RAVI ENGINEERING
& LAND SURVEYING, P.C.

June 21, 2023

Tasha Mumbrue, Assistant Geologist
Division of Environmental Remediation
New York State Department of Environmental Conservation
6274 East Avon-Lima Rd, Avon, NY 14414

**Re: Site Management Plan Supplement**
**United Cleaners**
**2199 E. Henrietta Rd.**
**Town of Henrietta**
**Rochester, New York 14623**

Dear Ms. Mumbrue:

Ravi Engineering & Land Surveying, P .C. (RE&LS) is pleased to provide this Supplement to update the existing Site Management Plan (SMP) for the subject Suburban Plaza property located at 2199 East Henrietta Road in the Town of Henrietta, New York (the "Site").

## Background

Haley and Aldrich of New York prepared the August 2015 Site Management Plan (SMP) for the Site (Attachment 1); it was prepared for S-P Associates, L.P. (SP).

One of the annual requirements was collection of groundwater samples for laboratory analysis for analysis for volatile organic compounds (VOCs) by USEPA Method 8260.

## Update

In a March 29, 2021 letter to SP, NYSDEC approved SP's request to discontinue groundwater monitoring at the Site, and required decommissioning of the monitoring wells. In a July 28, 2021 letter to NYSDEC, Haley & Aldrich of New York (H&A) stated that they retained Trec Environmental Inc. to decommission the wells on June 2 and 3, 2021 in accordance with the their approved NYSDEC work plan and also in accordance with NYSDEC Policy CP-43 (Attachment 2).

## SMP Update

As the monitoring wells have been decommissioned (removed), annual groundwater sampling is no longer required.

Sincerely,

Peter S. Morton, P.G., C.P.G.
Project Manager

Attachment 1: Site Management Plan
Attachment 2: H&A Decommissioning Documentation

# APPENDIX 1

# Site Management Plan

# United Cleaners

MONROE COUNTY, NEW YORK

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# Site Management Plan

## NYSDEC Site Number: 828152

**Prepared for:**
S-P Associates, L.P.
1265 Scottsville Road
Rochester, New York 14624

**Prepared by:**
Haley & Aldrich of New York
200 Town Centre Drive, Suite 2
Rochester, New York 14623
585-359-9000

## Revisions to Final Approved Site Management Plan:

| Revision # | Submitted Date | Summary of Revision | DEC Approval Date |
|---|---|---|---|
| 1 | 18 August 2015 | Revised SMP submission in response to NYSDEC letter “Draft Site Management Plan Review” (May 2014), Haley & Aldrich response letter “Response to Comments on Site Management Plan” (December 2014), and NYSDEC verbal approval of response letter (June 2015). | |
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**AUGUST 2015**

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# SITE MANAGEMENT PLAN

## 1.0 INTRODUCTION AND DESCRIPTION OF REMEDIAL PROGRAM

### 1.1 INTRODUCTION

This document is required as an element of the remedial program at the property located at 2199 East Henrietta Road in Henrietta, New York known as United Cleaners (hereinafter referred to as the “Site”) under the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program administered by New York State Department of Environmental Conservation (NYSDEC). The site was investigated and remediated in accordance with Order on Consent Index #B8-0786-08-06, Site # 828152, which was executed on June 20, 2013.

#### 1.1.1 General

S-P Associates, L.P. entered into an Order on Consent with the NYSDEC to remediate an approximately 2.02-acre portion of a 13.27-acre property located in Henrietta, Monroe County, New York. This Order on Consent required the Remedial Party, S-P Associates, L.P., to investigate and remediate contaminated media at the site. Figures showing the site location and boundaries of this 2.02-acre site are provided in Figures 1, 2, and 3. The boundaries of the site are more fully described in the metes and bounds site description that is part of the Environmental Easement (Appendix A).

After completion of the remedial work described in the IRM Work Plan, some contamination was left in the subsurface at this site, which is hereafter referred to as “remaining contamination.” This Site Management Plan (SMP) was prepared to manage remaining contamination at the site until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. All reports associated with the site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

This SMP was prepared by Haley & Aldrich of New York, on behalf of S.P. Associates, L.P., in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated May 2010, and the guidelines provided by NYSDEC. This SMP addresses the means for implementing the Institutional Controls (ICs) and Engineering Controls (ECs) that are required by the Environmental Easement for the site.

### 1.1.2 Purpose

The site contains contamination left after completion of the remedial action. Engineering Controls have been incorporated into the site remedy to control exposure to remaining contamination during the use of the site to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC, and recorded with the Monroe County Clerk, will require compliance with this SMP and all ECs and ICs placed on the site. The ICs place restrictions on site use, and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. This SMP specifies the methods necessary to ensure compliance with all ECs and ICs required by the Environmental Easement for contamination that remains at the site. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor’s successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

This SMP provides a detailed description of all procedures required to manage remaining contamination at the site after completion of the Remedial Action, including: (1) implementation and management of all Engineering and Institutional Controls; (2) media monitoring; (3) operation and maintenance of sub-slab vapor mitigation systems; (4) performance of periodic inspections, certification of results, and submittal of Periodic Review Reports; and (5) defining criteria for termination of treatment system operations.

To address these needs, this SMP includes three plans: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs; (2) a Monitoring Plan for implementation of Site Monitoring; (3) an Operation and Maintenance Plan for sub-slab vapor mitigation systems.

This plan also includes a description of Periodic Review Reports for the periodic submittal of data, information, recommendations, and certifications to 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, 6NYCRR Part 375 and the Order on Consent Index #B8-0786-08-06, Site # 828152 for the site, and thereby subject to applicable penalties.

### 1.1.3 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. In accordance with the Environmental Easement for the site, 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.

## 1.2 SITE BACKGROUND

### 1.2.1 Site Location and Description

The site is located in the Town of Henrietta, County of Monroe, New York and is identified as tax Parcel ID number 162.18-2-1.111 On the Town of Henrietta Tax Map. The site is an approximately 2.02-acre area that is part of a larger 13.27-acre portion of land operated by the Suburban Plaza. The site is bounded by a storm water retention basin, additional plaza buildings, beyond which are private single family residences and commercial retail properties to the north, landscaped property, paved parking, and commercial properties to the south, a paved parking lot and East Henrietta Road, beyond which are private single family residences and small commercial businesses to the east, and pavement and a drainage swale, beyond which is a section of town land and residences to the west (see Figure 2). The boundaries of the site are more fully described in Appendix A – Environmental Easement and Metes and Bounds.

### 1.2.2 Site History

Historically, the site was undeveloped agricultural land until the late 1950s. Historical records indicate that the Suburban Plaza property was developed by 1959. United Cleaners, which leases a portion of the property, has been the only occupant of the Plaza known to have used tetrachloroethene (PCE) or dry cleaning solvent.

According to historical records, United Cleaners began operating at the Suburban Plaza property in the 1970s. According to United Cleaners personnel, prior to 1993, United Cleaners was a pick-up/drop-off location and did not use PCE. Reportedly, they began use of PCE in 1993 and continued use of the dry cleaning solvent until 2009, when at the request of S-P Associates; United Cleaners converted their operation to the use of petroleum distillates and/or “environmentally friendly solvents.”

Between 1993 and 2009, United Cleaners reported that they used approximately 180 gallons of PCE per year. Waste PCE was stored onsite (inside United Cleaners) in small (less than 55-gallon) poly drums. The drums were staged on top of grates over secondary containment pending recycling or disposal. Currently, United Cleaners operates a dry cleaning plant and a pick-up/drop-off store. The dry cleaning solvent release identified at the site is a result of United Cleaner’s past operations.

### 1.2.3 Geologic Conditions

Topographical, geological, and hydrogeological conditions are described below. Refer to Figures 4 and 5 for representative north-south and east-west cross-sections of the site and surrounding area. Figure 6 depicts groundwater flow direction.

#### *Topography*

The site topographic information is relative to feet above mean sea level (MSL) and varies from east to west as follows:

- The site has a topographic high at an elevation slightly above El. 575 along East Henrietta Road, which borders the eastern side of the Suburban Plaza property.
- The plaza parking lot slopes down slightly to the west to the Plaza Building in which United Cleaners in located. The Plaza Building lowest floor elevation is at approximately El. 574.

- To the west of the Plaza Building, the site slopes down to the west to a north-flowing drainage ditch (El. 566) along the western border of the Suburban Plaza property.
- West of the drainage ditch, the ground surface slopes up to the west and then down towards a residential neighborhood at approximately El. 562.

Stormwater runoff from the site is directed into the north-flowing drainage ditch. The drainage ditch discharges to a retention basin located proximate to the northeast corner of the Plaza property.

### *Geology*

The site is underlain by approximately 6 to 10 feet of fill consisting of silt, sand, gravel and clay. The fill is underlain by a thin (1 to 2 feet thick) buried former topsoil layer of sandy silt with organic material (lacustrine/native layer). The buried topsoil is underlain by glacial till comprised of sandy silt, lean clay or lean sandy clay with varying amounts of gravel, sand, and occasional cobbles or boulders. A 2 to 5 foot thick layer of glacio-lacustrine sediments consisting of lean clay with minor amounts of sand and gravel is present 30 to 40 feet below the ground surface. The glacio-lacustrine sediment layer may be discontinuous; it was not encountered in one of the four deep test borings installed at the site to date. Where the glacio-lacustrine sediment layer was encountered, it was underlain by glacial till consisting of sand, silt and gravel.

The deepest exploration performed to-date at the site extended to 47 feet below ground surface (bgs). Bedrock was not encountered in the borings installed. The New York State geological survey’s regional geologic map indicates that the uppermost bedrock unit underlying the area of the site is shale of the Upper Silurian Vernon Formation.

### *Hydrogeology*

The shallow water table/saturated overburden at the site occurs approximately 5 to 10 feet below ground surface, within or just below the shallow lacustrine/native soil layer. Soil conditions and water levels observed at the four deeper wells (HA-1 through HA-4) installed at the site suggest that the shallow water table is not in good connection with the more regional groundwater in the deeper glacial till deposits. Groundwater levels observed in the four deeper wells were 17 to 33 feet below ground surface compared to 5 to 10 feet in the shallow screened wells. The belief that the shallow and deeper screen zones represent two different hydrogeologic units is supported by the difference in groundwater flow directions between the shallow and deeper saturated zones (northwest vs. southeast); strong downward vertical gradients between the shallow and deeper screen zones suggest a lower permeable unit separates the two saturated intervals; and the shallow groundwater flow appears to be more significantly influenced by near surface topography, which decreases towards the west, while the deeper groundwater flow generally flows to the southeast in the direction of nearby creeks and water features (Figure 6).

## 1.3 SUMMARY OF REMEDIAL INVESTIGATION FINDINGS

A Site Characterization (SC) was performed to characterize the nature and extent of contamination at the site. The results of the SC are described in detail in the following report:

- *Site Characterization Report, United Cleaners Facility, 2199 East Henrietta Road, Henrietta, New York, Site #HW828252,* dated 30 November 2010. Prepared by Haley & Aldrich of New York.

The report above also includes summaries and references to investigation reports prepared prior to the site being entered in the NYSDEC program. Those reports include:

- *Phase II Environmental Site Assessment, Suburban Plaza, Rochester, New York,* dated 24 May 2006. Prepared by Stantec Consulting Services, Inc.
- *Supplemental Phase II Environmental Site Assessment, Suburban Plaza – United Cleaners, Rochester, New York,* dated 30 June 2006. Prepared by Stantec Consulting Services, Inc.
- *Preliminary Investigation Report and Supplemental Investigation Work Plan, United Cleaners, 2199 East Henrietta Road, Henrietta, New York, NYSDEC Spill ID 0652009,* dated 7 March 2007. Prepared by Haley & Aldrich of New York.

Generally, the SC determined that contaminants of concern (COCs) at the site include tetrachloroethene (PCE), trichoroethene (TCE), cis-1,2-dichloroethene (cis-DCE), trans-1,2-dichloroethene (trans-DCE), vinyl chloride, chloroethane, chloroform, and acetone. Below is a summary of site conditions when the RI was performed in 2008-2010.

### 1.3.1 Soil

Significant soil characterization was conducted onsite (32 borings/monitoring wells and 26 soil samples plus an additional 9 samples collected as part of excavation confirmation sampling). The results are summarized below and in Table 1. For comparison purposes, soil analytical results were compared to the NYCRR Part 375 Soil Cleanup Objectives (SCOs) for restricted commercial use and protection of groundwater. Soil boring locations are shown on Figure 3.

- One area of the site in the vicinity of B-17 and B-19 had elevated concentrations of COCs, though detected below commercial SCOs (Table I). That area was excavated as part of the IRM (see below).
- Based on the IRM excavation confirmation samples (see below), the remaining concentrations of COCs are below commercial SCOs and within one order of magnitude of the SCOs for protection of groundwater (Table I).
- There were no detections of COCs in off-site soil.

### 1.3.2 Site-Related Groundwater

Dry cleaner solvent-related compounds were detected in groundwater onsite beneath United Cleaners and offsite directly west of the Plaza Building at concentrations exceeding comparison criteria. Refer to Table 2 for a summary of the analytical data. Well locations are shown on Figures 2 and 3. Groundwater analytical results were compared to the NYS Ambient Water Quality Standards for class GA groundwater (TOGS). The results are summarized below.

- The highest total chlorinated VOC concentrations (greater than 100 mg/L) were detected in monitoring wells MW-18, former well MW-23, and MW-105 (Refer to Figure 3). The primary dry cleaning solvent release appears to have originated from the area near the drainage ditch and appears to be migrating to the west consistent with shallow groundwater flow direction.
- Chlorinated VOCs were not detected above laboratory detection limits in wells HA-106, HA-107, HA-208, or HA-209, and very low detections (near TOGS criteria) of cis-DCE were detected in MW-22. This indicates that groundwater impacts appear to be confined to a narrow corridor extending west from United Cleaners to just beyond the drainage ditch into the town property at well HA-105. The sampling results from MW-208 and MW-209 indicate that groundwater impacts do not extend into the residential neighborhood.
- Chlorinated VOC impacts to groundwater appear to be confined to the shallow aquifer. Deep wells HA-1, HA-2, and HA-3 have shown no detections of

CVOCs during all sampling events. Deep well HA-4 had one low detection of cis-DCE in 2007; however that compound was not detected during the two subsequent sampling events in 2008 and 2009.

- Of the detected chlorinated VOCs, the highest detected compound was cis-DCE, which is a breakdown product of source products PCE and TCE. This indicates a condition of degradation consistent with natural attenuation.
- Following the IRM excavation activities, the concentrations of chlorinated VOCs in the groundwater at MW-18 (located in the excavation area) dropped by one order of magnitude.

Sump water samples were collected in March 2009 and in September 2009. Cis-DCE was detected slightly above TOGS in the sump at 18 Prince Charles Circle during both events. Chlorinated solvents of concern were not detected above TOGS at 26 Prince Charles Circle (Table 3). Though low levels of cis-DCE were detected in the sump water at 18 Prince Charles Circle, recent indoor air sampling in 18 Prince Charles Circle indicated that the low-concentration of cis-DCE in the sump water are not impacting indoor air (see below).

### 1.3.3 Site-Related Soil Vapor Intrusion

The results of the vapor intrusion evaluations conducted in both the Plaza Building and within two residential properties are summarized below. Analytical results are summarized in Tables 4 and 5.

#### *Residences*

COCs were not detected in the indoor air in the residences during the March 2009 sampling event. Due to high groundwater levels, sub-slab vapor samples could not be collected during that event.

The January 2010 sampling event results indicated that PCE was detected in indoor air at 18 Prince Charles Circle (Figure 2) at an estimated concentration (below the laboratory detection limit) of 0.76 µg/m$^3$, and TCE was detected in indoor air at 0.27 µg/m$^3$ (Table 4). COCs were not detected in the sub-slab at 18 Prince Charles Circle. Given the lack of chlorinated compound detections in the sub-slab at 18 Prince Charles Circle, the detections of PCE and TCE in indoor air were likely due to indoor sources such as household chemicals rather than soil vapor intrusion.

COCs were not detected in the indoor air, sub-slab, or outdoor air at 26 Prince Charles Circle (Figure 2).

### ***Plaza***

Prior to installation of the SSD system (discussed below), the results of sub-slab vapor and indoor air sampling indicated that chlorinated COCs (specifically PCE and TCE) were identified both in the sub-slab and indoor air of the Vacant Space (former Play-it-Again Sports), and the Family Dollar store (March 2009) (Table 5). Refer to Figure 3 for sampling locations. Detections of PCE and TCE in the sub-slab vapor and indoor air were compared to the decision matrix (Matrix 2) included in the 2006 NYSDOH Guidance for Evaluating Soil Vapor Intrusion in New York State (NYSDOH Guidance). For both the Vacant Space and Family Dollar, the concentrations of PCE detected resulted in a requirement for further monitoring and/or mitigation, which prompted the installation of the SSD system throughout the plaza. Following installation of the full plaza SSD system, the March 2010 indoor air sampling was conducted (additional sub-slab vapor testing was not applicable due to depressurization of the slab due to the SSD system).

- Results from the March 2010 indoor air sampling indicated significantly lower concentrations of contaminants of concern, as follows:
- Dry cleaner solvent related compounds were not detected in indoor air at the former Hollywood Video space (currently vacant).
- Low concentrations (less than 1 µg/m$^3$) of TCE and cis-DCE were detected in the indoor air at Country Max.

Concentrations of PCE and TCE in these spaces have significantly decreased (by one order of magnitude) between March 2009 and March 2010. PCE and TCE were detected in indoor air at Family dollar and the Vacant Space between 1 and 6.78 µg/m$^3$.

The significant reduction in PCE and TCE concentrations since the March 2009 sampling round is likely a result of dissipation over time directly related to United Cleaners discontinuing their use of PCE and to the operation of the sub-slab depressurization (SSD) system. United Cleaners stopped using PCE in early March 2009. The first indoor air samples were collected in Family Dollar and the Vacant Space on 19 March 2009, which was only approximately two weeks after United Cleaners stopped using PCE, and before the installation of the SSD systems. In contrast, prior to the indoor air sampling on 18 March 2010, PCE had not been used for over one year and the SSD systems had been operating throughout the building for almost five months (since November 2009).

## 1.4 SUMMARY OF REMEDIAL ACTIONS

The site was remediated in accordance with the NYSDEC-approved Interim Remedial Measure (IRM) work plans:

- *Revised Interim Remedial Measure (IRM) Work Plan, United Cleaners Facility, 2199 East Henrietta Road, Henrietta, New York, Site #HW828252,* dated 19 February 2009. Prepared by Haley & Aldrich of New York.
- *Revised Interim Remedial Measure (IRM) Work Plan Addendum, United Cleaners Facility, 2199 East Henrietta Road, Henrietta, New York, Site #HW828252,* dated 30 June 2009. Prepared by Haley & Aldrich of New York.

The following is a summary of the Remedial Actions performed at the site:

1. Excavation of approximately 75 cubic yards of dry cleaning solvent-impacted soil from a source area west of the United Cleaners tenant space. The final excavation measured approximately 14.5 feet by 20 feet in plan area and approximately 6.5 feet deep (Figure 7).
2. Placement and maintenance of a soil cover system consisting of asphalt pavement to prevent human exposure to contaminated soil/fill remaining in the excavation area;
3. Execution and recording of an Environmental Easement to restrict land use and prevent future exposure to any contamination remaining at the site.
4. Installation of a sub-slab depressurization (SSD) system and adjustment of roof-top handlers in the plaza building (Figures 8 and 9).
5. Development and implementation of a Site Management Plan for long term management of remaining contamination as required by the Environmental Easement, which includes plans for: (1) Institutional and Engineering Controls, (2) monitoring, (3) operation and maintenance and (4) reporting;

Remedial activities were completed at the site in May 2010.

### 1.4.1 Removal of Contaminated Materials from the Site

COCs in soil at the site were compared to the SCOs for commercial use and the protection of groundwater as shown in Table 1. A figure showing areas where excavation was performed is shown in Figure 7. The excavation activities conducted as part of the IRM are described below.

#### *Initial Excavation*

On 10 June 2009, C.P. Ward, Inc. of Scottsville, New York excavated approximately 28.5 cubic yards of asphalt and soil from the area to the west of United Cleaners and east of the drainage swale (Figure 7). The purpose of the excavation was to remove soils in the area of soil borings B-17 and B-19, where elevated concentrations of chlorinated volatile organic compounds (VOCs) were detected.

Excavated soils were screened by a Haley & Aldrich using a Photoionization Detector (PID). In addition, Community Air Monitoring was conducted according to the Generic New York State Department of Health (NYSDOH) Community Air Monitoring Plan (CAMP).

The initially excavated area measured approximately 19 ft by 8 ft in plan area and ranged from 5 ft to 5.3 ft deep. Excavated soil was staged on and beneath poly-sheeting in a dedicated staging area, and the open excavation was barricaded to restrict access while awaiting the results of confirmatory chemical testing.

A total of five confirmation samples were collected from the excavation – one from each sidewall and one from the bottom. Soil sample locations were selected based on PID screening results. The samples were submitted to Paradigm Environmental Services (Paradigm) in Rochester, New York for analysis for VOCs via EPA method 8260.

The confirmation sample results indicated that several samples contained COCs in excess of the NYSDEC Protection of Groundwater SCOs.

#### *Supplemental Excavation*

On 12 June 2009, C.P. Ward continued excavation activities and removed an additional 46.5 cubic yards of soil from the excavation. Due to the close proximity of subsurface utilities, additional excavation was not deemed practical. The additional soil was staged on and beneath poly-sheeting in the dedicated staging area, and the excavation was barricaded to restrict access while awaiting the results of confirmatory analytical testing. The final excavation measured approximately 14.5 ft by 20 ft in plan area and measured approximately 6.5 feet deep.

Community air monitoring and screening occurred during the supplemental excavation consistent with the initial excavation.

Four confirmation samples were collected from the supplemental excavation – one sample from each of the west, north, and east sidewalls and one from the bottom. Soil sample locations were selected based on PID screening results. The samples were submitted to Paradigm for analysis for volatile organic compounds (VOCs) via EPA method 8260. The results indicated that several samples contained COCs in excess of the Protection of Groundwater SCOs (Table 1).

Additional excavation was not practical due to the physical restrictions at the Site as noted above.

### *Excavation Backfill*

Approximately 105 tons of bank run gravel from Valley Sand and Gravel was used to backfill the excavation. Community Air Monitoring was conducted in accordance with the NYSDOH CAMP during backfilling activities.

C.P. Ward installed asphalt over the former excavation to meet existing pavement grade following backfilling.

### 1.4.2 Sub-Slab Depressurization (SSD) System

Installation of the SSD systems occurred in multiple phases as described below. The design of the system is described in detail in the *Interim Remedial Measures (IRM) Report, United Cleaners Facility, Henrietta, New York, Site #HW828152,* dated 30 November 2010.

- <u>February 2009</u> – This initial system installation occurred in the United Cleaners space and adjacent northern tenant space (Henrietta Spa) in accordance the February 2009 Revised IRM Work Plan.
- <u>April/May 2009</u> – Additional system installation was conducted based on the results of confirmation indoor air testing (refer to Section 3.3 below). Additional communication testing was conducted and the SSD systems were expanded into vacant spaces that were formerly occupied by a Hollywood Video store (currently vacant), Tooley’s Furniture (currently vacant), Vacant

Space (formerly Play-It-Again Sports), and the Redemption Center (formerly Liquor Store), as well as a space occupied by Country Max.

- July 2009 – The SSD systems were installed in the Auto Zone tenant space.
- November 2009 – The SSD systems was installed in the Family Dollar space.

The SSD Systems consist of suction points and either Radonaway GP-501 series or GP-265 in-line fans. A manometer was placed on each of the suction pipe runs for post-installation monitoring. The manometers are easily visible, and will allow for system operation warning devices.

The vent and discharge piping for the systems are located on the roof, 10 feet away from building openings less than 2 feet below the exhaust point, and at least 10 feet from adjoining tenant buildings and HVAC intakes or supply registers.

Figure 8 shows the locations of fans and suction points in the Plaza Building; Figure 9 shows the roof plan; and Figure 10 is a detail drawing of a typical fan set-up.

### 1.4.3 HVAC System Upgrades

During April 2010, to enhance the rate of fresh-air exchange within the Plaza Building and remove potential sources of PCE within the building, S-P Associates adjusted roof-top air handlers to increase the amount of fresh outside air to 15 - 20%, changed air filters, and removed the old ceiling tiles in the vacant spaces, which could have absorbed PCE over time while United Cleaners was operating using PCE. In May 2010, similar upgrades were made to the Country Max space.

### 1.4.4 Remaining Contamination

The results of soil sampling, most recent groundwater sampling, and vapor sampling are shown on Tables 1 through 5. Sampling locations are shown of Figures 2 and 3. Following IRM activities, the following COC contamination remains at the site:

#### *Soil*

Dry cleaning related compounds are present in soils immediately west of the United Cleaners site in the IRM excavation area at levels below NYSDEC commercial SCOs, indicating that they can stay in-place with no engineering controls as long as the site continues to be used for commercial use. However, dry cleaning related compounds were detected above the NYSDEC protection of groundwater SCOs (within one order of magnitude) beneath pavement; therefore existing cover (pavement) should remain in place to preclude surface water infiltration into groundwater. The area for which pavement should remain in place and shown on Figure 7, is called the **Soil Management Area (SMA)**.

### *Groundwater*

Low levels (near NYSDEC TOGS criteria) of dry-cleaning related solvents are present in the shallow groundwater beneath and downgradient of the United Cleaners site. Overall, the nature of the local geology (i.e. dense glacial till) appears to be limiting the downward migration of dry cleaner solvent-related compounds. Groundwater impacts above TOGS criteria appear to be confined to a narrow corridor extending west from United Cleaners into the adjacent Town of Henrietta property at well HA-105. The sampling results from wells HA-208 and HA-209 suggest that groundwater impacts do not extend beyond these well locations further into the neighborhood.

Of the detected chlorinated VOCs in groundwater, the highest detected compound was cis-DCE, which is a natural biological breakdown product of TCE (PCE→TCE→cis-DCE→vinyl chloride). The presence of cis-DCE is indicative of natural attenuation.

The Town of Henrietta property to the west of United Cleaners is undeveloped and is not used as a drinking water source.

### *Soil Vapor*

The potential for vapor intrusion in the Plaza Building has been mitigated through the use of a sub-slab depressurization system.

Vapor impacts related to United Cleaners were not identified in nearby residential properties.

# 2.0 ENGINEERING AND INSTITUTIONAL CONTROL PLAN

## 2.1 INTRODUCTION

### 2.1.1 General

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

### 2.1.2 Purpose

This plan provides:

- A description of all EC/ICs on the site;
- The basic implementation and intended role of each EC/IC;
- A description of the key components of the ICs set forth in the Environmental Easement;
- A description of the features to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of EC/ICs, such as the implementation of the Excavation Work Plan 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 EC/ICs required by the site remedy, as determined by the NYSDEC.

## 2.2 ENGINEERING CONTROLS

### 2.2.1 Engineering Control Systems

2.2.1.1 Soil Cover over Soil Management Area (SMA)

Exposure to remaining contamination above the protection of groundwater SCOs in soil/fill in the SMA is prevented by a soil cover system placed over the site. This cover system is comprised of asphalt pavement. The Excavation Work Plan that appears in Appendix B outlines the procedures required to be implemented in the event the cover system in the SMA is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed. The location of the SMA is shown on Figure 7. Procedures for the inspection and maintenance of this cover are provided in the Monitoring Plan included in Section 4 of this SMP.

2.2.1.2 Sub-Slab Depressurization (SSD) System

The potential for vapor intrusion into the plaza building is mitigated via the use of a sub-slab depressurization system. The SSD Systems consist of suction points and either Radonaway GP-501 series or GP-265 in-line fans. A manometer was placed on each of the suction pipe runs for post-installation monitoring. The manometers are easily visible, and will allow for system operation warning devices.

The vent and discharge piping for the systems are located on the roof, 10 feet away from building openings less than 2 feet below the exhaust point, and at least 10 feet from adjoining tenant buildings and HVAC intakes or supply registers.

The locations of vents, fans, suction points and test points are shown on Figures 8 and 9.

Procedures for operating and maintaining the SSD systems are documented in the Operation and Maintenance Plan (Section 4 of this SMP). Procedures for monitoring the system are included in the Monitoring Plan (Section 3 of this SMP). The Monitoring Plan also addresses severe condition inspections in the event that a severe condition, which may affect controls at the site, occurs.

### 2.2.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when effectiveness 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 6.6 of NYSDEC DER-10.

#### 2.2.2.1 Composite Cover System

The composite cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity.

See Section 3.2 for discussion of cover system monitoring.

#### 2.2.2.2 Sub-Slab Depressurization System (SSD) System

The SSD System is designed to be operated continuously and the system will be monitored and inspected at defined, regular intervals in perpetuity.

The active SSD system will not be discontinued unless prior written approval is granted by the NYSDEC. In the event that monitoring data indicates that the SSD system, or individual fan systems, is no longer required, a proposal to discontinue the SSD system will be submitted by the responsible party to the NYSDEC and NYSDOH.

See Table 8 in Section 3.1.2 for Monitoring and Inspection Schedule and Section 4.3 for discussion of SSD system monitoring.

#### 2.2.2.3 Groundwater Monitoring

Groundwater monitoring activities will continue, as determined by the NYSDEC, until residual groundwater concentrations are found to be consistently below NYSDEC standards or have become asymptotic at an acceptable level over an extended period. Monitoring will continue until permission to discontinue is granted in writing by the NYSDEC. If groundwater contaminant levels become asymptotic at a level that is not acceptable to the NYSDEC, additional source removal, treatment and/or control measures will be evaluated.

See Table 8 in Section 3.1.2 for Monitoring and Inspection Schedule and Section 3.3.1 for discussion of groundwater monitoring.

## 2.3 INSTITUTIONAL CONTROLS

A series of Institutional Controls is required by the Decision Document to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and, (3) limit the use and development of the site to commercial and industrial uses only. Adherence to these Institutional Controls on the site is required by the Environmental Easement and will be implemented under this Site Management Plan. These Institutional Controls are:

- Compliance with the Environmental Easement and this SMP by the Grantor and the Grantor's successors and assigns;
- The Controlled Property may be used for Commercial use as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial use as described in 6 NYCRR Part 375-1.8(g)(2)(iv);
- All Engineering Controls must be operated and maintained as specified in this SMP;
- All Engineering Controls on the Controlled Property 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 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;
- Groundwater and other environmental or public health monitoring must be performed as defined in this SMP;
- Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in this SMP;
- All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;
- Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;

- Operations, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the 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 this Environmental Easement.

Institutional Controls identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement.

The site has a series of Institutional Controls in the form of site restrictions. Adherence to these Institutional Controls is required by the Environmental Easement (Appendix A). Site restrictions that apply to the Controlled Property are:

- The property may only be used for commercial or industrial use provided that the long-term Engineering and Institutional Controls included in this SMP are employed.
- The property may not be used for a higher level of use, such as unrestricted, residential, or restricted-residential use without additional remediation and amendment of the Environmental Easement, as approved by the NYSDEC;
- All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with this SMP;
- The use of the groundwater underlying the property is prohibited without treatment rendering it safe for intended use;
- The potential for vapor intrusion must be evaluated for any buildings developed at the site, and any potential impacts that are identified must be monitored or mitigated;
- Vegetable gardens and farming on the property are prohibited;
- The site owner or remedial party will submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually,

or an alternate period of time that NYSDEC may allow and will be made by an expert that the NYSDEC finds acceptable.

### 2.3.1 Excavation Work Plan

The site has been remediated for commercial and industrial uses. Any future intrusive work that will penetrate the soil cover or cap in the SMA, or encounter or disturb the remaining contamination, including any modifications or repairs to the existing cover system in the SMA will be performed in compliance with the Excavation Work Plan (EWP) that is attached as Appendix B to this SMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) prepared for the site. A sample HASP is attached as Appendix C to this SMP that is in current compliance with DER-10, and 29 CFR 1910, 29 CFR 1926, and all other applicable Federal, State and local regulations. Based on future changes to State and federal health and safety requirements, and specific methods employed by future contractors, the HASP and CAMP will be updated and re-submitted with the notification provided in Section B-1 of the EWP. Any intrusive construction work will be performed in compliance with the EWP, HASP and CAMP, and will be included in the periodic inspection and certification reports submitted under the Site Management Reporting Plan (See Section 5).

The site owner and associated parties preparing the remedial documents submitted to the State, and parties performing this work, are completely responsible for the safe performance of all intrusive work, the structural integrity of excavations, proper disposal of excavation de-water, control of runoff from open excavations into remaining contamination, and for structures that may be affected by excavations (such as building foundations and bridge footings). The site owner will ensure that site development activities will not interfere with, or otherwise impair or compromise, the engineering controls described in this SMP.

### 2.3.2 Soil Vapor Intrusion Evaluation

Prior to the construction of any enclosed structures located over areas that contain remaining contamination and the potential for soil vapor intrusion (SVI) has been identified, an SVI evaluation will be performed to determine whether any mitigation measures are necessary to eliminate potential exposure to vapors in the proposed structure.

Alternatively, an SVI mitigation system may be installed as an element of the building foundation without first conducting an investigation. This mitigation system will include a vapor barrier and passive sub-slab depressurization system that is capable of being converted to an active system.

Prior to conducting an SVI investigation or installing a mitigation system, a work plan will be developed and submitted to the NYSDEC and NYSDOH for approval. This work plan will be developed in accordance with the most recent NYSDOH "Guidance for Evaluating Vapor Intrusion in the State of New York" (NYSDOH Guidance). Measures to be employed to mitigate potential vapor intrusion will be evaluated, selected, designed, installed, and maintained based on the SVI evaluation, the NYSDOH guidance, and construction details of the proposed structure.

Preliminary (unvalidated) SVI sampling data will be forwarded to the NYSDEC and NYSDOH for initial review and interpretation. Upon validation, the final data will be transmitted to the agencies, along with a recommendation for follow-up action, such as mitigation. If the property is owned by a third party, validated SVI data will be transmitted to the property owner within 30 days of validation. If any indoor air test results exceed NYSDOH guidelines, relevant NYSDOH fact sheets will be provided to all tenants and occupants of the property within 15 days of receipt of validated data.

SVI sampling results, evaluations, and follow-up actions will also be summarized in the next Periodic Review Report.

## 2.4 INSPECTIONS AND NOTIFICATIONS

### 2.4.1 Inspections

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

- Whether Engineering Controls 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 Easement;
- Achievement of remedial performance criteria;
- Sampling and analysis of appropriate media during monitoring events;
- If site records are complete and up to date; and
- Changes, or needed changes, to the remedial or monitoring system;

Inspections will be conducted in accordance with the procedures set forth in the Monitoring Plan of this SMP (Section 3). The reporting requirements are outlined in the Periodic Review Reporting section of this plan (Section 5).

If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs, an inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the EC/ICs implemented at the site by a qualified environmental professional as determined by NYSDEC.

### 2.4.2 Notifications

Notifications will be submitted by the property owner to the NYSDEC as needed for the following reasons:

- 60-day advance notice of any proposed changes in site use that are required under the terms of the Order on Consent, 6NYCRR Part 375, and/or Environmental Conservation Law.
- 7-day advance notice of any proposed ground-intrusive activities in the SMA pursuant to the Excavation Work Plan.
- Notice within 48-hours of any damage or defect to the foundation, structures or engineering control that reduces or has the potential to reduce the effectiveness of an Engineering Control 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 Engineering Controls 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 shall be submitted to the NYSDEC within 45

days and shall describe and document 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 has been provided with a copy of the Order on Consent, 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.

## 2.5 CONTINGENCY PLAN

Emergencies may include injury to personnel, fire or explosion, environmental release, or serious weather conditions.

If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs, an inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the EC/ICs implemented at the site by a qualified environmental professional as determined by NYSDEC.

### 2.5.1 Emergency Telephone Numbers

In the event of any environmentally related situation or unplanned occurrence requiring assistance the Owner or Owner's representative(s) should contact the appropriate party from the contact list below. For emergencies, appropriate emergency response personnel should be contacted. Prompt contact should also be made to S-P Associates. These emergency contact lists must be maintained in an easily accessible location at the site.

**Table 6: Emergency Contact Numbers**

| | |
|---|---|
| Medical, Fire, and Police: | 911 |
| One Call Center: | (800) 272-4480 |

| | |
|---|---|
| | (3 day notice required for utility markout) |
| Poison Control Center: | (800) 222-1222 |
| Pollution Toxic Chemical Oil Spills: | (800) 424-8802 |
| NYSDEC Spills Hotline | (800) 457-7362 |

**Table 7: Contact Numbers**

| | |
|---|---|
| S-P Associates | (585) 783-3241 |
| Haley & Aldrich of New York | (585) 359-9000 |
| Matthew P. Gillette, P.E<br>NYSDEC | (585) 226-5308 |
| Mark S. Sergott<br>NYSDOH | (518) 402-7860 |
| Jeffery M. Kosmala, P.E.<br>Monroe County DOH | (585) 753-5470 |

* Note: Contact numbers subject to change and should be updated as necessary

### 2.5.2 Map and Directions to Nearest Health Facility

Site Location: Suburban Plaza
2199 East Henrietta Road
Henrietta, New York

Nearest Hospital Name: Extended Medical Care (Urgent Care)

Hospital Location: 2116 East Henrietta Road
Henrietta, New York

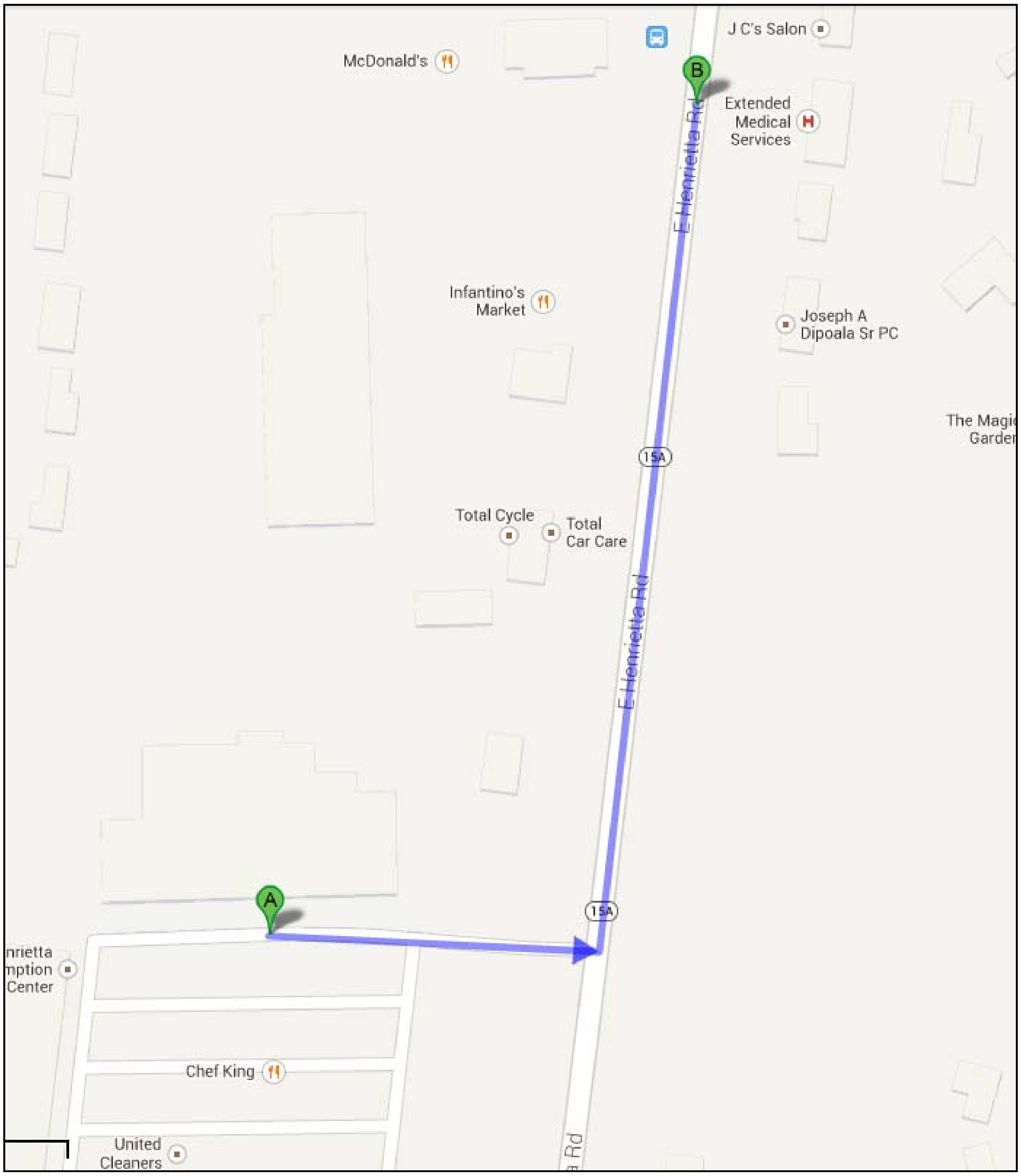
Hospital Telephone: (585) 486-4989

Directions to the Hospital:

1. From Suburban Plaza Parking lot: Turn left onto New York 15A/East Henrietta Road.
2. Destination will be on the right approximately 0.2 miles.

Total Distance: 0.2 miles

Total Estimated Time: 4 Minutes



**Map Showing Route from the site to the Hospital:**

### 2.5.3 Response Procedures

As appropriate, the fire department and other emergency response group will be notified immediately by telephone of the emergency. The emergency telephone number list is found at the beginning of this Contingency Plan (Table 6). The list will also be posted prominently at the site and made readily available to all personnel at all times.

# 3.0 SITE MONITORING PLAN

## 3.1 INTRODUCTION

### 3.1.1 General

The Monitoring Plan describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the site, the soil cover system, and all affected site media identified below. Monitoring of other Engineering Controls is described in Chapter 4, Operation and Maintenance Plan. This Monitoring Plan may only be revised with the approval of NYSDEC.

### 3.1.2 Purpose and Schedule

This Monitoring Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., groundwater, indoor air, soil vapor, soils);
- Assessing compliance with applicable NYSDEC standards, criteria and guidance, particularly ambient groundwater standards and Part 375 SCOs for soil;
- Assessing achievement of the remedial performance criteria.
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment; and
- Preparing the necessary reports for the various monitoring activities.

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

- Sampling locations, protocol, and frequency;
- Information on all designed monitoring systems (e.g., well logs);
- Analytical sampling program requirements;
- Reporting requirements;
- Quality Assurance/Quality Control (QA/QC) requirements;
- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and

- Annual inspection and periodic certification.

Periodic monitoring of the performance of the remedy and overall reduction in contamination on-site will be conducted per the table below. Trends in contaminant levels in groundwater in the affected areas, will be evaluated to determine if the remedy continues to be effective in achieving remedial goals. Monitoring programs are summarized in Table 8 and outlined in detail in Sections 3.2, 3.3, and 4.3 below.

**Table 8: Monitoring/Inspection Schedule**

| Monitoring Program | Frequency* | Matrix | Analysis |
|---|---|---|---|
| Cover System | Yearly | N/A | Visual, only |
| SSD System | Monthly: Manometer readings on individual fan systems<br>-------------------------------<br>Yearly: General Equipment Inspection and sub-slab vacuum monitoring | Fan<br>-----------------------<br>Eight (8) permanent vacuum test points | Visual manometer readings<br>----------------------<br>Visual |
| Groundwater | Semi-Annually (Year 1 & 2)<br>Annually (Year 3 and on) | Groundwater | VOCs via EPA Method 8260 |

* The frequency of events will be conducted as specified until otherwise approved by NYSDEC and NYSDOH

## 3.2 COVER SYSTEM MONITORING

Pavement is present over the SMA located to the west of the United Cleaners tenant space. The pavement must be maintained at all times, and must be replaced in-kind should it be breached as described in the Excavation Work Plan (Appendix B).

The cover will be inspected on an annual basis. If significant areas of distress are noted, they will be repaired to a condition required by this SMP. The cover will be repaired in-kind if it is damaged during any subsurface work (e.g. utilities). Monitoring of the cover will be reported in the Periodic Review Report.

## 3.3 MEDIA MONITORING PROGRAM

### 3.3.1 Groundwater Monitoring

Groundwater monitoring will be performed on a periodic basis to assess the performance of the remedy.

The network of monitoring wells has been installed to monitor both up-gradient and down-gradient groundwater conditions at the site. The network of on-site and off-site wells has been designed based on the following criteria:

- Representation of the downgradient area to evaluate offsite migration to the west.
- Representation of shallow and deep source area wells to evaluate natural degradation of dry cleaning-related compounds over time.
- The condition of the wells and accessibility for ongoing maintenance and monitoring (i.e. interior 1-inch monitoring wells are excluded from monitoring).

The monitoring well network is summarized in the Table 9 below. Baseline water quality data is shown on Table 2. Monitoring well locations are shown on Figure 2. Groundwater contours from 2009 are included in Figure 6.

Monitoring well construction logs are included in Appendix D. A summary of the monitoring well construction is included in Table 10.

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

Deliverables for the groundwater monitoring program are specified in sections below.

**Table 9: Monitoring Well Network Summary**

| Well ID | Location | Casing Diameter | Screen Depth | Baseline Conditions (2009) | Analytes to be Tested |
|---|---|---|---|---|---|
| HA-1 | Upgradient | 2 inch | 37-47 ft. | VOCs non-detect | Water Level Only |
| HA-2 | N. Boundary of Plume (deep) | 2 inch | 30-40 ft. | VOCs non-detect | Water Level Only |
| HA-3 | S. Boundary of Plume (deep) | 2 inch | 30-40 ft. | VOCs non-detect | Water Level Only |
| MW-15R | W. of United Cleaners Space | 2 inch | 10.5-15.5 ft. | Cis-DCE, trans-DCE & Vinyl Chloride detected slightly above TOGS | VOCs |
| MW-22R | S. Boundary of Plume | 2 inch | 5.2-15.2 ft. | Cis-DCE detected slightly above TOGS | VOCs |
| MW-18R | Source Area (shallow) | 2 inch | 10-15 ft. | Cis-DCE and trans-DCE detected slightly above TOGs | VOCs |
| HA-4 | Source Area (deep) | 2 inch | 30-40 ft. | VOCs non-detect | VOCs |
| HA-107 | N. Boundary of Plume | 2 inch | 4.8-14.8 ft. | VOCs non-detect | VOCs |
| HA-105 | Downgradient (offsite) | 2 inch | 6.6-16.6 ft. | Several COCs detected above TOGs | VOCs |
| HA-106 | Downgradient (offsite) | 2 inch | 6.1-16.1 ft. | VOCs non-detect | VOCs |
| HA-208 | Downgradient (offsite) | 2 inch | 10-20 ft. | VOCs non-detect | VOCs |
| HA-209 | Downgradient (offsite) | 2 inch | 5-15 ft. | VOCs non-detect | VOCs |

#### 3.3.1.1 Sampling Protocol

All monitoring well sampling activities will be recorded in groundwater sampling forms presented in Appendix E. Other observations (e.g., well integrity, etc.) will be noted on the well sampling log. The well sampling log will serve as the inspection form for the groundwater monitoring well network. Sampling protocol is as follows:

**__First Event, Only:__**

1. Prior to sampling, the wells shall be developed to remove fines and sediments if needed. Wells will be developed until the water is visually clear, ten well volumes have been removed, or the well is dry. After development, the wells will be allowed to sit for 1 week to equilibrate.

2. Following the equilibration period and prior to sampling, static water levels shall be measured from each well in the network and documented in the log (Appendix E).

3. Place a passive diffusion bag in each well to a depth of the midway point of the well screen.

4. The bags should remain in the wells for at least 2 weeks (but not to exceed 90 days) prior to collection or per length of time recommended by the laboratory.

5. After the specified length of time, retrieve the bags and fill the laboratory-supplied volatile organic analyte bottles with water in the bags.

6. The samples will be labeled as follows:

   Well ID-Date (YYMMDD)-Time (24 hour) *(e.g. MW15R-071713-1310)*

7. Samples will be cooled to 4°C or less and shipped/couriered to an ELAP Certified Laboratory for analysis of VOCs via EPA Method 8260B.

8. Dispose of the bags in onsite dumpsters.

9. Place a new passive diffusion bag in each well to a depth of the midway point of the well screen.

**<u>All Other Events:</u>**

1. Prior to sampling, static water levels shall be measured from each well in the network and documented in the log (Appendix E).
2. Retrieve the passive diffusion bag placed in the well a maximum of 90 days prior to the sampling event and fill the laboratory-supplied volatile organic analyte bottles with water in the bags.
3. The samples will be labeled as follows:

   Well ID-Date (YYMMDD)-Time (24 hour) *(e.g. MW15R-071713-1310)*
4. Samples will be cooled to 4°C or less and shipped/couriered to an ELAP Certified Laboratory for analysis of VOCs via EPA Method 8260B.
5. Dispose of the bags in onsite dumpsters.
6. Gauge the bottom of the well to evaluate if there has been significant sediment build up since the previous sampling event. If so, it may be necessary to redevelop the well (see procedure above) prior to placement of a new passive diffusion bag.
7. Place a new passive diffusion bag in each well to a depth of the midway point of the well screen.

#### 3.3.1.2 Monitoring Well Repairs, Replacement And Decommissioning

The on-site and/or off-site monitoring wells will by physically agitated/surged if silt accumulation occurs in the monitoring wells to the point where 20% of the well screen is covered. Additionally, monitoring wells will be properly decommissioned and replaced (as per the Monitoring Plan). All development water will be properly handled in accordance with applicable regulations.

Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance. Monitoring wells will be visually inspected during each sampling event. Damaged or missing components (e.g. missing bolts, damaged well covers, poor surface seals, etc.) will be documented and the well will be repaired or replaced prior to the next sampling event.

The NYSDEC will be notified prior to any repair or decommissioning of monitoring wells for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent periodic report. Well decommissioning without replacement will be done only with the prior approval of NYSDEC. Well abandonment will be performed in accordance with NYSDEC's "Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells that are decommissioned because they have been rendered unusable will be reinstalled in the nearest available location, unless otherwise approved by the NYSDEC.

### 3.3.2 Indoor Air Monitoring

A single indoor air sampling event, consisting of one sample from the Family Dollar (same as previous location), one sample from Former Play-It-Again Sports (same as previous location), and an outdoor ambient air control sample, will be conducted during the 2015-2016 heating season.

These samples will be collected using 'certified-clean' 6.0-liter canisters equipped with *8-hour* flow controllers. The indoor-air samples will be collected from the same locations as the samples collected previously during March 2009. The indoor air samples will be collected at table or work-bench height. The outdoor ambient air sample will be collected at an upwind location to be determined in the field.

The SUMMA® canisters will be submitted to the laboratory for analysis via EPA Method TO-15. The sub-slab samples will be analyzed for the site COCs: PCE, TCE, cis-1,2-DCE, and VC only.

## 3.4 SITE-WIDE INSPECTION

Site-wide inspections will be performed on a regular schedule at a minimum of once a year. Site-wide inspections will also be performed after all severe weather conditions that may affect Engineering Controls or monitoring devices. During these inspections, an inspection form will be completed (Appendix E). 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;
- Compliance with permits and schedules included in the Operation and Maintenance Plan; and
- Confirm that site records are up to date.

## 3.5 MONITORING QUALITY ASSURANCE/QUALITY CONTROL

All sampling and analyses will be performed in accordance with the requirements of the Quality Assurance Project Plan (QAPP) prepared for the site (Appendix F). Main Components of the QAPP include:

- QA/QC Objectives for Data Measurement;
- Sampling Program:
  - Sample containers will be properly washed, decontaminated, and appropriate preservative will be added (if applicable) prior to their use by the analytical laboratory. Containers with preservative will be tagged as such.
  - Sample holding times will be in accordance with the NYSDEC ASP requirements.
  - Field QC samples (e.g., trip blanks, coded field duplicates, and matrix spike/matrix spike duplicates) will not be collected unless requested by the NYSDEC, with the exception of a trip blank, which will be collected during each groundwater sampling event.
- Sample Tracking and Custody;
- Calibration Procedures:
  - All field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions.

    - The laboratory will follow all calibration procedures and schedules as specified in USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods.

- Analytical Procedures;
- Preparation of a Data Usability Summary Report (DUSR), which will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain of custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method.
- Internal QC and Checks;
- QA Performance and System Audits;
- Preventative Maintenance Procedures and Schedules;
- Corrective Action Measures.

## 3.6 MONITORING REPORTING REQUIREMENTS

Forms and any other information generated during regular monitoring events and inspections will be kept on file on-site. All forms, and other relevant reporting formats used during the monitoring/inspection events, will be (1) subject to approval by NYSDEC and (2) submitted at the time of the Periodic Review Report, as specified in the Reporting Plan of this SMP.

All monitoring results will be reported to NYSDEC on a periodic basis in the Periodic Review Report. The report will include, at a minimum:

- Date of event;
- Personnel conducting sampling;
- Description of the activities performed;
- Type of samples collected (e.g. groundwater, etc);
- 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 groundwater conditions have changed since the last reporting event.

Data will be reported in hard copy or digital format as determined by NYSDEC. A summary of the monitoring program deliverables are summarized in Table 11 below.

## Table 11: Schedule of Monitoring/Inspection Reports

| Task | Reporting Frequency* |
|---|---|
| Cover System Monitoring | Annually |
| SSD System Monitoring | Annually |
| Groundwater Monitoring | Annually |

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

# 4.0 OPERATION AND MAINTENANCE PLAN

## 4.1 INTRODUCTION

This Operation and Maintenance Plan describes the measures necessary to operate, monitor and maintain the mechanical components of the remedy selected for the site. This Operation and Maintenance Plan:

- Includes the steps necessary to allow individuals unfamiliar with the site to operate and maintain the Sub-slab depressurization (SSD) systems;
- Includes an operation and maintenance contingency plan; and,
- Will be updated periodically to reflect changes in site conditions or the manner in which the SSD system is operated and maintained.

Information on non-mechanical Engineering Controls (i.e. soil cover system) is provided in Section 3 - Monitoring Plan. A copy of this Operation and Maintenance Plan, along with the complete SMP, will be kept at the site. This Operation and Maintenance Plan is not to be used as a stand-alone document, but as a component document of the SMP.

## 4.2 ENGINEERING CONTROL SYSTEM OPERATION AND MAINTENANCE

### 4.2.1 Sub-Slab Depressurization (SSD) System Scope

A SSD system was installed in the plaza building to mitigate the potential for soil vapor intrusion and was approved by the NYSDEC. Refer to Section 2.2.1.2 for a description of the system. Monitoring of the system consists of monthly pressure checks, and annual sub-slab pressure readings.

### 4.2.2 System Start-Up and Testing

The SSD system is designed to work continuously and does not need to be turned on or shut down. The system has vacuum monitors (manometers) that can be inspected to evaluate performance and alarms to indicate system failure (see Section 3.8.2, above). In the event that a manometer indicates the system is ineffective or there is a system shutdown, a site owner representative will notify the appropriate environmental professional via telephone contact.

### 4.2.3 System Operation: Routine Operation Procedures

Other than routine monitoring (See Section 4.3), the SSD system operates continuously and does not require manual system operation. In the event of an electrical failure, the system is engineered to restart. In the event that the warning devices (manometers) indicate that the system is not working effectively or there is a system shutdown, a site owner representative will notify the appropriate environmental professional via telephone contact.

### 4.2.4 System Operation: Routine Equipment Maintenance

Routine maintenance shall commence following NYSDEC approval of this SMP. Monitoring shall occur annually.

During routine maintenance, the following activities (at a minimum) must be conducted:

1. A visual inspection of the complete system (i.e. fan, piping, labeling system, urethane seals, etc.);
2. A visual inspection of the manometers and readings;
3. Inspection of exhaust points to verify that air intakes have not been located nearby;
4. Audible inspection to verify a fan’s operational performance

Preventative maintenance (i.e. replacing fans), repairs and/or adjustments shall be made to the system to ensure its continued effectiveness at mitigating potential exposures related to soil vapor intrusion. The need for preventative maintenance will depend upon the life expectancy and warranty for the specific part (fan life is generally between three and five years), as well as visual observations over time. The need for repairs and/or adjustments will depend upon the observation of system operation compared to that obtained when system operations were initiated.

In addition to the routine OM&M activities described here, the building's owner and tenants will be provided with the IRM Completion Report and this SMP that explains the system's operation, maintenance and monitoring.  Therefore, at any time during the system's operation, the building's owner or tenants may check that the system is operating properly.

### 4.2.5 System Operation: Non-Routine Equipment Maintenance

Non-routine maintenance may be required during the long-term operation of a SSD system. Examples of such situations include the following:

1. The need to replaces a fan;
2. The building's owners or occupants report that the warning device (vacuum gauge) indicates the SSD system is not operating properly;
3. The SSD system becomes damaged; or
4. The building has undergone renovations that may reduce the effectiveness of the vapor management system.

Activities conducted during non-routine maintenance will vary depending upon the reason for the maintenance. In general, non-routine maintenance activities may include examining the building for structural or HVAC system changes, or other changes that may affect the performance of the vapor mitigation system (e.g. new combustion appliances or deterioration of the concrete slab). The non-routine maintenance may also include examining the operation of the warning device and the vent fan. Repairs or adjustments should be made to the system as appropriate. If necessary, the system should be redesigned. Refer to Table 7 for appropriate contact information for non-routine maintenance.

## 4.3 ENGINEERING CONTROL SYSTEM PERFORMANCE MONITORING

A SSD system was installed in the plaza building to mitigate the potential for soil vapor intrusion and was approved by the NYSDEC. Refer to Section 2.2.1.2 for a description of the system. Monitoring of the system consists of monthly pressure checks.

### 4.3.1 Monitoring Schedule & Protocol

There are ten manometers connected to the ten suction points (See Figure 8), which will be monitored monthly by site personnel or representatives of the responsible party. In the event that the manometers indicate that negative differential pressure is not present beneath the slab, non-routine maintenance may be required as described in Section 4.2.4. Operational maintenance issues will be reported and discussed in the Periodic Review Report.

Sub-slab vacuum monitoring shall be performed by measuring the differential pressure between the indoor air and sub-slab to ensure a lower pressure is being maintained in the sub-slab. As shown in Figure 8, eight (8) temporary vacuum test points will be converted to permanent test points. These test points shall be monitored via pressure testing (measuring the vacuum influence with a digital manometer at permanent monitoring point locations). Pressure testing will be conducted by an environmental professional and recorded on the General Equipment Inspection Form. The established design target is a minimum differential pressure of 0.004 inches of water at each vacuum test point.

In the event that any of the following criteria exist, the designated environmental professional will be notified so that maintenance can be performed and the SSD System will be restarted:

- Any equipment readings are not within their typical range,
- Any equipment is observed to be malfunctioning, or
- The system is not performing within specifications.

Operational maintenance issues will be reported and discussed in the Annual Report.

The need for repairs and/or adjustments will depend upon the observation of system operation compared to that obtained when system operations were initiated.

If significant changes are made to the system or when the system's performance is unacceptable, the system may need to be reevaluated.

In addition to the routine OM&M activities described here, the building's owner and tenants (who occupy space with active fan systems) will be provided with the Construction Completion Report and this SMP which explains the system's operation, maintenance, and monitoring.

Inspection frequency is subject to change with the approval of the NYSDEC. Unscheduled inspections and/or sampling may take place when a suspected failure of the SSD system has been reported or an emergency occurs that is deemed likely to affect the operation of the system. Monitoring deliverables for the SSD system are specified later in this Plan.

### 4.3.2 General Equipment Monitoring

A visual inspection of the complete system will be conducted during the annual monitoring event. SSD system components to be monitored include, but are not limited to, the following:

- Fans
- General system piping
- Manometer readings (Monitored Monthly)
- Sub-Slab Vacuum point readings (if needed)

In addition, and in accordance with Section 4.2.4, routine maintenance should be conducted in conjunction with system monitoring.

If equipment readings are not within their typical range, equipment is observed to be malfunctioning, or the system is not performing within specifications, the site owner or owner's environmental professional will be notified so that maintenance can be performed, and the SSD system will be restarted.

The results of the general equipment monitoring shall be documented on the General Equipment Inspection form (Appendix E) and included in the Periodic Review Report.

### 4.3.3 System Monitoring Devices and Alarms

The SSD system has a warning device to indicate that the system is not operating properly. The warning device is in the form of a manometer. Each fan is equipped with its own manometer. In the event that the warning device indicates the system is not working effectively or there is a system shutdown, a site owner representative will notify the appropriate environmental professional via telephone contact. Additionally, applicable maintenance and repairs will be conducted and documented on the appropriate maintenance form (Appendix E), as specified in the Operation and Maintenance Plan, and the SSD system restarted. The SSD system is also engineered to restart after an electrical failure. Operational problems will be noted in the subsequent Periodic Review Report.

## 4.4 MAINTENANCE AND PERFORMANCE MONITORING REPORTING REQUIREMENTS

Maintenance reports and any other information generated during regular operations at the site will be kept on-file on-site. All reports, forms, and other relevant information generated will be available upon request to the NYSDEC and submitted as part of the Periodic Review Report, as specified in the Section 5 of this SMP.

### 4.4.1 Routine Maintenance Reports

Checklists or forms (see Appendix E) will be completed during each routine maintenance event. Checklists/forms will include, but not be limited to the following information:

- Date;
- Name, company, and position of person(s) conducting maintenance activities;
- Maintenance activities conducted;

- 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).

### 4.4.2 Non-Routine Maintenance Reports

During each non-routine maintenance event, a form will be completed which will include, but not be limited to, the following information:

- Date;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Presence of leaks;
- Date of leak repair;
- Other repairs or adjustments made to the system;
- 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).

# 5. INSPECTIONS, REPORTING AND CERTIFICATIONS

## 5.1 SITE INSPECTIONS

### 5.1.1 Inspection Frequency

All inspections will be conducted at the frequency specified in the schedules provided in Section 3 Monitoring Plan and Section 4 Operation and Maintenance Plan of this SMP. At a minimum, a site-wide inspection will be conducted annually. Inspections of remedial components will also be conducted when a breakdown of any treatment system component has occurred or whenever a severe condition has taken place, such as an erosion or flooding event that may affect the ECs.

### 5.1.2 Inspection Forms, Sampling Data, and Maintenance Reports

All inspections and monitoring events will be recorded on the appropriate forms which are contained in Appendix E. These forms are subject to NYSDEC revision.

All applicable inspection forms and other records, including all media sampling data and system maintenance reports, generated for the site during the reporting period will be provided in electronic format in the Periodic Review Report.

### 5.1.3 Evaluation of Records and Reporting

The results of the inspection and site monitoring data will be evaluated as part of the EC/IC certification to confirm that the:

- EC/ICs are in place, are performing properly, and remain effective;
- The Monitoring Plan is being implemented;
- Operation and maintenance activities are being conducted properly; and, based on the above items,
- The site remedy continues to be protective of public health and the environment and is performing as designed in the IRM Work Plan and IRM Completion Report.

## 5.2 CERTIFICATION OF ENGINEERING AND INSTITUTIONAL CONTROLS

After the last inspection of the reporting period, a Professional Engineer will prepare the following certification:

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

- The inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;
- 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;
- Nothing has occurred that would impair the ability of the control to protect the public health and 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 the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;
- 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;
- Use of the site is compliant with the environmental easement;
- The engineering control systems are performing as designed and are effective;
- To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program; and
- The information presented in this report is accurate and complete.
- No new information has come to my attention, including groundwater monitoring data from wells located at the site boundary, if any, to indicate that the assumptions made in the qualitative exposure assessment of off-site contamination are no longer valid; and

- *Every five years the following certification will be added:* The assumptions made in the qualitative exposure assessment remain valid.
- 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 *(company)*, am certifying as *(owner or owner’s representative)* for the site.

The signed certification will be included in the Periodic Review Report described below.

## 5.3 PERIODIC REVIEW REPORT

A Periodic Review Report will be submitted to the Department every year, beginning fifteen months after the No Further Action is issued. 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 (Metes and Bounds). The report will be prepared in accordance with NYSDEC DER-10 and submitted within 30 days of the end of each certification period. Media sampling results will also 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 inspection forms and other records generated for the site during the reporting period in electronic format;
- 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), 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 electronically in a NYSDEC-approved format;
- A site evaluation, which includes the following:
    - The compliance of the remedy with the requirements of the site-specific 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 Plan for the media being monitored;
    - Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan; and
    - The overall performance and effectiveness of the remedy.

The Periodic Review Report will be submitted, in electronic format, to the NYSDEC Regional Office in which the site is located, and in electronic format to the NYSDOH Bureau of Environmental Exposure Investigation.

## 5.4 CORRECTIVE MEASURES 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 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 plan until it is approved by the NYSDEC.

# 6. CERTIFICATIONS

I, Mark N. Ramsdell, P.E., 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 the DER-approved work plan and any DER-approved modifications.

