST HARD	MATERIAL	USCS	PID* (PPM)	REMARKS
36		18	>100	50/ 0.3'		53%	Red Brown	Very Dense	32'-40': Medium-fine SAND, some fine-coarse Gravel and coarse Sand, trace Silt (LGT)	SW	0.6	Wet, No Odor
		19	>100	33	50/ 0.4'	50%					205.0	
		20	>100	50	50/ 0.3'	65%					2.2	
40												
		21	>100	49	50/ 0.3'	50%	Greenish Grey		40'-42': Coarse-fine GRAVEL, some to trace fine Sand, Weathered Shale, Top of Rock	GW	28.7	
42												
		22	>100	50/ 0.25'		5%			End of Boring @ 42' BGS		NA	
45												
50												

Comments: Boring advanced with Truck-mounted CME-85 equipped with 4 1/4-inch hollow stem augers and 2-foot long, 2-inch diameter, split-spoon sampler

NA = Not Applicable

LAC = Lacustrine, UGT = Upper Glacial Till, LGT = Lower Glacial Till

WoH = Weight of Hammer, WoR = Weight of Rod

PROJECT NO.	11174465.00002
BORING NO.	URS-03

URS Corporation

TEST BORING LOG

BORING NO:	URS-04
SHEET:	1 of 1
JOB NO.:	11174465.00002
BORING LOCATION:	See Map
GROUND ELEVATION:	See Map
DATE STARTED:	3/9/2007
DATE FINISHED:	3/9/2007
DRILLER:	Steve Loranty
GEOLOGIST:	Kevin J. McGovern
REVIEWED BY:	Tim Burmeier

PROJECT: Stuart-Olver-Holtz
CLIENT: NYSDEC
BORING CONTRACTOR: Nothnagle Drilling Company

GROUNDWATER: Approx 4' BGS

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	CORE	TUBE
TYPE	HSA	Split Spoon		
DIA.	4.25"	2-inch		
WT.		140#		
FALL		30"		

* Photoionization Detector

DEPTH FEET	STRATA	"S" NO.	"N" NO.	BLOWS PER 6"	REC% RQD%	COLOR	CONSIST HARD	MATERIAL	USCS	PID* (PPM)	REMARKS
1		1	>100	50/ 0.4'	10%			0'-0.15': ASPHALT			
							Dense	0.15'-4': FILL - Gravel Subbase		0.0	Moist, No Odor
		2**	35	17 25	55%	Reddish Brown					
4				10 5						0.0	
5		3	2	2 1	50%		Very Soft	4'-4.2': Clayey SILT (LAC)	ML	0.0	Wet @ 4' BGS
6				1 1			Very Loose	4.2'-6': SILT and fine SAND, some coarse-	ML/ SM		No Odor
		4	17	2 6	75%		Very Stiff	medium Sand and fine Gravel, trace Clay	ML	0.0	
				11 12				6'-12': Clayey SILT (LAC)			
		5	20	3 9	50%					0.0	
10				11 13							
		6	11	2 5	80%					0.0	
12				6 11							
		7	19	9 9	25%	Medium Brown	Medium Dense	12'-14': Coarse-medium-fine SAND and fine-coarse GRAVEL, some Silt (UGT)	SW/ GW	0.0	
15		8	16	10 10	40%	Grey		14'-16': SILT and fine SAND, some medium -coarse Sand and fine-coarse Gravel (UGT)	ML/ SM	0.0	
		9#	16	3 10	55%			16'-20': Medium-fine SAND, some coarse sand and fine-coarse Gravel, some to trace Silt (UGT)	SW	0.0	
				6 4							
		10#	7	2 3	50%		Loose			0.1	
20				4 10							
		11	34	3 13	55%	Reddish Grey Brown	Dense	20'-24': Silty fine SAND, some medium-coarse Sand and fine-coarse Gravel	SM	0.7	
				21 33							
		12***	>100	17 38	90%		Very Dense			205.0	
24				50/ 0.4'							
25								End of Boring @ 24' BGS			
30											
35											

Comments: Boring advanced with Truck-mounted CME-85 equipped with a 4.25" ID hollow stem auger and a 2-inch dia. 2-foot long split spoon sampler

NA = Not Applicable

LAC = Lacustrine, UGT = Upper Glacial Till, LGT = Lower Glacial Till

WoH = Weight of Hammer, WoR = Weight of Rod

PROJECT NO. 11174465.00002
BORING NO. URS-04

** -Sampled (2'-4') for TCL VOCs (8260B)

*** - Sampled (22'-24') for TCL VOCs (8260B)

URS Corporation

TEST BORING LOG

PROJECT:	Stuart-Olver-Holtz
CLIENT:	NYSDEC
BORING CONTRACTOR:	Nothnagle Drilling Company
GROUNDWATER:	Approx 2' BGS

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	CORE	TUBE
TYPE	HSA	Split Spoon		
DIA.	4.25"	2-inch		
WT.		140#		
FALL		30"		

* Photoionization Detector

BORING NO:	URS-05
SHEET:	1 of 1
JOB NO.:	11174465.00002
BORING LOCATION:	See Map
GROUND ELEVATION:	See Map
DATE STARTED:	3/8/2007
DATE FINISHED:	3/8/2007
DRILLER:	Steve Loranty
GEOLOGIST:	Kevin J. McGovern
REVIEWED BY:	Tim Burmeier

DEPTH FEET	STRATA	SAMPLE "S" NO.	SAMPLE "N" NO.	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	CONSIST HARD	MATERIAL	USCS	PID* (PPM)	REMARKS
1		1**	2	1 1 / 1 1	50%	Medium Brown	Very Loose	0'-0.2': TOPSOIL 0.2'-4': FILL - Silt/Sand/Gravel Mix		0.0	Moist, No Odor
4		2	4	1 2 / 2 3	55%					0.0	Wet @ 2' BGS No Odor
5		3	6	2 3 / 3 5	70%	Reddish Brown	Medium Stiff	4'-10': Clayey SILT (LAC)	ML	0.0	
		4	15	3 6 / 9 13	75%		Very Stiff			0.0	
10		5	17	3 6 / 11 12	100%			-grades to.... 10'-12': SILT and CLAY (LAC)	ML/ CL	0.0	
12		6	17	3 6 / 11 12	65%					0.0	
14		7***	10	1 3 / 7 9	75%		Stiff	12'-14': Sandy CLAY, some to trace medium-coarse Sand and fine Gravel	CL	0.3	
15		8	3	1 2 / 1 2	75%		Soft	14'-26': CLAY, trace Silt at 14-16' (LAC)		0.0	
		9	<1	WoH WoH / WoH WoH	100%		Very Soft			0.0	
20		10	<1	1 WoH / WoH WoH	100%					0.0	
		11	<1	WoH WoH / WoH WoH	100%					0.0	
		12	<1	WoH WoH / WoH WoH	100%					0.0	
25		13	<1	WoH WoH / WoH WoH	100%					0.0	
26		14	<5	WoR WoH / 5 6	60%	Reddish Grey Brown	Very Loose to Loose	26'-37': Medium-fine SAND, some Clay and coarse Sand and fine Gravel (UGT) 28'-30': Some to trace coarse Gravel 30'-37': no Clay, some Silt and coarse Gravel	SW	0.0	
30		15	6	WoR 2 / 4 8	50%					0.0	
		16	10	1 3 / 7 9	50%					0.0	
		17	20	5 9 / 11 14	30%		Medium Dense			0.0	
35		18#	7	4 2 / 5 14	50%		Loose			0.0	
37		19#	>100	18 25 / 50/ 0.4'	45%	Medium Brown	Very Dense	37'-40': Silty fine SAND, some medium-coarse Sand and fine-coarse Gravel (LGT) End of Boring @ 40' BGS	SM	0.0	
40		20	>100	50/ 0.4'	15%					0.0	

Comments: Boring advanced with Truck-mounted CME-85 equipped with a 4.25" ID hollow stem auger and a 2-inch dia. 2-foot long split spoon sampler

NA = Not Applicable

LAC = Lacustrine, UGT = Upper Glacial Till, LGT = Lower Glacial Till

WoH = Weight of Hammer, WoR = Weight of Rod

PROJECT NO.	11174465.00002
BORING NO.	URS-05

** - Sampled (0'-2') for TCL VOCs (8260B), TCL SVOCs(8270C), TAL Metals, CN, PCBs + Pesticides

*** - Sampled (12'-14') for TCL VOCs (8260B), TCL SVOCs (8270C), TAL Metals, CN, PCBs+ Pesticides

URS Corporation

TEST BORING LOG

BORING NO:	URS-06
SHEET:	1 of 1
JOB NO.:	11174465.00002
BORING LOCATION:	See Map
GROUND ELEVATION:	See Map
DATE STARTED:	3/9/2007
DATE FINISHED:	3/9/2007
DRILLER:	Steve Loranty
GEOLOGIST:	Kevin J. McGovern
REVIEWED BY:	Tim Burmeier

PROJECT: Stuart-Olver-Holtz
CLIENT: NYSDEC
BORING CONTRACTOR: Nothnagle Drilling Company
GROUNDWATER: Approx 2' BGS

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	CORE	TUBE
TYPE	HSA	Split Spoon		
DIA.	4.25"	2-inch		
WT.		140#		
FALL		30"		

* Photoionization Detector

DEPTH FEET	STRATA	SAMPLE "S" NO.	SAMPLE "N" NO.	BLOWS PER 6"	REC% RQD%	COLOR	CONSIST HARD	MATERIAL	USCS	PID* (PPM)	REMARKS
1		1**	20	21 12 / 8 7	35%			0'-0.1': ASPHALT			
						Dark Brown	Loose	0.1'-3.5': FILL - Gravel Subbase		1.0	Moist, No Odor
3		2	9	4 5 / 4 3	75%					0.7	Wet @ 2' BGS No Odor
4											
5		3	16	5 8 / 8 2	35%	Reddish Brown	Very Stiff	3.5'-10': Clayey SILT (LAC)	ML	0.6	
										0.7	
		4	23	4 8 / 15 16	75%						
		5	20	7 8 / 12 12	40%					0.3	
10											
		6	9	4 4 / 5 4	90%		Stiff	10'-12': SILT and CLAY, trace coarse-medium-fine Sand (LAC)	ML/ CL	0.2	
12											
		7	3	1 2 / 1 3	90%		Soft	12'-14': Fine sandy CLAY, some to trace medium-coarse Sand and Silt (LAC)	CL	0.7	
14											
15		8#	8	2 3 / 5 4	25%	Brown	Loose	14'-17.5': Clayey fine SAND, some medium -coarse sand, silt and gravel (UGT)	SC	0.0	
17		9	<2	WoH WoH / 2 12	100%		Very Loose	17.5'-18': Medium-fine SAND, some coarse Sand and fine-coarse Gravel (UGT)	SW	1.0	
18											
		10	>100	7 25 / 50/ 0.4'	50%	Reddish Grey Brown	Very Dense	18'-22': Silty fine SAND, some medium-coarse Sand and fine-coarse Gravel (LGT)	SM	1.0	
20											
		11***	>100	42 50/ 0.2'	40%					1.1	
22											
								End of Boring @ 22' BGS			
25											
30											
35											

Comments: Boring advanced with Truck-mounted CME-85 equipped with a 4.25" ID hollow stem auger and a 2-inch dia. 2-foot long split spoon sampler

NA = Not Applicable

LAC = Lacustrine, UGT = Upper Glacial Till, LGT = Lower Glacial Till

WoH = Weight of Hammer, WoR = Weight of Rod

PROJECT NO.	11174465.00002
BORING NO.	URS-06

** - Sampled (0'-2') for TCL VOCs (8260B), TCL SVOCs(8270C), TAL Metals, CN, PCBs + Pesticides

*** - Sampled (20'-22') for TCL VOCs (8260B), TCL SVOCs (8270C), TAL Metals, CN, PCBs+ Pesticides

- Collected Sample (16'-18') for Natural Oxidant Demand

APPENDIX D – WELL CONSTRUCTION DIAGRAMS

GeoLogic
PO Box 350, Homer, NY 13077
607-749-5000 / 607-749-5063 (fax)

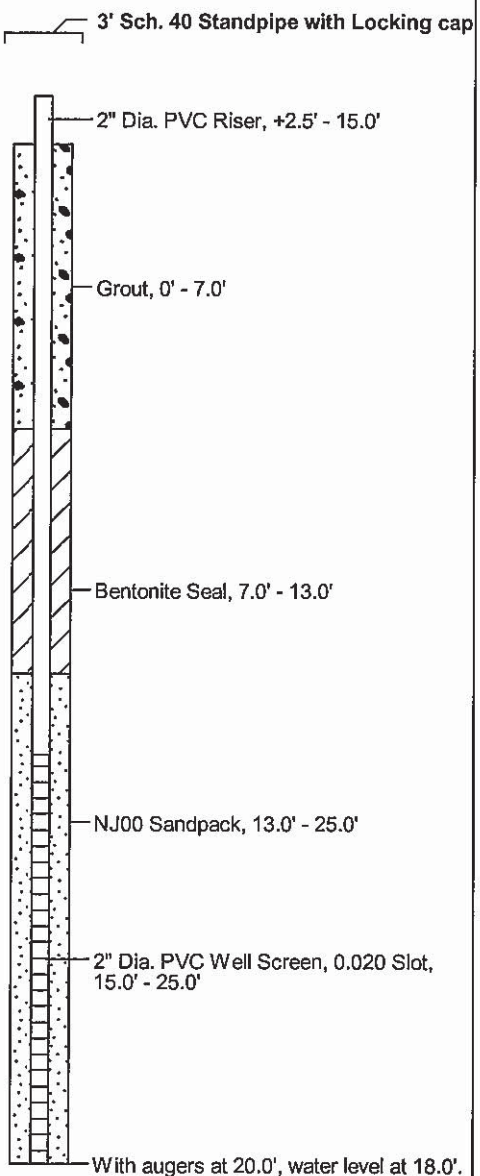
SUBSURFACE LOG

Stuart Olver

Rochester, New York

Boring No: : URS-16
Project No.: : 210001D
Date Started: : 02/23/11
Date Completed: : 02/23/11

Depth (ft)	Sample No.	Blow Count	N-Value	Recovery (ft)	DESCRIPTION
0	1	WH 1 1 1	2	0.5	Topsoil 0.5' Brown fine SAND and Organic SILT, roots
2					
4					
6	2	6 5 6 7	11	2.0	Light Brown fine-medium SAND, moist Brown fine SAND and SILT, roots, moist
8					
10	3	5 10 14 15	24	2.0	Brown SILT, Some Clay, little fine-coarse sand, moist
12					
14					
16	4	2 1 1 3	2	2.0	Brown CLAY, wet
18					
20	5	WH 1 1 5	2	1.8	Brown coarse SAND, Some fine-medium Sand, little silt, saturated
22					
24					Driller noted harder drilling at 23.5'
26	6	50/.3	-	0.3	Brown SILT, Some fine-coarse Sand, little gravel, moist BORING TERMINATED AT 25.3'
28					



Sampling Method: ASTM D-1586, unless otherwise noted.
Notes: 4 1/4" ID Hollow Stem Augers
Visually Classified by: Geologist
File: 210001D/tech/URS-16

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GeoLogic
PO Box 350, Homer, NY 13077
607-749-5000 / 607-749-5063 (fax)

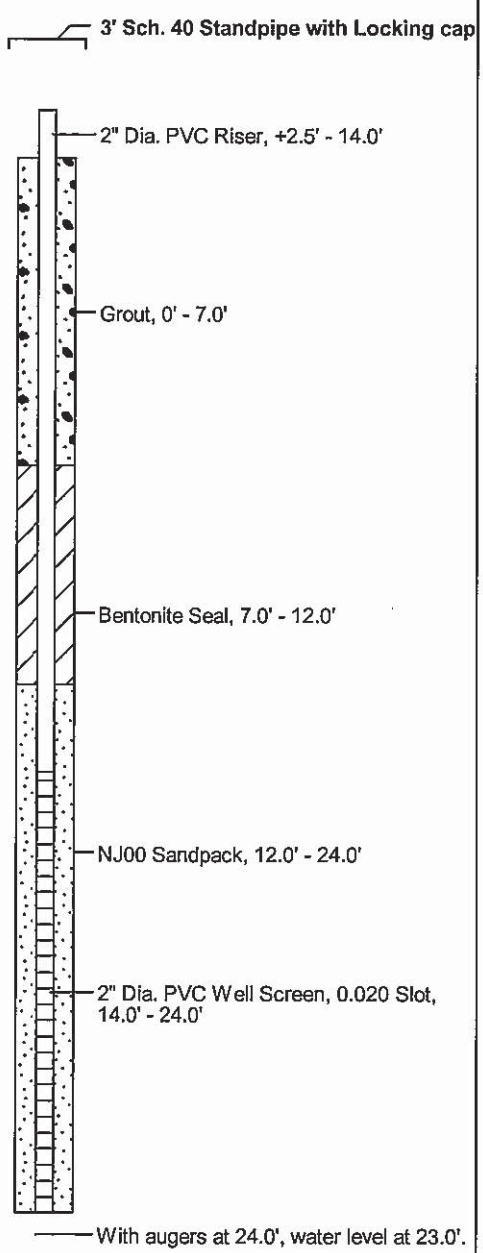
SUBSURFACE LOG

Stuart Olver

Rochester, New York

Boring No: : URS-15
Project No.: : 210001D
Date Started: : 02/22/11
Date Completed: : 02/22/11

Depth (ft)	Sample No.	Blow Count	N-Value	Recovery (ft)	DESCRIPTION
0	1	7 6 6 15	12	1.0	Gray fine GRAVEL, Some fine-coarse Sand, little silt, moist
2					Brown fine-coarse SAND and SILT, little gravel, moist
4					
6	2	5 9 14 18	23	1.5	similar, saturated
8					Brown SILT and fine SAND, trace medium-coarse sand, moist
10	3	16 24 29 29	53	1.6	similar, Gray, wet
12					
14					
16	4	45 50/.4	-	0.9	Gray fine SAND and SILT, little to Some fine Gravel, occasional cobbles, little medium-coarse sand, moist
18					
20	5	18 30 47 50	77	2.0	similar, Brown, wet
22	6	75/.5	-	0.5	similar
24					BORING TERMINATED AT 24.0'
26					



Sampling Method: ASTM D-1586, unless otherwise noted.
Notes: 4 1/4" ID Hollow Stem Augers
Visually Classified by: Geologist
File: 210001D/tech/URS-15

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DRILLING SUMMARY

Geologist: Kevin J. McGovern

Contractor: Nothnagle Drilling

Operator: Steve Loranty

Model: CME-85

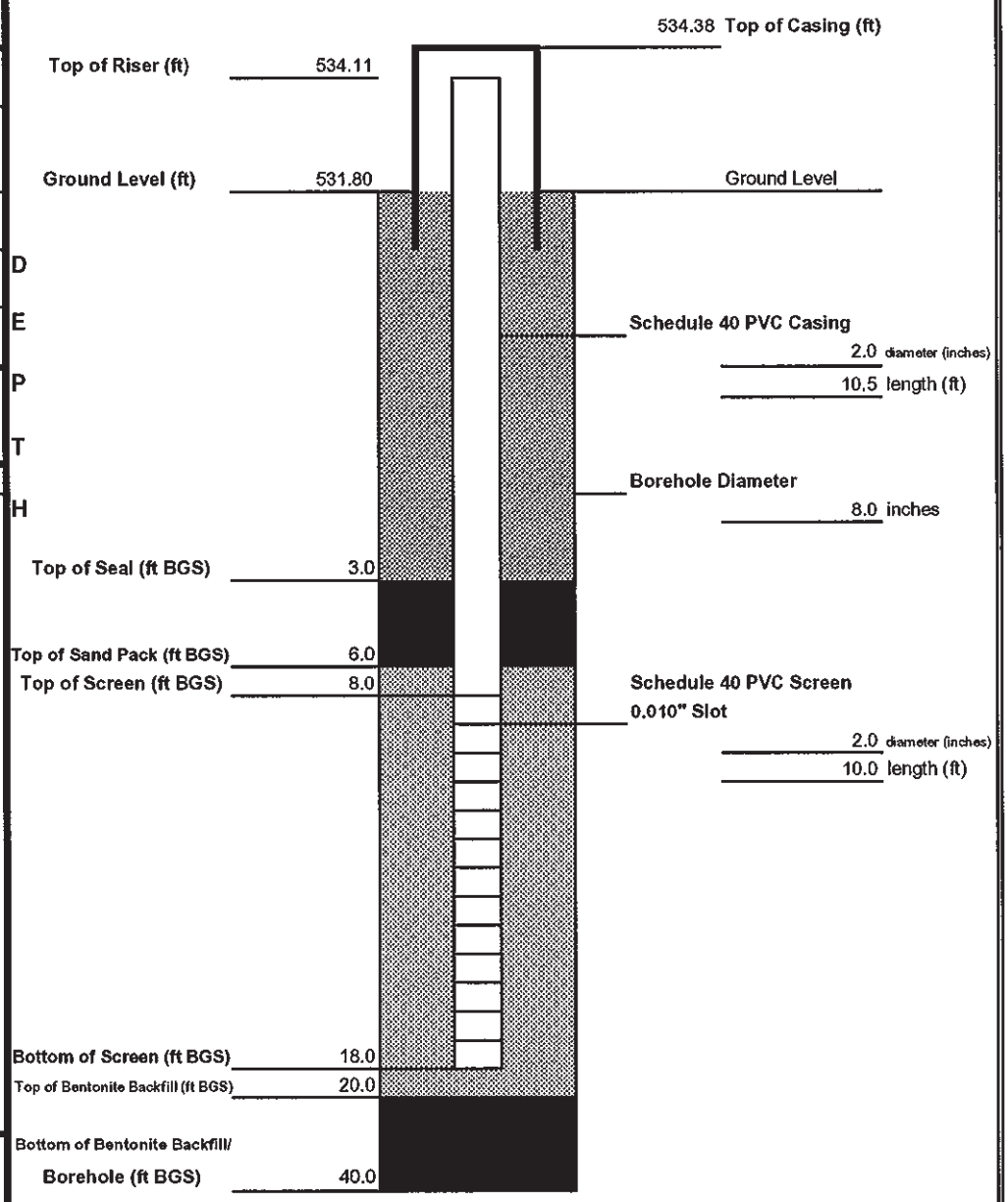
Date: February 16, 2007

GEOLOGIC LOG

Depth (ft.)	Description
0-0.8	Fill/ Concrete
0.8-2	Lacustrine
2-20	Upper Glacial Till
20-40	Lower Glacial Till
40-42	Weathered Shale

WELL DESIGN

DEPTH



CASING MATERIAL	SCREEN MATERIAL	FILTER MATERIAL
Surface: 4" Steel protective cover (Stick Up)	**Type:** 2" Schedule 40 PVC	**Type:** 00N well sand **Setting:** 6'-20'
Monitor: 2" Schedule 40 PVC	**Slot Size:** 0.010"	**SEAL MATERIAL** **Type 1:** Bentonite chips **Setting:** 3'-6' **Type 1:** Cement/ Bentonite Grout **Setting:** 0'-3'

COMMENTS:

LEGEND

- Cement/Bentonite Grout
- Bentonite Seal
- Sand Pack

Client: NYSDEC	**Location:** Stuart-Olver-Holtz	**Project No.:** 11174465.00002
URS Corporation	**MONITORING WELL CONSTRUCTION DETAILS**	**Well Number: URS-09**

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DRILLING SUMMARY

Geologist: Kevin J. McGovern

Contractor: Nothnagle Drilling

Operator: Steve Loranty

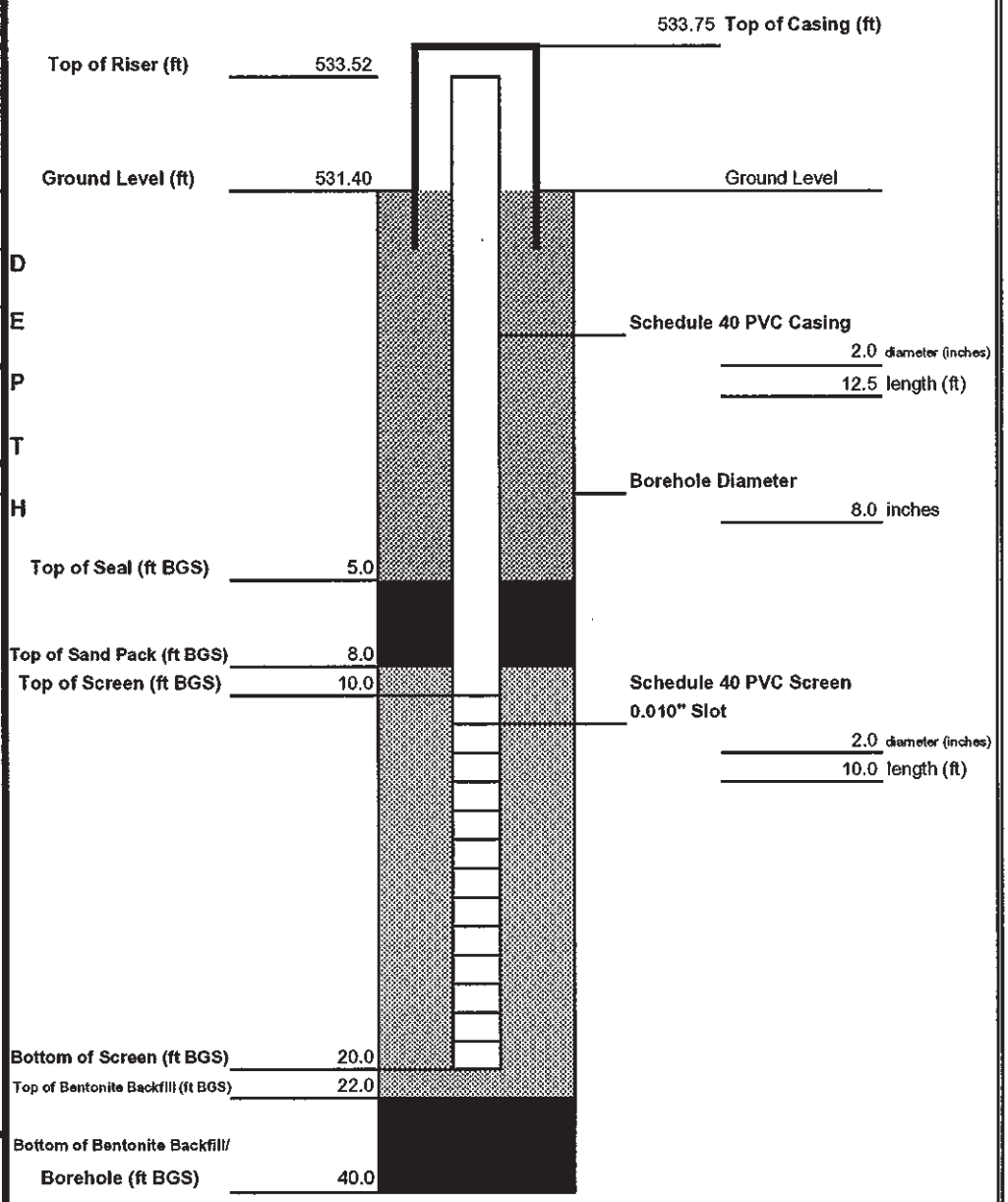
Model: CME-85

Date: February 14, 2007

GEOLOGIC LOG

Depth (ft.)	Description
0-6	Fill/ Concrete
6-22	Upper Glacial Till
22-40.5	Lower Glacial Till
40.5'-40.6'	Weathered Shale

WELL DESIGN



CASING MATERIAL

Surface: 4" Steel protective cover (Stick Up)

Monitor: 2" Schedule 40 PVC

SCREEN MATERIAL

Type: 2" Schedule 40 PVC

Slot Size: 0.010"

FILTER MATERIAL

Type: 00N well sand
Setting: 8'-22'

SEAL MATERIAL

Type 1: Bentonite chips
Setting: 5'-8'
Type 1: Cement/ Bentonite Grout
Setting: 0'-5'

COMMENTS:

LEGEND

- Cement/Bentonite Grout
- Bentonite Seal
- Sand Pack

Client: NYSDEC | **Location:** Stuart-Olver-Holtz | **Project No.:** 11174465.00002

URS Corporation

MONITORING WELL CONSTRUCTION DETAILS

Well Number: URS-10

DRILLING SUMMARY

Geologist: Kevin J. McGovern

Contractor: Nothnagle Drilling

Operator: Steve Loranty

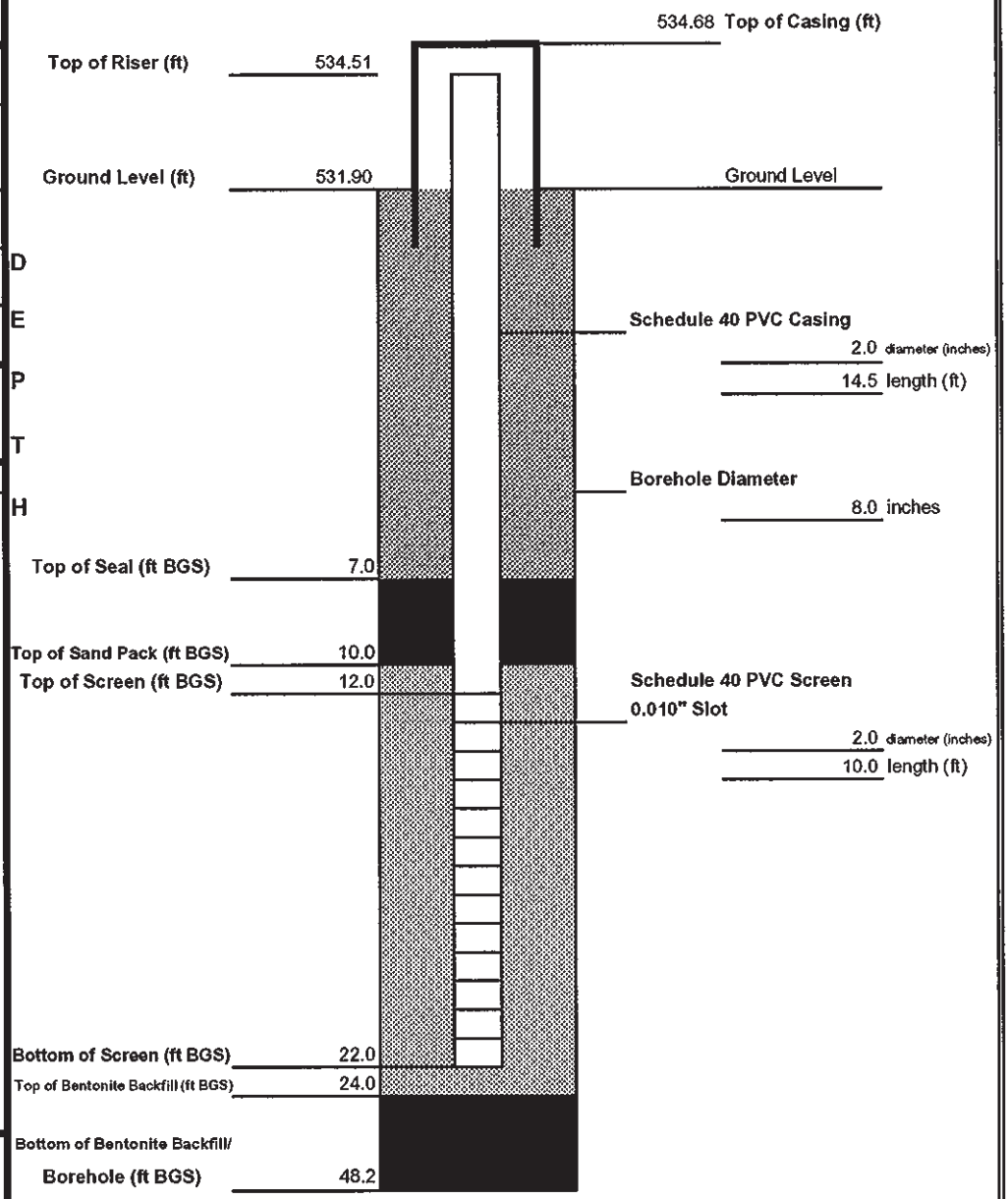
Model: CME-85

Date: February 6, 2007

GEOLOGIC LOG

Depth (ft.)	Description
0-6	Fill/ Concrete
6-24	Upper Glacial Till
24-28	Lower Glacial Till
28-32	mf SAND
32-48	Lower Glacial Till
48-48.2	Weathered Shale

WELL DESIGN



CASING MATERIAL

Surface: 4" Steel protective cover (Stick Up)

Monitor: 2" Schedule 40 PVC

SCREEN MATERIAL

Type: 2" Schedule 40 PVC

Slot Size: 0.010"

FILTER MATERIAL

Type: 00N well sand
Setting: 10'-24'

SEAL MATERIAL

Type 1: Bentonite chips
Setting: 7'-10'
Type 1: Cement/ Bentonite Grout
Setting: 0'-7'

COMMENTS:

LEGEND

- Cement/Bentonite Grout
- Bentonite Seal
- Sand Pack

Client: NYSDEC | **Location:** Stuart-Olver-Holtz | **Project No.:** 11174465.00002

URS Corporation

MONITORING WELL CONSTRUCTION DETAILS

Well Number: URS-11

DRILLING SUMMARY

Geologist: Kevin J. McGovern

Contractor: Nothnagle Drilling

Operator: Steve Loranty

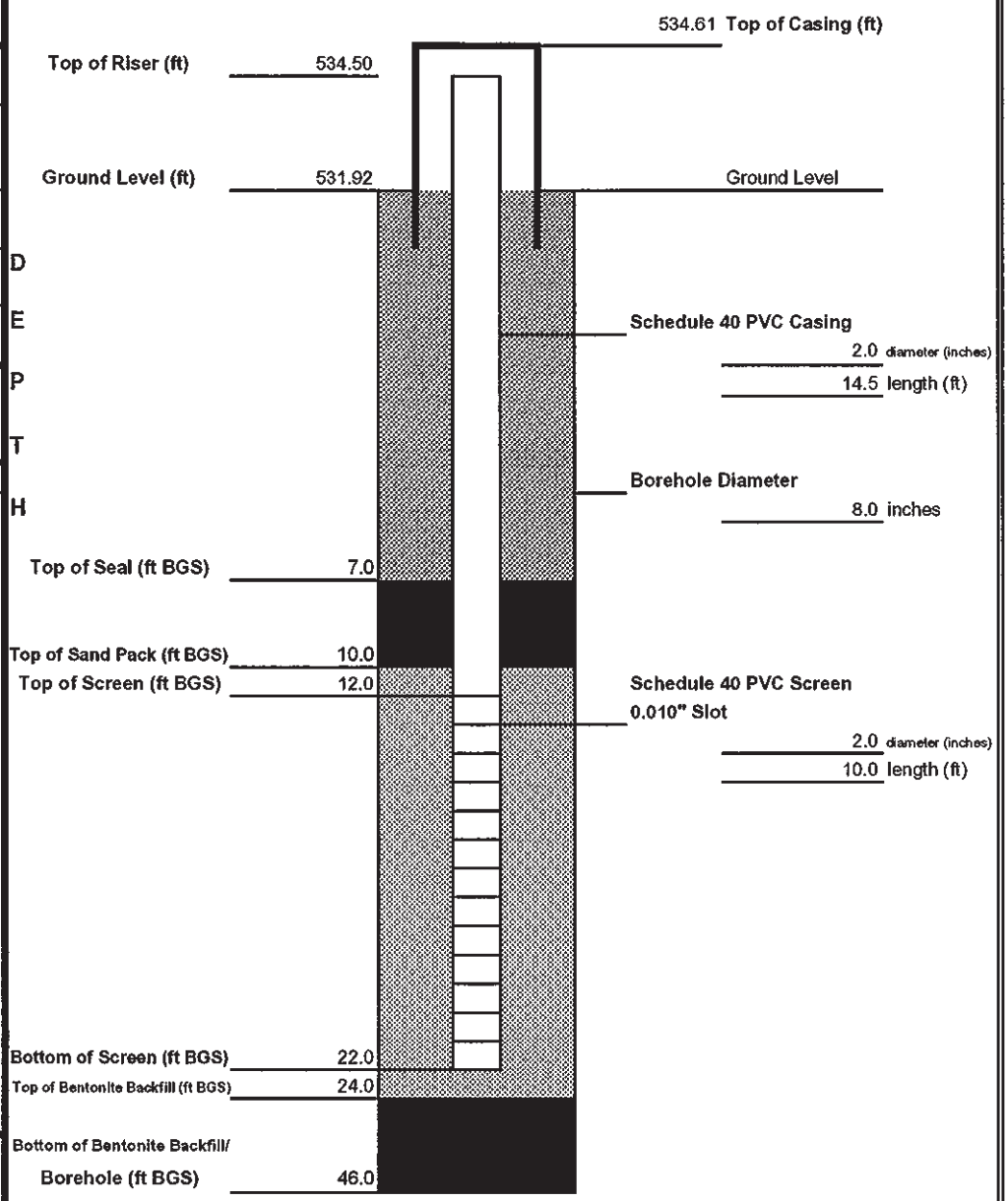
Model: CME-85

Date: February 8, 2007

GEOLOGIC LOG

Depth (ft.)	Description
0-5.5	Fill/ Concrete
5.5-24	Upper Glacial Till
24-32	Lower Glacial Till
32-34	mf SAND
34-45.5	Lower Glacial Till
45.5'-46	Weathered Shale

WELL DESIGN



CASING MATERIAL

Surface: 4" Steel protective cover (Stick Up)

Monitor: 2" Schedule 40 PVC

SCREEN MATERIAL

Type: 2" Schedule 40 PVC

Slot Size: 0.010"

FILTER MATERIAL

Type: 00N well sand
Setting: 10'-24'

SEAL MATERIAL

Type 1: Bentonite chips
Setting: 7'-10'
Type 1: Cement/ Bentonite Grout
Setting: 0'-7'

COMMENTS:

LEGEND

- Cement/Bentonite Grout
- Bentonite Seal
- Sand Pack

Client: NYSDEC	**Location:** Stuart-Olver-Holtz	**Project No.:** 11174465.00002
URS Corporation	**MONITORING WELL CONSTRUCTION DETAILS**	**Well Number: URS-12**