Mark N. Ramsdell

Mark N. Ramsdell, P.E

MARK N. RAMSDELL
71627

8/18/15

Date

TABLE 1 -
SUMMARY OF SOIL QUALITY DATA
UNITED CLEANERS
HENRIETTA, NEW YORK
NYSDEC SITE # HW828152

*(Table notes included on Page 4)*

| SAMPLE DESIGNATION | NYSDEC | NYSDEC | **B2-(4-8)** | **B3-(0-4)** | **B5-(0-4)** | **B6-(0-4)** | **B8-(4-8)** | **B10-(0-4)** | **B12-(0-4)** | **B13-(0-4)** | **B14-(4-8)** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE DEPTH (FT BGS) | 6 NYCRR Part 375 | 6 NYCRR Part 375 | 4 - 8 ft | 0 - 4 ft | 0 - 4 ft | 0 - 4 ft | 4 - 8 ft | 0 - 4 ft | 0 - 4 ft | 0 - 4 ft | 4 - 8 ft |
| SAMPLING DATE | Commercial | Protection of | 5/12/2006 | 5/12/2006 | 5/12/2006 | 5/12/2006 | 5/12/2006 | 5/12/2006 | 6/9/2006 | 6/9/2006 | 6/9/2006 |
| SAMPLED BY |  | Groundwater | Stantec | Stantec | Stantec | Stantec | Stantec | Stantec | Stantec | Stantec | Stantec |
| UNITS | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| **VOCs by 8260B** |  |  |  |  |  |  |  |  |  |  |  |
| Acetone | 500 | 0.05 | 0.0302 U | 0.34 U | 0.0487 U | 0.037 U | 0.0432 U | 0.0418 U | 0.255 | 0.103 | 0.134 |
| cis-1,2-Dichloroethene | 500 | 0.25 | 0.00603 U | 0.0681 U | 0.2 | 0.0074 U | 0.00864 U | 0.00837 U | 0.0101 U | 0.00879 U | 0.0132 |
| Tetrachloroethene | 150 | 1.3 | 0.00603 U | 0.221 | 0.00974 U | 0.0074 U | 0.0182 | 0.00837 U | 0.0101 U | 0.0587 | 0.00706 U |
| trans-1,2-Dichloroethene | 500 | 0.19 | 0.00603 U | 0.0681 U | 0.0331 | 0.0074 U | 0.00864 U | 0.00837 U | 0.0101 U | 0.00879 U | 0.00706 U |
| Trichloroethene | 200 | 0.68 | 0.00603 U | 0.0681 U | 0.00974 U | 0.0117 | 0.00864 U | 0.00837 U | 0.0101 U | 0.0326 | 0.00706 U |
| Trichlorofluoromethane | NA | NA | 0.00603 U | 0.0681 U | 0.00974 U | 0.0074 U | 0.00864 U | 0.00837 U | 0.0101 U | 0.00879 U | 0.00706 U |
| Vinyl Chloride | 13 | 0.02 | 0.00603 U | 0.0681 U | 0.00974 U | 0.0074 U | 0.00864 U | 0.00837 U | 0.0101 U | 0.00879 U | 0.00706 U |

TABLE 1 -
SUMMARY OF SOIL QUALITY DATA
UNITED CLEANERS
HENRIETTA, NEW YORK
NYSDEC SITE # HW828152

*(Table notes included on Page 4)*

| SAMPLE DESIGNATION<br>SAMPLE DEPTH (FT BGS)<br>SAMPLING DATE<br>SAMPLED BY<br>UNITS | NYSDEC<br>6 NYCRR Part 375<br>Commercial<br><br>mg/kg | NYSDEC<br>6 NYCRR Part 375<br>Protection of<br>Groundwater<br>mg/kg | **B15-(4-8)**<br>4 - 8 ft<br>6/12/2006<br>Stantec<br>mg/kg | **B17-(0-4)**<br>0 - 4 ft<br>6/12/2006<br>Stantec<br>mg/kg | **B17-(6-7.2)**<br>6 - 7.2 ft<br>6/12/2006<br>Stantec<br>mg/kg | **B19-(0-4)**<br>0 - 4 ft<br>6/12/2006<br>Stantec<br>mg/kg | **B19-(6-8)**<br>6 - 8 ft<br>6/12/2006<br>Stantec<br>mg/kg | **B21-(0-4)**<br>0 - 4 ft<br>6/21/2006<br>Stantec<br>mg/kg | **B21-(7-8)**<br>7 - 8 ft<br>6/21/2006<br>Stantec<br>mg/kg |
|---|---|---|---|---|---|---|---|---|---|
| **VOCs by 8260B** | | | | | | | | | |
| Acetone | 500 | 0.05 | 0.123 | 0.0856 | 0.0486 U | 0.0443 U | 0.0453 U | 0.0353 U | 0.0476 U |
| cis-1,2-Dichloroethene | 500 | 0.25 | 0.0237 | 0.486 | 0.0382 | 0.457 | 0.00906 U | 0.00706 U | 0.00952 U |
| Tetrachloroethene | 150 | 1.3 | 0.0113 U | 2.21 | 0.00973 U | 1.70 | 0.00906 U | 0.00706 U | 0.00952 U |
| trans-1,2-Dichloroethene | 500 | 0.19 | 0.0182 | 0.00906 U | 0.00973 U | 0.0239 | 0.00906 U | 0.00706 U | 0.00952 U |
| Trichloroethene | 200 | 0.68 | 0.0113 U | 0.515 | 0.00973 U | 0.529 | 0.00906 U | 0.00706 U | 0.00952 U |
| Trichlorofluoromethane | NA | NA | 0.0113 U | 0.00906 U | 0.00973 U | 0.00885 U | 0.00906 U | 0.00706 U | 0.00952 U |
| Vinyl Chloride | 13 | 0.02 | 0.0113 U | 0.00906 U | 0.00973 U | 0.00885 U | 0.00906 U | 0.00706 U | 0.00952 U |

TABLE 1 -
SUMMARY OF SOIL QUALITY DATA
UNITED CLEANERS
HENRIETTA, NEW YORK
NYSDEC SITE # HW828152

*(Table notes included on Page 4)*

| SAMPLE DESIGNATION | NYSDEC | NYSDEC | **B22-(0-4)** | **B22-(7-8)** | **B23-(9-12)** | **B23-(15-16)** | **HA-2-S7** | **HA-3-S4** | **HA-4-S5** | **HA-105** | **HA-106** | **HA-107** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE DEPTH (FT BGS) | 6 NYCRR Part 375 | 6 NYCRR Part 375 | 0 - 4 ft | 7 - 8 ft | 9 - 12 ft | 15 - 16 ft | 35-37 ft | 20-22 ft | 25-27 ft | 8 - 11 ft | 4 - 8 ft | 7.5-8.3 ft |
| SAMPLING DATE | Commercial | Protection of | 6/21/2006 | 6/21/2006 | 6/21/2006 | 6/21/2006 | 1/18/2007 | 1/19/2007 | 1/17/2007 | 12/2/2008 | 12/2/2008 | 12/1/2008 |
| SAMPLED BY | | Groundwater | Stantec | Stantec | Stantec | Stantec | H&A | H&A | H&A | H&A | H&A | H&A |
| UNITS | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| **VOCs by 8260B** | | | | | | | | | | | | |
| Acetone | 500 | 0.05 | 0.0495 U | 0.042 U | 0.0431 U | 0.0352 U | -- | -- | -- | 0.028 U | 0.028 U | 0.15 U |
| cis-1,2-Dichloroethene | 500 | 0.25 | 0.00989 U | 0.0084 U | 0.157 | 0.0552 | 0.00776 U | 0.00819 U | 0.00853 U | 0.016 U | 0.0028 U | 0.003 U |
| Tetrachloroethene | 150 | 1.3 | 0.00989 U | 0.0084 U | 0.237 | 0.00703 U | 0.00776 U | 0.00819 U | 0.00853 U | 0.007 U | 0.0028 U | 0.003 U |
| trans-1,2-Dichloroethene | 500 | 0.19 | 0.00989 U | 0.0084 U | 0.00862 U | 0.00703 U | 0.00776 U | 0.00819 U | 0.00853 U | 0.0042 U | 0.0042 U | 0.0046 U |
| Trichloroethene | 200 | 0.68 | 0.00989 U | 0.0084 U | 0.0947 | 0.0232 | 0.00776 U | 0.00819 U | 0.00853 U | 0.0028 U | 0.0028 U | 0.003 U |
| Trichlorofluoromethane | NA | NA | 0.00989 U | 0.0084 U | 0.00862 U | 0.00703 U | 0.00776 U | 0.00819 U | 0.00853 U | 0.014 U | 0.014 U | 0.015 U |
| Vinyl Chloride | 13 | 0.02 | 0.00989 U | 0.0084 U | 0.00862 U | 0.00703 U | 0.00776 U | 0.00819 U | 0.00853 U | 0.0056 U | 0.0056 U | 0.0061 U |

TABLE 1 -
SUMMARY OF SOIL QUALITY DATA
UNITED CLEANERS
HENRIETTA, NEW YORK
NYSDEC SITE # HW828152

*(Table notes included on Page 4)*

| | | | *Post Excavation Results* | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE DESIGNATION | NYSDEC | NYSDEC | **North Wall - 1** | **East Wall - 1** | **South Wall - 2** | **West Wall -1** | **Bottom - 1** | **North Wall - 2** | **East Wall - 2** | **West Wall - 2** | **Bottom - 2** |
| SAMPLE DEPTH (FT BGS) | 6 NYCRR Part 375 | 6 NYCRR Part 375 | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| SAMPLING DATE | Commercial | Protection of | 6/10/2009 | 6/10/2009 | 6/10/2009 | 6/10/2009 | 6/10/2009 | 6/12/2009 | 6/12/2009 | 6/12/2009 | 6/12/2009 |
| SAMPLED BY | | Groundwater | H&A | H&A | H&A | H&A | H&A | H&A | H&A | H&A | H&A |
| UNITS | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| **VOCs by 8260B** | | | | | | | | | | | |
| Acetone | 500 | 0.05 | 0.0775 | 0.0483 U | 0.0515 U | 0.0453 U | 0.0344 U | 0.0467 U | 0.0413 U | 0.0543 U | 0.581 |
| cis-1,2-Dichloroethene | 500 | 0.25 | 0.685 | 0.264 | 0.0345 | 6.57 E | 3.1 E | 1 | 0.0356 | 0.268 | 3.04 E |
| Tetrachloroethene | 150 | 1.3 | 0.00958 U | 0.0143 | 0.512 | 0.0512 | 0.00689 U | 0.00934 U | 0.835 | 0.0109 U | 0.00902 U |
| trans-1,2-Dichloroethene | 500 | 0.19 | 0.175 | 0.199 | 0.0129 | 0.865 | 0.993 E | 0.279 | 0.016 | 0.0109 U | 0.376 |
| Trichloroethene | 200 | 0.68 | 0.299 | 0.521 | 0.174 | 0.782 | 0.00689 U | 0.00934 U | 0.334 | 0.0109 U | 0.00902 U |
| Trichlorofluoromethane | NA | NA | 9.58 U | 9.65 U | 10.3 U | 9.05 U | 6.89 U | 9.34 U | 8.26 U | 10.9 U | 9.02 U |
| Vinyl Chloride | 13 | 0.02 | 0.00958 U | 0.00965 U | 0.0103 U | 0.0353 | 0.00689 U | 0.0573 | 0.00826 U | 0.0109 U | 0.00902 U |

**NOTES:**

U: Not detected; Number indicated is laboratory detection limit

VOCs: Volatile Organic Compounds by EPA Method 8260B.

E: Value is estimated.

BGS: Below Ground Surface

1. Shaded cells indicate soil conditions pre-interim remedial measure excavation. Post excavation results are shown at the end of this table.
2. Soil analytical results compared to the New York State Department of Environmental Conservation, Division of Environmental Remediation 6 NYCRR Part 375 Environmental Remediation Programs Restricted Soil Cleanup Objectives for Commercial Sites, dated 14 December 2006.
3. Only detected compounds are shown.

TABLE 2 -
SUMMARY OF GROUNDWATER QUALITY DATA
UNITED CLEANERS FACILITY
HENRIETTA, NEW YORK
NYSDEC SITE # HW828152

*(Table notes included on Page 4)*

| SAMPLE DESIGNATION | NYSDEC | **HA-1** | | **HA-2** | | | **HA-3** | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL SCREEN DEPTH (FT BGS) | TOGS 1.1.1 | 37-47 ft | | 30-40 ft | | | 30-40 ft | | |
| SAMPLING DATE | | 1/23/2007 | 9/2/2009 | 1/23/2007 | 12/18/2008 | 9/2/2009 | 1/23/2007 | 12/18/2008 | 9/2/2009 |
| SAMPLED BY | | H&A | | H&A | | | H&A | | |
| UNITS | μg/kg | μg/kg | | μg/kg | | | μg/kg | | |
| **VOCs by 8260B** | | | | | | | | | |
| Acetone | 50 | 37.4 | -- | 10 U | 5 U | -- | 18.5 | 5 U | -- |
| Chloroethane | 5 | 2 U | 2 U | 2 U | 1 U | 2 U | 2 U | 1 U | 2 U |
| cis-1,2-Dichloroethene | 5 | 2 U | 2 U | 2 U | 0.5 U | 2 U | 2 U | 0.5 U | 2 U |
| Tetrachloroethene | 5 | 2 U | 2 U | 2 U | 0.5 U | 2 U | 2 U | 0.5 U | 2 U |
| trans-1,2-Dichloroethene | 5 | 2 U | 2 U | 2 U | 0.75 U | 2 U | 2 U | 0.75 U | 2 U |
| Trichloroethene | 5 | 2 U | 2 U | 2 U | 0.5 U | 2 U | 2 U | 0.5 U | 2 U |
| Vinyl Chloride | 2 | 2 U | 2 U | 2 U | 1 U | 2 U | 2 U | 1 U | 2 U |

TABLE 2 -
SUMMARY OF GROUNDWATER QUALITY DATA
UNITED CLEANERS FACILITY
HENRIETTA, NEW YORK
NYSDEC SITE # HW828152

*(Table notes included on Page 4)*

| SAMPLE DESIGNATION | NYSDEC | **HA-4** | | | **HA-105** | | **HA-106** | | **HA-107** | | **HA-208** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL SCREEN DEPTH (FT BGS) | TOGS 1.1.1 | 30-40 ft | | | 6.6-16.6 ft | | 6.1-16.1 ft | | 4.8-14.8 ft | | 10-20 ft |
| SAMPLING DATE | | 1/23/2007 | 12/18/2008 | 9/2/2009 | 12/19/2008 | 9/3/2009 | 12/19/2008 | 9/3/2009 | 12/18/2008 | 9/2/2009 | 9/3/2009 |
| SAMPLED BY | | H&A | | | H&A | | H&A | | H&A | | H&A |
| UNITS | μg/kg | μg/kg | | | μg/kg | | μg/kg | | μg/kg | | μg/kg |
| **VOCs by 8260B** | | | | | | | | | | | |
| Acetone | 50 | 43.2 | 5 U | -- | 25 U | -- | 5 U | -- | 5 U | -- | -- |
| Chloroethane | 5 | 2 U | 1 U | 2 U | **5 U** | **6.98** | 1 U | 2 U | 1 U | 2 U | 2 U |
| cis-1,2-Dichloroethene | 5 | **5.82** | 0.5 U | 2 U | **210** | **131** | 0.5 U | 2 U | 0.5 U | 2 U | 2 U |
| Tetrachloroethene | 5 | 2 U | 0.5 U | 2 U | **15** | **5.66** | 0.5 U | 2 U | 0.5 U | 2 U | 2 U |
| trans-1,2-Dichloroethene | 5 | 2 U | 0.75 U | 2 U | **27** | **26.3** | 0.75 U | 2 U | 0.75 U | 2 U | 2 U |
| Trichloroethene | 5 | 2 U | 0.5 U | 2 U | **9.2** | **6.23** | 0.5 U | 2 U | 0.5 U | 2 U | 2 U |
| Vinyl Chloride | 2 | 2 U | 1 U | 2 U | **11** | **11.8** | 1 U | 2 U | 1 U | 2 U | 2 U |

TABLE 2 -
SUMMARY OF GROUNDWATER QUALITY DATA
UNITED CLEANERS FACILITY
HENRIETTA, NEW YORK
NYSDEC SITE # HW828152

*(Table notes included on Page 4)*

| SAMPLE DESIGNATION | NYSDEC | **HA-209** | **MW-12** | | | **MW-14** | | | **MW-15** | **MW-15R** | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL SCREEN DEPTH (FT BGS) | TOGS 1.1.1 | 5-15 ft | 9-14 ft | | | 9-14 ft | | | 11-16 ft | 10.5-15.5 ft | |
| SAMPLING DATE | | 9/3/2009 | 6/12/2006 | 12/19/2008 | 9/2/2009 | 6/12/2008 | 12/18/2008 | 9/2/2009 | 6/13/2006 | 12/19/2008 | 9/2/2009 |
| SAMPLED BY | | H&A | Stantec | H&A | | Stantec | H&A | | Stantec | H&A | |
| UNITS | µg/kg | µg/kg | µg/kg | | | µg/kg | | | µg/kg | µg/kg | |
| **VOCs by 8260B** | | | | | | | | | | | |
| Acetone | 50 | -- | 10 U | 5 U | -- | 10 U | 5 U | -- | 10 U | 5 U | -- |
| Chloroethane | 5 | 2 U | 2 U | 1 U | 2 U | 2 U | 1 U | 2 U | 2 U | 1 U | 2 U |
| cis-1,2-Dichloroethene | 5 | 2 U | **191** | **50** | **127** | **26.1** | **44** | **42** | **6.77** | **30** | **17.2** |
| Tetrachloroethene | 5 | 2 U | 2 U | **11** | 2 U | 2.19 | **5.8** | 3.3 | **6.54** | 0.56 | 2 U |
| trans-1,2-Dichloroethene | 5 | 2 U | **10.4** | **25** | **14** | 2.06 | 4.1 | **7.97** | 2 U | 4.8 | **7.1** |
| Trichloroethene | 5 | 2 U | 2 U | 0.53 | 2 U | 2.48 | 1.8 | **8.07** | 2 U | 0.5 U | 2 U |
| Vinyl Chloride | 2 | 2 U | 2 U | **14** | **10.6** | 2 U | 1 U | 2 U | 2 U | 1 U | **2.44** |

## TABLE 2 -
## SUMMARY OF GROUNDWATER QUALITY DATA
UNITED CLEANERS FACILITY
HENRIETTA, NEW YORK
NYSDEC SITE # HW828152

*(Table notes included on Page 4)*

| SAMPLE DESIGNATION | NYSDEC | **MW-18** | **MW-18R** | | **MW-21** | **MW-22** | **MW-22R** | | **MW-23** |
|---|---|---|---|---|---|---|---|---|---|
| WELL SCREEN DEPTH (FT BGS) | TOGS 1.1.1 | 8-13 ft | 10-15 ft | | 10.5-15.5 ft | 10.5-15.5 ft | 5.2-15.2 ft | | 8-13 ft |
| SAMPLING DATE | | 6/13/2006 | 12/18/2008 | 11/18/2009 | 6/22/2006 | 6/22/2006 | 12/18/2008 | 9/2/2009 | 6/22/2006 |
| SAMPLED BY | | Stantec | H&A | | Stantec | Stantec | H&A | | Stantec |
| UNITS | µg/kg | µg/kg | µg/kg | | µg/kg | µg/kg | µg/kg | | µg/kg |
| **VOCs by 8260B** | | | | | | | | | |
| Acetone | 50 | 30.2 | **50 U** | **--** | 10 U | 10 U | 5 U | **--** | **100 U** |
| Chloroethane | 5 | 2 U | **10 U** | 2 UJ | 2 U | 2 U | 1 U | 2 U | **20 U** |
| cis-1,2-Dichloroethene | 5 | **169** | **420** | **15.2 J** | 2 U | **30.7** | **19** | **14.3** | **758** |
| Tetrachloroethene | 5 | **5.03** | 5 U | 2 UJ | 2 U | 2 U | 0.5 U | 2 U | **349** |
| trans-1,2-Dichloroethene | 5 | 3.56 | **88** | **18.4 J** | 2 U | 2 U | 1.2 | 2.59 | **20 U** |
| Trichloroethene | 5 | **28.6** | 5 U | 2 UJ | 2 U | 2 U | 0.5 U | 2 U | **426** |
| Vinyl Chloride | 2 | 2 U | **63** | 1.999 UJ | 2 U | 2 U | 1 U | 2 U | **28** |

**NOTES:**

--: Analyte Not Sampled

NA :Not applicable

U: Not detected; number indicated is laboratory detection limit

J: Value is estimated below laboratory detection limits

VOCs: Volatile Organic Compounds by EPA Method 8260B.

TOGS 1.1.1: New York State Department of Environmental Conservation Ambient Water Quality Standards and Guidance Values

1. **Bold** values indicate an exceedance of TOGS 1.1.1 Standards and Guidance Values.
2. Only detected compounds are shown.

# TABLE 3 -
# SUMMARY OF RESIDENTIAL SUMP QUALITY DATA
# UNITED CLEANERS FACILITY
# HENRIETTA, NEW YORK
# NYSDEC SITE # HW828152

| LOCATION | | **18 Prince Charles Circle** | | **26 Prince Charles Circle** | |
|---|---|---|---|---|---|
| SAMPLE DESIGNATION | NYSDEC | Sump-18 | | Sump-26 | |
| WELL SCREEN DEPTH (FT BGS) | TOGS 1.1.1 | N/A | | N/A | |
| SAMPLING DATE | | 3/17/2009 | 9/3/2009 | 3/19/2009 | 9/2/2009 |
| SAMPLED BY | | H&A | H&A | H&A | H&A |
| MATRIX | | Aqueous | | Aqueous | |
| UNITS | µg/kg | µg/kg | | µg/kg | |
| **VOCs by 8260B** | | | | | |
| Bromodichloromethane | 50 | 0.5 U | -- | 4 | -- |
| Chloroform | 7 | 1.8 | -- | **99** | -- |
| cis-1,2-Dichloroethene | 5 | **7.3** | **14.8** | 4 | 4.89 |

**NOTES:**

--: Not Analyzed

U: Not detected; number indicated is laboratory detection limit

VOCs: Volatile Organic Compounds by EPA Method 8260B.

TOGS 1.1.1: New York State Department of Environmental Conservation Ambient Water Quality Standards and Guidance Values

1. **Bold** values indicate an exceedance of TOGS 1.1.1 Standards and Guidance Values.

2. Only detected compounds are shown.

TABLE 4 -
SUMMARY OF AIR QUALITY DATA - RESIDENCES
UNITED CLEANERS FACILITY
HENRIETTA, NEW YORK
NYSDEC SITE # HW828152

*(Table notes included on Page 2)*

| LOCATION | **18 Prince Charles Circle** | | | | **26 Prince Charles Circle** | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE TYPE | Indoor Air | | Outdoor Air | Sub-Slab Vapor | Indoor Air | | Outdoor Air | | Sub-Slab Vapor |
| SAMPLE ID | IA-18-031809 | IA-18B-010610 | AA-18-031809 | SS-18A-010610 | IA-26-032309 | IA-26B-010510 | AA-26-032309 | AA-26B-010510 | SS-26A-010510 |
| SAMPLING DATE | 18-Mar-09 | 5-Jan-10 | 18-Mar-09 | 5-Jan-10 | 23-Mar-09 | 5-Jan-10 | 23-Mar-09 | 5-Jan-10 | 5-Jan-10 |
| VALIDATION DATE | 17-Apr-09 | 19-Feb-10 | 17-Apr-09 | 19-Feb-10 | 17-Apr-09 | 19-Feb-10 | 17-Apr-09 | 19-Feb-10 | 19-Feb-10 |
| LAB SAMPLE ID | L0903676-01 | C1001023-004A | L0903676-02 | C1001023-005A | L0903676-03 | C1001023-001A | L0903676-04 | C1001023-003A | C1001023-002A |
| UNITS | $\mu g/m^3$ | $\mu g/m^3$ | $\mu g/m^3$ | $\mu g/m^3$ | $\mu g/m^3$ | $\mu g/m^3$ | $\mu g/m^3$ | $\mu g/m^3$ | $\mu g/m^3$ |
| **VOCs by TO-15 and TO-15 SIM** | | | | | | | | | |
| 1,2,4-Trimethylbenzene | 1.03 | 1.1 | 0.982 U | 1.0 | 0.982 U | 0.80 | 0.982 U | 0.75 U | 0.75 U |
| 1,3,5-Trimethybenzene | 0.982 U | 0.6 | 0.982 U | 0.55 | 0.982 U | 0.55 J | 0.982 U | 0.75 U | 0.75 U |
| 2,2,4-Trimethylpentane | 1.17 | 0.71 U | 0.934 U | 0.71 U | 1.43 | 0.71 U | 0.934 U | 0.71 U | 0.71 U |
| 2-Butanone (MEK) | 3.6 | 2.9 | 4.51 | 8.1 J | 2.54 | 1.7 | 4.5 | 0.54 J | 3.3 |
| 2-Hexanone (MBK) | 0.819 U | 1.2 U | 1.34 | 1.2 | 0.819 U | 1.2 U | 2.42 | 1.2 U | 1.2 U |
| 4-Methyl-2-pentanone (MIBK) | 1.1 | 1.2 U | 0.819 U | 0.87 J | 0.819 U | 1.2 U | 0.819 U | 1.2 U | 1.2 U |
| Acetone | 57.2 | 27 | 35.8 | 47 | 82.1 J | 85 | 37.1 | 10 | 58 |
| Benzene | 2.58 | 1.9 | 0.95 | 0.97 | 2.37 | 1.7 | 1.16 | 0.52 | 16 |
| Carbon disulfide | 0.662 U | 0.60 | 0.662 U | 2.6 | 0.662 U | 0.47 U | 0.662 U | 0.47 U | 22 |
| Carbon tetrachloride | 1.26 U | 0.58 | 1.26 U | 0.51 | 1.26 U | 0.51 | 1.26 U | 0.38 | 0.38 |
| Chloroform | 1.9 | 0.74 U | 0.976 U | 0.74 U | 11.3 | 0.55 J | 0.976 U | 0.74 U | 1.3 |
| Chloromethane | 1.32 | 0.97 | 1.32 | 0.23 J | 1.58 | 0.31 U | 1.19 | 0.59 | 0.31 U |
| Cyclohexane | 0.688 U | 1.4 | 0.688 U | 1.0 | 0.688 U | 1.2 | 0.688 U | 0.52 U | 31 |
| Dichlorodifluoromethane (Freon 12) | 2.42 | 1.9 | 2.5 | 1.9 | 2.5 | 2.0 | 2.56 | 1.9 | 1.9 |
| Ethanol | 1120 | NA | 6.72 | NA | 1080 | NA | 15.1 | NA | NA |
| Ethyl Acetate | 7.96 | 1.6 J | 1.8 U | 0.92 UJ | 1.8 U | 0.70 J | 1.8 U | 0.92 UJ | 0.92 UJ |
| Ethylbenzene | 1.95 | 0.57 J | 0.868 U | 0.53 J | 1.03 | 0.66 U | 0.868 U | 0.66 U | 0.44 J |
| Heptane | 1.31 | 0.79 | 0.819 U | 0.50 J | 1.8 | 0.71 | 0.819 U | 0.54 J | 17 |
| Hexane | 3.42 | 5.2 | 0.704 U | 3.0 | 3.28 | 4.5 | 0.708 | 1.7 | 44 |
| Isopropanol | 76.9 | 18 | 1.23 U | 3.0 | 325 | 390 | 2.24 | 0.37 U | 200 |
| Methylene chloride | 1.74 U | 6 | 1.74 U | 4.6 | 1.74 U | 4.2 | 1.74 U | 2.9 | 1.8 |
| o-Xylene | 1.91 | 0.66 | 0.868 U | 0.82 J | 1.13 | 0.49 J | 0.868 U | 0.66 U | 0.66 U |
| p/m-Xylene | 5.68 | 1.7 | 1.74 U | 1.7 | 3.23 | 1.4 | 1.74 U | 1.3 U | 1.2 J |
| Propylene | 0.344 U | 0.26 UJ | 4.19 J | 0.26 UJ | 0.344 U | 0.26 UJ | 4.24 J | 0.26 UJ | 0.26 UJ |
| **Tetrachloroethene** | 1.36 U | 0.76 J | 1.36 U | 1.0 U | 1.36 U | 1.0 U | 1.36 U | 1.0 U | 1.0 U |
| Toluene | 14 | 4.5 | 2.74 | 3.2 | 11.6 | 3.3 | 3 | 0.73 | 8.8 |
| **Trichloroethene** | 1.07 U | 0.27 | 1.07 U | 0.22 U | 1.07 U | 0.22 U | 1.07 U | 0.22 U | 0.22 U |
| Trichlorofluoromethane (Freon 11) | 1.4 | 1.0 | 1.31 | 0.97 | 3.74 | 3.1 | 1.33 | 0.91 | 2.2 |
| **Vinyl chloride (SIM)** | 0.051 U | NA | 0.056 | NA | 0.051 U | NA | 0.051 U | NA | NA |

# TABLE 4 -
# SUMMARY OF AIR QUALITY DATA - RESIDENCES
# UNITED CLEANERS FACILITY
# HENRIETTA, NEW YORK
# NYSDEC SITE # HW828152

**NOTES:**

Analyzed using EPA Method TO-15

$\mu g/m^3$ = micrograms per cubic meter.

U = the analyte was analyzed for but not detected above the reporting limit.

J = the analyte concentration is estimated due to detection bewteen the MDL and RL, initial calibration % relative standard deviation non-compliance, or co-elution with a non-target analyte.

UJ = the analyte was not detected above the reporting limit, however, the reporting limit is estimated due to initial calibration % relative standard deviation non-compliance.

NA = not analyzed

1. Only detected compounds are shown
2. Bolded compounds indicate Site compounds of concern.

TABLE 5 -
SUMMARY OF AIR QUALITY DATA - PLAZA BUILDING
UNITED CLEANERS FACILITY
HENRIETTA, NEW YORK
NYSDEC SITE # HW828152

*(Table notes included on Page 2)*

| LOCATION | **Outdoor Air** | | **Former Play-It-Again-Sports** | | | **Family Dollar** | | | **Country Max** | **Former Hollywood Video** | **Former Liquor Store** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE TYPE | Outdoor Air | | Sub-Slab Vapor | Indoor Air | | Sub-Slab Vapor | Indoor Air | | Indoor Air | Indoor Air | Indoor Air |
| SAMPLE ID | AA-1-032009 | AA-100318 | SS-1-032009 | IA-1-032009 | IA-100318_VS | SS-2-032009 | IA-2-032009 | IA-100318_FD | IA-100318_CM | IA-100318_HV | IA-100318_LS |
| SAMPLING DATE | 20-Mar-09 | 18-Mar-10 | 20-Mar-09 | 20-Mar-09 | 18-Mar-10 | 20-Mar-09 | 20-Mar-09 | 18-Mar-10 | 18-Mar-10 | 18-Mar-10 | 18-Mar-10 |
| | 17-Apr-09 | 1-Apr-10 | 17-Apr-09 | 17-Apr-09 | 1-Apr-10 | 17-Apr-09 | 17-Apr-09 | 1-Apr-10 | 1-Apr-10 | 1-Apr-10 | 1-Apr-10 |
| LAB SAMPLE ID | L0903676-07 | L1004082-01 | L0903676-05 | L0903676-06 | L1004077-01 | L0903676-09 | L0903676-08 | L1004079-01 | L1004075-01 | L1004076-01 | L1004080-01 |
| UNITS | $\mu g/m^3$ | $\mu g/m^3$ | $\mu g/m^3$ | $\mu g/m^3$ | $\mu g/m^3$ | $\mu g/m^3$ | $\mu g/m^3$ | $\mu g/m^3$ | $\mu g/m^3$ | $\mu g/m^3$ | $\mu g/m^3$ |
| **VOCs by TO-15 and TO-15 SIM** | | | | | | | | | | | |
| 1,2,4-Trimethylbenzene | 0.982 U | -- | 5.76 | 4.81 | -- | 6.73 | 2.85 | -- | -- | -- | -- |
| 1,2-Dichlorobenzene | 1.2 U | -- | 1.2 U | 3.06 | -- | 1.2 U | 1.5 | -- | -- | -- | -- |
| 1,2-Dichloroethane | 0.809 UJ | -- | 0.809 UJ | 0.89 J | -- | 0.809 UJ | 4.37 J | -- | -- | -- | -- |
| 1,3,5-Trimethybenzene | 0.982 U | -- | 3.24 | 1.52 | -- | 5.93 | 1.08 | -- | -- | -- | -- |
| 1,3-Butadiene | 0.442 U | -- | 0.442 U | 0.442 U | -- | 0.442 U | 0.663 | -- | -- | -- | -- |
| 1,4-Dichlorobenzene | 1.2 U | -- | 1.2 U | 1.2 U | -- | 1.2 U | 21 | -- | -- | -- | -- |
| 2,2,4-Trimethylpentane | 0.934 U | -- | 0.934 U | 0.934 U | -- | 0.934 U | 0.934 U | -- | -- | -- | -- |
| 2-Butanone | 0.589 U | -- | 7.08 | 2.5 | -- | 6.9 | 5.83 | -- | -- | -- | -- |
| 2-Hexanone | 0.819 U | -- | 2.24 | 0.819 U | -- | 0.819 U | 0.819 U | -- | -- | -- | -- |
| 4-Ethyltoluene | 0.982 U | -- | 1.29 | 1.08 | -- | 1.76 | 0.982 U | -- | -- | -- | -- |
| Acetone | 5.33 | -- | 122 J | 18.4 J | -- | 25.5 J | 224 J | -- | -- | -- | -- |
| Benzene | 0.638 U | -- | 3.04 | 1.76 | -- | 27.2 | 7.47 | -- | -- | -- | -- |
| Carbon disulfide | 0.662 U | -- | 2.33 | 0.662 U | -- | 3.87 | 0.662 U | -- | -- | -- | -- |
| Chloroform | 0.976 U | -- | 0.976 U | 0.976 U | -- | 4.33 | 2.73 | -- | -- | -- | -- |
| Chloromethane | 1.15 | -- | 0.413 U | 2.06 | -- | 0.413 U | 1.59 | -- | -- | -- | -- |
| **cis-1,2-Dichloroethene** | 0.792 U | 0.792 U | 0.792 U | 0.792 U | 0.792 U | 0.792 U | 0.792 U | 0.792 U | 0.998 | 0.792 U | 0.792 U |
| Cyclohexane | 0.688 U | -- | 15.8 | 0.688 U | -- | 8.62 | 1.03 | -- | -- | -- | -- |
| Dichlorodifluoromethane | 2.6 | -- | 3.28 | 3.36 | -- | 3.79 | 3.21 | -- | -- | -- | -- |
| Ethanol | 4.71 U | -- | 43.5 | 55.9 | -- | 13.9 | 162 | -- | -- | -- | -- |
| Ethyl Acetate | 1.8 U | -- | 1.8 U | 1.8 U | -- | 1.8 U | 22.3 | -- | -- | -- | -- |
| Ethylbenzene | 0.868 U | -- | 3.6 | 0.868 U | -- | 12.9 | 1.78 | -- | -- | -- | -- |
| Isopropanol | 1.23 U | -- | 9.11 | 14.1 | -- | 4.33 | 17.3 | -- | -- | -- | -- |
| Methylene chloride | 1.74 U | -- | 1.74 U | 2.15 | -- | 1.74 U | 1.74 U | -- | -- | -- | -- |
| 4-Methyl-2-pentanone | 0.819 U | -- | 0.819 U | 1.15 | -- | 0.819 U | 2.33 | -- | -- | -- | -- |
| p/m-Xylene | 1.74 U | -- | 17.5 | 1.74 U | -- | 59.4 | 3.34 | -- | -- | -- | -- |
| o-Xylene | 0.868 U | -- | 7.2 | 0.868 U | -- | 21.6 | 1.43 | -- | -- | -- | -- |
| Heptane | 0.819 U | -- | 38 | 0.819 U | -- | 24.5 | 0.942 | -- | -- | -- | -- |
| n-Hexane | 0.704 U | -- | 22.4 | 1.06 | -- | 18.1 | 5.11 | -- | -- | -- | -- |
| Propylene | 0.344 U | -- | 0.344 U | 0.344 U | -- | 1.42 J | 0.344 U | -- | -- | -- | -- |
| Styrene | 0.851 U | -- | 0.851 U | 0.851 U | -- | 0.851 U | 1.74 | -- | -- | -- | -- |
| **Tetrachloroethene** | 1.36 U | 1.36 U | 225 | 62.6 | 1.36 U | 204 | 30 | 1.61 | 1.36 U | 1.36 U | 1.36 U |
| Tetrahydrofuran | 0.589 U | -- | 6.99 | 0.884 | -- | 2.38 | 0.678 | -- | -- | -- | -- |
| Toluene | 0.753 U | -- | 14 | 1.88 | -- | 59.3 | 29.9 | -- | -- | -- | -- |
| **Trichloroethene** | 1.07 U | 0.107 U | 10.8 | 23.1 | 6.78 | 10.2 | 11.9 | 4.98 | 0.666 | 0.107 U | 0.156 |
| **Trichloroethene (SIM)** | 0.107 U | -- | NA | 23.9 | -- | NA | 12.3 | -- | -- | -- | -- |
| Trichlorofluoromethane | 1.31 | -- | 1.36 | 1.4 | -- | 4.48 | 3.48 | -- | -- | -- | -- |
| Vinyl acetate | 0.704 U | -- | 0.704 U | 0.704 U | -- | 0.704 U | 0.704 U | -- | -- | -- | -- |
| Vinyl bromide | 0.874 U | -- | 0.874 U | 0.874 U | -- | 0.874 U | 0.874 U | -- | -- | -- | -- |
| **Vinyl chloride** | 0.511 U | -- | 0.511 U | 0.511 U | -- | 0.511 U | 0.511 U | -- | -- | -- | -- |
| **Vinyl chloride (SIM)** | 0.051 U | 0.255 | NA | 0.051 U | 0.051 U | NA | 0.051 U | 0.051 U | 0.051 U | 0.051 U | 0.051 U |

TABLE 5 -
SUMMARY OF AIR QUALITY DATA - PLAZA BUILDING
UNITED CLEANERS FACILITY
HENRIETTA, NEW YORK
NYSDEC SITE # HW828152

*(Table notes included on Page 2)*

**NOTES:**

Analyzed using EPA Method TO-15

U = the analyte was analyzed for but not detected above the reporting limit.

J = the analyte concentration is estimated due to detection bewteen the MDL and RL, initial calibration % elative standard deviation non-compliance, or co-elution with a non-target analyte.

UJ = the analyte was not detected above the reporting limit, however, the reporting limit is estimated due to initial calibration % relative standard deviation non-compliance.

-- = results not reported by the laboratory

1. Only detected compounds are shown
2. Bolded compounds indicate Site compounds of concern.

***Table 6 – Emergency Contact Information is located within Section 2.5.1 in the text***

***Table 7 – Contact Numbers is located within Section 2.5.1 in the text***

***Table 8 – Monitoring/Inspection Schedule is located within Section 3.1.2 in the text***

***Table 9 – Monitoring Well Network Summary is located within Section 3.3.1 in the text***

# TABLE 10 -
# GROUNDWATER WELL INFORMATION
# UNITED CLEANERS FACILITY
# HENRIETTA, NEW YORK
# NYSDEC SITE # HW828152

| Well Name | Date Installed | Well Diameter | Depth (bgs) | Screen Interval | Riser Elevation (NGVD 29) | Well Completion |
|---|---|---|---|---|---|---|
| HA-1 | 1/18/2007 | 2 in | 48 ft | 37-47 ft | 572.57 | Flush Mount |
| HA-2 | 1/18/2007 | 2 in | 42 ft | 30-40 ft | 571.69 | Stick-Up |
| HA-3 | 1/18/2007 | 2 in | 42 ft | 30-40 ft | 573.83 | Stick-Up |
| HA-4 | 1/17/2007 | 2 in | 42 ft | 30-40 ft | 573.36 | Stick-Up |
| HA-105 | 12/2/2008 | 2 in | 16.6 ft | 6.6-16.6 ft | 564.87 | Stick-Up |
| HA-106 | 12/2/2008 | 2 in | 16.1 ft | 6.1-16.1 ft | 564.89 | Stick-Up |
| HA-107 | 12/1/2008 | 2 in | 15 ft | 4.8-14.8 ft | 573.06 | Stick-Up |
| HA-208 | 8/11/2009 | 2 in | 15 ft | 5-15 ft | 557.28 | Flush Mount |
| HA-209 | 8/11/2009 | 2 in | 20 ft | 10-20 ft | 564.25 | Flush Mount |
| MW-12 | 6/9/2006 | 1 in | 14 ft | 9-14 ft | Not Surveyed | Flush Mount |
| MW-14 | 6/9/2006 | 1 in | 14 ft | 9-14 ft | Not Surveyed | Flush Mount |
| MW-15R | 12/2/2008 | 2 in | 15.5 ft | 10.5-15.5 ft | 572.24 | Flush Mount |
| MW-18R | 11/9/2009 | 2 in | 15.1 ft | 10.1-15.1 ft | 571.27 | Flush Mount |
| *MW-21* | *Decommissioned in December 2008* | | | | | |
| MW-22R | 12/2/2008 | 2 in | 15.2 ft | 5.2-15.2 ft | 571.07 | Flush Mount |
| *MW-23* | *Decommissioned in December 2008* | | | | | |

**NOTES:**

1. Wells MW-12, MW-14, MW-15R, and MW-18R were wells previously installed by Stantec as part of Phase II investigations. They were overdrilled by Haley & Aldrich in 2006.
2. MW-18R was destroyed during IRM excavation activities. It was re-installed in 2009.

***Table 11 – Schedule of Monitoring/Inspection Reports is located within Section 3.6 in the text***

TABLE 12 -
APPLICABLE SOIL CLEANUP OBJECTIVES
UNITED CLEANERS FACILITY
HENRIETTA, NEW YORK
NYSDEC SITE # HW828152

| | NYSDEC Soil Cleanup Objectives (Restricted Use) | | Eastern United States Background Levels |
|---|---|---|---|
| | Protection of Groundwater (ppm) | Imported Fill Requirements (ppm) | |
| **Metals** | | | |
| Arsenic | 16 [2] | 16 [2] | 3-12 |
| Barium | 820 | 400 | 15-600 |
| Beryllium | 47 | 47 | 0-1.75 |
| Cadmium | 7.5 | 7.4 | 0.1-1 |
| Chromium, hexavalent[1] | 19 | 19 | 1.5-40 |
| Chromium, trivalent[1] | -- | 1500 | 1.5-40 |
| Copper | 1720 | 270 | 1-50 |
| Total Cyanide[1] | 40 | 27 | -- |
| Lead | 450 | 450 | 200-500 |
| Manganese | 2000 [2] | 2000 [2] | 50-5000 |
| Total Mercury | 0.73 | 0.73 | 0.001-0.2 |
| Nickel | 130 | 130 | 0.5-25 |
| Selenium | 4 [2] | 4 [2] | 0.1-3.9 |
| Silver | 8.3 | 8.3 | -- |
| Zinc | 2480 | 2480 | 9-50 |
| | | | |
| **PCBs/Pestacides** | | | |
| 2,3,5-TP Acid (Silvex) | 3.8 | 3.8 | -- |
| 4,4'-DDE | 17 | 17 | -- |
| 4,4'-DDT | 136 | 47 | -- |
| 4,4'-DDD | 14 | 14 | -- |
| Aldrin | 0.19 | 0.19 | -- |
| alpha-BHC | 0.02 | 0.02 | -- |
| beta-BHC | 0.09 | 0.09 | -- |
| Chlordane (Alpha) | 2.9 | 2.9 | -- |
| delta-BHC | 0.25 | 0.25 | -- |
| Dibenzofuran | 210 | 210 | -- |
| Dieldrin | 0.1 | 0.1 | -- |
| Endosulfan I | 102 | 102 | -- |
| Endosulfan II | 102 | 102 | -- |
| Endosulfan sulfate | 1000 [3] | 200 [4] | -- |
| Endrin | 0.06 | 0.06 | -- |
| Heptachlor | 0.38 | 0.38 | -- |
| Lindane | 0.1 | 0.1 | -- |
| Polychlorinated Biphenyls | 3.2 | 1 | -- |
| | | | -- |
| **Semi-Volatile Organic Compounds** | | | -- |
| Acenaphthene | 98 | 98 | -- |
| Acenapthylene | 107 | 107 | -- |
| Anthracene | 1000 [3] | 500 [3] | -- |
| Benz(a)anthracene | 1 [2] | 1 [2] | -- |
| Benzo(a)pyrene | 22 | 1 [2] | -- |
| Benzo(b)fluoranthene | 1.7 | 1.7 | -- |
| Benzo(g,h,i)perylene | 1000 [3] | 500 [3] | -- |
| Benzo(k)fluoranthene | 1.7 | 1.7 | -- |
| Chrysene | 1 [2] | 1 [2] | -- |
| Dibenz(a,h)anthracene | 1000 [3] | 0.56 | -- |
| Fluoranthene | 1000 [3] | 500 [3] | -- |
| Fluorene | 386 | 386 | -- |
| Indeno(1,2,3-cd)pyrene | 8.2 | 5.6 | -- |
| m-Cresol | 0.33 [6] | 0.33 [6] | -- |
| Naphthalene | 12 | 12 | -- |
| o-Cresol | 0.33 [6] | 0.33 [6] | -- |
| p-Cresol | 0.33 [6] | 0.33 [6] | -- |
| Pentachlorophenol | 0.8 [6] | 0.8 [6] | -- |
| Phenanthrene | 1000 [3] | 500 [3] | -- |
| Phenol | 0.33 [6] | 0.33 [6] | -- |
| Pyrene | 1000 [3] | 500 [3] | -- |

TABLE 12 -
APPLICABLE SOIL CLEANUP OBJECTIVES
UNITED CLEANERS FACILITY
HENRIETTA, NEW YORK
NYSDEC SITE # HW828152

| | **NYSDEC Soil Cleanup Objectives (Restricted Use)** | | **Eastern United States Background Levels** |
|---|---|---|---|
| | **Protection of Groundwater (ppm)** | **Imported Fill Requirements (ppm)** | |
| | | | -- |
| **Volatile Organic Compounds** | | | -- |
| 1,1,1-Trichloroethane | 0.68 | 0.68 | -- |
| 1,1-Dichloroethane | 0.27 | 0.27 | -- |
| 1,1-Dichloroethene | 0.33 | 0.33 | -- |
| 1,2-Dichlorobenzene | 1.1 | 1.1 | -- |
| 1,2-Dichloroethane | 0.02[2] | 0.02[2] | -- |
| cis-1,2-Dichloroethene | 0.25 | 0.25 | -- |
| trans-1,2-Dichloroethene | 0.19 | 0.19 | -- |
| 1,3-Dichlorobenzene | 2.4 | 2.4 | -- |
| 1,4-Dichlorobenzene | 1.8 | 1.8 | -- |
| 1,4-Dioxane | 0.1[6] | 0.1[6] | -- |
| Acetone | 0.05 | 0.05 | -- |
| Benzene | 0.06 | 0.06 | -- |
| Butylbenzene | 12 | 12 | -- |
| Carbon tetrachloride | 0.76 | 0.76 | -- |
| Chlorobenzene | 1.1 | 1.1 | -- |
| Chloroform | 0.37 | 0.37 | -- |
| Ethylbenzene | 1 | 1 | -- |
| Hexachlorobenzene | 3.2 | 3.2 | -- |
| Methyl ethyl ketone | 0.12 | 0.12 | -- |
| Methyl tert-butyl ether | 0.93 | 0.93 | -- |
| Methylene Chloride | 0.05 | 0.05 | -- |
| n-Propylbenzene | 3.9 | 3.9 | -- |
| sec-Butylbenzene | 11 | 11 | -- |
| tert-Butylbenzene | 5.9 | 5.9 | -- |
| Tetrachloroethane | 1.3 | 1.3 | -- |
| Toluene | 0.7 | 0.7 | -- |
| Trichloroethene | 0.47 | 0.47 | -- |
| 1,2,4-Trimethylbenzene | 3.6 | 3.6 | -- |
| 1,3,5-Trimethylbenzene | 8.4 | 8.4 | -- |
| Vinyl Chloride | 0.02 | 0.02 | -- |
| Xylene (mixed) | 1.6 | 1.6 | -- |

**NOTES & ABBREVIATIONS:**

-- = No Standard or Value

**The soil cleanup objectives herein are from the 6 NYCRR Part 375-6.8(b) dated 14 December 2006. In the event that revisions to the SCOs are published that post-date this SMP, the most recent iteration of the SCOs will be used.

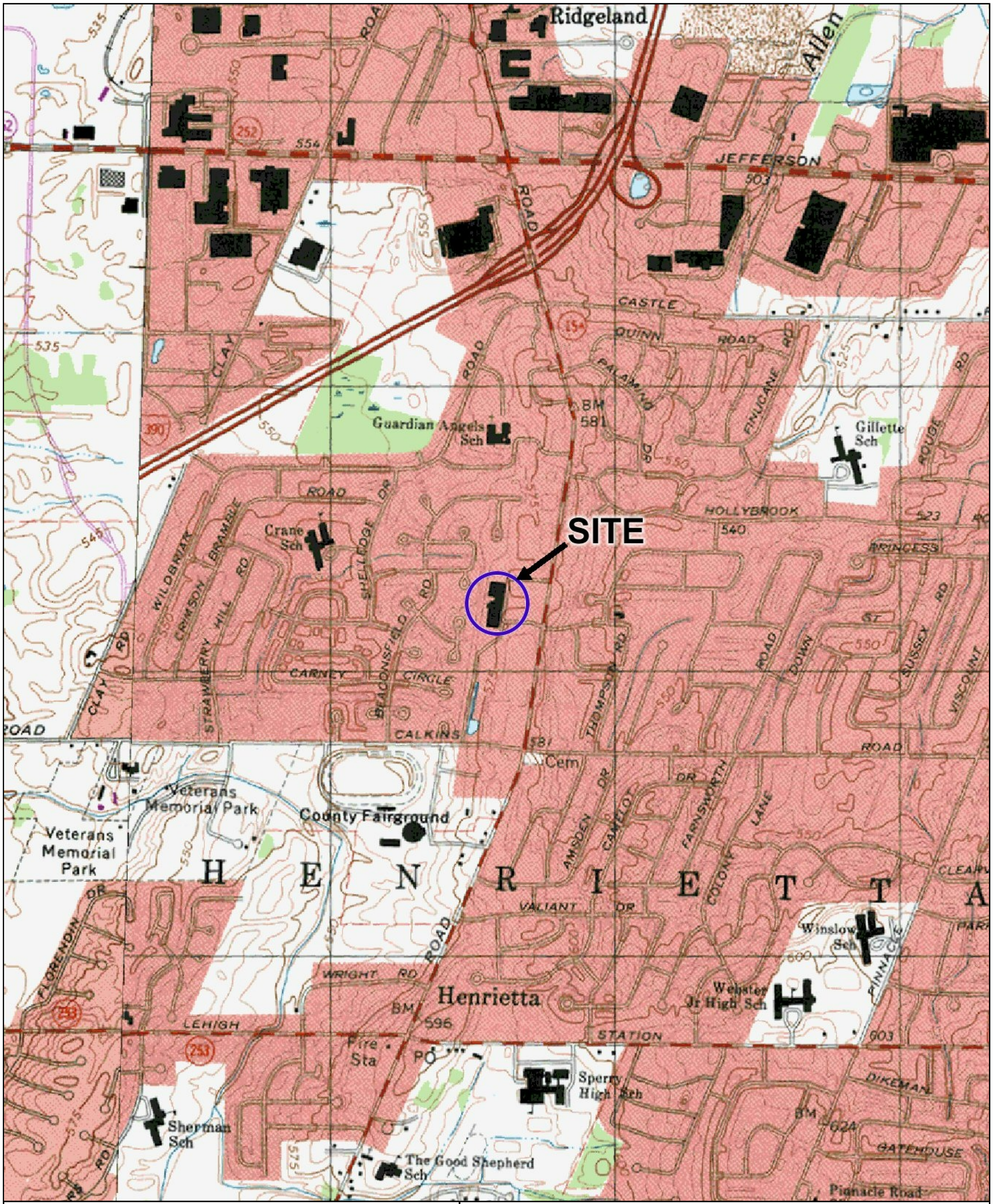
1. The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of thie contaminant is below the SCO
2. For consituants where the calculated SCO was lower than the rural soil background concentration determined by the Department and Department of Health rural soil survey, the rural soil background concentration is used as the Track 2 SCO value for this use of the site.
3. The SCOs were capped at a maximum value of 500 ppm.
4. This SCO is for the sum of endosulfan I, endosulfan II, and endosulfan sulfate.
5. The SCOs for the protection of groundwater were capped at a maximum value of 1000 ppm.
6. For constituents were the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the SCO value.

**APPLICABILITY:**

This table presents the NYSDEC approved applicable Soil Cleanup Objectives
The cleanup objectives should be used as follows:

1. **Onsite Soils to be Reused Onsite On Site:** Must be below the Resticted for Protection of Groundwater Standards.
2. **Imported Offsite Fill for Use Onsite:** Must be below Imported Fill Requirements.

Refer to the Excavation Plan (Appendix B) for additional information.



SITE COORDINATES:43°4'23"N 77°36'33"W

U.S.G.S. QUADRANGLE: PITTSFORD, NY

HALEY & ALDRICH

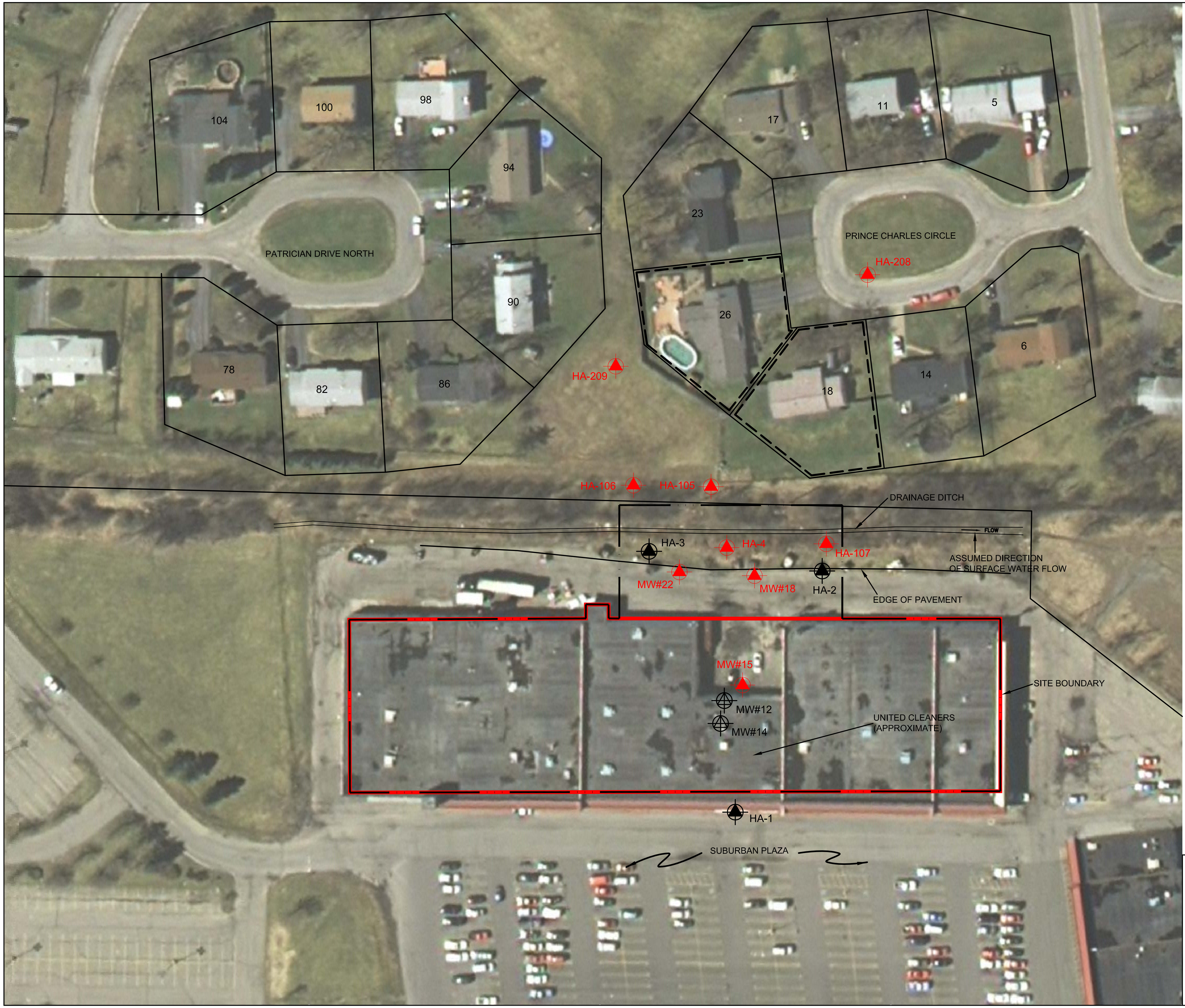
UNITED CLEANERS
2199 EAST HENRIETTA ROAD
HENRIETTA, NEW YORK

PROJECT LOCUS

SCALE: 1:24,000
NOVEMBER 2010

FIGURE 1

33587-004/CAD/Figure 1 - Project Locus 1.PDF



LEGEND:

| | |
|---|---|
| TAX MAP PROPERTY (APPROXIMATE) | ──── |
| SITE BOUNDARY | ── · · · ── |
| PLAZA BUILDING | 🟥 |
| 2-INCH MONITORING WELL LOCATIONS | HA-2 MW#15 |
| 1-INCH MONITORING WELL LOCATIONS | MW-14 |
| ONGOING GROUNDWATER MONITORING LOCATIONS | HA-106 |
| RESIDENTIAL PROPERTY ADDRESS | 18 |
| RESIDENTIAL LOCATIONS WHERE INDOOR AIR, OUTDOOR AIR, SUB-SLAB VAPOR, AND SUMP SAMPLING WAS CONDUCTED | ▭ |

NOTES:

1. WELL LOCATIONS ARE PER SURVEYS DATED 2007 & 2009 BY PARRONE ENGINEERING AND FISHER ASSOCIATES, RESPECTIVELY.

W
S
N
E

0 80 160
SCALE IN FEET

HALEY & ALDRICH

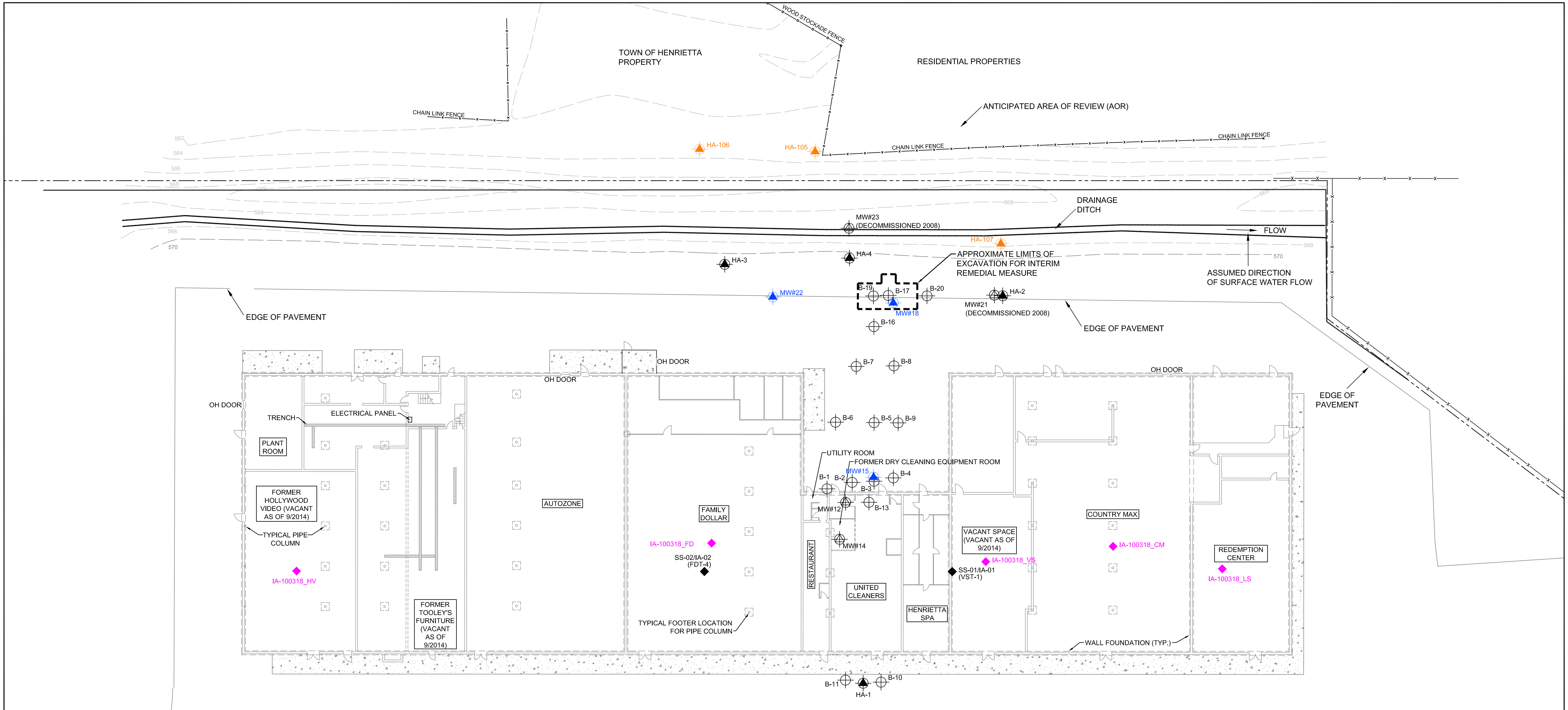
UNITED CLEANERS
2199 EAST HENRIETTA ROAD
HENRIETTA, NEW YORK

## SITE PLAN WITH ONGOING MONITORING LOCATIONS

SCALE: AS SHOWN
OCTOBER 2013

FIGURE 2

G:\PROJECTS\33587_SUBURBAN PLAZA\001 (INVESTIGATION PHASE)\CAD\2013 FIGURES\33587-005 0002 FA MW SITE PLAN_HA_APRIL2010_TRB.DWG



LEGEND:

| | |
|---|---|
| ▨ | CONCRETE |
| 562 —— | CONTOUR LINES |
| ◆ | SUB-SLAB/INDOOR AIR SAMPLE LOCATION (SAMPLED 20 MARCH 2009) |
| ◆ | INDOOR AIR SAMPLE LOCATIONS (SAMPLED 18 MARCH 2010) |
| ▲ | APPROX. MONITORING WELL LOCATION (H&A 2007) |
| ⊕ | APPROX. MONITORING WELL LOCATION (STANTEC 2006) |
| ▲ | APPROX. MONITORING WELL LOCATION (H&A 2008) |
| ▲ | APPROX. MONITORING WELL LOCATION (STANTEC 2006 / OVERDRILLED AND RE-INSTALLED BY H&A 2008/2009) |
| ⊕ | APPROX. SOIL BORING LOCATION (STANTEC 2006) |

NOTES:

1. BASE PLAN PROVIDED BY PARRONE ENGINEERING, 2007. SURVEY DATA PROVIDED BY FISHER ASSOCIATES OCTOBER 2009.
2. FOUNDATIONS INTERPRETED FROM HISTORICAL DRAWINGS.
3. ALL LOCATIONS APPROXIMATE.
4. MONITORING WELLS HA-208 & HA-209 (H&A 2009) ARE LOCATED OFFSITE TO THE WEST (IN THE RESIDENTIAL NEIGHBORHOOD). REFER TO FIGURE 2 FOR LOCATIONS.

W
S N
E

0 25 50 75 100
SCALE IN FEET

HALEY & ALDRICH

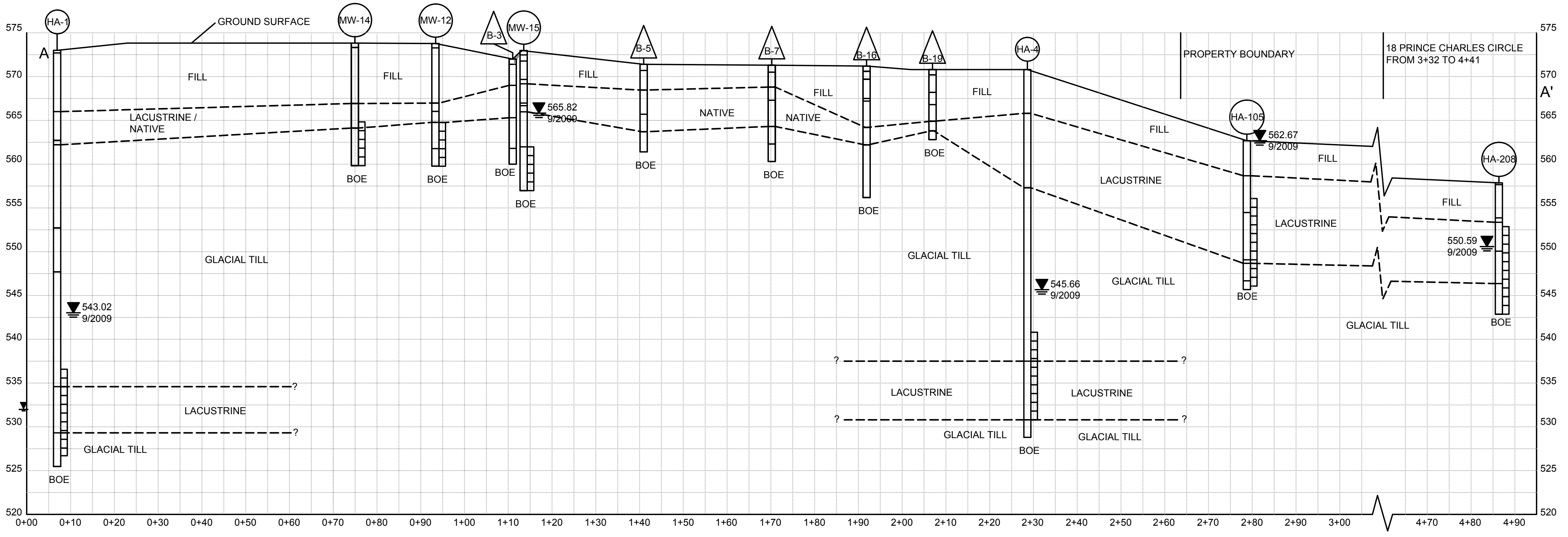
UNITED CLEANERS
2199 EAST HENRIETA ROAD
HENRIETTA, NEW YORK

SITE CHARACHTERIZATION
SUBSURFACE INVESTIGATION
LOCATION PLAN

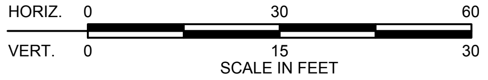
SCALE: AS SHOWN
SEPTEMBER 2014

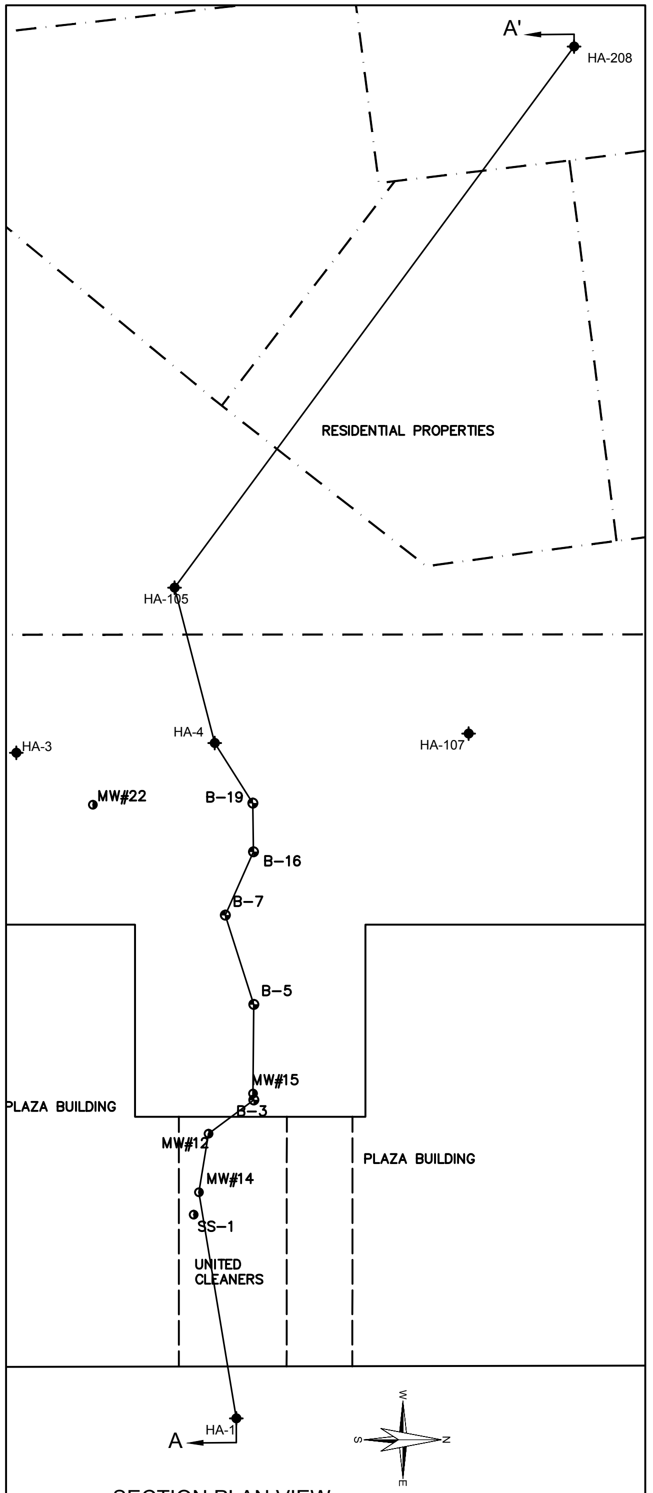
FIGURE 3

G:\PROJECTS\33587_SUBURBAN PLAZA\002 - SITE CHARACTERIZATION\CAD\33587-002_0003 SITE CHARACHTER PLAN.DWG



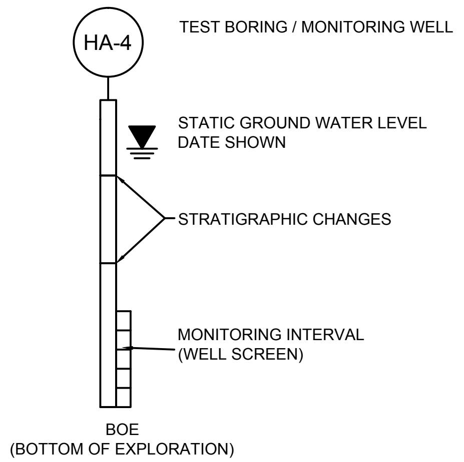
## SECTION A-A' - VIEW LOOKING SOUTH





SECTION PLAN VIEW
NOT TO SCALE

LEGEND:



NOTES:

1. SUBSURFACE EXPLORATIONS B-1 THROUGH B/MW-23 WERE PERFORMED BY STANTEC BETWEEN 12 MAY AND 21 JUNE 2006.
2. SUBSURFACE EXPLORATIONS HA-1 THROUGH HA-209 WERE PERFORMED BY HALEY & ALDRICH BETWEEN JANUARY 2007 AND AUGUST 2009.
3. THE SECTION PLAN VIEW WAS BASED ON THE BORING LOCATIONS FOR: 2199 EAST HENRIETTA ROAD "SUBURBAN PLAZA" PREPARED BY PARRONE ENGINEERING DATED SEPT. 20, 2006 AND SURVEY DATA PROVIDED BY FISHER ASSOCIATES DATED OCTOBER 2009.
4. SUBSURFACE PROFILES DEPICT THE GENERAL GEOLOGIC CONDITIONS AT THE SITE AND ARE BASED ON INTERPRETATION OF DATA PROVIDED IN THE BORING LOGS. ACTUAL SOIL CONDITIONS AND INTERFACES BETWEEN EXPLORATIONS MAY VARY SIGNIFICANTLY FROM THOSE INDICATED ON THE PROFILES.
5. INTERPRETATION OF GEOLOGIC CONDITIONS BASED, IN PART, ON DATA PROVIDED BY OTHERS.

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2199 EAST HENRIETTA ROAD
HENRIETTA, NEW YORK

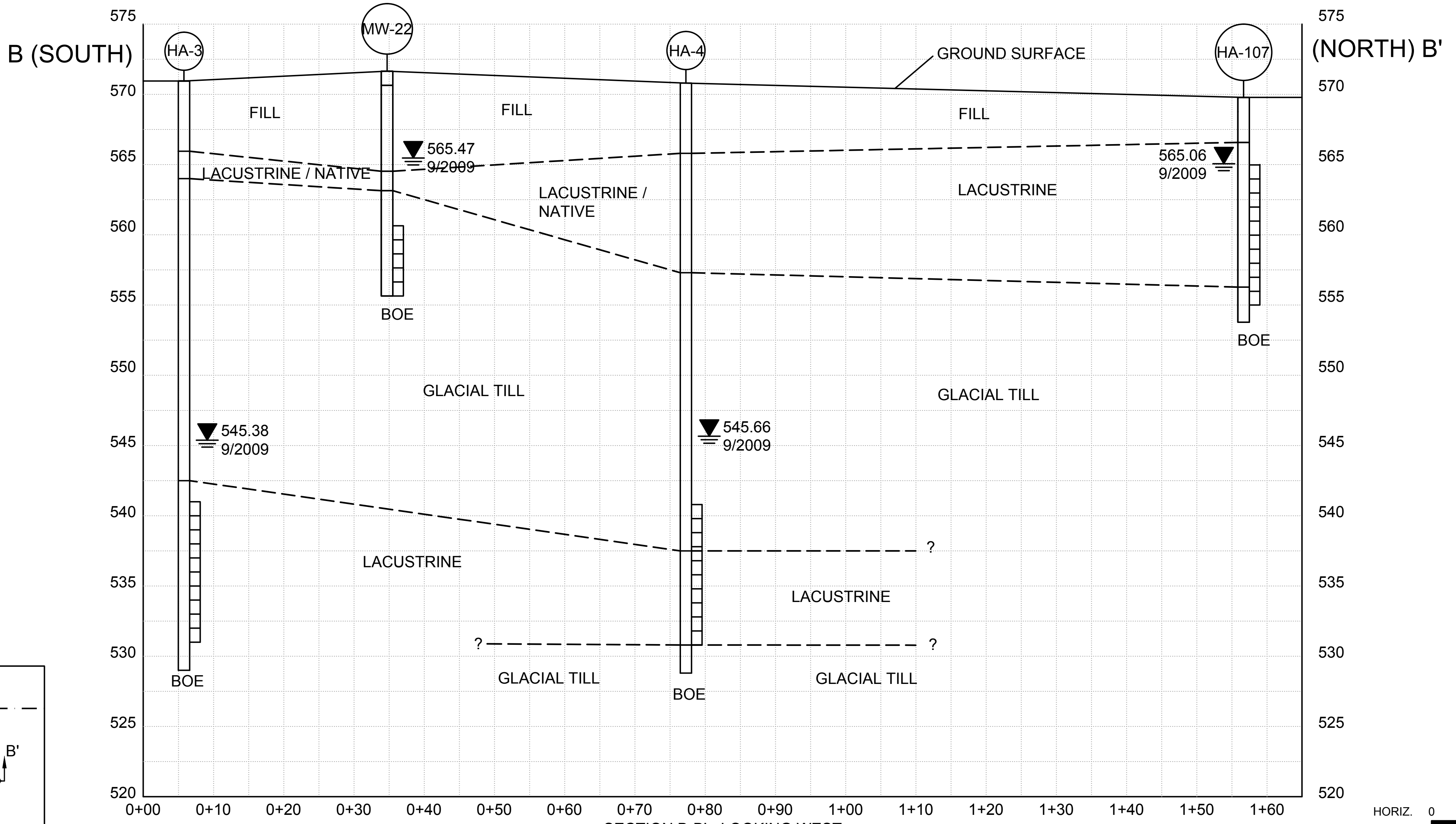
SCHEMATIC
SURFACE EXPLORATION PROFILE
SECTION A-A'

SCALE: AS SHOWN
OCTOBER 2013

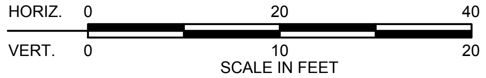
FIGURE 4

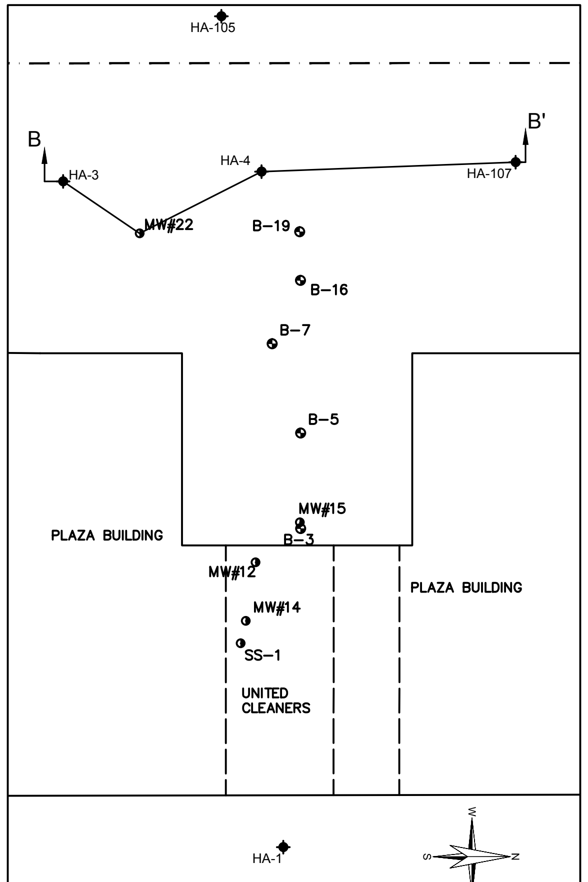
G:\PROJECTS\33587_SUBURBAN PLAZA\004 - REPORTING\CAD\33587-005-0003 SURFACE EXPLORATION PROFILE 7-24-13.DWG

G:\PROJECTS\33587_SUBURBAN PLAZA\004 - REPORTING\CAD\33587-005-0003 SURFACE EXPLORATION PROFILE 7-24-13.DWG



SECTION B-B' - LOOKING WEST

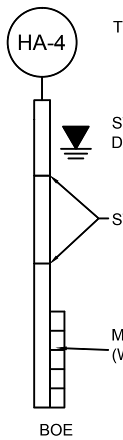




SECTION PLAN VIEW

NOT TO SCALE

LEGEND:



TEST BORING / MONITORING WELL

STATIC GROUND WATER LEVEL
DATE SHOWN

STRATIGRAPHIC CHANGES

MONITORING INTERVAL
(WELL SCREEN)

BOE
(BOTTOM OF EXPLORATION)

NOTES:

1. SUBSURFACE EXPLORATIONS B-1 THROUGH B/MW-23 WERE PERFORMED BY STANTEC BETWEEN 12 MAY AND 21 JUNE 2006.
2. SUBSURFACE EXPLORATIONS HA-1 THROUGH HA-209 WERE PERFORMED BY HALEY & ALDRICH BETWEEN JANUARY 2007 AND AUGUST 2009.
3. THE SECTION PLAN VIEW WAS BASED ON THE BORING LOCATIONS FOR: 2199 EAST HENRIETTA ROAD "SUBURBAN PLAZA" PREPARED BY PARRONE ENGINEERING DATED SEPT. 20, 2006 AND SURVEY DATA PROVIDED BY FISHER ASSOCIATES DATED OCTOBER 2009.
4. SUBSURFACE PROFILES DEPICT THE GENERAL GEOLOGIC CONDITIONS AT THE SITE AND ARE BASED ON INTERPRETATION OF DATA PROVIDED IN THE BORING LOGS. ACTUAL SOIL CONDITIONS AND INTERFACES BETWEEN EXPLORATIONS MAY VARY SIGNIFICANTLY FROM THOSE INDICATED ON THE PROFILES.
5. INTERPRETATION OF GEOLOGIC CONDITIONS BASED, IN PART, ON DATA PROVIDED BY OTHERS.

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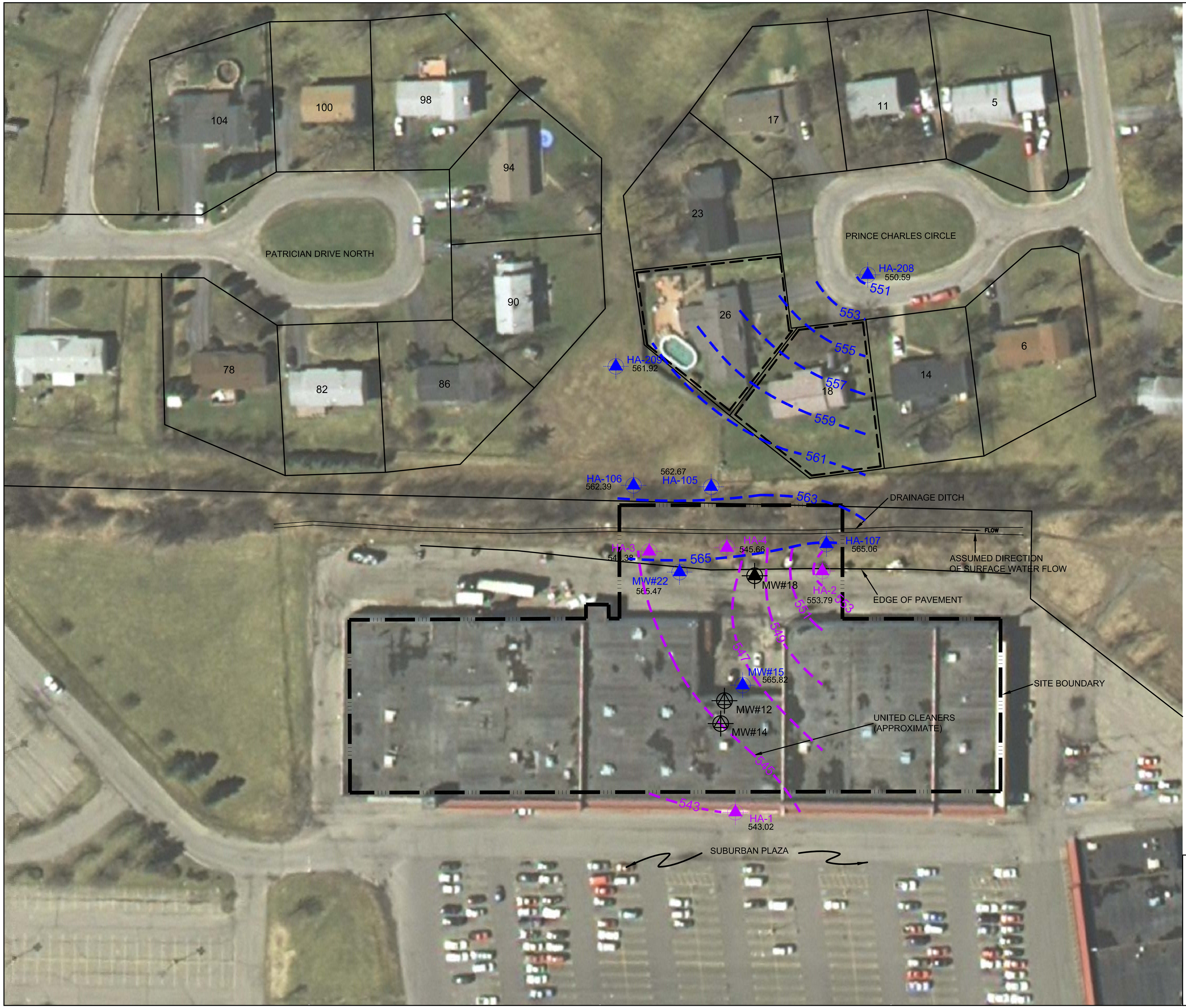
UNITED CLEANERS
2199 EAST HENRIETTA ROAD
HENRIETTA, NEW YORK

SCHEMATIC
SURFACE EXPLORATION PROFILE
SECTION B-B'

SCALE: AS SHOWN
OCTOBER 2013

FIGURE 5



LEGEND:

| | |
|---|---|
| TAX MAP PROPERTY (APPROXIMATE) | ─── |
| SITE BOUNDARY | ━━ ┆ ━━ ┆ ━━ |
| 2-INCH MONITORING WELL LOCATIONS | ▲ HA-106 |
| GROUNDWATER ELEVATION (NGVD 29) | 562.67 |
| 1-INCH MONITORING WELL LOCATIONS | ⊕ MW-14 |
| RESIDENTIAL PROPERTY ADDRESS | 18 |
| RESIDENTIAL LOCATIONS WHERE INDOOR AIR, OUTDOOR AIR, SUB-SLAB VAPOR, AND SUMP SAMPLING WAS CONDUCTED | ┄┄┄ |
| GROUNDWATER CONTOURS (SEPT. 2009) FOR SHALLOW WELLS | – – – 561 – – – |
| GROUNDWATER CONTOURS (SEPT. 2009) FOR DEEP WELLS | – – – 545 – – – |

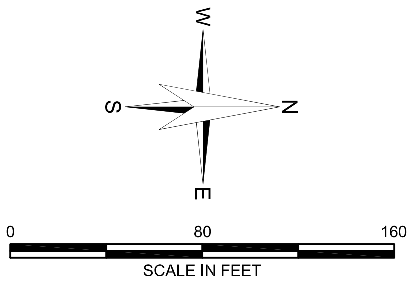
NOTES:

1. GROUNDWATER DEPTHS ARE IN INCHES AND MEASURED FROM THE TOP OF THE WELL RISER. GROUNDWATER DEPTHS WERE COLLECTED ON 2-3 SEPTEMBER 2009.

2. SURVEY DATA PROVIDED BY FISHER ASSOCIATES, OCTOBER 2009.

3) ONLY EXISTING WELLS ARE SHOWN. REFER TO FIGURE 3 FOR ADDITIONAL DETAIL.

4) WELLS MW-12 AND MW-14 WERE NOT INCLUDED IN THE GROUNDWATER CONTOURS AS THE RISER ELEVATIONS ARE UNKNOWN. WELL MW-18 WAS NOT INCLUDED IN THE GROUNDWATER CONTOURS AS NO MEASUREMENT WAS TAKEN DURING THIS EVENT.



HALEY& ALDRICH

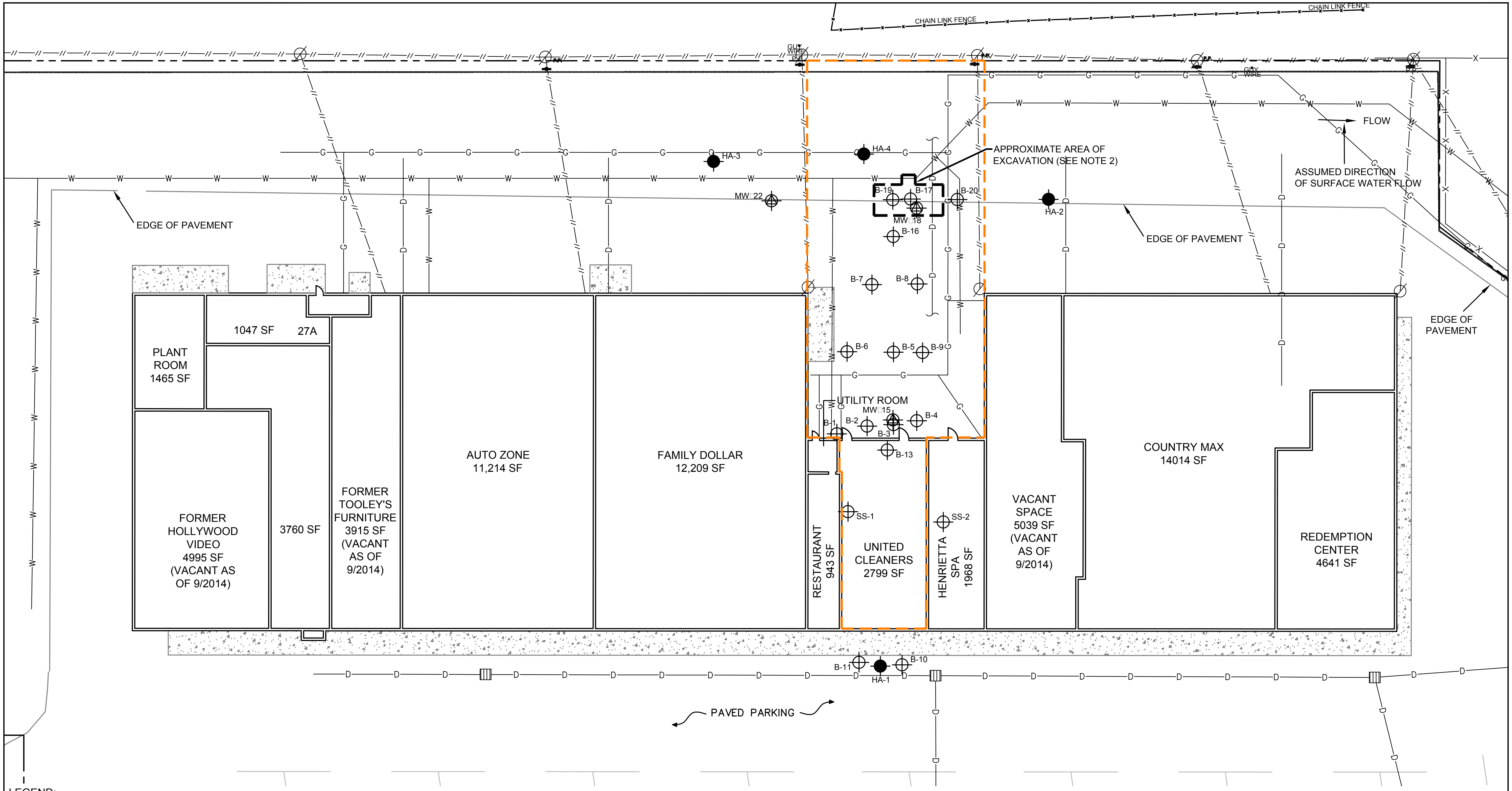
UNITED CLEANERS
2199 EAST HENRIETTA ROAD
HENRIETTA, NEW YORK

## SITE PLAN WITH 2009 GROUNDWATER SAMPLE LOCATIONS AND CONTOURS

SCALE: AS SHOWN
OCTOBER 2013

FIGURE 6

G:\PROJECTS\33587_SUBURBAN PLAZA\004 - REPORTING\CAD\FA MW SITE PLAN_HA-APRIL2010_GW CONTOURS 3Q2009.DWG



LEGEND:

PROPERTY LINE

STORM SEWER

STORM SEWER CATCH BASIN

SANITARY SEWER

SANITARY SEWER MANHOLE

GAS LINE

OVERHEAD ELECTRIC

WATER LINE

FENCE

CONCRETE

APPROX. LIMITS OF EXCAVATION (SEE NOTE 2)

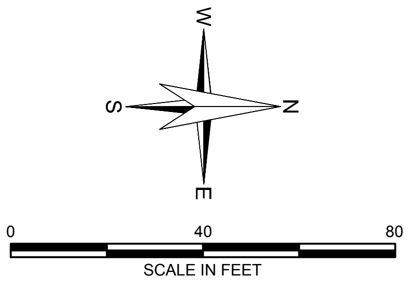
● APPROX. SOIL BORING LOCATION (H&A 2007)

⊕ APPROX. SOIL BORING LOCATION (STANTEC 2006)

MONITORING WELL LOCATION

LIMITS OF SOIL MANAGMENT AREA (SMA)

NOTES:
1. UTILITY LOCATIONS ARE APPROXIMATE BASED ON DRAWINGS PROVIDED BY BUILDING OWNER AND UTILITY COMPANIES.
2. LIMITS OF EXCAVATION DETERMINED BY FIELD SCREENING.



HALEY& ALDRICH

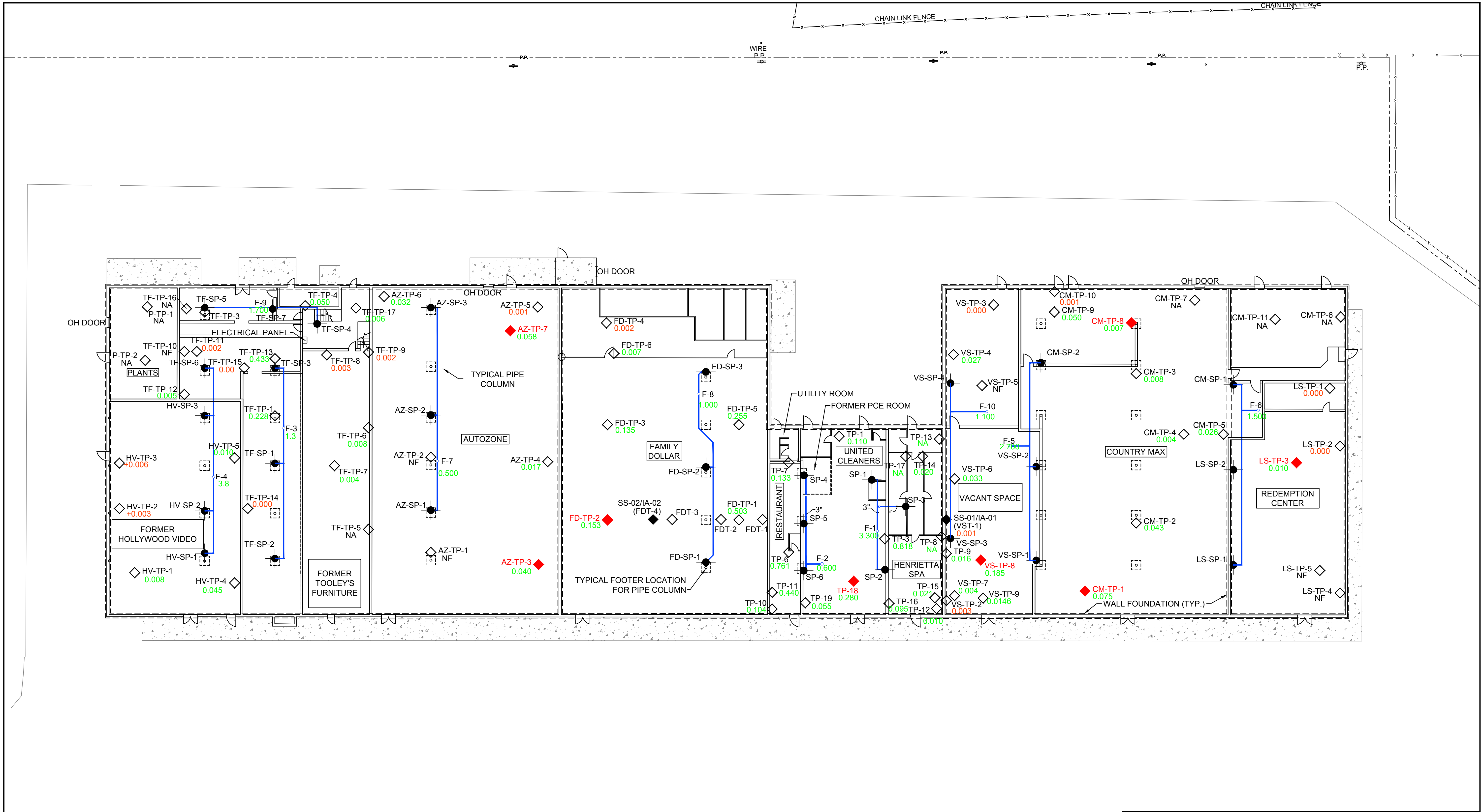
SUBURBAN PLAZA
2199 EAST HENRIETTA ROAD
HENRIETTA, NEW YORK

SITE UTILITY PLAN WITH SOIL MANAGEMENT AREA

SCALE: AS SHOWN
SEPTEMBER 2014

FIGURE 7

\\CLE\COMMON\PROJECTS\33587 - SUBURBAN PLAZA - ROCHESTER NY\004\CAD\DRAWINGS\33587-004-0005 SITE UTILITY PLAN.DWG



**LEGEND**

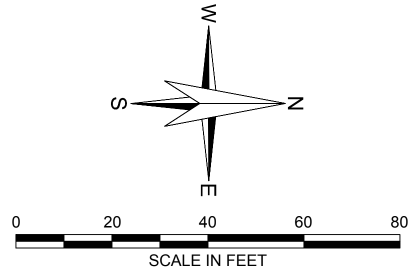
| | |
|---|---|
| ▨ | CONCRETE |
| — | SUB-SLAB DEPRESSURIZATION SYSTEM PIPING |
| F-1 | FAN LOCATION |
| ◇ | TEMPORARY TEST POINT LOCATION (TP) |
| ● | SUCTION POINT LOCATION (SP) |
| ◆ | SUB-SLAB/INDOOR AIR SAMPLE LOCATION |
| 0.009 | VACUUM TEST RESULTS (IN.W.C.) (SAMPLED 30 JULY 2014) |
| ◆ | PERMANENT TEST POINT LOCATION |
| NF | NOT FOUND |
| NA | NO ACCESS |

**GENERAL NOTES**

VS: VACANT SPACE (FORMER PLAY-IT-AGAIN SPORTS)
HV: FORMER HOLLYWOOD VIDEO
TF: FORMER TOOLEY'S FURNITURE
AZ: AUTOZONE
FD: FAMILY DOLLAR
CM: COUNTRY MAX
LS: REDEMPTION CENTER (LIQUOR STORE)
P: PLANTS SPACE

**NOTES**

1. FOUNDATIONS DETERMINED FROM HISTORICAL DRAWINGS.
2. ALL LOCATIONS APPROXIMATE.
3. VACUUM READINGS TAKEN ON JULY AND DECEMBER 2014.



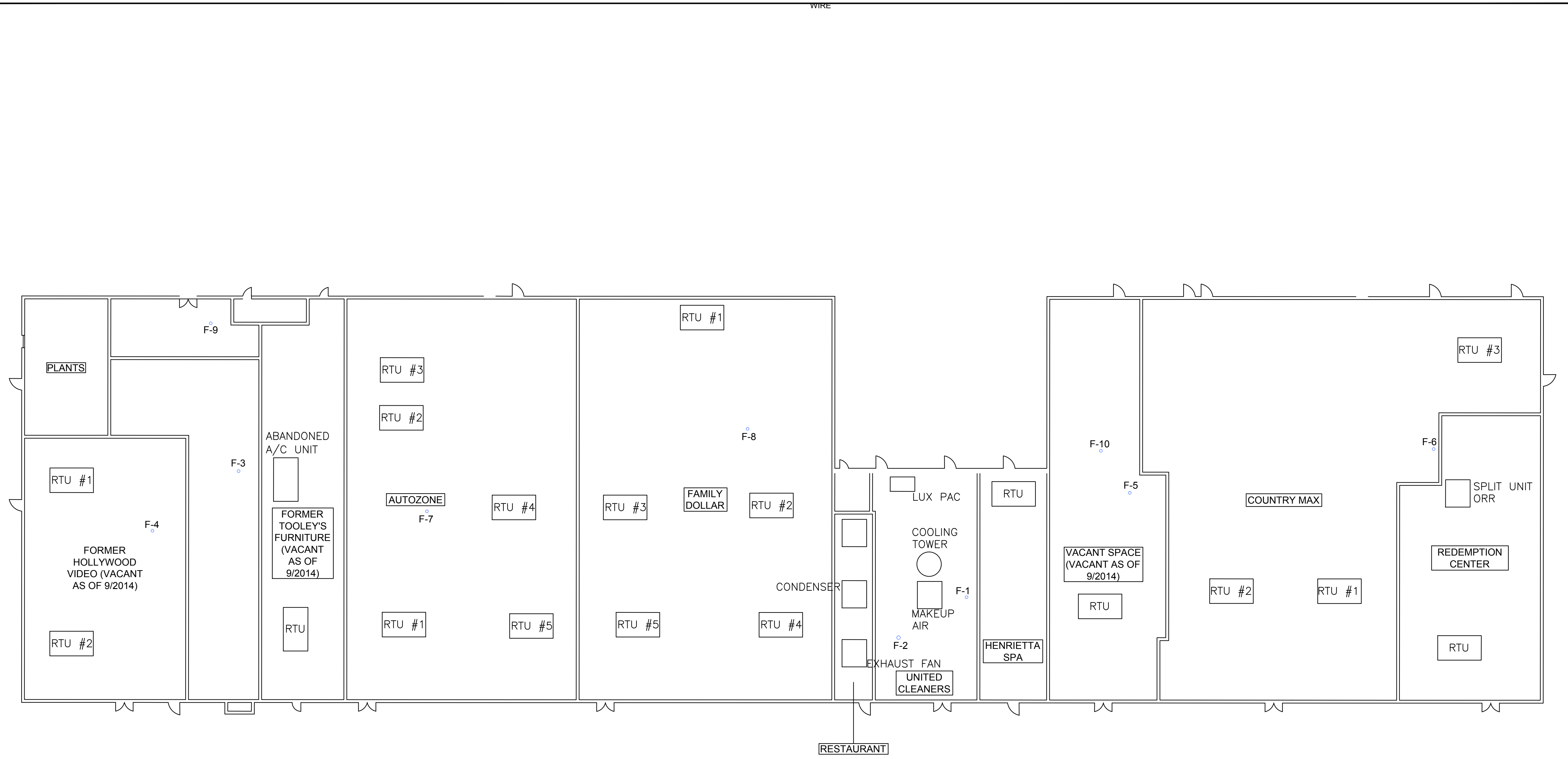
HALEY & ALDRICH

SUBURBAN PLAZA
2199 EAST HENRIETTA ROAD
HENRIETTA, NEW YORK

SUB-SLAB DEPRESSURIZATION
SYSTEM IRM RECORD DRAWING

SCALE: AS SHOWN
DECEMBER 2014

FIGURE 8

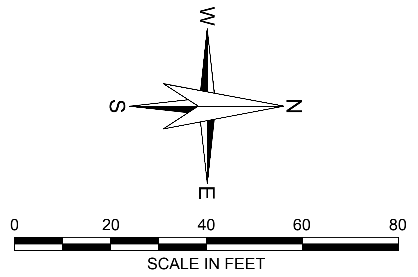


G:\PROJECTS\33587_SUBURBAN PLAZA\006_2014 SSD ACTIVITIES\2014-10-30_33587-004-0006 SUB-SLAB DEPRESS.DWG

LEGEND:

| | |
|---|---|
| ○ F-1 | FAN LOCATION |
| RTU | ROOF TOP UNIT |
| LUX PAC | ABANDONED ROOF TOP UNIT |

NOTES:
1. ALL LOCATIONS APPROXIMATE.
2. ALL SSD FANS ARE RADONAWAY GP-501, EXCEPT, F-2 AND F-10 ARE RADONAWAY RP-265.
3. HVAC EQUIPMENT WAS ADJUSTED IN APRIL & MAY 2010 TOINCREASE ECONOMIZER SETTINGS TO APPROXIMATELY 15% OUTSIDE AIR.



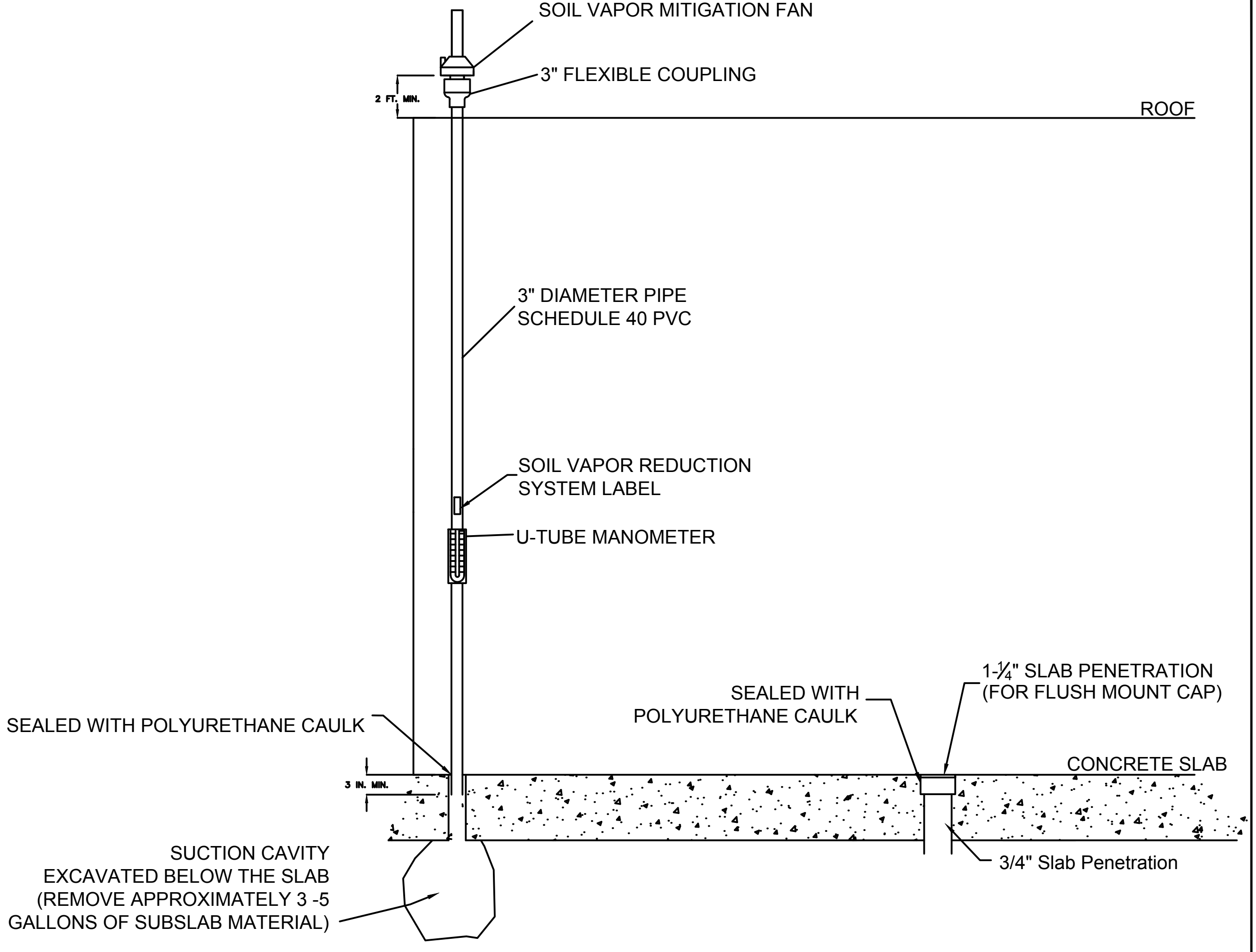
HALEY& ALDRICH

SUBURBAN PLAZA
2199 EAST HENRIETA ROAD
HENRIETTA, NEW YORK

SUB-SLAB DEPRESSURIZATION
IRM ROOF PLAN RECORD DRAWING

SCALE: AS SHOWN
SEPTEMBER 2014

FIGURE 9



SUCTION CAVITY
NOT TO SCALE

PERMANENT TEST LOCATION
NOT TO SCALE

**HALEY & ALDRICH**

SUB-SLAB DEPRESSURIZATION SYSTEM
SUBURBAN PLAZA
2199 EAST HENRIETTA ROAD
HENRIETTA, NEW YORK

## SUB SLAB DEPRESSURIZATION TYPICAL DETALS

SCALE: NOT TO SCALE
OCTOBER 2013

FIGURE 10

G:\PROJECTS\33587_SUBURBAN PLAZA\004 - REPORTING\CAD\33587-004-FIGURE 5_SSD TYP DETAILS.DWG

# APPENDIX A

## ENVIRONMENTAL EASEMENT & METES & BOUNDS

MONROE COUNTY CLERK'S OFFICE

ROCHESTER,NY

THIS IS NOT A BILL. THIS IS YOUR RECEIPT

Receipt # 1272740

Index DEEDS

Book 11565 Page 263

No. Pages : 10

Instrument EASEMENT AGREEMENT

Date : 07/22/2015

Time : 02:01:00PM

Control # 201507220702

TT # TT0000018196

Ref 1 #

Employee : AlanaM

Return To:
BOX 108

FRONTIER CENTER LLC

PEOPLE OF THE STATE OF NEW YORK

| | | |
|---|---|---|
| COUNTY FEE TP584 | $ | 5.00 |
| COUNTY FEE NUMBER PAGES | $ | 45.00 |
| RECORDING FEE | $ | 45.00 |
| STATE FEE TRANSFER TAX | $ | 0.00 |
| Total | $ | 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.

CHERYL DINOLFO
MONROE COUNTY CLERK

**TRANSFER AMT**

| | |
|---|---|
| TRANSFER AMT | $1.00 |

PI182-201507220702-10

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

**THIS INDENTURE** made this 30th day of June, 2015, between Owner(s) Frontier Center, LLC, having an office at 90 Air Park Drive, Suite 301 Town of Chili, 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

162.18-2-1.001

*

**WHEREAS,** Grantor, is the owner of real property located at the address of 2199 East Henrietta Road 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 162.18 Block 2 Lot 1.001, being the same as that property conveyed to Grantor by deed dated April 30, 2013 and recorded in the Monroe County Clerk's Office in Liber and Page 11243/563. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately 13.270 +/- acres, and is hereinafter more fully described in the Land Title Survey dated October 7, 2013 and last updated June 11, 2015 prepared by David N. Zacharias, a NYSPLS with BME Associates, 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 and the terms and conditions of Order on Consent Index Number: B8-0786-08-06, 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 listed in the 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, run with the land, 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.

A. (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) All Engineering Controls must be operated and maintained as specified in the Site Management Plan (SMP);

(3) All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP;

(4) 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;

(5) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;

(6) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

(7) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

(8) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;

(9) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP;

(10) 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.

B. 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.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining 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

D. 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.

E. 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.**

F. 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.

G. Grantor covenants and agrees that it shall, at such time as NYSDEC may require, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

(1) the inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3).

(2) the institutional controls and/or engineering controls employed at such site:

(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 controls are in the Department-approved format; and

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

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

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

(5) the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) to the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and

(7) the information presented is accurate and complete.

3. 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 and at reasonable times to assure compliance with the above-stated restrictions.

4. 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:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. 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;

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 any person violates this Environmental Easement, 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. 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: 828152
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.

**Remainder of Page Intentionally Left Blank**

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

Frontier Center LLC:

By: ________________________

Print Name: Richard Chiarenza

Title: Manager Date: 6-15-15

**Grantor's Acknowledgment**

STATE OF NEW YORK )
) ss:
COUNTY OF )

On the 15 day of June, in the year 20 15, before me, the undersigned, personally appeared Richard Chiar, 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.

Wendy J Thomas
Notary Public - State of New York

WENDY J. THOMAS
Notary Public, State of New York
No. 01TH6153579
Qualified in Monroe County
Commission Expires January 04, 2019

**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: ______________________________
Robert W. Schick, Director
Division of Environmental Remediation

## Grantee's Acknowledgment

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

On the 30th day of June, in the year 2015, before me, the undersigned, personally appeared Robert W. Schick, 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, 2018**

## SCHEDULE "A" PROPERTY DESCRIPTION

ALL THAT TRACT OR PARCEL OF LAND containing 13.270 acres more or less, being more particularly bounded and described as follows:

Beginning at the intersection of the southerly boundary line of lands now or formerly of ABC Supply Co. (T.A. No. 162.14-1-21.1) with the westerly right-of-way line of East Henrietta Road (NYS Route 15A) (66' Right-of-Way); thence

1. S 06°11'37" W, a distance of 839.97 feet to a point; thence

2. N 81°23'30" W, a distance of 57.60 feet to a point; thence

3. N 70°39'30" W, a distance of 73.30 feet to a point; thence

4. S 88°20'15" W, a distance of 234.14 feet to a point of curvature; thence

5. Southwesterly, along a tangent curve to the left, having a radius of 50.00 feet, a distance of 71.62 feet to a point; thence

6. S 06°15'48" W, a distance of 73.87 feet to a point of curvature; thence

7. Southwesterly, along a tangent curve to the right, having a radius of 80.00 feet, a distance of 62.83 feet to a point; thence

8. S 51°15'48" W, a distance of 25.98 feet to a point; thence

9. S 87°58'18" W, a distance of 263.89 feet to a point; thence

10. S 25°37'20" W, a distance of 0.01 feet to a point; thence

11. N 06°15'48" E, a distance of 736.59 feet to a point; thence

12. S 83°35'56" E, a distance of 68.38 feet to a point; thence

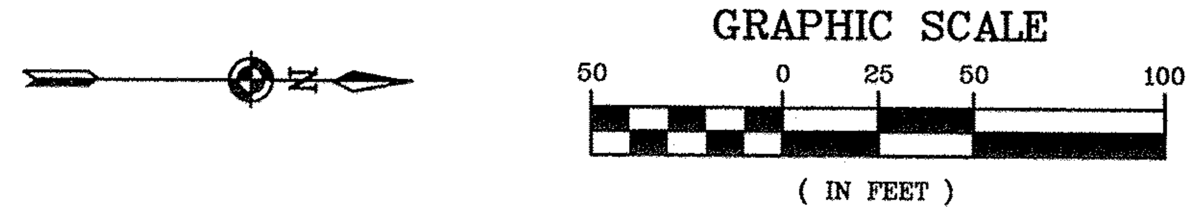
13. N 43°27'09" E, a distance of 297.35 feet to a point; thence

14. N 01°54'43" W, a distance of 49.29 feet to a point; thence

15. N 87°59'08" E, a distance of 467.66 feet to the Point of Beginning.

REFERENCES:

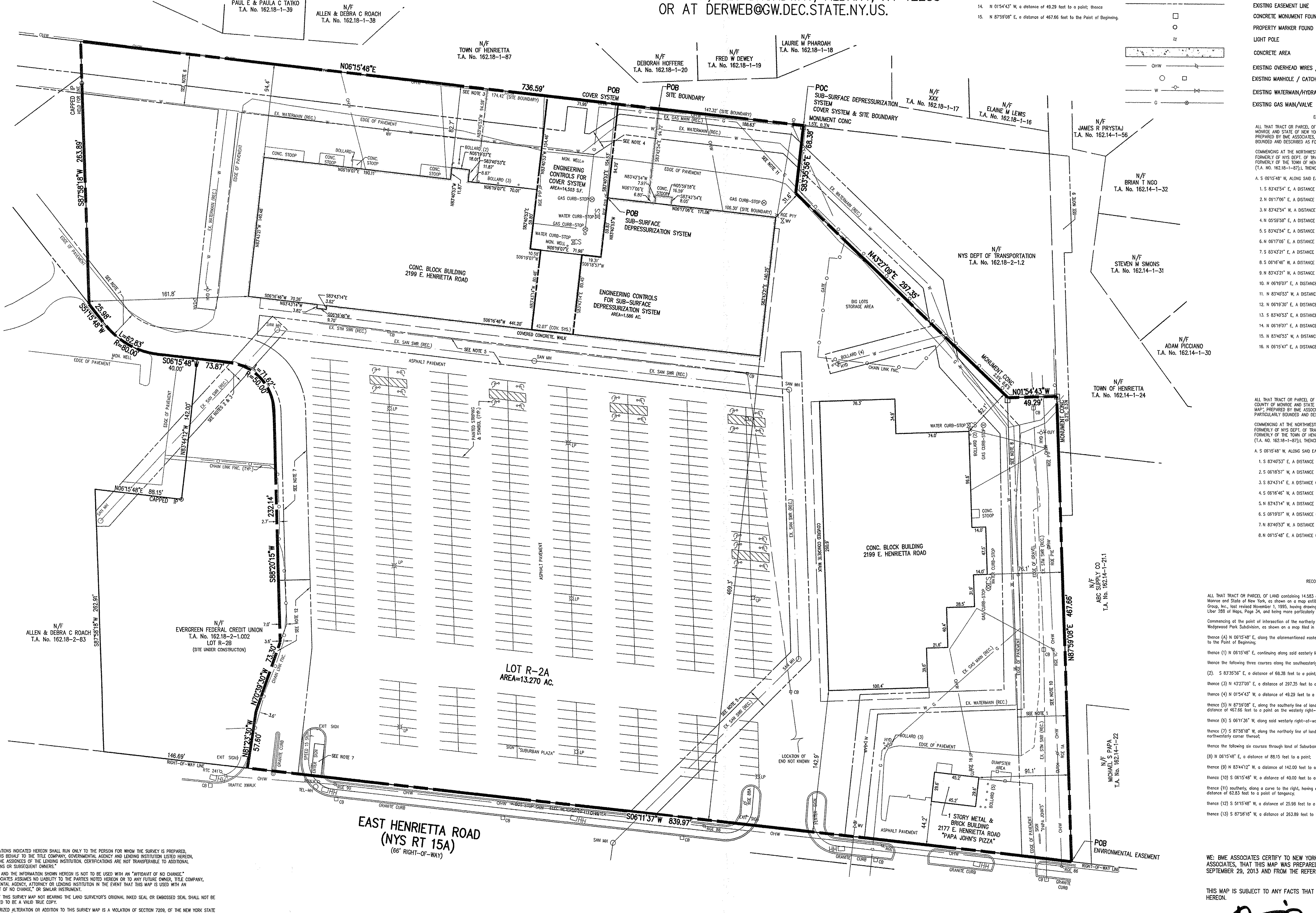
1. A PLAN ENTITLED "SUBURBAN PLAZA, RESUBDIVISION PLAT OF LOT 2," AS FILED AT THE MONROE COUNTY CLERK'S OFFICE IN LIBER 340 OF MAPS, PAGE 80.
2. L. 11247 D., P. 563
3. AN ABSTRACT OF TITLE WAS NOT PROVIDED FOR THE COMPLETION OF THIS SURVEY.



NOTES:

1. PARCEL SUBJECT TO A PERMANENT EASEMENT TO THE STATE OF NEW YORK PER L. 6462 D., P. 283.
2. PARCEL MAY BE SUBJECT TO A SANITARY SEWER EASEMENT TO THE TOWN OF HENRIETTA PER L. 6815 D., P. 225.
3. PARCEL MAY BE SUBJECT TO A SANITARY SEWER EASEMENT TO THE TOWN OF HENRIETTA AND TO BASOM PER L. 8589 D., P. 10.
4. PARCEL MAY BE SUBJECT TO A WATERMAIN EASEMENT TO THE TOWN OF HENRIETTA PER L. 8589 D., P. 25.
5. PARCEL MAY BE SUBJECT TO A SANITARY SEWER EASEMENT TO THE TOWN OF HENRIETTA PER L. 8627 D., P. 677.
6. PARCEL SUBJECT TO A DRAINAGE EASEMENT TO THE TOWN OF HENRIETTA PER L. 9590 D., P. 198.
7. PARCEL SUBJECT TO AN ACCESS EASEMENT TO LOTS R-1A AND R-1B PER L. 10041 D., P. 422.
8. PARCEL MAY BE SUBJECT TO A GAS MAIN EASEMENT TO RG&E PER REFERENCE 1.
9. PARCEL MAY BE BENEFITED BY A STORM SEWER EASEMENT PER REFERENCE 1.
10. PARCEL MAY BE SUBJECT TO A POLE LINE EASEMENT TO RG&E AND RTC PER REFERENCE 1.
11. PARCEL MAY BE SUBJECT TO A GAS MAIN EASEMENT TO RG&E PER REFERENCE 1.
12. PARCEL MAY BE SUBJECT TO AN ACCESS EASEMENT TO LOT R-2B PER REFERENCE 1.
13. THE HORIZONTAL DATUM SHOWN HEREON IS REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM, TRANSVERSE MERCATOR PROJECTION, WESTERN ZONE NAD 83 (2011)(EPOCH 2010) UTILIZING GPS OBSERVATIONS FROM THE NYSDOT REFERENCE NETWORK STATION (NYPF 0032).
14. THERE ARE NO USACOE AND/OR NYS DEC MAPPED WETLANDS ON THIS SITE.

THE ENGINEERING AND INSTITUTIONAL CONTROLS FOR THE 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 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.



ENVIRONMENTAL EASEMENT DESCRIPTION

ALL THAT TRACT OR PARCEL OF LAND containing 13.270 acres more or less, being more particularly bounded and described as follows:

Beginning at the intersection of the southerly boundary line of lands now or formerly of ABC Supply Co. (T.A. No. 162.14-1-21.1) with the westerly right-of-way line of East Henrietta Road (NYS Route 15A) (66' Right-of-Way); thence

1. S 06°11'37" W, a distance of 839.97 feet to a point; thence
2. N 81°23'30" W, a distance of 57.60 feet to a point; thence
3. N 70°39'30" W, a distance of 73.30 feet to a point; thence
4. S 88°20'15" W, a distance of 232.14 feet to a point of curvature; thence
5. Southwesterly, along a tangent curve to the left, having a radius of 50.00 feet, a distance of 71.62 feet to a point; thence
6. S 06°15'48" W, a distance of 73.87 feet to a point of curvature; thence
7. Southwesterly, along a tangent curve to the right, having a radius of 80.00 feet, a distance of 62.83 feet to a point; thence
8. S 51°15'48" W, a distance of 25.98 feet to a point; thence
9. S 87°58'18" W, a distance of 263.89 feet to a point; thence
10. S 25°37'20" W, a distance of 0.01 feet to a point; thence
11. N 06°15'48" E, a distance of 736.59 feet to a point; thence
12. S 83°35'56" E, a distance of 68.38 feet to a point; thence
13. N 43°27'09" E, a distance of 297.35 feet to a point; thence
14. N 01°54'43" W, a distance of 49.29 feet to a point; thence
15. N 87°59'08" E, a distance of 467.66 feet to the Point of Beginning.

LEGEND

| | |
|---|---|
| ━━ ━ ━ ━━ | BOUNDARY LINE |
| ——— — — ——— | EXISTING EASEMENT LINE |
| □ | CONCRETE MONUMENT FOUND |
| ○ | PROPERTY MARKER FOUND |
| ¤ | LIGHT POLE |
| ▨ | CONCRETE AREA |
| —— OHW —— | EXISTING OVERHEAD WIRES / UTILITY POLE |
| ○ □ | EXISTING MANHOLE / CATCH BASIN |
| —— W —— | EXISTING WATERMAIN/HYDRANT/VALVE |
| —— G —— | EXISTING GAS MAIN/VALVE |

LOCATION MAP
NOT TO SCALE

Drawing Alteration
The following is an excerpt from the New York State Education Law Article 145 Section 7209 and applies to this drawing:
"It is a violation of this law for any person, unless he is acting under the direction of a licensed professional engineer or land surveyor to alter any item in any way. If an item bearing the seal of an engineer or land surveyor is altered, the altering engineer or land surveyor shall affix to the item his seal and the notation "altered by" followed by his signature and the date of such alteration, and a specific description of the alteration."

ENGINEERING CONTROLS FOR SUB-SURFACE DEPRESSURIZATION SYSTEM

ALL THAT TRACT OR PARCEL OF LAND CONTAINING 2.066 ACRES MORE OR LESS, SITUATE IN THE TOWN OF HENRIETTA, COUNTY OF MONROE AND STATE OF NEW YORK, AS SHOWN ON A MAP ENTITLED, "SUBURBAN PLAZA, ENVIRONMENTAL EASEMENT MAP", PREPARED BY BME ASSOCIATES, HAVING DRAWING NO. 8904-606, LAST REVISED JANUARY 9, 2015, BEING MORE PARTICULARLY BOUNDED AND DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWESTERLY CORNER OF THE INTERSECTION OF THE SOUTHERLY BOUNDARY LINE OF LANDS NOW OR FORMERLY OF NYS DEPT. OF TRANSPORTATION (T.A. NO. 162.18-2-1.2) WITH THE EASTERLY BOUNDARY LINE OF LANDS NOW OR FORMERLY OF THE TOWN OF HENRIETTA
(T.A. NO. 162.18-1-87);L THENCE

A. S 06°15'48" W, ALONG SAID EASTERLY BOUNDARY LINE, A DISTANCE OF 147.32 FEET TO THE POINT OF BEGINNING; THENCE

1. S 83°42'54" E, A DISTANCE OF 94.72 FEET TO A POINT; THENCE
2. N 06°17'06" E, A DISTANCE OF 6.80 FEET TO A POINT; THENCE
3. N 83°42'54" W, A DISTANCE OF 7.97 FEET TO A POINT; THENCE
4. N 05°59'58" E, A DISTANCE OF 16.59 FEET TO A POINT; THENCE
5. S 83°42'54" E, A DISTANCE OF 8.05 FEET TO A POINT; THENCE
6. N 06°17'06" E, A DISTANCE OF 106.30 FEET TO A POINT; THENCE
7. S 83°43'21" E, A DISTANCE OF 140.25 FEET TO A POINT; THENCE
8. S 06°16'46" W, A DISTANCE OF 521.15 FEET TO A POINT; THENCE
9. N 83°43'21" W, A DISTANCE OF 140.48 FEET TO A POINT; THENCE
10. N 06°19'07" E, A DISTANCE OF 190.11 FEET TO A POINT; THENCE
11. N 83°40'53" W, A DISTANCE OF 11.88 FEET TO A POINT; THENCE
12. N 06°19'30" E, A DISTANCE OF 18.01 FEET TO A POINT; THENCE
13. S 83°40'53" E, A DISTANCE OF 11.87 FEET TO A POINT; THENCE
14. N 06°19'07" E, A DISTANCE OF 8.87 FEET TO A POINT; THENCE
15. N 83°40'53" W, A DISTANCE OF 94.59 FEET TO A POINT; THENCE
16. N 06°15'47" E, A DISTANCE OF 174.42 FEET TO THE POINT OF BEGINNING.

ENGINEERING CONTROLS FOR COVER SYSTEMS

ALL THAT TRACT OR PARCEL OF LAND CONTAINING 14,503 SQUARE FEET MORE OR LESS, SITUATE IN THE TOWN OF HENRIETTA, COUNTY OF MONROE AND STATE OF NEW YORK, AS SHOWN ON A MAP ENTITLED, "SUBURBAN PLAZA, ENVIRONMENTAL EASEMENT MAP", PREPARED BY BME ASSOCIATES, HAVING DRAWING NO. 8904-606, LAST REVISED JANUARY 9, 2015, BEING MORE PARTICULARLY BOUNDED AND DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWESTERLY CORNER OF THE INTERSECTION OF THE SOUTHERLY BOUNDARY LINE OF LANDS NOW OR FORMERLY OF NYS DEPT. OF TRANSPORTATION (T.A. NO. 162.18-2-1.2) WITH THE EASTERLY BOUNDARY LINE OF LANDS NOW OR FORMERLY OF THE TOWN OF HENRIETTA
(T.A. NO. 162.18-1-87);L THENCE

A. S 06°15'48" W, ALONG SAID EASTERLY BOUNDARY LINE, A DISTANCE OF 188.63 FEET TO THE POINT OF BEGINNING; THENCE

1. S 83°40'53" E, A DISTANCE OF 154.53 FEET TO A POINT; THENCE
2. S 06°18'57" W, A DISTANCE OF 19.31 FEET TO A POINT; THENCE
3. S 83°43'14" E, A DISTANCE OF 80.45 FEET TO A POINT; THENCE
4. S 06°16'46" W, A DISTANCE OF 42.07 FEET TO A POINT; THENCE
5. N 83°43'14" W, A DISTANCE OF 80.48 FEET TO A POINT; THENCE
6. S 06°19'07" W, A DISTANCE OF 10.58 FEET TO A POINT; THENCE
7. N 83°40'53" W, A DISTANCE OF 154.46 FEET TO A POINT; THENCE
8. N 06°15'48" E, A DISTANCE OF 71.96 FEET TO THE POINT OF BEGINNING.

RECORD DESCRIPTION

ALL THAT TRACT OR PARCEL OF LAND containing 14.583 acres more or less, situate in the Town of Henrietta, County of Monroe and State of New York, as shown on a map entitled, "Suburban Plaza, Subdivision Map", prepared by the Sear-Brown Group, Inc., last revised November 1, 1995, having drawing no. 13332 SU 3, being filed in the Monroe County Clerk's Office in Liber 288 of Maps, Page 34, and being more particularly bounded and described as follows:

Commencing at the point of intersection of the northerly right-of-way line of Calkins Road with the easterly line of lands of Wedgewood Park Subdivision, as shown on a map filed in the Monroe County Clerk's Office in Liber 158 of Maps, Page 17;

thence (A) N 06°15'48" E, along the aforementioned easterly line of Wedgewood Park Subdivision, a distance of 1162.06 feet to the Point of Beginning;

thence (1) N 06°15'48" E, continuing along said easterly line, a distance of 736.59 feet to a point;

thence the following three courses along the southeasterly line of lands of the State of New York:

(2). S 83°35'56" E, a distance of 68.38 feet to a point;

thence (3) N 43°27'09" E, a distance of 297.35 feet to a point;

thence (4) N 01°54'43" W, a distance of 49.29 feet to a point; thence

thence (5) N 87°59'08" E, along the southerly line of lands owned, now or formerly, by Petersons Roofing Materials, Inc.,a distance of 467.66 feet to a point on the westerly right-of-way line of East Henrietta Road;

thence (6) S 06°11'36" W, along said westerly right-of-way line, a distance of 986.66 feet to a point;

thence (7) S 87°58'18" W, along the northerly line of lands owned, now or formerly, by Bloch, a distance of 262.91 feet to northwesterly corner thereof;

thence the following six courses through land of Suburban Plaza:

(8) N 06°15'48" E, a distance of 88.15 feet to a point;

thence (9) N 83°44'12" W, a distance of 142.00 feet to a point;

thence (10) S 06°15'48" W, a distance of 40.00 feet to a point;

thence (11) southerly, along a curve to the right, having a radius of 80.00 feet, through a central angle of 45°00'00", a distance of 62.83 feet to a point of tangency;

thence (12) S 51°15'48" W, a distance of 25.98 feet to a point;

thence (13) S 87°58'18" W, a distance of 263.89 feet to the Point of Beginning.

WE: BME ASSOCIATES CERTIFY TO NEW YORK STATE – DEPARTMENT OF ENVIRONMENTAL CONSERVATION AND S-P ASSOCIATES, THAT THIS MAP WAS PREPARED FROM THE NOTES OF AN INSTRUMENT SURVEY COMPLETED BY US ON SEPTEMBER 29, 2013 AND FROM THE REFERENCES NOTED HEREON.

THIS MAP IS SUBJECT TO ANY FACTS THAT MAY BE REVEALED BY SOURCES OTHER THAN THOSE REFERENCED HEREON.

BY: DATE: 6/1/15
DAVID N. ZACHARIAS, NYSPLS No. 49940

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PHELPS & GORHAM PURCHASE, TOWNSHIP 12, RANGE 7, TOWN LOT 12, TOWN OF HENRIETTA THIRD RANGE, T.A. No. 162.18-2-1.001

| | REVISIONS | DATE | BY |
|---|---|---|---|
| 7 | | | |
| 6 | | | |
| 5 | | | |
| 4 | | | |
| 3 | | | |
| 2 | REVISED DIMENSIONS FOR ENGINEERING CONTROLS | 1/9/15 | KAM |
| 1 | ADDEDS DIMENSIONS FOR ENGINEERING CONTROLS | 10/7/13 | AJS |

BME | ASSOCIATES
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10 LIFT BRIDGE LANE EAST
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PROJECT SUBURBAN PLAZA
LOCATION TOWN OF HENRIETTA, MONROE COUNTY, NEW YORK
CLIENT WILMORITE, INC.
1265 SCOTTSVILLE ROAD
ROCHESTER, NY 14624
DRAWING TITLE ENVIRONMENTAL EASEMENT MAP

PROJECT MANAGER DATE
DN ZACHARIAS
PROJECT SURVEYOR DATE
DN ZACHARIAS
DRAWN BY DATE
AJ SHOLLY
SCALE DATE ISSUED
1"=50' OCTOBER 2013
PROJECT NO.
8904
DRAWING NO.
606

# APPENDIX B

## EXCAVATION WORK PLAN

# APPENDIX B – EXCAVATION WORK PLAN

***Applicability of this Plan***

*The excavation work plan applies to the following:*

- *Replacement of a cover system and testing of soils for excavations that will breach the cover system (asphalt pavement) in the Soil Management Area (SMA) shown on Figure 7.*
- *Management of groundwater encountered during excavations in all portions of the site.*
- *Management of visually impacted soils identified in all portions of the site.*

## B-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 Department. Currently, this notification will be made to:

Mr. Matthew P. Gillette, P.E
Regional Hazardous Waste Remediation Engineer
6274 East Avon-Lima Road
Avon, New York 14414

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent, plans for site re-grading, intrusive elements or utilities to be installed below the soil cover in the SMA, estimated volumes of contaminated soil to be excavated and any work that may impact an engineering control,
- A summary of environmental conditions anticipated 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, in electronic format, if it differs from the HASP provided in Appendix C of this document,
- Identification of disposal facilities for potential waste streams,
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

## B-2 SOIL SCREENING METHODS

Visual, olfactory and instrument-based soil screening (photoionization detector (PID)) will be performed by a qualified environmental professional during all remedial and development excavations into known or potentially contaminated material (remaining contamination). Soil screening will be performed regardless of when the 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 No Further Action letter.

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal, material that requires testing, material that can be returned to the subsurface, and material that can be used as cover soil. Characteristics of the types of stockpiles are shown in the table below.

**Table B1: Types of Stockpiles and Management Options**

| Stockpile Characteristics | Reuse onsite without further testing (Section B-7) | May be reused onsite pending analytical testing (Section B-7) | Dispose offsite per applicable regulations and landfill requirements (Section B-4 through B-6) |
|---|---|---|---|
| Material excavated from outside the limits of the SMA that is not visually impacted with free product, oily material, or solid waste. | ✓ | | |
| Material excavated from within the SMA with no evidence of contamination (visual, olfactory, PID). | | ✓ | |
| Material excavated from within the SMA with evidence of impact (staining, odor, elevated PID hits) | | ✓ | |
| Material excavated that is visually impacted by oily material[1] | | | ✓ |

1. If this material is encountered during excavations, additional testing and reporting requirements may be required depending on the quantity and nature of impacted material identified. Refer to Section B-12 below.

## B-3 STOCKPILE METHODS

Stockpiles will be kept covered at all times with appropriately anchored tarps, or on and beneath poly-sheeting with minimum of 6-mil thickness. If stockpiles are located near drainage wastes, or are larger than can be contained by poly-sheeting, soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters and other discharge points. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced. Soils may also be containerized in appropriate containers (drums, rolloffs, etc.) if quantities warrant such management.

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 NYSDEC.

## B-4 MATERIALS EXCAVATION AND LOAD OUT

In the event that excavation and load out of materials is required the following will occur (also refer to Section B-5 below):

- 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 its contractors are solely 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.

## B-5 MATERIALS TRANSPORT OFF-SITE

In the event that materials are planned to be removed from the site, the following will occur:

- 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.
- Loaded vehicles leaving the site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).

- 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.
- All trucks will be washed prior to leaving the site. A truck wash will be operated on-site. 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.
- Truck transport routes will be identified that will: (a) limit transport through residential areas and past sensitive sites; (b) take into account use of city mapped truck routes; (c) minimize off-site queuing of trucks entering the facility; (d) limit total distance to major highways; (e) promote safety in access to highways; and (f) consider overall safety in transport.
- 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.

## B-6 MATERIALS DISPOSAL OFF-SITE

All soil/fill/solid waste 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 6NYCRR Part 360) and Federal regulations. If disposal of soil/fill 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, 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 6NYCRR Part 360-1.2. Material that does not meet Track 1 unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility) without a beneficial use determination issued by NYSDEC.