DRILLING SUMMARY

Geologist: Kevin J. McGovern

Contractor: Nothnagle Drilling

Operator: Steve Loranty

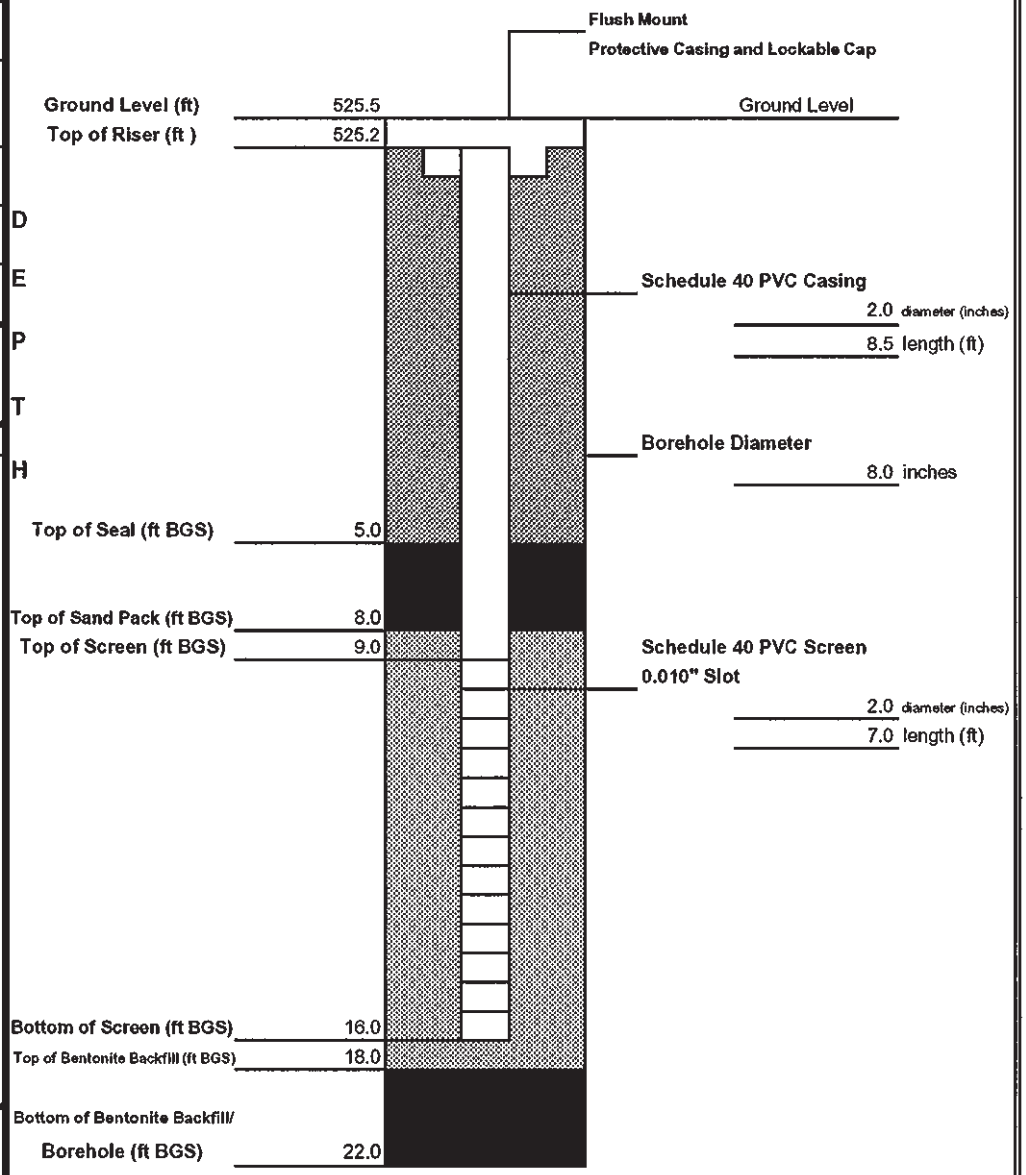
Model: CME-85

Date: March 7, 2007

GEOLOGIC LOG

Depth (ft.)	Description
0-2	Fill
2-8	Lacustrine
8-16	Upper Glacial Till
16-22	Lower Glacial Till

WELL DESIGN



CASING MATERIAL

Surface: 8" Steel protective curb-box (Flush Mount)

Monitor: 2" Schedule 40 PVC

SCREEN MATERIAL

Type: 2" Schedule 40 PVC

Slot Size: 0.010"

FILTER MATERIAL

Type: 00N well sand
Setting: 8'-18'

SEAL MATERIAL

Type 1: Bentonite chips
Setting: 5'-8'
Type 1: Cement/ Bentonite Grout
Setting: 0'-5'

COMMENTS:

LEGEND

- Cement/Bentonite Grout
- Bentonite Seal
- Sand Pack

Client: NYSDEC

Location: Stuart-Olver-Holtz

Project No.: 11174465.00002

URS Corporation

MONITORING WELL CONSTRUCTION DETAILS

Well Number: URS-13

DRILLING SUMMARY

Geologist: Kevin J. McGovern

Contractor: Nothnagle Drilling

Operator: Steve Loranty

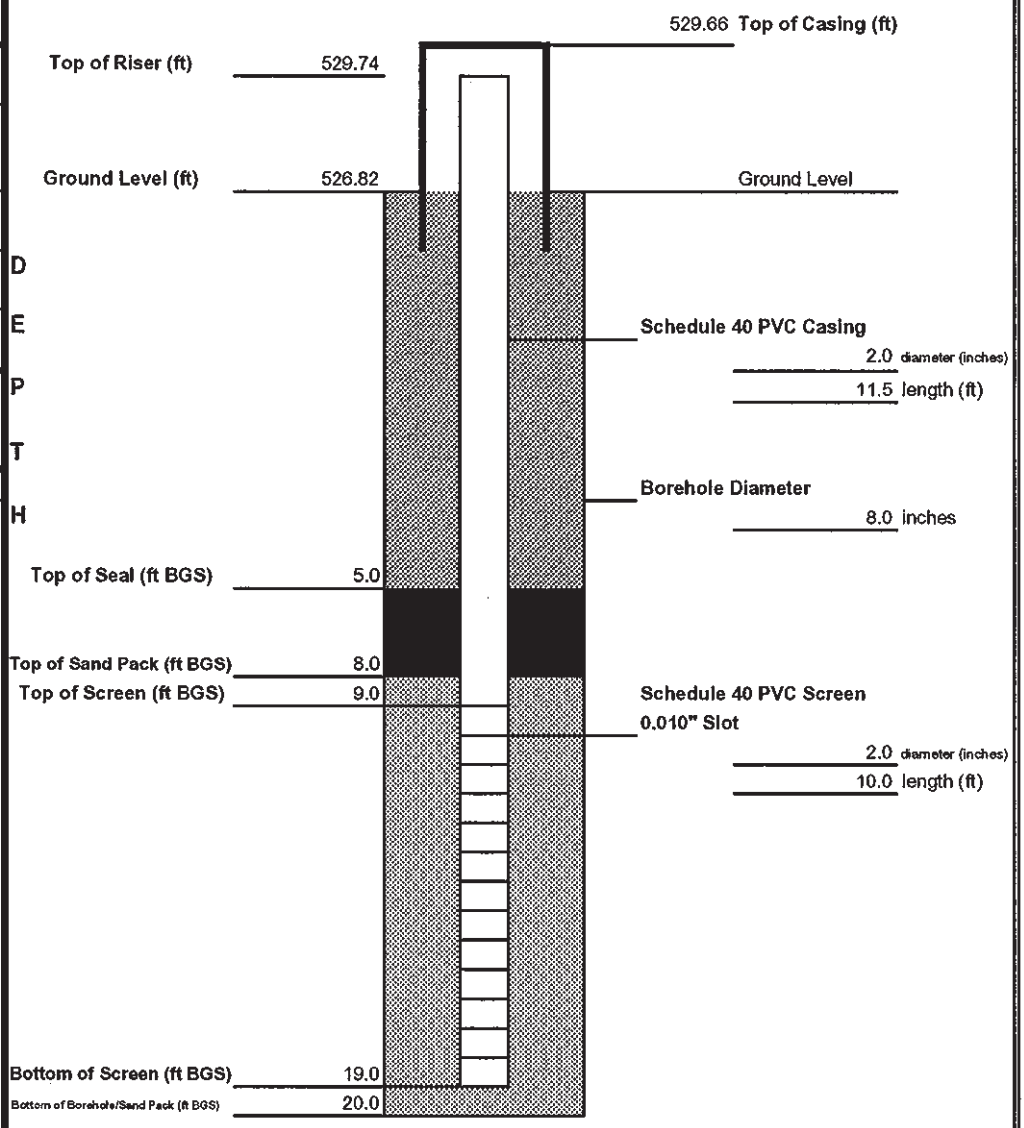
Model: CME-85

Date: February 23, 2007

GEOLOGIC LOG

Depth (ft.)	Description
0-4	Fill
4-8	Lacustrine
8-17	Upper Glacial Till
17-20	Lower Glacial Till

WELL DESIGN



CASING MATERIAL

Surface: 4" Steel protective cover (Stick Up)

Monitor: 2" Schedule 40 PVC

SCREEN MATERIAL

Type: 2" Schedule 40 PVC

Slot Size: 0.010"

FILTER MATERIAL

Type: 00N well sand
Setting: 8'-20'

SEAL MATERIAL

Type 1: Bentonite chips
Setting: 5'-8'
Type 1: Cement/ Bentonite Grout
Setting: 0'-5'

COMMENTS:

LEGEND

- Cement/Bentonite Grout
- Bentonite Seal
- Sand Pack

Client: NYSDEC

Location: Stuart-Olver-Holtz

Project No.: 11174465.00002

URS Corporation

MONITORING WELL CONSTRUCTION DETAILS

Well Number: URS-14

DRILLING SUMMARY

Geologist: Kevin J. McGovern

Contractor: Nothnagle Drilling

Operator: Steve Loranty

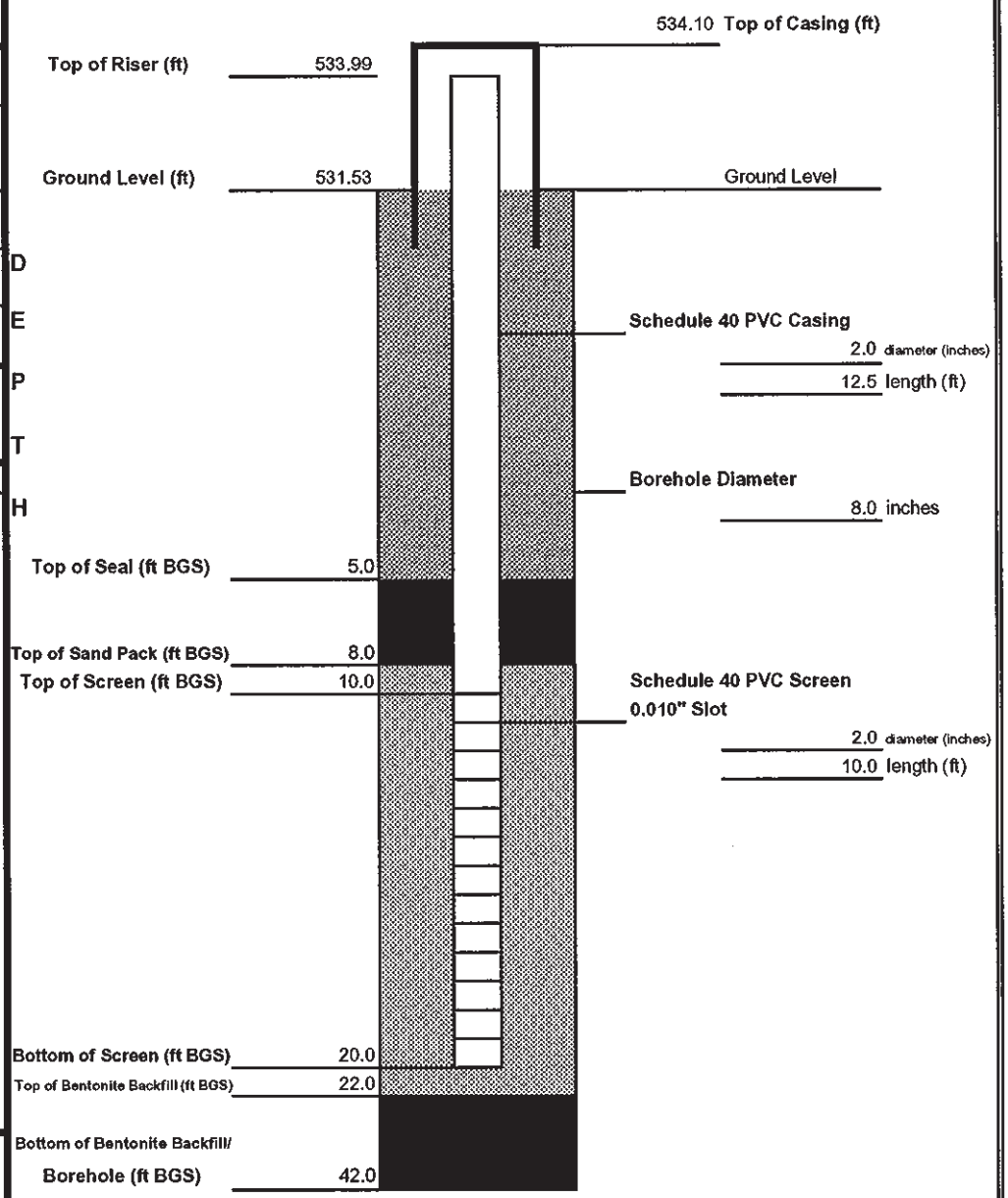
Model: CME-85

Date: February 15, 2007

GEOLOGIC LOG

Depth (ft.)	Description
0-4	Fill/ Concrete
4-22	Upper Glacial Till
22-40	Lower Glacial Till
40'-42'	Weathered Shale

WELL DESIGN



CASING MATERIAL

Surface: 4" Steel protective cover (Stick Up)

Monitor: 2" Schedule 40 PVC

SCREEN MATERIAL

Type: 2" Schedule 40 PVC

Slot Size: 0.010"

FILTER MATERIAL

Type: 00N well sand
Setting: 8'-22'

SEAL MATERIAL

Type 1: Bentonite chips
Setting: 5'-8'
Type 1: Cement/ Bentonite Grout
Setting: 0'-5'

COMMENTS:

LEGEND

- Cement/Bentonite Grout
- Bentonite Seal
- Sand Pack

Client: NYSDEC | **Location:** Stuart-Olver-Holtz | **Project No.:** 11174465.00002

URS Corporation

MONITORING WELL CONSTRUCTION DETAILS

Well Number: URS-08

DRILLING SUMMARY

Geologist: Kevin J. McGovern

Contractor: Nothnagle Drilling

Operator: Steve Loranty

Model: CME-85

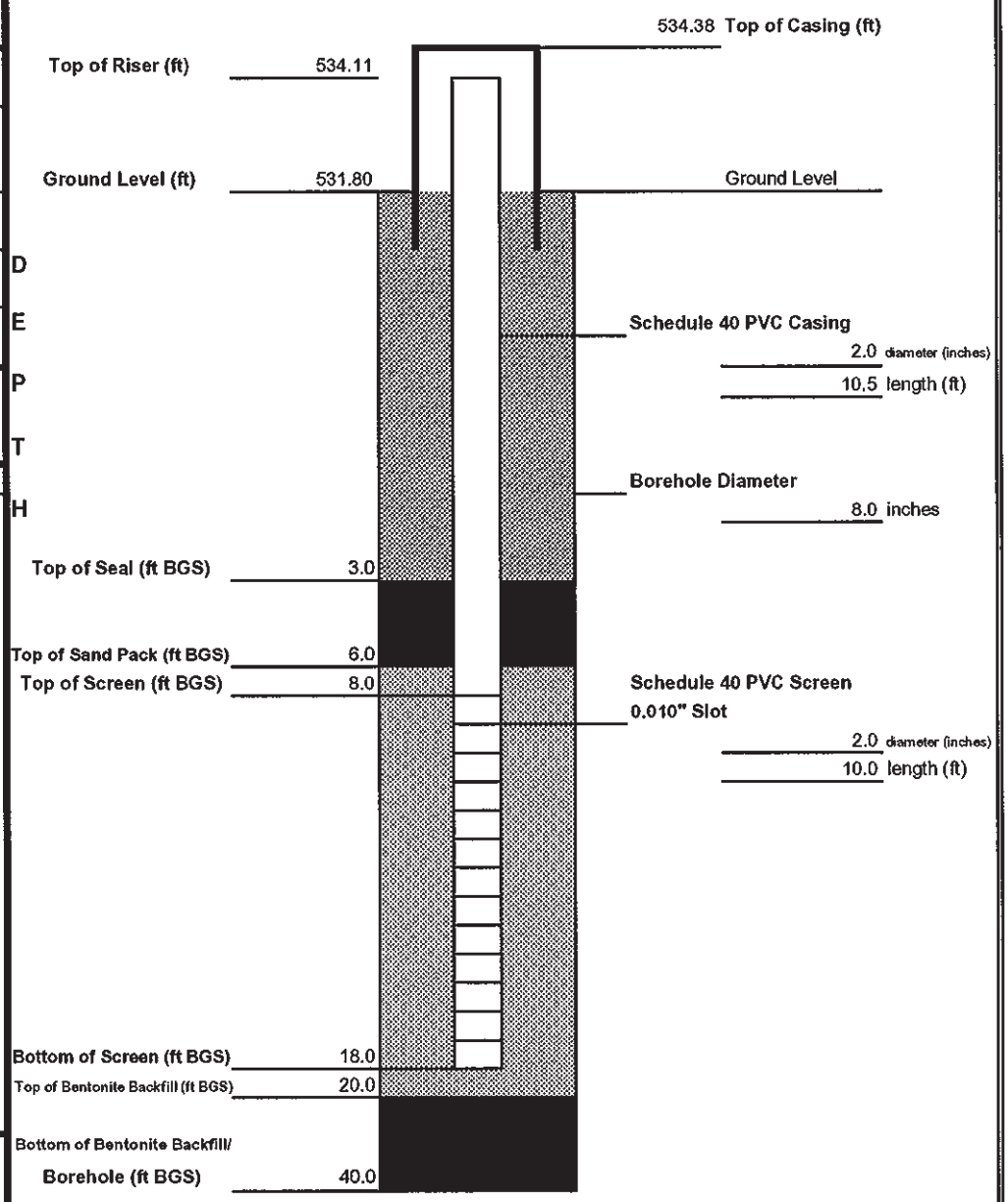
Date: February 16, 2007

GEOLOGIC LOG

Depth (ft.)	Description
0-0.8	Fill/ Concrete
0.8-2	Lacustrine
2-20	Upper Glacial Till
20-40	Lower Glacial Till
40-42	Weathered Shale

WELL DESIGN

DEPTH



CASING MATERIAL	SCREEN MATERIAL	FILTER MATERIAL
Surface: 4" Steel protective cover (Stick Up)	**Type:** 2" Schedule 40 PVC	**Type:** 00N well sand **Setting:** 6'-20'
Monitor: 2" Schedule 40 PVC	**Slot Size:** 0.010"	**SEAL MATERIAL** **Type 1:** Bentonite chips **Setting:** 3'-6' **Type 1:** Cement/ Bentonite Grout **Setting:** 0'-3'

COMMENTS:

LEGEND

- Cement/Bentonite Grout
- Bentonite Seal
- Sand Pack

Client: NYSDEC	**Location:** Stuart-Olver-Holtz	**Project No.:** 11174465.00002
URS Corporation	**MONITORING WELL CONSTRUCTION DETAILS**	**Well Number: URS-09**

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DRILLING SUMMARY

Geologist: Kevin J. McGovern

Contractor: Nothnagle Drilling

Operator: Steve Loranty

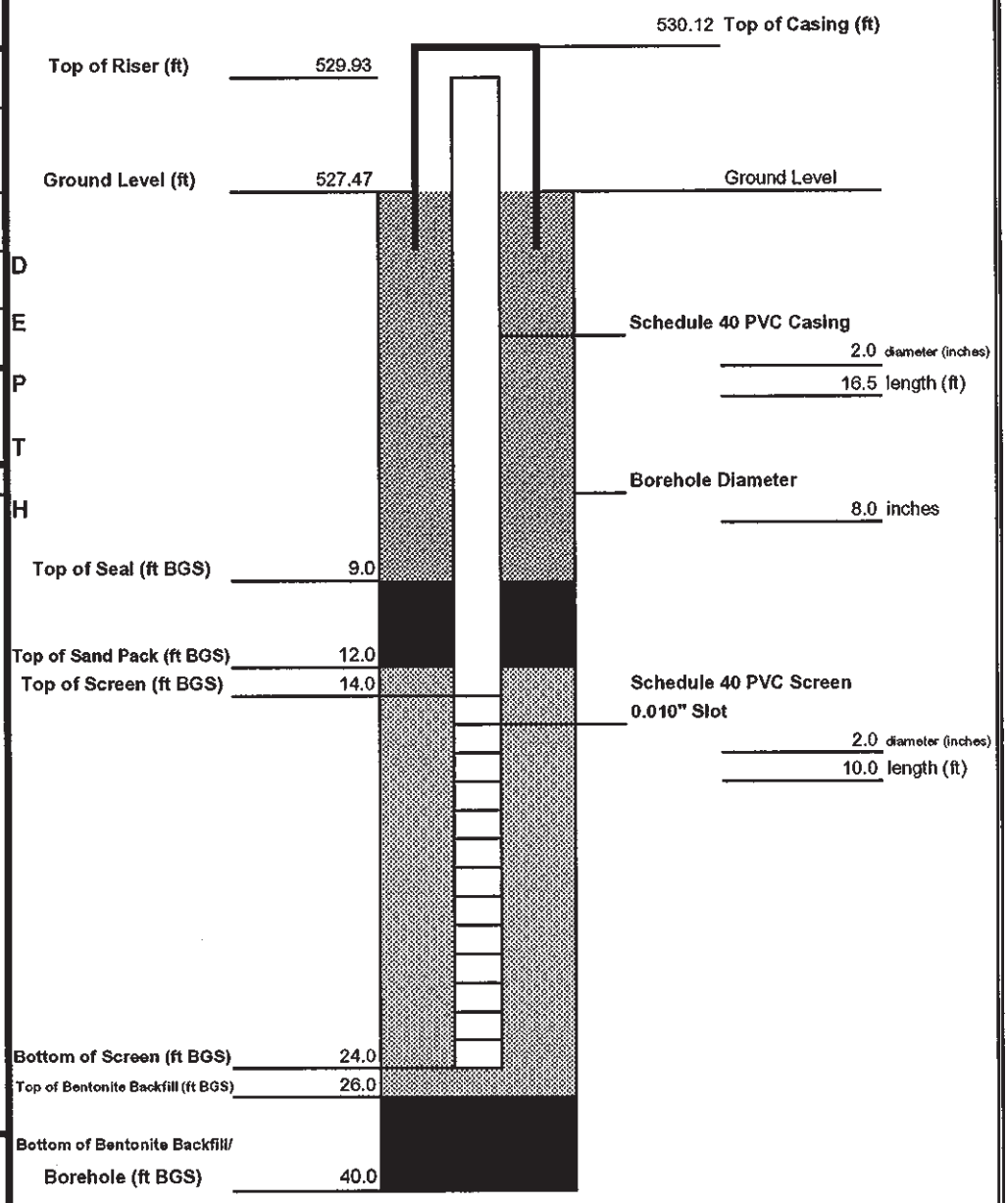
Model: CME-85

Date: February 20, 2007

GEOLOGIC LOG

Depth (ft.)	Description
0-4	Fill/ Asphalt
4-7.9	Lacustrine
7.9-26	Upper Glacial Till
26-39	Lower Glacial Till
39-40	Weathered Shale

WELL DESIGN



CASING MATERIAL

Surface: 4" Steel protective cover (Stick Up)

Monitor: 2" Schedule 40 PVC

SCREEN MATERIAL

Type: 2" Schedule 40 PVC

Slot Size: 0.010"

FILTER MATERIAL

Type: 00N well sand
Setting: 12'-26'

SEAL MATERIAL

Type 1: Bentonite chips
Setting: 9'-12'
Type 1: Cement/ Bentonite Grout
Setting: 0'-9'

COMMENTS:

LEGEND

- Cement/Bentonite Grout
- Bentonite Seal
- Sand Pack

Client: NYSDEC	**Location:** Stuart-Olver-Holtz	**Project No.:** 11174465.00002
URS Corporation	**MONITORING WELL CONSTRUCTION DETAILS**	**Well Number: URS-01**

DRILLING SUMMARY

Geologist: Kevin J. McGovern

Contractor: Nothnagle Drilling

Operator: Steve Loranty

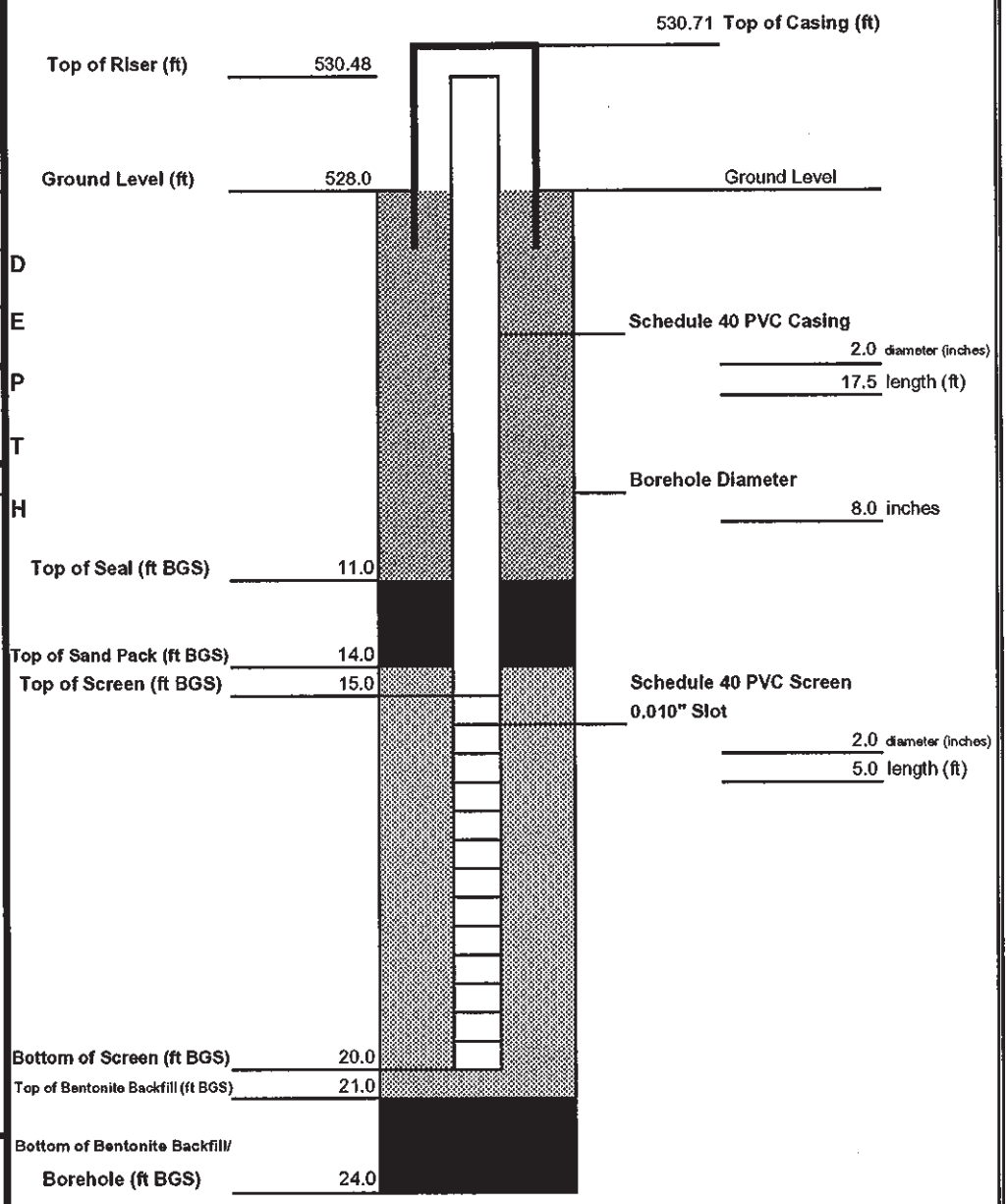
Model: CME-85

Date: February 21, 2007

GEOLOGIC LOG

Depth (ft.)	Description
0-4	Fill/ Asphalt
4-16	Lacustrine
16-19.5	Upper Glacial Till
19.5-24	Lower Glacial Till

WELL DESIGN



CASING MATERIAL

Surface: 4" Steel protective cover (Stick Up)

Monitor: 2" Schedule 40 PVC

SCREEN MATERIAL

Type: 2" Schedule 40 PVC

Slot Size: 0.010"

FILTER MATERIAL

Type: 00N well sand
Setting: 14'-21'

SEAL MATERIAL

Type 1: Bentonite chips
Setting: 11'-14'
Type 1: Cement/ Bentonite Grout
Setting: 0'-11'

COMMENTS:

LEGEND

- Cement/Bentonite Grout
- Bentonite Seal
- Sand Pack

Client: NYSDEC	**Location:** Stuart-Olver-Holtz	**Project No.:** 11174465.00002
URS Corporation	**MONITORING WELL CONSTRUCTION DETAILS**	**Well Number: URS-02**

DRILLING SUMMARY

Geologist: Kevin J. McGovern

Contractor: Nothnagle Drilling

Operator: Steve Loranty

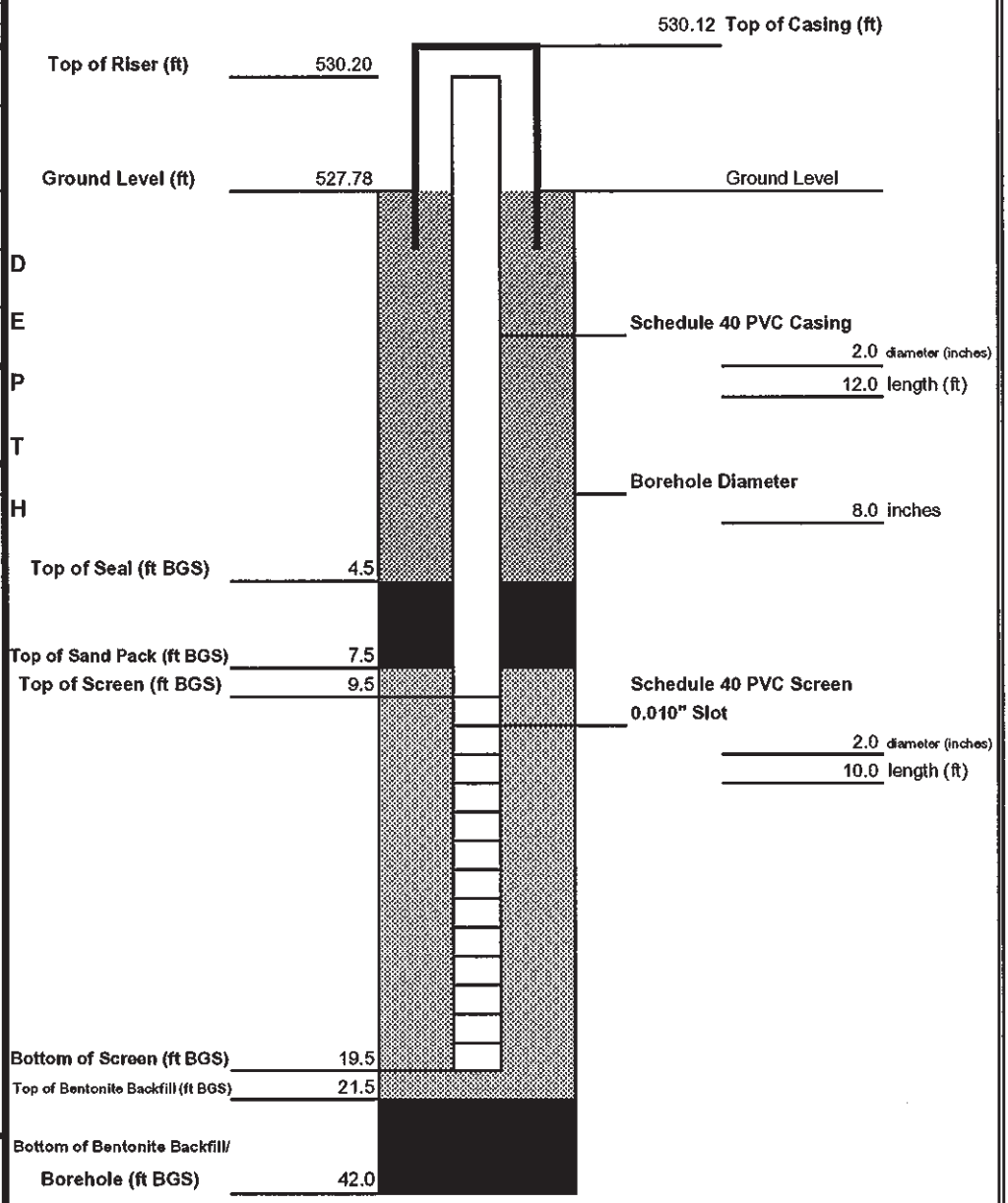
Model: CME-85

Date: February 19, 2007

GEOLOGIC LOG

Depth (ft.)	Description
0-2	Fill/ Asphalt
2-4	Lacustrine
4-21.5	Upper Glacial Till
21.5-40	Lower Glacial Till
40-42	Weathered Shale

WELL DESIGN



CASING MATERIAL

Surface: 4" Steel protective cover (Stick Up)

Monitor: 2" Schedule 40 PVC

SCREEN MATERIAL

Type: 2" Schedule 40 PVC

Slot Size: 0.010"

FILTER MATERIAL

Type: 00N well sand
Setting: 7.5'-21.5'

SEAL MATERIAL

Type 1: Bentonite chips
Setting: 4.5'-7.5'
Type 1: Cement/ Bentonite Grout
Setting: 0'-4.5'

COMMENTS:

LEGEND

- Cement/Bentonite Grout
- Bentonite Seal
- Sand Pack

Client: NYSDEC | **Location:** Stuart-Olver-Holtz | **Project No.:** 11174465.00002

URS Corporation

MONITORING WELL CONSTRUCTION DETAILS

Well Number: URS-03

DRILLING SUMMARY

Geologist: Kevin J. McGovern

Contractor: Nothnagle Drilling

Operator: Steve Loranty

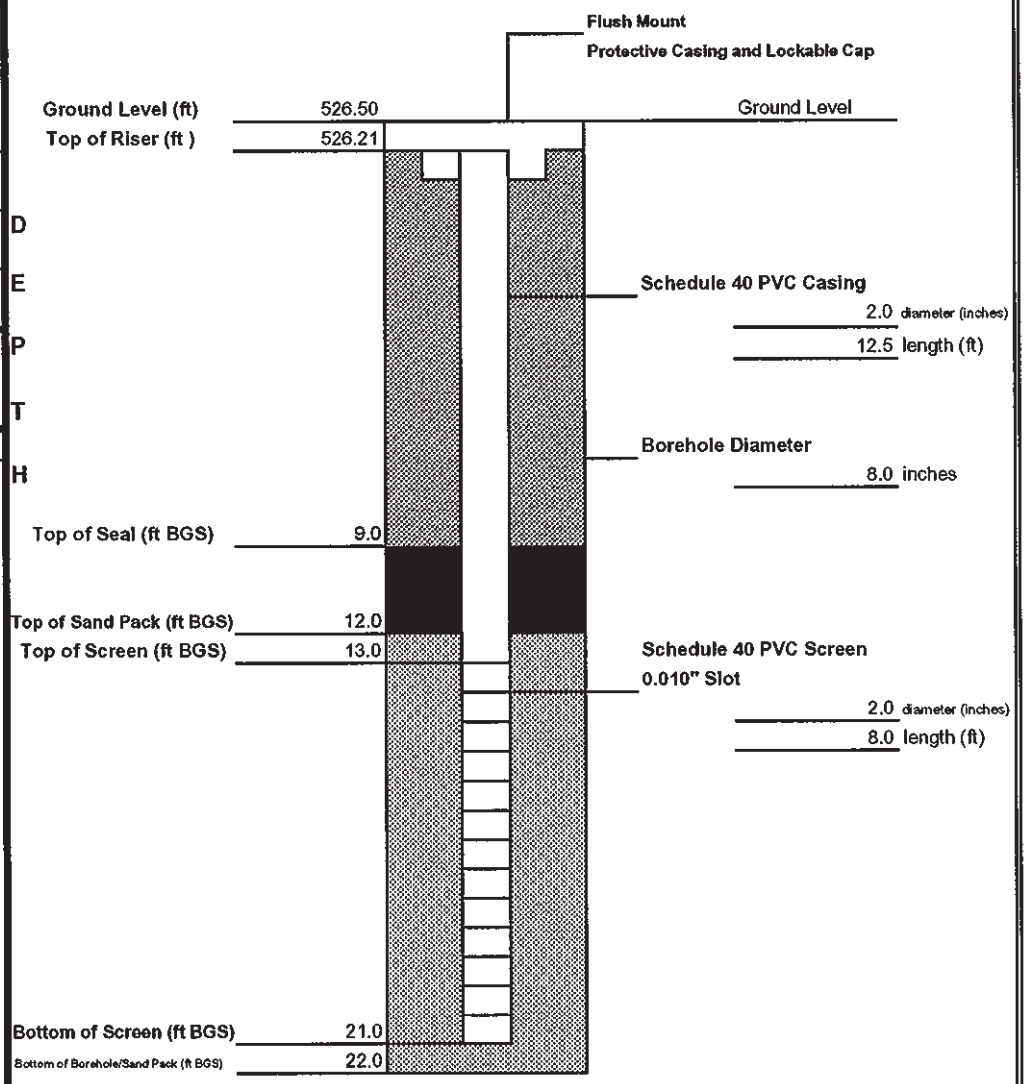
Model: CME-85

Date: March 9, 2007

GEOLOGIC LOG

Depth (ft.)	Description
0-4	Fill/ Asphalt
4-12	Lacustrine
12-20	Upper Glacial Till
20-22	Lower Glacial Till

WELL DESIGN



CASING MATERIAL

Surface: 8" Steel protective curb-box (Flush Mount)

Monitor: 2" Schedule 40 PVC

SCREEN MATERIAL

Type: 2" Schedule 40 PVC

Slot Size: 0.010"

FILTER MATERIAL

Type: 00N well sand
Setting: 12'-22'

SEAL MATERIAL

Type 1: Bentonite chips
Setting: 9'-12'
Type 1: Cement/ Bentonite Grout
Setting: 0'-9'

COMMENTS:

LEGEND

- Cement/Bentonite Grout
- Bentonite Seal
- Sand Pack

Client: NYSDEC

Location: Stuart-Olver-Holtz

Project No.: 11174465.00002

URS Corporation

MONITORING WELL CONSTRUCTION DETAILS

Well Number: URS-04

DRILLING SUMMARY

Geologist: Kevin J. McGovern

Contractor: Nothnagle Drilling

Operator: Steve Loranty

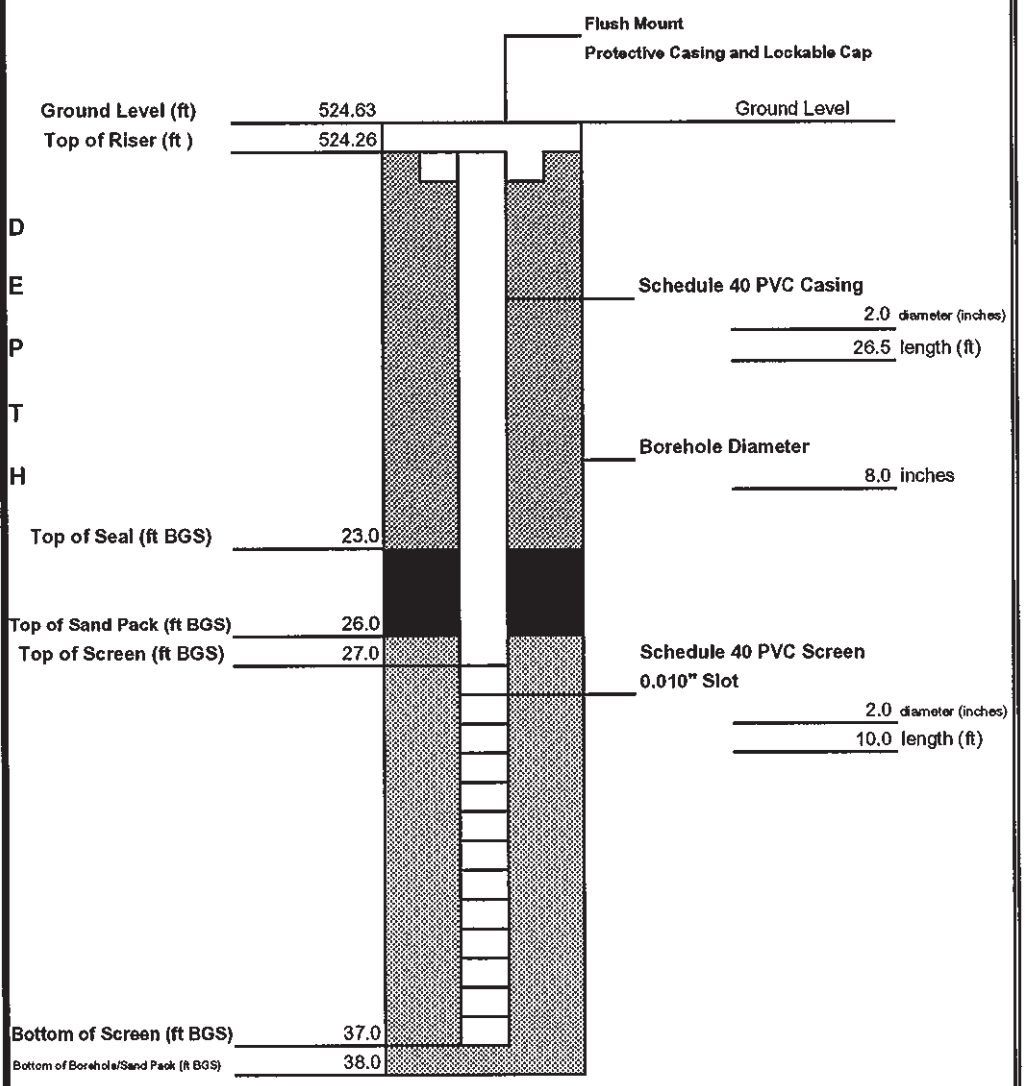
Model: CME-85

Date: March 8, 2007

GEOLOGIC LOG

Depth (ft.)	Description
0-4	Fill
4-26	Lacustrine
26-37	Upper Glacial Till
37-38	Lower Glacial Till

WELL DESIGN



CASING MATERIAL	SCREEN MATERIAL	FILTER MATERIAL
Surface: 8" Steel protective curb-box (Flush Mount)	**Type:** 2" Schedule 40 PVC	**Type:** 00N well sand **Setting:** 26'-38'
Monitor: 2" Schedule 40 PVC	**Slot Size:** 0.010"	**SEAL MATERIAL** **Type 1:** Bentonite chips **Setting:** 23'-26' **Type 1:** Cement/ Bentonite Grout **Setting:** 0'-23'

COMMENTS:

LEGEND

- Cement/Bentonite Grout
- Bentonite Seal
- Sand Pack

Client: NYSDEC	**Location:** Stuart-Olver-Holtz	**Project No.:** 11174465.00002
URS Corporation	**MONITORING WELL CONSTRUCTION DETAILS**	**Well Number: URS-05**

Q:/Exchange/Montroy/Well Construction Diagrams URS1-URS14/URS-05-10/18/2007-2:48 PM

DRILLING SUMMARY

Geologist: Kevin J. McGovern

Contractor: Nothnagle Drilling

Operator: Steve Loranty

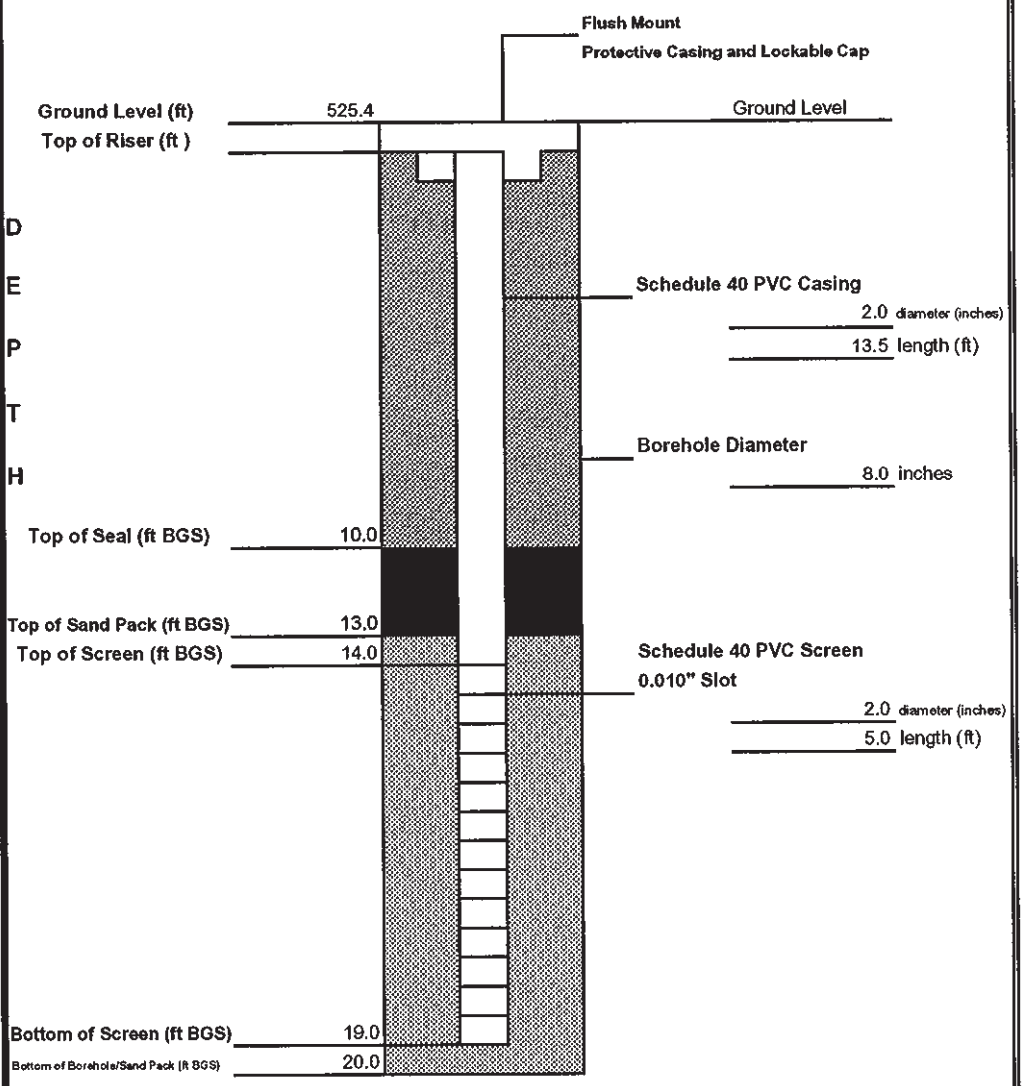
Model: CME-85

Date: March 9, 2007

GEOLOGIC LOG

Depth (ft.)	Description
0-3.5	Fill/ Asphalt
3.5-14	Lacustrine
14-18	Upper Glacial Till
18-20	Lower Glacial Till

WELL DESIGN



CASING MATERIAL

Surface: 8" Steel protective curb-box (Flush Mount)

Monitor: 2" Schedule 40 PVC

SCREEN MATERIAL

Type: 2" Schedule 40 PVC

Slot Size: 0.010"

FILTER MATERIAL

Type: 00N well sand
Setting: 13'-20'

SEAL MATERIAL

Type 1: Bentonite chips
Setting: 10'-13'
Type 1: Cement/ Bentonite Grout
Setting: 0'-13'

COMMENTS:

LEGEND

Cement/Bentonite Grout

Bentonite Seal

Sand Pack

Client: NYSDEC	**Location:** Stuart-Olver-Holtz	**Project No.:** 11174465.00002
URS Corporation	**MONITORING WELL CONSTRUCTION DETAILS**	**Well Number: URS-06**

Q:/Exchange/Montroy/Well Construction Diagrams URS1-URS14/URS-06-10/18/2007-2:46 PM

GeoLogic
PO Box 350, Homer, NY 13077
607-749-5000 / 607-749-5063 (fax)

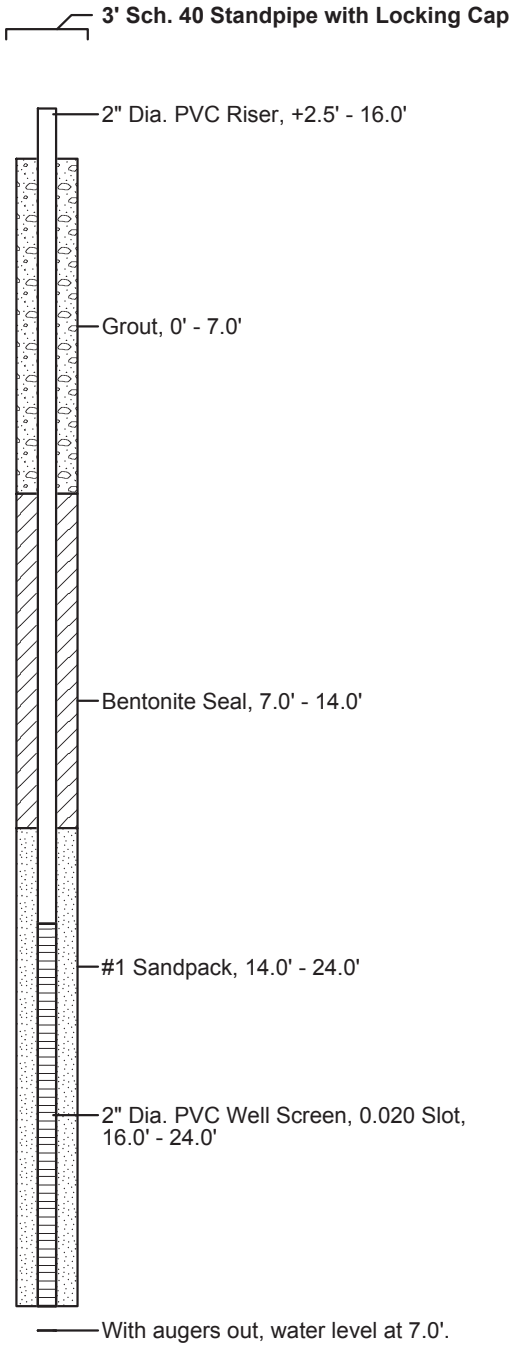
SUBSURFACE LOG

Stuart Olver

Rochester, New York

Boring No: : SW-37
Project No.: : 210001D
Date Started: : 02/03/11
Date Completed: : 02/03/11

Depth (ft)	DESCRIPTION
0	Concrete Slab Brown GRAVEL, Some fine-coarse Sand, little silt, moist
	Brown Organic SILT, little fine-coarse sand, moist - wet
5	Brown SILT, Some fine Sand, little medium-coarse sand, little gravel, wet
10	Brown SILT and fine-coarse SAND, little gravel, moist
15	Brown SILT, and fine SAND, little medium-coarse sand, trace gravel, saturated
20	Driller noted harder drilling at 19.5' Brown SILT and fine-coarse SAND, little gravel, moist - wet
	BORING TERMINATED AT 24.0'
25	



Sampling Method: ASTM D-1586, unless otherwise noted.
Notes: 4 1/4" ID Hollow Stem Augers
Visually Classified by: Geologist
File: 210001D/tech/SW-37

02-17-2011 P:\PROJECTS\2010\210001D-Stuart Olver Holtz-Rochester\TECH\SW-37.bor

GeoLogic
PO Box 350, Homer, NY 13077
607-749-5000 / 607-749-5083 (fax)

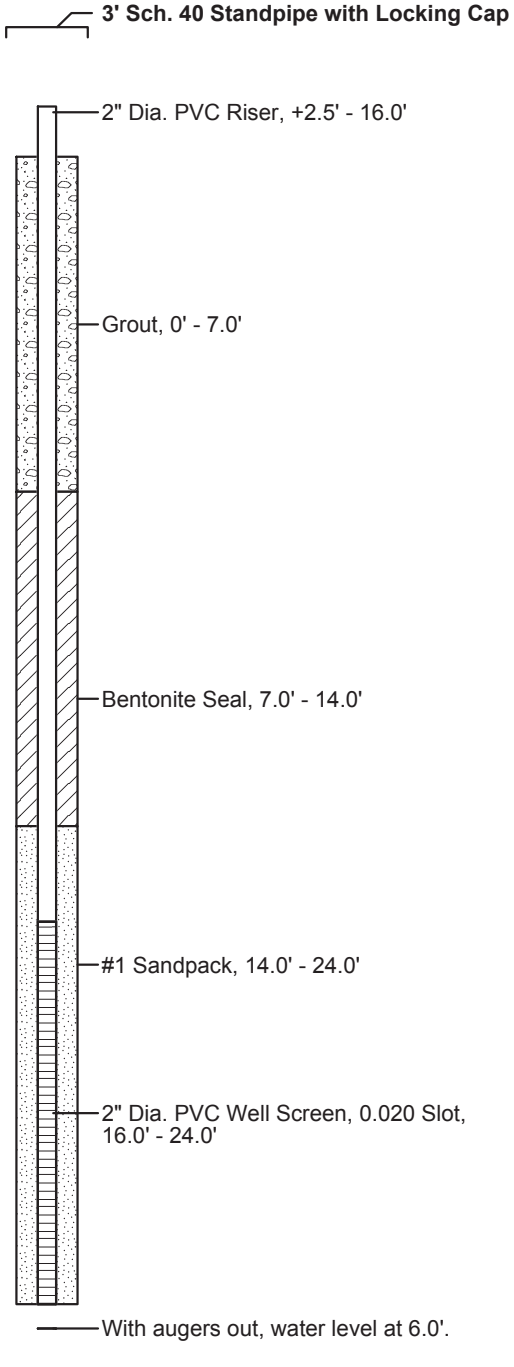
SUBSURFACE LOG

Stuart Olver

Rochester, New York

Boring No: : SW-33
Project No.: : 210001D
Date Started: : 02/09/11
Date Completed: : 02/09/11

Depth (ft)	DESCRIPTION
0	1.1' Concrete Slab Black/Brown SILT, little fine-coarse sand, trace gravel, moist
5	similar
	Brown SILT and CLAY, moist
	Brown SILT, Some fine-coarse Sand, saturated
10	
	Gray SILT and fine SAND, little medium-coarse sand, trace gravel, wet
15	
	Brown SILT and fine-coarse SAND, Some Gravel, wet Driller noted harder drilling at 16.0'
20	
	Driller noted easier drilling at 23.0' Brown fine-coarse SAND and GRAVEL, little to Some Silt, saturated
	BORING TERMINATED AT 24.0'
25	



Sampling Method: ASTM D-1586, unless otherwise noted.
Notes: 4 1/4" ID Hollow Stem Augers
Visually Classified by: Geologist
File: 210001D/tech/SW-33

02-17-2011 P:\PROJECTS\2010\210001D-Stuart Olver Holtz-Rochester\TECH\SW-33.bor

GeoLogic
PO Box 350, Homer, NY 13077
607-749-5000 / 607-749-5063 (fax)

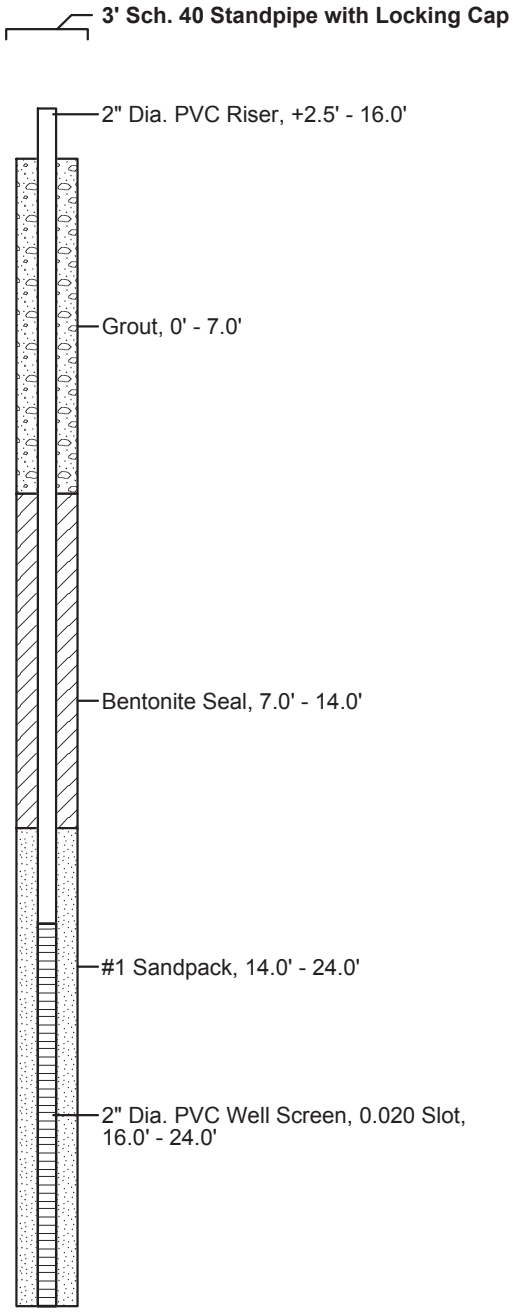
SUBSURFACE LOG

Stuart Olver

Rochester, New York

Boring No: : SW-32
Project No.: : 210001D
Date Started: : 02/07/11
Date Completed: : 02/07/11

Depth (ft)	DESCRIPTION
0	Brown GRAVEL, Some fine-coarse Sand, little silt, moist
	Brown SILT, little fine-coarse sand, little gravel, moist
5	
10	similar, wet
	Brown SILT, Some fine-coarse Sand, little gravel, wet Driller noted harder drilling at 14.0'
15	
20	
	Driller noted easier drilling at 22.0' Brown fine-coarse SAND and GRAVEL, Some Silt, saturated
	BORING TERMINATED AT 24.0'
25	



Sampling Method: ASTM D-1586, unless otherwise noted.
Notes: 4 1/4" ID Hollow Stem Augers
Visually Classified by: Geologist
File: 210001D/tech/SW-32

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GZA GEOENVIRONMENTAL OF NEW YORK
364 NAGEL DRIVE, BUFFALO, NEW YORK
ENGINEERS AND SCIENTISTS

PROJECT
Stuart-Olver-Holtz
Rochester, New York

BORING No. OW-5S
SHEET 1 OF 2
FILE No. 19078.10
CHKD. BY

CONTRACTOR Nothnagle Drilling
DRILLER Steve Lorantz
GZA GEOENVIRONMENTAL REPRESENTATIVE Dave Belaskas

BORING LOCATION N751367.00 E751367.00
GROUND SURFACE ELEVATION 526.9 DATUM NGVD
START DATE 11/1/94 END DATE 11/2/94

TYPE OF DRILL RIG CME-75
CASING SIZE AND TYPE 6-1/4 inch Hollow Stem Augers
OVERBURDEN SAMPLING METHOD 2 inch O.D. x 24" long split spoon
ROCK DRILLING METHOD

WATER LEVEL DATA

DATE	TIME	WATER	CASING	REMARKS
11/1/94	1600	Dry	12'	Stabilized 10 mins.
11/2/94	0800	Dry	12'	Stabilized 16 hrs.
11/2/94	1030	Dry	28'	Stabilized 0.5 hrs.

DEPTH	SAMPLE BLOWS / 6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)	SAMPLE DESCRIPTION	(1) Peak OVM Read (ppm)
1	1	S-1	0-2	9	50	Loose brown, fine to coarse SAND, some Clayey Silt, trace gravel, moist to wet root fragments.	ND
	4						
	5					[FILL] 1.0'	
2	6						
	5	S-2	2-4	14	45	Very stiff, brown, CLAY & SILT, trace fine Sand, moist.	ND
3	5						
	9					[LACUSTRINE]	
4	5						
	4	S-3	4-6	17	65	same, moist.	ND
5	6						
	11						
6	15						
	4	S-4	6-8	18	55	same, moist.	ND
7	8						
	10						
8	15						
	4	S-5	8-10	17	65	same, moist.	ND
9	8						
	9					[LACUSTRINE]	
10	16					10.5'	
	4	S-6	10-12	26	65	Meduim dense, brown to grey green, fine to coarse SAND and CLAY & SILT, trace Gravel, moist.	ND
11	11						
	15					[UPPER TILL]	
12	15						
	8	S-7	12-14	47	50	Grades to dense, with little Gravel.	ND
13	18						
	29						
14	36						
	6	S-8	14-16	57	100	grades to very dense, moist.	ND
15	10					[UPPER TILL] 14.6'	
	47					Very dense, brown, fine to coarse SAND, some Clayey Silt, trace Gravel, moist.	
16	85					[LOWER TILL]	
	28	S-9	16-16.9	>100	100	same.	ND

EQUIPMENT
I STALLAT N
LOG

- 6 inch OD protective casing
- Concrete surface seal to 2.5 ft.
- Cement/bentonite grout from 2.5 to 7 ft.
- 4 inch OD flush couple black steel riser to 12 ft.
- Bentonite pellet seal from 7 to 10 ft.
- No.00 size sand filter pack sand from 10 to 23 ft.
- No. 10 slot stainless steel screen from 12 to 21.5 ft.

NOTES

LEGEND
S - Split Spoon Soil Sample
U - Undisturbed Soil Sample
C - Rock Core Sample

NOTES: (1) Organic Vapor Meter (OVM) reading of headspace using H-Nu PI-101 photoionization detector. ND=not detected above 1 ppm.

GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GZA GEOENVIRONMENTAL OF NEW YORK
364 NAGEL DRIVE, BUFFALO, NEW YORK

ENGINEERS AND SCIENTISTS

PROJECT
Stuart-Olver-Holtz
Rochester, New York

BORING No. OW-5S
SHEET 2 OF 2
FILE No. 19078.10
CHKD. BY

DEPTH	SAMPLE BLOWS / 6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)	SAMPLE DESCRIPTION	(1) Peak OVM Read (PPM)	EQUIPMENT INSTALLATION LOG	NOTES
17	100/5"					[LOWER TILL]	ND		
18	30	S-10	18-18.8	>100	90	Very dense, brown, fine to coarse SAND, some Clayey Silt, trace gravel, moist.	ND		
19	100/4"								
20	37	S-11	20-20.9	>100	95	same.	ND		
21	100/5"								
22	26	S-12	22-23	>100	100	same.	ND	← stainless steel sump 21.5 to 22 ft.	
23	100/6"								
24						[LOWER TILL]		← Bentonite pellet seal from 23 to 30 ft.	
25	26	S-13	24-26	60	100	same.	ND		
26	27								
27	33								
28	37								
29	30	S-14	26-27.4	>100	100	same grades to little Clayey Silt, moist.	ND		
30	48								
31	100/5"								
32	48	S-15	28-29	>100	100	same.	ND		
33	100/6"								
34						[LOWER TILL]			
35						Bottom of boring at 30.0'.			
36									

LEGEND
S - Split Spoon Soil Sample
U - Undisturbed Soil Sample
C - Rock Core Sample

NOTES: (1) Organic Vapor Meter (OVM) reading of headspace using H-Nu PI-101 photoionization detector. ND=not detected above 1 ppm.

GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GZA GEOENVIRONMENTAL OF NEW YORK
364 NAGEL DRIVE, BUFFALO, NEW YORK
ENGINEERS AND SCIENTISTS

PROJECT
Stuart-Olver-Holtz
Rochester New York

BORING No. OW-6S
SHEET 1 OF 2
FILE No. 19078.10
CHKD. BY

CONTRACTOR Nothnagle Drilling
DRILLER Steve Lorantz
GZA GEOENVIRONMENTAL REPRESENTATIVE Dave Belaskas

BORING LOCATION N1123564.60 E751238.27
GROUND SURFACE ELEVATION 529.0 DATUM NGVD
START DATE 11/3/94 END DATE 11/3/94

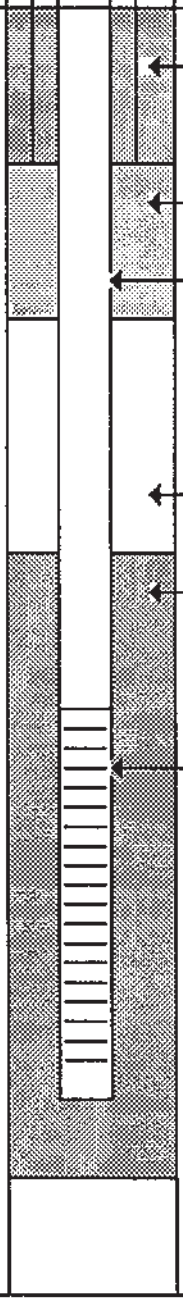
TYPE OF DRILL RIG CME-75
CASING SIZE AND TYPE 2-1/4 inch Hollow Stem Augers
OVERBURDEN SAMPLING METHOD 2 inch OD x 24 inch long spilt spoon
ROCK DRILLING METHOD

WATER LEVEL DATA

DATE	TIME	WATER	CASING	REMARKS
11/3/94	1345	Dry	32'	Stabilized 0.5 hrs.

DEPTH	SAMPLE BLOWS / 6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)	SAMPLE DESCRIPTION	(1) Peak OVM Read (PPM)
1	1	S-1	0-2	11	35	Medium Dense, brown, fine to coarse SAND, little clayey Silt, moist. (debris)	ND
	4						
	7						
2	9						
	7	S-2	2-4	13	55	Same. [FILL] 2.6'	1
3	8					Stiff, brown, CLAY and SILT, little Sand, moist.	
	5						
	13					[LACUSTRINE]	
4	2	S-3	4-6	14	50	Same.	2
5	6						
	8						
	12						
6	8	S-4	6-8	15	50	Same, except grades to trace gravel.	7
7	7						
	8						
	13						
8	6	S-5	8-10	24	90	[LACUSTRINE] 8.4'	7
9	12					Medium dense, brown fine to coarse SAND, wet.	
	12						
	15					[UPPER TILL]	
10	6	S-6	10-12	42	75	Same, except dense, wet.	5
11	20					(SAND STRATUM AT 8.4 to 11.0	ft.)
	22						
	24						
12	8	S-7	12-14	80	75	Very Dense, Grey fine to coarse SAND and SILT, trace Gravel, moist.	ND
13	24						
	56					[UPPER TILL]	
	30						
14	6	S-8	14-16	32	75	Dense, grey, fine to coarse SAND, some clayey Silt, moist.	ND
15	17						
	15					[UPPER TILL]	
	30						
16	3	S-9	16-18	75	35	Gray, very dense.	ND

EQUIPMENT INSTALLATION LOG



NOTES

LEGEND
S - Split Spoon Soil Sample
U - Undisturbed Soil Sample
C - Rock Core Sample

NOTES: Organic Vapor Meter (OVM) reading of headspace using H-Nu PI-101 photoionization detector.
ND-not detected above 1 ppm.

GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GZA GEOENVIRONMENTAL OF NEW YORK
364 NAGEL DRIVE, BUFFALO, NEW YORK

ENGINEERS AND SCIENTISTS

PROJECT
Stuart-Olver-Holtz
Rochester, New York

BORING No. OW-6S
SHEET 2 OF 2
FILE No. 19078.10
CHKD. BY

DEPTH	BLOWS / 6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)	SAMPLE DESCRIPTION	Peak OVM Read (PPM)	EQUIPMENT INSTALLATION LOG	NOTES
17	30						ND		
	45							← Bentonite seal from 15 to 33.4 ft.	
	28								
18	9	S-10	18-20	46	85	Dense, Grey, fine to coarse SAND, some Clayey Silt, trace Gravel, moist.	2		
	16								
19	30								
	30								
20	9	S-11	20-22	58	60	grades very dense.	T		
	21								
21	37								
	41								
22	11	S-12	22-23.8	74	75	[UPPER TILL] 22.5'	T		
	28					Very dense, gray, fine to coarse SAND, some Clayey Silt, trace Gravel, moist.			
23	46								
	100/3"					[LOWER TILL]			
24	37	S-13	24-24.9	>100	90	Same, moist.	T		
	100/5"								
25									
26	51	S-14	26-26.7	>100	100	Same.	ND		
	100/2"								
27									
						[LOWER TILL]			
28	16	S-15	28-30	>100	65	Same grades fine to coarse SAND.	T		
	56								
29	47								
	66								
30	22	S-16	30-32	60	75	Same.	T		
	31								
31	29								
	53								
32	47	S-17	32-33.4	>100	75	Same.	1.2 2		
	54								
33	100/4"					[LOWER TILL]			
						Bottom of Boring at 33.4 ft.			
34									
35									
36									

LEGEND
S - Split Spoon Soil Sample
U - Undisturbed Soil Sample
C - Rock Core Sample

NOTES:
Organic Vapor Meter (OVM) reading of headspace using H-NU PI-101 photoionization detector.
ND-not detected above 1 ppm.

GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GZA GEOENVIRONMENTAL OF NEW YORK
364 NAGEL DRIVE, BUFFALO, NEW YORK
ENGINEERS AND SCIENTISTS

PROJECT
Stuart-Olver-Holtz
Rochester, New York

BORING No. OW-7S
SHEET 1 OF 2
FILE No. 19078.10
CHKD. BY

CONTRACTOR Nothnagle Drilling
DRILLER Steve Lorantz
GZA GEOENVIRONMENTAL REPRESENTATIVE Dave Belaskas

BORING LOCATION N1123680.01 E751318.87
GROUND SURFACE ELEVATION 528.1 DATUM NGVD
START DATE 11/28/94 END DATE 11/28/94

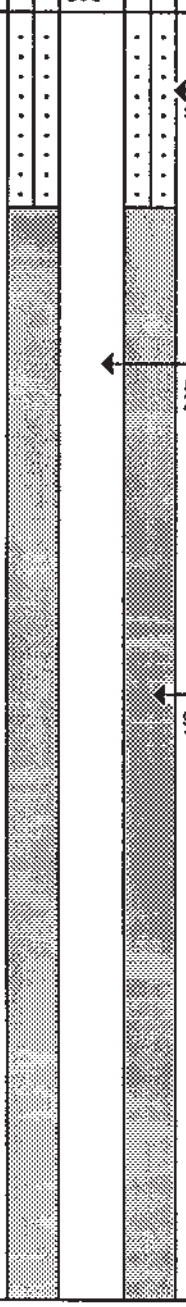
TYPE OF DRILL RIG CME-75
CASING SIZE AND TYPE 2-1/4 inch Hollow Stem Augers
OVERBURDEN SAMPLING METHOD 2 inch O.D. x 24" long split spoon
ROCK DRILLING METHOD

WATER LEVEL DATA

DATE	TIME	WATER	CASING	REMARKS
11/28/94	1230	2'	24'	Stabilized 1 hr.

DEPTH	SAMPLE BLOWS / 6"	SAMPLE NO.	SAMPLE DEPTH (FT.)	SAMPLE N-VALUE /RQD(%)	SAMPLE RECOVERY (%)	SAMPLE DESCRIPTION	Peak OVM Read (ppm)
1						See OW-7R log for overburden soil descriptions from 0.0' to 8.0 ft.	
2						[FILL] 2.4'	
3						Advanced augers to 8.0 ft. without sampling.	
4							
5						[LACUSTRINE] 6.4'	
6							
7						[UPPER TILL]	
8	5	S-2	8-10'	36	75	Dense, brown, fine to coarse SAND, some clayey Silt, trace gravel, moist.	6
9	15						
	21					[UPPER TILL]	
10	24					Advanced augers from 10.0 ft. to 22.0 ft. without sampling.	
11						(See OW-7R log for overburden soil descriptions.)	
12							
13							
14							
15						[UPPER TILL]	
16							

EQUIPMENT INSTALLATION



NOTES

LEGEND
S - Split Spoon Soil Sample
U - Undisturbed Soil Sample
C - Rock Core Sample

NOTES: Organic Vapor Meter (OVM) reading of headspace using H-Nu PI-101 photoionization detector.
ND-not detected above 1 ppm.

GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GZA GEOENVIRONMENTAL OF NEW YORK
364 NAGEL DRIVE, BUFFALO, NEW YORK
ENGINEERS AND SCIENTISTS

PROJECT
Stuart-Olver-Holtz
Rochester, New York

BORING No. DW-7S
SHEET 2 OF 2
FILE No. 19078.10
CHKD. BY

DEPTH	SAMPLE BLOWS / 6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)	SAMPLE DESCRIPTION	Peak OVM Read (PPM)	EQUIPMENT INSTALLATION LOG	NOTES
17						[UPPER TILL]			
18									
19									
20									
21									
22	24	S-2	22-22.9	>100	100	Very dense, grey fine to coarse SAND, some clayey Silt, trace gravel, moist.	ND		
23	100/5"					[UPPER TILL]			
24	13	S-3	23-24.4	>100	100	Same.	5		
25	33								
26	100/5"								
27	23	S-4	26-28	72	100	Very Dense, grey, fine to coarse SAND, clayey Silt, trace gravel, wet.	90		
28	36								
29	36					[UPPER TILL]			
30	40								
31	24	S-5	28-30	55	100	Same.	10		
	25								
	30								
	42					(Sand stratum 25.0-30.7 ft.)			
	17	S-6	30-31	28	100		20		
	28					[UPPER TILL]			
32						Bottom of boring at 31.0 ft.			
33									
34									
35									
36									

Bentonite pellet seal from 20.5 to 23.5 ft.

No.00 size sand filter pack from 23.5 to 31 ft.

No. 10 slot stainless steel well screen from 25.5 to 30 ft.

stainless steel sump 30 to 30.5 ft.

LEGEND
S - Split Spoon Soil Sample
U - Undisturbed Soil Sample
C - Rock Core Sample

NOTES:
Organic Vapor Meter (OVM) reading of headspace using H-NU PI-101 photoionization detector.
ND-not detected above 1 ppm.

GENERAL NOTES:
1) STRATIFICATION LINES REPRESE T APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GZA GEOENVIRONMENTAL OF NEW YORK
364 NAGEL DRIVE, BUFFALO, NEW YORK
ENGINEERS AND SCIENTISTS

PROJECT
Stuart-Olver-Holtz
Rochester, New York

BORING No. OW-4S
SHEET 1 OF 2
FILE No. 19078.10
CHKD. BY

CONTRACTOR Nothnagle Drilling
DRILLER Steve Lorantz
GZA GEOENVIRONMENTAL REPRESENTATIVE Dave Belaskas

BORING LOCATION N1123618.21 E751059.86
GROUND SURFACE ELEVATION 530.0 DATUM NGVD
START DATE 11/21/94 END DATE 11/21/94

TYPE OF DRILL RIG CME-75
CASING SIZE AND TYPE 6-1/4 inch Hollow Stem Augers
OVERBURDEN SAMPLING METHOD 2 inch O.D. x 24" long split spoon
ROCK DRILLING METHOD

WATER LEVEL DATA

DATE	TIME	WATER	CASING	REMARKS
Water level data was measured in completed well, see notes below.				

DEPTH	SAMPLE BLOWS / 6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)	SAMPLE DESCRIPTION	Peak OVM Read (ppm)
1						See OW-4R log for overburden soil descriptions from 0-8.0 ft.	
2							
3							
4							
5							
6						[FILL] 6.0'	
8	4	S-1	8-10	16	75	Very stiff, reddish brown CLAY & SILT, trace fine Sand, moist.	
9	6						
10	10					[LACUSTRINE]	
10	11						
11						Advanced augers to 14.0' without sampling.	
12							
13							
14							
14	4	S-2	14-16	15	75	Very stiff, reddish-brown, CLAY & SILT, some fine Sand, moist. [LACUSTRINE] 14.8'	
15	6						
15	9					[UPPER TILL]	
16	10						
16	1	S-3	16-18	5	50	Medium grey CLAY & Silt and fine to coarse SAND, moist to wet.	ND

EQUIPMENT INSTALLATION LOG

- Concrete surface seal 0 - 2.5 ft.
- 4 inch O.D. flush couple black steel riser to 15 ft.
- Cement bentonite grout 2.5 - 11 ft.
- Bentonite pellets 11 - 14 ft.
- No. 00 size Sand filter pack from 14 - 25.5 ft.

NOTES

LEGEND
S - Split Spoon Soil Sample
U - Undisturbed Soil Sample
C - Rock Core Sample

NOTES: Organic Vapor Meter (OVM) reading of headspace using H-Nu PI-101 photoionization detector.
ND-not detected above 1ppm.

GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GZA GEOENVIRONMENTAL OF NEW YORK
364 NAGEL DRIVE, BUFFALO, NEW YORK
ENGINEERS AND SCIENTISTS

PROJECT
Stuart-Olver-Holtz
Rochester, New York

BORING No. OW-4S
SHEET 2 OF 2
FILE No. 19078.10
CHKD. BY GJK

DEPTH	SAMPLE BLOWS / 6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)	SAMPLE DESCRIPTION	(1) Peak OVM Read (PPM)	EQUIPMENT INSTALLATION LOG	NOTES
17	2					[UPPER TILL]	ND		
	3								
	6								
18	2	S-4	18-20	7	75	Loose, grey, fine to coarse SAND, trace Gravel, wet.			
	4						ND		
19	3								
	8							#10 Slot Stainless Steel Screen 15-24.5 ft.	
20	2	S-5	20-22	30	70	Same.			
	12						ND		
21	18								
	28								
22	5	S-6	22-24	38	75	Same, moist to wet.			
	27					[UPPER TILL] 22.6'	ND		
23	11					Dense, grey, fine to coarse SAND, little Clayey Silt, moist to wet.			
	17								
24	17	S-7	24-25.5	>100	100	[LOWER TILL] Same, moist, grey Sand seam at 24.6'.			
	40						ND	stainless steel sump 24.5 - 25 ft.	
25	100/6"								
26						Bottom of boring at 25.5'			
27									
28									
29									
30									
31									
32									
33									
34									
35									
36									

LEGEND
S - Split Spoon Soil Sample
U - Undisturbed Soil Sample
C - Rock Core Sample

NOTES: (1) Organic Vapor Meter (OVM) reading of headspace using H-Nu PI-101 photoionization detector. ND=not detected above 1 ppm.

GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GZA GEOENVIRONMENTAL OF NEW YORK
364 NAGEL DRIVE, BUFFALO, NEW YORK
ENGINEERS AND SCIENTISTS

PROJECT
Stuart-Olver-Holtz
Rochester, New York

BORING No. OW-3S
SHEET 1 OF 2
FILE No. 19078.10
CHKD. BY

CONTRACTOR Nothnagle Drilling
DRILLER Steve Lorantz
GZA GEOENVIRONMENTAL REPRESENTATIVE Dave Belaskas

BORING LOCATION
GROUND SURFACE ELEVATION DATUM
START DATE 11/4/94 END DATE 11/4/94

TYPE OF DRILL RIG CME-75
CASING SIZE AND TYPE 6-1/4 inch Hollow Stem Augers
OVERBURDEN SAMPLING METHOD 2-1/4" O.D. x 24" long split spoon
ROCK DRILLING METHOD

WATER LEVEL DATA

DATE	TIME	WATER	CASING	REMARKS
11/4/94	1115	10'	24'	Stabilized 0.5 hrs.

DEPTH	SAMPLE BLOWS / 6"	SAMPLE NO.	SAMPLE DEPTH (FT.)	SAMPLE N-VALUE /RQD(%)	SAMPLE RECOVERY (%)	SAMPLE DESCRIPTION	Peak OVM Read (ppm)
1						See OW-3R log for overburden soil descriptions from 0.0' to 14.0' ft.	
2							
3							
4							
5						[FILL] 4.7'	
6						[LACUSTRINE]	
7							
8							
9							
10							
11							
12							
13						[LACUSTRINE]	
14						Advanced augers to 14.0 ft. without sampling.	
	1	S-1	14-16	2	100	Soft, brown, SILTY CLAY, wet.	ND
15	1						
	1					[LACUSTRINE]	
16	1						
	1	S-2	16-18	2	100	...grades little fine to coarse SAND.	ND

EQUIPMENT
I STALLAT ON
LOG

- 6 inch protective casing
- Concrete surface seal 0 to 2.5 ft.
- Cement/bentonite grout from 2.5 to 13 ft.
- 4 inch O.D. flush couple, black steel riser to 18 ft.
- Bentonite pellet seal from 13 to 16 ft.

NOTES

LEGEND
S - Split Spoon Soil Sample
U - Undisturbed Soil Sample
C - Rock Core Sample

NOTES: Organic Vapor Meter (OVM) reading of headspace using H-Nu PI-101 photoionization detector.
ND-not detected above 1 ppm.

GENERAL NOTES: 1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

GZA GEOENVIRONMENTAL OF NEW YORK
364 NAGEL DRIVE, BUFFALO, NEW YORK

ENGINEERS AND SCIENTISTS

PROJECT
Stuart-Olver-Holtz
Rochester, New York

BORING No. OW-3S
SHEET 2 OF 2
FILE No. 19078.10
CHKD. BY

DEPTH	SAMPLE BLOWS / 6"	NO.	DEPTH (FT.)	N-VALUE /RQD(%)	RECOVERY (%)	SAMPLE DESCRIPTION	Peak OVM Read (PPM)	EQUIPMENT INSTALLATION LOG	NOTES
17	1								
	1					[LACUSTRINE] 17.8 ft.			
	1								
18	2	S-3	18-20	5	40	Loose, brown, fine to coarse SAND, little Clayey Silt, trace Gravel, wet.	8.0		
	2								
19	3								
	2					[UPPER TILL]			
20	4	S-4	20-22	13	75	grades medium dense.	ND		
	6					(Sand Stratum 17.8 to 22.5 ft.)			
21	7								
	10								
22	15	S-5	22-23.8	98	60	[UPPER TILL] 22.5'			
	45					Very dense, brown, fine to coarse Sand, some Clayey Silt, trace Gravel, moist.	1.2		
23	53								
	100/3"					[LOWER TILL]			
24						Bottom of boring at 23.8 ft.			
25									
26									
27									
28									
29									
30									
31									
32									
33									
34									
35									
36									

No.00 size sand filter pack from 16 to 24 ft.

No. 10 slot stainless steel well screen from 18 to 22.5 ft.

stainless steel sump from 22.5 to 23 ft.

LEGEND
S - Split Spoon Soil Sample
U - Undisturbed Soil Sample
C - Rock Core Sample

NOTES:
Organic Vapor Meter (OVM) reading of headspace using H-NU PI-101 photoionization detector.
ND-not detected above 1 ppm.

GENERAL NOTES: 1) STRATIFICATION LINES REPRESE T APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS WERE MADE.

Drilling Log

IT CORPORATION
A Member of the IT Group

Monitoring Well B-4/PZ-1

Project SOH — Owner Metalade
Location Henrietta, NY — Proj. No. 784222
Surface Elev. ____ Total Hole Depth 40.8 ft. Diameter ____
Top of Casing ____ Water Level Initial ____ Static ____
Screen: Dia 2 in. Length 15 ft. Type/Size ____
Casing: Dia 2 in. Length 8.5 ft. Type ____
Fill Material ____ Rig/Core ____
Drill Co. SJB Method HSA
Driller A. Morris Log By T. Maynard Date 05/25/00 Permit # ____
Checked By ____ License No. ____

See Site Map For Boring Location

COMMENTS:

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / Blow Count / % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0						0-4': Augered to 4'.
2						
4		4.9	4-5-2-7 70%		OL	4-6': Tan, dry clay, dense.
6		2.2	11-15-17-10 70%			6-8': Same as above.
8		NA				8-10': Shelby tube crushed, no recovery.
10		102	7-7-9-14 90%		OL	10-12': Tan, clay, dry, dense, last 3" brown, silty sand (equal parts), wet.
12		101	7-7-10-7 80%		SM	12-14': Brown/tan, clay to ~12.8', grades to brown, silty sand (equal parts), wet.
14		NA				14-16': Shelby tube.
16		3.4	10-14-11-16 50%		SM / GM	16-18': Brown, wet, silty sand top 4", brown, moist, silty sand, little gravel, trace cobble, dense, Till.
18		NA	30-50/.3 0%			18-20': No recovery.
20		NA				20-22': Shelby tube #2.
22		6.0	21-20-24-27 20%		SM	22-24': Brown, silty sand (equal parts), grades to silt, little sand.
24						

Drilling Log

IT CORPORATION
A Member of the IT Group

Monitoring Well **B-4/PZ-1**

Project *SOH* Owner *Metalade*
Location *Henrietta, NY* Proj. No. *784222*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / Blow Count / % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
24						24-26': Spoon refusal on rock.
		NA	50/0 0%			
26						26-28': Brown, moist, silty sand, little gravel, trace cobble, very dense, Till.
		0.8	50/.4			
28						28-30': Same as above.
		1.1	50/.4		GM	
30						30-32': Same as above.
		1.3	21-47-41-49			
32						32-34': No recovery (sluff).
		NA	50/.4 0%			
34						34-36': Same as above.
		NA	48-45-48-49 0%			
36						36-38': Brown, moist, silty sand, little gravel, trace cobble, very dense, Till.
		NA	25-17-7-12 20%			
38						38-40': Same as above.
		NA	50/.4 15%		GM	
40						40-42': Same as above, weathered shale at 40.8'.
		NA	50/.3 10%			
42						
44						
46						
48						
50						
52						
54						
56						

Drilling Log

IT CORPORATION
A Member of the IT Group

Monitoring Well B-1/PZ-3

Project SOH — Owner Metalade
Location Henrietta, NY — Proj. No. 784222
Surface Elev. ____ — Total Hole Depth 37.7 ft. — Diameter ____
Top of Casing ____ — Water Level Initial ____ — Static ____
Screen: Dia 2 in. — Length 15 ft. — Type/Size ____
Casing: Dia 2 in. — Length 6.5 ft. — Type ____
Fill Material ____ — Rig/Core ____
Drill Co. SJB — Method HSA
Driller A. Morris — Log By T. Maynard — Date 05/24/00 — Permit # ____
Checked By ____ — License No. ____

See Site Map For Boring Location

COMMENTS:

Shelby to be collected. 0–30" from ground surface.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / Blow Count / % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0						0–4': Augered to 4'.
2						
4		0.0	7-12-14-18 100%		OL	4–6': Brown/tan, dry, clay, medium dense.
6		0.3	98%		SP	6–8': Brown, dry–moist w/depth, medium grained sand, some silt, little coarse sand, fine gravel, trace clay.
8		NA				8–10': Shelby tube crushed, no recovery.
10		NA				10–12': Same as above.
12		6.3	0-15-21-27 80%			12–14': Brown, wet, silty sand, some gravel, little medium–coarse grained sand, trace cobble.
14		4.3	50/.4 35%			14–16': Brown, wet, silty sand, little gravel, trace cobble, dense, Till.
16		0.03	0-50/.3 20%		GM	16–18': Brown, wet, silty sand, little gravel, trace cobble, very dense, Till.
18		0.0	27-50/.2 10%			18–20': Brown, wet, silty sand, little gravel, trace cobble, very dense, Till.
20		NA				20–22': Shelby tube crushed, no recovery.
22		NA	50/0 0%			22–24': No recovery (spoon refusal on boulder).
24					GM	

Drilling Log

IT CORPORATION
A Member of the IT Group

Monitoring Well B-1/PZ-3

Project SOH Owner Metalade
Location Henriette, NY Proj. No. 784222

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / Blow Count / % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
24						24–26': Brown, wet, silty sand, little gravel, trace cobble, very dense.
26		2.0	50–50/.3 35%		GM	26–28': No recovery.
28		NA	50/0 0%			28–30': Brown, moist, silty sand, little gravel, trace cobble, very dense, trace medium sand.
30		5.5	25–50/.2		GM	30–32': Auger refusal at ~30', refusal on rock.
32		NA				32–34': No recovery.
34		NA	50/.1 0%			34–37.7': No recovery.
36		NA	50/.1 0%			
38						Auger refusal at 37.7'.
40						
42						
44						
46						
48						
50						
52						
54						
56						

APPENDIX E - MEMORANDUM FOR ELIMINATION OF SURFACE SOIL EXCAVATION FROM REMEDY

New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau E, 12th Floor
625 Broadway, Albany, New York 12233-7017
Phone: (518) 402-9814 • **Fax:** (518) 402-9819
Website: www.dec.ny.gov

Joe Martens
Commissioner

MEMORANDUM

To: Mike Cruden, Chief, Bureau E

Thru: Joseph White, Chief, Section C, Bureau E

From: Vivek Nattanmai, Section C, Bureau E

Re: Minor change in remedy. Stuart Olver Holtz Site, Site No. 828079, Monroe County, Town of Henrietta

Date: November 21, 2014

The purpose of this memo is to document a minor change to the remedy for this site for insertion into the project file and the basis for the change.

One of the remedial components included in the 1997 ROD and was retained in the 2005 ESD was to excavate the on-site and off-site surface soils that are above standards, criteria and guidance (SCGs) value and dispose off-site. Re-grade and restore the excavated areas.

An evaluation was made in 2014 for the surface soil removal. The evaluation was based on the data obtained during the RI and the pre-design investigation. Refer to attached figures for the sample locations. During 1996 RI, three on-site surface soil samples (SS-1 thru SS-3), three off-site surface soil samples (SS-4 thru SS-6) and two off-site sediment samples (SED-2 and SED-3) were collected. The off-site surface soil samples were collected along Commerce Drive and West Henrietta Road. In November 2000, a total of fifteen off-site surface soil samples (DD-1 thru DD-15) were collected in the same area where the off-site sediment samples were obtained during the 1996 RI. The following samples SED-3, SS-3 thru SS-6 and DD-4, DD-8, DD-9 and DD-13 had PAH (benzo-a-pyrene, benzo-a-fluoranthene and benzo-a-anthracene) concentration above the Part 375 commercial cleanup standards. Refer to the attached tables for individual concentration of contaminants found in each sample. Also attached is a figure along with photos of corresponding locations indicated in the figure.

The following were considered during the evaluation of soil removal action:

1. The off-site surface soil samples (SS-4 thru SS-6) had PAH contamination with a maximum concentration of 30 ppm of BaP. This indicates that PAH is prevalent in background samples surrounding the site because most of the areas in this

commercial/industrial neighborhood are paved with asphalt (containing PAHs) for parking and/or transportation.

2. The contaminants of concern at the site are chlorinated compounds attributable to past activities at the site. The PAH contamination found off-site and some on-site samples were not contributed from the past activities at the site other than paving and sealing of asphalt surfaces.

3. None of the subsurface soil samples collected from soil borings and test pits detected PAH contamination exceeding SCGs. This indicates that the surface soil contamination was contributed from the paved areas at and around the site and not from the past site industrial activities.

4. Generally, in urban areas where most of the ground surface is covered with asphalt parking lots and roadways, the potential for PAH contamination on surface soil is ubiquitous in these areas and is very high compared to suburban areas.

5. There are power lines running through the off-site surface soil locations where excavation would need to be conducted. These areas located north and west of the Ruby Gordon store. The presence of the power lines will greatly complicate the excavation since the power company will have strict procedures for working in this area. As an example, at the Polymer Applications site (ID #915044), efforts were abandoned to excavate near the power lines because the requirements were very stringent.

6. If the surface soils were removed for PAH contamination, it is likely that these areas would be re-contaminated from surface water runoff from around and adjacent asphalt paved areas. Thus making the cleanup effort and money a waste of resources.

7. Most of the site was covered with the facility building and with pavement and very little surface soil remains at the site. So, the consequential nature of any remaining contamination is slight. Additionally the foreseeable use of the site is commercial which will again introduce pavement and asphalt over the site containing PAHs.

Based on this evaluation, off-site surface soils contaminated with PAH shall not be removed as part of the remedial action to be implemented at the site. This memorandum shall be attached to the Final Engineering Report with all the sample locations along with the laboratory results for each individual locations.

APPENDIX F – EXCAVATION WORK PLAN (EWP)

F-1 NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination, the site owner or their representative will notify the NYSDEC. Table F -1 includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in Appendix B.

Table F-1: Notifications*

George Momberger, Central Office NYSDEC Representative	(518) 402-9814/ george.momberger@dec.ny.gov
Scott Foti, NYSDEC Regional HW Engineer	(585) 226-5454/ scott.foti @dec.ny.gov
Kelly Lewandowski, NYSDEC Site Control	(518) 402-9543/ kelly.lewandowski@dec.ny.gov

* Note: Notifications are subject to change and will be updated as necessary.

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent of excavation, plans/drawings for site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated and any work that may impact an engineering control;
- A Dust Control Plan, Community Air Monitoring Plan, Stormwater Pollution Prevention Plan (if necessary), and appropriate data and description for backfill materials, soil re-use (if proposed) and truck transportation routes:
- A summary of environmental conditions anticipated to be encountered in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work;
- A summary of the applicable components of this EWP;
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120;

- A copy of the contractor's health and safety plan (HASP), in electronic format, if it differs from the HASP provided in Appendix K of this SMP;

- Identification of disposal facilities for potential waste streams; and

- Identification of sources of any anticipated backfill, along with all required chemical testing results.

F-2 SOIL SCREENING METHODS

Visual, olfactory and instrument-based (e.g. photoionization detector) soil screening will be performed by a qualified environmental professional during all excavations into known or potentially contaminated material (remaining contamination). Soil screening will be performed when invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the COC.

Based on previous environmental data and screening results, soils will be segregated into material that requires off-site disposal and material that requires testing to determine if the material can be reused on-site. Further discussion of off-site disposal of materials and on-site reuse is provided in Section F-7 of this Appendix.

F-3 SOIL STAGING METHODS

Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales or other sedimentation controls will be used as needed near catch basins, surface waters and other discharge points.

Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by the NYSDEC.

F-4 MATERIALS EXCAVATION AND LOAD-OUT

A qualified environmental professional or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material.

The owner of the property and remedial party (if applicable) and its contractors are responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the site.

Loaded vehicles leaving the site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYS Department of Transportation (DOT) requirements (and all other applicable transportation requirements).

A truck wash will be operated on-site, as appropriate. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the site until the activities performed under this section are complete Truck wash waters will be collected and disposed of off-site in an appropriate manner.

Locations where vehicles enter or exit the site shall be inspected daily for evidence of off-site soil tracking.

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the site are clean of dirt and other materials derived from the site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials.

F-5 MATERIALS TRANSPORT OFF-SITE

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

Truck transport routes shall be described in the pre-excavation notification (see Section F-1). All trucks loaded with site materials will exit the vicinity of the site using only these approved truck routes. The proposed route shall take into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport; and (g) community input.

Trucks will be prohibited from stopping and idling in the neighborhood outside the project site.

Egress points for truck and equipment transport from the site will be kept clean of dirt and other materials during site remediation and development.

Queuing of trucks will be performed on-site in order to minimize off-site disturbance. Off-site queuing will be prohibited.

F-6 MATERIALS DISPOSAL OFF-SITE

All material excavated and removed from the site will be treated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including 6 NYCRR Part 360) and Federal regulations. If disposal of material from this site is proposed for unregulated off-site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. Unregulated off-site management of materials from this site will not occur without formal NYSDEC approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, construction and demolition (C&D) recycling facility, etc. Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6 NYCRR Part 360-1.2. Material that does not meet Unrestricted Use soil cleanup-up objectives (SCOs) is prohibited from being taken to a New York State recycling facility (6 NYCRR Part 360-16 Registration Facility).

F-7 MATERIALS REUSE ON-SITE

All details for materials reuse on-site shall be included in the pre-excavation notification (See Section F-1). "Reuse on-site" means reuse on-site of material that originates at the site and which does not leave the site during excavation activities. Material reuse on-site will comply with the requirements of NYSDEC DER-10 Section 5.4(e)4. The following topics shall be covered:

- Procedures for determining if reuse is appropriate including, but not limited to, sampling and analytical methods and stockpile segregation schemes for reuse.

- Size of stockpiles and there location shown on a figure.

The qualified environmental professional will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material does not remain on-site. Contaminated on-site material, including historic fill and contaminated soil, that is acceptable for reuse on-site will be placed below the demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

Any demolition material proposed for reuse on-site will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-site will not be performed without prior NYSDEC approval. Organic

matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the site will not be reused on-site.

F-8 FLUIDS MANAGEMENT

All liquids to be removed from the site, including but not limited to, excavation dewatering, decontamination waters and groundwater monitoring well purge and development waters, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the site, and will be managed off-site, unless prior approval is obtained from NYSDEC.

Discharge of water generated during large-scale construction activities to surface waters (i.e. a local pond, stream or river) will be performed under a State Pollutant Discharge Elimination System (SPDES) permit.

F-9 BACKFILL FROM OFF-SITE SOURCES

All the methods for the import, handling and placement of backfill material from off-site shall be described in the pre-excavation notification (See Section F-1). The requirements for backfill used at the site should be consistent with the backfill requirements provided in DER-10 (e.g., Appendix 5). The following topics shall be covered:

- Sources of backfill material
- DOT Certification
- Pre-backfill sampling and analysis
- Appropriate chemical quality standards for use on-site
- Applicability of the groundwater protection SCOs
- Applicability of the ecological resources SCOs
- Stockpile procedures for imported backfill material

All materials proposed for import onto the site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP prior to receipt at the site. A Request to Import/Reuse Fill or Soil form, which can be found at http://www.dec.ny.gov/regulations/67386.html, will be prepared and submitted to the NYSDEC project manager allowing a minimum of 5 business days for review.

Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the site.

All imported soils will meet the backfill and cover soil quality standards established in 6 NYCRR 375-6.7(d) and the soil cleanup objectives for the protection of groundwater established in 6 NYCRR-6.5, unless otherwise directed by the NYSDEC. Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this site, will not be imported onto the site without prior approval by NYSDEC. Solid waste will not be imported onto the site.

Trucks entering the site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

F-10 STORMWATER POLLUTION PREVENTION

For large excavations, a Stormwater Pollution Prevention Plan that conforms to the requirements of the NYSDEC Division of Water guidelines and NYS regulations shall be submitted with the pre-excavation notification (See Section F-1).

Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by the NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

F-11 EXCAVATION CONTINGENCY PLAN

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition.

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes [Target Analyte list (TAL) metals; Target Compound List (TCL) volatiles and semi-volatiles, TCL pesticides and polychlorinated biphenyls (PCBs)], unless the site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the Periodic Review Report.

F-12 COMMUNITY AIR MONITORING PLAN

A Community Air Monitoring Plan shall be included with the pre-excavation notification. Guidance for the plan can be obtained in Appendix 1A of DER-10, Generic Community Air Monitoring Plan (CAMP). At a minimum the CAMP shall include:

- Details of the perimeter air monitoring program;
- Action levels to be used;
- Methods for air monitoring;
- Analytes measured and instrumentation to be used; and
- A figure showing the locations of air monitoring instrumentation based on generally prevailing wind conditions, with a note indicating that the exact locations to be monitored on a given day will be established based on the daily wind direction.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

F-13 ODOR CONTROL PLAN

If nuisance odors are identified at the site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the remedial party's Remediation Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-site disposal; (e) use of chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

F-14 DUST CONTROL PLAN

The following text should be included somewhere in this section:

A dust suppression plan shall be included in the pre-excavation notification that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of a dedicated on-site water truck for wetting vehicle traffic areas. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways and vehicle traffic areas to provide a clean and dust-free road surface.
- On-site vehicle traffic areas will be limited in total area to minimize the area required for water truck sprinkling.

F-15 OTHER NUISANCES

A plan for rodent control will be developed and utilized by the contractor prior to and during site clearing and site grubbing, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

APPENDIX G – QUALITY ASSURANCE PROJECT PLAN

STUART OLVER HOLTZ SITE

TOWN OF HENRIETTA

MONROE COUNTY, NEW YORK

NYSDEC SITE NUMBER: 828079

QUALITY ASSURANCE PROJECT PLAN

Prepared For:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

625 Broadway

Albany, New York 12233

Prepared By:

URS CORPORATION

257 West Genesee Street, Suite 400

Buffalo, New York 14202-2657

MARCH 2019

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1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) is designed to provide an overview of quality assurance/quality control (QA/QC) procedures and programs which will be adhered to during the post-remediation long-term monitoring activities, as described in the Site Management Plan (SMP) (URS, 2019). The QAPP will identify specific methods and QA/QC procedures for chemically testing environmental samples collected from the Stuart Olver Holtz Site, located in the Town of Henrietta, Monroe County, New York (NYSDEC Site Number: 828079).

2.0 PROJECT/SITE DESCRIPTION

A complete project description of the Stuart Olver Holtz site is provided in Section 2.0 of the Stuart Olver Holtz Site Management Plan (URS, 2019).

3.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

The Project QA Officer is responsible for verifying that corporate QA procedures are followed and will ensure that all project deliverables undergo a thorough QA review by senior staff members who are qualified and experienced in appropriate disciplines.

The Project Manager will be responsible for technical and financial management of the project, and for overall coordination and review of component work activities. The Project Manager will serve as the initial and primary contact with the client throughout the project and will be responsible for successful implementation of the field QA/QC activities. The Project Manager may delegate a portion of the tasks required for successful implementation of the work plans to a qualified individual who will be on site during the investigation (e.g., the Onsite Environmental Scientist). This person will work under the direction of the Project Manager and will be responsible for implementing applicable QC procedures in the field and verifying that all other field personnel adhere to these procedures and perform all activities as described in the project work plans.

The onsite Environmental Scientist is responsible for verifying that QA procedures are followed in the field so that valid, representative samples are collected. The onsite Environmental Scientist also will be responsible for coordinating the activities of all personnel involved with implementing the project in the field, and will be in daily communication with the Project Manager. This person will verify that all field work is carried out in accordance with the approved project plans.

The Project Chemist is responsible for verifying that the analytical laboratory adheres to the QA/QC requirements specified in this QAPP. The Project Chemist will be the point-of-contact for the Laboratory Project Manager and will be in continual contact to verify that all efforts are being made to perform sample analyses in a manner such that the resulting data will be of sufficient quality for its intended purpose.

The analytical laboratory to be used for the analysis of groundwater and leachate shall hold applicable New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certifications for the analyses to be performed. The QA Manager of the laboratory will be responsible for performing project-specific audits and for overseeing the quality control data generated. Also, the Laboratory Project Manager will be in daily communication with the Project Chemist.

4.0 DATA QUALITY OBJECTIVES

4.1 Background

Data quality objectives (DQOs) are qualitative and quantitative statements, which specify the quality of data required to support the post-remediation groundwater monitoring activities at the Stuart Olver Holtz site. The project DQOs focus on the identification of the end use of the data to be collected. The project DQOs will be achieved utilizing definitive data categories, as outlined in *Guidance on Systematic Planning Using the Data Quality Objectives Process,* EPA QA/G-4, EPA/240/B-06/001, USEPA (February 2006). The definitive data are generated using rigorous analytical methods, such as approved United States Environmental Protection Agency (USEPA) reference methods. The analytical methods to be used are presented in Table 4-1.

The project DQOs for data collected during the site management of the Stuart Olver Holtz site activities are to:

- Perform annual sampling and analysis of groundwater.
- Sample quantitation limits for groundwater must not exceed NYSDEC, Division of Water Technical and Operational Guidance Series (TOGS 1.1.1), *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations,* June 1998, or NYSDEC's Groundwater Sampling for Emerging Contaminants, July 2018, as listed on Table 4-2.

4.2 QA Objectives For Chemical Data Measurement

For the definitive data category described above, the data quality indicators of precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS) will be measured during offsite chemical analysis.

4.1.1 Precision

Precision examines the distribution of the reported values about their mean. The distribution of reported values refers to how different the individual reported values are from the average reported value. Precision may be affected by the natural variation of the matrix or contamination within that matrix, as well as by errors made in the field and/or laboratory handling procedures. Precision is evaluated using analyses of a laboratory matrix spike/matrix spike duplicate (MS/MSD) and field duplicate samples, which not only provide a measure of sampling

TABLE 4-1
SUMMARY OF SAMPLES TO BE COLLECTED AND ANALYTICAL PARAMETERS
STUART OLVER HOLTZ SITE
NYSDEC SITE NUMBER: 828079

Parameter	Analytical Method [1,2]	Number of Samples	Field QA/QC Samples					Estimated Total No. of Samples per event
			Field Duplicates [3]	MS/MSD Pairs [3]	Rinsate Blanks [4]	Field Blanks [5]	Trip Blanks [6]	
I. Groundwater Samples - Annual Monitoring (per event)								
TCL VOCs	8620C	25	2	2	1	0	1	33
1,4-Dioxane [7]	8260 SIM or 8270D SIM	25	2	2	1	0	1	33
PFAS (21 compound list) [8]	EPA 537 (modified)	25	2	2	1	2	0	34

Notes:
1. NYSDEC Analytical Services Protocol (ASP), July 2005 Edition.
2. EPA Document #: EPA/600/R-08/092
3. Field duplicates and MS/MSD pairs will be collected at a frequency of 1 per 20 samples per matrix per sampling event.
4. Rinsate blanks will be collected for PFAS at the rate of 1 per type of equipment used. For VOCs and 1,4-dioxane, rinse blanks will be collected only when non-dedicated (e.g. , non-disposable) equipment are used at a frequency of 1 per sampling equipment type per sampling event.
5. Field blanks will be collected at the rate of 1 per sample shipment for PFAS.
6. Trip blanks will be collected at the rate of one per sample shipment for aqueous VOCs only
7. Method 8270D SIM is the preferred method for the analysis of 1,4-dioxane. Method 8260C SIM may be used if sample volume is limited
8. Based on NYSDEC's Groundwater Sampling for Emerging Contaminants, July 2018. Should the NYSDEC update this list prior to sampling, the compound list analyzed by the laboratory should be updated

MS/MSD - Matrix Spike/Matrix Spike Duplicate
PFAS - Per- and Polyfluoroalkyl Substances
QA/QC Quality Assurance/Quality Control
TCL Target Compound List
VOCs - Volatile Organic Compounds

TABLE 4-2
GROUNDWATER QUANTITATION LIMITS AND AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES
STUART OLVER HOLTZ SITE
NYSDEC SITE NUMBER: 828079

Matrix: Groundwater			
Analytical Method [1]	**Parameter**	**PQL (µg/L)***	**Criteria [3] (µg/L)**
SW8260C Volatile Organic Compounds (VOCs)	1,1,1-Trichloroethane	5	5
	1,1,2,2-Tetrachloroethane	5	5
	1,1,2-Trichloro-1,2,2-trifluoroethane	5	5
	1,1,2-Trichloroethane	1	1
	1,1-Dichloroethane	5	5
	1,1-Dichloroethene	5	5
	1,2,4-Trichlorobenzene	5	5
	1,2-Dibromo-3-chloropropane	1	0.04
	1,2-Dibromoethane	1	0.006
	1,2-Dichlorobenzene	3	3
	1,2-Dichloroethane	1	0.6
	1,2-Dichloropropane	1	1
	1,3-Dichlorobenzene	3	3
	1,4-Dichlorobenzene	3	3
	2-Butanone	5	50
	2-Hexanone	5	50
	4-Methyl-2-pentanone**	5	NS
	Acetone	5	50
	Benzene	1	1
	Bromodichloromethane	5	50
	Bromoform**	5	50
	Bromomethane	5	5
	Carbon disulfide	5	60
	Carbon tetrachloride	5	5
	Chlorobenzene	5	5
	Chloroethane	5	5
	Chloroform	5	7
	Chloromethane	5	5
	cis-1,2-Dichloroethene	5	5
	cis-1,3-Dichloropropene	1	0.4
	Cyclohexane	5	NS
	Dibromochloromethane	5	50
	Dichlorodifluoromethane	5	5
	Ethylbenzene	5	5
	Isopropylbenzene	5	5
	Methyl acetate	5	NS
	Methyl tert-butyl ether**	5	10
	Methylcyclohexane	5	NS
	Methylene chloride	5	5
	Styrene**	5	5
	Tetrachloroethene	5	5
	Toluene	5	5
	trans-1,2-Dichloroethene	5	5
	trans-1,3-Dichloropropene	1	0.4
	Trichloroethene	5	5
	Trichlorofluoromethane	5	5
	Vinyl chloride	2	2
	Xylene (Total)	5	5

TABLE 4-2
GROUNDWATER QUANTITATION LIMITS AND AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES
STUART OLVER HOLTZ SITE
NYSDEC SITE NUMBER: 828079

Matrix: Groundwater				
Analytical Method [1]	**Parameter**		**PQL (µg/L)**	**Criteria [4] (µg/L)**
SW8260C or SW8270D SIM	1,4-Dioxane		0.20	1
Analytical Method [2]	**Parameter**		**PQL (ng/L)**	**Criteria [4] (ng/L)**
EPA 537 (modified)	Perfluorobutanesulfonic acid	(PFBS)	2.0	100
	Perfluorohexanesulfonic acid	(PFHxS)	2.0	100
	Perfluoroheptanesulfonic acid	(PFHpS)	2.0	100
	Perfluorooctanessulfonic acid	(PFOS)	2.0	10
	Perfluorodecanesulfonic acid	(PFDS)	2.0	100
	Perfluorobutanoic acid	(PFBA)	2.0	100
	Perfluoropentanoic acid	(PFPeA)	2.0	100
	Perfluorohexanoic acid	(PFHxA)	2.0	100
	Perfluoroheptanoic acid	(PFHpA)	2.0	100
	Perfluorooctanoic acid	(PFOA)	2.0	10
	Perfluorononanoic acid	(PFNA)	2.0	100
	Perfluorodecanoic acid	(PFDA)	2.0	100
	Perfluoroundecanoic acid	(PFUA/PFUdA)	2.0	100
	Perfluorododecanoic acid	(PFDoA)	2.0	100
	Perfluorotridecanoic acid	(PFTriA/PFTrDA)	2.0	100
	Perfluorotetradecanoic acid	(PFTA/PFTeDA)	2.0	100
	Perfluroroctanesulfonamide	(FOSA)	2.0	100
	6:2 Fluorotelomer sulfonate	(6:2 FTS)	20	100
	8:2 Fluorotelomer sulfonate	(8:2 FTS)	20	100
	N-methyl perfluorooctanesulfonamidoacetic acid	(N-MeFOSAA)	20	100
	N-ethyl perfluorooctanesulfonamidoacetic acid	(N-EtFOSAA)	20	100

Notes:
1. NYSDEC Analytical Services Protocol (ASP), July 2005 Edition.
2. EPA Method 537. Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid
3. NYSDEC Division of Water Technical and Operational Guidance Series (TOGS 1.1.1),*Ambient Water Quality Standards and Guidance*
4. New York Drinking Water Quality Council Recommended Screening Limits, January 2019
* -Lab dependent.
** - Compounds do not diffuse across passive diffusion bag (PDB) membrane. Results are not usable when sampling with PDBs
ng/L - nanograms per liter (parts per trillion)
NS - No Standard or Guidance Value
PQL - Practical Quantitation Limit
SIM - Selected Ion Monitoring
µg/L - Micrograms per Liter (parts per billion)

and analytical precision, but also indicate analytical precision through the reproducibility of the analytical results. Relative percent difference (RPD) is used to evaluate precision. RPD criteria for all analyses being performed as part of this work assignment shall meet method-specific QC requirements.

4.1.2 Accuracy

Accuracy measures the analytical bias in a measurement system. Sources of error are the sampling process, field contamination, preservation, handling, sample matrix, sample preparation, and analysis techniques. Sampling accuracy may be assessed by evaluating the results of rinse and trip blanks. These data help to assess the potential contamination contribution from various outside sources. The laboratory objective for accuracy is to equal or exceed the accuracy demonstrated for the applied analytical methods on samples of the same matrix. The percent recovery criterion is used to estimate accuracy based on recovery in the MS/MSD and laboratory control sample (LCS)/matrix spike blank (MSB). The MS/MSD analyses, which will give an indication of matrix effects that may be affecting target compounds, are also a good gauge of method efficiency. Surrogate recovery results will also be measured. Acceptable criteria for all analyses being performed as part of this work assignment shall meet method-specific QC requirements.

4.1.3 Representativeness

Representativeness expresses the degree to which the sample data accurately and precisely represent the characteristics of a population of samples, parameter variations at a sampling point, or environmental conditions. Representativeness is a qualitative parameter, which is most concerned with the proper design of the sampling program or subsampling of a given sample. Objectives for representativeness are defined for sampling and analysis tasks and are a function of the investigative objectives. The sampling procedures, as described in Sections 2.0, 3.0, and 4.0 of the Stuart Olver Holtz Field Sampling Plan (FSP) have been selected with the goal of obtaining representative samples for the media of concern.

4.1.4 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. An objective for this program is to produce data with the greatest possible degree of comparability. This goal is achieved through using standard techniques to collect and analyze representative samples, and reporting analytical results in

appropriate units. Complete field documentation using standardized data collection forms will support the assessment of comparability. Comparability is limited by the other parameters (e.g., precision, accuracy, representativeness, and completeness), because only when precision and accuracy are known can data sets be compared with confidence. For data sets to be comparable, it is imperative that the analytical methods and procedures be explicitly followed.

4.1.5 Completeness

Completeness is defined as a measure of the amount of valid data obtainable from a measurement system compared to the amount that was expected to be obtained under normal conditions. To meet project needs, it is important that appropriate QC procedures be maintained to verify that valid data are obtained. For the data generated, a goal of 90% is required for completeness (or usability) of the analytical data. If this goal is not met, then NYSDEC and contractor project personnel will determine whether the deviations may cause the data to be rejected, and what further actions, if any, need to be taken.

4.1.6 Sensitivity

Sensitivity, as it pertains to analytical methods/instrumentation, is defined as the lowest concentration that can be distinguished from background noise. Sensitivity is measured by method detection limit (MDL) determinations, which are performed by laboratories for each analyte and matrix following procedures specified in 40 CFR Part 136, Appendix B. The MDL is the minimum concentration of an analyte that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero. MDLs are determined by the laboratory on an annual basis.

Analytical results are typically reported down to the quantitation limit (QL), which represents the lowest point of the calibration curve, and are typically 3-10 times higher than MDLs. Analytical results reported above the MDL but below the QL are considered estimated values (qualified "J"). QLs for the parameters to be analyzed as part of this work assignment, where applicable, are presented in Table 4-2.

5.0 SAMPLING LOCATIONS AND PROCEDURES

Sampling locations and procedures are discussed in Sections 2.0, 3.0, and 4.0 of the Stuart Olver Holtz Site FSP (URS, 2018).

6.0 SAMPLE CUSTODY AND HOLDING TIMES

Proper documentation of sample collection and the methods used to control these documents are referred to as chain-of-custody procedures. Chain-of-custody procedures are essential for presenting sample analytical results as evidence in litigation or at administrative hearings held by regulatory agencies. Chain-of-custody procedures also serve to minimize loss or misidentification of samples and to ensure that unauthorized persons do not tamper with collected samples.

The procedures used in these investigations will follow the chain-of-custody guidelines of *NEIC Policies and Procedures,* prepared by the National Enforcement Investigations Center (NEIC) of the USEPA Office of Enforcement.

6.1 Custody Definitions

- Chain-of-Custody Officer - The employee responsible for oversight of all associated chain-of-custody activities is the Onsite Environmental Scientist (or his/her designee).
- Under Custody - A sample is "Under Custody" if:
  - It is in one's possession, or
  - It is in one's view, after being in one's possession, or
  - It was in one's possession and one locked it up, or
  - It is in a designated secure area.

6.2 Responsibilities

The onsite Environmental Professional will be responsible for monitoring all chain-of-custody activities and for collecting legally admissible chain-of-custody documentation for the permanent project file. The onsite Environmental Professional will be responsible for:

- Initially reviewing sample labels or tags, closure tapes, and chain-of-custody record forms. The onsite Environmental Professional shall document this review for the project file.
- Training all field sampling personnel in the methodologies for carrying out chain-of-custody and the proper use of all chain-of-custody forms and record documents.

- Monitoring the implementation of chain-of-custody procedures.
- Submit copies of the completed chain-of-custody forms to the Project Manager daily.

6.3 Chain-of-Custody

Chain-of-custody is initiated in the laboratory when the sample containers are cleaned, packed, and shipped to the site for use in the field. When the containers are received from the laboratory, they will be checked for any breach of custody including, but not limited to incomplete chain-of-custody records, broken chain-of-custody seals, or any evidence of tampering. Upon receipt of the samples, the laboratory will check for breach of custody as previously described.

6.4 Sample Containers and Holding Times

Table 6-1 identifies the analytical method, container, preservation, and holding time requirements. All holding times begin with the date/time of sample collection, except where noted otherwise in Table 6-1.