## B-7 MATERIALS REUSE ON-SITE

### B-7.1 Criteria for Onsite Reuse

As noted in Section B-3 above, the following soils may be reused onsite:

- Soil from outside the limits of the SMA (Figure 7) that is not visually impacted with free product, oily material, or solid waste may be reused onsite without further testing.
- Soil from within the limits of the SMA (Figure 7) with no evidence of contamination (visible, olfactory, PID) may be reused onsite pending testing results described below.
- Soil from within the limits of the SMA with some evidence of impact (staining, odor, elevated PID hits), but that is not visually impacted with oily material may be reused onsite pending testing results described below.

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.

### B-7.2 Sampling for Reuse Protocol

Soils that require testing prior to reuse will be tested as described below. If the soil will be disposed offsite, the disposal facility may require different and/or additional analysis. Chemical criteria for on-site reuse of material have been approved by NYSDEC and are listed in Table 12. Note that the SCOs listed in Table V represent the NYSDEC cleanup criteria as of the date of this SMP. Should those criteria be revised in the future, the most recent available cleanup criteria should be used.

1. Sampling will be conducted by a qualified owner representative, consultant, or contractor.
2. Each sample will be collected using a decontaminated or new stainless steel, or plastic disposable device (hand trowel, shovel, scoop, hand augers, or other appropriate sampling equipment). To minimize the potential for cross-contamination, disposable sampling equipment will be used if possible. If sample equipment is reused, the equipment will be decontaminated prior to each use using the following procedure:
    a. Potable water/non-phosphate detergent (i.e. – Alconox ) solution wash
    b. Potable or distilled water rinse
    c. Wipe or air dry
3. Sampling frequency and laboratory analysis will be based on planned reuse of the soil (offsite or onsite):
    a. If the soil is being considered for reuse onsite, for similarly stockpiled/containerized soils, collect two (2) discrete samples per 1,000 cubic yards of material in laboratory provided samplers for

    analysis for Volatile Organic Compounds (VOCs) via EPA Method 8260B.

    b. If the soil is being considered for reuse offsite, samples shall be collected at the frequency for the analytes shown in Table B-3 below.

4. Immediately upon collection, samples will be labeled and placed in coolers, chilled with ice to approximately 4°C. The sample labels will identify the soil stockpile or container group, sample type, time and date of collection, name of the sampler, and required analyses. Sealed sample coolers will be delivered with accompanying chain of custody documentation to an ELAP-certified laboratory for analysis of VOCs via EPA Method 8260B.

5. Based on the results of the sampling:

    a. For onsite reuse, if VOC concentrations are below the protection of groundwater Soil Cleanup Objectives (Table 12), <u>the soil may be reused onsite</u>. If the soil is being considered for offsite reuse, the analytical results must comply with the requirements at the importing site.

    b. If VOC concentrations are above the protection of groundwater SCOs, <u>the soil must be disposed of offsite</u> per applicable regulations and landfill requirements.

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 re-use 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.

## B-8 FLUIDS MANAGEMENT

All liquids to be removed from the site, including excavation dewatering 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, but will be managed off-site.

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 SPDES permit.

## B-9 COVER SYSTEM RESTORATION

After the completion of soil removal and any other invasive activities the cover system in the SMA will be restored in a manner that complies with the Decision Document. A cover system is not required for other portions of the site. The demarcation layer, consisting of pavement will be replaced to provide a visual reference to the top of the ‘Remaining Contamination Zone’, the zone that requires adherence to special conditions for disturbance of remaining contaminated soils defined in this Site Management Plan. Other acceptable barriers include placement of a demarcation layer and at least 1 foot of imported clean cover material (free of industrial and/or other potential sources of chemical contamination).

If the type of cover system changes from that which exists prior to the excavation, this will constitute a modification of the cover element of the remedy and the upper surface of the ‘Remaining Contamination. A figure showing the modified surface will be included in the subsequent Periodic Review Report and in any updates to the Site Management Plan.

## B-10 BACKFILL FROM OFF-SITE SOURCES

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. Refer to the table below for appropriate backfill sources and pre-screening requirements.

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.

## Table B2: Types of Backfill Sources Pre-Screening Requirements

| Material and source | May be used onsite without further testing | May be used onsite pending analytical testing (Section B-10.1) | May not be used onsite |
|---|---|---|---|
| Commercially purchased bagged topsoil used for landscaping purposes. | ✓ | | |
| Gravel, rock, or stone (non-soil) consisting of virgin material from a permitted mine or quarry. | ✓ | | |
| Recycled concrete or brick from a DEC registered C&D processing facility[1,2]. | ✓ | | |
| Soil or sand imported from a virgin mine or pit. | | ✓ | |
| Material (including gravel, rock, stone, sand, soil, etc.) from sources other than a virgin mine or pit. | | ✓ | |
| Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites. | | | ✓ |
| Material that meets the definition of solid waste. | | | ✓ |

1. Recycled material must conform to the requirements of Section 304 of the New York State Department of Transportation *Standard Specifications Construction and Materials Volume 1 (2002).*
2. 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.

## B-10.1 Sampling Protocols for Offsite Backfill Sources

All imported soils that require testing will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards are considered the lower of the protection of groundwater SCOs and commercial use SCOs and are listed in Table 12. The SCOs listed in Table 12 represent the most recent iteration NYSDEC soil criteria prepared as of the date of this SMP. Should those soil criteria be revised in the future, the most recent available cleanup criteria should be used.

For the sources listed above that require analytical testing, the testing shall consist of the following in accordance with the May 2010 DER-10:

Target Compound List VOCs (EPA Method 8276B)
Target Compound List SVOCs (EPA Method 8270C)
Target Analyte List Metals + Cyanide (EPA Method 6010/7471)
PCBs & Pesticides (EPA Method 8081)

Testing shall be performed by an ELAP-certified laboratory. The frequency of sampling will depend on the source of the material as follows:

- <u>Soil or sand from a virgin mine or pit</u>: Two (2) discrete samples for VOCs and one (1) composite sample for SVOCs, inorganic compounds, PCBs, and pesticides from the initial 100 cubic yards of material, only.
- <u>Materials from other sources</u>: Sample at a frequency based on the amount of material per the table below or at a frequency agreed upon with the NYSDEC.

## Table B3: Recommended Sampling Frequency for Imported Materials and Materials Considered for Offsite Reuse Requiring Testing

| **Soil Quantity (cubic yards)** | **VOCs** *(discrete samples)* | **SVOCs, Inorganics, PCBs & Pesticides** *(composite samples[1])* |
|---|---|---|
| 0-50 | 1 | 1 |
| 50-100 | 2 | 1 |
| 100-200 | 3 | 1 |
| 200-300 | 4 | 1 |
| 300-400 | 4 | 2 |
| 400-500 | 4 | 2 |
| 500-800 | 6 | 2 |
| 800-1,000 | 7 | 2 |
| >1,000 | Add an additional 2 VOC and 1 composite for each additional 1,000 cubic yards or consult the NYSDEC. | |

1. 3-5 discrete samples from different locations in the fill being provided will comprise a composite sample for analysis.

## B-11 STORMWATER POLLUTION PREVENTION

If construction or excavation is performed that exceeds the criteria for construction-related stormwater pollution prevention control, during the duration of construction and until cover is restored, 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 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.

## B-12 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 full a full list of analytes (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and 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 reports prepared pursuant to Section 5 of the SMP.

## B-13 COMMUNITY AIR MONITORING PLAN

The Contractor is required to perform air monitoring for its own activities, in conformance to the Contractor’s HASP. In addition, the Contractor shall follow the community air monitoring procedures set forth in the NYSDOH Generic Community Air Monitoring Plan (CAMP), which is attached to this document as Appendix C. In addition to the monitoring stations required by the CAMP, a fixed monitoring station will also be located at the western site perimeter adjacent to the residential properties.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

## B-14 ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors off-site. 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. Implementation of all odor controls, including the halt of work, is the responsibility of the property owner's Remediation Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

Reasonable and customary means will be employed to prevent on- and off-site nuisances. These measures may 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.

## B-15 DUST CONTROL PLAN

A dust suppression plan that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

- Dust suppression may be achieved though the use of a dedicated on-site water truck for road wetting or other suitable dust suppression techniques. 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 to provide a clean and dust-free road surface.

- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

## B-16 OTHER NUISANCES

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

# APPENDIX C

## HEALTH & SAFETY PLAN AND COMMUNITY AIR MONITORING PLAN

# HALEY & ALDRICH, INC.
## SITE-SPECIFIC HEALTH & SAFETY PLAN

For

United Cleaners Site Management Plan

Henrietta, New York

Project/File No. 33587-005

Prepared by: Claire L. Mondello ___ Date: 09/24/2013

Revised by: Enter Revisor's Name Date: Enter Date

APPROVALS: The following signatures constitute approval of this Health & Safety Plan

______________________________ 9/24/13 ______________

Margaret B. Holt- Local H&S Coordinator Date

Date printed: 10/24/2013 at 8:32 AM

**Note: This HASP has been developed for Haley & Aldrich purposes only and is not for use by others.**

## TABLE OF CONTENTS

**Note: This HASP has been developed for Haley & Aldrich purposes only and is not for use by others.**

## 1. PROJECT INFORMATION AND EMERGENCY RESOURCES

| | |
|---|---|
| **Project Name: United Cleaners Site Management Plan** | **H&A File No.: 33587-005** |
| **Location: 2199 East Henrietta Road, Henrietta, New York** | |
| **Client/Site Contact:**<br>Phone Number:<br>Emergency Phone Number: | Mr. Ronald Cocquyt<br>585-783-3232 |
| **H&A Project Manager:**<br>Phone Number:<br>Emergency Phone Number: | Claire Mondello<br>585-321-4219<br>585-698-9052 |
| **Local Health & Safety Coordinator:**<br>Emergency Phone Number: | Margaret Holt<br>585-321-4214<br>585-721-2426 |
| **Nearest Hospital:**<br>Address:<br>(see map on next page)<br>Phone Number: | Strong Memorial Hospital<br>601 Elmwood Avenue<br>Rochester, New York 14642<br>585-275-2100 |
| **Nearest Occ. Health Clinic:**<br>**http://www.talispoint.com/liberty/ext/**<br>Address:<br>(see map on next page)<br>Phone Number | Strong Memorial Hosp. Occup Hlth<br>400 Red Creek DR. Suite 220<br>Rochester, NY 14623<br>Phone 585-487-1000<br>Fax 585-487-1190 |
| **Liberty Mutual Claim Policy** | **WC2-Z11-254100-032** |
| **Emergency Response Number:** | **911** |
| **Other Local Emergency Response Number:** | 911 |
| **Other Ambulance, Fire, Police, or Environmental Emergency Resources:** | 911 |

**Work Scope:**

This Site-Specific Health and Safety Plan addresses the health and safety practices and procedures that will be employed by all Haley & Aldrich employees participating in the site characterization of the Project Site. This plan is based on an assessment of the site-specific health and safety risks available to Haley & Aldrich and Haley & Aldrich's experience with other project sites. The scope of work for the Site Characterization includes:

Task #1: Conducting semi-annual/annual groundwater sampling of nine (9) onsite and offsite groundwater wells using conventional purge and bail methods.

Task #2: Oversight of excavations within the soil management area (SMA) and sampling of soil piles for reuse or disposal as directed by the client.

Task #3: Inspection of the sub-slab depressurization system suction and test points.

**Subcontractor(s)** to be involved in on-site activities:

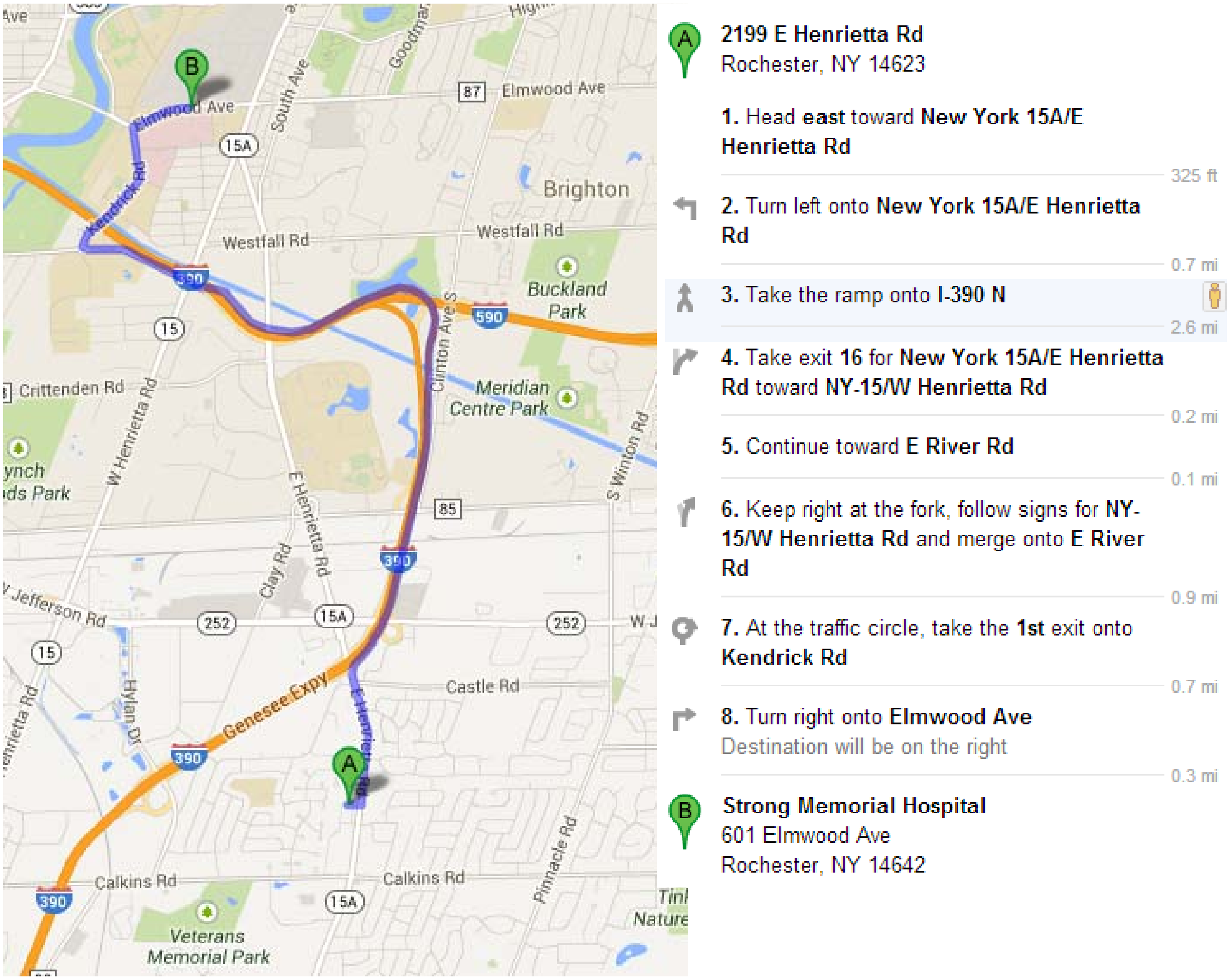
| Firm Name | Work Activity |
|---|---|
| N/A | N/A |
| N/A | N/A |

**Projected Start Date:** TBD

**Projected Completion Date:** Not Applicable

**Estimated Number of Days to Complete Field Work:**
2-3 days for each groundwater sampling event.

## Directions to the Nearest Hospital:



**A** **2199 E Henrietta Rd**
Rochester, NY 14623

**1.** Head **east** toward **New York 15A/E Henrietta Rd** — 325 ft

**2.** Turn left onto **New York 15A/E Henrietta Rd** — 0.7 mi

**3.** Take the ramp onto **I-390 N** — 2.6 mi

**4.** Take exit **16** for **New York 15A/E Henrietta Rd** toward **NY-15/W Henrietta Rd** — 0.2 mi

**5.** Continue toward **E River Rd** — 0.1 mi

**6.** Keep right at the fork, follow signs for **NY-15/W Henrietta Rd** and merge onto **E River Rd** — 0.9 mi

**7.** At the traffic circle, take the **1st** exit onto **Kendrick Rd** — 0.7 mi

**8.** Turn right onto **Elmwood Ave**
Destination will be on the right — 0.3 mi

**B** **Strong Memorial Hospital**
601 Elmwood Ave
Rochester, NY 14642

## 2. SITE DESCRIPTION

**Site Classification:**

| | | |
|---|---|---|
| ☐ Industrial | ☑ Commercial | ☐ Other Specify |

**General Description:**

United Cleaners is located within the center of Suburban Plaza, comprising approximately 14.6 acres, located at 2199 East Henrietta Road, in Henrietta, NY. United Cleaners is bounded by a parking lot to the east, other commercial tenant space to the north and south, and a rear plaza driveway, a Town of Henrietta easement and then beyond which are residences to the west. The Suburban Plaza property is bounded on the east by East Henrietta Road beyond which are residences and vacant land, on the south by commercial retail properties, on the north by commercial retail properties, and on the west by a drainage swale beyond which are private residences.

Suburban Plaza consists of two main buildings containing retail stores and a restaurant outbuilding.

Land uses on the properties surrounding the Site generally include commercial properties and private single-family residential properties.

**Background and Historic Site Usage:**

The Site was reportedly undeveloped agricultural land until the late 1950s. Historical records indicate that the Suburban Plaza property was developed by 1959. United Cleaners has been the only occupant of the Plaza Building known to have used PCE or dry cleaning solvent.

According to historical records, United Cleaners began operating at the Suburban Plaza property in the 1970s. According to United Cleaners personnel, prior to 1993 United Cleaners was a pick-up/drop-off location and did not use PCE. Reportedly, they began use of PCE in 1993 and continued use of the dry cleaning solvent until 2009, when at the request of S-P Associates; United Cleaners converted their operation to the use of petroleum distillates and/or “environmentally friendly solvents.”

Between 1993 and 2009, United Cleaners reported that they used approximately 180 gallons of PCE per year. Waste PCE was stored onsite (inside United Cleaners) in small (less than 55-gallon) poly drums. The drums were staged on top of grates over secondary containment pending recycling or disposal.

United Cleaners operates a dry cleaning plant and a pick-up/drop-off store. The dry cleaning solvent release identified at the Site is a result of United Cleaner’s past operations

**Project Scope:**

The project scope consists of periodic groundwater sampling, inspection of the sub-slab depressurization system, and excavation oversight as documented in the Site Management Plan.

**Overview of Hazards:**

Hazards include:

- Chemical hazards from groundwater sampling activities
- Potential inclement weather
- Hazards from heavy equipment if excavation is conducted
- Potential underground utilities if excavation is conducted
- Overhead utilities if tall equipment is used
- Variable terrain

**Site Status:** Indicate current activity status and describe operations at the site.

☑ Active ☐ Inactive

☐ Partially active ☐ Other

The facility currently operates as a retail plaza that includes parking.

**Site Plan:**

Is a site plan or sketch available? ☑ Y ☐ N

**Work Areas:**

List/identify each specific work area(s) on the job site and indicate its location(s) on the site plan:

1. Groundwater Monitoring – Exterior wells shown on the attached site plan

2. Excavations – If excavations requiring oversight were to occur, they would be located to the west (behind) the United Cleaners space as shown on the attached site plan.

3. SSD System Monitoring – Monitoring points are located throughout the interior of the plaza building in which United Cleaners is present.

## 3. PROJECT TASK BREAKDOWN

List and describe each distinct work task below.

| Task No. | Detailed Task Description | Employee(s) | Work Date(s) or Duration |
|---|---|---|---|
| **1** | Groundwater Monitoring | TBD | 2-3 days |
| **2** | Excavation Oversight | TBD | TBD |
| **3** | SSD System Monitoring | TBD | 1 day |
| **4** | | | |

## 4. HAZARD ASSESSMENT

Material Safety Data Sheets (MSDS) of hazardous materials used during the execution of work shall be available on site. MSDSs are required for chemicals used to prepare samples, calibration gases, etc.

**Chemical Hazards:**

Does chemical analysis data indicate that the site is contaminated? ☑ Y ☐ N

Indicate the potential physical state of the hazardous materials at the site.

☑ Gas/Vapor
☑ Liquid
☐ Sludge
☑ Solid/Particulate

Indicate the anticipated or actual class of compounds at the site.

☐ Asbestos
☐ BTEX
☑ Chlorinated Solvents
☐ Heavy Metals
☐ Inorganics
☐ Pesticides
☐ Petroleum products
☐ Other Specify

**Impacted Environments**:

Indicate media in which contamination is expected.

☑ Air
☑ Soil
☐ Surface water
☑ Groundwater
☐ Sediment
☐ Other Specify

**Estimated concentrations:**

Indicate medium of major chemicals expected to be encountered by onsite personnel.

| Work Activity | Media | Chemical | Anticipated Concentration |
|---|---|---|---|
| Groundwater Monitoring | GW<br>A | Chlorinated VOCs | GW: ND – 500 ug/L<br>A: ND – 250 ug/m$^3$ |
| Excavation Oversight | SO<br>GW<br>A | Chlorinated VOCs | SO: ND – 5 mg/kg<br>GW: ND – 500 ug/L<br>A: ND – 250 ug/m$^3$ |
| Inspect SSD System | N/A | N/A | N/A |

(Media key: A = Air; GW = Groundwater; SW = Surface Water; SO = Soil; SE = Sediment)

**Chemicals of Concern:**

**Trichloroethylene (TCE)** is a colorless, nonflammable, non-corrosive liquid has a “sweet” odor characteristic of some chlorinated hydrocarbons.

The compound is incompatible with strong caustics, it reacts with aluminum when acidic, and it is incompatible with active metals - barium, lithium, sodium, magnesium, and titanium. Decomposition of TCE, due to contact with hot metal or ultraviolet radiation, forms products including chlorine gas, hydrogen chloride, and phosgene. Dichloroacetylene may be formed from the reaction of alkali with TCE.

The Cal-OSHA PEL for TCE is 25 PPM as an 8-hour TWA; an acceptable ceiling concentration of 300 PPM; and a STEL of 200 PPM. The OSHA PEL for TCE is 100 ppm as an 8-hour TWA; an acceptable ceiling concentration of 200 ppm; and an acceptable maximum peak ceiling of 300 ppm for no more than 5 minutes in any 2-hour period. The standard routes of entry in the body are through inhalation, percutaneous absorption, ingestion, skin and eye contact. The points of attack are the respiratory system, heart, liver, kidneys, central nervous system and skin.

Exposure to TCE vapor may cause irritation of the eyes, nose, and throat. The liquid, if splashed in the eyes, may cause burning irritation and damage. Repeated or prolonged shin contact with the liquid may cause dermatitis. Acute exposure to TCE depresses the central nervous system exhibiting such symptoms as headache, dizziness, vertigo, tremors, nausea and vomiting, irregular heart beat, sleepiness, fatigue, blurred vision, and intoxication similar to that of alcohol. Unconsciousness and death have been reported. Alcohol may make the symptoms of TCE overexposure worse. If alcohol has been consumed, the overexposed worker may become flushed. TCE addiction and peripheral neuropathy have been reported.

**Tetrachloethylene (PCE)**

Tetrachloroethylene (PCE) is a colorless, nonflammable liquid with a mild, chloroform-like odor.

PCE is incompatible with strong oxidizers and metals such as lithium, beryllium and barium, caustic soda, sodium hydroxide, and potash. Decomposition of PCE, due to fire, forms products including hydrogen chloride, and phosgene.

The OSHA PEL for PCE is 100 ppm as an 8-hour TWA; an acceptable ceiling concentration of 200 ppm; and an acceptable maximum peak ceiling of 300 ppm for no more than 5 minutes in any 3-hour period. The standard routes of entry in the body are through inhalation, percutaneous absorption, ingestion, skin and eye contact. The points of attack are the respiratory system, heart, liver, kidneys, central nervous system, eyes, and skin.

Symptoms that may occur as a result of exposure to PCE include irritation to the eyes, skin, nose, and throat; respiratory system distress; nausea; flushed face and neck; incoordination; headache; drowsiness; skin erythema; and liver damage.

**1,1 and 1,2-Dichloroethylene (1,1-DCE; 1,2-DCE)**

1,1 and 1,2-Dichloroethylene (1,1-DCE; 1,2-DCE) is a colorless, class IB flammable liquid with a slightly acrid, chloroform-like odor.

1,1 and 1,2-DCE is incompatible with strong oxidizers, strong alkalis, potassium hydroxide, and metals such as copper, and contains inhibitors to prevent polymerization.

The OSHA PEL for 1,2-DCE is 200 ppm as an 8-hour TWA. There is no OSHA PEL for 1,1-DCE. The 8-hour TWA for 1,1-DCE is 1.0 ppm. The standard routes of entry in the body are through inhalation, ingestion, skin and eye contact. The points of attack are the respiratory system, central nervous system, and eyes.

Symptoms that may occur as a result of exposure to 1,1 and 1,2-DCE include irritation to the eyes; respiratory system distress; central nervous system depression.

**Vinyl Chloride (VC)**

Vinyl Chloride (VC) is a colorless, liquid or flammable gas with a pleasant odor at high concentrations.

VC is incompatible with oxidizers, peroxides, and metals such as copper, aluminum, iron and steel. VC polymerizes in air, sunlight, or heat unless it is stabilized by inhibitors such as phenol. It attacks iron and steel in the presence of moisture.

The OSHA PEL for VC is 1 ppm as am 8-hour TWA, and an acceptable ceiling of 5 ppm in a 15 minute period. The standard routes of entry in the body are through inhalation, skin and eye contact. The points of attack are the respiratory system, central nervous system, liver, blood, and lymphatic system.

Symptoms that may occur as a result of exposure to VC include weakness and exhaustion; abdominal pain; gastrointestinal bleeding; enlarged liver; and pallor or cyanosis of the extremities. Liquid VC can cause frostbite. VC can also cause liver cancer.

## TABLE 1
## OCCUPATIONAL EXPOSURE LIMITS (CONCENTRATIONS IN AIR)

(CIRCLE CONTAMINANTS OF CONCERN, WRITE ADDITIONAL CONTAMINANTS AND EXPOSURE ON LAST PAGE)

| CHEMICAL | ROUTES OF EXPOSURE | IDLH | Ceiling | STEL | PEL | TLV | REL | PID (IP eV) | FID | ODOR THRES-HOLD | IRRITATION THRESHOLD | ODOR DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **VAPORS & GASES** | | | | | | | | | | | | |
| Acetone | R, I, C | 2500 | - | 750 [ACGIH] | 1000 | 500 | 250 | 9.69 | 60 | 13 | - | fragrent, mint-like |
| Ammonia | R, I, C | 300 | - | 35 [NOSH, ACGIH] | 50 | 25 | 25 | 10.18** | - | 0.5-2 | 10 | Pungent suffocating odor |
| Benzene | R,A,I,C | Ca [500] | - | 1 [NIOSH]; 2.5 {ACGIH] | 1 | 0.5 | 0.1 | 9.24 | 150 | 4.68 | - | Solvent, aromatic |
| Carbon tetrachloride (Tetrachloromethane) | R,A,I,C | Ca [200] | 25 [instantaneous] 200 [5 min peak in any 4 hrs] | 2 [NIOSH, 60-min]; 10 [ACGIH] | 2 | 5 | Ca | 11.47** | 10 | 50 | - | Sweet, pungent, ether-like |
| Chlorobenzene | R,I,C | 1000 | - | - | 75 | 10 | - | 9.07 | 200 | 0.68 | - | Almond-like |
| Chloroform | R,I,C | Ca [500] | 50 [OSHA] | 2 [NIOSH, 60-min] | - | 10 | - | 11.42** | 65 | 50 | - | Sweet, pleasant |
| o-Dichlorobenzene | R,A,I,C | 200 | 50 [NIOSH, OSHA] | 50 [ACGIH] | - | 25 | - | 9.06 | 50 | 0.3 | E 20-30 | Pleasant, aromatic |
| p-Dichlorobenzene | R,A,I,C | Ca [150] | - | - | 75 | 10 | Ca | 8.98 | - | 0.18 | E 80-160 | Distinct, aromatic, mothball-like |
| Dichlorodifluoromethane (Freon 12) | R,C | 15000 | - | - | 1000 | 1000 | 1000 | 11.75** | 15 | - | - | Ether-like when at very high concs. |
| 1,1-Dichloroethane | R,I,C | 3000 | - | - | 100 | 100 | 100 | 11.06** | 80 | 200 | - | Distinct, chloroform-like |
| 1,2-Dichloroethane (Ethylene dichloride) | R,I,A,C | Ca [50] | 100 [OSHA] | 2 ppm [NIOSH]; 200 ppm [OSHA, 5-min max peak in any 3 hours] | 50 | 10 | 1 | 11.05** | 80 | 88 | - | Chloroform-like |
| 1,1-Dichloroethylene (1,1-DCE, Vinylidene chloride) | R,A,I,C | Ca [ND] | - | - | - | 5 | Ca | 10.00** | 40 | 190 | - | Chloroform-like |
| 1,2-Dichloroethylene | R,I,C | 1000 | - | - | 200 | 200 | 200 | 9.65 | 50 | 0.85 | - | Bitter, chloroform-like |
| Ethanol | R,I,C | 3300 | - | - | 1000 | 1000 | 1000 | 10.47** | 25 | 10 | - | Weak, ether-like, wine-like |
| Ethylbenzene | R,I,C | 800 | - | 125 [NIOSH; ACGIH] | 100 | 100 | 100 | 8.76 | 100 | 2.3 | E 200 | Aromatic |
| Ethylene Glycol | R,I,C | ND | 50 [OSHA]; 100 $mg/m^3$ [ACGIH] | - | - | - | - | - | - | - | - | Odorless |
| Formaldehyde | I,C | Ca [20] | 0.1 [NIOSH, 15-min]; 0.3 [ACGIH] | 2 | 0.75 | - | Ca [0.016] | 10.88** | - | 0.83 | - | Pungent, suffocating |
| Gasoline | R,I,A,C | Ca [ND] | - | 500 [OSHA; ACGIH] | 300 | 300 | - | - | - | - | E 0.5 | Petroleum-like |
| n-Hexane | R,I,C | 1100 | - | - | 500 | 50 | 50 | 10.18 | 70 | 130 | E.T 1400-1500 | Gasoline-like |
| Hydrogen Cyanide | R,A,I,C | 50 | 4.7 [ACGIH; Skin] | 4.7 [NIOSH - skin] | 10 [skin] | | - | - | - | 0.58 | - | Bitter almond |
| Hydrogen peroxide | R,I,C | 75 | - | - | 1 | 1 | 1 | 10.54** | - | - | - | Sharp |
| Methanol | R,I,A,C | 6000 | - | 250 [NIOSH; ACGIH; skin] | 200 | 200 [skin] | 200 | 10.84** | 12 | 1000 | - | Pungent |
| Methyl Ethyl Ketone Peroxide | R,I,C | ND | 0.2 [NIOSH; ACGIH] 0.7 [OSHA] | - | - | - | - | - | - | - | - | Characteristic odor |
| Methyl Chloroform (1,1,1-TCA) | R,I,C | 700 | 350 [NIOSH, 15-min] | 450 [ACGIH] | 350 | 350 | Ca | 11.00** | 105 | 20-100 | - | Chloroform-like |
| Methylene Chloride (Dichloromethane, Methylene dichloride) | R,I,A,C | Ca [2300] | - | 125 | 25 | 50 | Ca | 11.32** | 100 | 25-50 | E 5000 | Chloroform-like |
| Methyl Mercaptan | R,C | 150 | 10 [OSHA] 0.5 [NIOSH, 15-min] | - | - | 0.5 | - | 9.44 | - | - | - | Garlic, rotten cabbage |
| MIBK (Hexone) | R,I,C | 500 | - | 75 [NIOSH; ACGIH] | 100 | 50 | 50 | 9.30 | - | - | - | Pleasant |
| Naptha (coal tar) | R,I,C | 1000 | - | - | 100 | 400 | 100 | - | - | - | - | Aromatic |
| Naphthalene | R,A,I,C | 250 | - | 15 [NIOSH; ACGIH] | 10 | 10 | 10 | 8.12 | - | 0.3 | E 15 | Mothball-like |
| Octane | R,I,C | 1000 | 385 [NIOSH, 15-min] | - | 500 | 300 | 75 | 9.82 | 80 | 48 | - | Gasoline-like |
| Pentachlorophenol | R,A,I,C | 2.5 $mg/m^3$ | - | - | 0.5 $mg/m^3$ [skin] | 0.5 $mg/m^3$ [skin] | 0.5 $mg/m^3$ [skin] | - | - | - | - | Pungent when hot, benzene-like |
| Phenol | R,A,I,C | 250 | 15.6 [NIOSH, 15-min] | - | 5 [skin] | 5 [skin] | 5 [skin] | 8.50 | - | 0.04 | E.N.T. 68 | Sweet, acrid |
| Propane | R,C | 2100 | - | - | 1000 | 1000 | 1000 | 11.07** | 80 | 1600 | - | Odorless (commonly smells foul due to additive for odor detection) |
| Stoddard Solvent (Mineral Sprits) | R,CI,I | 20000 $mg/m^3$ | 1800 $mg/m^3$ [NIOSH, 15-min] | - | 500 | 100 | 350 $mg/m^3$ | - | - | 1 | E 400 | Kerosene-like |
| Styrene | R,I,A,C | 700 | 200 [OSHA] | 100 [NIOSH]; 600 [OSHA, 5-min max peak in any 3 hours]; 40 [ACGIH] | 100 | 20 | 50 | 8.40 | 85 | 0.047 | E 200-400 | Sweet, floral |
| 1,1,2,2-Tetrachloroethane | R,I,A,C | Ca [100] | - | - | 5 [skin] | 1 [skin] | 1 [skin] | 11.10** | 100 | 1.5 | - | Pungent, chloroform-like |
| Tetrachloroethylene (Perchloroethylene, Perc, PCE) | R,I,A,C | Ca [150] | 200 [OSHA] | 300 [OSHA, 5-min max peak in any 3-hours]; 100 [ACGIH] | 100 | 25 | Ca | 9.32 | 70 | 4.68 | N.T513-690 | Chloroform-like |
| Toluene | R,A,I,C | 500 | 300 [OSHA] | 150 [NIOSH]; 500 [OSHA, 10-min max peak] | 200 | 50 | 100 | 8.82 | 110 | 2.14 | E300-400 | Sweet, pungent, benzene-like |
| Trichloroethylene (TCE) | R,I,A,C | Ca [1000] | 200 [OSHA] | 300 [OSHA, 5-min max peak in any 2-hours]; 100 [ACGIH] | 100 | 50 | Ca | 9.45 | 70 | 21.4 | - | Chloroform-like |
| 1,2,3-Trimethylbenzene | R,I,C | ND | - | - | - | - | 25 | 8.48 | - | - | - | Distinctive, aromatic |
| 1,2,4-Trimethylbenzene | R,I,C | ND | - | - | - | - | 25 | 8.27 | - | - | - | Distinctive, aromatic |
| 1,3,5-Trimethylbenzene | R,I,C | ND | - | - | - | - | 25 | 8.39 | - | - | - | Distinctive, aromatic |
| Turpentine | R,A,I,C | 800 | - | - | 100 | 20 | 100 | - | - | 200 | E.N 200 | Pine-like |
| Vinyl Chloride | R,C | Ca [ND] | 5 [OSHA, 15-min] | - | 1 | 1 | Ca | 9.99 | - | 3000 | - | Pleasant odor at high concs. |
| Xylenes | R,A,I,C | 900 | - | 150 [NIOSH, ACGIH] | 100 | 100 | 100 | 8.56 (m- and o-)<br>8.44 (p-) | 111/116 | 1.1 | E.N.T. 200 | Aromatic |

## TABLE 1
## OCCUPATIONAL EXPOSURE LIMITS (CONCENTRATIONS IN AIR)

(CIRCLE CONTAMINANTS OF CONCERN, WRITE ADDITIONAL CONTAMINANTS AND EXPOSURE ON LAST PAGE)

| CHEMICAL | ROUTES OF EXPOSURE | IDLH | Ceiling | STEL | PEL | TLV | REL | PID (IP eV) | FID | ODOR THRES-HOLD | IRRITATION THRESHOLD | ODOR DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **DUSTS, MISTS, FUMES, AND MISCELLANEOUS COMPOUNDS** | | | | | | | | | | | | |
| Asbestos | R | Ca (ND) | - | - | 0.1 fiber/cc | 0.1 fiber/cc | 0.1 fiber/cc | - | - | - | - | - |
| PCBs-42% Chlorine | R,A,I,C | Ca [5 mg/m$^3$] | - | - | 1 mg/m$^3$ [skin] | 1 mg/m$^3$ [skin] | 0.001 mg/m$^3$ | - | - | - | - | Mild, hydrocarbon |
| PCBs-54% Chlorine | R,A,I,C | Ca [5 mg/m$^3$] | - | - | 0.5 mg/m$^3$ [skin] | 0.5 mg/m$^3$ [skin] | 0.001 mg/m$^3$ | - | - | - | - | Mild, hydrocarbon |
| Aluminum - metal dust | R,C | ND | - | - | 15 mg/m$^3$ (total); 5 mg/m$^3$ (respirable) | 10 mg/m$^3$ | 10 mg/m$^3$ (total); 5 mg/m$^3$ (respirable) | - | - | - | - | - |
| Aluminum - soluble salts | R,I,C | ND | - | - | 2 mg/m$^3$ | 2 mg/m$^3$ | 2 mg/m$^3$ | - | - | - | - | - |
| Arsenic- inorganic | R,A,I,C | Ca [5 mg/m$^3$] | 0.002 mg/m$^3$ [NIOSH, 15-min] | - | 0.01 mg/m$^3$ | 0.01 mg/m$^3$ | Ca | - | - | - | - | - |
| Barium:soluble compounds | R,I,C | 50 mg/m$^3$ | - | - | 0.5 mg/m$^3$ | 0.5 mg/m$^3$ | 0.5 mg/m$^3$ | - | - | - | - | - |
| Beryllium | R,C | Ca [4 mg/m$^3$] | 0.005 mg/m$^3$ [OSHA]; 0.025 mg/m$^3$ [OSHA, 30-min max peak]; 0.0005 mg/m$^3$ | 0.01 mg/m$^3$ [ACGIH] | 0.002 mg/m$^3$ | 0.002 mg/m$^3$ | Ca | - | - | - | - | - |
| Cadmium dusts | R,I | Ca [9 mg/m$^3$] | - | - | 0.005 mg/m$^3$ | 0.01 mg/m$^3$ | Ca | - | - | - | - | - |
| Chromates (Cr(VI) Compounds) & Chromic Acid | R,I,C | Ca [15 mg/m$^3$] | 0.1 mg/m$^3$ [OSHA] | - | 0.001 mg/m$^3$ | 0.05 mg/m$^3$ [water soluble]; 0.01 mg/m$^3$ [insoluble] | Ca | - | - | - | - | - |
| Chromium (III) Compounds | R,I,C | 25 mg/m$^3$ | - | - | 0.5 mg/m$^3$ | 0.5 mg/m$^3$ | 0.5 mg/m$^3$ | - | - | - | - | - |
| Chromium Metal | R,I,C | 250 mg/m$^3$ | - | - | 1 mg/m$^3$ | 0.5 mg/m$^3$ | 0.5 mg/m$^3$ | - | - | - | - | - |
| Copper - dust & mist | R,I,C | 100 mg/m$^3$ | - | - | 1 mg/m$^3$ | 1 mg/m$^3$ | 1 mg/m$^3$ | - | - | - | - | - |
| Lead | R,I,C | 100 mg/m$^3$ | - | - | 0.050 mg/m$^3$ | 0.05 mg/m$^3$ | 0.050 mg/m$^3$ | - | - | - | - | - |
| Manganese (compounds and fume) | R,I | 500 mg/m$^3$ | 5 mg/m$^3$ [OSHA] | 3 mg/m$^3$ [NIOSH] | - | 0.2 mg/m$^3$ | 1 mg/m$^3$ | - | - | - | - | - |
| Mercury & Inorganic Mercury Compounds | R,I,A,C | 10 mg/m$^3$ | 0.1 mg/m$^3$ [NIOSH, Skin]; 0.1 mg/m$^3$ [OSHA] | - | - | 0.025 mg/m$^3$ | 0.05 mg/m$^3$ [skin] | - | - | - | - | - |
| Organo-Mercury Compounds | R,A,I,C | 2 mg/m$^3$ | 0.04 mg/m$^3$ [OSHA] | 0.03 mg/m$^3$ [NIOSH] | 0.01 mg/m$^3$ | 0.01 mg/m$^3$ [alkyl]; 0.1 mg/m$^3$ [aryl] | 0.01 mg/m$^3$ | - | - | - | - | - |
| Nickel (metal and compounds) | R,I,C | Ca [10 mg/m$^3$] | - | - | 1 mg/m$^3$ | 1.5 mg/m$^3$ [metal]; 1 mg/m$^3$ [soluble inorganic compounds]; 1 mg/m$^3$ [insoluble | 0.015 mg/m$^3$ | - | - | - | - | - |
| Particulate (Not otherwise regulated) | R, C | ND | - | - | 15 mg/m$^3$ (total); 5 mg/m$^3$ (respirable) | 10 mg/m$^3$ (inhalable); 3 mg/m$^3$ (respirable) | - | - | - | - | - | - |
| Portland cement | R,I,C | 5000 mg/m$^3$ | - | - | 50 mppcf | 10 mg/m$^3$ | 10 mg/m$^3$ (total); 5 mg/m$^3$ (respirable) | - | - | - | - | - |
| Selenium compounds | R,I,C | 1 mg/m$^3$ | - | - | 0.2 mg/m$^3$ | 0.2 mg/m$^3$ | 0.2 mg/m$^3$ | - | - | - | - | - |
| Silica, crystalline | R, C | Ca [25 mg/m$^3$ (cristobalie, tridymite) ; 50 mg/m$^3$ (quartz, tripoli)] | - | - | Dependent on silicon dioxide content of silica (see Appendix C of the NIOSH Pocket Guide to Chemical Hazards, 2005) | Dependent on minerology [see ACGIH 2005 TLVs and BEIs Handbook] | 0.05 mg/m$^3$ | - | - | - | - | - |
| Silver (metal and soluble compounds) | R,I,C | 10 mg/m$^3$ | - | - | 0.01 mg/m$^3$ | 0.1 mg/m$^3$ | 0.01 mg/m$^3$ | - | - | - | - | - |
| Thallium, soluble | R,A,I,C | 15 mg/m$^3$ | - | - | 0.1 mg/m$^3$ [skin] | 0.1 mg/m$^3$ [skin] | 0.1 mg/m$^3$ [skin] | - | - | - | - | - |
| Tin (metal) | R,C | 100 mg/m$^3$ | - | - | 2 mg/m$^3$ | 2 | 2 mg/m$^3$ | - | - | - | - | - |
| Tin (organic compounds) | R,A,I,C | 25 mg/m$^3$ | - | - | 0.1 mg/m$^3$ | 0.1 mg/m$^3$ [skin] | 0.1 mg/m$^3$ [skin] | - | - | - | - | - |
| Zinc oxide dust & fume | R | 500 mg/m$^3$ | 15 mg/m$^3$ [NIOSH, dust] | 10 mg/m$^3$ [NIOSH; ACGIH; fume] | 15 mg/m$^3$ (total dust); 5 mg/m$^3$ [respirable dust]; 5 mg/m$^3$ [fume] | 2 mg/m$^3$ [respirable] | 5 mg/m$^3$ (total dust); 5 mg/m$^3$ [fume] | - | - | - | - | - |

NOTES & ABBREVIATIONS:

All units in parts per million (ppm) unless otherwise noted.
R = Respiratory (Inhalation)
I = Ingestion
A = Skin Absorption
C = Skin Contact
-: Not available
ND: Not detectable.
Ca = Carcinogen
** = Use 11.7 eV lamp
IP: Ionization potential
eV: Electrovolts

IDLH: Immediately dangerous to life and health
Ceiling: Highest allowable instantaneous C = Skin and/or Eye Contact
STEL: Short-term exposure limit. Exposure period is 15 minutes unless otherwise indicated
PEL: OSHA Permissible Exposure Limit (legally-enforceable)
REL: NIOSH Recommended Exposure Limit
PID: Photoionization Detector
OSHA: United States Occupational Safety and Health Administration
NIOSH: National Institute of Occupational Safety and Health
TLV: ACGIH Threshold Limit Value
ACGIH: American Conference of Governmental Industrial Hygienists

**Physical Hazards:**

Indicate all hazards that may be present for each task. If any of these potential hazards are checked, it is the project manager's responsibility to determine how to eliminate/minimize the hazard to protect onsite personnel.

Copy and paste a checkmark "✓"into appropriate boxes.

| Physical Hazard Checklist | | | | |
|---|---|---|---|---|
| **Potential Job Hazards** | **Task 1** | **Task 2** | **Task 3** | **Task 4** |
| | GW Sampling | Excavation Monitoring | SSD System Inspection | |
| Confined space entry* | | | | |
| Underground utilities | | ✓ | | |
| Overhead utilities | | ✓ | | |
| Electrical hazards | | | | |
| Excavations greater than 4' depth | | ✓ | | |
| Open excavation fall hazards | | ✓ | | |
| Heavy equipment | ✓ | ✓ | | |
| Drilling hazards | | | | |
| Noise (above 85 dBA) | | ✓ | | |
| Traffic concerns | ✓ | ✓ | | |
| Extreme weather conditions | ✓ | ✓ | | |
| Rough terrain for drilling equipment | | | | |
| Buried drums | | | | |
| Heavy lifting (more than 50 lbs) | | | | |
| High risk fire hazard | | | | |
| Poisonous insects or plants | | | | |
| Water hazards | | | | |
| Use of a boat | | | | |
| Lockout/Tagout requirements | | | | |
| Other: Specify | | | | |

***CONFINED SPACE ENTRY REQUIRES SPECIAL PROCEDURES, PERMITS AND TRAINING AND MUST BE APPROVED BY THE CORPORATE HEALTH & SAFETY MANAGER.**

## Potential Activity Hazards and Hazard Controls:

Copy and paste a checkmark "✓" adjacent to potential activity hazards and relevant hazard controls.

### POTENTIAL ACTIVITY HAZARDS

- Abrasions and Cuts ✓
- Access
- Asphyxiation
- Bacteria
- Biological Hazards
- Bloodborne Pathogens
- Cave Ins
- Chemical/Thermal Burns
- Chemicals ✓
- Cold Stress ✓
- Compressed Gases
- Confined Spaces
- Congestion
- Defective Equipment
- Dermatitis ✓
- Dropping Materials/Tools to Lower Levels
- Drowning or Flowing Water
- Electrical Shock
- Energized Equipment
- Equipment Misuse ✓
- Ergonomics
- Excavations ✓
- Explosions
- Fatigue
- Fire
- Flammability
- Flying debris ✓
- Foreign Body in Eye ✓
- Frostbite/Cold ✓
- Fueling and Fuel Storage ✓
- Fugitive Dust ✓
- Fumes ✓
- Generated Wastes ✓
- Guards removed
- Hazardous Materials ✓
- Heat Stress (cramps, exhaustion, stroke) ✓
- Heavy Equipment Operation ✓
- Heavy Equipment/Stability ✓
- Heavy Lifting ✓
- High crime area (violence)
- High Winds
- Hoists, Rigging, Slings, Cables
- Housekeeping – Improper ✓
- Illumination – Poor ✓
- Impact ✓
- Inability to Maintain Communication
- Inclement Weather ✓
- Inclines
- Insects/Reptiles
- Mold
- Moving Equipment, Conveyors or Vehicles ✓
- Muddy Site Conditions
- New Personnel
- Noise ✓
- Odor ✓
- Overhead Utilities ✓
- Overhead Work
- Overloaded Equipment
- Oxygen deficiency
- Pinch Points ✓
- Poisonous Plants ✓
- Pressure
- Pressurized Lines ✓
- Radiation
- Repetitive Motion
- Rigging - Improper ✓
- Sharp Objects ✓
- Silicosis ✓
- Slips, Trips, and Falls ✓
- Sprains and Strains ✓
- Steam
- Sunburn ✓
- Surface Water Run-off
- Toxicity ✓
- Traffic ✓
- Underground Utilities ✓
- Uneven Terrain ✓
- Unsafe Atmosphere
- Vibration
- Visibility - Poor
- Visitors Known/Unknown ✓
- VOC Emissions ✓
- Weight ✓
- Work at Depth
- Work at Heights
- Work over Water
- Working on Ice

### HAZARD CONTROLS

- Air Monitoring ✓
- Appropriate Clothing/Monitoring Of Weather ✓
- Appropriate Labels/Signage
- Barricades/Fencing/Silt Fencing
- Buddy System - Attendant
- Chock Blocks ✓
- Confined Space Procedures
- Decontamination Procedures ✓
- Derived Waste Management Plan
- Drinking Water/Fluids ✓
- Dust Abatement Measures ✓
- Emergency Action Plan Procedures
- Equipment Inspection
- Equipment Manuals/Training ✓
- Exclusion/Work Zones
- Exhaust Ventilation
- Eye Protection ✓
- Fall Protection
- Fire Extinguisher ✓
- Flotation Devices/Lifelines
- Gloves ✓
- Ground Fault Interrupter
- Grounded Hydraulic Attachments
- Grounded Equipment/Tanks
- Hand Signal Communication
- Hard Hat ✓
- Hazardous/Flammable Material Storage
- Hearing Protection ✓
- High Visibility Safety Vest ✓
- Hoses, Access to Water
- Hotwork Procedures
- Isolation of Energy Sources(Lockout/Tagout)
- Machine/Equipment Guards
- Manual Lifting Equipment
- Police Detail
- Proper Lifting Techniques ✓
- Proper Tool for Job ✓
- Proper Work Position/Tools ✓
- Protective Equipment ✓
- Radio Communication
- Respirator, (Specify Type)
- Safety Harness /Lanyard/Scaffold
- Security Escort
- Sloping, Shoring, Trench Box
- Spill Prevention Measures
- Spill Kits
- Stormwater Control
- Traffic Controls ✓
- Procedures/Methods
- Vehicle Inspection
- Visitor Orientation Escort
- Window Cleaning/Defrost

## Safety Meetings

All H&A personnel visiting the site will be given an orientation safety meeting and are required to read and sign this HASP. Daily safety meetings will be conducted onsite and documented on a Health & Safety Tailgate Meeting Form.

## Utility Locators and Underground Hazards

Prior to drilling or excavating, Haley & Aldrich staff members will ensure that permission has been gained from the property owner to access the property. Contact site facilities personnel to assist with location of underground utilities. Before marking any proposed exploration location, it is critical that all readily available information on underground utilities and structures be obtained. The estimated location of utility installations, such as gas, electric, fuel, steam, sewer, telephone, fiber optic, water, drainage or any other underground installation that may be expected to be encountered during drilling work, will be identified with the appropriate authority. Appropriate authorities include client representatives, utility companies, nonprofit organizations (e.g., "Dig-Safe), and others.

## Heavy Equipment

Staff Members must be especially careful and alert when working with contractors who use heavy equipment, since equipment failure or breakage can lead to accidents and worker injury. Cranes and equipment for drilling, pile driving, test pitting and coring is of special concern. Should these devices fail during operation the likelihood of worker injury is high. Equipment of this nature should be visually inspected and checked for proper working order prior to the commencement of field work. Those that operate heavy equipment must meet all of the requirements to operate heavy equipment. Haley & Aldrich, Inc. staff members that supervise projects or are associated with such high risk projects that involve digging should use due diligence when working with a construction firm. Maintain visual contact with operators at all times and keep out of the strike zone whenever possible. Always approach heavy equipment with an awareness of the swing radius and traffic routes of each piece of equipment and never go beneath a hoisted load. High-visibility safety vests must be worn onsite at all times. Avoid fumes created by heavy equipment exhaust.

## Noise Reduction

Site activities in proximity to heavy equipment often expose workers to excessive noise. It is anticipated that situations may arise when noise levels may exceed the OSHA Action Level of 85 dBA in an 8-hour time-weighted average (TWA). An example of this possibility is working in close proximity to the subcontractor during drilling activities onsite. If excessive noise levels occur, efforts will be made to control this by issuance of earplugs to all personnel and by implementing a system of hand signals understood by all.

## Work Site Access & Controls (Standard Precautions)

The work area is restricted to authorized personnel. Clearly define the work area before beginning activities for the day. Caution tape and safety cones must be provided as necessary for vehicular traffic concerns and to protect passers-by. Proper housekeeping is essential to avoid creating hazards to pedestrian and vehicular traffic. Excavations in progress will not be left unattended at any time. Running equipment will not be left unattended at any time. Test borings and test pits will be backfilled upon completion and the area restored. Drilling equipment will be secured above test borings during work stoppages and at the end of the workday.

### Site Security

TBD if excavations are required.

### Weather Related Hazards

H&A employees and their subcontractors should be aware of potential health effects and/or physical hazards of working during inclement weather. Refer to OP1003-Cold Stress and OP1015-Heat Stress for discussion on weather hazards.

### Cold Stress

Persons working outdoors in low temperatures, especially at or below freezing are subject to cold stress. Exposure to extreme cold for a short time may cause severe injury to the surface of the body, or result in profound generalized cooling, causing death. Areas of the body that have high surface area-to-volume ratio, such as fingers, toes, and ears, are the most susceptible.

Two factors influence the development of a cold injury: ambient temperature and the speed of the wind. Wind chill is used to describe the chilling effect of moving air in combination with low temperature. For instance, $10^{o}$ F with a wind of 15 miles per hour (mph) is equivalent in chilling effect to still air at $-18^{o}$F.

As a general rule, the greatest incremental increase in wind chill occurs when a wind of 5 mph increases to 10 mph. In addition, water conducts heat 240 times faster than air. Thus when chemical-protective equipment is removed the body cools suddenly if the clothing underneath is perspiration soaked. Warm, dry clothing must be available and donned as soon as possible when these conditions are present.

### Heat Stress

Heat stress on hazardous waste sites or construction sites usually is a result of protective clothing decreasing natural body ventilation, although it may occur at any time work is being performed at elevated ambient temperatures. Because heat stress is one of the most common and potentially serious illnesses associated with hazardous waste site work, regular monitoring and other preventative measures are vital.

Site workers must learn to recognize and treat the various forms of heat stress.

The best approach is preventative heat stress management. In general:

- Workers should drink 16 ounces of water before beginning work, such as in the morning or after lunch. The water should be maintained at 50 to 60°F. Workers should drink 1 to 2 4-ounce cups of water every 30-60 minutes. A cool area for rest breaks should be designated, preferably air-conditioned. The use of alcohol during non-working hours and the intake of caffeine during working hours can lead to an increase in susceptibility to heat stress. Monitor for signs of heat stress.

- Workers should acclimate to site work conditions by slowly increasing workloads, i.e., do not begin site work activities with extremely demanding activities. This acclimation process may require up to two weeks for completion.

- Cooling devices should be used to aid natural body ventilation. These devices, however, add weight, and their use should be balanced against worker efficiency. An example of a cooling aid is long cotton underwear, which acts as a wick to help absorb moisture and protect the skin from direct contact with heat-absorbing protective clothing.

- Installed mobile showers and/or hose-down facilities should be used to reduce body temperature and cool protective clothing in serious heat stress situations.

- In hot weather, field activities should be conducted in the early morning or evening.

- Adequate shelter should be available to protect personnel from heat, as well as cold, rain, snow, etc., which can decrease physical efficiency and increase the probability of both heat and cold stress. Set up a command post in the shade or erect temporary shade at the workstation if practical.

- In hot weather, rotate shifts of workers with potential heat stress exposure.

- Good hygienic standards must be maintained by frequent changes of clothing and showering. Clothing should be permitted to dry during rest periods. Persons who develop skin problems should immediately consult medical personnel.

### Effects of Heat Stress

If the body's physiological process fail to maintain a normal body temperature because of excessive heat, a number of physical reactions can occur ranging from mild (such as fatigue, irritability, anxiety, and decreased concentration, dexterity, or movement) to fatal.

Heat-related problems are:

<u>HEAT STROKE:</u> An acute and dangerous reaction to heat exposure caused by failure of heat regulating mechanisms of the body; the individual's temperature control system that causes sweating stops working correctly. Body temperature rises so high that brain damage and death will result if the person is not cooled quickly.

Symptoms:  Red, hot, dry skin, although person may have been sweating earlier; nausea; dizziness; confusion; extremely high body temperature; rapid respiratory and pulse rate; unconsciousness or coma.

Treatment:  Cool the victim quickly and obtain immediate medical assistance.  If the body temperature is not brought down fast, permanent brain damage or death may result.  Soak the victim in cool but not cold water, sponge the body with rubbing alcohol or cool water, or pour water on the body to reduce the temperature to a safe level (102oF).  Observe the victim and obtain medical help.  Do not give coffee, tea or alcoholic beverages.

HEAT EXHAUSTION:  A state of definite weakness or exhaustion caused by the loss of fluids from the body.  This condition is much less dangerous than heat stroke, but it nonetheless must be treated.

Symptoms:   Pale, clammy, moist skin, profuse perspiration and extreme weakness.  Body temperature is normal, pulse is weak and rapid, and breathing is shallow.  The person may have a headache, may vomit, and may be dizzy.

Treatment:  Remove the person to a cool place, loosen clothing, and place in a head-low position.  Provide bed rest.  Consult physician, especially in severe cases.  The normal thirst mechanism is not sensitive enough to ensure body fluid replacement.  Have patient drink 1 to 2 cups water immediately and every 20 minutes thereafter until symptoms subside.  Total water consumption should be 1 to 2 gallons per day.

HEAT CRAMPS:  Caused by perspiration that is not balanced by adequate fluid intake.  Heat cramps are often the first sign of a condition that can lead to heat stroke.

Symptoms:  Acute painful spasms of voluntary muscles (e.g., abdomen and extremities).

Treatment:  Remove the victim to a cool area and loosen clothing.  Have the patient drink 1 to 2 cups water immediately, and every 20 minutes thereafter until symptoms subside.  Total water consumption should be 1 to  gallons per day.

HEAT RASH:  Caused by continuous exposure to heat and humid air and aggravated by chaffing clothes.  Decreases ability to tolerate heat.

Symptoms:  Mild red rash, especially in areas of the body on contract with protective gear.

Treatment:  Decrease amount of time in protective gear, and provide powder to help absorb moisture and decrease chaffing.

## 5. PROTECTIVE MEASURES

**Personal Protective Equipment Requirements:**

Copy and paste a checkmark "✓"into appropriate boxes.

| **Required PPE** | **Task 1** | **Task 2** | **Task 3** | **Task 4** |
|---|---|---|---|---|
| | GW Monitoring | Excavation Monitoring | SSD System Inspection | Enter task |
| Hard hat | | ✓ | | |
| Safety glasses w/side shields | ✓ | ✓ | | |
| Steel-toe footwear | | ✓ | | |
| Hearing protection (plugs, muffs) | | ✓ | | |
| Tyvek ™ coveralls | | | | |
| PE-coated Tyvek™ coveralls | | | | |
| Boots, chemical resistant | | ✓ | | |
| Boot covers, disposable | | | | |
| Leather work gloves | | ✓ | | |
| Inner gloves - Nitrile | ✓ | ✓ | | |
| Outer gloves - Enter material here | | | | |
| Tape all wrist/ankle interfaces | | | | |
| Half-face respirator* | | | | |
| Full-face respirator* | | | | |
| Organic vapor cartridges | | | | |
| Acid gas cartridges | | | | |
| Other cartridges: Enter type here | | | | |
| P-100 (HEPA) filters | | | | |
| Face shield | | | | |
| Personal Flotation Device (PFD) | | | | |
| High-Visibility Safety Vest | ✓ | ✓ | | |
| Other: | | | | |
| Level of protection required [C or D]: | D | D | D | |

* In the event of respirator use, H&A staff must be medically qualified, fit tested and clean shaven with no facial hair that will interfere with the seal.

**The required PPE checked in any box above must be on site during the task being performed. Work shall not commence unless the required PPE is present.**

**Site Safety Equipment Requirements:**

Check all items that are required to be on site.

**Site Safety Equipment**

- ☐ Fire Extinguisher
- ☐ Air horn/signaling device
- ☐ Ladder
- ☐ Two-way radio
- ☐ Other Specify
- ☑ First Aid Kit
- ☑ Cellular Phone
- ☐ Barricade tape
- ☐ Safety cones
- ☐ Flashlight
- ☐ Duct tape
- ☐ Drum dolly
- ☐ Harness/Lanyard

**The required equipment checked in any box above must be on site during the task being performed. Work shall not commence unless the equipment is present.**

## 6. MONITORING PLAN AND EQUIPMENT

Is air/exposure monitoring required at this work site for personal protection? ☑ Y ☐ N

Is perimeter monitoring required for community protection? ☑ Y ☐ N

**Monitoring/Screening Equipment Requirements:**

Check all items that are required to be on site.

**Required Monitoring/Screening Equipment**

☑ Photo-Ionization Detector (PID) 10.2eV
☐ Photo-Ionization Detector (PID) 11.7eV
☐ Photovac Micro Tip (PID) 10.6eV
☐ Organic Vapor Monitor (FID)
☐ Photovac Gas Chromatagraph (GC)
☐ Combustible Gas Indicator (CGI) (LEL)
☐ Multiple Gas Detector LEL/O2/H2S/CO
☑ Dust Monitors (RAMs)
☐ Colorimetric tubes
☐ Other

**The required equipment checked in any box above must be on site. Work shall not commence unless the equipment is present.**

**Standard Action Levels and Required Responses:**

Exposure Guidelines for common contaminants are listed in Table 1 - Occupational Exposure Limits in the Chemical Hazards section above.

Requirements for PPE upgrades based on monitoring are in Table 2 - Monitoring Methods, Action Levels and Protective Measures following the Specific Monitoring Requirements section below.

Action levels for readings obtained with a multiple gas detector are listed below.

| **Instrument** | **Normal** | **Operating levels** | **Action levels – required responses** |
|---|---|---|---|
| Oxygen Meter | 20.9% | Between 19.5-23.5% | Below 19.5 %: leave area, requires supplied air<br>Above 23.5%: leave area, fire hazard |
| CGI | 0% | Less than 10% | Greater than 10%: fire/explosion hazard; cease work |
| Hydrogen Sulfide | 0% | Less than 10 ppm. | Greater than 15 ppm (or 10 ppm for 8 hrs) requires supplied air respirator |
| Carbon Monoxide | 0% | Less than 25 ppm | Greater than 200 ppm for 1 hour (or 25 ppm for 8 hrs) requires supplied air respirator |

**Standard Air Monitoring Plan (Volatiles):**

- Prior to the beginning of work obtain background readings with the PID away from the site.
- Monitor the breathing zone when site soil is exposed (e.g., while drilling or excavating is occurring, etc.) with the PID.
- Monitoring should be conducted most frequently (e.g., every 15-30 minutes) when drilling or excavation first begins in a particular area and when soil is removed from the hole. After this, and if no exceedances of exposure limits are noted (see below), monitoring may be conducted less frequently (e.g., every 60 minutes).
- H&A general exposure limits will be used when a mixture of potentially volatile chemicals are suspected to be present in soil at the site.

In summary, if a reading of 10 ppm above background is detected with the PID for 5 minutes or longer, back away for a few minutes. Screen the air again after any vapors/gases have been given a chance to dissipate. If 10 ppm above background is still noted, evacuate the area and call the LHSC and PM for further guidance.

- Record monitoring data and PPE upgrades in field book or on Record of Field Monitoring form and maintain with project files.

- Air monitoring for exposure should be based on the frequency established under the Standard Air Monitoring Plan or under the Specific Monitoring Requirements. Record time, location and results of monitoring and actions taken based upon the readings.

**Standard Dust Control Measures and Monitoring Plan:**

**Dust Control Measures:**

It is anticipated that exposure to airborne dust can be mitigated during work operations as necessary to control dust emissions by means of limiting the area of exposed soils and through the use of water sprays. If dust emissions cannot be controlled by these standard measures, additional measures may be employed such as the use of a tackifier (if approved) to stabilize soil exposures or by covering exposed soil and stockpiles with tarpaulins, plastic sheeting or geotextile fabric. Otherwise cease work immediately and contact the Project Manager or the Corporate Health & Safety Manager for assistance. It is not permissible for dust emissions to escape from the site at any time and perimeter dust monitoring may be required to insure public safety.

**Dust Monitoring:**

Respirable Aerosol Monitors (RAM) can be used to monitor total dust levels in work zones and/or at the site perimeter. These instruments do not give specific readings of contaminant concentration (e.g. metals, asbestos, etc.). Depending upon the contaminants present, it may be mandatory for all workers to upgrade to level C protection using a half-face air-purifying respirator with HEPA (P-100) filters if dust levels cannot be adequately controlled during any of the on-site tasks. The H&A Site Safety Officer (SSO) will determine PPE upgrades based upon visual determination as necessary and the OSHA PEL for each known or suspected contaminant. The OSHA PEL/STEL for Respirable Nuisance Dust is 5 mg/m$^3$ (8 hour TWA).

Action levels for fugitive dust at the site perimeter are based upon the daily $PM_{10}$ dust standard of 0.15 mg/$m^3$ in the National Ambient Air Quality Standard for Inhalable Dust (NAAQS).

Personal dust monitoring using an industrial hygiene pump and a filter cassette may be conducted on each day of operations. In such cases samples are collected from workers with the greatest potential dust exposure and analyzed by an accredited laboratory for specific contaminants.

**Specific Monitoring Requirements:**

Monitoring requirements and frequency is indicated by task and location below.

| | | | |
|---|---|---|---|
| Task Number: | 1,2 | Frequency | Continuous during invasive and/or sampling activities |

VOC monitoring using a PID will occur continuously during sampling and excavation activities to monitoring the breathing zone.

| | | | |
|---|---|---|---|
| Task Number: | 2 | Frequency | Community Air Monitoring (CAM) per the NYSDOH CAM Plan will be conducted during all excavation activities. |

Community Air Monitoring per the NYSDOH Community Air Monitoring Plan (CAMP) must be completed during all subsurface activities. CAM monitoring includes both perimeter VOC and particulate monitoring. The CAMP is attached to the Site Management Plan.

## TABLE 2
### Last Revised September 2002

### MONITORING METHOD, ACTION LEVELS AND PROTECTIVE MEASURES

| INSTRUMENT | HAZARD | ACTION LEVEL | ACTION RESPONSE |
|---|---|---|---|
| Respirable Dust Monitor | Total Particulates | > 5 mg/m$^3$ | Upgrade to Level C Protection |
| OVA, HNU(2), Photovac Microtip | Total Organic Vapors | Background | Level D Protection |
| | | 10 ppm > background or lowest OSHA permissible exposure limit, whichever is lower, or as modified for this task. Sustained for >5 minutes in the breathing zone. | Upgrade to Level C - site evacuation may be necessary for specific compounds |
| | | 50 ppm over background, unless lower values required due to respirator protection factors | Cease work; upgrade to Level B(3) may be required |
| Explosimeter(4) (LEL) | Flammable/Explosive Atmosphere | <10% Scale Reading | Proceed with work |
| | | 10-15% Scale Reading | Monitor with extreme caution |
| | | >15% Scale Reading | Evacuate site |
| 0xygen Meter(5) | Oxygen-Deficient Atmosphere | 19.5% - 23.5% $0_2$ | Normal - Continue work |
| | | < 19.5% $0_2$ | Evacuate site; oxygen deficient |
| | | > 23.5% $0_2$ | Evacuate site; fire hazard |
| Radiation Meter(6) | Ionizing Radiation | 0.1 Millirem/Hour | If > 0.1, radiation sources may be present(7) |
| | | > 1 Millirem/Hour | Evacuate site; radiation hazard |
| Drager Tubes | Vapors/Gases | Species Dependent<br>> 1 ppm vinyl chloride<br>> 1 ppm benzene<br>> 1 ppm 1,1-DCE | Consult Table 1 or other resources for concentration toxicity/detection data.<br>Upgrade to Level C if concentration of compounds exceed thresholds shown at left;<br>May need to cease work if other levels exceeded - site specific |
| Gas Chromatograph (GC) | Organic Vapors | 3 ppm total OV > background or > lowest specific OSHA permissible exposure limit, whichever is lower | On-site monitoring or tedlar bag sample collection for off-site/laboratory analysis |

Notes:
1. Monitor breathing zone.
2. Can also be used to monitor some inorganic species.
3. Positive pressure demand self contained breathing apparatus
4. Lower explosive limit (LEL) scale is 0-100%. LEL for most gasses is 15%.
5. Normal atmospheric oxygen concentration at sea level is 20%
6. Background gamma radiation is ~0.01-0.02 millirems/hour.
7. Contact H&A Health and Safety staff immediately.

**Calibration and Use of Equipment:**

Calibrate all monitoring equipment in accordance with manufacturers requirements, H&A calibration (OP) standards and site specific requirements (e.g., at the beginning and end of each work day). Calibration of equipment shall be documented in the field notes or Daily Field Report (DFR). Documentation should include:

- Date/time
- Zero reading before calibration
- Concentration of calibration gas
- Reading obtained with calibration gas before adjusting span\
- Final reading obtained with calibration gas after adjusting span

## 7. DECONTAMINATION AND DISPOSAL METHODS

### Personal Hygiene Safeguards:

The following minimum personal hygiene safeguards shall be adhered to:

- No smoking or tobacco products on any Hazwoper project.
- No eating or drinking in the exclusion zone.
- It is required that personnel present on site wash hands before eating, smoking, taking medication, chewing gum/tobacco, using the restroom, or applying cosmetics and before leaving the site for the day.
- It is recommended that personnel present on site shower or bathe at home at the end of each day of working on the site.

### Standard Personal Decontamination Procedures:

Outer gloves and boots should be decontaminated periodically as necessary and at the end of the day. Brush off solids with a hard brush and clean with soap and water or other appropriate cleaner whenever possible. Remove inner gloves carefully by turning them inside out during removal. Wash hands and forearms frequently. It is good practice to wear work-designated clothing while on-site which can be removed as soon as possible. Non-disposable overalls and outer work clothing should be bagged onsite prior to laundering. If gross contamination is encountered on-site contact the Project Manager and LHSC to discuss proper decontamination procedures. The steps required for decontamination will depend upon the degree and type of contamination but will generally follow the sequence below.

1. Remove and wipe clean hard hat
2. Rinse boots and gloves of gross contamination
3. Scrub boots and gloves clean
4. Rinse boots and gloves
5. Remove outer boots
6. Remove outer gloves
7. Remove Tyvek coverall
8. Remove respirator, wipe clean and store
9. Remove inner gloves

### Location of Decontamination Station:

N/A

### Disposal of PPE:

PPE that is not grossly contaminated can be bagged and disposed in regular trash receptacles. PPE that is grossly contaminated must be bagged (sealed) and field personnel should communicate with the Project Manager to determine proper disposal.

## Tools & Equipment Decontamination:

All decontamination should be conducted at the site and not at the office or lab.

Check all equipment and materials needed for decontamination of tools and other equipment.

☐ Acetone
☑ Alconox soap
☐ Brushes
☑ Disposal bags
☑ 5 gallon pails
☑ Distilled water
☐ Drums for water
☐ Hexane
☐ Methanol
☐ Other Paper towels
☐ Poly sheeting
☐ Steam cleaner
☑ Tap water
☐ Washtubs

## Standard Equipment Decontamination Procedures:

Air monitoring instrumentation and delicate instruments that are difficult to decontaminate or sensitive to water should be protected from contamination during use through the use of plastic sheeting. To the extent possible, efforts should be taken to limit the degree of contamination to hand tools and sampling equipment during use. Proper PPE must be worn while performing decontamination, including the wearing of chemical safety goggles and gloves. Storage or transport of decontamination solvents in squirt bottles is not permitted as they may discharge their contents upon ambient temperature change or leak if overturned. Standard equipment decontamination procedures are as follows. Any additional requirements are listed under Specific Equipment Decontamination Procedures below.

Pretreatment of heavily contaminated equipment may be conducted as necessary:

1. Remove gross contamination using a brush or wiping with a paper towel
2. Soak in a solution of Alconox and water (if possible)
3. Wipe off excess contamination with a paper towel
4. Clean with hexane or acetone and allow to dry

Standard decontamination procedure:

1. Wash using a solution of Alconox and water
2. Rinse with potable water
3. Rinse with methanol
4. Rinse with distilled water

## Specific Equipment Decontamination Procedures:

1. Wash using a solution of Alconox and water
2. Rinse with potable water
3. Rinse with distilled water

**Standard Disposal Methods for Contaminated Materials**:

Excess sample solids, decontamination materials, rags, brushes, poly sheeting, etc. that are determined to be free of contamination through field screening can usually be disposed into client-approved, on-site trash receptacles. Uncontaminated wash water may be discarded onto the ground surface away from surface water bodies in areas where infiltration can occur. Contaminated materials must be segregated into liquids or solids and drummed separately for off site disposal. Any additional requirements are listed under Specific Disposal Methods for Contaminated Materials below.

**Disposal Methods for Contaminated Soils**:

Contaminated soil cuttings and spoils must be drummed for disposal off-site unless otherwise specifically directed. Soil cuttings and spoils determined to be free of contamination through field screening can usually be returned to the boreholes or excavations from which they came. Any additional requirements are listed under Specific Disposal Methods for Contaminated Soils below.

**Contaminated Soil Sent to Geotechnical Lab:**

Assignments that include geotechnical lab testing on contaminated samples must be accompanied with written data that will provide information on the type and extent of contamination. Project Managers must communicate any anticipated or known chemical hazards to the lab when assigning geotechnical tests. Preferably, a copy of this HASP should be forwarded to the laboratory for their review. If the contamination is not known, the PM must contact the laboratory and discuss the source of the sample to help identify any potential hazards that may be associated with the sample.

## 8. CONTINGENCY PLANNING

How H&A responds to an emergency depends on whether we are at an active facility or another other location. Many active facilities have very stringent requirements for the mitigation of emergencies. Therefore, the PM is responsible for identifying any specific requirements from the client contact.

As a rule of thumb, the following are H&A's basic responses to handling Emergencies. Typically, H&A does not mitigate emergencies. When Clients request or require specific functions such as First Aid/CPR trained personnel on site, we typically conform. Before any Project Manager or LHSC agrees to something more stringent, many issues should be considered such as training, safety, feasibility of an adequate response, insurance requirements, and much more.

**Fire:**

- Major Fires - Major fires will be mitigated by the local fire departments or by client's on-site fire/emergency response departments.
- Incipient Stage Fires -Incipient stage fires will be extinguished by on-site personnel using fire extinguishers. Only those who have received annual training may use an extinguisher.

**Medical:**

All H&A employee injuries and illnesses will be reported to the PM and to HP at hpinjuryreporting@haleyaldrich.com and documented using the Incident Reporting Form. This form is available on HANK.

- First Aid - First aid will be addressed using the on-site first aid kit. H&A employees are not required or expected to administer first aid/CPR to any H&A, Contractor, or Civilian personnel at any time and it is H&A's position that those who do are doing it on their behalf and not as a function of their job.
- Trauma - Based upon the nature of the injury, the injured party may be transported to the nearest hospital or emergency clinic by on-site personnel or by ambulance. First response to a trauma incident is to call 911 or facility security. H&A staff members are expected to assist in ancillary roles only such as directing ambulances to the scene. It is the discretion of the staff member on site whether an ambulance should be procured in remote locations where ambulance services will not be effective.

**Hazardous Materials Spill:**

- Small incidental spills (e.g. pint of motor oil) caused by H&A employees and/or by the contractor will be mitigated by the H&A staff member and/or the contractor.
- Large spills (e.g. large leak from heavy equipment fuel tank). The contractor is responsible for cleanup. In the event that it posses a serious human or environmental threat, the local Fire Department and/or client emergency response department will be contacted. Once emergency has been mitigated typically clean up will be provided by a vendor.

**Rescue:**

H&A employees will not enter any confined spaces for rescue purposes.

**Weather Related Emergencies:**

H&A employees and their subcontractors should be aware of potential health effects and/or physical hazards of working during inclement weather. If applicable, safeguards against the effects and hazards of heat stress, cold stress, frostbite, thunderstorms, and lightning, etc., should be included with the section pertaining to physical hazards in this HASP.

**Evacuation Alarms:**

Evacuation alarms and/or emergency information will be communicated among personnel on site through verbal communication.

**Emergency Services:**

Emergency services will be summoned via on-site or cellular phone.

**Emergency Evacuation Plan:**

The site evacuation plan is as follows:

1. Establish a designated meeting area to conduct a head count in the event of an emergency evacuation.
2. If the work area is not near an emergency exit, exit via the closest route and meet at the designated meeting area.
3. Notify emergency response personnel (fire, police and ambulance) of the number of missing or unaccounted for employees and their suspected location.
4. Administer first aid will in the meeting area as necessary.

Under no circumstances should any personnel re-enter the site area without the approval of the corporate H&S manager, the H&S coordinator, and the fire department official in charge.

## 9. HEALTH & SAFETY PLAN ACKNOWEDGMENT FORM

**Note: Only H&A employees sign this page.**

I hereby acknowledge receipt and briefing on this Health & Safety Plan prior to the start of on-site work and declare that I understand and agree to follow the provisions and procedures set forth herein while working on this site.

| PRINTED NAME | SIGNATURE | DATE |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

## 10. PRE-JOB SAFETY CHECKLIST

The following checklist is designed to help Project Managers verify that all Health & Safety requirements are satisfied for projects involving site work and to aid in the preparation of the site-specific HASP.

Please initial and date the appropriate box once each requirement has been satisfied prior to commencement of site work.

| # | Project H&S Requirements | Approval by PM or LHSC (initial each box or place NA) | Date Approved |
|---|---|---|---|
| 1 | Project site history has been researched and summarized, current site conditions have been determined and documentation of previous investigations, risk analyses and chemical data has been assembled and summarized. | | |
| 2 | Project work scope has been outlined and potential chemical and physical hazards associated with work tasks have been identified. | | |
| 3 | Task Safety Analysis has been performed and attached to the HASP. | | |
| 4 | H&A personnel to be involved with the project have been identified and are current with medical surveillance, OSHA 40 hour and 8 hour refresher training. Hazwoper site supervisor requirements are satisfied. | | |
| 5 | Additional training requirements have been met: e.g. nuclear density gauge, DOT, Confined Space Entry, Competent Person Training for Excavation, OSHA 10 hour certification, Railway Safety Training, etc. | | |
| 6 | H&A personnel that may be required to wear a respirator are medically qualified and have current certification of fit testing. | | |
| 7 | Client's additional H&S requirements have been met: e.g. facility safety orientations, safety documentation, meetings, special PPE requirements | | |
| 8 | H&A subcontractors have met H&A's minimum requirements including: current OSHA 40 hour training, medical surveillance, written HASP, insurance, MSDSs. | | |
| 9 | MSDSs are on site and available for chemicals on site. | | |
| 10 | Safety equipment is available: e.g. flashlight, telephone, ladders, traffic cones, barricade tape, fire extinguisher, first aid kit, PPE, respiratory protection, air and dust monitoring instrumentation (calibrated), personal flotation device (PFD), 90' life line with ring, decontamination equipment, etc. | | |
| 11 | HASP and supporting documentation is complete and signed by all members. | | |

## APPENDIX A
## HASP Amendment Form

This Appendix is to be used whenever there is an immediate change in the project scope that would require an amendment to the HASP. For project scope changes associated with "add-on" tasks, the changes must be made in the body of the HASP. Before changes can be made, a review of the potential hazards must be initiated by the H&A Project Manager.

| | |
|---|---|
| Amendment No. | |
| Site Name: | |
| Work Assignment No.: | |
| Date: | |
| Type of Amendment: | |
| Reason for Amendment: | |
| Alternate Safeguard Procedures: | |
| Required Changes in PPE: | |

Project Manager Signature: ________________________________ Date: __________________

Local Health and Safety Coordinator: ________________________ Date: __________________

This original form must remain on site with the original HASP. If additional HASPs are in the field, it is the Project Manager's responsibility to forward a signed copy of this amendment to those who have copies.

# APPENDIX B
# Issuance and Compliance
# Site Safety Officer Role and Responsibilities
# Training Requirements

This Health & Safety Plan (HASP) has been prepared in accordance with the requirements of Title 29 the Code of Federal Regulations (CFR) Section 1910.120/1926.65 to provide guidance for the protection of onsite personnel from physical harm and chemical exposure while working at the subject site.

The specific requirements of this HASP include precautions for hazards that exist during this project and may be revised as new information is received or as site conditions change.

- This HASP must be signed by all Haley & Aldrich (H&A) staff members who will work on the project, including H&A visitors. By signing the Health and Safety Plan Acknowledgement Form personnel are acknowledging that they are aware of the specific hazards of the site and agree to follow the provisions and procedures required to safeguard themselves and others from those hazards.
- This HASP or a current signed copy must be retained at the site at all times when H&A staff members are present.
- Deviations from this HASP are not permitted without prior approval from the above signed. Unauthorized deviations may constitute a violation of H&A company procedures/policies and may result in disciplinary action.
- Revisions to this HASP must be outlined within the contents of the HASP. If immediate or minor changes are necessary, the LHSC and H&A Project Manager may use Appendix A (HASP Amendment Form), located in the back of this HASP. Any revision to the HASP requires personnel to be informed of the changes and that they understand the requirements of the change.
- This HASP is not for H&A Subcontractor use. Each subcontractor engaged is responsible for all matters relating to the health and safety of their personnel and the safe operation of their equipment. This HASP will be made available as a reference so that subcontractors are informed of the potential hazards associated with the site to the extent we are aware. Subcontractors must develop their own HASP which must be, at a minimum, at least as protective as this HASP.
- This Site Specific HASP provides only site-specific descriptions and work procedures. General safety and health compliance programs in support of this HASP (e.g., injury reporting, medical surveillance, personal protective equipment (PPE) selection, etc. are described in detail in the H&A Corporate Health and Safety Program Manual and within Standard Operating Procedures (OPs). Both the manual and OPs can be located on the Company Intranet. When appropriate, users of this HASP should always refer to these resources and incorporate to the extent possible. The manual and OPs are available to clients and regulators per request.

## Site Safety Officer:

The site safety officer (SSO) is defined as the individual responsible to the employer with the authority and knowledge necessary to implement the HASP and verify compliance with applicable health and safety requirements.

The H&A Project Manager may designate any person as the site safety officer (SSO) and determines the order of authority on site. Usually the highest ranking person on site is the SSO. A site safety officer must be on site at all times. When none of the designated SSOs are present on site, the senior person for H&A on site will default to the SSO. This project has identified the following hierarchy for SSO.

1. ______________________________

2. ______________________________

## Site Safety Officer Roles and Responsibilities:

The SSO is responsible for field implementation of this HASP and enforcement of safety rules and regulations. SSO functions include:

- Act as H&A's liaison for health and safety issues with client, staff, subcontractors, and agencies.
- Verify that utility clearance has been performed by H&A subcontractors.
- Oversee day-to-day implementation of the HASP by H&A employees on site.
- Interact with subcontractor project personnel on health and safety matters.
- Verify use of required PPE as outlined in the HASP.
- Inspect and maintain H&A safety equipment, including calibration of air monitoring instrumentation used by H&A.
- Perform changes to HASP and document in Appendix A of the HASP as needed and notify appropriate persons of changes.
- Investigate and report on-site accidents and incidents involving H&A and its subcontractors.
- Verify that site personnel are familiar with site safety requirements (e.g., the hospital route and emergency contact numbers).
- Report accidents, injuries, and near misses to the H&A PM and Local Health and Safety Coordinator (LHSC) as needed.

The SSO will conduct initial site safety orientations with site personnel (including subcontractors) and conduct toolbox and safety meetings thereafter with H&A employees and H&A subcontractors at regular intervals and in accordance with H&A policy and contractual obligations. The SSO will track the attendance of site personnel at H&A orientations, toolbox talks, and safety meetings. Subcontractors will document training and provide training rosters to the H&A SSO.

The SSO will report accidents such as injury, overexposure, or property damage to the Local Health and Safety Coordinator, to the Project Manager, and to the safety managers of other on-site consultants and contractors. The SSO will consult with the safety managers of other on-site consultants and subcontractors on specific health and safety issues arising over the course of the project, as needed.

## Health and Safety Training Requirements:

Personnel will not be permitted to supervise or participate in field activities until they have been trained to a level required by their job function and responsibility. H&A staff members, contractors, subcontractors, and consultants who have the potential to be exposed to contaminated materials or physical hazards must complete the training described in the following sections.

The H&A Project Manager/LHSC will be responsible for maintaining and providing to the client/site manager documentation of H&A staff members' compliance with required training as requested. Records shall be maintained per OSHA requirements.

## 40-Hour Health and Safety Training

The 40-Hour Health and Safety Training course provides instruction on the nature of hazardous waste work, protective measures, proper use of personal protective equipment, recognition of signs and symptoms which might indicate exposure to hazardous substances, and decontamination procedures. It is required for all personnel working on-site, such as equipment operators, general laborers, and supervisors, who may be potentially exposed to hazardous substances, health hazards, or safety hazards consistent with 29 CFR 1910.120.

## 8-hour Annual Refresher Training

Personnel who complete the 40-hour health and safety training are subsequently required to attend an annual 8-hour refresher course to remain current in their training. When required, site personnel must be able to show proof of completion (i.e., certification) at an 8-hr refresher training course within the past 12 months.

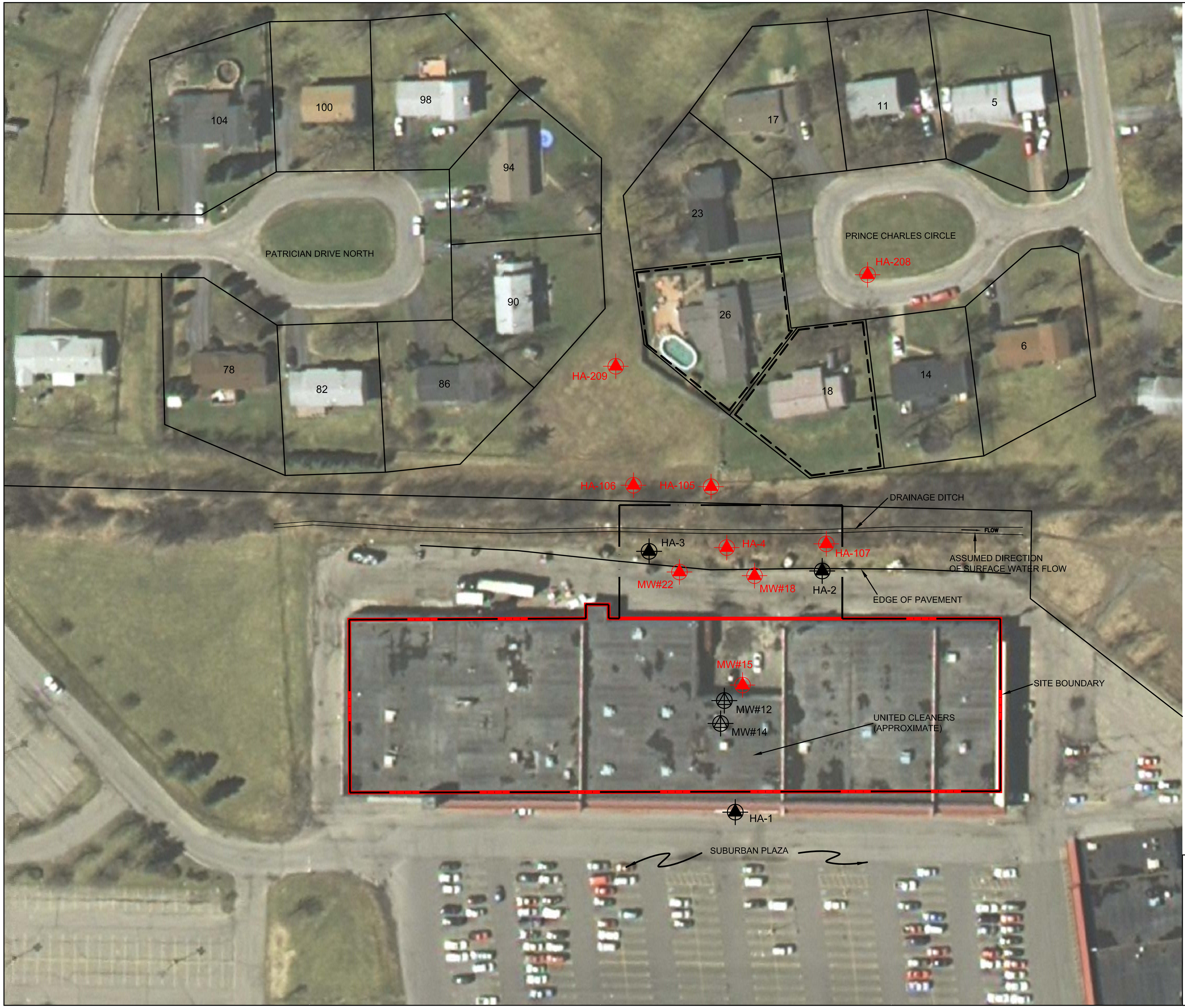
## 8-Hour Supervisor Training

On-site managers and supervisors directly responsible for, or who supervise staff members engaged in hazardous waste operations, should have eight additional hours of Supervisor training in accordance with 29 CFR 1910.120. Supervisor Training includes, but is not limited to, accident reporting/investigation, regulatory compliance, work practice observations, auditing, and emergency response procedures.

## Additional Training for Specific Projects

H&A personnel will ensure their personnel have received additional training on specific instrumentation, equipment, confined space entry, construction hazards, etc., as necessary to perform their duties. This specialized training will be provided to personnel before engaging in the specific work activities including:

- Client specific training or orientation
- Competent person excavations
- Confined space entry (entrant, supervisor, and attendant)
- Heavy equipment including aerial lifts and forklifts
- First aid/ CPR
- Diving certification
- Use of fall protection
- Commercial drivers license
- Use of nuclear density gauges
- Asbestos awareness



LEGEND:

TAX MAP PROPERTY (APPROXIMATE) ——

SITE BOUNDARY — · · · —

PLAZA BUILDING ——

2-INCH MONITORING WELL LOCATIONS HA-2 MW#15

1-INCH MONITORING WELL LOCATIONS MW-14

ONGOING GROUNDWATER MONITORING LOCATIONS HA-106

RESIDENTIAL PROPERTY ADDRESS 18

RESIDENTIAL LOCATIONS WHERE INDOOR AIR, OUTDOOR AIR, SUB-SLAB VAPOR, AND SUMP SAMPLING WAS CONDUCTED - - - -

NOTES:

1. WELL LOCATIONS ARE PER SURVEYS DATED 2007 & 2009 BY PARRONE ENGINEERING AND FISHER ASSOCIATES, RESPECTIVELY.

W
S
N
E

0 80 160
SCALE IN FEET

HALEY & ALDRICH

UNITED CLEANERS
2199 EAST HENRIETTA ROAD
HENRIETTA, NEW YORK

SITE PLAN WITH ONGOING MONITORING LOCATIONS

SCALE: AS SHOWN
AUGUST 2013

FIGURE 2

T:\PROJECTS\33587_SUBURBAN PLAZA\001 (INVESTIGATION PHASE)\CAD\2013 FIGURES\33587-005 0002 FA MW SITE PLAN_HA_APRIL2010_TRB.DWG

# New York State Department of Health
# Generic Community Air Monitoring Plan

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

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

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

## Community Air Monitoring Plan

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

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

**Periodic monitoring** for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

## VOC Monitoring, Response Levels, and Actions

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

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

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

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

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

## Particulate Monitoring, Response Levels, and Actions

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

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

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

All readings must be recorded and be available for State (DEC and DOH) personnel to review.

June 20, 2000

P:\Bureau\Common\CommunityAirMonitoringPlan (CAMP)\GCAMPR1.DOC

# APPENDIX D

## MONITORING WELL BORING AND CONSTRUCTION LOGS

Stantec

**2250 Brighton Henrietta Town L**
**Rochester, NY 14623**
**(585) 475-1440**

**Test Boring No.:** B-1

**Page 1 of 2**

Project: Suburban Plaza
Project #: 190500318
Client: Wilmorite
Location: See Figure
Drill Contractor: Marcor
Driller: Jeff
Elevation:
Weather: 60 deg, clear
Start Date: 5/12/2006
Completion Date: 5/12/2006
Drilling Method: Direct Push
Supervisor: D. Gnage

| | SAMPLE | | | | Soil Information | |
|---|---|---|---|---|---|---|
| 0 | PID | Rec. | No. | Depth | Remarks | |
| | 0.6/0.0 | 1.5 | 1 | 0-4 | asphalt and base | 0.6 |
| | | | | | Red brown SILT, some fine Sand, little clay, trace fine Gravel, moist (Native) | |
| | 0.9/0.0 | 2.5 | 2 | 4-8 | | |
| 5 | | | | | | |
| | | | | | | 6.0 |
| | | | | | Brown fine SAND, some Silt, trace fine Gravel, moist to wet | 6.5 |
| | | | | | Dark brown SILT, some to little fine Sand, trace organics, moist to dry | 8.0 |
| | 1.0/0.0 | 1.5 | 3 | 8-10 | s.a.a., increase in Sand, moist to wet | |
| 10 | | | | | | 10.0 |
| | 0.7/0.0 | 1.4 | 4 | 10-12 | Brown fine SAND, some Silt, trace fine Gravel, wet | |
| | | | | | End of Boring | |
| 15 | | | | | | |
| 20 | | | | | | |

Notes:
1. PID Model Mini-Rae 2000 with a 10.6eV lamp.

Stantec

**2250 Brighton Henrietta Town L**
**Rochester, NY 14623**
**(585) 475-1440**

**Test Boring No.:** B-2

**Page 1 of 2**

Project: Suburban Plaza
Project #: 190500318
Client: Wilmorite
Location: See Figure
Drill Contractor: Marcor
Driller: Jeff
Elevation:
Weather: 60 deg, clear
Start Date: 5/12/2006
Completion Date: 5/12/2006
Drilling Method: Direct Push
Supervisor: D. Gnage

| | **SAMPLE** | | | | **Soil Information Remarks** | |
|---|---|---|---|---|---|---|
| 0 | **PID** | **Rec.** | **No.** | **Depth** | | |
| | 0.6/1.0 | 2.1 | 1 | 0-4 | asphalt and base | 0.6 |
| | | | | | Brown fine SAND and Silt, trace fine Gravel, moist to wet | 1.5 |
| | | | | | Red brown fine SAND, some Silt, trace fine Gravel, dry to moist (Native) | |
| | 1.0/0.0 | 2.5 | 2 | 4-8 | s.a.a. more Silt | |
| 5 | | | | | | 6.5 |
| | | | | | Dark brown SILT, some to little fine SAND, trace organics, dry to moist | |
| | 0.6/0.0 | 2.4 | 3 | 8-12 | | 9.5 |
| 10 | | | | | Brown fine SAND, some Silt, trace fine Gravel, wet | 12.0 |
| | | | | | End of Boring | |
| 15 | | | | | | |
| 20 | | | | | | |

Notes:
1. PID Model Mini-Rae 2000 with 10.6eV lamp.

Stantec

**2250 Brighton Henrietta Town l**
**Rochester, NY 14623**
**(585) 475-1440**

**Test Boring No.:** B-3

**Page 1 of 2**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project: | Suburban Plaza | Drill Contractor: | Marcor | Start Date: | 5/12/2006 |
| Project #: | 190500318 | Driller: | Jeff | Completion Date: | 5/12/2006 |
| Client: | Wilmorite | Elevation: | | Drilling Method: | Direct Push |
| Location: | See Figure | Weather: | 60 deg, clear | Supervisor: | D. Gnage |

| | SAMPLE | | | | Soil Information Remarks | |
|---|---|---|---|---|---|---|
| 0 | PID | Rec. | No. | Depth | | |
| | 50.7/0.0 | 2.3 | 1 | 0-4 | ashpalt and base | 0.6 |
| | | | | | Brown to dark brown SILT, some fine Sand, moist | 3.0 |
| | | | | | Red brown SILT and fine Sand, trace fine Gravel, moist to wet (Native) | |
| | 2.0/0.0 | 2.6 | 2 | 4-8 | | |
| 5 | | | | | | |
| | | | | | Brown fine SAND, some Silt, moist to wet | 6.7 |
| | | | | | Dark brown SILT, some to little fine Sand, trace organics, dry to moist | |
| | 0.7/0.0 | 2.6 | 3 | 8-12 | | |
| 10 | | | | | | 10.2 |
| | | | | | Brown fine SAND, some Silt, little to trace fine Gravel, moist | 12.0 |
| | | | | | End of Boring | |
| 15 | | | | | | |
| 20 | | | | | | |

Notes:

1. PID Model Mini-Rae 2000 with 10.6eV lamp.

Stantec

2250 Brighton Henrietta Town l
Rochester, NY 14623
(585) 475-1440

**Test Boring No.:** B-4

**Page 1 of 2**

| | | | | | |
|---|---|---|---|---|---|
| Project: | Suburban Plaza | Drill Contractor: | Marcor | Start Date: | 5/12/2006 |
| Project #: | 190500318 | Driller: | Jeff | Completion Date: | 5/12/2006 |
| Client: | Wilmorite | Elevation: | | Drilling Method: | Direct Push |
| Location: | See Figure | Weather: | 60 deg, clear | Supervisor: | D. Gnage |

| | SAMPLE | | | | Soil Information<br>Remarks |
|---|---|---|---|---|---|
| 0 | PID | Rec. | No. | Depth | |
| | 2.6/0.0 | 1.7 | 1 | 0-4 | ashpalt and base |
| | | | | | 0.6 |
| | | | | | Brown to red brown fine SAND and Silt, trace fine Gravel, moist to wet |
| | 1.0/0.0 | 2.7 | 2 | 4-8 | s.a.a. (Native) |
| 5 | | | | | |
| | | | | | 6.3 |
| | | | | | Dark brown SILT, some to little fine Sand, trace organics, dry to moist |
| | 0.7/0.0 | 2.2 | 3 | 8-12 | |
| 10 | | | | | 10.3 |
| | | | | | Brown fine SAND, some Silt, trace fine Gravel and clay, wet |
| | | | | | 12.0 |
| | | | | | End of Boring |
| 15 | | | | | |
| 20 | | | | | |

Notes:

1. PID Model Mini-Rae 2000 with 10.6eV lamp.

Stantec

**2250 Brighton Henrietta Town l**
**Rochester, NY 14623**
**(585) 475-1440**

**Test Boring No.:** B-5

**Page 1 of 2**

| | | | | | |
|---|---|---|---|---|---|
| Project: | Suburban Plaza | Drill Contractor: | Marcor | Start Date: | 5/12/2006 |
| Project #: | 190500318 | Driller: | Jeff | Completion Date: | 5/12/2006 |
| Client: | Wilmorite | Elevation: | | Drilling Method: | Direct Push |
| Location: | See Figure | Weather: | 60 deg, clear | Supervisor: | D. Gnage |

| | SAMPLE | | | | Soil Information Remarks | |
|---|---|---|---|---|---|---|
| 0 | PID | Rec. | No. | Depth | | |
| | 10.5/0.0 | 2.3 | 1 | 0-4 | ashpalt and base | 0.7 |
| | | | | | Brown, red brown SILT, some fine Sand, trace fine Gravel, dry | 3.0 |
| | | | | | Brown fine SAND, some Silt, trace fine Gravel, moist to wet (Native) | |
| | 1.8/0.0 | 2.3 | 2 | 4-8 | | |
| 5 | | | | | | 5.7 |
| | | | | | Dark brown SILT, some to little fine Sand, trace organics | 7.7 |
| | | | | | Brown fine SAND, some Silt, trace fine Gravel, wet | |
| | 0.7/0.0 | 1.7 | 3 | 8-10 | Red brown Silty CLAY, little to trace fine Sand, trace fine to coarse Gravel, moist | |
| 10 | | | | | | 10.0 |
| | | | | | End of Boring | |
| 15 | | | | | | |
| 20 | | | | | | |

Notes:

1. PID Model Mini-Rae 2000 with 10.6eV lamp.

**Stantec**

**2250 Brighton Henrietta Town I**
**Rochester, NY 14623**
**(585) 475-1440**

**Test Boring No.: B-6**

**Page 1 of 2**

Project: Suburban Plaza
Project #: 190500318
Client: Wilmorite
Location: See Figure
Drill Contractor: Marcor
Driller: Jeff
Elevation:
Weather: 60 deg, clear
Start Date: 5/12/2006
Completion Date: 5/12/2006
Drilling Method: Direct Push
Supervisor: D. Gnage

| | **SAMPLE** | | | | **Soil Information<br>Remarks** | |
|---|---|---|---|---|---|---|
| 0 | **PID** | **Rec.** | **No.** | **Depth** | | |
| | 7.4/0.0 | 1.9 | 1 | 0-4 | asphalt and base | 0.7 |
| | | | | | Brown SILT and fine Sand, some to little fine Gravel, moist | |
| | 1.8/0.0 | 2.4 | 2 | 4-8 | moist to wet | |
| 5 | | | | | | 6.3 |
| | | | | | Red brown SILT, some fine Sand, trace fine Gravel, dry | 7.0 |
| | | | | | Dark brown SILT, little fine Sand, trace organics, dry to moist | 8.2 |
| | 1.2/0.0 | 1.8 | 3 | 8-10 | Red brown, silty CLAY, little to trace fine Sand, trace fine Gravel, moist | |
| 10 | | | | | | 10.0 |
| | | | | | End of Boring | |
| 15 | | | | | | |
| 20 | | | | | | |

Notes:
1. PID Model Mini-Rae 2000 with 10.6eV lamp.

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**Test Boring No.:** B-7

**Page 1 of 2**

Project: Suburban Plaza
Project #: 190500318
Client: Wilmorite
Location: See Figure
Drill Contractor: Marcor
Driller: Jeff
Elevation:
Weather: 60 deg, clear
Start Date: 5/12/2006
Completion Date: 5/12/2006
Drilling Method: Direct Push
Supervisor: D. Gnage

| | **SAMPLE** | | | | **Soil Information Remarks** | |
|---|---|---|---|---|---|---|
| 0 | **PID** | **Rec.** | **No.** | **Depth** | | |
| | 3.6/0.0 | 2.6 | 1 | 0-4 | asphalt and base | 0.8 |
| | | | | | Brown, red brown SILT, some fine Sand, little Gravel, dry | 2.5 |
| | | | | | Dark brown SILT, little fine Sand, trace organics, moist | |
| | 2.9/1.0 | 1 | 2 | 4-8 | | |
| 5 | | | | | | |
| | | | | | | 7.0 |
| | | | | | Brown fine SAND, some Silt, trace fine Gravel, wet | |
| | 0.9/0.0 | | 3 | 8-11 | | 9.0 |
| | | | | | Red brown, silty CLAY, little to trace fine Sand, trace fine Gravel, moist | |
| 10 | | | | | | 11.0 |
| | | | | | End of Boring | |
| 15 | | | | | | |
| 20 | | | | | | |

Notes:
1. PID Model Mini-Rae 2000 with 10.6eV lamp.

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**Test Boring No.:** B-8

**Page 1 of 2**

| | | | |
|---|---|---|---|
| Project: | Suburban Plaza | Drill Contractor: | Marcor |
| Project #: | 190500318 | Driller: | Jeff |
| Client: | Wilmorite | Elevation: | |
| Location: | See Figure | Weather: | 60 deg, clear |

Start Date: 5/12/2006
Completion Date: 5/12/2006
Drilling Method: Direct Push
Supervisor: D. Gnage

| | SAMPLE | | | | Soil Information Remarks |
|---|---|---|---|---|---|
| 0 | PID | Rec. | No. | Depth | |
| | 4.8/0.0 | 1.8 | 1 | 0-4 | asphalt and base 0.8 |
| | | | | | Brown SILT and fine Sand, trace fine Gravel, moist to wet |
| | 3.2/0.0 | 1.5 | 2 | 4-8 | |
| 5 | | | | | |
| | | | | | 6.5 |
| | | | | | Brown fine SAND, some Silt, trace fine Gravel, moist to wet |
| | | | | | Dark brown SILT, some to little fine Sand, moist |
| | 0.5/0.0 | 2.6 | 3 | 8-12 | |
| 10 | | | | | 10.0 |
| | | | | | Brown/red brown, silty CLAY, little fine Sand, trace fine Gravel, moist |
| | | | | | 12.0 |
| | | | | | End of Boring |
| 15 | | | | | |
| 20 | | | | | |

Notes:
1. PID Model Mini-Rae 2000 with 10.6eV lamp.

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**Test Boring No.:** B-9

**Page 1 of 2**

Project: Suburban Plaza
Project #: 190500318
Client: Wilmorite
Location: See Figure
Drill Contractor: Marcor
Driller: Jeff
Elevation:
Weather: 60 deg, clear
Start Date: 5/12/2006
Completion Date: 5/12/2006
Drilling Method: Direct Push
Supervisor: D. Gnage

| | SAMPLE | | | | Soil Information Remarks | |
|---|---|---|---|---|---|---|
| 0 | PID | Rec. | No. | Depth | | |
| | 1.0/0.0 | 2.4 | 1 | 0-4 | asphalt and base | 0.5 |
| | | | | | Brown/red brown, fine SAND and some Silt, little fine Gravel | 2.4 |
| | | | | | Brown fine SAND and Silt, trace fine Gravel, moist to wet | 3.7 |
| | | | | | Dark brown SILT, little fine Sand, trace organics, moist | |
| | 1.2/0.0 | 2.2 | 2 | 4-8 | | |
| 5 | | | | | | |
| | | | | | | 7.6 |
| | | | | | Red brown, silty CLAY, little fine Sand, trace fine Gravel, moist | |
| | 0.6/0.0 | 2.7 | 3 | 8-12 | | |
| 10 | | | | | | |
| | | | | | | 12.0 |
| | | | | | End of Boring | |
| 15 | | | | | | |
| 20 | | | | | | |

Notes:
1. PID Model Mini-Rae 2000 with 10.6eV lamp.

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**Test Boring No.:** B-10

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| | | | | | |
|---|---|---|---|---|---|
| Project: | Suburban Plaza | Drill Contractor: | Marcor | Start Date: | 5/12/2006 |
| Project #: | 190500318 | Driller: | Jeff | Completion Date: | 5/12/2006 |
| Client: | Wilmorite | Elevation: | | Drilling Method: | Direct Push |
| Location: | See Figure | Weather: | 60 deg, clear | Supervisor: | D. Gnage |

| | **SAMPLE** | | | | **Soil Information Remarks** |
|---|---|---|---|---|---|
| 0 | **PID** | **Rec.** | **No.** | **Depth** | |
| | 2.0/0.0 | 2.6 | 1 | 0-4 | asphalt 0.9 |
| | | | | | Red brown, fine to medium Sand and Gravel, trace to little Silt, dry 1.7 |
| | | | | | Brown/red brown SILT, some fine Sand, trace to little fine Gravel, moist |
| | 1.0/0.0 | 2.8 | 2 | 4-8 | |
| 5 | | | | | 6.7 |
| | | | | | Brown fine SAND, some Silt, little to trace fine Gravel, moist to wet |
| | 0.8/0.0 | 2.2 | 3 | 8-12 | |
| 10 | | | | | 11.0 |
| | | | | | Red brown, silty CLAY, little to trace fine Sand, trace fine Gravel, moist 12.0 |
| | | | | | End of Boring |
| 15 | | | | | |
| 20 | | | | | |

Notes:

1. PID Model Mini-Rae 2000 with 10.6eV lamp.

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**Test Boring No.:** B-11

**Page 1 of 2**

| | | | | | |
|---|---|---|---|---|---|
| Project: | Suburban Plaza | Drill Contractor: | Marcor | Start Date: | 5/12/2006 |
| Project #: | 190500318 | Driller: | Jeff | Completion Date: | 5/12/2006 |
| Client: | Wilmorite | Elevation: | | Drilling Method: | Direct Push |
| Location: | See Figure | Weather: | 60 deg, clear | Supervisor: | D. Gnage |

| | SAMPLE | | | | Soil Information Remarks |
|---|---|---|---|---|---|
| 0 | PID | Rec. | No. | Depth | |
| | 2.4/0.0 | 2.5 | 1 | 0-4 | asphalt and base |
| | | | | | 1.5 |
| | | | | | Brown/red brown, fine SAND and Silt, trace fine Gravel, moist to wet |
| | | | | | 4.0 |
| | 1.1/0.0 | 3 | 2 | 4-8 | Brown SILT, little fine Sand, trace Gravel, dry to moist |
| 5 | | | | | |
| | | | | | 6.5 |
| | | | | | Brown, fine SAND, some Silt, trace fine Gravel, moist to wet |
| | 0.3/0.0 | 2.6 | 3 | 8-12 | |
| 10 | | | | | |
| | | | | | 11.0 |
| | | | | | Red brown, silty CLAY, little to trace fine Sand, trace fine Gravel, moist |
| | | | | | 12.0 |
| | | | | | End of Boring |
| 15 | | | | | |
| 20 | | | | | |

Notes:

1. PID Model Mini-Rae 2000 with 10.6eV lamp.

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**Test Boring No.:** B-12

**Page 1 of 1**

Project: Suburban Plaza
Project #: 190500318
Client: Wilmorite
Location: See Figure

Drill Contractor: TREC
Driller: P. Wiley
Elevation: 100.00
Weather: overcast/rain

Start Date: 6/9/2006
Completion Date: 6/9/2006
Drilling Method: Direct Push
Supervisor: D. Gnage

| | **SAMPLE** | | | | **Soil Information Remarks** | |
|---|---|---|---|---|---|---|
| 0 | **PID** | **Rec.** | **No.** | **Depth** | | |
| | 0.0/0.0 | 2.5 | 1 | 0-4 | Concrete | 0.5 |
| | | | | | Brown to Lt. Brown SILT, some to little fine Sand, trace Fine to course Gravel, moist | |
| | 0.0/0.0 | 2.7 | 2 | 4-8 | same as above, moist | |
| 5 | | | | | | 6.8 |
| | | | | | Brown Silty CLAY, little to trace fine Sand, moist (Native) | 7.75 |
| | | | | | Dark Brown, CLAY, little Silt, trace organics, moist | |
| | 0.0/0.0 | 3.0 | 3 | 8-12 | | 9.0 |
| | | | | | Brown, SILT, some fine Sand, trace fine Gravel and Clay, moist to wet | |
| 10 | | | | | | 12.0 |
| | 0.0/0.0 | 2.0 | 4 | 12-14 | Red Brown Silt and fine SAND, trace fine Gravel, moist to wet (TILL) | 14.0 |
| 15 | | | | | End of Boring/ Refusal | |
| 20 | | | | | | |

Notes:
1. PID Model Mini-Rae 2000 with 10.6eV lamp.

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**Test Boring No.:** B-13

**Page 1 of 1**

| | | | | | |
|---|---|---|---|---|---|
| Project: | Suburban Plaza | Drill Contractor: | TREC | Start Date: | 6/9/2006 |
| Project #: | 190500318 | Driller: | P. Wiley | Completion Date: | 6/9/2006 |
| Client: | Wilmorite | Elevation: | 100.00 | Drilling Method: | Direct Push |
| Location: | See Figure | Weather: | overcast/rain | Supervisor: | D. Gnage |

| | **SAMPLE** | | | | **Soil Information Remarks** | |
|---|---|---|---|---|---|---|
| 0 | **PID** | **Rec.** | **No.** | **Depth** | | |
| | 4.8/0.0 | 2.3 | 1 | 0-4 | Concrete | 0.5 |
| | | | | | Brown to Red Brown SILT and fine Sand, trace fine Gravel and Clay, moist | |
| | 0.0/0.0 | 3.0 | 2 | 4-8 | same as above, moist to wet | |
| 5 | | | | | | 5.5 |
| | | | | | Red Brown to Brown, SILT, some fine Sand, trace F. Gravel, dry to moist (till-like, native) | 7.0 |
| | | | | | Dark Brown, CLAY, little Silt, trace organics, moist | 8.0 |
| | | | | | End of Boring/ Borehole collapse at 3.5' | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |

Notes:

1. PID Model Mini-Rae 2000 with 10.6eV lamp.

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**Test Boring No.:** B-14

**Page 1 of 1**

Project: Suburban Plaza
Project #: 190500318
Client: Wilmorite
Location: See Figure
Drill Contractor: TREC
Driller: P. Wiley
Elevation: 100.00
Weather: overcast/rain
Start Date: 6/9/2006
Completion Date: 6/9/2006
Drilling Method: Direct Push
Supervisor: D. Gnage

| | SAMPLE | | | | Soil Information Remarks | |
|---|---|---|---|---|---|---|
| 0 | PID | Rec. | No. | Depth | | |
| | 0.0/0.0 | 1.0 | 1 | 0-4 | Concrete | 0.5 |
| | | | | | Red Brown SILT and fine Sand, trace fine Gravel and Clay, moist to wet | |
| | 0.7/0.0 | 2.2 | 2 | 4-8 | same as above, moist, increase in clay | |
| 5 | | | | | | |
| | | | | | | 6.9 |
| | | | | | Dark Brown, CLAY, some Silt, trace organics, moist | |
| | 0.0/0.0 | 2.3 | 3 | 8-12 | | 9.7 |
| 10 | | | | | Brown to Red Brown Silt and fine SAND, little fine Gravel, trace clay moist to wet (TILL) | |
| | 0.0/0.0 | 2 | 4 | 12-14 | same as above, wet | 14.0 |
| 15 | | | | | End of Boring | |
| 20 | | | | | | |

Notes:

1. PID Model Mini-Rae 2000 with 10.6eV lamp.

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**Test Boring No.:** B-15

**Page 1 of 1**

Project: Suburban Plaza
Project #: 190500318
Client: Wilmorite
Location: See Figure
Drill Contractor: TREC
Driller: P. Wiley
Elevation: 99.18
Weather: p. cloudy +/-65
Start Date: 6/12/2006
Completion Date: 6/12/2006
Drilling Method: Direct Push
Supervisor: D. Gnage

| | **SAMPLE** | | | | **Soil Information Remarks** | |
|---|---|---|---|---|---|---|
| 0 | **PID** | **Rec.** | **No.** | **Depth** | | |
| | 0.7/0.0 | 2.3 | 1 | 0-4 | asphalt and base | 0.5 |
| | | | | | Brown to Orange Brown, fine SAND, some Silt, little fine Gravel, trace glass, moist (fill) | 1..2 |
| | | | | | same as above, dark brown, no glass | 3.3 |
| | | | | | Brwon, SILT and fine SAND, little fine Gravel, wet | 3.8 |
| 5 | 1.3/0.0 | 2.1 | 2 | 4-8 | same as above, dry | 6.0 |
| | | | | | Dark Brown Silty CLAY, trace fine Sand and organics (Native) | 6.3 |
| | | | | | Brown SILT and fine SAND, trace fine Gravel, moist | 7 |
| 10 | 0.0/0.0 | 2.0 | 3 | 8-12 | Red Brown CLAY, some Silt, little fine Sand, trace fine Gravel, moist (TILL) | 11.0 |
| 15 | 0.0/0.0 | 1.6 | 4 | 12-16 | same as above, increase in Sand, wet | 16.0 |
| 20 | | | | | End of Boring | |

Notes:

1. PID Model Mini-Rae 2000 with 10.6eV lamp.

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**Test Boring No.:** B-16

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| | | | |
|---|---|---|---|
| Project: | Suburban Plaza | Drill Contractor: | TREC | 
| Project #: | 190500318 | Driller: | P. Wiley |
| Client: | Wilmorite | Elevation: | 98.36 |
| Location: | See Figure | Weather: | p. cloudy +/-65 |

| | |
|---|---|
| Start Date: | 6/12/2006 |
| Completion Date: | 6/12/2006 |
| Drilling Method: | Direct Push |
| Supervisor: | D. Gnage |

| | SAMPLE | | | | Soil Information Remarks | |
|---|---|---|---|---|---|---|
| 0 | PID | Rec. | No. | Depth | | |
| | 48.9/0.0 | 3.0 | 1 | 0-4 | asphalt and base | 0.6 |
| | | | | | Brown, fine to medium SAND, some Silt, little fine Gravel, dry | 1.5 |
| | | | | | Brown to dark brown, SILT, some fine SAND, little to trace fine Gravel,moist | 3.7 |
| | | | | | Brown SILT and fine SAND, trace fine Gravel, moist to wet | |
| 4-7 | 31.8/0.0 | 2.5 | 2 | 4-8 | | |
| 5 | | | | | | 7.0 |
| 7-8 | 0.0/0.0 | | | | Dark Brown Silty CLAY, trace fine Sand and organics (Native) | |
| | 0.0/0.0 | 3.0 | 3 | 8-12 | | 9.0 |
| | | | | | Red Brown Silty CLAY, trace fine Sand and Gravel, moist (TILL) | |
| 10 | | | | | | |
| | 0.0/0.0 | 2.2 | 4 | 12-15 | | |
| 15 | | | | | | 15.0 |
| | | | | | End of Boring | |
| 20 | | | | | | |

Notes:

1. PID Model Mini-Rae 2000 with 10.6eV lamp.

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**Test Boring No.:** B-17

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| | | | | | | |
|---|---|---|---|---|---|---|
| Project: | Suburban Plaza | Drill Contractor: | TREC | Start Date: | 6/12/2006 |
| Project #: | 190500318 | Driller: | P. Wiley | Completion Date: | 6/12/2006 |
| Client: | Wilmorite | Elevation: | 98.10 | Drilling Method: | Direct Push |
| Location: | See Figure | Weather: | p. cloudy +/-65 | Supervisor: | D. Gnage |

| | **SAMPLE** | | | | **Soil Information Remarks** | |
|---|---|---|---|---|---|---|
| 0 | **PID** | **Rec.** | **No.** | **Depth** | | |
| | 303/0.0 | 1.6 | 1 | 0-4 | asphalt and base | 0.6 |
| | | | | | Brown, fine to medium SAND, some Silt, little fine Gravel, dry | 1.0 |
| | | | | | Brown to dark brown, SILT and fine SAND, little to trace fine Gravel,moist | |
| 4-6 | 103/0.0 | 3.0 | 2 | 4-8 | | |
| 5 | | | | | | |
| | | | | | | 6.0 |
| 6-7.2 | 1.4/0.0 | | | | Dark Brown Silty CLAY, trace fine Sand and organics, moist (Native) | |
| | | | | | | 7.2 |
| 7-8 | 0.0/0.0 | | | | Red Brown Silty CLAY, trace fine Sand and Gravel, moist (TILL) | |
| | | | | | | 8.0 |
| | | | | | End of Boring/ Borehole collapse at 2.1' | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |

Notes:

1. PID Model Mini-Rae 2000 with 10.6eV lamp.

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**Test Boring No.:** B-18

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| | | | | | |
|---|---|---|---|---|---|
| Project: | Suburban Plaza | Drill Contractor: | TREC | Start Date: | 6/12/2006 |
| Project #: | 190500318 | Driller: | P. Wiley | Completion Date: | 6/12/2006 |
| Client: | Wilmorite | Elevation: | 98.16 | Drilling Method: | Direct Push |
| Location: | See Figure | Weather: | p. cloudy +/-65 | Supervisor: | D. Gnage |

| | SAMPLE | | | | Soil Information Remarks | |
|---|---|---|---|---|---|---|
| 0 | PID | Rec. | No. | Depth | | |
| | 41.8/0.0 | 2.5 | 1 | 0-4 | asphalt and base | 0.6 |
| | | | | | Brown, fine to medium SAND, some Silt, little fine Gravel, dry | 1.3 |
| | | | | | Brown to dark brown, SILT and fine SAND, little to trace fine Gravel,moist | |
| 4-6.5 | 18.1/0.0 | 2.5 | 2 | 4-8 | same as above | |
| 5 | | | | | | |
| | | | | | | 6.5 |
| 6.5-7.5 | 0.0/0.0 | | | | Dark Brown Silty CLAY, trace fine Sand and organics, moist (Native) | |
| | | | | | | 7.5 |
| 7.5-8 | 0.0/0.0 | | | | Red Brown Silty CLAY, trace fine Sand and Gravel, moist (TILL) | |
| | 0.0/0.0 | 1.8 | 3 | 8-11 | | |
| 10 | | | | | | |
| | | | 4 | 11-13 | no sampling | |
| | | | | | | 13.0 |
| | | | | | End of Boring | |
| 15 | | | | | | |
| 20 | | | | | | |

Notes:

1. PID Model Mini-Rae 2000 with 10.6eV lamp.

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**Test Boring No.:** B-19

**Page 1 of 1**

Project: Suburban Plaza
Project #: 190500318
Client: Wilmorite
Location: See Figure

Drill Contractor: TREC
Driller: P. Wiley
Elevation: 98.05
Weather: p. cloudy +/-65

Start Date: 6/12/2006
Completion Date: 6/12/2006
Drilling Method: Direct Push
Supervisor: D. Gnage

| | SAMPLE | | | | Soil Information Remarks | |
|---|---|---|---|---|---|---|
| 0 | PID | Rec. | No. | Depth | | |
| | 162/0.0 | 2.2 | 1 | 0-4 | asphalt and base | 0.6 |
| | | | | | Brown, fine to medium SAND, some Silt, little fine Gravel, dry | 2.6 |
| | | | | | Brown, SILT and fine SAND, little to trace fine Gravel,moist to wet | |
| 4-6 | 45.2/0.0 | 3.25 | 2 | 4-8 | | 5.9 |
| 6-8 | 0.0/0.0 | | | | Dark Brown Silty CLAY, trace fine Sand and organics, moist (Native) | 7.0 |
| | | | | | Red Brown Silty CLAY, trace fine Sand and Gravel, moist (TILL) | 8.0 |
| | | | | | End of Boring/ Borehole collapse at 0.95' | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |

Notes:

1. PID Model Mini-Rae 2000 with 10.6eV lamp.

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**Test Boring No.:** B-20

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| | | | | | |
|---|---|---|---|---|---|
| Project: | Suburban Plaza | Drill Contractor: | TREC | Start Date: | 6/12/2006 |
| Project #: | 190500318 | Driller: | P. Wiley | Completion Date: | 6/12/2006 |
| Client: | Wilmorite | Elevation: | 98.15 | Drilling Method: | Direct Push |
| Location: | See Figure | Weather: | p. cloudy +/-65 | Supervisor: | D. Gnage |

| | **SAMPLE** | | | | **Soil Information Remarks** | |
|---|---|---|---|---|---|---|
| 0 | **PID** | **Rec.** | **No.** | **Depth** | | |
| | 0.0/0.0 | 2.5 | 1 | 0-4 | asphalt and base | 0.5 |
| | | | | | Brown, fine to medium SAND, some Silt, little fine Gravel, moist to wet | 2.5 |
| | | | | | Brown , SILT and fine SAND, little fine Gravel, moist | |
| 4-6 | 0.0/0.0 | 2.5 | 2 | 4-8 | | 6.0 |
| 6-8 | 0.0/0.0 | | | | Dark Brown Silty CLAY, trace fine Sand and organics, moist (Native) | 7.5 |
| | | | | | Red Brown Silty CLAY, trace fine Sand and Gravel, moist (TILL) | 8.0 |
| | | | | | End of Boring/ Borehole collapse at 2.65' | |
| 10 | | | | | | |
| 15 | | | | | | |
| 20 | | | | | | |

Notes:

1. PID Model Mini-Rae 2000 with 10.6eV lamp.

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**Test Boring No.:** B-21

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| | | | | | |
|---|---|---|---|---|---|
| Project: | Suburban Plaza | Drill Contractor: | TREC | Start Date: | 6/21/2006 |
| Project #: | 190500318 | Driller: | P. Wiley | Completion Date: | 6/21/2006 |
| Client: | Wilmorite | Elevation: | | Drilling Method: | Direct Push |
| Location: | See Figure | Weather: | clear +/-70 | Supervisor: | D. Gnage |

| | SAMPLE | | | | Soil Information<br>Remarks | |
|---|---|---|---|---|---|---|
| 0 | PID | Rec. | No. | Depth | | |
| | 0.0/0.0 | 2.7 | 1 | 0-4 | Asphalt and base | |
| | | | | | | 0.8 |
| | | | | | Brown to Red Brown SILT and fine SAND, trace fine Gravel and Clay, dry | |
| | | | | | at 3.5' moist | |
| 4-7 | 0.0/0.0 | 2.2 | 2 | 4-8 | same as above, brown | |
| 5 | | | | | | |
| | | | | | | 7.0 |
| 7-8 | 0.0/0.0 | | | | Dark Brown Clay, some Silt, trace fine Sand and organics, moist (Native) | |
| | | | | | | 8.5 |
| 8-10.5 | 0.0/0.0 | 3.3 | 3 | 8-12 | Red Brown Sitly CLAY, trace fine Sand and Gravel, moist (TILL) | |
| 10 | | | | | | |
| 10.5-12 | 0.0/0.0 | | | | | 10.5 |
| | | | | | same as above, increase in Sand, little to some , moist to wet | |
| | 0.0/0.0 | 3.5 | 4 | 12-16 | same as above, moist | |
| 15 | | | | | | |
| | | | | | at 15.7 dry | 16.0 |
| | | | | | End of Boring | |
| 20 | | | | | | |

Notes:

1. PID Model Mini-Rae 2000 with 10.6eV lamp.

**Stantec**

**2250 Brighton Henrietta Town L**
**Rochester, NY 14623**
**(585) 475-1440**

**Test Boring No.:** B-22

**Page 1 of 1**

| | | | | | |
|---|---|---|---|---|---|
| Project: | Suburban Plaza | Drill Contractor: | TREC | Start Date: | 6/21/2006 |
| Project #: | 190500318 | Driller: | P. Wiley | Completion Date: | 6/21/2006 |
| Client: | Wilmorite | Elevation: | | Drilling Method: | Direct Push |
| Location: | See Figure | Weather: | clear +/-70 | Supervisor: | D. Gnage |

| | SAMPLE | | | | Soil Information Remarks | |
|---|---|---|---|---|---|---|
| 0 | PID | Rec. | No. | Depth | | |
| | 0.0/0.0 | 3.0 | 1 | 0-4 | Asphalt and base | |
| | | | | | | 1.0 |
| | | | | | Brown to Dark Brown SILT and fine SAND, trace to little fine Gravel, trace Clay, moist | |
| 4-7 | 0.0/0.0 | 2.6 | 2 | 4-8 | same as above, moist to wet | |
| 5 | | | | | | |
| | | | | | | 7.0 |
| 7-8 | 0.0/0.0 | | | | Dark Brown Clay, some Silt, trace fine Sand and organics, moist (Native) | |
| | 0.1/0.0 | 3.0 | 3 | 8-12 | | 8.5 |
| | | | | | Red Brown Sitly CLAY, trace fine Sand and Gravel, moist to dry (TILL) | |
| 10 | | | | | | |
| | 0.0/0.0 | 3.5 | 4 | 12-16 | same as above, slight increase in Sand content, moist | |
| 15 | | | | | | |
| | | | | | | 16.0 |
| | | | | | End of Boring | |
| 20 | | | | | | |

Notes:
1. PID Model Mini-Rae 2000 with 10.6eV lamp.

**Stantec**

**2250 Brighton Henrietta Town L**
**Rochester, NY 14623**
**(585) 475-1440**

**Test Boring No.:** B-23

**Page 1 of 1**

| | | | | | |
|---|---|---|---|---|---|
| Project: | Suburban Plaza | Drill Contractor: | TREC | Start Date: | 6/21/2006 |
| Project #: | 190500318 | Driller: | P. Wiley | Completion Date: | 6/21/2006 |
| Client: | Wilmorite | Elevation: | | Drilling Method: | Direct Push |
| Location: | See Figure | Weather: | clear +/-70 | Supervisor: | D. Gnage |

| | **SAMPLE** | | | | **Soil Information Remarks** | |
|---|---|---|---|---|---|---|
| 0 | **PID** | **Rec.** | **No.** | **Depth** | | |
| 0-1 | 0.0/0.0 | 4.0 | 1 | 0-4 | Dark Brown, Silty CLAY, trace fine Sand and organics, moist to dry | |
| | | | | | | 1.0 |
| 1-4 | 0.0/0.0 | | | | Red Brown Sitly CLAY, trace fine Sand and Gravel, moist (TILL) | |
| 4-6 | 0.2/0.0 | 2.9 | 2 | 4-8 | slight increase in sand content, little Sand, moist | |
| 5 | | | | | | |
| | | | | | | 6.0 |
| 6-8 | 1.1/0.0 | | | | same as above, trace fine Sand | |
| 8-9 | 2.0/0.0 | 4.0 | 3 | 8-12 | same as above, moist to wet | |
| | | | | | at 8.5 1/2" sand seam, wet | 9.0 |
| 9-12 | 3.0/0.0 | | | | same as above, moist | |
| 10 | | | | | | |
| | | 4.0? | 4 | 12-16 | same as above, sample stuck in macro-core | |
| 15 | | | | | | |
| 15-16 | 0.4/0.0 | | | | | |
| | | | | | | 16.0 |
| | | | | | End of Boring | |
| 20 | | | | | | |

Notes:

1. PID Model Mini-Rae 2000 with 10.6eV lamp.

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. HA-1**

Project Suburban Plaza Henrietta, New York
Client Wilmorite, Inc.
Contractor Nothnagle Drilling, Inc.

File No. 33587-001
Sheet No. 1 of 2
Start January 18, 2007
Finish January 18, 2007
Driller K. Busch
H&A Rep. T. Bown
Elevation 573.1
Datum NGVD29
Location See Plan

| | Casing | Sampler | Barrel |
|---|---|---|---|
| Type | HSA | S | - |
| Inside Diameter (in.) | 4 1/4 | 1 3/8 | - |
| Hammer Weight (lb.) | - | 140 | - |
| Hammer Fall (in.) | - | 30 | - |

Drilling Equipment and Procedures
Rig Make & Model: BK-81
Bit Type: Cutting Head
Drill Mud: None
Casing: HSA
Hoist/Hammer: Automatic Hammer

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description<br>(Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | 572.8<br>0.4 | | -ASPHALT/PAVEMENT-<br>Note: Auger from 0.0 ft. to 5.0 ft. BGS before commencing subsurface sampling. | | | | | | | | | | | |
| 5 | 1<br>2<br>4<br>5 | S1<br>10/24 | 5.0<br>7.0 | | | CL | Medium soft, brown, lean CLAY with sand (CL), no odor, moist. | PID = 2.1 ppm | | | | | 25 | 75 | S | M | M | |
| | 5<br>4<br>5<br>4 | S2<br>11/24 | 7.0<br>9.0 | | | CL | Stiff, brown, lean CLAY with sand (CL), no odor, moist.<br>-LACUSTRINE- | | | | | | 25 | 75 | S | M | M | |
| 10 | 6<br>5<br>8<br>8 | S3<br>17/24 | 10.0<br>12.0 | | 563.1<br>10.0 | ML | Stiff, brown, SILT with sand (ML), no odor, wet. | | | | | | 20 | 80 | R | L | N | |
| | | | | | 562.6<br>10.5 | CL | Stiff, brown, sandy lean CLAY with gravel (CL), mps 0.75 in., no odor, dry. | PID = 0.0 ppm | | 15 | | 5 | 15 | 65 | S | M | M | |
| 15 | 8<br>17<br>13<br>9 | S4<br>7/24 | 15.0<br>17.0 | | | CL | Very stiff, red-brown, gravelly lean CLAY with sand (CL), mps 1.0 in., no odor, dry.<br>-GLACIAL TILL- | PID = 3.3 ppm | 25 | 10 | 5 | | 5 | 55 | S | M | M | |
| 20 | | | | | 553.1 | | | | | | | | | | | | | |

Water Level Data

| Date | Time | Elapsed Time (hr.) | Depth (ft.) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| 01/18/07 | 1115 | - | 42 | 44 | 40.7 |
| 01/18/07 | 1150 | 0.55 | 42 | 44 | 39.3 |

Sample Identification
O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (lin. ft.) 48.0
Rock Cored (lin. ft.) -
Samples

**Boring No. HA-1**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1] SPT = Sampler blows per 6 in. [2] Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

**HALEY & ALDRICH**

# TEST BORING REPORT

**Boring No. HA-1**
File No. 33587-001
Sheet No. 2 of 2

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 2<br>4<br>7<br>8 | S5<br>16/24 | 20.0<br>22.0 | | 20.0 | ML | Stiff, gray-brown, sandy SILT with gravel (ML), mps 0.75 in., no odor, moist. | PID = 2.2 ppm | | 15 | 5 | | 15 | 65 | | | | |
| 25 | 3<br>3<br>10<br>10 | S6<br>12/24 | 25.0<br>27.0 | | 548.1<br>25.0 | CL | Stiff, gray-brown, lean CLAY with gravel (CL), no odor, moist.<br>-GLACIAL TILL- | PID = 0.0 ppm | | 15 | | | 10 | 75 | S | M | M | |
| 30 | 11<br>35<br>9<br>10 | S7<br>12/24 | 30.0<br>32.0 | | | CL | Hard, red-gray, sandy lean CLAY with gravel (CL), mps 1.25 in., no odor, moist, pocket of silty sand. Large piece of coarse material at ~30.5 ft. BGS, moist to wet above. | PID = 0.6 ppm | 20 | | 5 | | 15<br>80 | 60<br>20 | S | M | M | |
| 35 | 2<br>5<br>12<br>10 | S8<br>19/24 | 35.0<br>37.0 | | | CL | Very stiff, gray-brown, sandy lean CLAY with gravel (CL), mps 1.0 in., no odor, moist to wet. | PID = 0.0 ppm | 15 | 5 | | | 25 | 60 | S | M | M | |
| | | | | | 534.6<br>38.5 | | | | | | | | | | | | | |
| 40 | 2<br>3<br>3<br>2 | S9<br>24/24 | 40.0<br>42.0 | | | CL | Medium stiff, gray-brown, lean CLAY (CL), mps 0.50 in., no odor, wet.<br>-LACUSTRINE- | PID = 0.0 ppm | | 5 | | | | 95 | S | M | M | |
| | 2<br>2<br>3<br>7 | S10<br>24/24 | 42.0<br>44.0 | | | CL | Medium stiff, gray-brown, sandy lean CLAY with gravel (CL), mps 0.50 in., no odor, wet. | PID = 1.0 ppm | | 15 | | 5 | 10 | 70 | S | M | M | |
| 45 | 8<br>5<br>8<br>8 | S11<br>8/24 | 44.0<br>46.0 | | 529.1<br>44.0 | SM | Medium dense, gray-brown, silty SAND with gravel (SM), mps 0.75 in., no odor, wet.<br>-GLACIAL TILL- | PID = 2.1 ppm | | 20 | 5 | 50 | 5 | 20 | | | | |
| | 6<br>9<br>4<br>3 | S12<br>16/24 | 46.0<br>48.0 | | | SM | Medium dense, gray-brown, silty SAND with gravel (SM), mps 0.50 in., no odor, wet. | PID = 0.0 ppm | | 5 | | 10 | 70 | 15 | | | | |
| | | | | | 525.1<br>48.0 | | Bottom of boring at 48.0 ft.<br>See Observation Well Report. | | | | | | | | | | | |

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**[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.**

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. HA-2**

Project Suburban Plaza Henrietta, New York
Client Wilmorite, Inc.
Contractor Nothnagle Drilling, Inc.