TABLE 6-1
SAMPLE CONTAINER, PRESERVATION, AND HOLDING TIME REQUIREMENTS
STUART OLVER HOLTZ SITE
NYSDEC SITE NUMBER: 828079

MATRIX/ANALYSIS	Sample Prep Method (1)	Analytical Method (2)	Sample Bottles (3)			Minimum Vol Rqd (4)	Preservation (5)	Holding Time (6)		Comment
			Type	Size	Quantity			Extraction	Analysis	
Aqueous Samples										
Target Compound List Volatile Organic Compounds (VOCs)	SW846 5030	SW846 8260C	Glass VOA vial	40 mL	2	40 mL, zero headspace	HCl to pH ≤ 2	NA	14 days	7 days unpreserved
1,4-Dioxane [7]	SW846 5030	SW846 8260C SIM	Glass VOA vial	40 mL	2	40 mL, zero headspace	HCl to pH ≤ 2	NA	14 days	7 days unpreserved
	SW846 3510C/3520C/3535	SW846 8270D SIM	Glass, Amber	1 L	2	1000 mL	None	7 days	40 days	
PFAS	EPA 537 (modified)	EPA 537 (modified)	HDPE or PP	250 mL	2	250 mL	None	14 days	28 days	

(1) Laboratory may propose alternate extraction/preparation methods, subject to NYSDOH ELAP certification.
(2) More recent versions of SW-846 methods may be used, subject to NYSDOH ELAP certification.
(3) All containers shall be certified clean and provided by the laboratory. Use of pre-preserved containers is preferred.
(4) Laboratory my require less volume if certified for low volume extraction.
(5) All samples for chemical analysis should be held at 4 degrees Celsius in addition to any chemical preservation required.
(6) Holding time for extraction from day of collection. Holding time for analysis from date of extraction or collection.
(7) Method 8270D SIM is the preferred method for the analysis of 1,4-dioxane. Method 8260C SIM may be used if sample volume is limited.
SW-846: *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods Compendium* . Third Edition, July 2014.
Method 537. *Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry*
HCl - Hydrochloric acid
HDPE - high density polyethylene
PFAS - Per- and Polyfluoroalkyl Substances
PP - Polypropylene
Rqd - required
SIM - Selected Ion Monitoring

7.0 ANALYTICAL PROCEDURES

Table 4-1 identifies the specific methods to be performed on the individual matrices. All analyses will be performed in accordance with the following documents:

- *New York State Department of Environmental Conservation Analytical Services Protocol*, July 2005 Edition.
- *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods Compendium (SW-846),* December 1996 (or most current update).
- *Method 537 - Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) Version 1.1*, EPA/600/R-08/092, September 2009.

8.0 CALIBRATION PROCEDURES AND FREQUENCY

In order to obtain a high level of precision and accuracy during sample processing procedures, laboratory instruments must be calibrated properly. Several analytical support areas must be considered so the integrity of standards and reagents is upheld prior to instrument calibration. The following sections describe the analytical support areas and laboratory instrument calibration procedures.

8.1 Analytical Support Areas

Prior to generating quality data, several analytical support areas must be considered:

Standard/Reagent Preparation - Primary reference standards and secondary standard solutions shall be obtained from National Institute of Standards and Technology (NIST), or other reliable commercial sources to verify the highest purity possible. The preparation and maintenance of standards and reagents will be accomplished per the methods referenced in Table 4-1. All standards and standard solutions are to be formally documented (i.e., in a bound logbook) and should identify the supplier, lot number, purity/concentration, receipt/preparation date, preparer's name, method of preparation, expiration date, and any other pertinent information. All standard solutions shall be validated prior to use. Care shall be exercised in the proper storage and handling of standard solutions (e.g., separating volatile standards from nonvolatile standards). The laboratory shall continually monitor the quality of the standards and reagents through well documented procedures.

Balances - The analytical balances shall be calibrated and maintained in accordance with American Society of Testing Materials (ASTM) specifications. Calibration is conducted with two Class-1 weights that bracket the expected balance use range. The laboratory shall check the accuracy of the balances daily and properly document results in permanently bound logbooks.

Refrigerators/Freezers - The temperature of the refrigerators and freezers within the laboratory shall be monitored and recorded daily. This will verify that the quality of the standards and reagents is not compromised and the integrity of the analytical samples is upheld. Appropriate acceptance ranges ($4^{o}C \pm 2^{o}C$ for refrigerators) shall be clearly posted on each unit in service.

Water Supply System - The laboratory must maintain a sufficient water supply for all project needs. The grade of the water must be of the highest quality (analyte-free) in order to

eliminate false-positives from the analytical results. Ultraviolet cartridges or carbon absorption treatments are recommended for organic analyses. Appropriate documentation of the quality of the water supply system(s) will be performed on a regular basis.

Air Supply System - The laboratory must maintain a sufficient clean (analyte free) air supply for all project needs if required. The grade of the air must be of the highest quality (analyte-free) in order to eliminate false-positives from the analytical results. Appropriate documentation of the quality of the air supply system(s) will be performed on a regular basis by the laboratory.

8.2 Laboratory Instruments

Calibration of instruments is required to verify that the analytical system is operating properly and at the sensitivity necessary to meet method established quantitation limits. Each instrument for organic analysis shall be calibrated with standards appropriate to the type of instrument and linear range established within the analytical method(s). Calibration of laboratory instruments will be performed according to methods specified in Table 4-1.

Calibration of an instrument must be performed prior to the analysis of any samples (initial calibration) and then at periodic intervals (continuing calibration) during the sample analysis to verify that the instrument is still properly calibrated. If the contract laboratory cannot meet the method-required calibration requirements, corrective action shall be taken as discussed in Section 11.0. All corrective action procedures taken by the contract laboratory are to be documented, summarized within the case narrative, and submitted with the analytical results.

9.0 INTERNAL QUALITY CONTROL CHECKS

Internal QC checks are used to determine if analytical operations at the laboratory are in control, as well as determining the effect sample matrix may have on data being generated. Two types of internal checks are performed - batch QC and matrix-specific QC procedures. The type and frequency of specific QC samples performed by the laboratory will be determined by the specified analytical method and project specific requirements. Acceptable criteria and/or target ranges for these QC samples shall meet method-specific QC requirements.

QC results, which vary from acceptable ranges shall result in the implementation of appropriate corrective measures, potential application of qualifiers, and/or an assessment of the impact these corrective measures have on the established data quality objectives. Quality control samples including any project-specific QC will be analyzed are discussed below.

9.1 Batch QC

Method Blanks - A method blank is defined as laboratory demonstrated analyte free water or solid that is carried through the entire analytical procedure. The method blank is used to determine the level of laboratory background contamination. Method blanks are analyzed at a frequency of one per analytical batch.

Matrix Spike Blank Samples - An MSB or LCS is an aliquot of demonstrated analyte free water or solid spiked (fortified) with all or a representative group of the analytes being analyzed. The MSB or LCS is a measure of precision and accuracy used to verify that the analysis being performed is in control. An MSB or LCS will be performed for each matrix as required by the analytical methods referenced in Table 4-1. Acceptable criteria and/or target ranges for these QC samples shall meet method-specific QC requirements.

9.2 Matrix-Specific QC

Matrix Spike Samples - An aliquot of sample is spiked with known concentrations of specific compounds as stipulated by the methodology. The MS/MSD samples are subjected to the entire analytical procedure in order to assess both accuracy and precision of the method for the matrix by measuring the percent recovery of each analyte and RPD between the concentrations of each analyte in the two spiked samples. The samples are used to assess matrix interference effects on the method, as well as to evaluate instrument performance. MS/MSDs are

analyzed at a frequency of one each per twenty samples, as listed in Table 4-1. Acceptable criteria and/or target ranges for these QC samples shall meet method-specific QC requirements.

9.3 Additional QC

Rinsate (Equipment) Blanks – Rinsate blanks are not required when dedicated non-disposable sampling equipment are used. A rinsate blank is a sample of laboratory demonstrated analyte-free water passed over or through the cleaned sampling equipment. A rinsate blank is used to indicate potential contamination from sample instruments used to collect and transfer samples. The water must originate from one common source within the laboratory and must be the same water used by the laboratory performing the analysis. The rinsate blank should be collected, transported, and analyzed in the same manner as the samples acquired that day. Rinsate blanks will be performed at the rate listed in Table 4-1.

Field Blanks – A field blank is used to indicate potential contamination from sample collection containers and/or from ambient sources during sample collection. The field blank is collected by pouring laboratory demonstrated analyte-free water directly into clean sample collection containers. The water must originate from one common source within the laboratory and must be the same water used by the laboratory when performing the analyses (i.e., for method blanks). Field blanks should be collected, transported, and analyzed in the same manner as the samples acquired that day. Field blanks will be performed for at the rate listed in Table 4-1.

Trip Blanks - Trip blanks are not required for non-aqueous matrices. Trip blanks are required for aqueous sampling events when volatile organics are collected. They consist of a set of sample bottles filled at the laboratory with laboratory demonstrated analyte-free water. These samples then accompany the bottles that are prepared at the laboratory into the field and back to the laboratory, along with the collected samples for analysis. These bottles are never opened in the field. Trip blanks must return to the laboratory with the same set of bottles they accompanied to the field. Trip blanks will be analyzed for volatile organics only. Trip blanks will be analyzed at the frequency stated in Table 4-1.

Field Duplicates – A field duplicate (FD) sample pair are independent samples, which are collected as close as possible to the same point in space and time. They are two separate samples taken from the same source, stored in separate containers, and analyzed independently. Field duplicates are useful in documenting the precision of the sampling process. Blind field duplicates will be collected at the frequency listed on Table 4-1. The field duplicates will be labeled so that

the laboratory cannot determine or identify the location from, which the field duplicate was collected.

10.0 CALCULATION OF DATA QUALITY INDICATORS

10.1 Precision

Precision is evaluated using results from field duplicate and/or MS/MSD analyses. The RPD between the parent sample/field duplicate or between the MS/MSD concentrations is used to evaluate precision and calculated by the following formula:

$$RPD = \left[\frac{|X_1 - X_2|}{(X_1 + X_2)/2} \right] x100\%$$

where:

X_1 = *Measured value of sample or matrix spike*

X_2 = *Measured value of duplicate or matrix spike duplicate*

RPD criteria for this project shall meet method-specific QC requirements.

10.2 Accuracy

Accuracy is defined as the degree of difference between the measured or calculated value and the true value. Analytical accuracy is expressed as the %R of a compound that has been added to the environmental sample or laboratory demonstrated analyte free matrix at known concentrations before analysis. Accuracy will be determined from MS, MSD, MSB (or LCS) samples as well as from surrogate compounds and is calculated as follows:

$$\%R = \frac{(X_s - X_u)}{K} \, x \, 100\%$$

where:

X_s - Measured value of the spike sample

X_u - Measured value of the unspiked sample

K - Known amount of spike in the sample

%R criteria for this project shall meet method-specific QC requirements.

10.3 Completeness

Completeness is calculated on a per matrix basis for the project and is calculated as follows:

$$\%\ Completeness = \frac{(N - X_n)}{N}\ x\ 100\%$$

where:

X_n - Number of invalid measurements

N - Number of valid measurements expected to be obtained

11.0 CORRECTIVE ACTIONS

Laboratory corrective actions shall be implemented to resolve problems and restore proper functioning to the analytical system when errors, deficiencies, or out-of-control situations exist at the laboratory. Full documentation of the corrective action procedure needed to resolve the problem shall be filed in the project records, and the information summarized in the analytical report case narrative. A discussion of the corrective actions to be taken is presented in the following sections.

11.1 Incoming Samples

Problems noted during sample receipt shall be documented by the laboratory. The Project Chemist (or designee) shall be contacted immediately for problem resolution. All corrective actions shall be documented thoroughly.

11.2 Sample Holding Times

If any sample extractions and/or analyses exceed method holding time requirements, the Project Chemist (or designee) shall be notified immediately for problem resolution. All corrective actions shall be documented thoroughly.

11.3 Instrument Calibration

Sample analysis shall not be allowed until all laboratory instrumentation is properly calibrated in accordance with method requirements. If any initial/continuing calibration standards exceed method QC limits, recalibration must be performed and, if necessary, samples back to the previous acceptable continuing calibration standard must be reanalyzed.

11.4 Quantitation Limits

The laboratory must meet all quantitation limits listed in Tables 4-2. If difficulties arise in achieving these limits due to a particular sample matrix, the laboratory must notify the Project Chemist for problem resolution. When any sample requires a secondary dilution due to high levels of target analytes, the laboratory must report the results from initial analyses and secondary dilution analyses. Dilution will be permitted only to bring target analytes within the linear range of calibration. If samples are analyzed at a dilution with no target analytes detected, the Project

Chemist (or designee) will be immediately notified so that appropriate corrective actions can be initiated.

11.5 Method QC

All QC, including blanks, matrix spikes, matrix spike duplicates, surrogate recoveries, matrix spike blank samples, and other method-specified QC samples, shall meet the requirements of the methods referenced in Table 4-1 and Table 4-2. Failure of method-required QC will result in the possible qualification of all affected data. If the laboratory cannot find any errors, the affected sample(s) shall be reanalyzed within method-required holding times to verify the presence or absence of matrix effects. If matrix effect is confirmed, the corresponding data shall be flagged accordingly using the flagging symbols and criteria as defined by the data validation guidelines identified in Section 12.2. If matrix effect is not confirmed, then the entire batch of samples may have to be reanalyzed. The Project Chemist shall be notified as soon as possible to discuss possible corrective actions should unusually difficult sample matrices be encountered.

11.6 Calculation Errors

All analytical results must be reviewed systematically for accuracy prior to submittal. If upon data review, calculation and/or reporting errors exist, the laboratory will be required to reissue the analytical data report with the corrective actions appropriately documented in the case narrative.

12.0 DATA REDUCTION, VALIDATION, AND USABILITY

For all analyses, NYSDEC ASP Category B deliverable requirements will be employed for documentation and reporting of all data. The standard NYSDEC Data Package Summary will be completed by the analytical laboratory and included in the deliverable data packages. In addition, analytical results will be reported in a NYSDEC EQuIS electronic data deliverable (EDD) format.

12.1 Data Reduction

Laboratory analytical data are first generated in raw form at the instrument. These data may be either graphic or printed tabular form. Specific data generation procedures and calculations are found in each of the referenced methods. Analytical results must be reported consistently. Data for aqueous samples will be reported in concentrations of micrograms per liter (µg/L) or milligrams per liter (mg/L).

Identification of all analytes must be accomplished with an authentic standard of the analyte traceable to NIST or other reliable commercial sources. Individuals experienced with a particular analysis and knowledgeable of requirements will perform data reduction.

12.2 Data Validation

Data validation is a systematic procedure of reviewing a body of data against a set of established criteria to provide a specified level of assurance of validity prior to its intended use.

Data validation will be performed by the Project Chemist and/or environmental chemists under his/her supervision. All analytical samples collected will receive a limited data review. This review will include a review of holding times; completeness of all required deliverables; review of QC results (surrogates, spikes, duplicates, and instrument calibration data blanks) to determine if the data is within the protocol-required limits and specifications; a determination that all samples were analyzed using established and agreed upon analytical protocols; an evaluation of the raw data to confirm the reported sample results; and a review of laboratory data qualifiers. The methods referenced in Table 4-1 as well as the general guidelines presented in the most current USEPA documents will be used to aide the chemist during the data review:

- *Validating Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry, SW-846 Method 8260B & 8260C,* SOP No. HW-24, Revision 4, October 2014 (or most current);
- *Data Review and Validation Guidelines for Perfluoroalkyl Substances (PFASs) Analyzed Using EPA Method 537*. EPA 910-R-18-001. November 2018

12.3 Data Usability

A Data Usability Summary Report (DUSR) will be prepared in accordance with NYSDEC Division of Environmental Remediation *DER-10 Technical Guidance for Site Investigation and Remediation, Appendix 2B, Guidance for Data Deliverables and the Development of Data Usability Summary Reports*, dated May 2010, and will describe the samples and the analytical parameters. Data deficiencies, analytical protocol deviations, and quality control problems are identified and their effect on the data will be discussed. The DUSR, which will be submitted to the NYSDEC, will also include recommendations on resampling/reanalysis.

13.0 PREVENTIVE MAINTENANCE

The laboratory is responsible for maintaining its analytical equipment. Preventive maintenance is provided on a regular basis to minimize down-time and the potential interruption of analytical work. Instruments are maintained in accordance with the manufacturer's recommendations. If instruments require maintenance, only trained laboratory personnel or manufacturer-authorized service specialists are permitted to do the work. Maintenance activities will be documented and kept in permanent logs. These logs will be available for inspection by auditing personnel.

14.0 PERFORMANCE AND SYSTEM AUDITS

Audits are evaluations of both field and laboratory QC procedures, and are performed before or shortly after systems are operational. Performance audits are conducted by introducing control samples into the data production process. These control samples may include performance evaluation samples, or field samples spiked with known amounts of analytes.

System audits are onsite qualitative inspections and reviews of the quality assurance system used by some part of or the entire measurement system. They provide a quantitative measure of the quality of the data produced by one section or the entire measurement process. The audits are performed against a set of requirements, which may be a quality assurance project plan or work plan, a standard method, or a project statement of work. The primary objective of the systems audits is to verify that the QA/QC procedures are being followed.

14.1 Performance and External Audits

In addition to conducting internal reviews and audits, as part of its established quality assurance program, the laboratory is required to take part in regularly scheduled performance evaluations and laboratory audits from state and federal agencies. They are conducted as part of the certification process and to monitor the laboratory performance. The audits also provide an external quality assurance check of the laboratory, and provide reviews and information on the management systems, personnel, standard operating procedures, and analytical measurement systems. Acceptable performance on evaluation samples and audits is required for certification and accreditation. The laboratory shall use the information provided from these audits to monitor and assess the quality of its performance. Problems detected in these audits shall be reviewed by the QA Manager and Laboratory Management, and corrective action shall be instituted as necessary.

14.2 Systems/Internal Audits

As part of its Quality Assurance Program, the Laboratory Quality Assurance Manager shall conduct periodic checks and audits of the analytical systems. The purpose of these is to verify that the analytical systems are working properly, and that personnel are adhering to established procedures and documenting the required information. These checks and audits also assist in determining or detecting where problems are occurring.

The QA Manager periodically will submit laboratory control samples. These samples will serve to check the entire analytical method, the efficiency of the preparation method, and the analytical instrument performance. The results of the control samples are reviewed by the QA Manager who reports the results to the analyst and the Laboratory Director. When a problem is indicated, the QA Manager will assist the analyst and laboratory management in determining the reason and in developing solutions. The QA Manager will also recheck the systems as required.

REFERENCES

Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Quality Assurance Manual, Final Copy , Revision I, October 1989.

National Enforcement Investigations Center of USEPA Office of Enforcement. *NEIC Policies and Procedures.* Washington: USEPA.

New York State Department of Environmental Conservation (NYSDEC), 1998. Division of Water Technical and Operational Guidance Series (TOGS 1.1.1), *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitation*. June.

NYSDEC. 2005. Analytical Services Protocol, July.

NYSDEC. 2010. Division of Environmental Remediation, *DER-10 Technical Guidance for Site Investigation and Remediation, Appendix 2B, Guidance for Data Deliverables and the Development of Data Usability Summary Reports*. May.

USEPA. 1987. *A Compendium of Superfund Field Operations Methods,* EPA/540/P-87-001, (OSWER Directive 9355.0-14). December. Cincinnati, OH: USEPA.

USEPA. 1996. *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods Compendium (SW-846)*. December.

USEPA. 2006. *Guidance on Systematic Planning Using the Data Quality Objectives Process,* EPA QA/G-4, EPA/240/B-06/001. February.

USEPA. 2009. *Method 537. Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) Version 1.1*. EPA/600/R-08/092. September.

USEPA. 2014. *Validating Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry, SW-846 Method 8260B & 8260C*, SOP No. HW-24, Revision 4. Region II. October.

USEPA. 2018. *Data Review and Validation Guidelines for Perfluoroalkyl Substances (PFASs) Analyzed Using EPA Method 537*. EPA 910-R-18-001. November

APPENDIX H - SITE MANAGEMENT FORMS

Summary of Green Remediation Metrics for Site Management

Site Name: _____Site Code: _____
Address: _____City: _____
State: _____ Zip Code: _____County: _____

Initial Report Period (Start Date of period covered by the Initial Report submittal)
Start Date: _____

Current Reporting Period
Reporting Period From: _____To: _____

Contact Information
Preparer's Name: _____ Phone No.: _____
Preparer's Affiliation: _____

I. Energy Usage: Quantify the amount of energy used directly on-site and the portion of that derived from renewable energy sources.

	Current Reporting Period	**Total to Date**
Fuel Type 1 (e.g. natural gas (cf))		
Fuel Type 2 (e.g. fuel oil, propane (gals))		
Electricity (kWh)		
Of that Electric usage, provide quantity:		
Derived from renewable sources (e.g. solar, wind)		
Other energy sources (e.g. geothermal, solar thermal (Btu))		

Provide a description of all energy usage reduction programs for the site in the space provided on Page 3.

II. Solid Waste Generation: Quantify the management of solid waste generated on-site.

	Current Reporting Period (tons)	**Total to Date (tons)**
Total waste generated on-site		
OM&M generated waste		
Of that total amount, provide quantity:		
Transported off-site to landfills		
Transported off-site to other disposal facilities		
Transported off-site for recycling/reuse		
Reused on-site		

Provide a description of any implemented waste reduction programs for the site in the space provided on Page 3.

III. Transportation/Shipping: Quantify the distances travelled for delivery of supplies, shipping of laboratory samples, and the removal of waste.

	Current Reporting Period (miles)	**Total to Date (miles)**
Standby Engineer/Contractor		
Laboratory Courier/Delivery Service		
Waste Removal/Hauling		

Provide a description of all mileage reduction programs for the site in the space provided on Page 3. Include specifically any local vendor/services utilized that are within 50 miles of the site.

IV. Water Usage: Quantify the volume of water used on-site from various sources.

	Current Reporting Period (gallons)	**Total to Date (gallons)**
Total quantity of water used on-site		
Of that total amount, provide quantity:		
Public potable water supply usage		
Surface water usage		
On-site groundwater usage		
Collected or diverted storm water usage		

Provide a description of any implemented water consumption reduction programs for the site in the space provided on Page 3.

V. Land Use and Ecosystems: Quantify the amount of land and/or ecosystems disturbed and the area of land and/or ecosystems restored to a pre-development condition (i.e. Green Infrastructure).

	Current Reporting Period (acres)	**Total to Date (acres)**
Land disturbed		
Land restored		

Provide a description of any implemented land restoration/green infrastructure programs for the site in the space provided on Page 3.

Description of green remediation programs reported above (Attach additional sheets if needed)
Energy Usage:
Waste Generation:
Transportation/Shipping:
Water usage:
Land Use and Ecosystems:
Other:

CERTIFICATION BY CONTRACTOR
I, _____ (**Name**) do hereby certify that I am _____ (**Title**) of the Company/Corporation herein referenced and contractor for the work described in the foregoing application for payment. According to my knowledge and belief, all items and amounts shown on the face of this application for payment are correct, all work has been performed and/or materials supplied, the foregoing is a true and correct statement of the contract account up to and including that last day of the period covered by this application. _____ **Date** **Contractor**

STUART OLVER HOLTZ SITE
NYSDEC SITE NO. 828079
INSPECTION FORM

GENERAL INFORMATION

Date:		**Inspector:**	
Weather:		**Signature:**	
Temperature:		**Company:**	
Season (circle one): Winter Spring Summer Fall			

SITE INSPECTION LOG SHEET*

Evidence of Site-Wide Disturbance(s)	Yes No	**Description of Disturbance(s)**	
Evidence of Surface Soil Disturbance(s)	Yes No	**Description of Disturbance(s)**	
Evidence of Excavation	Yes No	**Description of Excavation**	
Evidence of Building Construction	Yes No	**Description of Building Construction**	
Evidence of Change in Site Use	Yes No	**Description of New/Additional Site Use**	
Comments:			

* If answering Yes, attach map showing locations and any other information as required.

STUART OLVER HOLTZ SITE
NYSDEC SITE NO. 828079
INSPECTION FORM

WELL INSPECTION LOG SHEET (provide for each well inspected)

Well ID:		**Time:**	

Area	**Item Inspected**	**Description of Condition (attach additional sheet if needed)**	**Additional Maintenance Needed?**	**Inspector's Initials**
Exterior	**Casing and collar**		**Yes / No**	
	Well label		**Yes / No**	
	Lock and Cover		**Yes / No**	
Interior	**Well cap**		**Yes / No**	
	Well riser		**Yes / No**	
	Annular space		**Yes / No**	
Comments:				

APPENDIX I – FIELD SAMPLING PLAN

STUART OLVER HOLTZ SITE

TOWN OF HENRIETTA

MONROE COUNTY, NEW YORK

NYSDEC SITE NUMBER: 828079

FIELD SAMPLING PLAN

Prepared for:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

625 Broadway

Albany, New York 12233

Prepared by:

URS CORPORATION

257 West Genesee Street, Suite 400

Buffalo, New York 14202

MARCH 2019

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FIELD SAMPLING AND ANALYSIS PLAN

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1.0 INTRODUCTION

This Field Sampling Plan (FSP) is designed to provide detailed step-by-step procedures for the field activities performed during the long-term groundwater monitoring program at the Stuart Olver Holtz site (Site) located in the Town of Henrietta, Monroe County, New York (Figure 1). It will serve as the field procedures manual to be strictly followed by all project personnel. Adherence to these procedures will ensure the quality and defensibility of the field data collected. In addition to the field procedures outlined in this document, all personnel performing field activities must do so in compliance with: (1) the Quality Assurance/Quality Control (QA/QC) measures outlined in the existing Quality Assurance Project Plan; (QAPP); (2) the appropriate Health and Safety guidelines found in the existing Health and Safety Plan (HASP); and (3) the scope of work outlined in the Site Management Plan (SMP) (URS, 2019). Groundwater monitoring locations are shown on Figure 2. A groundwater level measurement will be recorded at each sampled monitoring well. Table 1 lists, on an annual basis, which monitoring wells will undergo water level measurements and water quality sampling.

2.0 GROUNDWATER SAMPLING PROCEDURES

2.1 Water Level Monitoring Procedures

Summary: Determination of groundwater depths in monitoring wells is necessary to calculate required purge volumes prior to groundwater sampling and to make potentiometric surface maps. Water levels in monitoring wells scheduled to be sampled during the field work will be measured using an electronic interface probe/water level indicator. During each monitoring event, water levels to be used to generate potentiometric groundwater surface contour maps will be collected from all sampled monitoring wells. Water level measurement procedures are presented below.

Procedure:

1) Clean the water level probe and the lower portion of cable following standard decontamination procedures and test water level meter to ensure that the batteries are charged.
2) Lower the probe slowly into the monitoring well until the solid audible alarm indicates water.
3) Read the depth to the nearest hundredth of a foot from the graduated cable using the V-notch on the riser pipe as a reference.
4) Repeat the measurement for confirmation and record the water level.
5) Lower the probe slowly to the bottom of the monitoring well. Record the bottom depth of the well.
6) Remove the probe from the well slowly, drying the cable and probe with a clean paper towel.
8) Replace the well cap.
9) Decontaminate the water level meter if additional measurements are to be taken.

2.2 Monitoring Well Sampling Procedures Using Passive Diffusion Bag Samplers

Samples collected using Passive Diffusion Bag Samplers (PDBS) are for the analysis of volatile organic analytes (VOAs) only. Information can be found in United States Geological Survey (USGS) *User's Guide For Polyethylene-Based Passive Diffusion Bag Samplers To Obtain Volatile Organic Compounds Concentrations In Wells*. Additional information can also be found in *Technical and Regulatory Guidance for Using Polyethylene Diffusion Bag Samplers to Monitor Volatile Organic Compounds in Groundwater,* Interstate Technology and Regulatory Council (ITRC) 2004 Publication (http://www.itrcweb.org/guidancedocument.asp?TID=12).

Samples collected using PDBS will be labeled and shipped following procedures outlined in Sections 3 and 4 of this Field Sampling Plan. If PDBS are not appropriate for sampling groundwater at a monitoring well location, HydraSleeve (Section 2.3) or conventional (Section 2.4) sampling procedures should be used.

1) The well cover will be unlocked and carefully removed to avoid having any foreign material enter the well. The interior of the riser pipe will be monitored for organic vapors using a PID. If a reading of greater than 5 parts per million (ppm) is recorded, the well will be vented until levels are below 5 ppm before continuing.
2) Using an oil/water interface, measure the water level, referenced to the top of the riser pipe.
3) Determine if non-aqueous phase liquid (NAPL) is present. If present, PDBS may not be an appropriate sampling procedure.
4) The end of the probe will be decontaminated between wells. Well data are to be recorded in the field notebook and on the PDBS Field Log (see Attachment B for an example).

2.2.1 PDBS Groundwater Sampling Procedures

PDBS have proven effective in detecting VOCs in ground water. The function of the PDBS is based on the Law of Diffusion, which states that compounds tend to migrate from areas of higher concentration to areas of lower concentration. PDBS are suspended within the screened interval or open borehole of a ground water monitoring well for a minimum of 2 weeks. VOCs in the well water will diffuse across the semi-permeable polyethylene membrane into the distilled water of the PDBS until the concentration inside and outside of the bag reach equilibrium. It is necessary to consider several factors that affect the ability of PDBS to obtain a representative sample. These factors include well construction, lithology, contaminants of concern, the potential for contaminant stratification, and vertical flow within the well. As with low-flow samples, PDBS' represent a point sample. Contamination migrating above or below the targeted depth interval will not be detected.

PDBS are made of low-density polyethylene (typically 4 mil thickness), filled with laboratory grade (ASTM Type II) distilled water and sealed at both ends. The PDBS' are typically about 18 to 20 inches in length and can hold from 220 ml to 350 ml of water. Because water quality parameters (e.g., pH, conductance, etc.) do not transfer through the PDBS membrane, water quality measurements are not required. (Source: New Jersey Department of

Environmental Protection (NJDEP) Field Sampling Procedures Manual, Chapter 5, Section 5.2.1.11 - Passive Diffusion Bag Samplers, August 2005).

2.2.1.1 Procedures for PDBS Use (Deployment/Retrieval):

PDBS can be obtained pre-filled, or they can be obtained empty and filled off site or in the field prior to deployment. In both cases, the PDBS must be filled with laboratory grade analyte free distilled water before deployment. As with all ground water sampling approaches, plastic sheeting should be laid out on the ground surface at the sampling location to provide a contaminant free surface to assemble and prepare the PDBS' for deployment. PDBS can be placed inside a protective polyethylene mesh sleeve to protect the bags against abrasion and tears during deployment and recovery. If a PDBS tears during deployment or retrieval, another PDBS must be prepared and deployed for a 2-week equilibration period.

An equipment blank (EB) is collected at the time of deployment. The EB is collected by emptying a pre-filled PDBS into VOA vials or by filling a PDBS using water provided by the laboratory and then emptying into VOA vials. The EB is collected on the day the last PDBS for the sampling event has been deployed and must be sent to the laboratory on the day it is collected.

2.2.1.2 Weights and Deployment Lines (Tethers)

Since PDBS are neutrally buoyant, they must be attached to a weighted line to keep them positioned at the desired sampling depth over time. Weight construction should be stainless steel, which can be reused after thorough decontamination. Teflon® coated stainless-steel wire or synthetic rope may be used as the deployment line (tether) if it is low stretch, non-buoyant, and sufficiently strong to support the weight of the PDBS(s). An example of acceptable tether would be uncolored (white) 90- pound, 3/16-inch braided polyester. Teflon® coated stainless steel wire may be reused in another well after thorough decontamination. The tether and PDBS must not contact NAPL during deployment or retrieval, which could lead to carry-over of contamination and degradation of the polyethylene membrane. Under no circumstances can a PDBS be re-used at another location.

Before PDBS deployment, measure the total well depth and compare it with the reported depth to the bottom of the well from as-built well construction diagrams to evaluate whether sediment has accumulated in the bottom of the well. Record the data on a PDBS field log (Figure 3). Wells with depths or construction details vastly different from the as-built diagrams may

indicate that there is a problem with the well or that the well is misidentified. In these cases, the well designation and location should be verified to find the source of the error.

The preferred deployment method is to have a weight attached to the end of the tether and position the line so that the weight rests on the bottom of the well with the line taut above it. The PDBS are attached directly to the tether at a depth interval corresponding to the targeted sample location within the screened interval. As previously mentioned, sufficient weight must be added to the PDBS tether to counterbalance the neutral buoyancy of the PDBS. This is particularly important when deploying multiple PDBS.

2.2.1.3 Measuring and Attaching the PDBS to the Tether

Measure the placement of the PDBS on the tether from the bottom of well by calculating the distance from the bottom of the well (or top of the sediment) up to the desired interval in the well where the PDBS will be suspended. For example, for a well with 5 feet of screen at the bottom of the well and the screen completely below the water table, measure up 2 feet from the bottom of the weighted tether and position the midpoint of the PDBS bag there. For wells that are screened across the water table, PDBS must be placed at least 2 feet below the water column in the well.

Provide attachment points in the tether using loops in the line at appropriate points or movable stainless steel clamps with rings. Attach the PDBS to the tether with cable ties, stainless steel clamps, or simply tie in a way that prevents slipping of the PDBS bag along the wire/rope. Care should be taken to eliminate sharp points or ends of clamps or cable ties to decrease the potential for PDBS punctures or tears.

PDBS' must not be exposed to air after the bags are placed into the well (i.e., during the equilibration period). The sampler shall review historical water level data, if available, so that the PDBS will not be exposed to air (i.e., above the water table) during the equilibration period due to fluctuations in ground water elevations. Since VOCs can diffuse into and out of the PDBS, VOCs from ground water that diffuse into the bag could diffuse out of the top of the bag into air. If this condition were observed prior to retrieval of the PDBS, it would be necessary to re-suspend the PDBS at least 2 feet below the water table and wait for an additional 2-week equilibration period. If available, historical water level data from site monitoring wells and National Weather Service regional rainfall data should provide an indication of water table fluctuations.

2.2.1.4 Equilibration Time

The PDBS is positioned at the desired depth interval in the well by attachment to a weighted tether and left to equilibrate with the water in the well for a minimum of 2 weeks. Many VOCs equilibrate within 48 to 72 hours; however, the minimum recommended equilibration period for PDBS is 2 weeks. This is to allow the formation water and well water to re-stabilize after deployment of the PDBS', and to allow diffusion between the stabilized well water and the PDBS to occur.

2.2.1.5 Sample Retrieval

After the 2-week equilibration period (discussed above), the PDBS is/are removed upward and out of the well using the tether. If multiple PDBS' are being retrieved from a single well, care must be taken to ensure the vertical placement of the sample within the well is accurately recorded on each sample vial and in the field-sampling logbook. When retrieving multiple PDBS from a single well, only one PDBS should be removed and processed at a time. The remaining PDBS should be suspended in the well until they can be processed to isolate them from exposure to ambient weather conditions and direct sunlight.

Once a PDBS is removed from the tether, the sample water must be immediately transferred into appropriate pre-labeled, VOC vials. All sampling information (e.g. site, well designation, sample ID, date and time of collection, depth interval, etc.) must be recorded before removing the next PDBS from the tether. If a protective outer covering is used during deployment, remove the PDBS bag and dry excess water from the bag using a clean paper towel.

PDBS water can be transferred to VOC sample vials using several available options depending on the equipment vendor and selected materials. One option is to carefully cut the PDBS bag at the top corner using decontaminated scissors or razor blade and carefully decant the sample into the VOC vials. Some PDBS models are equipped with a removable end cap that can be removed to allow the sample to be gently poured into VOC sample vials. Other equipment options include a small lab-cleaned straw that has a sharpened end. The straw is used to pierce the bag at the bottom and the sample is decanted though the straw into sample vials. In all cases, care must be taken when transferring the sample since the bags themselves are not rigid and can bend or collapse during handling.

It is acceptable to leave PDBS (without cuts or punctures) or tethers in the well so that PDBS can be retrieved and deployed for additional sampling. Record well sampling information in the field notebook and on the PDBS Field Log (Attachment B).

2.2.1.6 Quality Control

For groundwater samples collected using a PDBS, the pre-deployment equipment blank is a PDBS that is stored and transported with the PDBS from the time of sampler/tether construction to the time of deployment in the wells. An unused PDBS is filled with the same water used to fill the PDBS being deployed. An aliquot of water is collected from this unused PDBS into laboratory supplied certified analyte-free VOA vials. A pre-deployment equipment blank for groundwater samples will be collected at the rate of 1 per sampling event. The pre-deployment equipment blank(s) must be shipped to the laboratory within 24 hours of collection (i.e., date PDBS are deployed).

Trip blanks are not required when shipping only PDBS equipment blanks (i.e., pre-deployment equipment blank) samples to the laboratory.

2.2.1.7 Field Sampling Equipment

PDBS supplies, including custom made tethers can be obtained from the following vendors.

EON Products, Inc.
3230 Industrial Way, SW Suite B
Snellville, GA 30039
800-474-2490
www.eonpro.com
Instructions for the use of PDBS' from EON Products are provided in Attachment C.

ALS - Columbia
1565 Jefferson Road, Building 300, Suite 360
Rochester, NY 14623
1.800.695.7222
http://www.caslab.com/Passive-Diffusion-Sampling/

2.3 Monitoring Well Sampling using HydraSleeve Sampling Procedures

1) The well cover will be carefully removed to avoid having any foreign material enter the well.

2) Using an electronic interface probe, the water level below top of casing will be measured. The depth of the well will be measured to determine the volume of water in the well. The end of the probe will be decontaminated between wells. The depth to bottom of the well will be recorded from the V notch in the top of the casing.

To collect a representative groundwater sample without purging, the well usually needs to be allowed time to equilibrate after placement of the sampler. When any device is lowered into a well, some mixing of the water column occurs. The diameter of the device, how tightly it fits in the well, and its shape greatly affect the degree of mixing. The flat cross-section of the empty HydraSleeve minimizes the disturbance to the water column as the sampler is lowered into position, reducing the time needed for the well to return to equilibrium. Using a SpeedBag HydraSleeve eliminates equilibration time for most wells. There are several methods for holding a HydraSleeve in position as the well equilibrates. Most HydraSleeves and SuperSleeves are 3-5 feet long. The weight will go to the bottom of well but sample will come from upper half of well; because the sleeve will be suspended ~3-5 feet from the bottom up. A HydraSleeve Field Manual is provided in Attachment B. Because the well is not purged, water quality measurements (e.g., pH, conductance, etc.) are not required. Additional information can be found in *Protocol for Use of Five Passive Samplers to Sample for a Variety of Contaminants in Groundwater*, ITRC, February 2007 (https://www.itrcweb.org/GuidanceDocuments/DSP-5.pdf).

2.3.1 Deployment Methods

2.3.1.1 Top Down Deployment (most common)

Measure the correct amount of suspension line needed to "hang" the top of the HydraSleeve(s) at the desired sampling depth (in most cases, this will be at the bottom of the sampling zone). The upper end of the tether can be connected to the well cap to suspend the HydraSleeve at the correct depth until activated for sampling. *Note: For deep settings, it may be difficult to accurately measure long segments of suspension line in the field. Using an optional calibrated tether (marked sequentially in feet) will help solve this problem.*

2.3.1.2 Bottom Deployment

Sound the well to determine the exact depth. Lower the weighted HydraSleeve into the well and let it rest on the bottom. The HydraSleeve sits suspended off the bottom and typically sample will be collected from the area directly above the top of the sleeve at this point without adjustment. Attach the suspension line to the top of the well to suspend it at this depth. (It is often easier to measure a few feet from the bottom of the well up to the sample point, than it is to measure many feet from the top of the well down.)

2.3.1.3 Bottom Anchor

Determine the exact depth of the well. Calculate the distance from the bottom of the well to the desired sampling depth. Attach an appropriate length anchor line between the weight and the bottom of the sampler and lower the assembly until the weight rests on the bottom of the well, allowing the top of the sampler to float at the correct sampling depth.

2.3.1.4 Top Weighted Assemblies

Using a top weight for short water columns will compress the HydraSleeve into the bottom of the well. This allows for sample collection to begin at the lowest point possible. It provides for more saturated screen above the check valve from which to collect the sample. Insert the top weighted assembly into the well. Allow it to reach the bottom. Be sure to leave enough slack (at least the length of the sampler) so that there is enough tether to allow the HydraSleeve to compress over a period of time. The length of time and compression area is determined by the type and size of HydraSleeve being used.