File No. 33587-001
Sheet No. 1 of 2
Start January 18, 2007
Finish January 18, 2007
Driller S. Loranty
H&A Rep. D. Nostrant
Elevation 572.0
Datum NGVD29
Location See Plan

| | Casing | Sampler | Barrel |
|---|---|---|---|
| Type | HSA | S | - |
| Inside Diameter (in.) | 4 1/4 | 1 3/8 | - |
| Hammer Weight (lb.) | - | 140 | - |
| Hammer Fall (in.) | - | 30 | - |

Drilling Equipment and Procedures

Rig Make & Model: CME-85
Bit Type: Cutting Head
Drill Mud: None
Casing: HSA
Hoist/Hammer: Winch Automatic Hammer

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | Advanced augers to 5.0 ft. without sampling. | | | | | | | | | | | |
| 5 | 1<br>1<br>3<br>4 | S1<br>6/24 | 5.0<br>7.0 | | | ML | Soft, brown-black, SILT (ML), mps 3mm, no door, damp, trace organics.<br>-LACUSTRINE- | PID = 0.5 ppm | | | | | 10 | 90 | R | L | L | L |
| 10 | 3<br>6<br>7<br>9 | S2<br>20/24 | 10.0<br>12.0 | | 562.0<br>10.0 | ML | Stiff, brown, SILT with sand and gravel (ML), mps 7mm, no door, moist to wet.<br>-GLACIAL TILL- | PID = 4.3 ppm | | 15 | 5 | 5 | 15 | 60 | R | L | L | L |
| 15 | 12<br>15<br>17<br>18 | S3<br>0/24 | 15.0<br>17.0 | | | | No recovery for S3. | PID = N/A ppm | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | |

Water Level Data

| Date | Time | Elapsed Time (hr.) | Depth (ft.) to: Bottom of Casing | Depth (ft.) to: Bottom of Hole | Depth (ft.) to: Water |
|---|---|---|---|---|---|
| | | | | | |

Sample Identification

| | |
|---|---|
| O | Open End Rod |
| T | Thin Wall Tube |
| U | Undisturbed Sample |
| S | Split Spoon |
| G | Geoprobe |

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 40.0
Rock Cored (lin. ft.) -
Samples

**Boring No. HA-2**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1] SPT = Sampler blows per 6 in. [2] Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** **HA-2**
File No. 33587-001
Sheet No. 2 of 2

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 14<br>16<br>17<br>17 | S4<br>4/24 | 20.0<br>22.0 | | | ML | Suspected cobble/boulder, sample 90% broken rock pieces. | PID = N/A ppm | | | | | | | | | | |
| 25 | 9<br>11<br>12<br>14 | S5<br>0/24 | 25.0<br>27.0 | | | | No recovery for S5. | PID = N/A ppm | | | | | | | | | | |
| 30 | 8<br>9<br>15<br>8 | S6<br>23/24 | 30.0<br>32.0 | | 542.0<br>30.0 | SM | Medium dense, brown, silty SAND with gravel (SM), mps 25mm, no odor, damp to moist.<br>-GLACIAL TILL- | PID = 7.1 ppm | 10 | 10 | 10 | 15 | 15 | 40 | R | L | L | L |
| 35 | 10<br>9<br>7<br>8 | S7<br>24/24 | 35.0<br>37.0 | | 537.0<br>35.0 | CL | Very stiff, red-brown, lean CLAY (CL), mps 1mm, stratified with occasional fine sand and silt laminae, no odor, damp.<br>-LACUSTRINE- | PID = 15.9 ppm | | | | 5 | 5 | 90 | S | M | H | H |
| | | | | | 535.5<br>36.5 | ML | Very stiff, red-brown, SILT with sand (ML), mps 15mm, no odor, moist to wet. | | | 10 | 5 | 10 | 20 | 55 | R | L | L | L |
| | 9<br>9<br>8<br>8 | S8<br>2/24 | 38.0<br>40.0 | | | SM | Medium dense, red-brown, silty SAND with gravel (SM), mps 15mm, no odor, wet.<br>-GLACIAL TILL- | PID = 4.2 ppm | 5 | 10 | 10 | 20 | 35 | 20 | R | N | N | N |
| 40 | | | | | 532.0<br>40.0 | | Bottom of boring at 40.0 ft.<br>Note:<br>1. PVC Monitoring Well installed in completed boring. See Observation Well Installation Report for details.<br>2. NA-not available due to poor/no recovery. | | | | | | | | | | | |

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**[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.**

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

**Boring No.** **HA-2**

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. HA-3**

Project Suburban Plaza Henrietta, New York
Client Wilmorite, Inc.
Contractor Nothnagle Drilling, Inc.

File No. 33587-001
Sheet No. 1 of 2
Start January 19, 2007
Finish January 19, 2007
Driller K. Busch
H&A Rep. D. Nostrant

Elevation 571.0
Datum NGVD29
Location See Plan

| | Casing | Sampler | Barrel |
|---|---|---|---|
| Type | HSA | S | - |
| Inside Diameter (in.) | 4 1/4 | 1 3/8 | - |
| Hammer Weight (lb.) | - | 140 | - |
| Hammer Fall (in.) | - | 30 | - |

Drilling Equipment and Procedures
Rig Make & Model: CME-75
Bit Type: Cutting Head
Drill Mud: None
Casing: HSA
Hoist/Hammer: Winch Automatic Hammer

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description<br>(Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | | Gravel | | Sand | | | | Field Test | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | % Coarse | % Fine | % Coarse | % Medium | % Fine | % Fines | Dilatancy | Toughness | Plasticity | Strength |
| 0 | | | | | | | Advanced augers to 5.0 ft. without sampling. | | | | | | | | | | | |
| 5 | 1<br>3<br>2<br>3 | S1<br>18/24 | 5.0<br>7.0 | | | CL | Medium stiff, dark brown, lean CLAY with sand (CL), mps 3mm, no odor, damp to moist, little silt.<br>-LACUSTRINE- | PID = 0.9 ppm | | | | 5 | 15 | 80 | R | L | L | L |
| 10 | 4<br>4<br>6<br>5 | S2<br>15/24 | 10.0<br>12.0 | | 561.0<br>10.0 | SM | Loose, brown, silty SAND with gravel (SM), mps 3mm, no odor, damp.<br>-GLACIAL TILL- | PID = 1.0 ppm | 5 | 10 | 10 | 15 | 40 | 20 | R | L | N | L |
| 15 | 12<br>14<br>16<br>28 | S3<br>8/24 | 15.0<br>17.0 | | | SM | Dense, red-brown, silty SAND with gravel (SM), mps 25mm, no odor, damp to moist. | PID = 1.4 ppm | 10 | 15 | 10 | 15 | 30 | 20 | R | L | L | L |
| 20 | | | | | 551.0 | | | | | | | | | | | | | |

Water Level Data

| Date | Time | Elapsed Time (hr.) | Depth (ft.) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |

Sample Identification
O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram
▯ Riser Pipe
▤ Screen
⁙ Filter Sand
▨ Cuttings
■ Grout
△ Concrete
▧ Bentonite Seal

Summary
Overburden (lin. ft.) 42.0
Rock Cored (lin. ft.) -
Samples

**Boring No. HA-3**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1] SPT = Sampler blows per 6 in. [2] Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** HA-3
File No. 33587-001
Sheet No. 2 of 2

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | | Gravel | | Sand | | | | Field Test | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | % Coarse | % Fine | % Coarse | % Medium | % Fine | % Fines | Dilatancy | Toughness | Plasticity | Strength |
| 20 | 10<br>9<br>13<br>14 | S4<br>19/24 | 20.0<br>22.0 | | 20.0 | CL | Very stiff, red-brown, sandy lean CLAY with gravel (CL), mps 15mm, no odor, damp, some silt. | PID = 3.5 ppm | 5 | 15 | 10 | 10 | 10 | 50 | S | M | M | M |
| 25 | 6<br>7<br>10<br>12 | S5<br>20/24 | 25.0<br>27.0 | | | CL | Very stiff, red-brown, sandy lean CLAY with gravel (CL), mps 15mm, no odor, moist.<br>-GLACIAL TILL- | PID = 1.2 ppm | 5 | 10 | 5 | 10 | 10 | 60 | S | M | M | M |
| | | | | | 542.5<br>28.5 | | | | | | | | | | | | | |
| 30 | 5<br>6<br>8<br>9 | S6<br>10/24 | 30.0<br>32.0 | | | CL | Stiff, red-brown, lean CLAY with sand and gravel (CL), mps 20mm, no odor, damp to moist.<br>-LACUSTRINE- | PID = 0.4 ppm | 5 | 10 | 5 | 5 | 5 | 70 | S | M | M | M |
| 35 | 6<br>8<br>9<br>9 | S7<br>18/24 | 35.0<br>37.0 | | | CL | Stiff, red-brown, lean CLAY with sand (CL), mps 10mm, no odor, damp to moist.<br>-LACUSTRINE- | PID = 0.5 ppm | 5 | 5 | 5 | 5 | 10 | 70 | S | M | M | M |
| 40 | 6<br>8<br>3<br>4 | S8<br>17/24 | 40.0<br>42.0 | | | CL | Stiff, red-brown, sandy lean CLAY (CL), mps 3mm, no odor, moist to wet. | PID = 0.2 ppm | | 5 | 5 | 5 | 15 | 70 | S | M | M | M |
| | | | | | 529.0<br>42.0 | | Bottom of boring at 42.0 ft.<br>Note:<br>1. PVC Monitoring Well installed incompleted boring. See Observation Well Installation Report for details. | | | | | | | | | | | |

**[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.**

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

**Boring No.** HA-3

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No.** HA-4

| | |
|---|---|
| Project | Suburban Plaza Henrietta, New York |
| Client | Wilmorite, Inc. |
| Contractor | Nothnagle Drilling, Inc. |
| File No. | 33587-001 |
| Sheet No. | 1 of 2 |
| Start | January 17, 2007 |
| Finish | January 17, 2007 |
| Driller | S. Loranty |
| H&A Rep. | D. Nostrant |
| Elevation | 570.8 |
| Datum | NGVD29 |
| Location | See Plan |

| | Casing | Sampler | Barrel |
|---|---|---|---|
| Type | HSA | S | - |
| Inside Diameter (in.) | 4 1/4 | 1 3/8 | - |
| Hammer Weight (lb.) | - | 140 | - |
| Hammer Fall (in.) | - | 30 | - |

Drilling Equipment and Procedures

Rig Make & Model: CME-85 Truck Mount
Bit Type: Cutting Head
Drill Mud: None
Casing: HSA
Hoist/Hammer: Winch Automatic Hammer

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | Advanced augers to 5.0 ft. without sampling. | | | | | | | | | | | |
| 5 | 4<br>4<br>7<br>7 | S1<br>15/24 | 5.0<br>7.0 | | | ML | Stiff, brown, SILT with sand (ML), mps 8mm, no odor, damp, trace clay.<br>-LACUSTRINE- | PID = 1.5 ppm | | 5 | | 5 | 10 | 80 | R | L | L | L |
| 10 | 8<br>9<br>10<br>11 | S2<br>21/24 | 10.0<br>12.0 | | | ML | Very stiff, brown-gray, mottled, SILT with sand (ML), mps 10mm, no odor, moist to wet.<br>Damp at 11.0 ft. | PID = 4.6 ppm | | 5 | 5 | 5 | 10 | 75 | R | L | L | L |
| | | | | | 557.3<br>13.5 | | | | | | | | | | | | | |
| 15 | 5<br>9<br>11<br>18 | S3<br>24/24 | 15.0<br>17.0 | | | ML | Very stiff, brown, SILT with sand and gravel (ML), mps 10mm, no odor, damp, moist pockets in sample, trace clay.<br>-GLACIAL TILL- | PID = 3.2 ppm | 5 | 10 | 5 | 5 | 10 | 65 | R | M | M | L |
| 20 | | | | | 550.8 | | | | | | | | | | | | | |

Water Level Data

| Date | Time | Elapsed Time (hr.) | Depth (ft.) to: Bottom of Casing | Depth (ft.) to: Bottom of Hole | Depth (ft.) to: Water |
|---|---|---|---|---|---|
| | | | | | |

Sample Identification

| | |
|---|---|
| O | Open End Rod |
| T | Thin Wall Tube |
| U | Undisturbed Sample |
| S | Split Spoon |
| G | Geoprobe |

Well Diagram

| | |
|---|---|
| ◫ | Riser Pipe |
| ▤ | Screen |
| ⁘ | Filter Sand |
| ▨ | Cuttings |
| ■ | Grout |
| ▧ | Concrete |
| ▧ | Bentonite Seal |

Summary

Overburden (lin. ft.) 42.0
Rock Cored (lin. ft.) -
Samples

**Boring No.** HA-4

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1] SPT = Sampler blows per 6 in. [2] Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

USCS_TB3APID USCSLIB4.GLB USCSTC3A.GDT \\ROC\COMMON\PROJECTS\33587_SUBURBAN PLAZA\004 - REPORTING\ELECTRONIC DATA SUBMITTAL\BORING AND WELL INSTALLATION LOGS\33587-001TB.GPJ Nov 29, 10

# TEST BORING REPORT

HALEY & ALDRICH

**Boring No.** **HA-4**
File No. 33587-001
Sheet No. 2 of 2

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 8<br>12<br>12<br>16 | S4<br>8/24 | 20.0<br>22.0 | | 20.0 | CL | Very stiff, brown, lean CLAY with sand (CL), mps 1mm, no odor, damp. | PID = 10.5 ppm | | | | 5 | 10 | 85 | S | M | M | L |
| 25 | 6<br>8<br>10<br>12 | S5<br>24/24 | 25.0<br>27.0 | | | CL | Very stiff, red-brown, lean CLAY with sand and gravel (CL), mps 15mm, no odor, samp.<br>-GLACIAL TILL- | PID = 15 ppm | | 15 | 5 | 5 | 10 | 65 | S | M | M | M |
| 30 | 5<br>5<br>7<br>7 | S6<br>20/24 | 30.0<br>32.0 | | | CL | Stiff, red-brown, lean sandy CLAY with gravel (CL), mps 20mm, no door, damp to moist. | PID = 0.4 ppm | 10 | 10 | 5 | 10 | 15 | 50 | S | M | M | M |
| | | | | | 537.3<br>33.5 | | | | | | | | | | | | | |
| 35 | 1<br>2<br>3<br>4 | S7<br>24/24 | 35.0<br>37.0 | | | CL | Medium stiff, red-brown, lean CLAY (CL), mps 25mm, no odor, damp to moist.<br>-LACUSTRINE- | PID = 1.7 ppm | 5 | | | | 10 | 85 | S | M | H | H |
| 40 | 9<br>10<br>13<br>13 | S8<br>10/24 | 40.0<br>42.0 | | 530.8<br>40.0 | SM | Medium dense, brown, silty SAND with gravel (SM), mps 15mm, no odor, wet.<br>-GLACIAL TILL- | PID = 1.5 ppm | 5 | 10 | 15 | 15 | 35 | 20 | R | N | N | N |
| | | | | | 528.8<br>42.0 | | Bottom of boring at 42.0 ft.<br>Note:<br>1. PVC Monitoring Well installed incompleted boring. See Observation Well Installation Report for details. | | | | | | | | | | | |

[1] SPT = Sampler blows per 6 in. [2] Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

**NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

**Boring No.** **HA-4**

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. HA-105**

Project Suburban Plaza Henrietta, New York
Client Wilmorite, Inc.
Contractor Nothnagle Drilling, Inc.

File No. 33587-001
Sheet No. 1 of 1
Start December 2, 2008
Finish December 2, 2008
Driller J. Swietzer
H&A Rep. D. Nostrant
Elevation
Datum NGVD29
Location See Plan

|  | Casing | Sampler | Barrel |
|---|---|---|---|
| Type | HSA | Macro | None |
| Inside Diameter (in.) | 4 1/2 | 2.0 | - |
| Hammer Weight (lb.) | - | - | - |
| Hammer Fall (in.) | - | - | - |

Drilling Equipment and Procedures
Rig Make & Model: Geoprobe 6610DT Track Mount
Bit Type: -
Drill Mud: -
Casing: HSA
Hoist/Hammer: - -

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 |  | G1<br>48/48 | 0.0<br>4.0 |  |  | ML | Brown SILT with sand (ML), mps=15mm, no odor, damp.<br>-FILL- |  | 5 | 5 | 5 | 10 | 75 | R | L | L | L |
| 5 |  | G2<br>48/48 | 4.0<br>8.0 |  |  | ML | Brown sandy SILT with gravel (ML), mps=20mm, no odor, damp, trace clay.<br>-LACUSTRINE- | 5 | 15 | 5 | 5 | 10 | 60 | R | L | L | L |
| 10 |  | G3<br>36/36 | 8.0<br>11.0 |  | 8.2 | SM | Brown silty SAND with gravel (SM), mps=25mm, no odor, damp to moist.<br>-LACUSTRINE- | 5 | 10 | 5 | 10 | 50 | 20 |  |  |  |  |
|  |  | G4<br>36/36 | 11.0<br>14.0 |  |  | SM | Similar to above, except moist from 12.5 ft. to 13.5 ft. |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | 13.6 | CL | Brown-gray lean CLAY with sand (CL), mps=3mm, no odor, damp.<br>-LACUSTRINE- |  |  |  | 5 | 10 | 85 | S | M | M | L |
| 15 |  | G5<br>34/36 | 14.0<br>17.0 |  | 14.0 | SM | Brown silty SAND with gavel (SM), mps=15mm, no odor damp to moist.<br>-GLACIAL TILL- |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | 16.0 | CL | Brown gray lean CLAY with sand (CL), mps=8mm, no odor, damp.<br>-GLACIAL TILL- |  | 5 | 5 | 5 | 5 | 80 | S | M | M | L |
|  |  |  |  |  | 17.0 |  | Bottom of exploration at 17.0 ft. |  |  |  |  |  |  |  |  |  |  |

Water Level Data

| Date | Time | Elapsed Time (hr.) | Depth (ft.) to: Bottom of Casing | Depth (ft.) to: Bottom of Hole | Depth (ft.) to: Water |
|---|---|---|---|---|---|
|  |  | NOT MEASURED |  |  |  |

Sample Identification

| | |
|---|---|
| O | Open End Rod |
| T | Thin Wall Tube |
| U | Undisturbed Sample |
| S | Split Spoon |
| G | Geoprobe |

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

| | |
|---|---|
| Overburden (lin. ft.) | 17 |
| Rock Cored (lin. ft.) | - |
| Samples | G5 |

**Boring No. HA-105**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1] SPT = Sampler blows per 6 in. [2] Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. HA-106**

Project Suburban Plaza Henrietta, New York
Client Wilmorite, Inc.
Contractor Nothnagle Drilling, Inc.

File No. 33587-001
Sheet No. 1 of 1
Start December 2, 2008
Finish December 2, 2008
Driller J. Swietzer
H&A Rep. D. Nostrant

Elevation
Datum NGVD29
Location See Plan

| | Casing | Sampler | Barrel |
|---|---|---|---|
| Type | HSA | Macro | None |
| Inside Diameter (in.) | 4 1/2 | 2.0 | - |
| Hammer Weight (lb.) | - | - | - |
| Hammer Fall (in.) | - | - | - |

Drilling Equipment and Procedures
Rig Make & Model: BK-80 Truck Mount
Bit Type: -
Drill Mud: -
Casing: HSA
Hoist/Hammer: - -

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | G1<br>48/48 | 0.0<br>4.0 | | | ML | Brown SILT with sand and gravel (ML), mps=20mm, no odor, damp.<br>-FILL- | 5 | 10 | 5 | 5 | 10 | 60 | R | L | L | L |
| | | | | | 3.0 | ML | Brown sandy SILT with gravel (ML), mps=20mm, no odor, damp.<br>-LACUSTRINE- | | | | | | | | | | |
| 5 | | G2<br>48/48 | 4.0<br>8.0 | | | | | | | | | | | | | | |
| | | | | | 6.5 | SM | Brown silty SAND with gravel (SM), mps=20mm, no odor, damp. | 5 | 10 | 15 | 20 | 25 | 25 | R | L | L | L |
| 10 | | G3<br>36/36 | 8.0<br>11.0 | | | SM | Similar as above, except moist to 9.5 ft. damp from 9.5 ft. to 11.0 ft.<br>LACUSTRINE- | | | | | | | | | | |
| | | G4<br>36/36 | 11.0<br>14.0 | | | SM | Brown silty SAND with gravel (SM), mps=25mm, no odor, damp to moist.<br>-GLACIAL TILL- | 5 | 10 | 10 | 15 | 25 | 35 | R | L | L | L |
| | | G5<br>36/36 | 14.0<br>17.0 | | | SM | Similar as above. | | | | | | | | | | |
| 15 | | | | | | SM | Brown silty SAND with gravel (SM), mps=25mm, no odor, moist to wet.<br>-GLACIAL TILL- | 5 | 10 | 10 | 15 | 45 | 15 | R | L | L | L |
| | | | | | 17.0 | | Bottom of exploration at 17.0 ft. | | | | | | | | | | |

Water Level Data

| Date | Time | Elapsed Time (hr.) | Depth (ft.) to: Bottom of Casing | Depth (ft.) to: Bottom of Hole | Depth (ft.) to: Water |
|---|---|---|---|---|---|
| 12/02/08 | 1400 | 2.0 | | | 0.8 |

Sample Identification

| | |
|---|---|
| O | Open End Rod |
| T | Thin Wall Tube |
| U | Undisturbed Sample |
| S | Split Spoon |
| G | Geoprobe |

Well Diagram
- ☐ Riser Pipe
- ☐ Screen
- ☐ Filter Sand
- ☐ Cuttings
- ■ Grout
- ☐ Concrete
- ▨ Bentonite Seal

Summary
Overburden (lin. ft.) 17
Rock Cored (lin. ft.) -
Samples

**Boring No. HA-106**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1] SPT = Sampler blows per 6 in.
[2] Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

USCS_TB3APID USCSLIB4.GLB USCSTC3A.GDT \\ROC\COMMON\PROJECTS\33587_SUBURBAN PLAZA\004 - REPORTING\ELECTRONIC DATA SUBMITTAL\BORING AND WELL INSTALLATION LOGS\33587-001TB.GPJ Nov 29, 10

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. HA-107**

Project Suburban Plaza Henrietta, New York
Client Wilmorite, Inc.
Contractor Nothnagle Drilling, Inc.

File No. 33587-001
Sheet No. 1 of 1
Start December 1, 2008
Finish December 1, 2008
Driller K. Busch
H&A Rep. D. Nostrant

Elevation
Datum NGVD29
Location See Plan

| | Casing | Sampler | Barrel |
|---|---|---|---|
| Type | HSA | Macro | None |
| Inside Diameter (in.) | 4 1/2 | 2.0 | - |
| Hammer Weight (lb.) | - | - | - |
| Hammer Fall (in.) | - | - | - |

Drilling Equipment and Procedures
Rig Make & Model: BK-80 Truck Mount
Bit Type: -
Drill Mud: -
Casing: HSA
Hoist/Hammer: - -

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | G1<br>42/48 | 0.0<br>4.0 | | | ML | Light brown sandy SILT (ML), mps=3mm, no odor, damp.<br>-FILL- | | | | 5 | 30 | 65 | R | L | L | L |
| | | | | | 3.2 | ML | Dark brown sandy SILT (ML), mps=2mm, no odor, damp, trace organics.<br>-LACUSTRINE- | | | | 15 | 25 | 60 | R | L | L | L |
| 5 | | G2<br>46/48 | 4.0<br>8.0 | | | ML | Brown sandy SILT (ML), mps=20mm, no odor, damp, trace gravel.<br>-LACUSTRINE- | 5 | | 5 | 10 | 20 | 60 | R | L | L | L |
| 10 | | G3<br>48/48 | 8.0<br>12.0 | | 8.4 | SM | Light brown silty SAND with gravel (SM), mps=8mm, no odor, moist.<br>-LACUSTRINE- | 5 | 10 | 10 | 10 | 40 | 25 | R | L | L | L |
| | | G4<br>48/48 | 12.0<br>16.0 | | | | | | | | | | | | | | |
| 15 | | | | | 13.5 | ML | Brown sandy SILT with gravel (ML), mps=20mm, no odor, damp.<br>-GLACIAL TILL- | 5 | 10 | 10 | 10 | 15 | 50 | R | M | L | L |
| | | | | | 16.0 | | Bottom of exploration at 16.0 ft.<br>Notes: Observation Well installed in completed borehole.<br>See Observation Well Installation Report for details. | | | | | | | | | | |

Water Level Data

| Date | Time | Elapsed Time (hr.) | Depth (ft.) to: Bottom of Casing | Depth (ft.) to: Bottom of Hole | Depth (ft.) to: Water |
|---|---|---|---|---|---|
| | | NOT MEASURED | | | |

Sample Identification
O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (lin. ft.) 16
Rock Cored (lin. ft.) -
Samples G4

**Boring No. HA-107**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1] SPT = Sampler blows per 6 in.
[2] Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. HA-208**

| | | | |
|---|---|---|---|
| Project | United Cleaners 2199 East Henrietta Road, Rochester, New York | File No. | 33587-002 |
| Client | | Sheet No. | 1 of 1 |
| Contractor | Nothnagle Drilling | Start | August 11, 2009 |
| | | Finish | August 11, 2009 |
| | | Driller | J. Schweitzer |
| | | H&A Rep. | B. Zinni |
| | | Elevation | (est.) |
| | | Datum | NGVD29 |
| | | Location | See Plan |

| | Casing | Sampler | Barrel | Drilling Equipment and Procedures |
|---|---|---|---|---|
| Type | HSA | Macro | - | Rig Make & Model: Geoprobe 6610 DT |
| Inside Diameter (in.) | 4.5 | 2.0 | - | Bit Type: |
| | | | | Drill Mud: None |
| Hammer Weight (lb.) | - | - | - | Casing: |
| Hammer Fall (in.) | - | - | - | Hoist/Hammer: Automatic Hammer |

| Depth (ft.) | SPT¹ | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size², structure, odor, moisture, optional descriptions, geologic interpretation) | | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | G1<br>36 | 0.0<br>2.0 | | | | Gravel at surface=> ~2 in. | | | | | | | | | | | |
| | | | | | 0.2 | ML | Brown sandy SILT (ML), mps=0.25 in., no structure, no odor, dry<br>-FILL- | PID = 0.0 ppm | | | 5 | 10 | 25 | 60 | | | | |
| | | | | | | | Wet at ~4.0 ft | | | | | | | | | | | |
| | | G2<br>30 | 4.0<br>7.0 | | 4.0 | SP-SM | Brown poorly-graded SAND with silt and gravel (SP-SM), mps=0.75 in., no structure, no odor, wet | PID = 0.0 ppm | 5 | 10 | 20 | 20 | 35 | 10 | | | | |
| 5 | | | | | 4.5 | ML | Brown sandy SILT with gravel (ML), mps=1.5 in., no structure, no odor, wet<br>-LACUSTRINE- | PID = 0.0 ppm | 5 | 10 | 10 | 10 | 15 | 50 | | M | M | H |
| | | G3<br>24 | 7.0<br>9.0 | | 7.8 | SM | Brown silty SAND with gravel (SM), mps=1.75 in., no structure, no odor, wet<br>-LACUSTRINE- | PID = 0.0 ppm | 5 | 10 | 10 | 15 | 40 | 20 | | | | |
| 10 | | G4<br>36 | 9.0<br>12.0 | | | | | | | | | | | | | | | |
| | | | | | 11.5 | CL | Red-brown lean CLAY with sand (CL), mps=0.75 in., no structure, no odor, moist<br>-GLACIAL TILL- | PID = 0.0 ppm | | | 5 | 10 | 10 | 75 | | M | M | M |
| | | G5<br>24 | 12.0<br>15.0 | | | | | | | | | | | | | | | |
| 15 | | | | | 15.0 | | Bottom of exploration at 15.0 ft | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft.) to: Bottom of Casing | Depth (ft.) to: Bottom of Hole | Depth (ft.) to: Water |
|---|---|---|---|---|---|
| | | NOT MEASURED | | | |

**Sample Identification**

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

**Well Diagram**

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

**Summary**

Overburden (lin. ft.) 15

Rock Cored (lin. ft.) -

Samples G5

**Boring No. HA-208**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High

Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

¹SPT = Sampler blows per 6 in. ²Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

USCS_TB3APID USCSLIB4.GLB USCSTC3A.GDT \\ROC\COMMON\PROJECTS\33587_SUBURBAN PLAZA\004 - REPORTING\ELECTRONIC DATA SUBMITTAL\BORING AND WELL INSTALLATION LOGS\33587-002TB_VER8.GPJ Nov 29, 10

HALEY & ALDRICH

# TEST BORING REPORT

**Boring No. HA-209**

Project United Cleaners 2199 East Henrietta Road, Rochester, New York
Client
Contractor Nothnagle Drilling

File No. 33587-002
Sheet No. 1 of 1
Start August 11, 2009
Finish August 11, 2009
Driller J. Schweitzer
H&A Rep. B. Zinni
Elevation (est.)
Datum NGVD29
Location See Plan

| | Casing | Sampler | Barrel |
|---|---|---|---|
| Type | HSA | Macro | - |
| Inside Diameter (in.) | 4.5 | 2.0 | - |
| Hammer Weight (lb.) | - | - | - |
| Hammer Fall (in.) | - | - | - |

Drilling Equipment and Procedures
Rig Make & Model: Geoprobe 6610 DT
Bit Type:
Drill Mud: None
Casing:
Hoist/Hammer: Automatic Hammer

| Depth (ft.) | SPT[1] | Sample No. & Rec. (in.) | Sample Depth (ft.) | Well Diagram | Elev./Depth (ft.) | USCS Symbol | Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation) | | Gravel | | Sand | | | | Field Test | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | % Coarse | % Fine | % Coarse | % Medium | % Fine | % Fines | Dilatancy | Toughness | Plasticity | Strength |
| 0 | | G1<br>48 | 0.0<br>4.0 | | | | Dark brown ORGANIC SOIL | | | | | | | | | | | |
| | | | | | 0.8 | CL | Dark brown sandy lean CLAY (CL), mps 0.75 in., no structure, no odor, dry | PID = 0.0 ppm | 5 | 5 | 5 | 10 | 10 | 65 | | M | M | L |
| | | | | | | CL | Dark brown lean CLAY with sand (CL), mps 1.20 in., no structure, no odor, moist | PID = 0.0 ppm | 5 | 5 | 5 | 5 | 5 | 75 | | M | M | L |
| | | G2<br>36 | 4.0<br>7.0 | | | | | | | | | | | | | | | |
| 5 | | | | | 4.5 | MH | Dark brown sandy elastic SILT (MH), mps 1.5 in., no structure, no odor, dry | PID = 0.0 ppm | 5 | 5 | 5 | 10 | 10 | 65 | | M | M | M |
| | | G3<br>24 | 7.0<br>9.0 | | | | | | | | | | | | | | | |
| | | G4<br>24 | 9.0<br>11.0 | | | | | | | | | | | | | | | |
| 10 | | | | | 9.5 | CL | Dark brown lean CLAY with sand (CL), mps 0.5 in., no structure, no odor, dry | PID = 0.0 ppm | | | 5 | 10 | 10 | 75 | | M | L-M | M |
| | | | | | | CL | Dark brown sandy lean CLAY (CL), mps 1.5 in., no structure, no odor, dry | PID = 0.0 ppm | 5 | 5 | 5 | 10 | 10 | 65 | | M | M | L |
| | | G5<br>24 | 11.0<br>13.0 | | | | | | | | | | | | | | | |
| | | G6<br>20 | 13.0<br>15.0 | | | | | | | | | | | | | | | |
| 15 | | | | | 14.5 | SM | Dark brown silty SAND (SM), mps=1.25 in., no structure, no odor, wet | PID = 0.0 ppm | 5 | 5 | 5 | 20 | 30 | 35 | | L | L | L |
| | | G7<br>22 | 15.0<br>17.0 | | | SM | Dark brown silty SAND (SM), mps=1.5 in., no structure, no odor, wet | PID = 0.0 ppm | 5 | 5 | 10 | 25 | 30 | 25 | | L | L | L |
| | | | | | | SM | Gray-brown silty SAND (SM), mps=1.5 in., no structure, no odor, wet | PID = 0.0 ppm | 5 | 5 | 5 | 15 | 45 | 25 | | L | M | L |
| | | G8<br>18 | 17.0<br>20.0 | | | | | | | | | | | | | | | |
| 20 | | | | | 20.0 | | Bottom of exploration at 20.0 ft | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth (ft.) to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | NOT MEASURED | | | |

**Sample Identification**

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon
- G Geoprobe

**Well Diagram**

- ▯ Riser Pipe
- ▤ Screen
- ⛆ Filter Sand
- ▨ Cuttings
- ■ Grout
- ▧ Concrete
- ▧ Bentonite Seal

**Summary**

Overburden (lin. ft.) 20
Rock Cored (lin. ft.) -
Samples G8

**Boring No. HA-209**

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Toughness: L-Low, M-Medium, H-High Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1] SPT = Sampler blows per 6 in. [2] Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

**Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.**

HALEY & ALDRICH

# OBSERVATION WELL INSTALLATION REPORT

Well No. **HA-1**
Boring No. **HA-1**

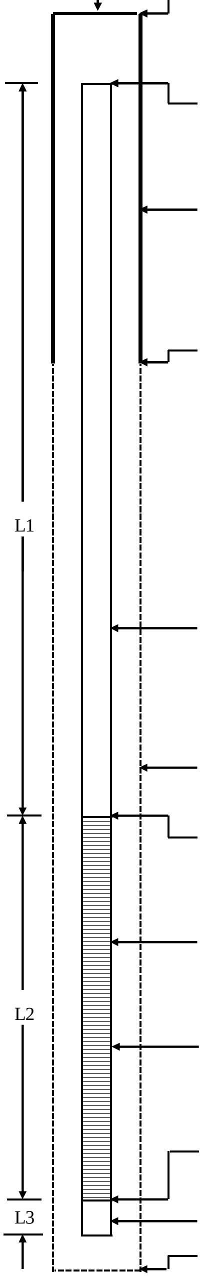
| | | | |
|---|---|---|---|
| **PROJECT** | Site Investigation and Environmental Consulting Services | **H&A FILE NO.** | 33587-001 |
| **LOCATION** | Surban Plaza, 2199 East Henrietta, New York | **PROJECT MGR.** | L. Turturro |
| **CLIENT** | Wilmorite, Inc. | **FIELD REP.** | T. Bown |
| **CONTRACTOR** | Nothnagle Drilling, Inc. | **DATE INSTALLED** | 01/18/07 |
| **DRILLER** | K. Bush | **WATER LEVEL** | 27.41 |

**Ground El.** 572 ft
**El. Datum** NGVD29
**Location** SEE PLAN

☐ **Guard Pipe**
☑ **Roadway Box**

| SOIL/ROCK CONDITIONS | BOREHOLE BACKFILL |
|---|---|
| ASPHALT | 0 |
| 0.4 | CONCRETE |
| LACUSTRINE | |
| | 1.5 |
| 10.5 | BENTONITE/<br>GROUT MIXTURE |
| GLACIAL<br>TILL | |
| | 29.4<br>BENTONITE<br>SEAL |
| | 34.3 |
| 38.5<br>LACUSTRINE | #00<br>QUARTZ<br>SAND |
| 44.0<br>GLACIAL<br>TILL | |
| 48 | 48 |

(Numbers refer to depth from ground surface in feet)



(Not to Scale)

| | | |
|---|---|---|
| **Type of protective lock** | Master Lock Key #2342 | |
| **Height of top of guard roadway box above ground surface** | 0.0 | ft |
| **Height of top of riser pipe above ground surface** | -0.55 | ft |
| **Type of protective casing:** | Roadway Box | |
| **Length** | 1.08 | ft |
| **Inside Diameter** | 8.0 | in |
| **Depth of bottom of guard roadway box** | 1.0 | ft |

| Type of Seals | Top of Seal (ft) | Thickness (ft) |
|---|---|---|
| Concrete | 0 | 1.5 |
| Cement-Bentonite Grout | 1.5 | 27.9 |
| Bentonite Seal | 29.4 | 4.9 |
| #00 Sand Pack | 34.3 | 13.7 |

| | | |
|---|---|---|
| **Type of riser pipe:** | Sch. 40 PVC | |
| **Inside diameter of riser pipe** | 2 | in |
| **Type of backfill around riser** | Bentonite Grout, Bentonite | |
| **Diameter of borehole** | 9.0 | in |
| **Depth to top of well screen** | 37.0 | ft |
| **Type of screen** | Slotted Sch. 40 PVC | |
| **Screen gauge or size of openings** | 0.010 | in |
| **Diameter of screen** | 2.0 | in |
| **Type of backfill around screen** | #00 Sand | |
| **Depth of bottom of well screen** | 47.0 | ft |
| **Bottom of Silt trap** | 47.11 | ft |
| **Depth of bottom of borehole** | 48.0 | ft |

ft + ft + ft = ft
Riser Pay Length (L1) Length of screen (L2) Length of silt trap (L3) Pay length

**COMMENTS:**

Form # 3010

HALEY & ALDRICH

# OBSERVATION WELL INSTALLATION REPORT

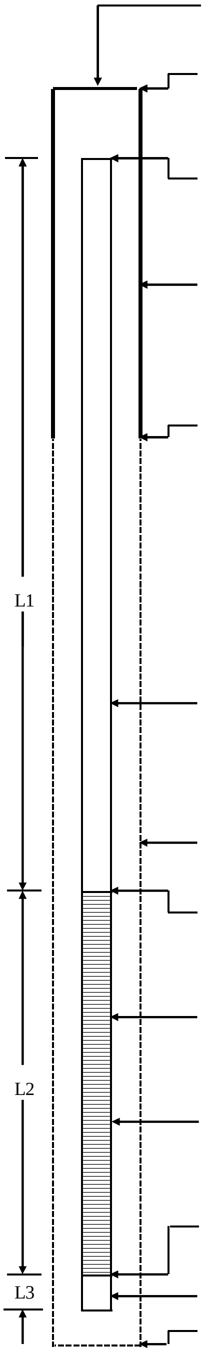
**Well No.** HA-2
**Boring No.** HA-2

| | | | |
|---|---|---|---|
| **PROJECT** | Site Investigation and Environmental Consulting Services | **H&A FILE NO.** | 33587-001 |
| **LOCATION** | Surban Plaza, 2199 East Henrietta, New York | **PROJECT MGR.** | L. Turturro |
| **CLIENT** | Wilmorite, Inc. | **FIELD REP.** | D. Nostrant |
| **CONTRACTOR** | Nothnagle Drilling, Inc. | **DATE INSTALLED** | 01/18/07 |
| **DRILLER** | S. Loranty | **WATER LEVEL** | 32.90 (1/23/07) |

**Ground El.** 572 ft
**El. Datum** NGVD29
**Location** SEE PLAN
☐ **Guard Pipe**
☑ **Roadway Box**

| SOIL/ROCK CONDITIONS | BOREHOLE BACKFILL |
|---|---|
| 0<br>LACUSTRINE | 0<br>CONCRETE |
| | 1.0<br>CEMENT-BENTONITE GROUT |
| 10.0<br>GLACIAL TILL | |
| | 23<br>BENTONITE SEAL |
| 35.0<br>LACUSTRINE | 28.0<br>#00 QUARTZ SAND |
| 36.5<br>GLACIAL TILL | |
| 42 | 42 |

(Numbers refer to depth from ground surface in feet)



(Not to Scale)

**Type of protective lock** Bolted Steel

**Height of top of guard roadway box above ground surface** 0.0 **ft**

**Height of top of riser pipe above ground surface** 0.25 **ft**

**Type of protective casing:** Flushmount Roadway Box
**Length** 1.0 **ft**
**Inside Diameter** 8.0 **in**

**Depth of bottom of guard roadway box** 1.0 **ft**

| Type of Seals | Top of Seal (ft) | Thickness (ft) |
|---|---|---|
| Concrete | 0.0 | 1.0 |
| Cement-Bentonite Grout | 1.0 | 22.0 |
| Bentonite Seal | 23.0 | 5.0 |
| #00 Sand Pack | 28.0 | 12.0 |

**Type of riser pipe:** PVC
**Inside diameter of riser pipe** 2.0 **in**
**Type of backfill around riser** See Diagram

**Diameter of borehole** 8.0 in. ± **in**

**Depth to top of well screen** 30.0 **ft**

**Type of screen** Slotted PVC
**Screen gauge or size of openings** 0.010 **in**
**Diameter of screen** 2.0 **in**
**Type of backfill around screen** No. 00 Quartz Sand

**Depth of bottom of well screen** 40.0 **ft**

**Bottom of Silt trap** 40.0 **ft**

**Depth of bottom of borehole** 42.0 **ft**

ft + ft + ft = ft
Riser Pay Length (L1) + Length of screen (L2) + Length of silt trap (L3) = Pay length

**COMMENTS:**

Form # 3010

HALEY & ALDRICH

# OBSERVATION WELL INSTALLATION REPORT

**Well No.** HA-3

**Boring No.** HA-3

**PROJECT** Site Investigation and Environmental Consulting Services
**LOCATION** Surban Plaza, 2199 East Henrietta, New York
**CLIENT** Wilmorite, Inc.
**CONTRACTOR** Nothnagle Drilling, Inc.
**DRILLER** S. Loranty

**H&A FILE NO.** 33587-001
**PROJECT MGR.** L. Turturro
**FIELD REP.** D. Nostrant
**DATE INSTALLED** 01/18/07
**WATER LEVEL** 25.54 (1/23/07)

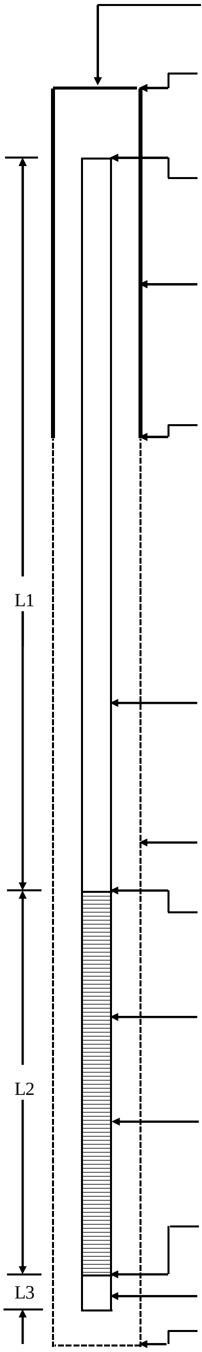
**Ground El.** 571 ft
**El. Datum** NGVD29

**Location** SEE PLAN

☑ **Guard Pipe**
☐ **Roadway Box**

| SOIL/ROCK CONDITIONS | BOREHOLE BACKFILL |
|---|---|
| 0<br>LACUSTRINE | 0<br>CONCRETE |
| | 2.2 |
| 10.0<br>GLACIAL TILL | CEMENT-BENTONITE GROUT |
| | 23.0<br>BENTONITE SEAL |
| 28.5<br>LACUSTRINE | 28.0<br>#00 QUARTZ SAND |
| 42 | 42 |

(Numbers refer to depth from ground surface in feet)



(Not to Scale)

**Type of protective lock** Hinged Steel/Padlock

**Height of top of guard roadway box above ground surface** 2.8 ft

**Height of top of riser pipe above ground surface** 2.45 ft

**Type of protective casing:** Galvanized Steel
**Length** 5.0 ft
**Inside Diameter** 4.0 in. x 4.0 in. in

**Depth of bottom of guard roadway box** 2.20 ft

| Type of Seals | Top of Seal (ft) | Thickness (ft) |
|---|---|---|
| Concrete | 0.0 | 2.2 |
| Cement-Bentonite Grout | 2.2 | 20.8 |
| Bentonite Seal | 23.0 | 5.0 |
| #00 Sand Pack | 28.0 | 14.0 |

**Type of riser pipe:** PVC
**Inside diameter of riser pipe** 2.0 in
**Type of backfill around riser** See Diagram

**Diameter of borehole** 8.0 in. ± in

**Depth to top of well screen** 30.0 ft

**Type of screen** Slotted PVC
**Screen gauge or size of openings** 0.010 in
**Diameter of screen** 2.0 in
**Type of backfill around screen** No. 00 Quartz Sand

**Depth of bottom of well screen** 40.0 ft

**Bottom of Silt trap** 40.0 ft

**Depth of bottom of borehole** 42.0 ft

| | | | |
|---|---|---|---|
| ft + | ft + | ft = | ft |
| Riser Pay Length (L1) | Length of screen (L2) | Length of silt trap (L3) | Pay length |

**COMMENTS:**

# OBSERVATION WELL INSTALLATION REPORT

HALEY & ALDRICH

**Well No.** HA-4

**Boring No.**

**PROJECT** Site Investigation and Environmental Consulting Services

**H&A FILE NO.** 33587-001

**LOCATION** Surban Plaza, 2199 East Henrietta, New York

**PROJECT MGR.** L. Turturro

**CLIENT** Wilmorite, Inc.

**FIELD REP.** D. Nostrant

**CONTRACTOR** Nothnagle Drilling, Inc.

**DATE INSTALLED** 01/17/07

**DRILLER** S. Loranty

**WATER LEVEL** 24.55 (1/23/07)

**Ground El.** 571 ft

**El. Datum** NGVD29

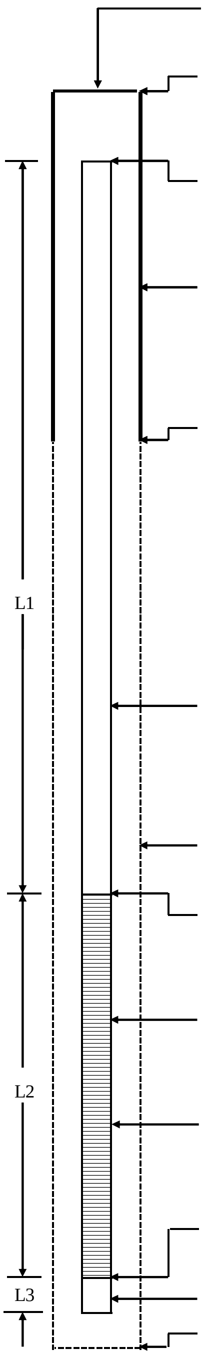
**Location** SEE PLAN

☑ **Guard Pipe**

☐ **Roadway Box**

| SOIL/ROCK CONDITIONS | BOREHOLE BACKFILL |
|---|---|
| 0<br>LACUSTRINE | 0<br>CONCRETE |
| | 2.0<br>CEMENT-BENTONITE GROUT |
| 13.5<br>GLACIAL TILL | |
| | 23.0<br>BENTONITE SEAL |
| 33.5<br>LACUSTRINE | 28<br>#00 QUARTZ SAND |
| 40.0<br>GLACIAL TILL | |
| 42 | 42 |

(Numbers refer to depth from ground surface in feet)



**Type of protective lock** Hinged Steel/Padlock

**Height of top of guard roadway box above ground surface** 3.0 ft

**Height of top of riser pipe above ground surface** 2.7 ft

**Type of protective casing:** Galvanized Steel

**Length** 5.0 ft

**Inside Diameter** 4.0 in. x 4.0 in. in

**Depth of bottom of guard roadway box** 2.0 ft

| Type of Seals | Top of Seal (ft) | Thickness (ft) |
|---|---|---|
| Concrete | 0.0 | 2.0 |
| Cement-Bentonite Grout | 2.0 | 21.0 |
| Bentonite Seal | 23.0 | 5.0 |
| #00 Sand Pack | 28.0 | 14.0 |

**Type of riser pipe:** PVC

**Inside diameter of riser pipe** 2.0 in

**Type of backfill around riser** See Diagram

**Diameter of borehole** 8.0 in. ± in

**Depth to top of well screen** 30.0 ft

**Type of screen** Slotted PVC

**Screen gauge or size of openings** 0.010 in

**Diameter of screen** 2.0 in

**Type of backfill around screen** No. 00 Quartz Sand

**Depth of bottom of well screen** 40.0 ft

**Bottom of Silt trap** 40.0 ft

**Depth of bottom of borehole** 42.0 ft

**(Not to Scale)**

ft + ft + ft = ft

Riser Pay Length (L1) + Length of screen (L2) + Length of silt trap (L3) = Pay length

**COMMENTS:**

Form # 3010

HALEY & ALDRICH

# OBSERVATION WELL INSTALLATION REPORT

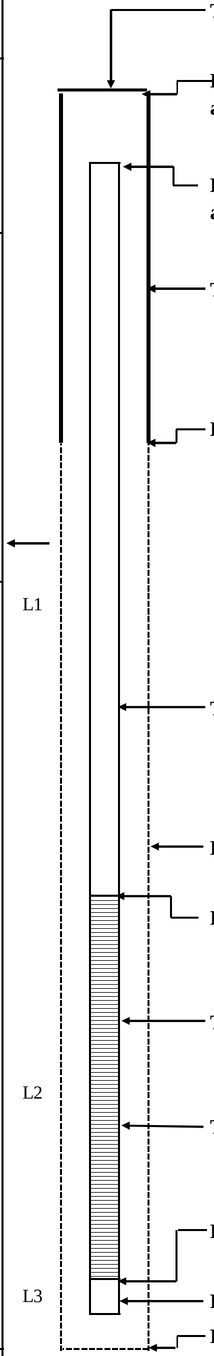
**Well No.** HA-105
**Boring No.** HA-105

| | | | |
|---|---|---|---|
| **PROJECT** | Site Investigation and Environmental Consulting Services | **H&A FILE NO.** | 33587-001 |
| **LOCATION** | Surban Plaza, 2199 East Henrietta, New York | **PROJECT MGR.** | L. Turturro |
| **CLIENT** | Wilmorite, Inc. | **FIELD REP.** | D. Nostrant |
| **CONTRACTOR** | Nothnagle Drilling, Inc. | **DATE INSTALLED** | 12/02/08 |
| **DRILLER** | K. Busch | **WATER LEVEL** | 1.88 |

**Ground El.** 563 ft
**El. Datum** NGVD29
**Location** SEE PLAN
☑ **Guard Pipe**
☐ **Roadway Box**

| SOIL/ROCK CONDITIONS | BOREHOLE BACKFILL |
|---|---|
| 0 | 0 |
| | CONCRETE |
| FILL | 1.0 |
| | HYDRATED BENTONITE CHIPS |
| 4.0 | |
| | 5.6 |
| LACUSTRINE | |
| | OON QUARTZ SAND |
| 14.0 | |
| GLACIAL TILL | |
| 16.6 | 16.6 |

(Numbers refer to depth from ground surface in feet)



**Type of protective lock** Hinged Steel/Padlock

**Height of top of guard pipe above ground surface** 1.6 ft

**Height of top of riser pipe above ground surface** 1.25 ft

**Type of protective casing:** Galvanized Steel
**Length** 5.0 ft
**Inside Diameter** 4.0 in. x 4.0 in. in

**Depth of bottom of guard roadway box** 3.75 ft

| **Type of Seals** | | |
|---|---|---|
| Concrete | 0.0 | 1.0 |
| Bentonite Seal | 1.0 | 4.6 |
| #00 Sand Pack | 5.6 | 11.0 |

**Type of riser pipe:** PVC
**Inside diameter of riser pipe** 2.0 in
**Type of backfill around riser** See Diagram

**Diameter of borehole** 8.0 in. ± in

**Depth to top of well screen** 6.6 ft

**Type of screen** Slotted PVC
**Screen gauge or size of openings** 0.010 in
**Diameter of screen** 2.0 in
**Type of backfill around screen** OON Quartz Sand

**Depth of bottom of well screen** 16.6 ft

**Bottom of Silt trap** 16.6 ft

**Depth of bottom of borehole** 16.6 ft

**(Not to Scale)**

| | | | | | | |
|---|---|---|---|---|---|---|
| ft | + | ft | + | ft | = | ft |
| Riser Pay Length (L1) | | Length of screen (L2) | | Length of silt trap (L3) | | Pay length |

**COMMENTS:**

Form # 3010

HALEY & ALDRICH

# OBSERVATION WELL INSTALLATION REPORT

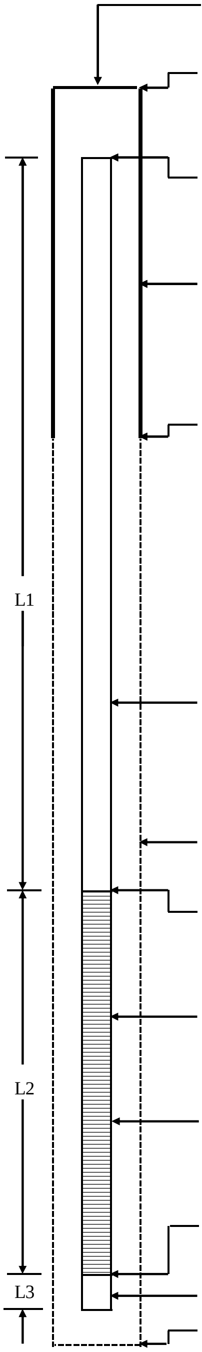
**Well No.** HA-106
**Boring No.** HA-106

| | | | |
|---|---|---|---|
| **PROJECT** | Site Investigation and Environmental Consulting Services | **H&A FILE NO.** | 33587-001 |
| **LOCATION** | Surban Plaza, 2199 East Henrietta, New York | **PROJECT MGR.** | L. Turturro |
| **CLIENT** | Wilmorite, Inc. | **FIELD REP.** | D. Nostrant |
| **CONTRACTOR** | Nothnagle Drilling, Inc. | **DATE INSTALLED** | 12/02/08 |
| **DRILLER** | K. Busch | **WATER LEVEL** | 1.95 |

**Ground El.** 563.4 ft
**El. Datum** NGVD29
**Location** SEE PLAN
☑ **Guard Pipe**
☐ **Roadway Box**

| **SOIL/ROCK CONDITIONS** | **BOREHOLE BACKFILL** |
|---|---|
| 0 | 0 |
| FILL | CONCRETE |
| | 1.0 |
| 3.0 | HYDRATED BENTONITE CHIPS |
| LACUSTRINE | 5.1 |
| | OON QUARTZ SAND |
| 11.0 | |
| GLACIAL TILL | |
| **16.1** | **16.1** |

(Numbers refer to depth from ground surface in feet)



**Type of protective lock** Hinged Steel/Padlock

**Height of top of guard pipe above ground surface** 1.8 ft

**Height of top of riser pipe above ground surface** 1.45 ft

**Type of protective casing:** Galvanized Steel
**Length** 5.0 ft
**Inside Diameter** 4.0 in. x 4.0 in. in

**Depth of bottom of guard roadway box** 3.25 ft

**Type of Seals**

| | | |
|---|---|---|
| Concrete | 0.0 | 1.0 |
| Bentonite Seal | 1.0 | 4.1 |
| #00 Sand Pack | 5.1 | 11.0 |

**Type of riser pipe:** PVC
**Inside diameter of riser pipe** 2.0 in
**Type of backfill around riser** See Diagram

**Diameter of borehole** 8.0 in. ± in

**Depth to top of well screen** 6.1 ft

**Type of screen** Slotted PVC
**Screen gauge or size of openings** 0.010 in
**Diameter of screen** 2.0 in
**Type of backfill around screen** OON Quartz Sand

**Depth of bottom of well screen** 16.1 ft

**Bottom of Silt trap** 16.1 ft

**Depth of bottom of borehole** 16.1 ft

**(Not to Scale)**

ft + ft + ft = ft
Riser Pay Length (L1) + Length of screen (L2) + Length of silt trap (L3) = Pay length

**COMMENTS:**

Form # 3010

HALEY & ALDRICH

# OBSERVATION WELL INSTALLATION REPORT

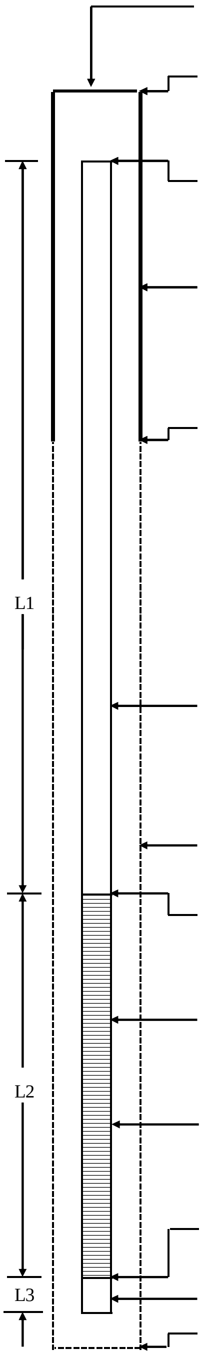
**Well No.** HA-107
**Boring No.** HA-107

**PROJECT** Site Investigation and Environmental Consulting Services
**LOCATION** Surban Plaza, 2199 East Henrietta, New York
**CLIENT** Wilmorite, Inc.
**CONTRACTOR** Nothnagle Drilling, Inc.
**DRILLER** K. Busch
**H&A FILE NO.** 33587-001
**PROJECT MGR.** L. Turturro
**FIELD REP.** D. Nostrant
**DATE INSTALLED** 12/01/08
**WATER LEVEL** 7.48

**Ground El.** 570 ft
**El. Datum** NGVD29
**Location** SEE PLAN
☑ **Guard Pipe**
☐ **Roadway Box**

| SOIL/ROCK CONDITIONS | BOREHOLE BACKFILL |
|---|---|
| 0 | 0 |
| | CONCRETE |
| FILL | 1.8 |
| | HYDRATED BENTONITE PELLETS |
| 3.2 | |
| | 3.8 |
| LACUSTRINE | SILICA SAND |
| 13.5 | |
| GLACIAL TILL | |
| 15 | 15 |

(Numbers refer to depth from ground surface in feet)



**Type of protective lock** Steel/Padlock
**Height of top of guard pipe above ground surface** 3.0 ft
**Height of top of riser pipe above ground surface** 2.8 ft
**Type of protective casing:** Galvanized Steel
**Length** 5.0 ft
**Inside Diameter** 4.0 in. x 4.0 in. in
**Depth of bottom of guard roadway box** 2.0 ft

| Type of Seals | Top of Seal (ft) | Thickness (ft) |
|---|---|---|
| Concrete | 0.0 | 1.8 |
| Bentonite Seal | 1.8 | 2.0 |
| #00 Sand Pack | 3.8 | 11.2 |

**Type of riser pipe:** PVC
**Inside diameter of riser pipe** 2.0 in
**Type of backfill around riser** See Diagram
**Diameter of borehole** 8.0 in. ± in
**Depth to top of well screen** 5.0 ft
**Type of screen** Slotted PVC
**Screen gauge or size of openings** 0.010 in
**Diameter of screen** 2.0 in
**Type of backfill around screen** Silica Sand
**Depth of bottom of well screen** 15.0 ft
**Bottom of Silt trap** 15.0 ft
**Depth of bottom of borehole** 15.0 ft

**(Not to Scale)**

_____ ft + _____ ft + _____ ft = _____ ft
Riser Pay Length (L1) + Length of screen (L2) + Length of silt trap (L3) = Pay length

**COMMENTS:**

Form # 3010

HALEY & ALDRICH

# OBSERVATION WELL INSTALLATION REPORT

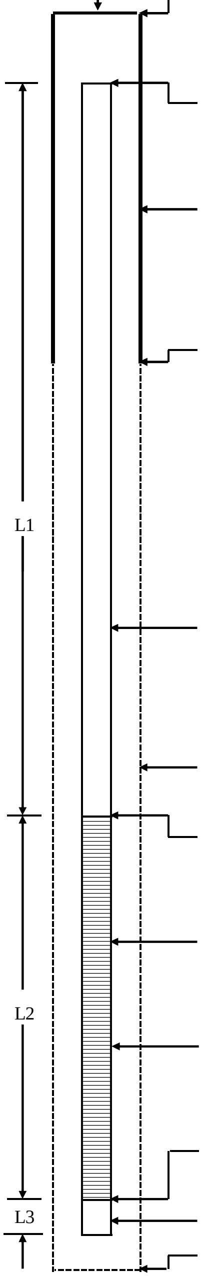
**Well No.** MW-15R
**Boring No.** MW-15W

| | | | |
|---|---|---|---|
| **PROJECT** | Site Investigation and Environmental Consulting Services | **H&A FILE NO.** | 33587-001 |
| **LOCATION** | Surban Plaza, 2199 East Henrietta, New York | **PROJECT MGR.** | L. Turturro |
| **CLIENT** | Wilmorite, Inc. | **FIELD REP.** | D. Nostrant |
| **CONTRACTOR** | Nothnagle Drilling, Inc. | **DATE INSTALLED** | 12/02/08 |
| **DRILLER** | K. Busch | **WATER LEVEL** | 6.69 |

**Ground El.** 573 ft
**El. Datum** NGVD29
**Location** SEE PLAN
☐ **Guard Pipe**
☑ **Roadway Box**

| **SOIL/ROCK CONDITIONS** | **BOREHOLE BACKFILL** |
|---|---|
| SOIL/ ROCK CONDITIONS NOT DESCRIBED (REPLACEMENT WELL) | CONCRETE |
| | 1.0 |
| | HYDRATED BENTONITE CHIPS |
| | 9.5 |
| | OON QUARTZ SAND |
| 15.5 | 15.5 |

(Numbers refer to depth from ground surface in feet)



**Type of protective lock** Bolted Steel/Padlock

**Height of top of guard pipe above ground surface** 0.0 **ft**

**Depth of top of riser pipe below ground surface** 0.60 **ft**

**Type of protective casing:** Roadway Box
**Length** 1.0 **ft**
**Inside Diameter** 8.0 **in**

**Depth of bottom of guard roadway box** 1.0 **ft**

| **Type of Seals** | **Top of Seal (ft)** | **Thickness (ft)** |
|---|---|---|
| Concrete | 0.0 | 1.0 |
| Bentonite Seal | 1.0 | 8.5 |
| #00 Sand Pack | 9.5 | 6.0 |

**Type of riser pipe:** PVC
**Inside diameter of riser pipe** 2.0 **in**
**Type of backfill around riser** See Diagram

**Diameter of borehole** 8.0 in. ± **in**

**Depth to top of well screen** 10.5 **ft**

**Type of screen** Slotted PVC
**Screen gauge or size of openings** 0.010 **in**
**Diameter of screen** 2.0 **in**
**Type of backfill around screen** OON Quartz Sand

**Depth of bottom of well screen** 15.5 **ft**
**Bottom of Silt trap** 15.5 **ft**
**Depth of bottom of borehole** 15.5 **ft**

**(Not to Scale)**

_____ ft + _____ ft + _____ ft = _____ ft
Riser Pay Length (L1) + Length of screen (L2) + Length of silt trap (L3) = Pay length

**COMMENTS:**

Form # 3010

HALEY & ALDRICH

# OBSERVATION WELL INSTALLATION REPORT

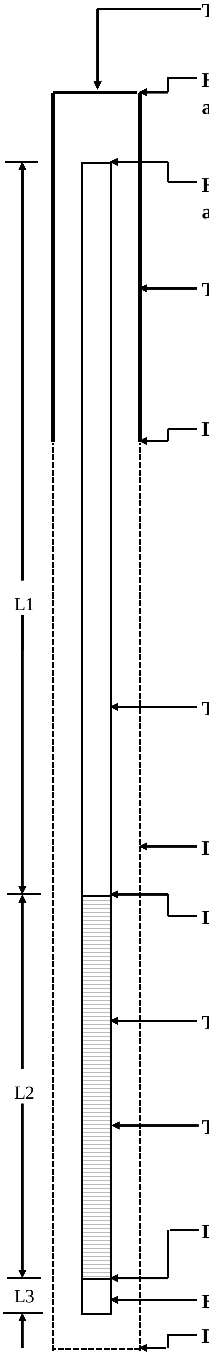
**Well No.** MW-18R
**Boring No.** MW-18W

| | | | |
|---|---|---|---|
| **PROJECT** | Suburban Plaza Ongoing Site Characterization | **H&A FILE NO.** | 33587-002 |
| **LOCATION** | Henrietta, NY | **PROJECT MGR.** | G. White |
| **CLIENT** | Wilmorite, Inc. | **FIELD REP.** | D. Nostrant |
| **CONTRACTOR** | Nothnagle Drilling | **DATE INSTALLED** | 11/9/2009 |
| **DRILLER** | J. Schweitzer | **WATER LEVEL** | 6.4 |

**Ground El.** 572 ft
**El. Datum** NGVD29
**Location** At previusly completed excavation area
☑ **Guard Pipe**
☐ **Roadway Box**

| **SOIL/ROCK CONDITIONS** | **BOREHOLE BACKFILL** |
|---|---|
| ROCK/SOIL CONDITIONS NOT OBSERVED | CONCRETE |
| | 1.0 |
| (REPLACEMENT WELL) | HYDRATED BENTONITE |
| | 8.0 |
| | MORIE NO. 00N QUARTZ SAND |
| | 15.1 |

**(Bottom of Exploration)**
(Numbers refer to depth from ground surface in feet)



(Not to Scale)

**Type of protective cover/lock** Bolted Steel/Padlock

**Height/Depth of top of guard pipe/roadway box above/below ground surface** 0.0 ft

**Height/Depth of top of riser pipe above/below ground surface** 0.4 ft

**Type of protective casing:** Flushmount Roadbox
**Length** 1.0 ft
**Inside Diameter** 8.000 in

**Depth of bottom of guard pipe/roadway box** 1.0 ft

| **Type of Seals** | **Top of Seal (ft)** | **Thickness (ft)** |
|---|---|---|
| Concrete | 0.0 | 1.0 |
| Bentonite Seal | 1.0 | 7.0 |
| #00 Sand Pack | 8.0 | 7.1 |
| | | |

**Type of riser pipe:** PVC
**Inside diameter of riser pipe** 2.0 in
**Type of backfill around riser** See Diagram

**Diameter of borehole** 8.0 + - in

**Depth to top of well screen** 10.1 ft

**Type of screen** Slotted PVC
**Screen gauge or size of openings** 0.0 in
**Diameter of screen** 2.0 in
**Type of backfill around screen** Morie No. 00N Quartz Sand