2.3.2 Sample Collection

The HydraSleeve must move upward at a rate of one foot per second or faster (about the speed a bailer is usually pulled upward) for water to pass through the check valve into the sample sleeve. For most applications the HydraSleeve will fill within the length of the sampler. For example, a 30-inch HydraSleeve needs a total upward movement of 30 inches to fill. There are times when the total upward distance the check valve must travel to fill the sample sleeve is longer. When using a smaller sleeve diameter in a larger diameter well the pull-to-fill distance will be longer. The upward motion can be accomplished using one of several variations of cycling or long continuous pull or any combination that moves the check valve the required distance

within the saturated screen zone in the open position. To ensure the Hydrasleeve is full and check valve closed the following cycling method is recommend.

2.3.2.1 Continuous Pull

Pull the HydraSleeve continuously upward from its starting point at a constant 1 to 2 feet per second until full. This method is analogous to coring the water column from the bottom up. *Note: When using this method, the screen interval must be long enough so the sampler fills before exiting the top of the screen. Fill rate is dependent on the sleeve being sized for the well diameter. 2-inch sleeves for 2-inch wells. 4-inch sleeves for 4-inch wells.*

2.3.2.2 Sample Discharge

The best way to remove a sample from the HydraSleeve with the least amount of aeration and agitation is with the short plastic discharge tube. First, squeeze the full sampler just below the top to expel water resting above the flexible check valve. Fold the stiffeners over to make sure all of the water is off the top of the check valve. Then, push the pointed discharge tube through the outer polyethylene sleeve as desired but at least 3-4 inches below the white reinforcing strips. *Note: For some contaminants (VOC's/sinkers) the best location for discharge is the middle to bottom of the sampler.* This would be representative of the deeper portion of the well screen. Discharge the sample into the desired container. Raising and lowering the bottom of the sampler or pinching the sample sleeve just below the discharge tube will control the flow of the sample. The sample sleeve can also be squeezed, forcing fluid up through the discharge tube, similar to squeezing a tube of toothpaste.

2.3.2.3 Field Sampling Equipment

HydraSleeve supplies, including custom made tethers can be obtained from the following vendor:

EON Products, Inc.
3230 Industrial Way, SW Suite B
Snellville, GA 30039
800-474-2490
www.eonpro.com
Instructions for the use of HydraSleeves from EON Products are provided in Attachment C.

2.4 Monitoring Well Sampling using Low-Flow Sampling Procedures

2.4.1 Well Purging Procedures

Well purging will be completed using the low-flow purging technique as follows:

1) The well cover will be carefully removed to avoid having any foreign material enter the well.

2) Using an electronic interface probe, the water level below top of casing will be measured. The depth of the well will be measured to determine the volume of water in the well. The end of the probe will be decontaminated between wells. The depth to bottom of the well will be recorded from the V notch in the top of the casing.

3) Calibrate field instruments [e.g., pH, dissolved oxygen (DO), oxidation-reduction potential (ORP), specific conductance, temperature, and turbidity].

4) Start the flow rate low and maintain it between 100 and 500 ml/min, optimally at a rate where the water level remains stable.

5) Purge the required water volume (i.e., until stabilization of pH, DO, ORP, temperature, specific conductivity, and turbidity) using a low-flow pump (e.g., peristaltic pump) and dedicated high density polyethylene (HDPE) tubing. During purging, it is permissible to by-pass the flow cell until the groundwater has cleared. New dedicated tubing will be used for each well.

6) Purge the well until the water quality parameters have stabilized. Collect groundwater parameters every five minutes until the well has stabilized. The respective measurements of the parameters must fall within the stated range for three consecutive readings. If stability or five well volumes has been achieved for the parameters listed below, the well can be sampled. The stabilization criteria are: DO ± 10% full-scale range; ORP ± 10%; specific conductivity ± 3% full-scale range; pH ± 0.10 pH unit; temperature ± 0.2°C, and turbidity ± 10% if greater than 50 nephelometric turbidity unit (NTU).

7) Purging of three well volumes is not necessary if the indicator parameters are stable. However, a minimum of thirty minutes of purging is required before sampling, even if the parameters are stable. At the start of purging, it is permissible to by-pass the flow cell until the groundwater has cleared.

8) Well purging data are to be recorded on the Low Flow Groundwater Purging/Sampling Log (Figure 3).

2.4.2 Low-Flow Groundwater Sampling Procedures

The following groundwater sampling procedures will be used for monitoring wells after purging has been conducted:

Procedures

1) After well purging is completed, the flow cell will be disconnected and drained and a sample will be collected into the appropriate laboratory supplied containers from the well tubing, without changing the purge rate.

2) Direct water flow toward the inside wall of the sample container to minimize volatilization. Fill volatile sample containers so no headspace (air bubbles) is present. If containers are pre-preserved, do not overfill sample containers. Note if effervescence is observed.

3) All sample bottles will be labeled in the field using a waterproof permanent marker. They will be filled in the order: VOCs, SVOCs, pesticides, herbicides, and metals.

4) Samples will be collected into laboratory-provided sample bottles (containing required preservatives) and placed on ice in coolers for processing (preservation and packing) prior to shipment or delivery to the analytical laboratory. A chain-of-custody (COC) record (Figure 4) will be initiated. The analytical laboratory will provide certified analyte-free sample bottles.

6) After the required sample containers have been filled, remove dedicated/disposable HDPE tubing. Decontaminate reusable sampling equipment with laboratory grade soap and distilled water and rinse with distilled water before reassembling.

7) Well sampling data are to be recorded in the field notebook and on the Well Purging Log.

8) Groundwater samples will be placed on ice, and delivered to the laboratory either by the sampler, laboratory courier or common courier (e.g. FedEx) under COC control. The volume of sample required, bottle type and required quality assurance/quality control (QA/QC) may be found in the QAPP, Table 6-1. Groundwater samples will be collected for the parameters referenced in the QAPP, Table 4-1 (i.e., VOCs, SVOCs, pesticides, chlorinated herbicides and metals). Samples must be received by the laboratory less than 24 hours after collection.

9) If samples are shipped via common courier, the sample cooler must be sealed with a custody seal.

Any observations of sheen, blebs, free-phase product, staining or coating of the sampling equipment, odor, etc. that were made during sampling of groundwater are to be included in the groundwater sample collection log.

3.0 SAMPLE LABELING

Summary: In order to prevent misidentification and to aid in the handling of environmental samples collected during the field investigation, the following procedures will be used:

Procedure: Each container will have the following information placed on the laboratory supplied sample label:

- Site name
- Sample identification
- Project number
- Collection Date/time
- Sampler's initials
- Analysis required and preservatives

Sample identification numbers will be assigned based on the well identification and will be the same for all parameters collected. For example, a groundwater sample extracted from monitoring well MW-03 would have the same identifier assigned, MW-03 for VOCs, metals, etc.

Field duplicate samples will be assigned a unique identification alphanumeric code that specifies the data of collection, the letters DUP (for field duplicate) and an ascending number that records the number of duplicate samples collected that day. For example, the first field duplicate collected on November 17, 2018 would be assigned the following sample number using the code shown below:

DUP-MMDDYY = DUP-111718

Subsequent duplicates collected on the same day would be assigned FD-1117218-2, FD-111718-3, etc. The field duplicate IDs are “blind”, so that the laboratory cannot trace them to their parent samples. Field sampling crew will record the duplicate sample information on the appropriate Sampling Field Data Sheets and also in the field notebook. The sample will be added to the COC with the time of collection of 0000.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples will use the same well identification name as the parent sample, with the acronym MS/MSD after it; for example, MW-04S (MS/MSD). The sample will be added to the COC with the same time of collection as the parent sample.

Rinsate (Equipment) Blank samples will be labeled with the letters RB (rinsate blank) and the date of collection in the same order as for the field duplicate and added to the COC (e.g., using the same date as above, RB-111718).

Field blanks will be labeled with the letters FB (field blank) and the date in the same order as the field duplicate and added to the COC (e.g., for example, using the same date as above, FB-111718).

Trip blanks will be labeled with the letters TB (trip blank) and the date in the same order as the field duplicate and added to the COC (e.g., for example, using the same date as above, TB-111718).

4.0 QUALITY ASSURANCE/ QUALITY CONTROL SAMPLING

QA/QC procedures are described in the QAPP. QA/QC samples will be collected as follows:

- All sampling personnel shall have training for the collection of samples for per- and polyfluoroalkyl substances (PFAS).
- Field duplicates will be collected per matrix at the rate of one per twenty (5%) samples collected. It will be collected immediately following the collection of the parent sample for the same parameters as the parent sample.
- MS/MSD samples will be collected for each matrix at a rate of one per twenty (5%) samples collected. It will be collected immediately following the collection of the parent sample for the same parameters as the parent sample.
- Rinsate (Equipment) Blank samples will be collected one time per sampling event. Laboratory provided deionized water will be run through the clean reused equipment and collected for the same parameters as the sampling program. Rinsate blanks will be collected when sampling for PFAS at the rate of one per sampling equipment type. For all other parameters, if dedicated, disposal sampling equipment is used, rinsate blanks are not required.
- Field Blanks – Field blank samples will be collected by pouring laboratory demonstrated analyte-free water directly into clean sample collection containers. Field blanks will be collected, transported, and analyzed in the same manner as the samples acquired that day. Field blanks will be collected when sampling for PFAS.
- Trip Blanks will be provided by the laboratory filled with analyte-free water and returned at the rate of one per sample pickup. Trip blanks will be analyzed for VOCs only.

5.0 FIELD DOCUMENTATION

Field notebooks will be used during all on-site work. A dedicated permanently-bound field notebook will provide a legal record and will be maintained by the field technician overseeing the site activities. Entries will be written with waterproof ink and will be of sufficient detail that a complete daily record of significant events, observations, and measurements is developed. At the conclusion of each day of fieldwork, entries will be signed and dated. Erroneous entries will be corrected by the field technician that made the entries. Corrections will be made by drawing a single line through the error, entering the correct information, and initialing/dating the correction.

The field sampling team will maintain the daily field notebook and logs, which will minimally include the following information:

1) Project name and location of field activity
2) Date and time of entry
3) Names and titles of field team members onsite
4) Names, titles of any site visitors, as well as date and time entering and leaving site
5) Weather information (e.g., temperature, precipitation, cloud coverage, wind speed and direction, etc.)
6) Purpose of field activity and detailed description of fieldwork conducted
7) Sample media to be collected
8) Sample Identification
9) Date and time of sample collection
10) Field observations and measurements (e.g., PID, water levels)
11) Sampling methods and devices
12) Purge volumes (groundwater)
13) Groundwater purge parameters e.g., pH, temperature, ORP, DO, conductivity, water levels, turbidity, etc.
14) Chain of custody and shipping information.

6.0 SAMPLE SHIPPING

Summary: Proper documentation of sample collection and the methods used to control these documents are referred to as chain-of-custody (COC) procedures. COC procedures are essential for presentation of sample analytical chemistry results as evidence in litigation or at administrative hearings held by regulatory agencies. COC procedures also serve to minimize loss or misidentification of samples and to ensure that unauthorized persons do not tamper with collected samples.

The procedures used in this study follow the chain-of-custody guidelines outlined in NEIC Policies and Procedures, prepared by the National Enforcement Investigations Center (NEIC) of the U.S. Environmental Protection Agency Office of Enforcement.

Procedure:

1) A COC record is initiated at the analytical laboratory performing the sample analyses and will accompany the sample containers during preparation, delivery of the sample containers to the field, and during return shipment to the laboratory.

2) The COC record (Figure 4) should be completely filled out by field personnel with all applicable/relevant information as samples are collected and packed for shipment e.g., project name and number, field technician name, sample ID, date/time of collection, matrix, requested parameters, number of sample bottles, relinquishing/receipt signatures, method of sample shipment with shipper airbill number, name of analytical laboratory, etc. Any erroneous markings will be crossed-out with a single line and initialed by the author.

3) The original COC accompanies the samples. It should be placed in a Ziplock bag and placed inside the cooler containing the samples. The sampler should retain a copy of the COC for the project records.

4) All groundwater samples should be placed and stored on ice immediately after sample collection in the laboratory supplied coolers.

5) If the laboratory provides a courier to collect the samples from the site, samples should be picked up on the day of collection. If that is not possible, the samples shall be stored on ice in a secure area then delivered to the laboratory the next day, or as soon as possible.

6) If the courier is not provided, samples can be shipped via common courier. Pack the coolers with the samples wrapped in bubble wrap, place ice in plastic baggies to prevent any melt from leaking out of the cooler, and make sure samples will

not shift in the cooler. Place the lab address on top of sample cooler. Affix numbered custody seals across the cooler lid. Cover seals with wide, clear tape.

7) Ship samples via overnight carrier the same day that they are collected and must be delivered to the laboratory the following morning.

8) The COC seal must be applied in a manner where they must be broken in order to open the shipping container. Breakage of the seal before receipt at the laboratory may indicate tampering. If tampering is evident, the laboratory must immediately contact the laboratory Project Manager, whom further contacts the URS Project Manager for further instructions (i.e., cancel or proceed with analyses).

7.0 FIELD SAMPLING INSTRUMENTATION

Contractor owned and rented field sampling equipment will require no maintenance beyond decontamination between sampling locations. Calibration procedures for electronic instruments can be found in the equipment operating manuals. Calibration and maintenance procedures for the common instrumentation that will be used during field investigations are discussed in the equipment operating manuals. A copy of the manufacturer's operating manual for each instrument will be kept with the instrument or the operator. All field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions. The calibration procedures and results will be recorded in the field notebook. All changes to instrumentation will be noted in the field notebook.

The following field instruments may be used during project site work:

1) Multi-Parameter Meter (MultiRAE PLUS PGM-50 Monitor (10.6 eV lamp) with PID, %LEL) - Calibration of the meter and a battery check will be performed daily in accordance with manufacturer's specifications. Standards used for calibration will be National Institute of Standards and Technology (NIST) traceable. All calibration data will be recorded in the field notebook.

2) Turbidity Meter – The turbidity meter will be checked daily in accordance with manufacturer's specifications. All daily data will be recorded in the field notebook.

3) Horiba U-22 Multi-Parameter Meter – Calibration of the meter will be performed daily in accordance with manufacturer's specifications. All daily data will be recorded in the field notebook.

8.0 SAMPLING EQUIPMENT DECONTAMINATION PROCEDURES

Summary: To assure that no outside contamination will be introduced into the samples/data, thereby invalidating the samples/data, the following cleaning protocols will apply for all equipment used to collect samples/data during the field investigations.

Procedures:

1) Thoroughly clean equipment with laboratory-grade soap and water, until all visible contamination is gone.
2) Rinse with water, until all visible evidence of soap is removed.
3) Rinse several times with deionized water.
4) Air dry before using.
5) If equipment will not be used immediately, wrap in aluminum foil.
6) Decontamination materials will be collected and placed in 55 gallon drums.

9.0 INVESTIGATION-DERIVED WASTE CHARACTERIZATION AND DISPOSAL

All decontamination water, purge water, and used sampling equipment will be contained in 55-gallon drums.

Since investigation-derived wastes (IDW) were properly characterized during site remediation activities, there is no reason for further characterization of the IDW during the post-remediation long-term groundwater monitoring program.

The IDW subcontractor will be responsible for removing IDW from the work site as needed. All waste will be disposed of at a permitted off-site disposal facility.

10.0 **ANALYSIS**

Each groundwater and leachate sample will be analyzed by a NYSDOH Environmental Laboratory Accreditation Program (ELAP) certified laboratory for those parameters referenced in the QAPP, Table 4-1 (i.e., VOCs, 1,4-dioxane and PFAS). Field personnel will coordinate with the laboratory for sample pick-up, delivery and/or shipment of the samples to the laboratory.

TABLES

TABLE 1
WATER LEVEL MEASUREMENTS AND WATER QUALITY SAMPLING
STUART OLVER HOLTZ SITE
NYSDEC SITE NUMBER: 828079

Sampling Locations	Water Level Measurements	VOCs (SW8620B*)	1,4-Dioxane** (SW8260C* SIM or SW8270D* SIM)	PFAS (USEPA 537 modified)	Frequency
B1/PZ-3	X	X	X	X	Annually
B4/PZ-1	X	X	X	X	Annually
MW-5	X	X	X	X	Annually
OW-3S	X	X	X	X	Annually
OW-4S	X	X	X	X	Annually
OW-5S	X	X	X	X	Annually
OW-6S	X	X	X	X	Annually
OW-7S	X	X	X	X	Annually
SW-32	X	X	X	X	Annually
SW-33	X	X	X	X	Annually
SW-37	X	X	X	X	Annually
URS-01	X	X	X	X	Annually
URS-02	X	X	X	X	Annually
URS-03	X	X	X	X	Annually
URS-04	X	X	X	X	Annually
URS-05	X	X	X	X	Annually
URS-06	X	X	X	X	Annually
URS-08	X	X	X	X	Annually
URS-09	X	X	X	X	Annually
URS-11	X	X	X	X	Annually
URS-12	X	X	X	X	Annually
URS-13	X	X	X	X	Annually
URS-14	X	X	X	X	Annually
URS-15	X	X	X	X	Annually
URS-16	X	X	X	X	Annually

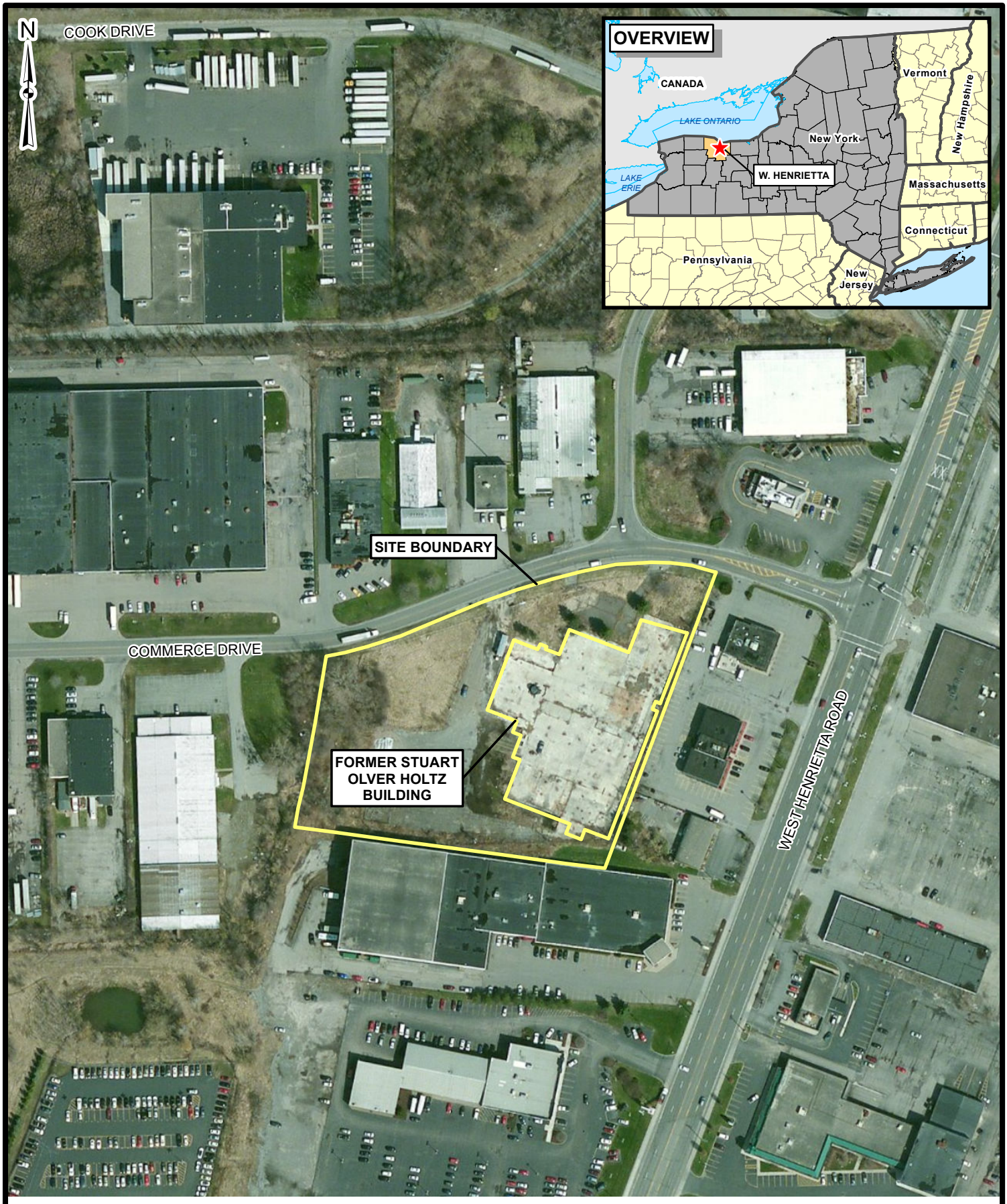
* Or most current version

** Method 8270D SIM is the preferred method for the analysis of 1,4-dioxane. Method 8260C SIM may be used if sample volume is limited.

PFAS - Per- and Polyfluoroalkyl Substances

VOCs - Volatile Organic Compounds

FIGURES



Source: ESRI World Imagery

200 0 200 Feet

URS

STUART OLVER HOLTZ
SITE LOCATION

FIGURE 1

J:\Projects\11174465.00000\DB\GIS\SITE LOCATION.mxd 12/20/2016

PROJECT NO. SHEET NO.

E 751,000
N 1,124,000

COMMERCE DRIVE (50')

HENRIETTA ROAD

WEST

PULLMAN MANUFACTURING

LEGEND (THIS DWG.)

- EASEMENT LINE
- PROPERTY LINE
- NEW MONITORING WELL
- NEW SOURCE AREA INJECTION WELL
- EXISTING OVERBURDEN MONITORING WELL
- EXISTING BEDROCK MONITORING WELL
- EXISTING PIEZOMETER

URS-04, URS-05, URS-06, URS-07, URS-08, URS-09, URS-10, URS-11, URS-12, URS-13, URS-14, URS-15, URS-16, URS-03, URS-02, URS-01

OW-5S, OW-1S, OW-1R, OW-3S, OW-3R, OW-4S, OW-4R, OW-6S, OW-7R, OW-7S, OW-8S, OW-2R, OW-2S, OW-LS (MW-2), OW-9S, OW-10S, B101-OW, OW-11S

B1/PZ-3, B3/PZ-2, B4/PZ-1, IPZ-2, MW-5, MW-2, MW-3

SW-1 through SW-37

TREATMENT ZONE

BLACKTOP PARKING LOT
BLACKTOP
GATE
36" MANHOLE
18" MANHOLE
24" MANHOLE
CB MANHOLE
CATCH BASIN
TEMPORARY WATER VALVE
PLUGGED 4" C.I.P.
HUB/TACK FOUND
WOODED AREA
GRAVEL FRAME
LOW AREA
DITCH
EDGE OF STANDING WATER
SEWER EASEMENT
OVERHEAD WIRES
CONC. RAMP
SIDEWALK WIRES
APPROXIMATE LOCATION OF OREGANOS PZZA
CENTER APPROXIMATE LOCATION OF PATTON PROFESSIONAL
ASPH. PARKING
LEICHTNER STUDIOS
RUBY GORDON'S FURNITURE

40' 0 40'
SCALE IN FEET

NO.	DATE	BY	PROJECT ADV./ DEPT. MGR/SUPR. ENGR APPROVAL APPROVAL

REVISIONS

URS Corporation
77 Goodell Street, Buffalo, New York 14203
(716)856-5636 phone (716)856-2545 fax

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
625 BROADWAY
ALBANY, NEW YORK
12233

STUART OLVER HOLTZ SITE
TOWN OF HENRIETTA
MONROE COUNTY
SITE No. 8-28-079

REMEDIAL CONSTRUCTION

WELL LOCATION MAP

SHEET TITLE

OWNER'S PROJECT NUMBER	PROJECT NUMBER 11174465
DATE OCTOBER 2015	SCALE AS SHOWN
DRAWN BY RAL	FIGURE 2
CHECKED BY DMc	
ARCH/ENGR. CWP	DWG. NUMBER

J:\Projects\11174465.00000\CAD\OCT 2015\FIGURE 2.dwg, FIGURE-2, 1:2, 10/26/2015, 1-RAL

FIGURE 3

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: New York State Department of Environmental Conservation Site: Stuart Olver Holtz PAGE: Well I.D.: _____

Date: _____ Sampling Personnel: _____ Company: URS Corporation

Purging/ Sampling Device: _____ Tubing Type: _____ Tubing Inlet: _____

Measuring Point: _____ Initial Depth to Water: _____ Depth to Well Bottom: _____ Well Diameter: _____ Screen Length: _____

Casing Type: _____ Volume in 1 Well Casing (liters): _____ Estimated Purge Volume (liters): _____

Sample ID: _____ Sample Time _____ QA/QC: _____

Sample Parameters: _____

PURGE PARAMETERS

TIME	pH	TEMP (^{0}C)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	Eh (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
Tolerance:	**0.1**	**---**	**0.03**	**0.1**	**0.1**	**+ or - 10**	**---**	

Information:

Remarks:

FIGURE 4 - CHAIN OF CUSTODY RECORD

PROJECT NO. | SITE NAME

SAMPLERS (PRINT/SIGNATURE)

LAB _____

COOLER _____ of _____

PAGE _____ of _____

DELIVERY SERVICE: _____ AIRBILL NO.: _____

LOCATION IDENTIFIER	DATE	TIME	COMP/ GRAB	SAMPLE ID	MATRIX	TOTAL NO.# OF CONTAINERS	TESTS								BOTTLE TYPE AND PRESERVATIVE								REMARKS	SAMPLE TYPE	BEGINNING DEPTH (IN FEET)	ENDING DEPTH (IN FEET)	FIELD LOT NO.# (IRPIMS ONLY)

MATRIX CODES

AA - AMBIENT AIR
SE - SEDIMENT
SH - HAZARDOUS SOLID WASTE
SL - SLUDGE
WP - DRINKING WATER
WW - WASTE WATER
WG - GROUND WATER
SO - SOIL
DC - DRILL CUTTINGS
WL - LEACHATE
GS - SOIL GAS
WC - DRILLING WATER
WO - OCEAN WATER
WS - SURFACE WATER
WQ - WATER FIELD QC
LH - HAZARDOUS LIQUID WASTE
LF - FLOATING/FREE PRODUCT ON GW TABLE

SAMPLE TYPE CODES

TB# - TRIP BLANK
SD# - MATRIX SPIKE DUPLICATE
RB# - RINSE BLANK
FR# - FIELD REPLICATE
N# - NORMAL ENVIRONMENTAL SAMPLE
MS# - MATRIX SPIKE
(# - SEQUENTIAL NUMBER (FROM 1 TO 9) TO ACCOMMODATE MULTIPLE SAMPLES IN A SINGLE DAY)

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LAB BY (SIGNATURE)	DATE	TIME

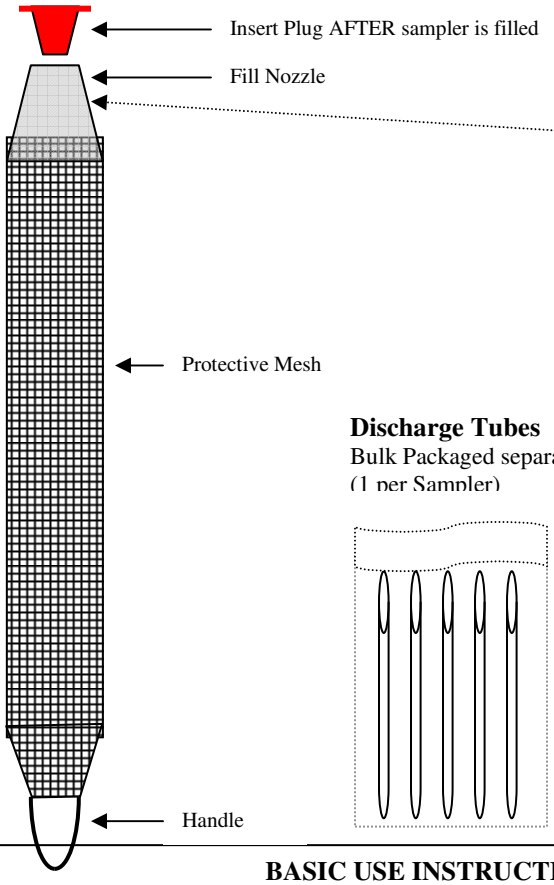
SPECIAL INSTRUCTIONS

Distribution: Original accompanies shipment, copy to coordinator field files

ATTACHMENT A

EQUILIBRATOR ™
Diffusion Sampler Instructions

Equilibrator Sampler



Accessory Items

Funnel
(Optional)

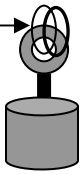
Insert this end into Sampler Fill Nozzle

Cable-Tie

Discharge Tubes
Bulk Packaged separately
(1 per Sampler)

Plug is packaged in wrapper with Sampler

Split Ring
Attach to
Bottom of
Tether



Weight
(Reusable)

BASIC USE INSTRUCTIONS* (Fig 1)

1. **Fill the Sampler with deionized water** until the entire assembly is completely full of water. To use the funnel, insert the tip into the Sampler and pour deionized water into the tube. Fill the Sampler until water rises and stands at least two inches up the funnel to expand the Sampler to its maximum capacity. ***Gently squeeze and add more water to expand the membrane and remove air pockets. Repeat as needed until completely full.*** *Disclosure Statement – When filling the Sampler, we recommend that you hold the Sampler firmly at the top as close to nozzle tip as possible to prevent unnecessary stress on inside poly bag which could cause a leak to develop.*
2. **Insert the Plug firmly into the Sampler,** until the rim of the plug is as close to the nozzle as possible.
3. **Attach a Weight to the bottom of the Tether or Hanger.**
4. **Attach the Equilibrator(s) to the Tether line.** If installing on a factory prepared tether, locate the small (1/2" diameter) stainless steel rings that are attached to the Tether line. The rings will be separated by approximately 2/3 the length of the sampler. Use a Cable-Tie through the lower of two adjacent rings and through handle. Use a second Cable-Tie through upper of two adjacent rings and through a section of mesh below the fill nozzle in the softer part of the filled sampler. Tighten the Cable-Ties and snip off excess. Continue with each Sampler. If the factory did not prepare the Tether, then securely attach the Sampler(s) to the tether using cable ties at the intended location(s).
5. **Lower the Tether with Sampler(s) attached into the well.** Locate Sampler(s) below the water surface, in the screen flow zone of the well. Attach the top of the suspension cord to a well cap or other secure location at the top of the well. Leave Sampler in place for a time suitable for equilibration, a minimum of 2 weeks required.
6. **Upon retrieval: Discharge sample immediately** to avoid loss of volatile compounds. Select a point on the Sampler near the handle/bottom of sampler. Press one end of the Discharge Tube firmly into the clear polyethylene membrane at a downward angle until it pierces the membrane. ***Discharge small amount to waste to purge discharge tube.***

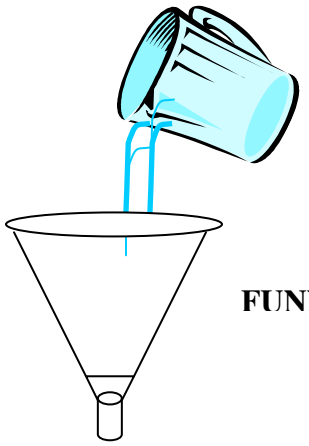
***Contact EON for detailed installation information and for factory prepared Tethers.**

800-474-2490

EQUILIBRATOR ™
Diffusion Sampler Instructions

STEP 1

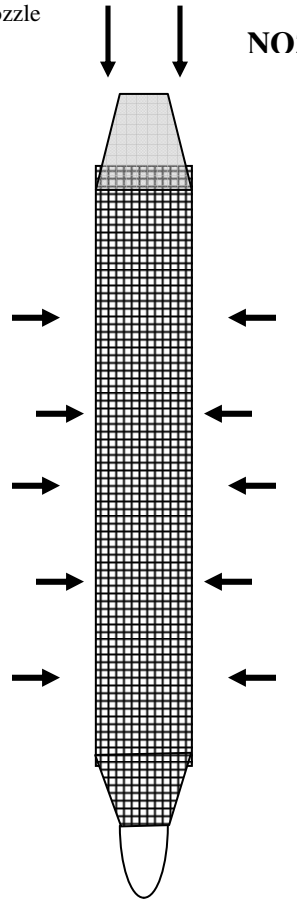
2. Pour DI Water into Sampler



FUNNEL

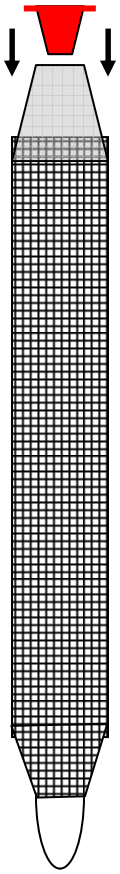
1. Insert Fill Funnel into Sampler Nozzle

NOZZLE

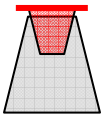


3. Squeeze Sampler & release multiple times to release air and expand volume. Add water & repeat as needed to fill.

STEP 2



1. Press Plug firmly into nozzle



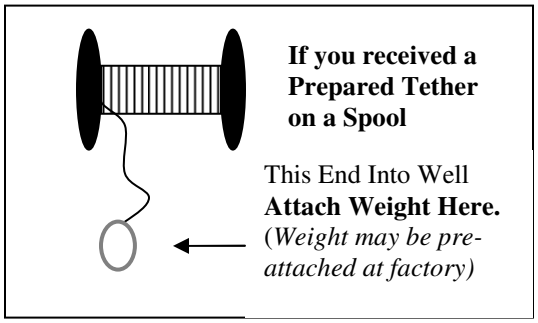
PRESS PLUG INTO NOZZLE UNTIL RED RIM TOUCHES WHITE NOZZLE

1. Fill the Sampler with deionized water until the entire assembly is completely full of water. To use the Funnel, insert the short nozzle into the Sampler and pour deionized water into the tube. Fill the Sampler until water rises and stands at least two inches up the funnel to expand the Sampler to its maximum capacity. **Squeeze the Sampler several times and add more water. Repeat as needed to expand the membrane and remove air pockets.** Fill to top of nozzle, leaving a meniscus.

2. Insert the Plug firmly into the Sampler, **until the rim touches the nozzle.**

3. Fill at least two VOA Vials with the DI water used to fill the samplers to use as a water blank. (Not Shown)

EQUILIBRATOR ™
Diffusion Sampler Instructions



If you received a Prepared Tether on a Spool

This End Into Well
Attach Weight Here.
(*Weight may be pre-attached at factory)*

Extra Length of Tether

4. Connect to Well Cap
*__This is the Depth Reference Point__

Well ID Tag

3. Attach Cable Tie thru Ring on tether & Ring on Sampler.

Stainless Steel Rings- Permanent

2. Attach Cable Tie thru Handle and Ring.

Pull tight & clip excess

Cable-Tie

1. Attach Weight to Ring on the end of the Tether. Allow Weight to rest on the bottom of the well

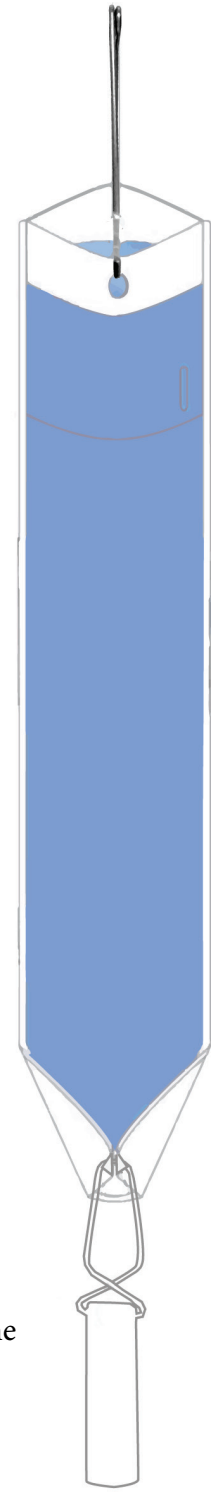
ATTACHMENT B

HYDRASleeve™

Simple by Design

US Patents No. 6,481,300; No. 6,837,120; others pending

Field Manual



The HydraSleeve is a simple tool. In keeping with the Simple by Design motto, these are the basic instructions. Please call if you have any questions.
800-996-2225

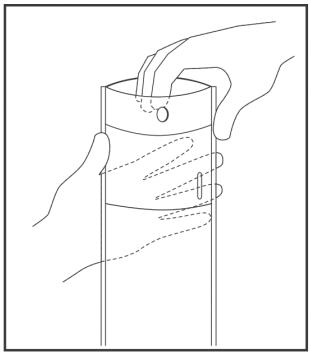
Introduction

Please read the manual in its entirety before sampling with HydraSleeve.

The HydraSleeve groundwater sampler can be used to collect a representative sample for most physical and chemical parameters without purging the well. It collects a whole water sample from a user-defined interval (typically within the well screen), without mixing fluid from other intervals. One or more HydraSleeves are placed within the screened interval of the monitoring well, and a period of time is allocated for the well to re-equilibrate. Hours to months later, the sealed HydraSleeve can be activated for sample collection. (Note: the new SpeedBags can be immediately deployed and recovered.) When activated by rapid upward motion, the check value opens and the HydraSleeve collects a sample with no drawdown and minimal agitation or displacement of the water column. Once the sampler is full, the one-way reed valve collapses, preventing mixing of extraneous, non-representative fluid during recovery. HydraSleeves go in flat and closed and come out full and closed.

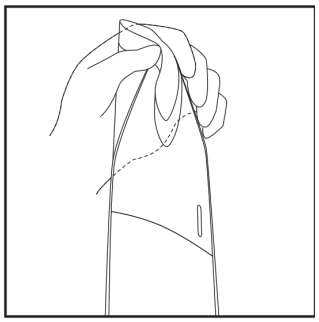
Assembly

Assembling the HydraSleeve is simple, and can be done by one person in the field, taking only a minute or two.



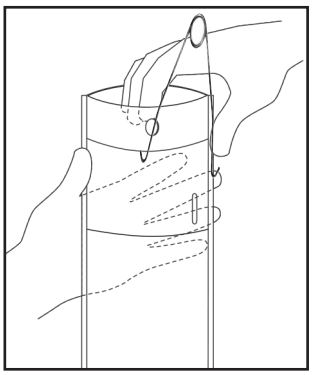
1

Remove HydraSleeve from package and grasp top to "pop" open.
Remember to save the discharge tube for later.