**Depth of bottom of well screen** 15.1 ft

**Bottom of Silt trap** 15.1 ft

**Depth of bottom of borehole** 15.1 ft

___ ft + ___ ft + ___ ft = ___ ft
Riser Pay Length (L1) + Length of screen (L2) + Length of silt trap (L3) = Pay length

**COMMENTS:**

Form # 3010

# OBSERVATION WELL INSTALLATION REPORT

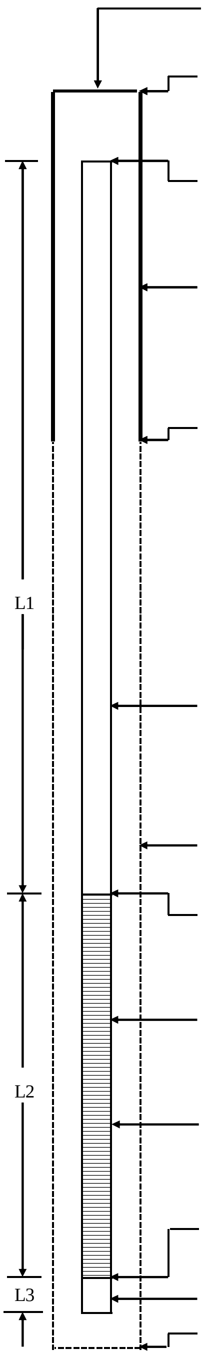
**Well No.** MW-22R
**Boring No.** MW-22W

| | | | |
|---|---|---|---|
| **PROJECT** | Site Investigation and Environmental Consulting Services | **H&A FILE NO.** | 33587-001 |
| **LOCATION** | Surban Plaza, 2199 East Henrietta, New York | **PROJECT MGR.** | L. Turturro |
| **CLIENT** | Wilmorite, Inc. | **FIELD REP.** | D. Nostrant |
| **CONTRACTOR** | Nothnagle Drilling, Inc. | **DATE INSTALLED** | 12/02/08 |
| **DRILLER** | K. Busch | **WATER LEVEL** | 8.43 |

**Ground El.** 571.5 ft
**El. Datum** NGVD29
**Location** SEE PLAN
☐ **Guard Pipe**
☑ **Roadway Box**

| **SOIL/ROCK CONDITIONS** | **BOREHOLE BACKFILL** |
|---|---|
| ROCK/SOIL CONDITIONS NOT OBSERVED<br>(REPLACEMENT WELL) | CONCRETE |
| | 1.0 |
| | HYDRATED BENTONITE CHIPS |
| | 4.2 |
| | OON QUARTZ SAND |
| 15.2 | 15.2 |

(Numbers refer to depth from ground surface in feet)



**Type of protective lock** Bolted Steel/Padlock

**Height of top of guard pipe above ground surface** 0.0 **ft**

**Depth of top of riser pipe below ground surface** 0.5 **ft**

**Type of protective casing:** Roadway Box
**Length** 1.0 **ft**
**Inside Diameter** 8.0 **in**

**Depth of bottom of guard roadway box** 1.0 **ft**

| **Type of Seals** | **Top of Seal (ft)** | **Thickness (ft)** |
|---|---|---|
| Concrete | 0.0 | 1.0 |
| Bentonite Seal | 1.0 | 3.2 |
| #00 Sand Pack | 4.2 | 11.0 |

**Type of riser pipe:** PVC
**Inside diameter of riser pipe** 2.0 **in**
**Type of backfill around riser** See Diagram

**Diameter of borehole** 8.0 in. ± **in**

**Depth to top of well screen** 5.2 **ft**

**Type of screen** Slotted PVC
**Screen gauge or size of openings** 0.010 **in**
**Diameter of screen** 2.0 **in**
**Type of backfill around screen** OON Quartz Sand

**Depth of bottom of well screen** 15.2 **ft**

**Bottom of Silt trap** 15.2 **ft**

**Depth of bottom of borehole** 15.2 **ft**

**(Not to Scale)**

ft + ft + ft = ft
Riser Pay Length (L1) Length of screen (L2) Length of silt trap (L3) Pay length

**COMMENTS:**

Form # 3010

# OBSERVATION WELL INSTALLATION REPORT

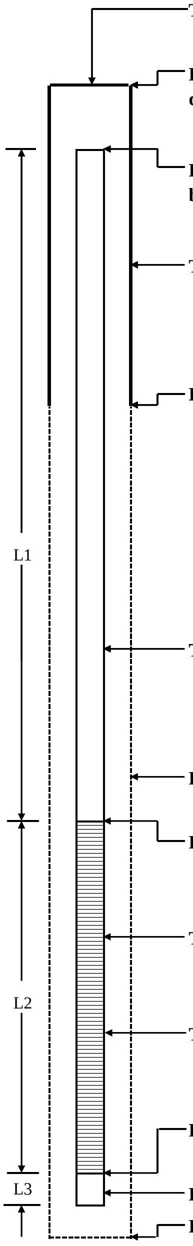
**Well No.** HA-208
**Boring No.** HA-208

| | | | |
|---|---|---|---|
| **PROJECT** | United Cleaners | **H&A FILE NO.** | 33587-002 |
| **LOCATION** | Rocehster, New York | **PROJECT MGR.** | L. Turturro |
| **CLIENT** | SP Associates, LP | **FIELD REP.** | B. Zinni |
| **CONTRACTOR** | Nothnagle Drilling, Inc. | **DATE INSTALLED** | 08/11/09 |
| **DRILLER** | J. Sweitzer | **WATER LEVEL** | |

**Ground El.** 558 ft
**El. Datum** NGVD29
**Location** SEE PLAN
☐ **Guard Pipe**
☐ **Roadway Box**

| **SOIL/ROCK CONDITIONS** | **BOREHOLE BACKFILL** |
|---|---|
| 0.0<br>GRAVEL | CONCRETE |
| 0.2<br>FILL | 1.0<br>BENTONITE CHIPS |
| 4.5<br>LACUSTRINE | 4.0<br>QUARTZ SAND |
| 11.5<br>GLACIAL TILL | |
| 15 | 15 |

(Numbers refer to depth from ground surface in feet)



**Type of protective lock** Padlock

**Height of top of guard pipe depth of top of riser below ground surface** 0.0 **ft**

**Depth of top of riser pipe below ground surface** 0.3 **ft**

**Type of protective casing:** Roadway Box
**Length** 1.0 **ft**
**Inside Diameter** 8.0 **in**

**Depth of bottom of guard roadway box** ______ **ft**

| **Type of Seals** | **Top of Seal (ft)** | **Thickness (ft)** |
|---|---|---|
| Concrete | 0.0 | 1.0 |
| Bentonite Seal | 1.0 | 3.0 |
| Quartz Sand | 4.0 | 11.0 |

**Type of riser pipe:** PVC
**Inside diameter of riser pipe** 2.0 **in**
**Type of backfill around riser** Quartz Sand/Bentonite

**Diameter of borehole** 8.0 **in**

**Depth to top of well screen** 5.0 **ft**

**Type of screen** PVC
**Screen gauge or size of openings** 0.010 **in**
**Diameter of screen** 2.0 **in**
**Type of backfill around screen** Quartz Sand

**Depth of bottom of well screen** 15.0 **ft**

**Bottom of Silt trap** 15.0 **ft**

**Depth of bottom of borehole** 15.0 **ft**

**(Not to Scale)**

______ ft + ______ ft + ______ ft = ______ ft
Riser Pay Length (L1) + Length of screen (L2) + Length of silt trap (L3) = Pay length

**COMMENTS:**

HALEY & ALDRICH

# OBSERVATION WELL INSTALLATION REPORT

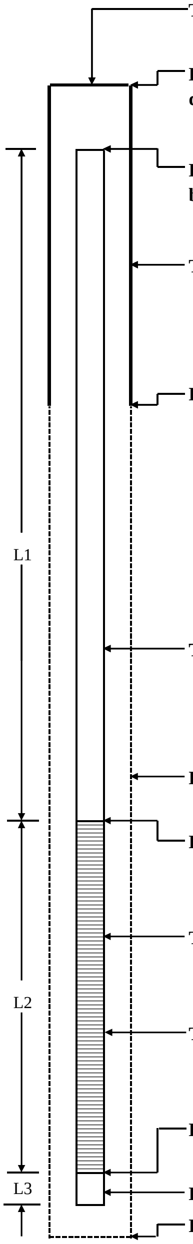
**Well No.** HA-209
**Boring No.** HA-209

| | | | |
|---|---|---|---|
| **PROJECT** | United Cleaners | **H&A FILE NO.** | 33587-002 |
| **LOCATION** | Rocehster, New York | **PROJECT MGR.** | L. Turturro |
| **CLIENT** | SP Associates, LP | **FIELD REP.** | B. Zinni |
| **CONTRACTOR** | Nothnagle Drilling, Inc. | **DATE INSTALLED** | 08/11/09 |
| **DRILLER** | J. Sweitzer | **WATER LEVEL** | |

**Ground El.** 560.5 ft
**El. Datum** NGVD29
**Location** SEE PLAN
☐ **Guard Pipe**
☐ **Roadway Box**

| **SOIL/ROCK CONDITIONS** | **BOREHOLE BACKFILL** |
|---|---|
| | CONCRETE |
| | 1 |
| | BENTONITE CHIPS |
| | 9.0 |
| | QUARTZ SAND |
| 20 | 20 |

(Numbers refer to depth from ground surface in feet)



**Type of protective lock** Padlock

**Height of top of guard pipe depth of top of riser below ground surface** 0.0 **ft**

**Depth of top of riser pipe below ground surface** 0.3 **ft**

**Type of protective casing:** Roadway Box
**Length** 1.0 **ft**
**Inside Diameter** 8.0 **in**

**Depth of bottom of guard roadway box** 1.0 **ft**

| **Type of Seals** | **Top of Seal (ft)** | **Thickness (ft)** |
|---|---|---|
| Concrete | 0.0 | 1.0 |
| Bentonite Seal | 1.0 | 3.0 |
| Quartz Sand | 9.0 | 11.0 |

**Type of riser pipe:** PVC
**Inside diameter of riser pipe** 2.0 **in**
**Type of backfill around riser** Quartz Sand/Bentonite

**Diameter of borehole** 8.0 **in**

**Depth to top of well screen** 10.0 **ft**

**Type of screen** PVC
**Screen gauge or size of openings** 0.010 **in**
**Diameter of screen** 2.0 **in**
**Type of backfill around screen** Quartz Sand

**Depth of bottom of well screen** 20.0 **ft**

**Bottom of Silt trap** 20.0 **ft**

**Depth of bottom of borehole** 20.0 **ft**

**(Not to Scale)**

ft + ft + ft = ft
Riser Pay Length (L1) + Length of screen (L2) + Length of silt trap (L3) = Pay length

**COMMENTS:**

# APPENDIX E

## FIELD FORMS

## Static Water Levels

Location (Site/Facility Name): ______________________
Location (Address): ______________________
Client: ______________________

Date: ______________________
Performed By: ______________________
Job Number: ______________________

| Well ID | Riser Elevation (NGVD 29) | Water Level (from Top of Riser) |
|---|---|---|
| **HA-1** | **572.57** | |
| **HA-2** | **571.69** | |
| **HA-3** | **573.83** | |
| **HA-4** | **573.36** | |
| **MW-15R** | **572.24** | |
| **MW-22R** | **571.07** | |
| **MW-18R** | **571.27** | |
| **HA-105** | **564.87** | |
| **HA-106** | **564.89** | |
| **HA-107** | **573.06** | |
| **HA-208** | **557.28** | |
| **HA-209** | **564.25** | |

**Visual Inspection of System:**

**Recommendation Actions:**

**Description of Past Year Activities:**

# GROUNDWATER SAMPLING RECORD

**Page** **of**

**PROJECT**

**LOCATION**

**CLIENT**

**CONTRACTOR**

**H&A FILE NO.**

**PROJECT MGR.**

**FIELD REP**

**DATE**

## GROUNDWATER SAMPLING INFORMATION

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Well No. | | | | | | | |
| Water Depth (ft) | | | | | | | |
| Time | | | | | | | |
| Product | | | | | | | |
| Depth Of Well (ft) | | | | | | | |
| Inside Diameter (in) | | | | | | | |
| Standing Water Depth (ft) (1) | | | | | | | |
| Volume Of Water In Well (gal) | | | | | | | |
| Purging Device | | | | | | | |
| Volume of Bailer/Pump Capacity | | | | | | | |
| Cleaning Procedure | | | | | | | |
| Bails Removed/ Volume Removed | | | | | | | |
| Time Purging Started | | | | | | | |
| Time Purging Stopped | | | | | | | |
| Sampling Device | | | | | | | |
| Cleaning Procedure | | | | | | | |
| TIME SAMPLES TAKEN | VOCs | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| PARAMETERS | Color | | | | | | |
| | Odor | | | | | | |
| | pH | | | | | | |
| | Conductivity | | | | | | |
| | Turbidity | | | | | | |
| | Dissolved Oxygen | | | | | | |
| | Temp, $^0$ C | | | | | | |
| | Salinity | | | | | | |

Remarks: (ie: field filtrations, persons communicated with at site, etc.)

1. Standing Water Depth = Depth of Well - Water Depth

Form 3005

# Monthly Monitoring Form for SSD System

Site/Facility Name: **United Cleaners**
Address: **2199 East Henrietta Road**
**Rochester, NY**
Client: **S-P Associates, L.P.**

| | | | | | | |
|---|---|---|---|---|---|---|
| Date | | | | | | |
| Time | | | | | | |
| Name | | | | | | |
| Company | | | | | | |
| Position | | | | | | |

| **Fan System** | Typical Range (in. w.c.) | Manometer (in.w.c.) | Manometer (in.w.c.) | Manometer (in.w.c.) | Manometer (in.w.c.) | Manometer (in.w.c.) | Manometer (in.w.c.) |
|---|---|---|---|---|---|---|---|
| **F-1** | 2.6 - 4.2 | | | | | | |
| **F-2** | 0.1 - 1.7 | | | | | | |
| **F-3** | 1.0 - 2.6 | | | | | | |
| **F-4** | 3.0 - 4.6 | | | | | | |
| **F-5** | 1.9 - 3.5 | | | | | | |
| **F-6** | 0.7 - 2.3 | | | | | | |
| **F-7** | 0.1 - 1.7 | | | | | | |
| **F-8** | 0.2 - 1.8 | | | | | | |
| **F-9** | 0.9 - 2.5 | | | | | | |
| **F-10** | 0.3 - 1.9 | | | | | | |

* Each month, provide the completed Monthly Monitoring Form to Haley & Aldrich via email (see below).
* Notify the appropriate environmental professional if manometer reading is outside of typical range.

Contact: Haley & Aldrich
Ben Drayn (BDrayn@haleyaldrich.com)
Mark Ramsdell (MRamsdell@haleyaldrich.com)
Phone: (585) 359-9000

**Site Inspection Form** **Reporting Period:** ____________________

Location (Site/Facility Name): ______________________________
Location (Address): ______________________________
Client: ______________________________

Date: ______________________________
Performed By: ______________________________
Job Number: ______________________________

Reason for Inspection: ☐ Annual Inspection
☐ Severe Weather Condition
☐ Other *(Describe)*
____________________

## 1. Site Use & Ownership

a. Current Site Use & Owner ______________________________

b. Has site use or owner changed since previous inspection? ☐ YES ☐ NO

*If "yes", describe:* ______________________________
______________________________
______________________________

*If "yes", was notification made to the NYSDEC?* ☐ YES ☐ NO

c. Have permits been issued for the property since previous inspection? ☐ YES ☐ NO

*If "yes", describe:* ______________________________
______________________________
______________________________

## 2. Engineering Controls (Cover System)

a. Are engineering controls (cover) in place and functioning as designed? ☐ YES ☐ NO

i. Pavement Area ☐ intact ☐ needs repair *describe*: ______________________________
______________________________

ii. Building Slab ☐ intact ☐ needs repair *describe*: ______________________________
______________________________

b. Have excavations occurred that breached the cover system? ☐ YES ☐ NO

*If "yes", describe:* ______________________________
______________________________
______________________________

*If "yes", was SMP followed (attach documentation to PRR)?* ☐ YES ☐ NO

## 3. Institutional Controls

a. Is the site in compliance with the environmental easement? ☐ YES ☐ NO ☐ UNKNOWN
b. Is the site being used for commercial/industrial use? ☐ YES ☐ NO ☐ UNKNOWN
c. Has groundwater been used for any purpose? ☐ YES ☐ NO ☐ UNKNOWN
d. Is work at the site being conducted in accordance with the SMP? ☐ YES ☐ NO ☐ UNKNOWN

**Site Inspection Form** **Reporting Period:** ____________________

## 4. Monitoring (indicate if/when monitoring was conducted during the reporting period)

a. Groundwater monitoring ☐ YES ☐ NO Dates: ____________________

b. Sub-slab vapor/Indoor air monitoring ☐ YES ☐ NO Dates: ____________________

## 5. Soil Export, Import, Re-Use During Reporting Period

a. Was soil imported to or excavated and re-used on the site? ☐ YES ☐ NO

*If "yes", describe:* ____________________________________________________________

____________________________________________________________

____________________________________________________________

*If "yes", was SMP followed (attach documentation to PRR)?* ☐ YES ☐ NO

b. Was soil excavated and disposed? ☐ YES ☐ NO

*If "yes", describe:* ____________________________________________________________

____________________________________________________________

____________________________________________________________

*If "yes", was SMP followed (attach documentation to PRR)?* ☐ YES ☐ NO

## 6. List of Tenants

| a. Are tenants the same since last inspection? | | | If No, new tenant: |
|---|---|---|---|
| Former Hollywood Video (currently vacant) | ☐ YES | ☐ NO | |
| Former Tooley's Furniture (currently vacant) | ☐ YES | ☐ NO | |
| AutoZone | ☐ YES | ☐ NO | |
| Family Dollar | ☐ YES | ☐ NO | |
| Chef King | ☐ YES | ☐ NO | |
| United Cleaners | ☐ YES | ☐ NO | |
| Henrietta Spa | ☐ YES | ☐ NO | |
| Vacant Space | ☐ YES | ☐ NO | |
| Country Max | ☐ YES | ☐ NO | |
| Redemption Center | ☐ YES | ☐ NO | |
| Other | | | |

### *Other Notes and Information:*

____________________________________________________________

____________________________________________________________

____________________________________________________________

____________________________________________________________

____________________________________________________________

____________________________________________________________

____________________________________________________________

____________________________________________________________

____________________________________________________________

# General Equipment Inspection Form for SSD System

Site/Facility Name: **United Cleaners**

Address: **2199 East Henrietta Road**
**Rochester, NY**

Client: **S-P Associates, L.P.**

| | | | |
|---|---|---|---|
| Date | | | |
| Time | | | |
| Name | | | |
| Company | | Instrument | |
| Position | | Serial No. | |

| **Test Point Location** | Vacuum (in.w.c.) | Visual Inspection | **Fan System** | Manometer (in.w.c.) | Visual Inspection | Inspection of Exhaust Point | Audible Inspection of Fan |
|---|---|---|---|---|---|---|---|
| **AZ-TP-3** | | | **F-1** | | | | |
| **AZ-TP-7** | | | **F-2** | | | | |
| **FD-TP-2** | | | **F-3** | | | | |
| **TP-18** | | | **F-4** | | | | |
| **VS-TP-8** | | | **F-5** | | | | |
| **CM-TP-1** | | | **F-6** | | | | |
| **CM-TP-8** | | | **F-7** | | | | |
| **LS-TP-3** | | | **F-8** | | | | |
| | | | **F-9** | | | | |
| | | | **F-10** | | | | |

* NR-Not recorded
* AR-Analog manometer reading

Visual Inspection of Complete System (fans, piping, labels, urethane seals, etc.):

Recommended Actions (Identification and repair of leaks):

Description of Activities Since Last Inspection:

Identification and Repair of Significant Floor Cracks:

Identification and Backdraft Analysis for Natural Draft Combustion Appliances:

# Routine Maintenance Form for SSD System

Site/Facility Name: **United Cleaners**
Address: **2199 East Henrietta Road**
**Rochester, NY**
Client: **S-P Associates, L.P.**

| | |
|---|---|
| Date | |
| Time | |
| Name | |
| Company | |
| Position | |

| Date of Repair | Maintenance Activities Conducted | Modifications to System |
|---|---|---|
| | | |

Additional Notes/Photos:

| Visual Inspection of Complete System (fans, piping, labels, urethane seals, etc.) after repair: |
|---|
| |

# Non-Routine Maintenance Form for SSD System

Site/Facility Name: **United Cleaners**
Address: **2199 East Henrietta Road**
**Rochester, NY**
Client: **S-P Associates, L.P.**

| | |
|---|---|
| Date | |
| Time | |
| Name | |
| Company | |
| Position | |

| Date of Repair | Description of Repair | Other Repairs/Adjustments |
|---|---|---|
| | | |

Additional Notes:

| Visual Inspection of Complete System (fans, piping, labels, urethane seals, etc.) after repair: |
|---|
| |

# APPENDIX F

## QUALITY ASSURANCE PROJECT PLAN

# QUALITY ASSURANCE PROJECT PLAN
# UNITED CLEANERS
**2199 EAST HENRIETTA ROAD**
**HENRIETTA, NEW YORK**
**NYSDEC SITE ID: 828152**

**by**

**Haley & Aldrich of New York**
**Rochester, New York**

**for**

**S-P Associates, L.P.**
**Rochester, New York**

**File No. 33587-005**
**October 2013**

## EXECUTIVE SUMMARY

This Quality Assurance Project Plan (QAPP) presents the organization, objectives, planned activities, and specific quality assurance / quality control (QA/QC) procedures associated with the site monitoring at the United Cleaners facility in Henrietta, New York ("the Site") in accordance with the New York State Department of Environmental Conservation (NYSDEC). Protocols for sample collection, sample handling and storage, chain-of-custody procedures, and laboratory and field analyses are described here in or specifically referenced to related investigation documents.

This QAPP addresses the QA/QC elements prescribed in the NYSDEC 6 NYCRR Part 375 Environmental Remediation Programs, 14 December 2006; and NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, 3 May 2010. The QA/QC procedures described in this QAPP have been developed to be consistent with current NYSDEC technical and administrative guidance memoranda in general.

## TABLE OF CONTENTS

## LIST OF TABLES

# 1 PROJECT DESCRIPTION

This Quality Assurance Project Plan (QAPP) has been prepared on behalf of S-P Associates, L.P. (S-P Associates). The QAPP is a component of the NYSDEC Site Management Plan (SMP) that also includes an Excavation Management Plan (EMP) and Health & Safety Plan (HASP).

## 1.1 Project Objectives and Decision Statement

The primary objectives for data collection activities include:

- Collect and evaluate data necessary to monitor the nature and extent of groundwater impacts, and;

- Characterize environmental media for reuse or disposal as necessary during site management activities.

Associated specific objectives for field and laboratory data collection are discussed in Section 1.4 of this plan.

### 1.1.1 Project Status/Phase

The project status and management approach are presented in the SMP. Section 1summarizes the Site background. Section 2 describes the applicable engineering and institutional controls (IE/ECs). Section 3 describes the site monitoring plan. Section 4 describes operations and maintenance of site systems.

### 1.1.2 QAPP Preparation Guidelines

This QAPP has been prepared in accordance with the United States Environmental Protection Agency, (1999). EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations. EPA QA/R-5 Interim Final, November 1999.

## 1.2 Site Description

The general Site description is provided in Section 1 of the ***SMP*** and is incorporated herein by reference.

| | |
|---|---|
| Site Location | SMP Figure 1 |
| Site Plan | SMP Figure 2 |

## 1.3 Site History

The Site history is provided in Section 1 of the RI Work Plan and incorporated herein by reference.

| | |
|---|---|
| Site History | SMP Sections 1.2, 1.3, and 1.4 |

## 1.4 Target Parameter List and Intended Data Use

### 1.4.1 Target Parameter List

The investigative program includes the sampling and analysis of environmental media for the presence of organic and inorganic constituents based on the historical use of the Site. The field and laboratory parameters are presented in Table 1 with the associated laboratory reporting and method detection limits determined by the project laboratory in accordance with the provisions of the Federal Register, Volume 49, Number 209, October 26, 1984 pp. 198-199.

### 1.4.1.1 Laboratory Parameters

The laboratory parameters include target compound list (TCL) for volatile organic compounds (VOC) in soil and groundwater using EPA Method 8260B. In addition, some soil samples will be analyzed for TCL semi-volatile organic compounds (SVOCs) by EPA Method 8270C, target analyte list (TAL) metals by EPA Methods 6010/7471, and polychlorinated biphenyls (PCBs) by EPA Methods 8081 and pesticides by EPA Method 8082 as needed for disposal, reuse, or import to the site.

Concurrent with sample collection, several field parameters will be determined. For soils and solid matrices, field parameters will include visual observations, odor identification, and VOC screening using handheld monitoring equipment.

## 1.5 Sampling Locations

The SMP provides a summary and rationale for the location of groundwater samples. It is possible that sampling locations may change depending on the encountered field conditions. Soil sample locations will be as needed for import or disposal. The person responsible for making such decisions will be the Project Manager whose responsibilities are described in Section 2.0 of this QAPP.

## 1.6 Project Schedule

Site management activities are intended to be ongoing. The schedule of project monitoring presented in the SMP Table 8.

# 2 PROJECT ORGANIZATION AND RESPONSIBILITIES

This section defines the roles and responsibilities of the individuals who will perform the RIWP activities. The Site Manager will have the primary responsibility for implementation of the RIWP. The selected analytical laboratory will perform the analyses of environmental samples collected at the Site.

## 2.1 Management Responsibilities

A description of the project organization is presented in the RIWP. Management responsibilities of key personnel include:

Mr. Ronald Cocquyt – United Cleaners Project Manager

The United Cleaners Project Manager is responsible for implementing the project, and has the authority to commit the resources necessary to meet project objectives and requirements. The Project Manager will ensure that technical, financial, and scheduling objectives are achieved successfully. He/she will provide the primary point of contact and represent the project team at regulatory agency meetings and public hearings. The United Cleaners Project Manager will establish project policy and procedures to address the specific needs of the project and will also respond to issues related to community outreach.

Project Director/Project Engineer

The Project Director/Engineer will provide final review and approval of significant submittals to NYSDEC and may participate in technical meetings. The Project Director/Engineer will ensure that overall technical quality is maintained. He/she will be actively involved in the direction of the project and has overall responsibility for the project.

Consultant Project Manager

The Project Manager is responsible for managing the implementation of the SMP and coordinating the collection of data. The Project Manager is responsible for technical quality control and project oversight. The Project Manager responsibilities include the following:

- Acquire and apply technical and corporate resources as needed to ensure performance within budget and schedule restraints;
- Review work performed to ensure quality, responsiveness, and timeliness;
- Be responsible for the preparation and quality of interim and final reports;
- Communicate with the United Cleaners Project Manager concerning the progress of the project;
- Assure corrective actions are taken for deficiencies cited during audits of RIWP activities; and
- Overall Site health and safety.

## 2.2 Quality Assurance Responsibilities

The Quality Assurance (QA) team will consist of a Quality Assurance Officer, the Consultant Project Manager and qualified staff with the responsibilities described as follows:

Quality Assurance (QA) Officer

The QA Officer reports directly to the Project Manager and will be responsible for ensuring that QA/QC procedures are followed. The QA Officer will be responsible for overseeing the review of field and laboratory data. Additional responsibilities include the following:

- Assure the application and effectiveness of the QAPP by the analytical laboratory and the project staff; Conduct internal QA/QC of the investigation activities;
- Provide input to the Project Director, and Project Manager as to corrective actions that may be required as a result of the above-mentioned evaluations;
- Prepare and review data validation and audit reports;
- Approval of the QAPP.

The QA Officer will be assisted by the data validation staff in the evaluation and validation of field and laboratory generated data.

Data Validation Staff

The data validation staff will be independent of the laboratory and familiar with the analytical procedures performed. The validation will include a review of each validation criterion as prescribed by the guidelines presented in Section 12.2 of this document and be presented in a formal written report for submittal to the QA Officer.

NYSDEC Quality Assurance Officer

The NYSDEC Quality Assurance Officer may review this QAPP, conduct external performance and system audits of the project laboratory; and review and evaluate field and analytical laboratory procedures.

## 2.3 Laboratory Responsibilities

Laboratory services in support of the RIWP include the following personnel:

Laboratory Project Manager

The Laboratory Project Manager will report directly to the QA Officer and Project Manager, and will be responsible for ensuring all resources of the laboratory are available on an as-required basis. The Laboratory Project Manager will also be responsible for the approval of the final analytical reports.

### Laboratory Operations Manager

The Laboratory Operations Manager will report to the Laboratory Project Manager and will be responsible for coordinating laboratory analysis, supervising in-house chain-of-custody reports, scheduling sample analyses, overseeing data review and overseeing preparation of analytical reports.

### Laboratory QA Officer

The Laboratory QA Officer will have sole responsibility for review and validation of the analytical laboratory data. The Laboratory QA Officer will provide Case Narrative descriptions of any data quality issues encountered during the analyses conducted by the laboratory. The QA Officer will also define appropriate QA procedures, overview QA/QC documentation.

### Laboratory Sample Custodian

The Laboratory Sample Custodian will report to the Laboratory Operations Manager and will be responsible for the following:

- Receive and inspect the incoming sample containers;
- Record the condition of the incoming sample containers;
- Sign appropriate documents;
- Verify chain-of-custody and its correctness;
- Notify the Project Manager and Operations Manager of sample receipt and inspection;
- Assign a unique identification number and customer number, and enter each into the sample receiving log;
- Initiate transfer of samples to lab sections; and
- Control and monitor access/storage of samples and extracts.

### Laboratory Technical Personnel

The laboratory technical staff will have the primary responsibility in the performance of sample analysis and the execution of the QA procedures developed to determine the data quality. These activities will include the proper preparation and analysis of the project samples in accordance with the contract laboratory’s Quality Assurance Manual and associated Standard Operating Procedures.

## 2.4 Field Responsibilities

### Field Coordinator

The Field Coordinator is responsible for the overall operation of the field team and reports directly to the Project Director and Project Manager. The Field Coordinator works with the Site Health & Safety Officer (HSO) to conduct operations in compliance with the project Health & Safety Plan (HASP). The Field Coordinator will facilitate communication and coordinate efforts between the Project Manager and the field team members.

Other responsibilities include the following:

- Develop and implement field-related work plans, ensuring schedule compliance, and adhering to management-developed project requirements;
- Coordinate and manage field staff, including sampling;
- Perform field system audits;
- Oversee quality control for technical data provided by the field staff;
- Prepare and approve text and graphics required for field team efforts;
- Coordinate and oversee technical efforts of subcontractors assisting the field team;
- Identify problems in the field; resolve difficulties in consultation with the Project Director, QAO, and Project Manager; implement and document corrective action procedures and,
- Participate in preparation of the final reports.

### Field Team Personnel

Field Team Personnel will be responsible for the following:

- Perform field activities in compliance with the QAPP.
- Immediately report any accidents and/or unsafe conditions to the Project Manager and take reasonable precautions to prevent injury.

# 3 QUALITY ASSURANCE OBJECTIVES FOR MEASUREMENT DATA

The SMP and associated QAPP are designed to produce data of the quality necessary to achieve the project objectives and meet or exceed the minimum standard requirements for the field and laboratory analytical methods. The overall project data quality objective (DQO) is to develop and implement procedures for field sampling, handling, chain-of-custody, laboratory analysis, and reporting that achieve the project objectives. The following section is a general discussion of the criteria that will be used to measure and achieve the project DQO.

## 3.1 **Precision**

### 3.1.1 Definition

Precision will be determined by collecting and analyzing field duplicate samples and by creating and analyzing laboratory duplicates from one or more of the field samples. Precision is defined as a quantitative measure of the degree to which two or more measurements are in agreement. Precision will be stated in terms of relative percent difference (RPD). The analytical results from the field duplicate samples will provide data on sampling precision. The results from duplicate samples created by the laboratory will provide data on analytical precision.

### 3.1.2 Field Precision Sample Objectives

Field precision will be assessed through collection and measurement of field duplicate samples at a rate of 1 duplicate per 20 samples.

### 3.1.3 Laboratory Precision Sample Objectives

Laboratory precision will be assessed through the analysis of laboratory control samples (LCS/LCSD) samples. The analytical data will be presented in summary table format. The DQO criteria for laboratory LCS/LCSD analyses are provided in Table 1.

## 3.2 **Accuracy**

### 3.2.1 Definition

Accuracy relates to the bias in a measurement system. Bias is the difference between the observed and the "true" value. Sources of error are the sampling process, field contamination, preservation techniques, sample handling, sample matrix interference, sample preparation and analytical procedure limitations.

### 3.2.2 Field Accuracy Objectives

Sampling bias will be assessed by evaluating the results of equipment rinse and trip blanks. Equipment rinse and trip blanks will be collected as appropriate for each sampling effort.

Equipment rinse blanks will be collected by passing ASTM Type II water over and/or through the respective sampling equipment utilized during each sampling effort. One equipment rinse blank will be collected for each type of sampling equipment used for the sampling effort.

Equipment rinse blanks will be analyzed for each target parameter for the respective sampling effort for which environmental media have been collected. (Note: If dedicated or disposable sampling equipment is used, equipment rinse samples may not be collected as part of that field effort.)

Trip blank samples will be prepared by the laboratory and provided with each cooler that includes volatile organic compound (VOC) containers. Trip blank samples will be analyzed for each VOC for which environmental media have been collected for analysis.

### 3.2.3 Laboratory Accuracy Sample Objectives

Analytical bias will be assessed through the use of known laboratory control samples (LCS) and site specific matrix spike (MS) sample analyses. LCS analyses will be performed with each analytical batch of project samples to determine the accuracy of the analytical system.

One (1) set of MS/MSD analyses will be performed with each batch of twenty (20) project samples to assess the accuracy of identification and quantification of analytes within the site-specific sample matrices. Additional sample volume will be collected at sample locations selected for MS/MSD analyses so that method detection limits (MDLs) and laboratory reporting limits (RLs) can be met.

The accuracy of organic parameter analyses is also monitored through the analysis of system monitoring or surrogate compounds. Surrogate compounds are added to each sample, standard, blank, and QC samples prior to the sample preparation and analysis. Surrogate compound percent recoveries provide information on the effect of the sample matrix on the accuracy of the analyses. The results of the LCS and MS/MSD analyses and surrogate compounds will be presented in a summary table reporting format and evaluated versus the laboratory specific acceptance criteria presented in Table 1.

## 3.3 Representativeness

### 3.3.1 Definition

Representativeness expresses the degree to which sample data accurately and precisely represent a characteristic of a population, a parameter variation at a sampling point or an environmental condition. Representativeness is a qualitative parameter that is dependent upon the design of the sampling program. The representativeness criterion is satisfied by proper selection of sampling locations and quantity of samples collected.

### 3.3.2 Measures to Ensure Representativeness of Field Data

Representativeness will be addressed by prescribing sampling techniques and the rationale used to select sampling locations.

For this project, sampling will generally be biased unless otherwise noted in the SMP; that is, sampling associated with the soil and groundwater will be based on site knowledge and/or the observed presence/absence of site specific contaminants. Specific sampling technique descriptions, which allow consistency, repetitiveness and thus representativeness, are provided in the SMP.

### 3.3.3 Measures to Ensure Representativeness of Laboratory Data

Representativeness in the laboratory is ensured by using proper analytical procedures and analyzing duplicate samples. By definition, duplicate samples are collected and analyzed to be representative of a given point in space and time. Thus, sample duplicates provide both precision and representativeness information.

## 3.4 **Completeness**

### 3.4.1 Definition

Completeness is a measure of the amount of valid (usable) data obtained from a measuring system compared to the total amount of the data obtained or anticipated. The completeness goal for all data uses is that a sufficient amount of valid data be generated so that determinations can be made related to the intended data use with a high degree of confidence.

### 3.4.2 Field Completeness Objectives

Completeness is a measure of the amount of valid measurements obtained from all measurements taken in this project versus the number proposed in the SMP. Field completeness objective for this project will be greater than (>) 90 percent (%).

### 3.4.3 Laboratory Completeness Objectives

Laboratory data completeness objective is a measure of the amount of valid data obtained from all laboratory measurements. The evaluation of the data completeness will be performed at the conclusion of each sampling and analysis effort. Corrective actions such as revised sample handling procedures will be implemented if problems are noted.

The completeness of the data generated will be determined by comparing the amount of valid data, based on independent validation, with the total data set. The completeness goal will be >90%.

## 3.5 Comparability

### 3.5.1 Definition

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared to another.

### 3.5.2 Measures to Ensure Comparability of Field Data

Sample data should be comparable to other measurement data for similar samples and sample conditions. This goal is achieved through using standard operating procedures to collect, preserve, store and analyze representative samples, and the reporting of analytical results. The field SOP for the various activities to be conducted during this investigation will provide guidelines to generate reproducible results.

### 3.5.3 Measures to Ensure Comparability of Laboratory Data

Comparability of laboratory data will be measured from the analysis of Standard Reference Materials (SRM) obtained from either EPA Cooperative Research and Development Agreement (CRADA) suppliers or the National Institute of Standards and Technology (NIST). The reported analytical data will also be presented in standard units of mass of contaminant within a known volume of environmental media.

The units for various sample matrices are described as follows:

- Solid Matrices - milligrams (mg) contaminant per kilogram (kg) of media (Dry Weight).
- Aqueous Matrices – micrograms (ug) contaminant per liter (L) of media for organic analyses, and milligrams per liter for inorganic analyses.
- Gaseous Matrices – micrograms (ug) contaminant per cubic meter ($M^3$) of media

## 3.6 Decision Rules

### 3.6.1 Definition

The decision rule is a statement that prescribes a course of action or non-action to be taken, based on assumptions to test its logical and empirical consequences.

### 3.6.2 Decision Rule Objective

The rationale for sample locations, sample number and analytical parameters is provided in the SMP. The decision rule for the sampling and analysis data collected is as follows:

1. Samples will be collected at discrete locations to provide a comprehensive assessment of impacted media.

2. Sample data will be compared to action levels (e.g., Soil Cleanup Objectives (SCO) to determine the appropriate action as defined in the SMP.

### 3.7 Level of Quality Control Effort

Equipment rinse, trip and method blank samples; field and laboratory duplicate samples; and laboratory control and matrix spike samples will be prepared and analyzed to determine the analytical data quality.

**Equipment rinse blanks** will be prepared by field personnel and submitted for analysis of target parameters. Equipment rinse blank samples will be analyzed to check for contamination of equipment introduced during sampling at the Site. One (1) equipment rinse blank will be collected per sampling event.

**Trip blanks** are used to assess the potential for contamination during sample storage and shipment. The trip blank will consist of ASTM Type II water that has been provided with the sample containers to be used for sampling VOC. Trip blanks will be preserved and handled in the same manner as the project samples. One (1) trip blank will be included along with each shipment cooler containing project samples to be analyzed for VOCs.

**Method blank** samples will be prepared by the laboratory and analyzed concurrently with all project samples to assess potential contamination introduced during the analytical process.

**Field duplicate samples** are analyzed to determine sampling and analytical reproducibility. One (1) field duplicate will be collected for every 20 or fewer investigative samples collected for laboratory analysis.

**Matrix spikes** will provide information to assess the precision and accuracy of the analysis of the target parameters within the environmental media collected. One (1) matrix spike/matrix spike duplicate (MS/MSD) will be collected for every 20 or fewer investigative samples per sample matrix (i.e. soil or groundwater).

(Note: Soil MS/MSD samples require triple sample volume for VOC only. Aqueous MS/MSD samples require triple the normal sample volume for VOC analysis and double the volume for the remaining parameters.)

# 4 SAMPLING PROCEDURES

Samples of soil and groundwater will be obtained during the SMP program. The SMP describes each of the sampling tasks and project objectives.

The SMP and EMP provide the standard operating procedures (SOP) for sampling of each environmental media including soil stockpiles and groundwater.

## 4.1 Sample Containers

Sample containers for each sampling task will be provided by the project laboratory. The containers will be cleaned by the manufacturer to meet or exceed the analyte specifications established in the U.S. EPA, "Specifications and Guidance for Obtaining Contaminant-Free Sample Containers", April 1992, OSWER Directive #9240.0-0.5A. Certificates of analysis for each lot of sample containers used during the RIWP will be maintained by the laboratory and will be available upon request.

The appropriate sample containers, preservation method, maximum holding times, and shipping information for each target parameter and sampling task are provided in Table 2.

## 4.2 Sample Labeling

Each sample will be labeled with a unique sample number that will facilitate tracking and cross-referencing of sample information. Equipment rinse blank and field duplicate samples also will be numbered with a unique sample number to prevent analytical bias of field QC samples.

## 4.3 Field QC Sample Collection

### 4.3.1 Equipment Rinse Blank Sample Collection

Equipment rinse blank samples will be collected when non-dedicated sampling equipment is used to collect samples. Equipment rinse blanks consist of distilled water that has been routed through decontaminated sampling equipment and collected into the appropriate containers. The containers will be filled in order of decreasing analyte volatility (i.e., VOC first, SVOC second and followed by the containers for the remaining analyses).

### 4.3.2 Field Duplicate Sample Collection

#### 4.3.2.1 Water Samples

Field duplicate samples will be collected using the following procedure:

1. The first sample container is filled to the proper level and sealed. The procedure is repeated for the second sample container.

2. The samples are properly labeled as specified in Section 4.2.

3. Steps 1 through 4 are repeated for the bottles for each analysis. The samples are collected in order of decreasing analyte volatility as detailed in Section 4.3.1.

4. Chain-of-custody documents are executed.

5. The samples will be packaged as specified in Table 2.

#### 4.3.2.2 Soil Samples

Soil field duplicates will be collected as specified in the following:

1. The split-spoon sampler or trowel will be retrieved from the sampling point.

2. Soil for VOC analysis will be removed from the sampling device.

3. Soil for non-VOC analysis will be removed from the sampling device and placed in a stainless steel mixing bowl. The soil will be thoroughly homogenized using stainless steel utensils and the sample containers will be filled in order of decreasing analyte volatility as described in Section 4.3.1.

# 5 CUSTODY PROCEDURES

Custody is one of several factors necessary for the admissibility of environmental data as evidence in a court of law. Custody procedures help to satisfy the two major requirements for admissibility: relevance and authenticity. Sample custody is addressed in three parts: field sample collection, laboratory analysis and final project files.

Custody of a sample begins when it is collected by or transferred to an individual and ends when that individual relinquishes or disposes of the sample. A sample or project file is under custody if:

1. the item is in actual possession of a person;
2. the item is in the view of the person after being in actual possession of the person;
3. the item was in actual possession and subsequently stored to prevent tampering; or
4. the item is in a designated and identified secure area.

## 5.1 Field Custody Procedures

Field personnel will keep written records of field activities on applicable preprinted field forms or in a bound field notebook to record data collecting activities. These records will be written legibly in ink and will contain pertinent field data and observations. Entry errors or changes will be crossed out with a single line, dated and initialed by the person making the correction. Field forms and notebooks will be periodically reviewed by the Field Coordinator.

The beginning of each entry in the logbook or preprinted field form will contain the following information:

- Date
- Start time
- Weather
- Names of field personnel (including subcontractors)
- Level of personal protection used at the Site
- Names of all visitors and the purpose of their visit.

For each measurement and sample collected, the following information will be recorded:

- Detailed description of sample location,
- Equipment used to collect sample or make measurement and the date equipment was calibrated,
- Time sample was collected,
- Description of the sample conditions,
- Depth sample was collected (if applicable),
- Volume and number of containers filled with the sample; and,
- Sampler’s identification.

### 5.1.1 Field Procedures

Data quality can be affected by sample collection activities. If the integrity of collected samples is questionable, the data, regardless of its analytical quality, will also be questionable.

The following procedure describes the process to maintain the integrity of the samples:

- Upon collection samples are placed in the proper containers. In general, samples collected for organic analysis will be placed in pre-cleaned glass containers and samples collected for inorganic analysis will be placed in pre-cleaned plastic (polyethylene) bottles.
- Samples will be assigned a unique sample number and will be affixed to a sample label.
- Samples will be properly and appropriately preserved by field personnel in order to minimize loss of the constituent(s) of interest due to physical, chemical or biological mechanisms.
- Appropriate volumes will be collected to ensure that the appropriate reporting limits can be successfully achieved and that the required QC sample analyses can be performed.

### 5.1.2 Transfer of Custody and Shipment Procedures

- A chain-of-custody (COC) record will be completed at the time of sample collection and will accompany each shipment of project samples to the laboratory. The field personnel collecting the samples will be responsible for the custody of the samples until the samples are relinquished to the laboratory. Sample transfer will require the individuals relinquishing and receiving the samples to sign, date and note the time of sample transfer on the COC record.
- Samples will be shipped or delivered in a timely fashion to the laboratory so that holding-times and/or analysis times as prescribed by the methodology can be met.
- Samples will be transported in containers (coolers) which will maintain the refrigeration temperature for those parameters for which refrigeration is required in the prescribed preservation protocols.
- Samples will be placed in an upright position and limited to one layer of samples per cooler. Additional bubble wrap or packaging material will be added to fill the cooler. Shipping containers will be secured with strapping tape and custody tape for shipment to the laboratory.
- If samples are split with the NYSDEC representatives, a separate chain-of-custody will be prepared and marked to indicate with whom the samples are shared. The person

relinquishing the samples will require the representative's signature acknowledging sample receipt.

- If samples are sent by a commercial carrier, a bill of lading will be used. A copy of the bill of lading will be retained as part of the permanent record. Commercial carriers will not sign the custody record as long as the custody record is sealed inside the sample cooler and the custody tape remains intact.

- Samples will be shipped to the laboratory courier or transported by courier to the laboratory the day of collection.

## 5.2 Laboratory Chain-of-Custody Procedures

A sample custodian will be designated by the laboratory and will have the responsibility to receive all incoming samples. Once received, the custodian will document if the sample is received in good condition (i.e., unbroken, cooled, etc.) and that the associated paperwork, such as chain-of-custody forms have been completed.

The custodian will sign the COC and document if sufficient sample volume has been received to complete the analytical program. The sample custodian will then place the samples into secure, limited access storage (refrigerated storage, if required). The sample custodian will assign a unique number to each incoming sample for use in the laboratory. The unique number will then be entered into the sample-receiving log with the verified time and date of receipt also noted.

Consistent with the analyses requested on the chain-of-custody form, analyses by the laboratory's analysts will begin in accordance with the appropriate methodologies. Samples will be removed from secure storage with internal chain-of-custody sign-out procedures followed.

## 5.3 Storage of Samples

Empty sample bottles will be returned to secure and limited access storage after the available volume has been consumed by the analysis. Upon completion of the entire analytical work effort, samples will be disposed of by the sample custodian. The length of time that samples are held will be at least thirty (30) days after reports have been submitted. Disposal of remaining samples will be completed in compliance with all Federal, State and local requirements.

## 5.4 Final Project Files Custody Procedures

The final project files will be the central repository for all documents with information relevant to sampling and analysis activities as described in this QAPP. The Project Manager will be the custodian of the project file. The project files including all relevant records, reports, logs, field notebooks, pictures, subcontractor reports and data reviews will be maintained in a secured, limited access area and under custody of the Project Director or his designee.

The final project file will include the following:

- Project plans and drawings
- Field data records
- Sample identification documents and soil boring/monitoring well logs
- All chain-of-custody documentation
- Correspondence
- References, literature
- Laboratory data deliverables
- Data validation and assessment reports
- Progress reports, QA reports
- Final report

The laboratory will be responsible for maintaining analytical logbooks, laboratory data and sample chain of custody documents. Raw laboratory data files and copies of hard copy reports will be inventoried and maintained by the laboratory for a period of six (6) years at which time the laboratory will contact the Project Manager regarding the disposition of the project related files.

# 6 CALIBRATION PROCEDURES AND FREQUENCY

## 6.1 Field Instrument Calibration Procedures

Several field instruments will be used for both on-site screening of samples and for health and safety monitoring, as described in the Health and Safety Plan (HASP). On-site air monitoring for health and safety purposes may be accomplished using several different organic vapor detection devices, such as a Photo-ionization Detector (PID), Combustible Gas Indicator (CGI), and/or Draeger tubes.

Field instruments will be calibrated in accordance with the instrument manufacturer’s requirements and checked during field activities to verify performance.

## 6.2 Laboratory Instrument Calibration Procedures

Reference materials of known purity and quality will be utilized for the analysis of environmental samples. The laboratory will carefully monitor the preparation and use of reference materials including solutions, standards and reagents through well-documented procedures.

All solid chemicals and acids/bases used by the laboratory will be rated as “reagent grade” or better. All gases will be “high” purity or better. All Standard Reference Materials (SRMs) or Performance Evaluation (PE) materials will be obtained from approved vendors of the National Institute of Standards and Technology (formerly National Bureau of Standards), the U.S. EPA Environmental Monitoring Support Laboratories (EMSL), or reliable Cooperative Research and Development Agreement (CRADA) certified commercial sources.

# 7 ANALYTICAL PROCEDURES

Analytical procedures to be utilized for analysis of environmental samples will be based on referenced U.S. EPA promulgated analytical protocols.

## 7.1 Field Analytical Procedures

Field analytical procedures include qualitative measurement of Volatile Organic Compounds (VOC) during the collection of soil samples.

## 7.2 Laboratory Analytical Procedures

Laboratory analyses will be based on the U.S. EPA methodology requirements promulgated in:

- "Test Methods for Evaluating Solid Waste," SW-846 EPA, Office of Solid Waste, and promulgated updates, 1986.

The laboratory reporting limits (RLs) and associated method detection limits (MDLs) for the target analytes and compounds for the environmental media to be analyzed are presented in Table 1.

### 7.2.1 List of Project Target Compounds and Laboratory Detection Limits

A complete list of project target compounds and project reporting limits for each analyte is listed in Table 1. MDLs have been experimentally determined by the project laboratory using the method provided in 40 CFR, Part 136 Appendix B.

### 7.2.2. List of Method Specific Quality Control (QC) Criteria

The laboratory method specific procedures will include a section that presents the minimum QC requirements for the project analyses. Section 8.0 references the frequency of the associated QC samples for each sampling effort and matrix.

# 8 INTERNAL QUALITY CONTROL CHECKS

This section presents the internal quality control checks that will be employed for field and laboratory measurements.

## 8.1 Field Quality Control

### 8.1.1 Equipment Rinse Blanks

Internal quality control checks will include analysis of equipment blanks to validate successful equipment cleaning activities. Whenever possible, dedicated equipment will be employed to reduce the possibility of cross-contamination of samples.

The frequency of equipment rinse sample preparation will be for each type of sampling equipment on which decontamination procedures have been performed as part of each sampling event.

### 8.1.2 Trip Blanks

Trip blanks samples will be prepared by the project laboratory using ASTM Type II or equivalent water placed within pre-cleaned 40 milliliter (ml) VOC vials equipped with teflon septa. Trip blanks will accompany each sample delivery group (SDG) of environmental samples collected for analysis of VOCs.

Trip blank samples will be placed in each cooler that stores and transports project samples that are to be analyzed for VOCs.

## 8.2 Laboratory Procedures

Procedures which contribute to maintenance of overall laboratory quality assurance and control include appropriately cleaned sample containers, proper sample identification and logging, applicable sample preservation, storage and analysis within prescribed holding times, and use of controlled materials.

### 8.2.1 Field Duplicate Samples

The precision or reproducibility of the data generated will be monitored through the use of field duplicate samples. Field duplicate analysis will be performed at a frequency of 1 in 20 project samples.

Precision will be measured in terms of the absolute value of the relative percent difference (RPD) as expressed by the following equation:

$$RPD = \frac{\left| \frac{R1 - R2}{(R1 - R2)} \right|}{2} X100\%$$

Acceptance criteria for duplicate analyses performed on solid matrices will be 50 % and aqueous matrices will be 30%. RPD values outside these limits will require an evaluation of the sampling and/or analysis procedures by the project QA Officer and/or laboratory QA Director. Corrective actions may include re-analysis of additional sample aliquots and/or qualification of the data for use.

### 8.2.2 Matrix Spike Samples

Ten percent of each project sample matrix for each analytical method performed will be spiked with known concentrations of the specific target compounds/analytes.

The amount of the compound recovered from the sample compared to the amount added will be expressed as a percent recovery. The percent recovery of an analyte is an indication of the accuracy of an analysis within the site-specific sample matrix. Percent recovery will be calculated for MS/MSD using the following equation.

$$\% \ Recovery = \frac{Spiked \ Sample \ - \ Background}{Known \ Value \ of \ Spike} \ x \ 100\%$$

If the quality control value falls outside the control limits (UCL or LCL) due to sample matrix effects, the results will be reported with appropriate data qualifiers. To determine the effect non-compliant MS recoveries have on the reported results, the recovery data will be evaluated as part of the validation process.

### 8.2.3 Laboratory Control Sample (LCS) Analyses

The laboratory will perform LCS analyses prepared from Standard Reference Materials (SRMs). The SRMs will be supplied from an independent manufacturer and traceable to NIST materials with known concentrations of each target analyte to be determined by the analytical methods performed. In cases where an independently supplied SRM is not available, the LCS may be prepared by the laboratory from a reagent lot other than that used for instrument calibration.

The laboratory will evaluate LCS analyses in terms of percent recovery using the most recent laboratory generated control limits.

LCS recoveries that do not meet acceptance criteria will be deemed invalid. Analysis of project samples will cease until an acceptable LCS analysis has been performed. If sample analysis is performed in association with an out-of-control LCS sample analysis, the data will be deemed invalid.

Corrective actions will be initiated by the QA Officer and/or laboratory QA officer to investigate the problem. After the problem has been identified and corrected, the solution will be noted in the instrument run logbook and re-analysis of project samples will be performed, if possible.

The analytical anomaly will be noted in the sample delivery group (SDG) Case Narrative and reviewed by the data validator. The data validator will confirm that appropriate corrective actions were implemented and recommend the applicable use of the affected data.

### 8.2.4 Surrogate Compound/Internal Standard Recoveries

For VOCs, surrogates will be added to each sample prior to analysis to establish purge and trap efficiency. Quantitation will be accomplished via internal standardization techniques.

The recovery of surrogate compounds and internal standards will be monitored by laboratory personnel to assess possible site-specific matrix effects on instrument performance.

For semi-volatile organics analyses, surrogates will be added to the raw sample to assess extraction efficiency. Internal standards will be added to all sample extracts and instrument calibration standard immediately before analysis for quantitation via internal standardization techniques.

Surrogate compound/internal standard recoveries that do not fall within accepted QC limits for the analytical methodology performed will have the analytical results flagged with data qualifiers as appropriate by the laboratory and will not noted in the laboratory report Case Narrative.

To ascertain the effect non-compliant surrogate compound/internal standard recoveries may have on the reported results, the recovery data will be evaluated as part of the validation process. The data validator will provide recommendations for corrective actions including but not limited to additional data qualification.

### 8.2.5 Calibration Verification Standards

As presented in Section 7.0 of this plan, calibration verification (CV) standards will be utilized to confirm instrument calibrations and performance throughout the analytical process. CV standards will be prepared as prescribed by the respective analytical protocols. Continuing calibration will be verified by compliance with method-specific criteria prior to additional analysis of project samples. Non-compliant analysis of CV standards will require immediate corrective action by the project laboratory QA officer and/or designated personnel. Corrective action may include re-analysis of each affected project sample, a detailed description of the problem, the corrective action undertaken, the person who performed the action, and the resolution of the problem.

### 8.2.6 Laboratory Method Blank Analyses

Method blank sample analysis will be performed as part of each analytical batch for each methodology performed. If target compounds are detected in the method blank samples, the reported results will be flagged by the laboratory in accordance with standard operating procedures. The data validator will provide recommendations for corrective actions including but not limited to additional data qualification.

# 9 DATA REDUCTION, VALIDATION AND REPORTING

All data generated through field activities or by the laboratory operation shall be reduced and validated prior to reporting in accordance with the following procedures:

## 9.1 Data Reduction

### 9.1.1 Field Data Reduction Procedures

Field data reduction procedures will be minimal in scope compared to those implemented in the laboratory setting. The pH, conductivity, temperature, turbidity and VOC readings collected in the field will be generated from direct read instruments. The data will be written into field logbooks immediately after measurements are taken. If errors are made, data will be legibly crossed out, initialed and dated by the field member, and corrected in a space adjacent to the original entry.

### 9.1.2 Laboratory Data Reduction Procedures

Laboratory data reduction procedures are provided by the appropriate chapter of USEPA, Test Methods for Evaluating Solid Waste", SW-846, Third Edition. All calculations will be checked at the conclusion of each day. Errors will be noted; corrections made with the original notations crossed out legibly. Analytical results for soil samples shall be calculated and reported on a dry weight basis.

Quality control data (e.g., laboratory duplicates, surrogates, matrix spikes, and matrix spike duplicates) will be compared to the method acceptance criteria. Data considered to be acceptable will be entered into the laboratory information management system (LIMS).

Data summaries will be sent to the Laboratory QA Officer for review. Unacceptable data shall be appropriately qualified in the project report. Case narratives will be prepared which will include information concerning data that fell outside acceptance limits and any other anomalous conditions encountered during sample analysis.

## 9.2 Data Validation

Data validation procedures shall be performed for both field and laboratory operations as described below:

### 9.2.1 Procedures Used to Evaluate Field Data

Procedures to evaluate field data for this project will include review of field logbooks and checking for transcription errors to project specific documents. This task will be the responsibility of the Field QAO/Project Coordinator.

### 9.2.2 Procedures to Validate Laboratory Data

Validation of the analytical data will be performed by the QA Officer or designee using the following documents as guidance for the review process:

"U.S.EPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999 and the "U.S. EPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganic Data Review ", EPA-540/R-02-008, July 2002.

The specific data qualifiers used will be as presented and defined in the CLP National Functional Guidelines. Validation will be performed by qualified personnel at the direction of the QA Officer. Data review and validation will consist of two tiers of assessment that incorporates an approach similar to "Innovative Approaches to Data Validation", U.S.EPA Region III, June 1995.

Tier I data validation will be performed on 100% of the laboratory quality control summary data deliverables. The following will be evaluated:

Organic Analysis

i) technical holding times;

ii) GC/MS instrument performance check;

iii) method, trip and equipment rinsate blanks;

iv) system monitoring compounds (surrogate spikes);

v) MS/MSD results;

vi) laboratory control samples; and

vii) field duplicate samples.

Inorganic Analysis

i) technical holding times;

ii) blanks;

iii) laboratory control samples;

iv) MS/MSD results; and

v) field duplicates.

Tier II validation will only be completed at which time United Cleaners applies for delisting and an expanded package of the final round of groundwater data is obtained. The following will be evaluated during tier II validation:

Organic Analyses

i) technical holding times;

ii) GC/MS instrument performance check;

iii) initial and continuing calibration;

iv) blanks;

v) system monitoring compounds (surrogate spikes);

vi) MS/MSD results;

vii) laboratory control samples;

viii) internal standard performance;

ix) system performance;

x) target compound identification (GC/MS analyses); and

xi) field duplicates

Inorganic Analyses

i) technical holding times;

ii) initial and continuing calibration;

iii) blanks;

iv) interference check samples;

v) laboratory control samples;

vi) matrix duplicate sample analysis;

vii) matrix spike sample analysis;

viii) ICP interference check sample;

ix) ICP serial dilution;

x) ICP/MS internal standard performance;

xi) sample result verification; and

xii) field duplicates.

The completeness of each data package will be evaluated by the Data Validator. Completeness checks will be administered on all data to determine whether deliverables specified in the QAPP are present. The validator will determine whether all required items are present and request copies of missing deliverables.

## 9.3 Data Reporting

Data reporting procedures shall be carried out for field and laboratory operations as indicated below:

### 9.3.1 Field Data Reporting

Field data reporting shall be conducted principally through the transmission of report sheets containing tabulated results of all measurements made in the field and documentation of all field calibration activities.

### 9.3.2 Laboratory Data Reporting

The laboratory data reporting package will be sufficient to perform a data validation in accordance with protocols described above. The final laboratory data report format for interim groundwater sampling shall consist of NYSDEC Analytical Services Protocol (ASP) Category A deliverables. If at which point United Cleaners applies for site delisting or if the discontinuation of groundwater sampling is to be requested, the final laboratory data report format for the final round of groundwater sampling shall consist of NYSDEC ASP Category B deliverables.

# 10 PERFORMANCE AND SYSTEM AUDITS

A performance audit is an independent quantitative comparison with data routinely obtained in the field or the laboratory. Performance audits include two separate, independent parts: internal and external audits.

## 10.1 Field Performance and System Audits

### 10.1.1 Internal Field Audit Responsibilities

Internal audits of field activities will be initiated at the discretion of the Project Manager and will include the review of sampling and field measurements. The audits will verify that all procedures are being followed. Internal field audits will be conducted once during each phase of the sampling and at the conclusion of the project. The audits will include examination of the following:

- Field sampling records, screening results, instrument operating records
- Sample collection
- Handling and packaging in compliance with procedures
- Maintenance of QA procedures
- Chain-of-custody reports

### 10.1.2 External Field Audit Responsibilities

External audits may be conducted by the Project Coordinator at any time during the field operations. These audits may or may not be announced and are at the discretion of the NYSDEC. The external field audits can include (but are not limited to) the following:

- Sampling equipment decontamination procedures
- Sample bottle preparation procedures
- Sampling procedures
- Examination of health and safety plans
- Procedures for verification of field duplicates
- Field screening practices

## 10.2 Laboratory Performance and System Audits

### 10.2.1 Internal Laboratory Audit Responsibilities

The laboratory system audits are typically conducted by the laboratory QA Officer or designee on an annual basis. The system audit will include an examination of laboratory documentation including: sample receiving logs, sample storage, chain-of-custody procedures, sample preparation and analysis and instrument operating records.

At the conclusion of internal system audits, reports will be provided to the laboratory's operating divisions for appropriate comment and remedial/corrective action where necessary. Records of audits and corrective actions will be maintained by the Laboratory QA Officer.

### 10.2.2 External Laboratory Audit Responsibilities

External audits will be conducted as required, by the NYSDOH or designee. External audits may include any of the following:

- Review of laboratory analytical procedures
- Laboratory on-site visits
- Submission of performance evaluation samples for analysis

Failure of any of the above audit procedures can lead to laboratory disqualification, and another suitable laboratory will have to be chosen. An on-site review can consist of:

- Sample receipt procedures
- Custody, sample security and log-in procedures
- Review of instrument calibration logs
- Review of QA procedures
- Review of log books
- Review of analytical SOPs
- Personnel interviews

A review of a data package from samples recently analyzed by the laboratory can include (but not be limited to) the following:

- Comparison of resulting data to the SOP or method
- Verification of initial and continuing calibrations within control limits
- Verification of surrogate recoveries and instrument timing results
- Review of extended quantitation reports for comparisons of library spectra to instrument spectra, where applicable
- Assurance that samples are run within holding times.

# 11 PREVENTIVE MAINTENANCE

## 11.1 Field Instrument Preventive Maintenance

The field equipment preventive maintenance program is designed to ensure the effective completion of the sampling effort and to minimize equipment down time. Program implementation is concentrated in three areas:

- Maintenance responsibilities.
- Maintenance schedules.
- Inventory of critical spare parts and equipment.

The maintenance responsibilities for field equipment will be assigned to the task leaders in charge of specific field operations. Field personnel will be responsible for daily field checks and calibrations and for reporting any problems with the equipment. The maintenance schedule will follow the manufacturer's recommendations. In addition, the field personnel will be responsible for determining that critical spare parts are included with the field equipment. An adequate inventory of spare parts will be maintained. The inventory will primarily contain parts that are subject to frequent failure, have limited useful lifetimes and/or cannot be obtained in a timely manner.

## 11.2 Laboratory Instrument Preventive Maintenance

Analytical instruments at the laboratory will undergo routine and/or preventive maintenance. The extent of the preventive maintenance will be a function of the complexity of the equipment.

Generally, annual preventive maintenance service will involve cleaning, adjusting, inspecting and testing procedures designed to deduce instrument failure and/or extend useful instrument life. Between visits, routine operator maintenance and cleaning will be performed according to manufacturer's specifications by laboratory personnel.

Maintenance records will be placed on file at the laboratory and can be made available upon request.

# 12 SPECIFIC ROUTINE PROCEDURES USED TO ASSESS DATA PRECISION, ACCURACY, AND COMPLETENESS

## 12.1 Field Measurements

Field generated information will be reviewed for validity. The review will be performed by the Field QA Officer and typically include evaluation of bound logbooks/forms, data entry and calculation checks. Field data will be assessed by the QA Officer who will review the field results for compliance with the established QC criteria that are specified in Section 3.0 of this QAPP. The accuracy of pH and specific conductance will be assessed using daily instrument calibration, calibration check, and blank data. Accuracy will be measured by determining the percent recovery of calibration check standards as defined in Section 12.2.2. Precision of the pH and specific conductance measurements will be assessed on the basis of the reproducibility of duplicate readings of a field sample and will be measured by determining the relative percent difference of the readings as defined in Section 12.2.1.

Field data completeness will be calculated using the following equation:

$$\%\ \text{Completeness} = \frac{\text{Valid (usable) Data Obtained}}{\text{Total Data Planned}} \times 100$$

## 12.2 Laboratory Data

Surrogate, internal standard and matrix spike recoveries will be used to evaluate data quality. The laboratory quality assurance/quality control program will include the following elements:

- Precision, in terms of relative percent difference (RPD), will be determined by duplicate sample analysis with each batch of project samples. RPD is defined as the absolute difference of duplicate measurements divided by the mean of these analyses normalized to percentage.

- Accuracy, in terms of percent recovery (recovery of known constituent additions) will be determined by the analysis of matrix spike (MS) samples. The frequency of MS analyses will be one (1) project sample MS/MSD per twenty (20) project samples.

- One method blank will be prepared and analyzed with each batch of project samples. The total number of method blank sample analyses will be determined by the laboratory analytical batch size.

- Standard Reference Materials (SRMs) will be used for each analysis. Sources of SRM's include the U.S. EPA, commercially available material from CRADA certified vendors and/or laboratory produced solutions. SRMs, when available and appropriate, will be processed and analyzed on a frequency of one per set of samples.

- Completeness is the evaluation of the amount of valid data generated versus the total set of data produced from a particular sampling and analysis event. Valid data is determined by independent confirmation of compliance with method-specific and project-specific data quality objectives. The calculation of data set completeness will be performed by the following equation.

$$\frac{\mathit{Number\ of\ Valid\ Sample\ Results}}{\mathit{Total\ Number\ of\ Samples\ Planned}}\ X\ 100 = \%\ \mathit{Complete}$$

# 13 CORRECTIVE ACTION

## 13.1 Field Corrective Action

Project personnel will be responsible for ensuring the quality of the sampling procedures and environmental data and as such, will be responsible for initiating corrective action when appropriate. Any Field Team member may initiate corrective action procedures by reporting in writing the nature of the suspected problem to the Project Coordinator, Project Manager or Project QA Officer. Corrective action is intended to address unacceptable procedures or deficient quality control performance.

The corrective action procedures will be as follows:

- Identify/define the problem.
- Assign responsibility for investigating the problem.
- Investigate/determine the cause of the problem.
- Determine an appropriate corrective action to eliminate the problem.
- Implement the corrective action.
- Evaluate the effectiveness of the corrective action.
- Verify that the corrective action has eliminated the problem.
- Prepare a written record detailing the problem, corrective action utilized and solution of the problem.
- Submit the Corrective Action Record (CAR) to the Project Manager.