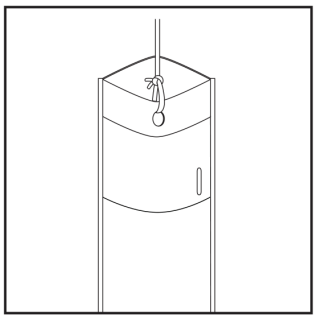
2

Squeeze side fins together at top to bend reinforcing strips outward.
Crimp the corners to remain open



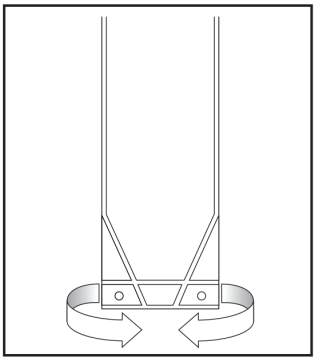
3 Preferred

Attach the tethered spring clip (see separate spring clip instructions); or



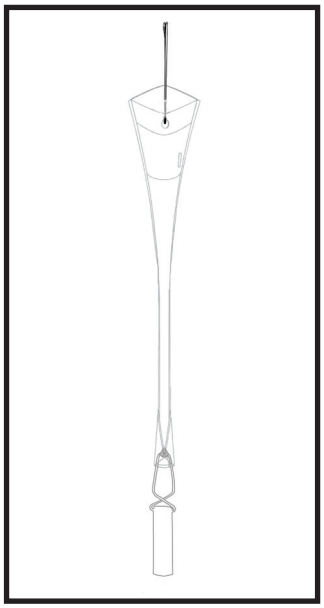
4 Option B

Alternatively attach the line to one side of the HydraSleeve if spring clips are not being used. Be sure the top is sharply crimped open.



5

Align the two holes at bottom of HydraSleeve together and attach weight with the weight clip.



6

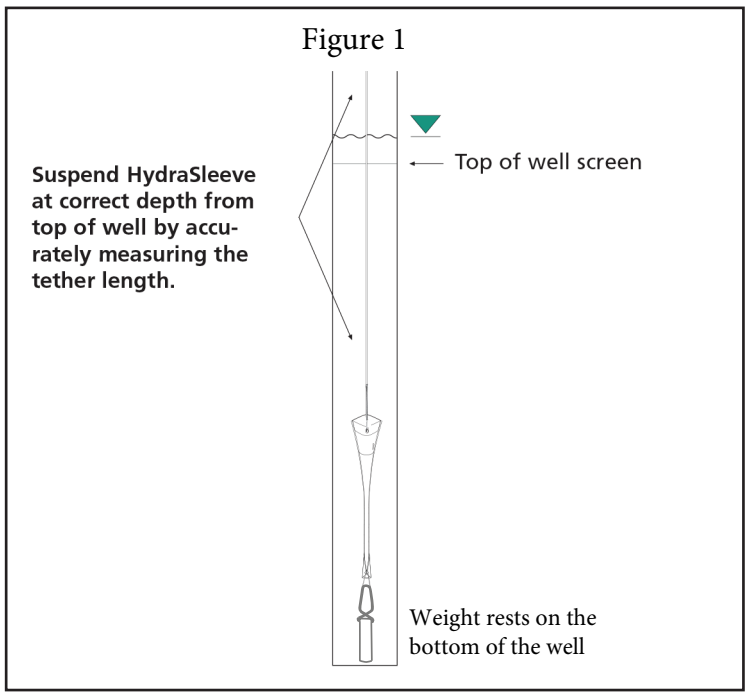
Sampler is ready to be placed in the well.

Placing the HydraSleeve(s)

To collect a representative groundwater sample without purging, the well usually needs to be allowed time to equilibrate after placement of the sampler. When any device is lowered into a well, some mixing of the water column occurs. The diameter of the device, how tightly it fits in the well, and its shape greatly affect the degree of mixing. The flat cross-section of the empty HydraSleeve minimizes the disturbance to the water column as the sampler is lowered into position, reducing the time needed for the well to return to equilibrium. Using a SpeedBag HydraSleeve eliminates equilibration time for most wells.
There are several methods for holding a HydraSleeve in position as the well equilibrates.
Most HydraSleeves and SuperSleeves are 3-5 feet long. The weight will go to the bottom of well but sample will come from upper half of well; because the sleeve will be suspended ~3-5 feet from the bottom up.

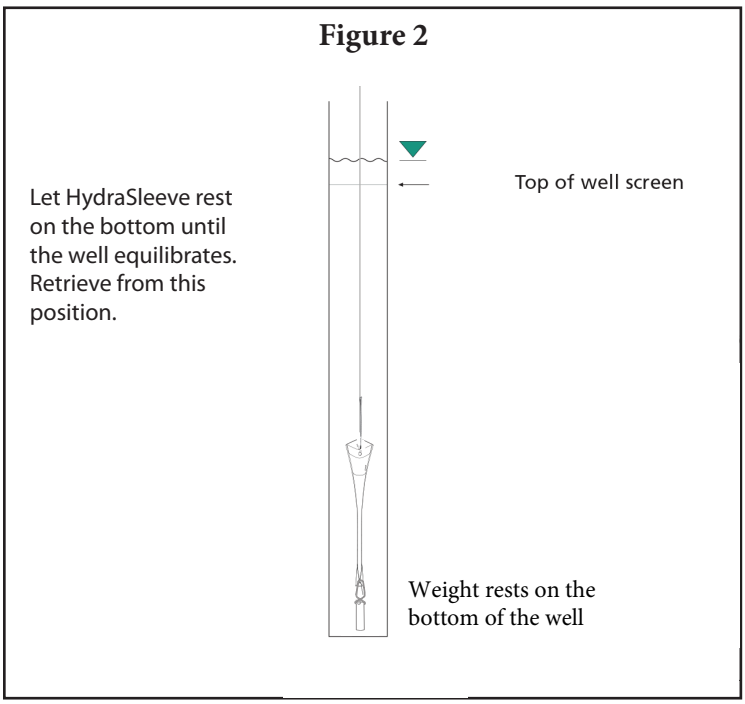
Most Common
TOP DOWN DEPLOYMENT (Figure 1)
Measure the correct amount of suspension line needed to "hang" the top of the HydraSleeve(s) at the desired sampling depth (in most cases, this will be at the bottom of the sampling zone). The upper end of the tether can be connected to the well cap to suspend the HydraSleeve at the correct depth until activated for sampling.
Note: For deep settings, it may be difficult to accurately measure long segments of suspension line in the field. Using our optional calibrated tether (marked sequentially in feet) will help solve this problem.

Figure 1



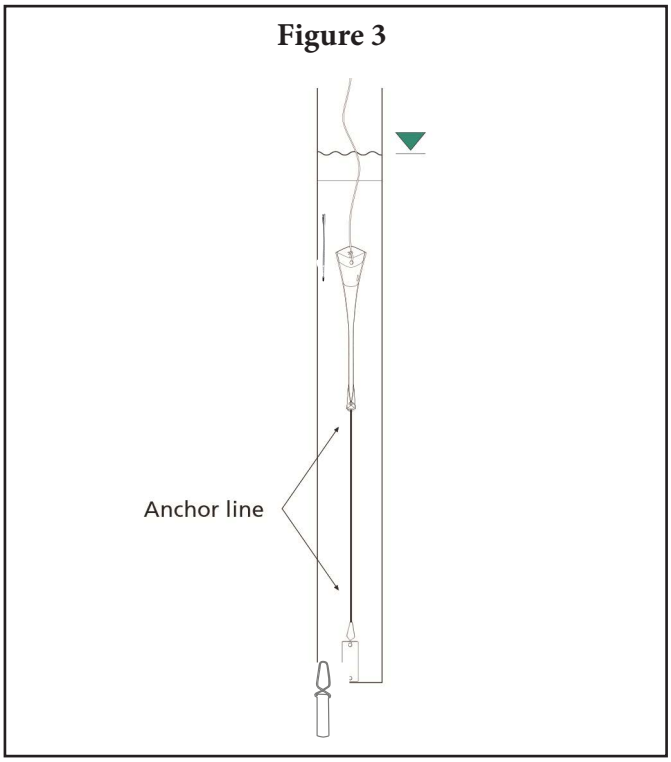
BOTTOM DEPLOYMENT (Figure 2)
Sound the well to determine the exact depth. Lower the weighted HydraSleeve into the well and let it rest on the bottom. The HydraSleeve sits suspended off the bottom & typically sample will be collected from the area directly above the top of the sleeve at this point without adjustment. Attach the suspension line to the top of the well to suspend it at this depth. (It is often easier to measure a few feet from the bottom of the well up to the sample point, than it is to measure many feet from the top of the well down.)

Figure 2



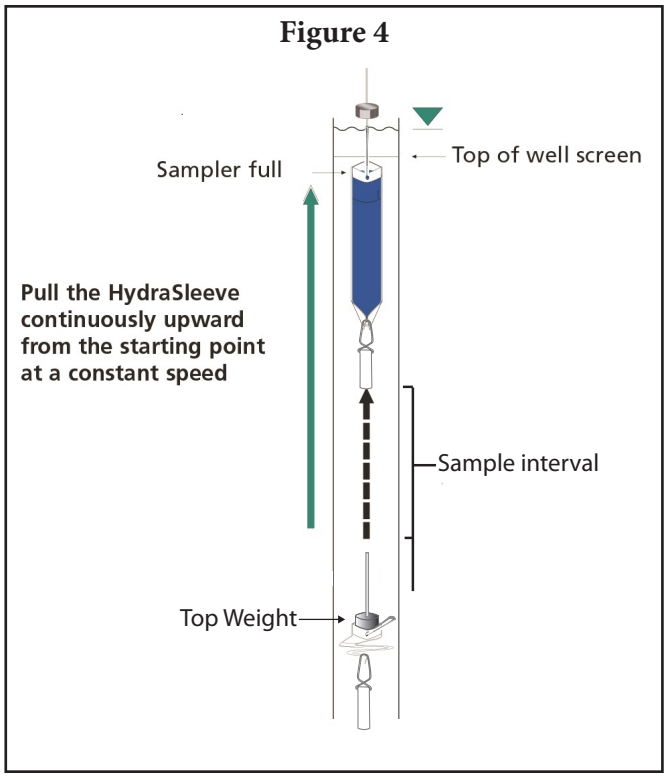
BOTTOM ANCHOR (Figure 3)
Determine the exact depth of the well. Calculate the distance from the bottom of the well to the desired sampling depth. Attach an appropriate length anchor line between the weight and the bottom of the sampler and lower the assembly until the weight rests on the bottom of the well, allowing the top of the sampler to float at the correct sampling depth.

Figure 3



TOP WEIGHTED ASSEMBLIES (Figure 4)
Using a top weight for short water collumns will compress the HydraSleeve into the bottom of the well. This allows for sample collection to begin at the lowest point possible. It provides for more saturated screen above the check valve from which to collect the sample. Insert the top wighted assembly into the well. Allow it to reach the bottom. Be sure to leave enough slack (at least the length of the sampler) so that there is enough tether to allow the HydraSleeve to compress over a period of time. The length of time and compression area are determined by the type and size of HydraSleeve being used.

Figure 4



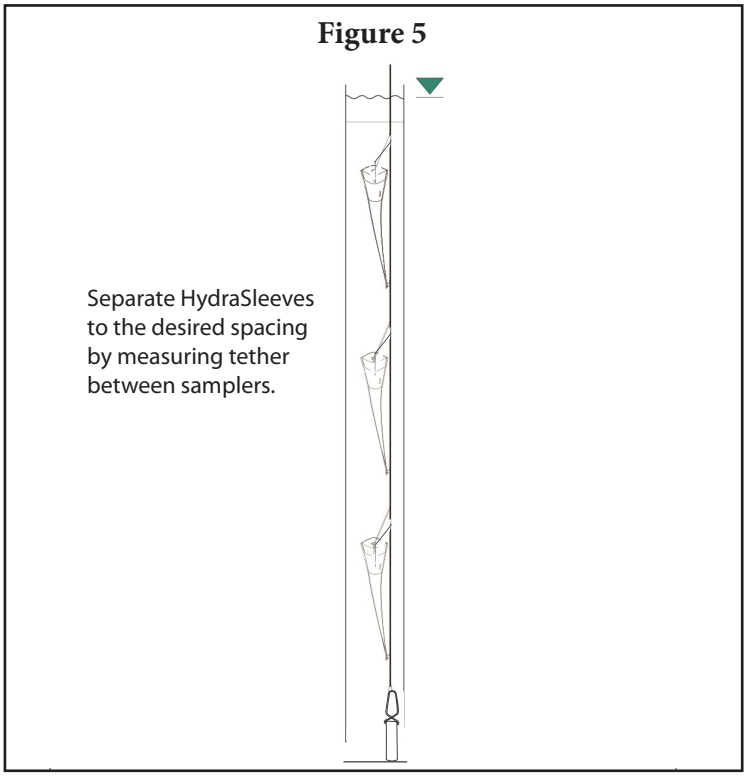
Multiple Interval Deployment

There are 3 basic methods for placing multiple HydraSleeves in a well to collect samples from different levels simultaneously.

ATTACHED TO A SINGLE TETHER (Figure 5)
To use 3 or more samplers simultaneously, we recommend attaching them all to a tether for support to prevent the sampling string from pulling apart. The weight is attached to a single length of suspension line and allowed to rest on the bottom of the well. The top and bottom of each HydraSleeve are attached to the tether at the desired sample intervals. Cable tie or stainless steel clips (optional) work well for attaching the HydraSleeves to the line. Simply push one end of the clip between strands of the rope and tie a knot at the desired point before attaching the clip to the HydraSleeve.

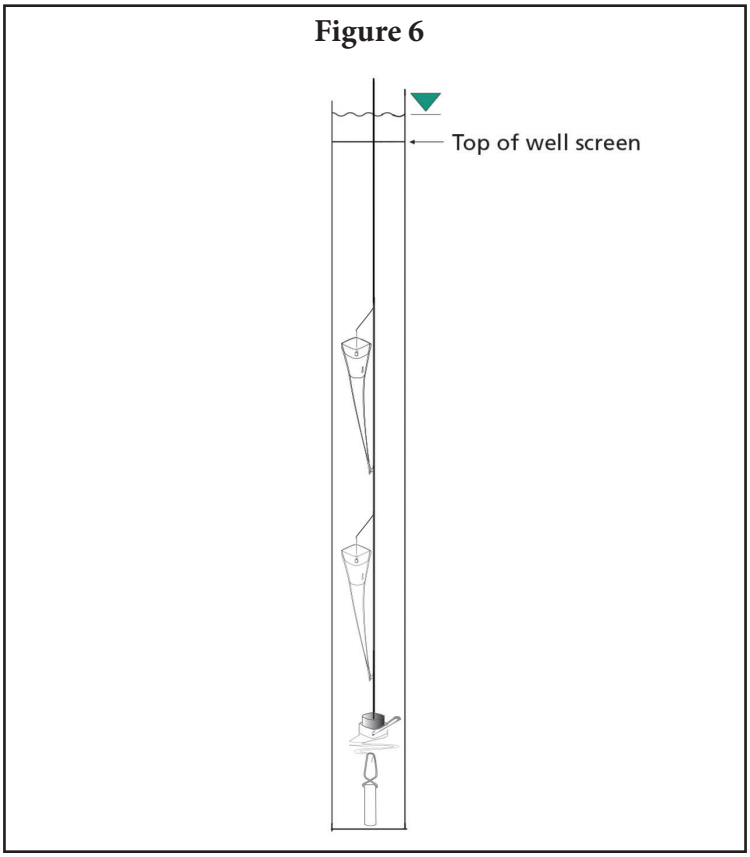
Note: if many HydraSleeves are attached to a tether, more bottom weight will be required than with a single sampler.

Figure 5



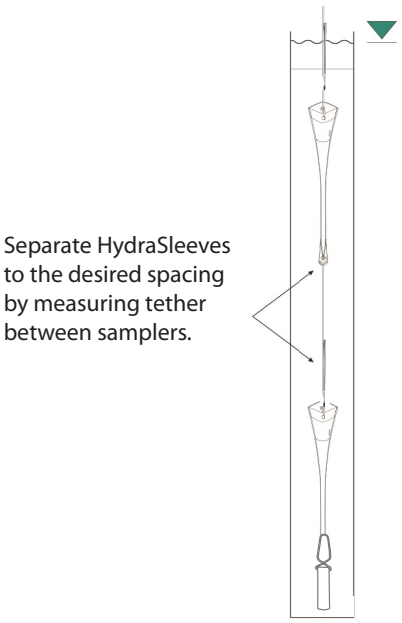
ATTACHED TO A SINGLE TETHER WITH A TOP WEIGHT ON THE BOTTOM (Figure 6)
Attach the HydraSleeves in the same manner as figure 5 but put a top weight on the bottom HydraSleeve. Remember to leave enough slack in the tether (at least the length of the bottom sleeve) so the assembly can be compressed into the bottom of the well.

Figure 6



ATTACHED END TO END (Figure 7)
To place 2 stacked HydraSleeves for vertical profiling, use one of the methods described above to locate where you want to place the bottom sampler. Attach the bottom of the top sampler to the top of the following HydraSleeve with a carefully measured length of suspension cable. Connect the weight to the bottom sampler. Heavier bottom weight will be required for this application.

Figure 7



NOTE: If multiple sleeves are being used soley to provide additional sample volume, consider a single longer (often top-weighted) custom sleeve instead of multiple shorter sleeves. It's simpler and more reliable.

Sample Collection

The HydraSleeve must move upward at a rate of one foot per second or faster (about the speed a bailer is usually pulled upward) for water to pass through the check valve into the sample sleeve. For most applications the HydraSleeve will fill within the length of the sampler. For example, a 30-inch HydraSleeve needs a total upward movement of 30 inches to fill.
There are times when the total upward distance the check valve must travel to fill the sample sleeve is longer. When using a smaller sleeve diameter in a larger diameter well the pull-to-fill distance will be longer. The upward motion can be accomplished using one of several variations of cycling or long continuous pull or any combination that moves the check valve the required distance within the saturated screen zone in the open position.

To ensure the Hydrasleeve is full and check valve closed we recommend one of the cycling methods is followed see below.

CONTINUOUS PULL (Figure 8)
Pull the HydraSleeve continuously upward from its starting point at a constant 1 to 2 feet per second until full. This method is analogous to coring the water column from the bottom up.

Note: When using this method, the screen interval must be long enough so the sampler fills before exiting the top of the screen. Fill rate is dependent on the sleeve being sized for the well diameter. 2-inch sleeves for 2-inch wells. 4-inch sleeves for 4-inch wells. If using undersized sleeves please use a cycling method to assure the sleeve fills in the screened interval.

CYCLING THE SLEEVE (Figure 9)
Pull the sampler upward at about 1 to 2 feet or the length of the sampler and let it drop back to the starting point. Repeat the cycle 3 to 5 times.
This method provides a shorter sampling interval than the continuous pull method (above), and usually reduces the turbidity levels of the sample below that of numerous rapid, short cycles. The sample comes from between the top of the cycle and the top of the check valve at its resting point.

Figure 8

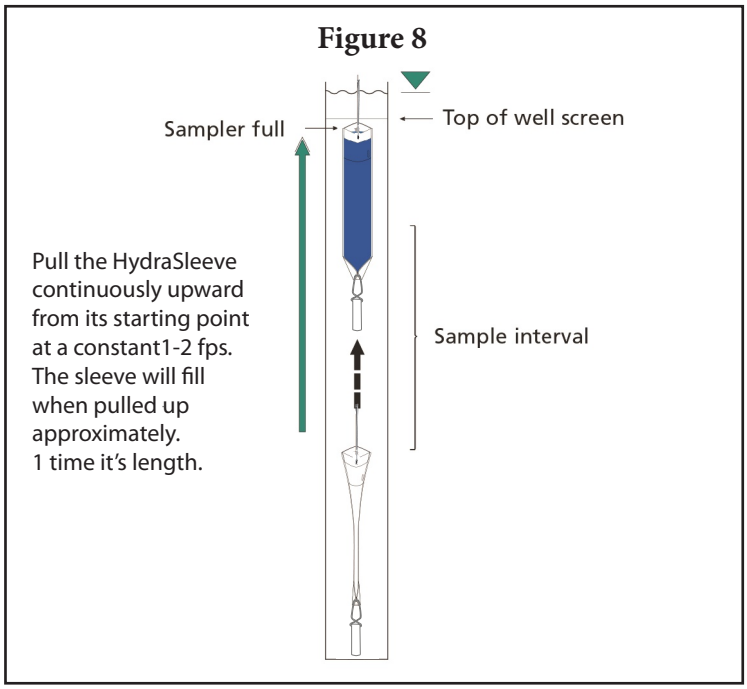
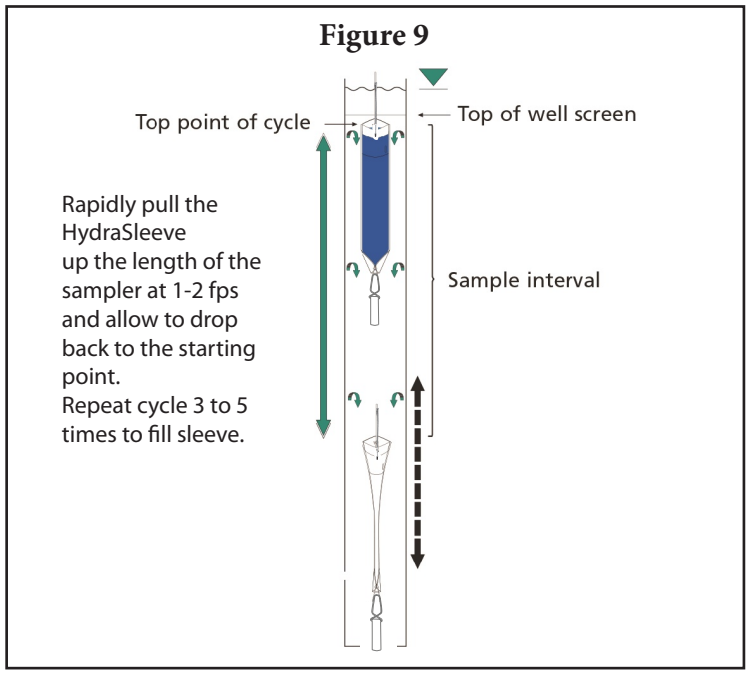


Figure 9



Sample Discharge

The best way to remove a sample from the HydraSleeve with the least amount of aeration and agitation is with the short plastic discharge tube (included).

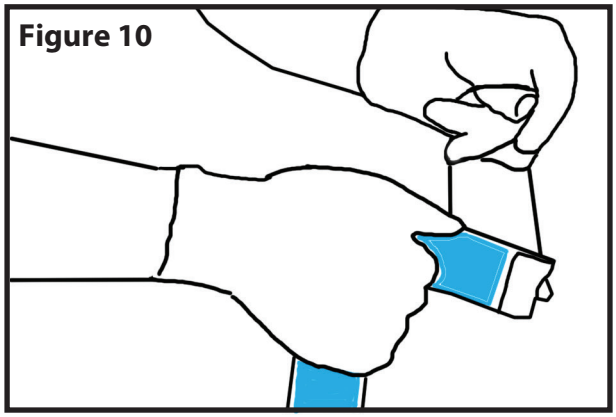
First, squeeze the full sampler just below the top to expel water resting above the flexible check valve. **(Fig. 10, top right)** Fold the stiffeners over to make sure all of the water is off the top of the check valve.

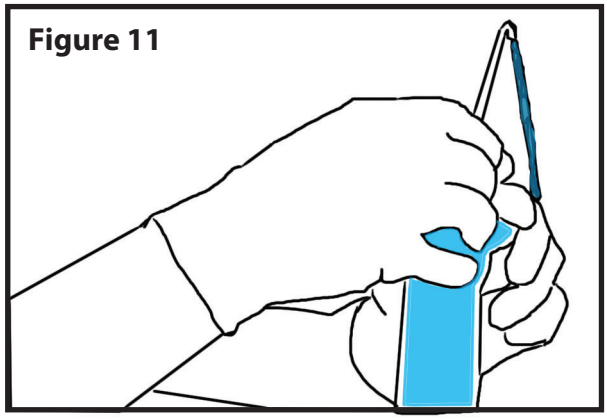
Then, push the pointed discharge tube through the outer polyethylene sleeve as desired but at least 3-4 inches below the white reinforcing strips. **(Fig. 11, middle right)**

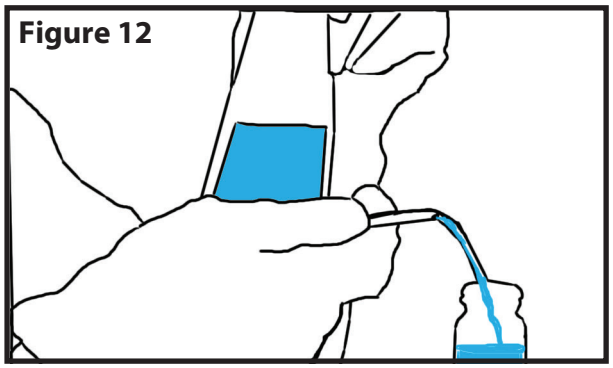
Note: For some contaminants (VOC's/sinkers) the best location for discharge is the middle to bottom of the sampler. This would be representative of the deeper portion of the well screen.

Discharge the sample into the desired container.**(Fig. 12, bottom right)**

Raising and lowering the bottom of the sampler or pinching the sample sleeve just below the discharge tube will control the flow of the sample. The sample sleeve can also be squeezed, forcing fluid up through the discharge tube, similar to squeezing a tube of toothpaste. With a little practice, and using a flat surface to set the sample containers on, HydraSleeve sampling becomes a one-person operation.







2007 Glass Road • Las Cruces, NM 88005
Phone: 1.800.996.2225 • 1.575.523.5799 • Fax: 1.575.523.0789
www.hydrasleeve.com info@hydrasleeve.com

APPENDIX J - REMEDIAL SYSTEM OPTIMIZATION TABLE OF CONTENTS

REMEDIAL SYSTEM OPTIMIZATION FOR STUART OLVER HOLTZ SITE

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APPENDIX K – HEALTH AND SAFETY PLAN

HEALTH AND SAFETY PLAN
FOR THE
SITE MANAGEMENT PLAN
STUART OLVER HOLTZ SITE
SITE # 828079
TOWN OF HENRIETTA, MONROE COUNTY, NEW YORK

Prepared For

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL REMEDIATION
WORK ASSIGNMENT D007622-08

Prepared By

URS CORPORATION
257 West Genesee Street, Suite 400
BUFFALO, NEW YORK 14202

JANUARY 2018

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APPENDICES

1.0 INTRODUCTION

This Health and Safety Plan (HASP) includes appropriate health and safety procedures to be followed by all URS Corporation (URS) personnel during site management activities at and in the vicinity of the Stuart Olver Holt site in the Town of Henrietta, Monroe County, New York. Anticipated field activities at the site will include:

- groundwater monitoring well sampling

The procedures presented in this plan comply with the following regulatory or guidance documents:

AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (ACGIH)

ACGIH-0028	2000 TLVs and BEIs - Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices.
ACGIH-0376	Guide to Occupational Exposure Values - 2000.
ACGIH-0460	Guidelines for the Selection of Chemical Protective Clothing, 3rd Edition.

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR Part 1904	Recording and Reporting Occupational Injuries and Illnesses.
29 CFR Part 1910	Occupational Safety and Health Standards, especially Part 1910.120-Hazardous Waste Site Operations and Emergency Response.
29 CFR Part 1926	Safety and Health Regulations for Construction, especially Part 1926.65-Hazardous Waste Site Operations and Emergency Response.
49 CFR Part 171	General Information, Regulations, and Definitions.
49 CFR Part 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA)

No Publication No.	(1984) Standard Operating Safety Guides, Office of Emergency and Remedial Response.

USEPA Order 1440.2 (1981) Health and Safety Requirements for Employees Engaged in Field Activities.

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

NIOSH Pub. No. 85-115 (October 1985) NIOSH/OSHA/USCG/USEPA, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities.

NIOSH Pub. No. 97-140 (June 1997) NIOSH Pocket Guide to Chemical Hazards.

URS personnel who will be involved in intrusive activities on site have completed the appropriate waste site worker training as required by OSHA 1910.120(e)(2), 1910.120(e)(3), and 1910.120(e)(8), as applicable, and the required medical surveillance as required by OSHA 1910.120(f). Copies of training certificates and medical surveillance certification for all URS field personnel will be maintained on site.

2.0 RESPONSIBILITIES

The following is a summary of the health and safety responsibilities of project personnel.

2.1 Project Health and Safety Officer

The responsibilities of the Project Health and Safety Officer (HSO) are to develop and coordinate the Site Health and Safety Program, and to provide necessary direction and supervision to the Site HSO. The Project HSO will review and confirm changes in personal protection requirements when site conditions are found to be different from those originally anticipated. The Project HSO will be involved in all discussions on health and safety matters with NYSDEC, OSHA, local health authorities, or other governmental or labor representatives. In addition, this individual will provide the Site HSO with details concerning the task-specific health and safety considerations. The Project HSO reports directly to the Project Manager and the Corporate Health and Safety Director.

2.2 Site Health and Safety Officer

The responsibilities of the Site HSO are as follows:

- Implement this HASP
- Enforce day-to-day health and safety protocols in effect on the site
- Require that all URS workers who will be involved in intrusive activities on the site have had appropriate waste site worker training and medical examinations, and review and maintain training and medical certifications on site
- Require that all personnel entering the site understand the provisions of this HASP
- Conduct periodic training sessions in proper use and maintenance of personal protective equipment and safety practices
- Conduct periodic emergency response drills

- Conduct daily health and safety meetings each morning
- Direct and advise onsite URS personnel, visitors, and subcontractor HSO on all aspects, especially changes, related to health and safety requirements at the site
- Conduct necessary health and safety monitoring
- Administer any air monitoring program
- Monitor site conditions and determine all necessary changes in levels of personal protection and, if warranted, execute work stoppages
- Report changes in site conditions and changes in personal protection requirements to the Project HSO
- Prepare accident/incident reports

The Site HSO reports directly to the Project HSO. URS will designate a qualified backup for the Site HSO prior to the initiation of onsite activities.

2.3 Field Team Personnel

Field team personnel will be responsible for understanding and complying with site health and safety requirements. Field team personnel on site will be trained in first aid and CPR, and will be certified by the American Red Cross. Field team personnel will have completed the required waste site worker training to comply with 29 CFR, Part 1910.120.

3.0 SITE DESCRIPTION AND HISTORY

Site description and history is presented in Section 2.0 of the Site Management Plan for the Stuart Olver Holtz site.

4.0 TRAINING REQUIREMENTS

All personnel conducting field activities on site are required to be certified in health and safety practices for hazardous waste operations as specified in the Federal OSHA Regulations (29 CFR 1910.120) (revised March 6, 1990). Paragraph (e) (2) of the above-referenced regulations requires that each employee, at the time of job assignment, receive a minimum of 40 hours of initial instruction off the site, and a minimum of three days of supervised field experience. The waste site worker training program components are presented in Appendix A.

Paragraph (e) (3) of the above-referenced regulations requires that all onsite management and supervisory personnel directly responsible for, or who supervise employees engaged in hazardous waste operations, must initially receive eight hours of additional specialized training. Management and supervisory training must emphasize health and safety practices related to managing hazardous waste work. The waste site worker supervisory training program components are presented in Appendix A.

Paragraph (e)(8) of the above-referenced regulations requires that workers and supervisors receive eight hours of refresher training annually on the items specified in Paragraph (e)(1) and/or (e)(3). The waste site work annual refresher training components are presented in Appendix A.

Additionally, all personnel must receive adequate site-specific training, in the form of an Onsite Health and Safety Briefing given by the Project HSO prior to participating in onsite field work. This will involve a review of this Health and Safety Plan with emphasis on the following:

- Protection of the adjacent community from hazardous substances which may be released during intrusive activities
- Attention to health effects and hazards of substances known to be present on site
- Attention to physical hazards on site, and the importance of knowing proper means of avoiding these hazards.

- Health hazards, protective measures, emergency and first aid measures, fire and explosion information, reactivity, incompatible materials, and emergency procedures for spills of hazardous chemicals brought onto the site for use during normal field operations
- Hazards and protection against heat/cold
- The need for vigilance in personal protection, and the importance of attention to proper use, fit, and care of personal protective equipment
- The effectiveness and limitations of personal protective equipment
- Prescribed decontamination procedures
- Site control, including work zones, access, and security
- The proper observance of daily health and safety practices, such as the entry and exit of work zones and site, proper hygiene during lunch, break, etc.
- Recognition in oneself or in others of physical conditions requiring immediate medical attention, and application of simple first aid measures
- Emergency procedures to be followed (with rehearsals) in cases of fire, explosion, or sudden release of hazardous gases

Health and Safety Meetings will be conducted daily by the Site HSO and will cover protective clothing and other equipment to be used that day, potential chemical and physical hazards, emergency procedures, and conditions and activities from the previous day.

All visitors entering the Exclusion Zone or Contamination Reduction Zone will be required to receive the necessary site-specific training from the Site HSO and must be equipped with the proper personal protective equipment.

5.0 MEDICAL SURVEILLANCE REQUIREMENTS

All URS personnel who engage in onsite activities for 30 days or more per year participate in the Medical Surveillance Program, which involves undergoing a medical examination once every year. A physician who is board-certified in occupational medicine must conduct the examination. The physician will have been made familiar with the job-related duties of each worker examined. All URS project personnel involved in onsite activities in the Exclusion Zone at the site participate in the Medical Surveillance Program.

6.0 SITE HAZARD EVALUATION

6.1 Chemical Hazards

The primary chemicals of concern on site are chlorinated VOCs based on detections of these compounds in soil and water samples from previous investigations. The health and safety characteristics and occupational exposure values of these compounds are summarized in Table 6-1. The risk of exposure to these contaminants can be by the dermal or respiratory route, depending on the type of contaminant and activity being conducted.

6.2 Physical Hazards

Physical hazards range from the dangers of tripping and falling on uneven ground or stairs to those associated with the operation of heavy equipment such as drill rigs. Physical hazards also include scattered debris.

During site activities, workers may have to work on drilling equipment by climbing the mast. The drilling subcontractor will conform with any applicable OSHA and NIOSH recommendations for climbing activities. These activities will be overseen by the subcontractor drilling supervisor and URS field geologist.

Field activities that involve drilling usually involve contact with various types of machinery. At least two people on site must be currently American Red Cross-certified in first aid and CPR. Personnel trained and certified in first aid should be prepared to take care of cuts and bruises as well as other minor injuries. A first aid kit approved by the American Red Cross will be present and available during all field activities.

Animals and some insects may bite and thereby pose a health hazard in the form of irritation, illness, or poisoning. Anyone bitten should be given immediate first aid as necessary, and shall be transported to the nearest medical facility (if necessary). Members of the field investigation team

will be properly briefed regarding the potential for encountering insects and animals. The potential threat of the deer tick and the possibility of contracting Lyme disease is a serious matter. The likelihood of contracting Lyme disease will be greatly decreased by field personnel wearing long pants, long sleeved shirts, and hard hats. All field personnel will be instructed to take a shower daily upon returning to the hotel or place of residence to further decrease the likelihood of contracting Lyme disease.

Improper lifting by workers is one of the leading causes of industrial injuries. Field workers in the drilling program will often be required to lift heavy objects (drill casings, auger flights, etc.). Therefore, all members of the field crew should be trained in the proper methods of lifting heavy objects. All workers should be cautioned against lifting objects too heavy for one person.

6.3 Temperature Stress

A Heat/Cold Stress Log will be kept and maintained on a daily basis for all personnel wearing protective ensembles on site.

6.3.1 Heat Stress

The combination of high ambient temperature, high humidity, physical exertion, and personal protective apparel which limits the dissipation of body heat and moisture can cause heat stress. The Site HSO is responsible for monitoring heat stress in the field team personnel.

The following prevention, recognition, and treatment strategies will be implemented to protect personnel from heat stress. Personnel will be trained to recognize the symptoms of heat stress, and to apply the appropriate treatment.

A. Prevention

1. Provide plenty of liquids. Available in the Support Zone will be a 50% solution of fruit punch in water, or the like, or plain water.

2. Provide cooling devices. A portable, pump-activated sprayer and containers of tap water will be available in the Contamination Reduction Zone to reduce body temperature, cool protective clothing, and/or act as a quick-drench shower in case of an exposure incident.

3. Adjustment of the work schedule. During the hot summer days, labor intensive tasks which pose a high potential risk of heat stress can be performed during the coolest part of the day.

B. Recognition and Treatment

Any person who observes any of the following forms of heat stress, either in themselves or in another worker, will report this information to the Site HSO immediately after implementing treatment, if possible.

1. Heat Rash (prickly heat):

   Cause: Continuous exposure to hot and humid air, aggravated by chafing clothing.

   Symptoms: Eruption of red pimples around sweat ducts, accompanied by intense itching and tingling.

   Treatment: Remove source of irritation and cool the skin with water or wet cloths.

2. Heat Syncope (fainting):

   Cause: Sun rays beating down on victim's head and prolonged upright position can lead to mild dehydration and contraction of the blood vessels resulting in a temporary deficiency of blood to the brain.

   Symptoms: Brief loss of consciousness.

   Treatment: Worker should assume a horizontal position and drink 2 liter to one liter of fluid (not alcohol). Elevate the legs and cover the head.

3. Heat Cramps (heat prostration):

   Cause: Profuse perspiration accompanied by inadequate replenishment of body water and electrolytes.

   Symptoms: Sudden development of pain and/or muscle spasms in the abdominal region.

   Treatment: Move the worker to the Contamination Reduction Zone. Remove protective clothing. Provide fluids orally. Decrease body temperature and allow a period of rest in a cool location.

4. Heat Exhaustion (heat toxemia, sunstroke):

   Cause: Overexertion in a hot environment and profuse perspiration accompanied by inadequate replenishment of body water and electrolytes. A serious condition.

   Symptoms: Muscular weakness, tiredness, staggering gait, nausea, dizziness, shallow breathing, pale and clammy skin, approximately normal body temperature.

   Treatment: Perform the following while simultaneously making arrangements for transport to a medical facility: Move the worker to the Contamination Reduction Zone. Remove protective clothing. Lie the worker down on his or her back, in a cool place, and raise the feet 6 to 12 inches. Keep warm, but loosen all clothing. If conscious, provide sips of a salt water solution using one teaspoon of salt in 12 ounces of water. Transport the worker to a medical facility.

5. Heat Stroke:

   Cause: Same as heat exhaustion. An extremely serious condition.

   Symptoms: Dry, red, hot skin, dry mouth, dizziness, nausea, headache, rapid pulse. Temperature continues to rise unless treatment is implemented.

   Treatment: The basic principle is to lower the body temperature rapidly.

   1. Move the victim out of the sun.
   2. Remove clothes.

3. Soak victim completely with water, wet hair as well.
4. Place victim in front of a fan or in a breeze, if possible.
5. If ice is available, apply directly to the victim, especially under the arms and on the head.
6. Monitor body temperature with available thermometers. Temperature should start to decrease within minutes.
7. As temperature approaches 101^{o}F, stop cooling measures and initiate transport to a hospital or declare an emergency response. The temperature should continue to fall, often to subnormal, during this period.

Other considerations in treating heat stroke are:

1. Rub skin briskly during cooling process.
2. If cardiac arrest occurs, perform CPR (ONLY IF CERTIFIED) and continue cooling.
3. If a seizure occurs, continue cooling; the seizure will stop.
4. No drugs of any kind are to be given to the victim.

C. Heat Stress - Predisposing Factors

Preventing heat stress is clearly preferred to treatment. The following factors increase the individual's risk of heat stress:

- Physically unfit
- Age
- Not accustomed to heat
- Sunburn
- Alcohol and drugs
- Dehydration
- Heavy or non-breathable clothing

- Not covering one's head

6.3.2 Cold Stress

Personnel can be susceptible to cold stress while conducting field work during cold weather months. To guard against cold stress and to prevent cold injuries, appropriate warm clothing should be worn, warm shelter must be previously identified and readily available, rest periods should be adjusted as needed, and the physical conditions of onsite field personnel should be closely monitored. All personnel working onsite must be able to recognize the signs and symptoms of cold stress and apply first aid as needed. The Site HSO is responsible for monitoring the signs and symptoms of cold stress among field personnel.

The development of cold stress and cold injuries is influenced by three factors: the ambient temperature, the velocity of the wind, and the amount of sunshine. Fingers, toes, and ears are the most susceptible parts of the body affected by cold.

A. Frost Nip: Frost nip is the first sign of frost bite and is the only form of local cold injury that can be definitively treated in the field.
   Symptoms: A whitened area of the skin which is slightly burning or painful.
   Treatment: Rewarming the affected part.

B. Frost Bite: Local damage is caused by exposure to low temperature environmental conditions. It results at temperatures when ice crystals form, either superficially or deeply, in the fluids and underlying soft tissues of the skin. The nose, cheeks, ears, fingers, and toes are most commonly affected.

   Symptoms: Skin is cold, hard, white, and numb. There may also be blisters. The affected parts will feel intensely cold; however, there may not be any pain. The victim may not know that he or she is frost-bitten. As time goes on, the victim may experience mental confusion and impairment of judgment. The victim may stagger and eyesight may fail. The victim may fall and become unconscious. Shock is

evident and breathing may cease. If death occurs, it is usually due to heart failure.

Treatment: Generally, definitive thawing should not be performed in the field, because if re-freezing occurs, it could result in severe damage. The victim should be transported to a medical facility after the following measures are instituted:

Do Not:

- Do not walk on a thawed foot or toes or use thawed hands.
- Do not allow victim to smoke or drink alcohol.
- Do not rub affected area with anything.
- Do not break any blisters.
- Do not apply heat of any kind.

Do:

- Do place victim in protected environment.
- Do prevent further heat loss (warmer clothes).
- Do protect from further damage (warm covering).

D. Mild Hypothermia

Symptoms: The single most important sign of mild hypothermia is a change in behavior. Some signs that can be observed are:

- Decrease in work efficiency
- Decreased level of communication
- Forgetfulness
- Poor judgment
- Poor motor skills (difficulty in handling objects, dropping tools)

The target organ of mild hypothermia is the brain. During mild hypothermia, most of the body's protective mechanisms for temperature control are intact. Shivering is usually present and "goose flesh" and pale skin persist. When asked directly, the

victim will usually say that he feels cold. A worker impaired by mild hypothermia can be a danger to himself and co-workers.

Treatment: The victim should be moved indoors or into a heated vehicle.

- Remove all wet or damp clothing, dry skin, and apply dry clothing.
- The head should be covered with a hat or blanket.
- Blankets should be put on the victim.
- The victim should be given hot fluids (no alcohol).
- If possible, monitor the victim's temperature at 15 minute intervals.

E. Moderate Hypothermia: For field purposes, this may be defined as the stage at which the patient is clearly incapable of functioning effectively, but is conscious.

Symptoms: The victim's body temperature is well below normal and some mental changes may occur which include:

- Disorientation to people, place, and time
- Hallucinations
- Inappropriate laughing or crying
- Bizarre behavior for that individual

During moderate hypothermia, shivering is absent, "goose flesh" disappears, and the heart rate may slow down. The victim does not "feel" cold.

Treatment: First, treat the patient for mild hypothermia.

- Provide warming with hot blowers or heaters.
- Use human body heat.
- Watch for signs of returning to normal (e.g., shivering, goose flesh, teeth chattering).
- Monitor mental status.

After these steps are initiated, the victim should be taken to a medical facility. The patient should not return to work for at least 48 hours.

F. Severe Hypothermia:

Symptoms: Characterized by a decrease in the body temperature which results in a deep coma in which even vital signs become very weak and finally undetectable. Most occupational cases occur when the victim is alone or lost. These victims, for all practical purpose, appear to be dead, but the saying "not dead until warm and dead" applies to severe hypothermia. Many of these victims can survive.

Treatment:

1. The patient is not to be considered dead.
2. Remove wet clothes, dry skin, and apply dry clothes.
3. Activate rewarming.
4. Prepare to transfer the victim to a medical facility.
5. If the patient is pulse-less and is not breathing, perform CPR (ONLY IF CERTIFIED), while enroute to the medical facility.
6. Very cold victims often tolerate long periods of arrest, even without CPR. The victim must be handled very carefully because of extreme susceptibility to even minor trauma.

TABLE 6-1

CHEMICAL CONTAMINANTS OF CONCERN

Specific Contaminant Known or Suspected (CAS number)	PEL, or TLV (ppm)	IDLH (ppm)	Acute Effects	Ionization Potential (eV)	Appropriate Monitoring Instrument	Comments
Vinyl Chloride (75-01-4)	1.0	Not Determined Potential Carcinogen	Central nervous system effects (CNS), such as dizziness, drowsiness, and headaches.	10.0	PID	
1,1-Dichloroethene (75-35-4)	None	Not Determined Potential Carcinogen	Studies in humans indicate that relatively high concentrations of inhaled 1,1-dichloroethene can induce adverse neurological effects	11.12	PID	
Methylene Chloride (75-09-2)	25	2,300	Acute inhalation exposure to high levels of methylene chloride in humans has resulted in effects on the central nervous system (CNS).	11.32	PID	
Trichloroethylene (79-01-6)	100	1,000	Drowsiness, headaches. Chronic exposure may result in ataxia, decreased appetite, short term memory loss, headaches, sleep disturbance and vertigo.	9.45	PID	

NOTES:
NS = No Standard
IDLH = Immediately Dangerous to Life and Health
NIOSH = National Institute for Occupational Health and Safety
PPM – Parts per million
NA = Not Applicable
PEL = Permissible Exposure Limit
REL = Regulatory Exposure Limit
TLV = Threshold Limit Value

7.0 SITE CONTROL

In order to keep unauthorized personnel from entering the work area during environmental sampling activities, and for good control of overall site safety, three work zones will be established: The three work zones are the Support Zone, the Contamination Reduction Zone, and the Exclusion Zone. Actual Exclusion Zone size will be determined by optimal size of work area and by local obstructions.

7.1 Support Zone

The Support Zone for the site will be established on site as needed. The support facilities will contain personal protective equipment (disposable suits, gloves, boots, etc.), a first aid kit, a fire extinguisher, a stretcher, an eyewash station, sampling equipment, sample containers, and 50% solution of fruit punch or the like in water (or plain drinking water).

7.2 Contamination Reduction Zones

A Mobile Contamination Reduction Zone will lie adjacent to each active sampling location. During drilling operations, materials brought to the surface may come in contact with workers' boots or protective clothing and equipment. A mobile decontamination area will be set up adjacent to the active drilling area. All personnel in the active drilling area will be required to decontaminate themselves and light equipment prior to leaving the active drilling Exclusion Zone.

7.3 Site Visitation

It is expected that officials from NYSDEC and other regulating bodies and jurisdictions will visit the site during operations. It is also possible that an OSHA representative will wish to inspect the operations. All such officials must meet the same requirements as onsite workers (OSHA-approved training, site-specific training, and medical surveillance) before going into any Exclusion Zone. All visitors must read this HASP prior to entering an Exclusion Zone. Visitors other than

NYSDEC, OSHA, New York State Department of Health (NYSDOH), or Town or County government representatives will be subject to the additional requirement of having to receive written permission from NYSDEC to enter an Exclusion Zone. A Daily Site Visitors Log will be kept and all visitors to the site will sign in and provide their affiliation, the date of visit, affirmation that they have read and understood the HASP, arrival time, departure time, and purpose of visit.

8.0 PERSONAL PROTECTION

Since personnel working on site may be exposed to chemical contaminants released during intrusive activities, or may come in contact with contaminants in wastes, drill cuttings, or soils, various levels of protection must be available. Components of all levels of personal protection that will be available are listed in Table 8-1. The anticipated levels of protection for various field activities are given in Table 8-2.

In the event that unexpected levels of organic vapors are encountered, any personnel working at Level D or D+ protection will don their respirators (change to Level C). The Site HSO will consult with the Project HSO to decide if and when Level D or D+ protection may be resumed, or if a higher level of personal protection is required.

Some modification in safety equipment (e.g., switching from poly-coated disposable coveralls to standard disposable coveralls) may be implemented in order to balance concerns for full contaminant protection against concerns for the possibility of heat stress resulting from the need to wear more restrictive protective equipment. Such modifications may be implemented only if approved in advance by the Site HSO, following consultation with the Project HSO. Protective equipment which fully complies with the requirements of all required levels of protection will be immediately available at all times on the site.

Level C respiratory protection will normally be provided using NIOSH-approved full-face respirators, with high efficiency particulate air P-100 (HEPA) combination filter cartridges approved for removal of organic vapors, particulates, gases, and fumes. The filter cartridges will be changed at the end of each work day or when breakthrough occurs, whichever comes first. All URS field team members will have been fit-tested for respirators using irritant smoke prior to project assignment. Due to difficulties in achieving a proper seal between face and mask, persons with facial hair will not be allowed to work in areas requiring respiratory protection.

TABLE 8-1

COMPONENTS OF PERSONAL PROTECTION LEVELS

Level D Protection	Level D+ Protection	Level C Protection
! Safety glasses with side shields (or goggles)	! Safety glasses with side shields (or goggles)	! Hard hat
! Hard hat	! Hard hat	! Disposable poly-coated coveralls (Tyvek or equivalent)
! Ordinary coveralls	! Face shield (optional)	! Inner gloves of snug-fitting latex or vinyl
! Ordinary work gloves	! Disposable poly-coated coveralls (Tyvek or equivalent)	! Outer gloves of neoprene or nitrile
! Steel-toe, steel-shank work shoes or boots (chemical resistant)	! Inner gloves of snug-fitting latex or vinyl	! Steel-toe, steel-shank work shoes or boots (chemical resistant)
! Outer boots of neoprene or butyl rubber (optional)	! Outer gloves of neoprene or nitrile	! Outer boots of neoprene or butyl rubber
	! Outer boots of neoprene or butyl rubber	
	! Steel-toe, steel-shank work shoes or boots (chemical resistant)	! Full-face air-purifying respirator (to be worn)
	! Full-face air-purifying respirator (immediately available)	! Taping of gloves and boots to disposable coveralls
	! Disposable outer "booties" (optional)	! Disposable outer "booties" (optional)

1. The use of optional equipment is dependent upon site conditions.
2. Respirator to be fitted with NIOSH-approved high-efficiency filter (P-100) combination respirator cartridges approved for organic vapors, particulates, gases, and fumes.

TABLE 8-2

PLANNED LEVELS OF PERSONAL PROTECTION FOR EACH MAJOR ACTIVITY

Field Activity	Level of Protection*
A. Non-Intrusive Activities	
1. Setting up Support Facilities/Mobilization	D
2. Land Surveying	D
3. Staging of Drummed IDW	D
4. Support Zone Activities	D
B. Intrusive Activities	
1. Drilling/Monitoring Well Installation	D+/C
2. Environmental Sampling	D+/C
3. Equipment Decontamination	D+/C

* These are the levels of protection at which work will commence during the various activities on the site. Due to onsite conditions, and as directed by the Site Health and Safety Officer, it may become necessary to upgrade, or it may be possible to downgrade, the level of personal protection.

9.0 AIR MONITORING

Real-time air monitoring will be performed during all intrusive activities (e.g., drilling and monitoring well installation) and throughout the intrusive activities by trained URS personnel. While sampling activities are in progress, monitoring frequencies will be as summarized in Table 9-1. Air monitoring equipment will be calibrated daily and all data will be recorded in the field notebook and transferred to Instrument Reading Logs. Each day, intrusive work will not begin until the instruments are calibrated and background levels are taken and recorded. Air will be monitored for total volatiles with a photoionization detector (PID) (HNu Model PI 101, or equivalent). Explosive atmosphere, oxygen content, and hydrogen sulfide will be monitored with an explosimeter (Bacharach Sentinel 44, or equivalent). All real-time air monitoring results and meteorological data (e.g., temperature range, wind speed, wind direction, etc. obtained from onsite measurements and/or national weather service, radio, or airport) will be recorded in the field notebook and will be transferred to Instrument Reading Logs.

9.1 Total Volatiles

Air monitoring for total volatiles (organic vapors) will be performed using a PID (HNu Model PI 101, or equivalent) equipped with the standard probe, which contains a 10.2 eV lamp. When readings less than 1 part per million (ppm) above background in the breathing zone are observed consistently, monitoring will take place at least every 10 minutes or for every sample retrieved and Level D protection will be utilized. When readings between 1 ppm and 5 ppm above background in the breathing zone are observed consistently, monitoring will be continuous and Level D+ protection will be utilized. If readings from 5 to 10 ppm above background in the breathing zone are observed, and all other action levels indicate that intrusive activities can proceed, monitoring will be continuous and Level C protection will be utilized. If organic vapor readings exceed 10 ppm above background in the breathing zone, or other instrument readings necessitate work suspension, intrusive activities will be halted and the level of protection used by onsite personnel will be reassessed. Monitoring frequencies during intrusive activities will be as summarized in Table 9-1.

9.2 Explosive Atmosphere/Oxygen Content/Hydrogen Sulfide Gas

A Bacharach Sentinel 44 combustible gas indicator (CGI), or equivalent, will be used to monitor for explosive atmosphere, percent oxygen, and hydrogen sulfide content. Readings greater than 10% LEL, less than 19.5% oxygen, greater than 23.5% oxygen, or greater than 10 ppm hydrogen sulfide will require temporary suspension of intrusive activities until the Project SHO determines a safe re-entry level.

9.3 Work Stoppage Responses

The following responses will be initiated whenever one or more of the action levels necessitating a work stoppage is exceeded:

- The Site HSO will be consulted immediately.
- All personnel (except as necessary for continued monitoring and contaminant mitigation, if applicable) will be cleared from the work area (e.g., from within the Exclusion Zone).

Any chemical release to air, water, or soil must be reported to the Site HSO at once. Any exposure resulting from protective equipment failure must be immediately reported to the Site HSO and to the Project HSO in writing within 24 hours.

9.4 Calibration of Air Monitoring Instruments

Photoionization Detector: The photoionization detector will be calibrated to a benzene surrogate daily (prior to field activities) and the results will be recorded in the field notebook and transferred to Instrument Reading Logs.

Explosimeter: Once a day, the explosimeter will be calibrated to a methane gas and hydrogen sulfide gas standard. Prior to each use, the oxygen sensor will be air-calibrated at an

upwind location. This calibration involves adjusting the meter to read 20.9%, the concentration of oxygen in ambient air.

9.5 Community Air Monitoring Plan

Real-time air monitoring for volatile organic compounds will be conducted at the perimeter of the Exclusion Zone during drilling programs as follows:

- Volatile organic compounds and dust particulates will be monitored at the downwind perimeter of the exclusion zone on a periodic basis. If total organic vapor levels exceed 5 ppm above background, work activities will be halted and monitoring continued under the provisions of a Vapor Emission Response Plan (Section 9.5.1). All readings will be recorded and be available for NYSDEC and NYSDOH personnel to review if requested.

9.5.1 Vapor Emission Response Plan

If the ambient air concentration of organic vapors exceeds 5 ppm above background at the perimeter of the Exclusion Zone, activities will be halted and monitoring continued. If the organic vapor level decreases below 5 ppm above background, work activities can resume. If the organic vapor levels are greater than 5 ppm over background but less than 25 ppm over background at the perimeter of the Exclusion Zone, activities can resume provided the organic vapor level 200 feet downwind of the Exclusion Zone or half the distance to the nearest residential or commercial structure, whichever is less, is below 5 ppm over background.

If the organic vapor level is above 10 ppm at the perimeter of the Exclusion Zone, activities must be shut down. When work shutdown occurs, downwind air monitoring as directed by the Site HSO will be implemented to ensure that vapor emission does not impact the nearest residential or commercial structure at levels exceeding those specified in the Major Vapor Emission Response Plan (Section 9.5.2).

9.5.2 Major Vapor Emission Response Plan

If any organic vapor levels greater than 5 ppm over background are identified 200 feet downwind from the Exclusion Zone or half the distance to the nearest residential or commercial property, whichever is less, all work activities will be halted.

If, following the cessation of work activities, or as the result of an emergency, organic vapor levels persist above 5 ppm above background 200 feet downwind from the Exclusion Zone or half the distance to the nearest residential or commercial property, then the air quality will be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20-foot zone).

If efforts to abate the emission source are unsuccessful and organic vapor levels approaching 5 ppm persist for more than 30 minutes in the 20-foot zone, then the Major Vapor Emission Response Plan shall automatically be placed into effect. Also, the Major Vapor Emission Response Plan shall be immediately placed into effect if 20-foot zone organic vapor levels are greater than 10 ppm above background.

Upon activation of the Major Vapor Emission Response Plan, the following activities will be undertaken:

- All Emergency Response authorities and the Broome County Health Department will immediately be contacted by the Site HSO and advised of the situation.
- Air monitoring will be conducted at 15 minute intervals within the 20-foot zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the Site HSO.

TABLE 9-1

ACTION LEVELS DURING INTRUSIVE ACTIVITIES

Organic Vapors (PID)	Combustibles	Oxygen	Hydrogen Sulfide	Responses
1 ppm Above Background, Sustained Reading	0-10% LEL	19.5-23.5%	0-5 ppm	• Continue intrusive activities. • Level D protection. • Continue monitoring every 10 minutes/every sample retrieved in work area.
1-5 ppm Above Background, Sustained Reading	0-10% LEL	19.5-23.5%	5-10 ppm	• Continue intrusive activities. • Level D+ protection. • Continuous monitoring for organic vapors in the work area and at the Exclusion Zone perimeter. • Continuous monitoring for LEL, O_2, and H_2S in the work area.
5-10 ppm Above Background, Sustained Reading	0-10% LEL	19.5-23.5%	5-10 ppm	• Continue intrusive activities. • Level C protection. • Continuous monitoring for organic vapors in the work area and at the Exclusion Zone perimeter. • Continuous monitoring for LEL, 0_2, and H_2S in the work area.
>10 ppm Above Background, Sustained Reading	>10% LEL	<19.5% or >23.5%	>10 ppm	• Temporarily suspend intrusive activities. • Withdraw from area; shut off all engine ignition sources. • Continuous monitoring for organic vapors at Exclusion Zone perimeter if organic vapor readings >10 ppm. • Continuous LEL monitoring in breathing zone if LEL reading >10%. • Consult with Project HSO.

Notes:

Air monitoring for action levels will occur in the breathing zone.

If action levels for any one of the monitoring parameters is exceeded , the appropriate responses listed in the right hand column should be taken.

10.0 HANDLING OF SAMPLES

The collection and analysis of environmental samples will require caution, not only to ensure safety of site sampling and support personnel, but also to ensure accuracy of results. To minimize hazards to lab personnel, sample volumes will be no larger than necessary, and the outside of all sample containers will be wiped clean prior to shipment.

11.0 DECONTAMINATION PROCEDURES

11.1 Decontamination of Personnel

Non-disposable protective clothing, boots, and gloves, will be decontaminated before entering the Support Zone by a thorough soap-and-water wash prior to leaving the Exclusion Zone. Personnel performing intrusive tasks in potentially contaminated areas (e.g., drilling or environmental sampling) will be advised that all clothing worn under protective clothing (i.e., underwear, shirts, socks, trousers) should be laundered separately from street clothing before re-wearing. If protective clothing is breached and personal clothing becomes contaminated, the personal clothing will be disposed.

11.2 Decontamination of Equipment

Decontamination of sampling equipment is described in the Field Sampling and Analysis Plan. Other light equipment (such as tools, containers, monitoring instruments, radios, clipboards, etc.) will be segregated and deposited on plastic drop cloths or in plastic-lined containers placed in the Contamination Reduction Zone and will be wiped off with damp cloths.

Decontamination of drilling equipment, such as auger flights, heavy equipment, and vehicles, will be carried out at the decontamination pad by high-pressure water in the Contamination Reduction Zone. Appropriate PPE must be used during all decontamination activities.

12.0 EMERGENCY PROCEDURES

The most likely incidents for which emergency measures might be required are:

- an exposure-related worker illness
- a sudden release of hazardous gases/vapors during drilling
- an explosion or fire occurring during drilling
- a heavy equipment-related accident, or other accident resulting in personal injury
- slipping, tripping, or falling resulting in personal injury
- spill of contaminated liquid or solid

Emergency procedures established to respond to these incidents are covered under the sections that follow.

12.1 Communications

Communications will be centered in the field vehicle, one of which will contain a cellular telephone for direct outside communications with emergency response organizations. If the site HSO or his designee leaves the immediate area, a cellular phone will be carried by him at all times. A cellular phone will be maintained at the drill rig and with any groups of personnel who are performing tasks on site (e.g., environmental sampling).

12.2 Escape Routes

Flags will be positioned near drill rigs to indicate wind direction. In the event of a sudden release of hazardous gases, or a fire, all personnel will be required to move upwind or at 90 degrees away from the location of the release or fire, toward the site exit point. This may require personnel to

move from the Exclusion Zone directly into an offsite area without proper decontamination. At the conclusion of the emergency, they should perform proper decontamination.

12.3 Evacuation Signal

In the event of a sudden release or fire requiring immediate evacuation of the site, three quick blasts will be sounded on an air horn. Sounding the air horn will be the responsibility of the drill rig operator or the supervising personnel. The horns will be kept in a conspicuous place for quick access by personnel. The person will also contact the Site HSO via the two-way radio to report the incident and request aid if necessary. An air horn will also be kept in the Contamination Reduction Zone. The NYSDEC and the Project HSO will be notified by telephone, and later by written report, whenever a site evacuation is executed.

12.4 Other Signals

Emergency hand signals for use by personnel wearing air-purifying respirators are summarized in Table 12-1.

12.5 Fire

In the event of a fire that cannot be controlled with available equipment, the local fire department will be summoned immediately by the Site HSO or his designee, who shall apprise them of the situation upon their arrival. NYSDEC will also be notified. (See Table 12-2 for telephone numbers of emergency response agencies).

12.6 First Aid

At the startup of field activities, the Project HSO will contact hospital personnel regarding the potential hazards at the site. First aid for personal injuries will be administered, if possible, at the site by the Site HSO or his designee. If a site worker should require further treatment, he or she will

be transported to the hospital in the URS vehicle located on site or an ambulance will be summoned. The onsite vehicle will carry written directions to the hospital as well as a copy of Figure 12-1 showing the route.

All accidents, however insignificant, will be reported to the Site HSO, who will report the accident to the Project HSO. All personnel designated to administer first aid will have received a minimum of eight hours training in first aid and CPR, and be certified by the American Red Cross.

In the event of a serious personal injury requiring offsite medical attention, the injured person will first be moved to the Contamination Reduction Zone, where an attempt will be made to go through the decontamination procedures, including removal of protective clothing. If the injury is life-threatening, decontamination will be of secondary importance, and the injured party will be taken directly to the hospital. If a head, neck, back, or spinal injury is suspected, the injured person will not be moved and an ambulance will be summoned to the site.

12.7 Emergency Assistance

The name, telephone number, and location of police, fire, hospital, and other agencies whose services might be required, or from whom information might be needed, will be kept in the support zone. The list is presented in Table 12-2.

If an ambulance should have to be called to the site, the injured person should meet the ambulance outside the Exclusion Zone if possible. If a head or spinal injury is suspected or the person is unconscious for any reason, medical personnel may have to come into the Exclusion Zone.

12.8 Spills

The potential for spills to occur during onsite work at the site is minimal, since the direct handling of hazardous waste containers (drums, tanks, etc.) is not expected to be part of the scope of

work. In the event that residual materials are spilled on site, the following procedures will be implemented:

12.8.1 Liquid Spills

If a liquid (decontamination water, well development water, etc.) is spilled on a permeable surface, 2 inches of surface soil will be removed where the spill occurred and drummed. The area will later be either backfilled with clean soil or regraded. If liquid is spilled on an impermeable surface, a sorbent material will be applied to the spill area. The sorbent material will be swept up and drummed, and the spill area washed down with clean water.

12.8.2 Soil Spills

Contaminated soil spilled on a permeable surface will be shoveled into a drum, and the top 2 inches of soil where the spill occurred will also be removed and drummed. The area will then be either backfilled with clean topsoil or regraded. If soil is spilled on an impermeable surface, the material will be shoveled (or swept) back into a drum, and the area washed with clean water.

All spills will be reported to the Project HSO within 24 hours. The Project HSO in turn will inform NYSDEC of the incident.

12.9 Reports

Any emergencies, spills, or releases that occur on the site will be reported to the Project HSO and NYSDEC within one hour and will be followed by written notification within 24 hours.

12.10 Accident Investigation and Reporting

12.10.1 Accident Investigations

All accidents requiring first aid which occur incidental to activities on site will be investigated. Standard OSHA formats will be used for reporting any accidents/injuries/illness that occur on the site. The investigation format will be as follows:

- interviews with witnesses,
- pictures, if applicable, and
- necessary actions to alleviate the problem.

12.10.2 Accident Reports

In the event that an accident or some other incident such as an explosion or exposure to toxic chemicals occurs during the course of the project, the Project HSO will be telephoned within one hour and receive a written notification within 24 hours. The report shall include the following items:

- Name, telephone number, and location of the contractor, if not URS personnel.
- Name and title of person(s) reporting.
- Date and time of accident/incident.
- Location of accident/incident, (i.e., building number, facility name).
- Brief summary of accident/incident giving pertinent details including type of operation ongoing at the time of the accident/incident.
- Cause of accident/incident.
- Casualties (fatalities, disabling injuries).

- Details of any existing chemical hazard or contamination.
- Estimated property damage, if applicable.
- Nature of damage; effect on contract schedule.
- Action taken by contractor/URS to ensure safety and security.
- Other damage or injuries sustained (public or private).

TABLE 12-1

EMERGENCY HAND SIGNALS

- Hand gripping throat	- Can't breathe.
- Grip partner's wrist, or place both hands around wrist	- Leave area immediately, no debate!
- Hands on top of head	- Need assistance.
- Thumbs up	- I am all right, OK, I understand.
- Thumbs down	- No, negative.

TABLE 12-2

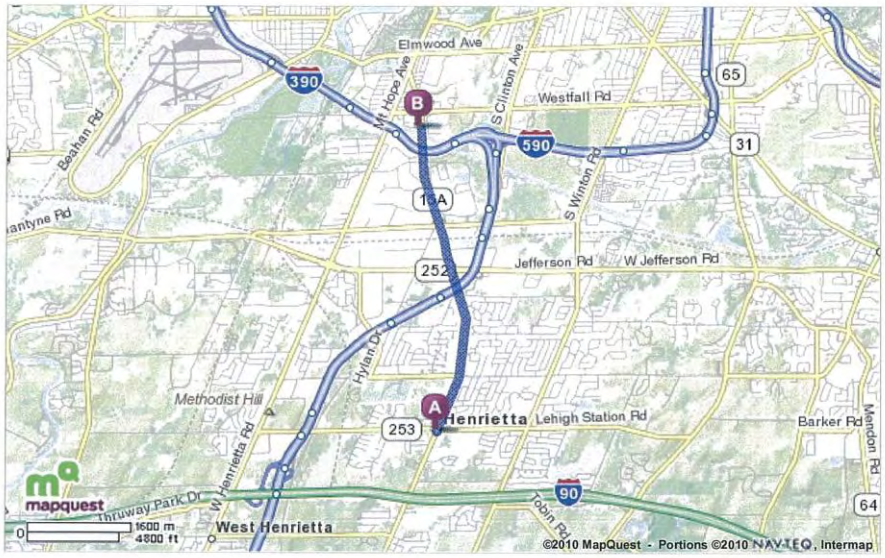
EMERGENCY TELEPHONE NUMBERS

Emergency Response Agencies	
Fire	911
Police	911
Ambulance	911
Medical Facilities	
Monroe Community Hospital	(585) 760-6500
435 East Henrietta Road	
Rochester, NY 14620	
Environmental and Health Agencies	
New York State Department of Environmental Conservation (George Momberger)	(518) 402-9814
New York State Department of Health	(585) 423-8042
USEPA National Response Center (Chemical spills, oil spills, pollutant discharges)	(800) 424-8802
URS Corporation	
Chuck Dusel, Project Manager	(716) 856-5636

12. MAP TO HOSPITAL:

FIGURE 12-1

MapQuest Maps - Driving Directions - Map Page 2 of 2



1. Turn right out of Site entrance going east toward Henrietta Road (500ft).
2. Turn left on to NY15 N/W Henrietta Road and continue 2.5 miles.
3. Turn right on Westfall Road and continue 0.3 miles.
4. Take 1st right turn onto E. Henrietta Road / NY15A south and travel 500 feet to hospital

http://www.mapquest.com/print?a=app.core.d9604eb5dbdc8e992d53370c 12/20/2010

APPENDICES

APPENDIX A

WASTE SITE WORKER TRAINING PROGRAMS

APPENDIX A
TABLE 1

WASTE SITE WORKER TRAINING PROGRAM (40 HOURS)

Introduction to Program
Sources of Reference
Hazardous Waste Operations and Emergency Response (29 CFR 1910.120)
Heat Stress/Cold Exposure
Chemical & Physical Hazards
Chemical Protective Clothing (CPC)

Toxicology
Respiratory Protection Principles
Air-Purifying Respirators (APR)
APR Inspection, Donning, and Doffing
Self Contained Breathing Apparatus (SCBA)
SCBA Checkout
SCBA Field Exercise
Review of SCBA Lab and Field Exercise
Air-Line Respirators (ALR)

Site Safety
Site Control
Decontamination
Air Monitoring Equipment
Entry Permit Development
Material Handling and Spill Containment

Health and Safety Plans (HASP)
Emergency Response Plans (ERP)
HASP & ERP Development

Level A/B Field Exercise
Level B/C Field Exercise
Air Monitoring Equipment Lab
SCBA Proficiency Checkout

Review of Lab & Field Exercises
Review of Air Monitoring Equipment Lab
Medical Monitoring
Hazard Communication (29 CFR 1910.120)
Risk Assessment
APR Fit Test Demonstration and Certification
Written Test

APPENDIX A

TABLE 2

WASTE SITE WORKER SUPERVISORY TRAINING PROGRAM (8 HOURS)

Record keeping Requirements Under Standard 29 CFR 1910.120
OSHA Inspections
Establishing Community Relations
Employee Training and Motivation
Management Traits
Dermal Protection Program
Respiratory Protection Program
Preventative Heat Stress and Cold Exposure Management
Medical Monitoring Requirements
Reporting and Recording Occupational Injuries, Illnesses, and Exposures
Accident Prevention
Spill Containment Program
Determining the Effectiveness of Decontamination Procedures
Implementation of Site Health and Safety Plans
Implementation of Emergency Response Plans
Implementation of the Hazard Communication Standard (29 CFR 1910.120)
Responsibilities of the Site Safety and Health Supervisor and Project Manager
Personnel Sampling
Interpretation of Air Monitoring Data

APPENDIX A

TABLE 3

WASTE SITE WORKER ANNUAL REFRESHER TRAINING PROGRAM (8 HOURS)

OSHA Requirements
Hazardous Wastes
Toxicology
Exposure Limits
Chemical Hazards
Temperature Stress
Other Physical Hazards
Radiation
Site Control at Hazardous Waste Sites
Decontamination Procedures
Personal Protective Equipment
Air Monitoring Equipment
Field Exercises

APPENDIX B

STANDARD OPERATING

SAFETY PROCEDURES

APPENDIX B STANDARD OPERATING SAFETY PROCEDURES

Rules for onsite personal safety are shown in Appendix B, Table 1; rules for operational safety appear in Appendix B, Table 2.

APPENDIX B

TABLE 1

PERSONAL SAFETY RULES

- Visual contact must be maintained between crew members on site.
- Any practice that increases the probability of hand-to-mouth transfer and ingestion of materials is prohibited in any area designated as contaminated. These practices include as a minimum, eating, drinking, chewing gum or tobacco, and smoking.
- Hands and face must be thoroughly washed upon leaving the work area, and before engaging in any other activities, especially eating or drinking.
- Due to interference of facial hair with the mask-to-face seal on air-purifying respirators, personnel working on site will not be permitted to wear facial hair that interferes with the seal.
- Contact with contaminated surfaces or surfaces suspected of contamination should be avoided. Site personnel should avoid walking through puddles, mud, or other discolored areas, and should not kneel or sit on the ground.
- Field personnel shall be familiar with the physical characteristics of the site, including:

    - wind direction in relation to the working area
    - accessibility to associates, equipment, and vehicles
    - communications
    - work zones
    - site access

- Medicine and alcohol can exacerbate the effect from exposure to toxic chemicals. Prescribed drugs should not be taken by field personnel where the potential for absorption, inhalation, or ingestion of toxic substances exists unless specifically

approved by a qualified physician. Alcoholic beverage and controlled substance intake is strictly forbidden during onsite operations.

APPENDIX B

TABLE 2

OPERATIONAL SAFETY RULES

- No visitors shall be allowed into any Exclusion Zone without the permission of the NYSDEC.
- Onsite personnel must use the buddy system when wearing respiratory protective equipment. A third person, suitably equipped, is required as a safety backup during initial site entries.
- During day-to-day operations, onsite workers will act as a safety backup to each other. Offsite personnel will provide emergency assistance.
- Wind indicators will be set up so as to be visible from the Exclusion Zone.
- Daily briefings will be held to review site hazards, changes in level of personal protection required, special safety precautions for assigned work activities, and emergency response.
- All personnel going on site must be thoroughly briefed on anticipated hazards, and trained on equipment to be worn, safety procedures, emergency procedures, and communications.

APPENDIX L - RESPONSIBILITIES of - OWNER and REMEDIAL PARTY

Responsibilities

The responsibilities for implementing the Site Management Plan ("SMP") for the Stuart Olver Holtz site (the "site"), number 828079, are divided between the site owner(s) and a Remedial Party, as defined below. The owner is currently listed as:

SOH Acquiring, Inc.; Richard Groth, RGroth5117@aol.com

Solely for the purposes of this document and based upon the facts related to a particular site and the remedial program being carried out, the term Remedial Party ("RP") refers to any of the following: certificate of completion holder, volunteer, applicant, responsible party, and, in the event the New York State Department of Environmental Conservation ("NYSDEC") is carrying out remediation or site management, the NYSDEC and/or an agent acting on its behalf. The RP is: URS Corporation, 257 Genesee Street, Buffalo, New York 04202.

Nothing on this page shall supersede the provisions of an Environmental Easement, Consent Order, Consent Decree, agreement, or other legally binding document that affects rights and obligations relating to the site.

Site Owner's Responsibilities:

1) The owner shall follow the provisions of the SMP as they relate to future construction and excavation at the site.
2) In accordance with a periodic time frame determined by the NYSDEC, the owner shall periodically certify, in writing, that all Institutional Controls set forth in an Environmental Easement remain in place and continue to be complied with. The owner shall provide a written certification to the RP, upon the RP's request, in order to allow the RP to include the certification in the site's Periodic Review Report (PRR) certification to the NYSDEC.
3) In the event the site is delisted, the owner remains bound by the Environmental Easement and shall submit, upon request by the NYSDEC, a written certification that the Environmental Easement is still in place and has been complied with.
4) The owner shall grant access to the site to the RP and the NYSDEC and its agents for the purposes of performing activities required under the SMP and assuring compliance with the SMP.
5) The owner is responsible for assuring the security of the remedial components located on its property to the best of its ability. In the event that damage to the remedial components or vandalism is evident, the owner shall notify the site's RP and the NYSDEC in accordance with the timeframes indicated in Section 1.3-Notifications.
6) In the event some action or inaction by the owner adversely impacts the site, the owner must notify the site's RP and the NYSDEC in accordance with the time frame indicated in 1.3- Notifications and (ii) coordinate the performance of necessary corrective actions with the RP.

7) The owner must notify the RP and the NYSDEC of any change in ownership of the site property (identifying the tax map numbers in any correspondence) and provide contact information for the new owner of the site property/ies. 6 NYCRR Part contains notification requirements applicable to any construction or activity changes and changes in ownership. Among the notification requirements is the following: Sixty days prior written notification must be made to the NYSDEC. Notification is to be submitted to the NYSDEC Division of Environmental Remediation's Site Control Section. Notification requirements for a change in use are detailed in Section 1.3 of the SMP. A 60-Day Advance Notification Form and Instructions are found at http://www.dec.ny.gov/chemical/76250.html.
8) In accordance with the tenant notification law, within 15 days of receipt, the owner must supply a copy of any vapor intrusion data, that is produced with respect to structures and that exceeds NYSDOH or OSHA guidelines on the site, whether produced by the NYSDEC, RP, or owner, to the tenants on the property. The owner must otherwise comply with the tenant and occupant notification provisions of Environmental Conservation Law Article 27, Title 24.

Remedial Party Responsibilities

1) The RP must follow the SMP provisions regarding any construction and/or excavation it undertakes at the site.
2) The RP shall report to the NYSDEC all activities required for remediation, operation, maintenance, monitoring, and reporting. Such reporting includes, but is not limited to, periodic review reports and certifications, electronic data deliverables, corrective action work plans and reports, and updated SMPs.
3) Before accessing the site property to undertake a specific activity, the RP shall provide the owner advance notification that shall include an explanation of the work expected to be completed. The RP shall provide to (i) the owner, upon the owner's request, (ii) the NYSDEC, and (iii) other entities, if required by the SMP, a copy of any data generated during the site visit and/or any final report produced.
4) If the NYSDEC determines that an update of the SMP is necessary, the RP shall update the SMP and obtain final approval from the NYSDEC. Within 5 business days after NYSDEC approval, the RP shall submit a copy of the approved SMP to the owner(s).
5) The RP shall notify the NYSDEC and the owner of any changes in RP ownership and/or control and of any changes in the party/entity responsible for the operation, maintenance, and monitoring of and reporting with respect to any remedial system (Engineering Controls). The RP shall provide contact information for the new party/entity. Such activity constitutes a Change of Use pursuant to 375-1.11(d) and requires 60-days prior notice to the NYSDEC. A 60-Day Advance Notification Form and Instructions are found at http://www.dec.ny.gov/chemical/76250.html .

6) The RP shall notify the NYSDEC of any damage to or modification of the systems as required under Section 1.3- Notifications of the SMP.

7) Prior to a change in use that impacts the remedial system or requirements and/or responsibilities for implementing the SMP, the RP shall submit to the NYSDEC for approval an amended SMP.
8) Any change in use, change in ownership, change in site classification (*e.g.*, delisting), reduction or expansion of remediation, and other significant changes related to the site may result in a change in responsibilities and, therefore, necessitate an update to the SMP and/or updated legal documents. The RP shall contact the Department to discuss the need to update such documents.

Change in RP ownership and/or control and/or site ownership does not affect the RP's obligations with respect to the site unless a legally binding document executed by the NYSDEC releases the RP of its obligations.

Future site owners and RPs and their successors and assigns are required to carry out the activities set forth above.