The Project Manager will begin corrective action by relating the problem to appropriate personnel.

## 13.2 Laboratory Corrective Action

The following paragraphs define the corrective action decision process relative to possible non-compliant events encountered during laboratory analysis of the project samples. Corrective actions will be initiated by the laboratory QA personnel and will be implemented by laboratory staff chemists under the oversight of the laboratory QA personnel. As with field corrective actions, the laboratory QA personnel will document the problem, the corrective action undertaken and the resolution of the problem. The corrective actions will be performed prior to release of the data from the laboratory.

## 13.3 Corrective Action During Data Validation and Data Assessment

The QA Officer may identify the need for corrective action during either the data validation or data assessment processes. Potential types of corrective action may include re-sampling by the field team or re-analysis of samples by the laboratory (if possible). These actions are dependent upon the ability to mobilize the field team, whether the data to be collected is necessary to meet the required quality assurance objectives (e.g., the holding time for samples is not exceeded). When the QA Officer identifies a corrective action situation, United Cleaners Project Manager will be responsible for approving the implementation of corrective action, including re-sampling, during data assessment. All corrective actions will be documented by the Project Manager.

## 14 QUALITY ASSURANCE (QA) REPORTS

Critically important to the successful implementation of the QA Plan is a reporting system that provides the means by which the program can be reviewed, problems identified and programmatic changes made to improve the plan.

QA reports to management include:

- Audit reports, internal and external audits with responses
- Performance evaluation sample results; internal and external sources
- Daily QA/QC exception reports/corrective actions

QA/QC corrective action reports will be prepared by the QA Officer when appropriate and presented to the project and/or laboratory management personnel so that performance criteria can be monitored for all analyses from each analytical department. The updated trend/QA charts prepared by the laboratory QA personnel will be distributed and reviewed by various levels of the laboratory management.

## 15 REFERENCES

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# Quality Assurance Project Plan

TITLE: Quality Assurance Project Plan, United Cleaners Site Management Plan

Prepared By/Date: Haley & Aldrich of New York, October 2013

Approved By/Date:

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10/24/2013

QA Officer Date

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10/24/2013

Haley & Aldrich Project Manager Date

Laboratory Project Manager (if requested) Date

Date of Issue: October 2013

# APPENDIX A

## Summary of Field and Laboratory Parameters

**The parameters included in this appendix were provided by Alpha Analytical Services as an example. Field and laboratory parameters should meet or exceed these values.*

Alpha Analytical Inc.
Standard Reporting Limits
Westborough, MA

| Pesticides in soil EPA 8081A | | | | |
|---|---|---|---|---|
| Analytes | MDL * ug/Kg | RL ug/Kg | LCS/MS % Rec | MS/MSD % RPD |
| 4,4'-DDD | 2.854 | 8 | 25-150% | < 50% |
| 4,4'-DDE | 1.851 | 8 | 35-140% | < 50% |
| 4,4'-DDT | 6.418 | 15 | 30-155% | < 50% |
| Aldrin | 2.816 | 8 | 25-140% | < 50% |
| Alpha-BHC | 0.946 | 3.33 | 60-130% | < 50% |
| Beta-BHC | 3.032 | 8 | 65-125% | < 50% |
| Chlordane | 26.503 | 65 | N/A | < 50% |
| cis-Chlordane | 2.787 | 10 | 65-125% | < 50% |
| Delta-BHC | 1.565 | 8 | 45-135% | < 50% |
| Dieldrin | 2.501 | 5 | 30-130% | < 50% |
| Endosulfan I | 1.889 | 8 | 50-110% | < 50% |
| Endosulfan II | 2.675 | 8 | 30-130% | < 50% |
| Endosulfan sulfate | 1.523 | 3.33 | 55-135% | < 50% |
| Endrin | 1.368 | 3.33 | 55-135% | < 50% |
| Endrin Aldehyde | 3.485 | 10 | 40-150% | < 50% |
| Endrin ketone | 2.060 | 8 | 75-125% | < 50% |
| Heptachlor | 1.795 | 4 | 30-145% | < 50% |
| Heptachlor epoxide | 4.493 | 15 | 30-130% | < 50% |
| Lindane | 1.489 | 3.33 | 60-125% | < 50% |
| Methoxychlor | 4.681 | 15 | 55-150% | < 50% |
| Toxaphene | 42.126 | 150 | N/A | < 50% |
| trans-Chlordane | 2.638 | 10 | 60-125% | < 50% |
| **Non-Standard Compounds** | | | | |
| Alachlor | 3.416 | 10 | 40-140% | < 50% |
| Hexachlorobenzene | 2.004 | 8 | 25-140% | < 50% |

| Surrogate(s) | % Recovery |
|---|---|
| 2,4,5,6-Tetrachloro-m-xylene | 30-150% |
| Decachlorobiphenyl | 30-150% |

* Pest 10 & 11 2009 Microwave, Pest 10 SOX 2007,
Pest 11 SOX 2007 - highest MDL

| Pesticides in Liquid EPA 8081A | | | | |
|---|---|---|---|---|
| Analytes | MDL * ug/L | RL ug/L | LCS/MS % Rec | MS/MSD % RPD |
| 4,4'-DDD | 0.00464 | 0.04 | 30-135% | < 50% |
| 4,4'-DDE | 0.00381 | 0.04 | 70-125% | < 50% |
| 4,4'-DDT | 0.00432 | 0.04 | 45-140% | < 50% |
| Aldrin | 0.00216 | 0.02 | 45-140% | < 50% |
| Alpha-BHC | 0.00439 | 0.02 | 60-125% | < 50% |
| Beta-BHC | 0.00560 | 0.02 | 60-125% | < 50% |
| Chlordane | 0.04626 | 0.2 | N/A | < 50% |
| cis-Chlordane | 0.00666 | 0.02 | 65-120% | < 50% |
| Delta-BHC | 0.00467 | 0.02 | 55-135% | < 50% |
| Dieldrin | 0.00429 | 0.04 | 65-125% | < 50% |
| Endosulfan I | 0.00345 | 0.02 | 15-135% | < 50% |
| Endosulfan II | 0.00519 | 0.04 | 35-140% | < 50% |
| Endosulfan sulfate | 0.00481 | 0.04 | 60-135% | < 50% |
| Endrin | 0.00429 | 0.04 | 60-135% | < 50% |
| Endrin Aldehyde | 0.00810 | 0.04 | 35-145% | < 50% |
| Endrin ketone | 0.00477 | 0.04 | 65-135% | < 50% |
| Heptachlor | 0.00310 | 0.02 | 50-140% | < 50% |
| Heptachlor epoxide | 0.00415 | 0.02 | 65-130% | < 50% |
| Lindane | 0.00434 | 0.02 | 60-125% | < 50% |
| Methoxychlor | 0.00684 | 0.2 | 55-145% | < 50% |
| Toxaphene | 0.06299 | 0.2 | N/A | < 50% |
| trans-Chlordane | 0.00627 | 0.02 | 65-125% | < 50% |
| **Non-Standard Compounds** | | | | |
| Alachlor | 0.00514 | 0.1 | 40-140% | < 50% |
| Hexachlorobenzene | 0.00639 | 0.02 | 40-140% | < 50% |

| Surrogate(s) | % Recovery |
|---|---|
| 2,4,5,6-Tetrachloro-m-xylene | 30-150% |
| Decachlorobiphenyl | 30-150% |

* Pest 10 2007 & Pest 11 2007 - highest MDL

Alpha Analytical Inc.
Standard Reporting Limits
Westborough, MA

**PCBs in soil EPA 8082**

| Analytes | MDL * ug/Kg | RL ug/Kg | LCS/MS % Rec | MS/MSD % RPD |
|---|---|---|---|---|
| Aroclor 1016 | 6.577 | 33.3 | 40-140% | < 50% |
| Aroclor 1221 | 10.045 | 33.3 | | < 50% |
| Aroclor 1232 | 7.074 | 33.3 | | < 50% |
| Aroclor 1242 | 6.32 | 33.3 | | < 50% |
| Aroclor 1248 | 4.029 | 33.3 | | < 50% |
| Aroclor 1254 | 5.25 | 33.3 | | < 50% |
| Aroclor 1260 | 5.78 | 33.3 | 40-140% | < 50% |
| Aroclor 1262 | 2.463 | 33.3 | | < 50% |
| Aroclor 1268 | 4.831 | 33.3 | | < 50% |

| Surrogate(s) | % Recovery |
|---|---|
| 2,4,5,6-Tetrachloro-m-xylene | 30-150% |
| Decachlorobiphenyl | 30-150% |

* Pest 2 2009 , Pest 7 2008, Pest 9 2008,
Pest 12 2009, Pest 13 2012 SOX & Microwave - Highest MDL

**PCBs in Liquid EPA 8082**

| Analytes | MDL * ug/L | RL ug/L | LCS/MS % Rec | MS/MSD % RPD |
|---|---|---|---|---|
| Aroclor 1016 | 0.066 | 0.25 | 40-140% | < 30% |
| Aroclor 1221 | 0.058 | 0.25 | | < 30% |
| Aroclor 1232 | 0.037 | 0.25 | | < 30% |
| Aroclor 1242 | 0.072 | 0.25 | | < 30% |
| Aroclor 1248 | 0.067 | 0.25 | | < 30% |
| Aroclor 1254 | 0.041 | 0.25 | | < 30% |
| Aroclor 1260 | 0.038 | 0.25 | 40-140% | < 30% |
| Aroclor 1262 | 0.035 | 0.25 | | < 30% |
| Aroclor 1268 | 0.029 | 0.25 | | < 30% |

| Surrogate(s) | % Recovery |
|---|---|
| 2,4,5,6-Tetrachloro-m-xylene | 30-150% |
| Decachlorobiphenyl | 30-150% |

* Pest 7 2008, Pest 9 2008 - highest MDL

Alpha Analytical Inc.
Standard Reporting Limits
Westborough, MA

| Pesticides in Liquid EPA 608 | | | | |
|---|---|---|---|---|
| Analytes | MDL * ug/L | RL ug/L | LCS/MS % Rec | MS/MSD % RPD |
| 4,4'-DDD | 0.00498 | 0.04 | 30-150% | < 30% |
| 4,4'-DDE | 0.00350 | 0.02 | 30-150% | < 30% |
| 4,4'-DDT | 0.00524 | 0.02 | 30-150% | < 30% |
| Aldrin | 0.00345 | 0.02 | 30-150% | < 30% |
| Alpha-BHC | 0.00380 | 0.02 | 30-150% | < 30% |
| Beta-BHC | 0.00598 | 0.02 | 30-150% | < 30% |
| Chlordane | 0.04170 | 0.2 | 30-150% | < 30% |
| cis-Chlordane | 0.00414 | 0.02 | 30-150% | < 30% |
| Delta-bhc | 0.00272 | 0.02 | 30-150% | < 30% |
| Dieldrin | 0.00295 | 0.04 | 30-150% | < 30% |
| Endosulfan I | 0.00607 | 0.02 | 30-150% | < 30% |
| Endosulfan II | 0.00400 | 0.04 | 30-150% | < 30% |
| Endosulfan sulfate | 0.00524 | 0.04 | 30-150% | < 30% |
| Endrin | 0.00434 | 0.02 | 30-150% | < 30% |
| Endrin Aldehyde | 0.00257 | 0.04 | 30-150% | < 30% |
| Endrin ketone | 0.00496 | 0.04 | 30-150% | < 30% |
| Heptachlor | 0.00396 | 0.02 | 30-150% | < 30% |
| Heptachlor epoxide | 0.00619 | 0.02 | 30-150% | < 30% |
| Lindane | 0.00295 | 0.02 | 30-150% | < 30% |
| Methoxychlor | 0.00583 | 0.2 | 30-150% | < 30% |
| Toxaphene | 0.12560 | 0.2 | 30-150% | < 30% |
| trans-Chlordane | 0.00801 | 0.02 | 30-150% | < 30% |

| Surrogate(s) | % Recovery |
|---|---|
| 2,4,5,6-Tetrachloro-m-xylene | 30-150% |
| Decachlorobiphenyl | 30-150% |

* Pest 9 2008, Pest 10 2008 - highest MDL

| PCBs in Liquid EPA 608 | | | | |
|---|---|---|---|---|
| Analytes | MDL * ug/L | RL ug/L | LCS/MS % Rec | MS/MSD % RPD |
| Aroclor 1016 | 0.0918 | 0.5 | 40-126% | < 30% |
| Aroclor 1221 | 0.0549 | 0.5 | | < 30% |
| Aroclor 1232 | 0.0690 | 0.5 | | < 30% |
| Aroclor 1242 | 0.0550 | 0.5 | | < 30% |
| Aroclor 1248 | 0.0863 | 0.5 | | < 30% |
| Aroclor 1254 | 0.0639 | 0.5 | | < 30% |
| Aroclor 1260 | 0.0322 | 0.5 | 40-127% | < 30% |

| Surrogate(s) | % Recovery |
|---|---|
| 2,4,5,6-Tetrachloro-m-xylene | 30-150% |
| Decachlorobiphenyl | 30-150% |

* Pest 9 2008, Pest 10 2008 - highest MDL

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| Herbicides in Soil EPA 8151A | | | | |
|---|---|---|---|---|
| Analytes | MDL * ug/Kg | RL ug/Kg | LCS/MS % Rec | MS/MSD % RPD |
| 2,4,5-TP (Silvex) | 9.20 | 167 | 30-150% | < 30% |
| 2,4,5-T | 10.41 | 167 | 30-150% | < 30% |
| 2,4-D | 20.25 | 167 | 30-150% | < 30% |
| 2,4-DB | 11.66 | 167 | 30-150% | < 30% |
| Dalapon | 10.36 | 33.3 | 30-150% | < 30% |
| Dicamba | 9.72 | 33.3 | 30-150% | < 30% |
| Dichloroprop | 10.71 | 33.3 | 30-150% | < 30% |
| Dinoseb | 11.66 | 33.3 | 30-150% | < 30% |
| MCPP | 956.60 | 3300 | 30-150% | < 30% |
| MCPA | 1042.28 | 3300 | 30-150% | < 30% |

| Surrogate(s) | % Recovery |
|---|---|
| DCAA | 30-150% |

* Pest 8 2007 Highest MDL

| Herbicides in Liquid EPA 8151A | | | | |
|---|---|---|---|---|
| Analytes | MDL * ug/L | RL ug/L | LCS/MS % Rec | MS/MSD % RPD |
| 2,4,5-TP (Silvex) | 0.391 | 2 | 30-150% | < 25% |
| 2,4,5-T | 0.488 | 2 | 30-150% | < 25% |
| 2,4-D | 0.544 | 10 | 30-150% | < 25% |
| 2,4-DB | 1.016 | 10 | 30-150% | < 25% |
| Dalapon | 0.454 | 20 | 30-150% | < 25% |
| Dicamba | 0.304 | 1 | 30-150% | < 25% |
| Dichloroprop | 0.465 | 10 | 30-150% | < 25% |
| Dinoseb | 0.552 | 5 | 30-150% | < 25% |
| MCPA | 28.486 | 500 | 30-150% | < 25% |
| MCPP | 30.881 | 500 | 30-150% | < 25% |

| Surrogate(s) | % Recovery |
|---|---|
| DCAA | 30-150% |

* Pest 8 2007, Pest 12 2009 - Highest MDL

| VOCs in Soil - Low EPA 8260B | | | | |
|---|---|---|---|---|
| **Analytes** | **MDL * ug/Kg** | **RL ug/Kg** | **LCS/MS % Rec** | **MS/MSD % RPD** |
| 1,1,1,2-Tetrachloroethane | 0.318 | 1 | 83-119 | < 30% |
| 1,1,1-Trichloroethane | 0.111 | 1 | 78-121 | < 30% |
| 1,1,2,2-Tetrachloroethane | 0.171 | 1 | 70-123 | < 30% |
| 1,1,2-Trichloroethane | 0.125 | 1.5 | 73-114 | < 30% |
| 1,1-Dichloroethane | 0.178 | 1.5 | 79-113 | < 30% |
| 1,1-Dichloroethene | 0.206 | 1 | 65-135 | < 30% |
| 1,1-Dichloropropene | 0.456 | 5 | 75-119 | < 30% |
| 1,2,3-Trichlorobenzene | 0.168 | 4 | 71-123 | < 30% |
| 1,2,3-Trichloropropane | 0.163 | 4 | 68-118 | < 30% |
| 1,2,4,5-tetramethylbenzene | 0.130 | 4 | 70-130 | < 30% |
| 1,2,4-Trichlorobenzene | 0.120 | 4 | 79-129 | < 30% |
| 1,2,4-Trimethylbenzene | 0.573 | 4 | 82-123 | < 30% |
| 1,2-Dibromo-3-chloropropane | 0.790 | 4 | 68-118 | < 30% |
| 1,2-Dibromoethane | 0.178 | 4 | 84-112 | < 30% |
| 1,2-Dichlorobenzene | 0.183 | 4 | 85-115 | < 30% |
| 1,2-Dichloroethane | 0.146 | 1 | 75-119 | < 30% |
| 1,2-Dichloropropane | 0.228 | 3.5 | 74-114 | < 30% |
| 1,3,5-trichlorobenzene | 0.230 | 4 | | < 30% |
| 1,3,5-Trimethylbenzene | 0.143 | 4 | 79-123 | < 30% |
| 1,3-Dichlorobenzene | 0.183 | 4 | 85-116 | < 30% |
| 1,3-Dichloropropane | 0.173 | 4 | 69-117 | < 30% |
| 1,4-Dichloro-2-butane | 0.783 | 10 | 70-130 | < 30% |
| 1,4-Dichlorobenzene | 0.242 | 4 | 85-116 | < 30% |
| 1,4-Dioxane | 17.413 | 100 | 65-136 | < 30% |
| 2,2-Dichloropropene | 0.226 | 5 | 80-125 | < 30% |
| 2-Butanone | 0.355 | 10 | 76-120 | < 30% |
| 2-Chloroethylvinyl ether | 0.176 | 20 | | < 30% |
| 2-Chlorotoluene | 0.160 | 4 | 74-119 | < 30% |
| 2-Hexanone | 0.151 | 10 | 73-126 | < 30% |
| 4-Chlorotoluene | 0.133 | 4 | 75-122 | < 30% |
| 4-ethyltoluene | 0.117 | 4 | 70-130 | < 30% |
| 4-methyl-2-pentanone | 0.244 | 10 | 74-130 | < 30% |
| Acetone | 3.103 | 10 | 54-140 | < 30% |
| Acrylonitrile | 0.238 | 4 | 70-130 | < 30% |
| Benzene | 0.118 | 1 | 75-125 | < 30% |
| Bromobenzene | 0.208 | 5 | 85-115 | < 30% |
| Bromochloromethane | 0.197 | 4 | 80-122 | < 30% |

| VOCs in Soil - High EPA 8260B | | | | |
|---|---|---|---|---|
| **Analytes** | **MDL * ug/Kg** | **RL ug/Kg** | **LCS/MS % Rec** | **MS/MSD % RPD** |
| 1,1,1,2-Tetrachloroethane | 15.91 | 50 | 75-119 | < 30% |
| 1,1,1-Trichloroethane | 5.54 | 50 | 84-112 | < 30% |
| 1,1,2,2-Tetrachloroethane | 8.53 | 50 | 74-114 | < 30% |
| 1,1,2-Trichloroethane | 15.21 | 75 | 85-115 | < 30% |
| 1,1-Dichloroethane | 8.88 | 75 | 83-119 | < 30% |
| 1,1-Dichloroethene | 10.29 | 50 | 70-123 | < 30% |
| 1,1-Dichloropropene | 22.78 | 250 | 68-118 | < 30% |
| 1,2,3-Trichlorobenzene | 8.40 | 200 | 69-117 | < 30% |
| 1,2,3-Trichloropropane | 11.24 | 200 | | < 30% |
| 1,2,4,5-tetramethylbenzene | 6.51 | 200 | 79-123 | < 30% |
| 1,2,4-Trichlorobenzene | 39.49 | 200 | 85-116 | < 30% |
| 1,2,4-Trimethylbenzene | 28.65 | 200 | 70-130 | < 30% |
| 1,2-Dibromo-3-chloropropane | 39.49 | 200 | 71-123 | < 30% |
| 1,2-Dibromoethane | 8.89 | 200 | 68-118 | < 30% |
| 1,2-Dichlorobenzene | 9.16 | 200 | 79-129 | < 30% |
| 1,2-Dichloroethane | 7.31 | 50 | 82-123 | < 30% |
| 1,2-Dichloropropane | 11.42 | 175 | 85-116 | < 30% |
| 1,3,5-trichlorobenzene | 11.48 | 200 | 80-125 | < 30% |
| 1,3,5-Trimethylbenzene | 7.17 | 200 | 75-122 | < 30% |
| 1,3-Dichlorobenzene | 9.16 | 200 | 76-120 | < 30% |
| 1,3-Dichloropropane | 8.65 | 200 | 74-119 | < 30% |
| 1,4-Dichlorobenzene | 12.09 | 200 | 74-130 | < 30% |
| 1,4-Dichlorobutane | 39.17 | 500 | | < 30% |
| 1,4-Dioxane | 721.13 | 5000 | | < 30% |
| 2,2-Dichloropropane | 11.28 | 250 | 73-126 | < 30% |
| 2-Butanone | 17.76 | 500 | 70-130 | < 30% |
| 2-Chloroethylvinyl ether | 30.80 | 1000 | 73-111 | < 30% |
| 2-Chlorotoluene | 7.99 | 200 | 65-136 | < 30% |
| 2-Hexanone | 9.41 | 500 | | < 30% |
| 4-Chlorotoluene | 7.69 | 200 | 70-130 | < 30% |
| 4-ethyltoluene | 5.85 | 200 | | < 30% |
| 4-Methyl-2-pentanone | 12.22 | 500 | | < 30% |
| Acetone | 155.17 | 500 | 54-140 | < 30% |
| Acrylonitrile | 11.89 | 200 | 70-130 | < 30% |
| Benzene | 5.90 | 50 | 75-125 | < 30% |
| Bromobenzene | 10.42 | 250 | 85-115 | < 30% |
| Bromochloromethane | 9.85 | 200 | 80-122 | < 30% |

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**VOCs in Soil - Low EPA 8260B**

| Analytes | MDL * ug/Kg | RL ug/Kg | LCS/MS % Rec | MS/MSD % RPD |
|---|---|---|---|---|
| Bromodichloromethane | 0.229 | 1 | 80-115 | < 30% |
| Bromoform | 0.415 | 4 | 75-124 | < 30% |
| Bromomethane | 0.206 | 2 | 57-147 | < 30% |
| Carbon disulfide | 1.101 | 4 | 59-112 | < 30% |
| Carbon tetrachloride | 0.210 | 1 | 75-123 | < 30% |
| Chlorobenzene | 0.348 | 1 | 75-125 | < 30% |
| Chlorodibromomethane | 0.308 | 1 | 79-116 | < 30% |
| Chloroethane | 0.316 | 2 | 50-151 | < 30% |
| Chloroform | 0.370 | 1.5 | 78-114 | < 30% |
| Chloromethane | 0.168 | 4 | 52-120 | < 30% |
| cis-1,2-Dichloroethene | 0.149 | 1 | 85-117 | < 30% |
| cis-1,3-Dichloropropene | 0.127 | 1 | 77-110 | < 30% |
| cyclohexane | 0.123 | 20 |  | < 30% |
| Dibromomethane | 0.164 | 4 | 81-116 | < 30% |
| Dichlorodifluoromethane | 0.218 | 10 | 30-146 | < 30% |
| Diisopropyl ether | 0.140 | 4 | 66-118 | < 30% |
| Ethyl Acetate | 0.819 | 20 |  | < 30% |
| Ethyl benzene | 0.147 | 1 | 81-121 | < 30% |
| ethyl ether | 0.266 | 5 | 67-129 | < 30% |
| Ethyl-methacrylate | 0.168 | 10 | 70-130 | < 30% |
| Ethyl-tert-butyl ether | 0.423 | 4 | 73-111 | < 30% |
| Freon-113 | 0.273 | 4 |  | < 30% |
| Hexachlorobutadiene | 0.422 | 4 | 67-126 | < 30% |
| Isopropylbenzene | 0.168 | 1 | 79-123 | < 30% |
| Methyl acetate | 0.466 | 4 |  | < 30% |
| methyl cyclohexane | 0.699 | 4 |  | < 30% |
| Methylene chloride | 2.000 | 5 | 71-115 | < 30% |
| Methyl-tert-butyl ether | 0.104 | 2 | 66-113 | < 30% |
| Naphthalene | 0.138 | 4 | 73-114 | < 30% |
| n-Butylbenzene | 0.198 | 1 | 72-128 | < 30% |
| n-Propylbenzene | 0.126 | 1 | 73-125 | < 30% |
| o-Xylene | 0.271 | 2 | 82-125 | < 30% |
| p/m-Xylene | 0.323 | 2 | 83-120 | < 30% |
| p-diethylbenzene | 0.160 | 4 | 70-130 | < 30% |
| p-Isopropyltoluene | 0.125 | 1 | 84-126 | < 30% |
| sec-Butylbenzene | 0.206 | 1 | 73-123 | < 30% |
| Styrene | 0.309 | 2 | 85-121 | < 30% |

**VOCs in Soil - High EPA 8260B**

| Analytes | MDL * ug/Kg | RL ug/Kg | LCS/MS % Rec | MS/MSD % RPD |
|---|---|---|---|---|
| Bromodichloromethane | 11.45 | 50 | 80-115 | < 30% |
| Bromoform | 20.74 | 200 | 75-124 | < 30% |
| Bromomethane | 16.90 | 100 | 57-147 | < 30% |
| Carbon disulfide | 55.06 | 200 | 59-112 | < 30% |
| Carbon tetrachloride | 10.51 | 50 | 75-123 | < 30% |
| Chlorobenzene | 17.38 | 50 | 75-125 | < 30% |
| Chlorodibromomethane | 15.39 | 50 | 79-116 | < 30% |
| Chloroethane | 15.80 | 100 | 50-151 | < 30% |
| Chloroform | 18.51 | 75 | 78-114 | < 30% |
| Chloromethane | 39.16 | 200 | 52-120 | < 30% |
| cis-1,2-Dichloroethene | 7.47 | 50 | 85-117 | < 30% |
| cis-1,3-Dichloropropene | 6.36 | 50 | 77-110 | < 30% |
| Cyclohexane | 31.26 | 1000 | 81-116 | < 30% |
| Dibromomethane | 8.18 | 200 | 30-146 | < 30% |
| Dichlorodifluoromethane | 10.91 | 500 | 81-121 | < 30% |
| Diisopropyl ether | 6.98 | 200 |  | < 30% |
| Ethyl Acetate | 40.97 | 1000 | 67-129 |  |
| Ethyl benzene | 7.37 | 50 | 70-130 | < 30% |
| Ethyl ether | 13.28 | 250 | 67-126 | < 30% |
| Ethyl methacrylate | 8.38 | 500 | 79-123 | < 30% |
| Ethyl-Tert-Butyl-Ether | 21.16 | 200 |  | < 30% |
| Freon-113 | 13.66 | 200 | 70-130 | < 30% |
| Hexachlorobutadiene | 21.12 | 200 | 71-115 | < 30% |
| Isopropylbenzene | 8.38 | 50 | 66-113 | < 30% |
| Methyl Acetate | 23.30 | 200 | 73-114 | < 30% |
| methyl cyclohexane | 34.97 | 200 | 72-128 | < 30% |
| Methylene chloride | 100.00 | 250 | 73-125 | < 30% |
| Methyl-tert-butyl ether | 5.21 | 100 | 82-125 | < 30% |
| Naphthalene | 38.48 | 200 | 83-120 | < 30% |
| n-Butylbenzene | 9.88 | 50 | 84-126 | < 30% |
| n-Propylbenzene | 6.29 | 50 | 73-123 | < 30% |
| o-Xylene | 13.54 | 100 | 85-121 | < 30% |
| p/m-Xylene | 16.13 | 100 | 78-119 | < 30% |
| p-Diethylbenzene | 7.99 | 200 | 82-122 | < 30% |
| p-Isopropyltoluene | 9.56 | 50 | 66-111 | < 30% |
| sec-Butylbenzene | 10.29 | 50 | 75-125 | < 30% |
| Styrene | 15.47 | 100 | 78-113 | < 30% |

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| VOCs in Soil - Low EPA 8260B | | | | |
|---|---|---|---|---|
| Analytes | MDL * ug/Kg | RL ug/Kg | LCS/MS % Rec | MS/MSD % RPD |
| Tert-Butyl Alcohol | 0.907 | 20 | | < 30% |
| tert-Butylbenzene | 0.561 | 4 | 78-119 | < 30% |
| Tertiary-amyl methyl ether | 0.576 | 4 | 76-117 | < 30% |
| Tetrachloroethene | 0.140 | 1 | 82-122 | < 30% |
| Tetrahydrofuran | 0.375 | 4 | 66-111 | < 30% |
| Toluene | 0.112 | 1.5 | 75-125 | < 30% |
| trans-1,2-Dichloroethene | 0.212 | 1.5 | 78-113 | < 30% |
| trans-1,3-Dichloropropene | 0.121 | 1 | 77-119 | < 30% |
| trans-1,4-Dichloro-2-butene | 0.448 | 5 | 70-130 | < 30% |
| Trichloroethene | 0.152 | 1 | 75-125 | < 30% |
| Trichlorofluoromethane | 0.121 | 4 | 73-139 | < 30% |
| Vinyl Acetate | 0.480 | 10 | 70-130 | < 30% |
| Vinyl chloride | 0.082 | 2 | 67-121 | < 30% |

| Surrogate(s) | % Recovery |
|---|---|
| dibromofluoromethane | 70-130% |
| 1,2-dichloroethane-d4 | 70-130% |
| toluene-d8 | 70-130% |
| 4-bromofluorobenzene | 70-130% |

* Curly 2005, Charlie 2010. VOA100 2011, VOA 104 2011 - Highest MDL

| VOCs in Soil - High EPA 8260B | | | | |
|---|---|---|---|---|
| Analytes | MDL * ug/Kg | RL ug/Kg | LCS/MS % Rec | MS/MSD % RPD |
| Tert-Butyl Alcohol | 45.37 | 1000 | | < 30% |
| tert-Butylbenzene | 28.04 | 200 | 77-119 | < 30% |
| Tertiary-Amyl Methyl Ether | 28.80 | 200 | 76-117 | < 30% |
| Tetrachloroethene | 7.01 | 50 | 70-130 | < 30% |
| Tetrahydrofuran | 18.75 | 200 | 75-125 | < 30% |
| Toluene | 5.60 | 75 | 73-139 | < 30% |
| trans-1,2-Dichloroethene | 10.58 | 75 | 70-130 | < 30% |
| trans-1,3-Dichloropropene | 6.04 | 50 | 67-121 | < 30% |
| trans-1,4-Dichloro-2-butene | 19.58 | 250 | 79-113 | < 30% |
| Trichloroethene | 7.61 | 50 | 65-135 | < 30% |
| Trichlorofluoromethane | 6.07 | 200 | 75-119 | < 30% |
| Vinyl acetate | 23.98 | 500 | 78-121 | < 30% |
| Vinyl chloride | 7.06 | 100 | 73-114 | < 30% |

| Surrogate(s) | % Recovery |
|---|---|
| dibromofluoromethane | 70-130% |
| 1,2-dichloroethane-d4 | 70-130% |
| toluene-d8 | 70-130% |
| 4-bromofluorobenzene | 70-130% |

* Curly 2005, Charlie 2010. VOA100 2011, VOA 104 2011 - Highest MDL

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| VOCs in Liquid EPA 8260B | | | | |
|---|---|---|---|---|
| **Analytes** | **MDL * ug/L** | **RL ug/L** | **LCS/MS % Rec** | **MS/MSD % RPD** |
| 1,1,1,2-Tetrachloroethane | 0.165 | 0.5 | 64-125 | < 20% |
| 1,1,1-Trichloroethane | 0.158 | 0.5 | 67-123 | < 20% |
| 1,1,2,2-Tetrachloroethane | 0.192 | 0.5 | 67-124 | < 20% |
| 1,1,2-Trichloroethane | 0.261 | 0.75 | 70-125 | < 20% |
| 1,1-Dichloroethane | 0.181 | 0.75 | 73-119 | < 20% |
| 1,1-Dichloroethene | 0.216 | 0.5 | 61-145 | < 20% |
| 1,1-Dichloropropene | 0.256 | 2.5 | 72-118 | < 20% |
| 1,2,3-Trichlorobenzene | 0.234 | 2.5 | 75-125 | < 20% |
| 1,2,3-Trichloropropane | 0.428 | 5 | 64-127 | < 20% |
| 1,2,4,5-Tetramethylbenzene | 0.542 | 2 | | < 20% |
| 1,2,4-Trichlorobenzene | 0.220 | 2.5 | 75-125 | < 20% |
| 1,2,4-Trimethylbenzene | 0.191 | 2.5 | 75-121 | < 20% |
| 1,2-Dibromo-3-chloropropane | 0.650 | 2.5 | 41-144 | < 20% |
| 1,2-Dibromoethane | 0.202 | 2 | 70-119 | < 20% |
| 1,2-Dichlorobenzene | 0.184 | 2.5 | 75-125 | < 20% |
| 1,2-Dichloroethane | 0.160 | 0.5 | 71-125 | < 20% |
| 1,2-Dichloropropane | 0.296 | 1.75 | 70-120 | < 20% |
| 1,3,5-trichlorobenzene | 0.109 | 2 | | < 20% |
| 1,3,5-Trimethylbenzene | 0.211 | 2.5 | 64-121 | < 20% |
| 1,3-Dichlorobenzene | 0.186 | 2.5 | 75-125 | < 20% |
| 1,3-Dichloropropane | 0.212 | 2.5 | 71-122 | < 20% |
| 1,4-Dichloro-2-butane | 0.464 | 5 | | < 20% |
| 1,4-Dichlorobenzene | 0.215 | 2.5 | 75-125 | < 20% |
| 1,4-Dioxane | 75.706 | 250 | 56-162 | < 20% |
| 2,2-Dichloropropane | 0.204 | 2.5 | 63-133 | < 20% |
| 2-Butanone | 1.939 | 5 | 63-138 | < 20% |
| 2-Chloroethylvinyl ether | 0.402 | 10 | 75-125 | < 20% |
| 2-Chlorotoluene | 0.182 | 2.5 | 75-125 | < 20% |
| 2-Hexanone | 0.578 | 5 | 57-128 | < 20% |
| 4,-Methy-2-pentanone | 0.824 | 5 | 59-126 | < 20% |
| 4-Chlorotoluene | 0.185 | 2.5 | 75-125 | < 20% |
| 4-Ethyltoluene | 0.340 | 2 | | < 20% |
| Acetone | 1.561 | 5 | 58-148 | < 20% |
| Acrylonitrile | 0.430 | 5 | 70-102 | < 20% |
| Benzene | 0.194 | 0.5 | 76-127 | < 20% |
| Bromobenzene | 0.184 | 2.5 | 75-125 | < 20% |
| Bromochloromethane | 0.329 | 2.5 | 74-123 | < 20% |

| VOCs in Liquid EPA 8260B | | | | |
|---|---|---|---|---|
| Analytes | MDL * ug/L | RL ug/L | LCS/MS % Rec | MS/MSD % RPD |
| Bromodichloromethane | 0.192 | 0.5 | 67-121 | < 20% |
| Bromoform | 0.277 | 2 | 54-136 | < 20% |
| Bromomethane | 0.256 | 1 | 39-139 | < 20% |
| Carbon disulfide | 0.299 | 5 | 51-121 | < 20% |
| Carbon tetrachloride | 0.165 | 0.5 | 63-132 | < 20% |
| Chlorobenzene | 0.192 | 0.5 | 75-130 | < 20% |
| Chlorodibromomethane | 0.189 | 0.5 | 63-119 | < 20% |
| Chloroethane | 0.233 | 1 | 55-138 | < 20% |
| Chloroform | 0.198 | 0.75 | 75-125 | < 20% |
| Chloromethane | 0.281 | 2.5 | 64-130 | < 20% |
| cis-1,2-Dichloroethene | 0.187 | 0.5 | 75-125 | < 20% |
| cis-1,3-Dichloropropene | 0.144 | 0.5 | 75-125 | < 20% |
| Cyclohexane | 0.271 | 10 | | < 20% |
| Dibromomethane | 0.363 | 5 | 76-126 | < 20% |
| Dichlorodifluoromethane | 0.300 | 5 | 36-147 | < 20% |
| Diisopropyl Ether | 0.165 | 2 | 75-125 | < 20% |
| Ethyl acetate | 0.716 | 10 | 75-125 | < 20% |
| Ethyl benzene | 0.171 | 0.5 | 79-118 | < 20% |
| Ethyl ether | 0.265 | 2.5 | 59-134 | < 20% |
| Ethyl-methacrylate | 0.606 | 5 | | < 20% |
| Ethyl-Tert-Butyl-Ether | 0.382 | 2 | 75-125 | < 20% |
| Freon -113 | 0.234 | 10 | 70-130 | < 20% |
| Halothane | 0.149 | 2 | 70-130 | < 20% |
| Hexachlorobutadiene | 0.230 | 0.5 | 63-123 | < 20% |
| Isopropylbenzene | 0.187 | 0.5 | 73-122 | < 20% |
| Methyl Acetate | 0.201 | 10 | | < 20% |
| Methyl cyclohexane | 0.396 | 10 | | < 20% |
| Methylene chloride | 0.289 | 5 | 74-121 | < 20% |
| Methyl-tert-butyl ether | 0.539 | 1 | 63-112 | < 20% |
| Naphthalene | 0.216 | 2.5 | 75-125 | < 20% |
| n-Butylbenzene | 0.196 | 0.5 | 53-136 | < 20% |
| n-Propylbenzene | 0.173 | 0.5 | 69-127 | < 20% |
| o-Xylene | 0.330 | 1 | 75-125 | < 20% |
| p/m-Xylene | 0.348 | 1 | 75-125 | < 20% |
| p-Diethylbenzene | 0.392 | 2 | | < 20% |
| p-Isopropyltoluene | 0.188 | 0.5 | 73-127 | < 20% |
| sec-Butylbenzene | 0.181 | 0.5 | 70-124 | < 20% |

| VOCs in Liquid EPA 8260B | | | | |
|---|---|---|---|---|
| **Analytes** | **MDL * ug/L** | **RL ug/L** | **LCS/MS % Rec** | **MS/MSD % RPD** |
| Styrene | 0.366 | 1 | 70-122 | < 20% |
| Tert butyl Alcohol | 0.402 | 10 | 80-129 | < 20% |
| tert-Butylbenzene | 0.215 | 2.5 | 70-122 | < 20% |
| Tertiary-Amyl Methyl Ether | 0.184 | 2 | 66-124 | < 20% |
| Tetrachloroethene | 0.181 | 0.5 | 70-130 | < 20% |
| Tetrahydrofuran | 1.299 | 5 | 58-123 | < 20% |
| Toluene | 0.227 | 0.75 | 76-125 | < 20% |
| trans-1,2-Dichloroethene | 0.202 | 0.75 | 75-125 | < 20% |
| trans-1,3-Dichloropropene | 0.164 | 0.5 | 75-125 | < 20% |
| trans-1,4-Dichloro-2-butene | 0.173 | 2.5 | 70-118 | < 20% |
| Trichloroethene | 0.175 | 0.5 | 71-120 | < 20% |
| Trichlorofluoromethane | 0.280 | 2.5 | 62-150 | < 20% |
| Vinyl acetate | 0.304 | 5 | 83-124 | < 20% |
| Vinyl chloride | 0.268 | 1 | 55-140 | < 20% |

| Surrogate(s) | % Recovery |
|---|---|
| dibromofluoromethane | 70-130% |
| 1,2-dichloroethane-d4 | 70-130% |
| toluene-d8 | 70-130% |
| 4-bromofluorobenzene | 70-130% |

)7, Quimby Con1/2 -2007, Jack Con1/2- 2008, Gonzo 2009, VOA101 2011 - I

| SVOCs in Soil - EPA 8270 | | | | |
|---|---|---|---|---|
| Analytes | MDL * ug/Kg | RL ug/Kg | LCS/MS % Rec | MS/MSD % RPD |
| 1,2,4,5-Tetrachlorobenzene | 26.675 | 167 | 40-117% | < 50% |
| 1,2,4-Trichlorobenzene | 30.785 | 167 | 38-107% | < 50% |
| 1,2-Dichlorobenzene | 27.116 | 167 | 40-140% | < 50% |
| 1,3-Dichlorobenzene | 30.215 | 167 | 40-140% | < 50% |
| 1,4-Dichlorobenzene | 34.472 | 167 | 28-104% | < 50% |
| 1-chloro-2-nitrobenzene | 53.670 | 167 | | < 50% |
| 1-Methylnaphthalene | 34.217 | 167 | | < 50% |
| 2,3,4,6-Tetrachlorophenol | 41.946 | 167 | | < 50% |
| 2,4,5-Trichlorophenol | 54.135 | 167 | 30-130% | < 50% |
| 2,4,6-Trichlorophenol | 31.489 | 100 | 30-130% | < 50% |
| 2,4-Dichlorophenol | 29.371 | 150 | 30-130% | < 50% |
| 2,4-Dimethylphenol | 49.877 | 167 | 30-130% | < 50% |
| 2,4-Dinitrophenol | 228.543 | 800 | 4-130% | < 50% |
| 2,4-Dinitrotoluene | 26.784 | 167 | 28-89% | < 50% |
| 2,6-Dinitrotoluene | 37.981 | 167 | 40-140% | < 50% |
| 2-Chloroaniline | 29.878 | 167 | | < 50% |
| 2-Chloronaphthalene | 28.888 | 167 | 40-140% | < 50% |
| 2-Chlorophenol | 37.444 | 167 | 25-102% | < 50% |
| 2-Methylnaphthalene | 29.332 | 200 | 40-140% | < 50% |
| 2-Methylphenol | 40.939 | 167 | 30-130% | < 50% |
| 2-Nitroaniline | 47.003 | 167 | 47-134% | < 50% |
| 2-Nitrophenol | 29.064 | 360 | 30-130% | < 50% |
| 3,3'-Dichlorobenzidine | 36.082 | 167 | 40-140% | < 50% |
| 3,3'-Dimethylbenzidine | 103.735 | 330 | 15-115% | < 50% |
| 3-Chloroaniline | 50.654 | 250 | | < 50% |
| 3-Methylphenol/4-Methylphen | 42.574 | 233 | 30-130% | < 50% |
| 3-Nitroaniline | 46.110 | 167 | 26-129% | < 50% |
| 4,6-Dinitro-o-cresol | 61.225 | 433 | 10-130% | < 50% |
| 4-Bromophenyl phenyl ether | 38.428 | 167 | 40-140% | < 50% |
| 4-Chloroaniline | 44.207 | 167 | 40-140% | < 50% |
| 4-Chlorophenyl phenyl ether | 32.996 | 167 | 40-140% | < 50% |
| 4-Nitroaniline | 44.944 | 333 | 41-125% | < 50% |
| 4-Nitrophenol | 54.158 | 233 | 11-114% | < 50% |
| Acenaphthene | 34.490 | 133 | 31-137% | < 50% |
| Acenaphthylene | 31.238 | 133 | 40-140% | < 50% |

| SVOCs in Liquid EPA 8270 | | | | |
|---|---|---|---|---|
| Analytes | MDL * ug/L | RL ug/L | LCS/MS % Rec | MS/MSD % RPD |
| 1,2,4,5-Tetrachlorobenzene | 0.652 | 10 | 2-134% | < 30% |
| 1,2,4-Trichlorobenzene | 0.669 | 5 | 39-98% | < 30% |
| 1,2-Dichlorobenzene | 0.547 | 2 | 40-140% | < 30% |
| 1,3-Dichlorobenzene | 0.550 | 2 | 40-140% | < 30% |
| 1,4-Dichlorobenzene | 0.551 | 2 | 36-97% | < 30% |
| 1-chloro-2-nitrobenzene | 0.634 | 5 | | < 30% |
| 1-Methylnaphthalene | 0.636 | 2 | | < 30% |
| 2,3,4,6-Tetrachlorophenol | 0.654 | 5 | | < 30% |
| 2,4,5-Trichlorophenol | 0.447 | 5 | 30-130% | < 30% |
| 2,4,6-Trichlorophenol | 0.448 | 5 | 30-130% | < 30% |
| 2,4-Dichlorophenol | 0.429 | 5 | 30-130% | < 30% |
| 2,4-Dimethylphenol | 1.243 | 5 | 30-130% | < 30% |
| 2,4-Dinitrophenol | 1.408 | 20 | 20-130% | < 30% |
| 2,4-Dinitrotoluene | 0.446 | 5 | 24-96% | < 30% |
| 2,6-Dinitrotoluene | 0.459 | 5 | 40-140% | < 30% |
| 2-Chloroaniline | 0.349 | 5 | | < 30% |
| 2-Chloronaphthalene | 0.474 | 2 | 40-140% | < 30% |
| 2-Chlorophenol | 0.340 | 2 | 27-123% | < 30% |
| 2-Methylnaphthalene | 0.548 | 2 | 40-140% | < 30% |
| 2-Methylphenol | 0.528 | 5 | 30-130% | < 30% |
| 2-Nitroaniline | 0.398 | 5 | 52-143% | < 30% |
| 2-Nitrophenol | 0.475 | 10 | 30-130% | < 30% |
| 3,3'-Dichlorobenzidine | 0.852 | 5 | 40-140% | < 30% |
| 3-Chloroaniline | 1.119 | 10 | | < 30% |
| 3-Methylphenol/4-Methylphen | 0.471 | 5 | 30-130% | < 30% |
| 3-Nitroaniline | 0.590 | 5 | 25-145% | < 30% |
| 4,6-Dinitro-o-cresol | 0.587 | 10 | 20-164% | < 30% |
| 4-Bromophenyl phenyl ether | 0.674 | 2 | 40-140% | < 30% |
| 4-Chloroaniline | 0.829 | 5 | 40-140% | < 30% |
| 4-Chlorophenyl phenyl ether | 0.611 | 2 | 40-140% | < 30% |
| 4-Nitroaniline | 0.551 | 5 | 51-143% | < 30% |
| 4-Nitrophenol | 1.224 | 10 | 10-80% | < 30% |
| Acenaphthene | 0.547 | 2 | 37-111% | < 30% |
| Acenaphthylene | 0.503 | 2 | 45-123% | < 30% |
| Acetophenone | 0.552 | 5 | 39-129% | < 30% |

| SVOCs in Soil - EPA 8270 | | | | |
|---|---|---|---|---|
| Analytes | MDL * ug/Kg | RL ug/Kg | LCS/MS % Rec | MS/MSD % RPD |
| Acetophenone | 37.894 | 167 | 14-144% | < 50% |
| Aniline | 34.039 | 200 | 40-140% | < 50% |
| Anthracene | 27.776 | 100 | 40-140% | < 50% |
| a-Terpineol | 41.094 | 167 | | < 50% |
| Atrazine | 27.121 | 133 | | < 50% |
| Azobenzene | 33.369 | 167 | | < 50% |
| Benzaldehyde | 43.827 | 220 | | < 50% |
| Benzidine | 95.442 | 567 | | < 50% |
| Benzo(a)anthracene | 30.452 | 100 | 40-140% | < 50% |
| Benzo(a)pyrene | 28.618 | 133 | 40-140% | < 50% |
| Benzo(b)fluoranthene | 29.970 | 100 | 40-140% | < 50% |
| Benzo(ghi)perylene | 33.842 | 133 | 40-140% | < 50% |
| Benzo(k)fluoranthene | 31.868 | 100 | 40-140% | < 50% |
| Benzoic acid | 145.546 | 540 | | < 50% |
| Benzyl alcohol | 38.665 | 167 | 40-140% | < 50% |
| Biphenyl | 27.338 | 380 | | < 50% |
| Bis(2-chloroethoxy)methane | 33.111 | 180 | 40-117% | < 50% |
| Bis(2-chloroethyl)ether | 26.237 | 150 | 40-140% | < 50% |
| Bis(2-chloroisopropyl)ether | 36.058 | 200 | 40-140% | < 50% |
| Bis(2-ethylhexyl)phthalate | 39.445 | 167 | 40-140% | < 50% |
| Butyl benzyl phthalate | 32.642 | 167 | 40-140% | < 50% |
| Caprolactam | 46.218 | 167 | | < 50% |
| Carbazole | 30.943 | 167 | 54-128% | < 50% |
| Chrysene | 32.791 | 100 | 40-140% | < 50% |
| Dibenzo(a,h)anthracene | 31.286 | 100 | 40-140% | < 50% |
| Dibenzofuran | 29.473 | 167 | 40-140% | < 50% |
| Dichloran | 42.675 | 180 | | < 50% |
| Diethyl phthalate | 27.814 | 167 | 40-140% | < 50% |
| Dimethyl phthalate | 26.863 | 167 | 40-140% | < 50% |
| Di-n-butylphthalate | 32.243 | 167 | 40-140% | < 50% |
| Di-n-octylphthalate | 37.623 | 167 | 40-140% | < 50% |
| Diphenamid | 30.883 | 167 | | < 50% |
| Fluoranthene | 28.309 | 100 | 40-140% | < 50% |
| Fluorene | 32.401 | 167 | 40-140% | < 50% |
| Hexachlorobenzene | 28.923 | 100 | 40-140% | < 50% |

| SVOCs in Liquid EPA 8270 | | | | |
|---|---|---|---|---|
| Analytes | MDL * ug/L | RL ug/L | LCS/MS % Rec | MS/MSD % RPD |
| Aniline | 0.465 | 2 | 40-140% | < 30% |
| Anthracene | 0.473 | 2 | 40-140% | < 30% |
| a-Terpineol | 0.460 | 5 | | < 30% |
| Atrazine | 2.248 | 10 | | < 30% |
| Azobenzene | 0.576 | 2 | 40-140% | < 30% |
| Benzaldehyde | 0.596 | 5 | | < 30% |
| Benzo(a)anthracene | 0.822 | 2 | 40-140% | < 30% |
| Benzo(a)pyrene | 0.484 | 2 | 40-140% | < 30% |
| Benzo(b)fluoranthene | 0.483 | 2 | 40-140% | < 30% |
| Benzo(ghi)perylene | 0.531 | 2 | 40-140% | < 30% |
| Benzo(k)fluoranthene | 0.486 | 2 | 40-140% | < 30% |
| Benzoic acid | 1.010 | 50 | | < 30% |
| Benzyl alcohol | 0.473 | 2 | | < 30% |
| Biphenyl | 0.502 | 2 | | < 30% |
| Bis(2-chloroethoxy)methane | 0.399 | 5 | 40-140% | < 30% |
| Bis(2-chloroethyl)ether | 0.387 | 2 | 40-140% | < 30% |
| Bis(2-chloroisopropyl)ether | 0.504 | 2 | 40-140% | < 30% |
| Bis(2-ethylhexyl)phthalate | 1.400 | 3 | 40-140% | < 30% |
| Butyl benzyl phthalate | 0.459 | 5 | 40-140% | < 30% |
| Caprolactam | 0.389 | 10 | | < 30% |
| Carbazole | 0.529 | 2 | 55-144% | < 30% |
| Chrysene | 0.562 | 2 | 40-140% | < 30% |
| Dibenzo(a,h)anthracene | 0.484 | 2 | 40-140% | < 30% |
| Dibenzofuran | 0.473 | 2 | 40-140% | < 30% |
| Dichloran | 0.700 | 5 | | < 30% |
| Diethyl phthalate | 0.451 | 5 | 40-140% | < 30% |
| Dimethyl phthalate | 0.449 | 5 | 40-140% | < 30% |
| Di-n-butylphthalate | 0.543 | 5 | 40-140% | < 30% |
| Di-n-octylphthalate | 0.533 | 5 | 40-140% | < 30% |
| Diphenamid | 0.577 | 5 | | < 30% |
| Fluoranthene | 0.510 | 2 | 40-140% | < 30% |
| Fluorene | 0.490 | 2 | 40-140% | < 30% |
| Hexachlorobenzene | 0.646 | 2 | 40-140% | < 30% |
| Hexachlorobutadiene | 0.810 | 2 | 40-140% | < 30% |
| Hexachlorocyclopentadiene | 2.060 | 20 | 40-140% | < 30% |

Alpha Analytical Inc.
Standard Reporting Limits
Westborough, MA

| SVOCs in Soil - EPA 8270 | | | | |
|---|---|---|---|---|
| Analytes | MDL * ug/Kg | RL ug/Kg | LCS/MS % Rec | MS/MSD % RPD |
| Hexachlorobutadiene | 36.213 | 167 | 40-140% | < 50% |
| Hexachlorocyclopentadiene | 107.246 | 478 | 40-140% | < 50% |
| Hexachloroethane | 30.375 | 133 | 40-140% | < 50% |
| Indeno(1,2,3-cd)pyrene | 37.047 | 133 | 40-140% | < 50% |
| Isophorone | 35.539 | 150 | 40-140% | < 50% |
| m-Toluidine | 29.069 | 300 | | < 50% |
| Naphthalene | 36.149 | 167 | 40-140% | < 50% |
| Nitrobenzene | 35.214 | 133 | 40-140% | < 50% |
| NDPA/DPA | 39.719 | 150 | | < 50% |
| n-Nitrosodimethylamine | 26.621 | 333 | | < 50% |
| n-Nitrosodi-n-propylamine | 35.898 | 167 | 32-121% | < 50% |
| p-Chloro-m-cresol | 40.262 | 167 | 26-103% | < 50% |
| Pentachloronitrobenzene | 44.458 | 150 | 42-153% | < 50% |
| Pentachlorophenol | 35.691 | 133 | 17-109% | < 50% |
| Phenanthrene | 27.307 | 100 | 40-140% | < 50% |
| Phenol | 40.882 | 167 | 26-90% | < 50% |
| Pyrene | 30.097 | 100 | 35-142% | < 50% |
| Pyridine | 37.303 | 667 | 10-93% | < 50% |

| Surrogate(s) | % Recovery |
|---|---|
| 2,4,6-Tribromophenol | 0-136% |
| 2-Fluorobiphenyl | 30-120% |
| 2-Fluorophenol | 25-120% |
| 4-Terphenyl-d14 | 18-120% |
| Nitrobenzene-d5 | 23-120% |
| Phenol-d6 | 10-120% |

* Buffy '12, GCMS5 '12, GCMS7 '12, Juliet '12,
SV103 '12 - Highest MDL
30-gram Extraction

| SVOCs in Liquid EPA 8270 | | | | |
|---|---|---|---|---|
| Analytes | MDL * ug/L | RL ug/L | LCS/MS % Rec | MS/MSD % RPD |
| Hexachloroethane | 0.665 | 2 | 40-140% | < 30% |
| Indeno(1,2,3-cd)pyrene | 0.477 | 2 | 40-140% | < 30% |
| Isophorone | 0.349 | 5 | 40-140% | < 30% |
| m-Toluidine | 0.588 | 10 | | < 30% |
| Naphthalene | 0.725 | 2 | 40-140% | < 30% |
| Nitrobenzene | 0.701 | 2 | 40-140% | < 30% |
| NDPA/DPA | 0.505 | 2 | 40-140% | < 30% |
| n-Nitrosodimethylamine | 0.554 | 2 | | < 30% |
| n-Nitrosodi-n-propylamine | 0.392 | 5 | 29-132% | < 30% |
| p-Chloro-m-cresol | 0.500 | 2 | 23-97% | < 30% |
| Pentachlorophenol | 1.215 | 10 | 9-103% | < 30% |
| Phenanthrene | 0.488 | 2 | 40-140% | < 30% |
| Phenol | 0.265 | 5 | 12-110% | < 30% |
| Pyrene | 0.438 | 2 | 26-127% | < 30% |
| Pyridine | 0.649 | 5 | 10-66% | < 30% |

| Surrogate(s) | % Recovery |
|---|---|
| 2,4,6-Tribromophenol | 10-120% |
| 2-Fluorobiphenyl | 15-120% |
| 2-Fluorophenol | 21-120% |
| 4-Terphenyl-d14 | 33-120% |
| Nitrobenzene-d5 | 23-120% |
| Phenol-d6 | 10-120% |

* GCMS5 '11, Buffy '11, Juliet '11, GCMS7 '11 - Highest MDL
2-Liter Extraction

Alpha Analytical Inc.
Standard Reporting Limits
Westborough, MA

| SVOCs in Soil - EPA 8270SIM | | | | |
|---|---|---|---|---|
| Analytes | MDL * ug/Kg | RL ug/Kg | LCS/MS % Rec | MS/MSD % RPD |
| 1-Methylnaphthalene | 0.911 | 6.67 | 40-140% | < 50% |
| 2-Chloronaphthalene | 1.762 | 6.67 | 40-140% | < 50% |
| 2-Methylnaphthalene | 0.794 | 6.67 | 40-140% | < 50% |
| Acenaphthene | 0.895 | 6.67 | 40-140% | < 50% |
| Acenaphthylene | 0.801 | 6.67 | 40-140% | < 50% |
| Anthracene | 0.901 | 6.67 | 40-140% | < 50% |
| Benzo (a) anthracene | 1.041 | 6.67 | 40-140% | < 50% |
| Benzo (a) pyrene | 1.542 | 6.67 | 40-140% | < 50% |
| Benzo (b) fluoranthene | 1.587 | 6.67 | 40-140% | < 50% |
| Benzo (ghi) perylene | 1.874 | 6.67 | 40-140% | < 50% |
| Benzo (k) fluoranthene | 1.612 | 6.67 | 40-140% | < 50% |
| Chrysene | 1.111 | 6.67 | 40-140% | < 50% |
| Dibenzo (a,h) anthracene | 1.856 | 6.67 | 40-140% | < 50% |
| Fluoranthene | 0.961 | 6.67 | 40-140% | < 50% |
| Fluorene | 0.754 | 6.67 | 40-140% | < 50% |
| Hexachlorobenzene ** | 0.880 | 6.67 | 40-140% | < 50% |
| Hexachlorobutadiene | 0.820 | 6.67 | 34-107% | < 50% |
| Hexachloroethane | 0.877 | 6.67 | 29-106% | < 50% |
| Indeno (1,2,3-cd) pyrene | 1.876 | 6.67 | 40-140% | < 50% |
| Naphthalene | 0.909 | 6.67 | 40-140% | < 50% |
| Pentachlorophenol ** | 4.844 | 26.67 | 17-109% | < 50% |
| Phenanthrene | 0.829 | 6.67 | 40-140% | < 50% |
| Pyrene | 0.793 | 6.67 | 35-142% | < 50% |

| Surrogate(s) | % Recovery |
|---|---|
| 2,4,6-Tribromophenol | 0-136% |
| 2-Fluorobiphenyl | 30-120% |
| 2-Fluorophenol | 25-120% |
| 4-Terphenyl-d14 | 18-120% |
| Nitrobenzene-d5 | 23-120% |
| Phenol-d6 | 10-120% |

* Dakota '11, Mork '11, Mindy '12 MW
Mork '12, Dakota '12 SOX - Highest MDL
30 gram Extraction

| SVOCs in Liquid EPA 8270SIM | | | | |
|---|---|---|---|---|
| Analytes | MDL * ug/L | RL ug/L | LCS/MS % Rec | MS/MSD % RPD |
| 1-Methylnaphthalene | 0.0560 | 0.2 | 40-140% | < 40% |
| 2-Chloronaphthalene | 0.0660 | 0.2 | 40-140% | < 40% |
| 2-Methylnaphthalene | 0.0600 | 0.2 | 40-140% | < 40% |
| Acenaphthene | 0.0640 | 0.2 | 37-111% | < 40% |
| Acenaphthylene | 0.0500 | 0.2 | 40-140% | < 40% |
| Anthracene | 0.0630 | 0.2 | 40-140% | < 40% |
| Benzo (a) anthracene | 0.0570 | 0.2 | 40-140% | < 40% |
| Benzo (a) pyrene | 0.0690 | 0.2 | 40-140% | < 40% |
| Benzo (b) fluoranthene | 0.0710 | 0.2 | 40-140% | < 40% |
| Benzo (ghi) perylene | 0.0700 | 0.2 | 40-140% | < 40% |
| Benzo (k) fluoranthene | 0.0680 | 0.2 | 40-140% | < 40% |
| Chrysene | 0.0490 | 0.2 | 40-140% | < 40% |
| Dibenzo (a,h) anthracene | 0.0730 | 0.2 | 40-140% | < 40% |
| Fluoranthene | 0.0430 | 0.2 | 40-140% | < 40% |
| Fluorene | 0.0570 | 0.2 | 40-140% | < 40% |
| Hexachlorobenzene ** | 0.0139 | 0.8 | 40-140% | < 40% |
| Hexachlorobutadiene | 0.0710 | 0.2 | 40-140% | < 40% |
| Hexachloroethane | 0.0650 | 0.2 | 40-140% | < 40% |
| Indeno (1,2,3-cd) pyrene | 0.0790 | 0.2 | 40-140% | < 40% |
| Naphthalene | 0.0640 | 0.2 | 40-140% | < 40% |
| Pentachlorophenol ** | 0.1875 | 0.8 | 9-103% | < 40% |
| Phenanthrene | 0.0640 | 0.2 | 40-140% | < 40% |
| Pyrene | 0.0570 | 0.2 | 26-127% | < 40% |

| Surrogate(s) | % Recovery |
|---|---|
| 2,4,6-Tribromophenol | 10-120% |
| 2-Fluorobiphenyl | 15-120% |
| 2-Fluorophenol | 21-120% |
| 4-Terphenyl-d14 | 33-120% |
| Nitrobenzene-d5 | 23-120% |
| Phenol-d6 | 10-120% |

* Mork'08, Mindy '08, Dakota '08 - highest MDL
** Mork '10, Mindy '10, Dakota '10 - Highest MDL

Alpha Analytical Inc.
Standard Reporting Limits
Westborough, MA

| Trace Metals Liquid -EPA 6010B | | | | |
|---|---|---|---|---|
| Element | MDL * mg/L | RL mg/L | LCS % Rec | MS/MSD %Rec/RPD |
| Aluminum | 0.022277 | 0.1 | 80-120% | 75-125%/ <20% |
| Antimony | 0.009563 | 0.05 | 80-120% | 75-125%/ <20% |
| Arsenic | 0.003423 | 0.005 | 80-120% | 75-125%/ <20% |
| Barium | 0.002734 | 0.01 | 80-120% | 75-125%/ <20% |
| Beryllium | 0.00035 | 0.005 | 80-120% | 75-125%/ <20% |
| Boron | 0.008154 | 0.03 | 80-120% | 75-125%/ <20% |
| Cadmium | 0.000635 | 0.005 | 80-120% | 75-125%/ <20% |
| Calcium | 0.0217 | 0.1 | 80-120% | 75-125%/ <20% |
| Chromium | 0.00203 | 0.01 | 80-120% | 75-125%/ <20% |
| Cobalt | 0.004856 | 0.02 | 80-120% | 75-125%/ <20% |
| Copper | 0.004642 | 0.01 | 80-120% | 75-125%/ <20% |
| Iron | 0.0173 | 0.05 | 80-120% | 75-125%/ <20% |
| Lead | 0.002802 | 0.01 | 80-120% | 75-125%/ <20% |
| Magnesium | 0.044941 | 0.1 | 80-120% | 75-125%/ <20% |
| Manganese | 0.002445 | 0.01 | 80-120% | 75-125%/ <20% |
| Molybdenum | 0.011358 | 0.05 | 80-120% | 75-125%/ <20% |
| Nickel | 0.003945 | 0.025 | 80-120% | 75-125%/ <20% |
| Potassium | 0.798578 | 2.5 | 80-120% | 75-125%/ <20% |
| Selenium | 0.003277 | 0.01 | 80-120% | 75-125%/ <20% |
| Silicon | 0.139321 | 0.5 | 80-120% | 75-125%/ <20% |
| Silver | 0.002008 | 0.007 | 80-120% | 75-125%/ <20% |
| Sodium | 0.7952 | 2 | 80-120% | 75-125%/ <20% |
| Strontium | 0.001915 | 0.01 | 80-120% | 75-125%/ <20% |
| Thallium | 0.006234 | 0.02 | 80-120% | 75-125%/ <20% |
| Tin | 0.010996 | 0.05 | 80-120% | 75-125%/ <20% |
| Titanium | 0.001891 | 0.01 | 80-120% | 75-125%/ <20% |
| Vanadium | 0.002229 | 0.01 | 80-120% | 75-125%/ <20% |
| Zinc | 0.005409 | 0.05 | 80-120% | 75-125%/ <20% |

| Trace Metals Soil - EPA 6010B | | | | |
|---|---|---|---|---|
| Element | MDL mg/Kg | RL mg/Kg | LCS/MS % Rec | MSD RPD |
| Aluminum | 0.891088 | 4 | 75-125% | < 35% |
| Antimony | 0.382505 | 2 | 75-125% | < 35% |
| Arsenic | 0.136903 | 0.4 | 75-125% | < 35% |
| Barium | 0.109346 | 0.4 | 75-125% | < 35% |
| Beryllium | 0.014004 | 0.2 | 75-125% | < 35% |
| Boron | 0.326175 | 1.2 | 75-125% | < 35% |
| Cadmium | 0.025396 | 0.4 | 75-125% | < 35% |
| Calcium | 0.868 | 4 | 75-125% | < 35% |
| Chromium | 0.081206 | 0.4 | 75-125% | < 35% |
| Cobalt | 0.194223 | 0.8 | 75-125% | < 35% |
| Copper | 0.185684 | 0.4 | 75-125% | < 35% |
| Iron | 0.692 | 2 | 75-125% | < 35% |
| Lead | 0.112074 | 2 | 75-125% | < 35% |
| Magnesium | 1.797658 | 4 | 75-125% | < 35% |
| Manganese | 0.097792 | 0.4 | 75-125% | < 35% |
| Molybdenum | 0.454302 | 2 | 75-125% | < 35% |
| Nickel | 0.157813 | 1 | 75-125% | < 35% |
| Potassium | 31.94312 | 100 | 75-125% | < 35% |
| Selenium | 0.13108 | 0.8 | 75-125% | < 35% |
| Silicon | N/A | N/A | N/A | N/A |
| Silver | 0.080313 | 0.4 | 75-125% | < 35% |
| Sodium | 31.808 | 80 | 75-125% | < 35% |
| Strontium | 0.07662 | 2 | 75-125% | < 35% |
| Thallium | 0.249359 | 0.8 | 75-125% | < 35% |
| Tin | 0.439823 | 4 | 75-125% | < 35% |
| Titanium | 0.075652 | 0.4 | 75-125% | < 35% |
| Vanadium | 0.089178 | 0.4 | 75-125% | < 35% |
| Zinc | 0.216342 | 2 | 75-125% | < 35% |

* Trace 3 '09 & Trace 4 '09, Trace 5 '12 - highest MDL

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Westborough, MA

**Trace Metals Liquid - EPA 6020**

| Element | MDL * ug/L | RL ug/L | LCS/MS % Rec | MS/MSD %Rec/RPD |
|---|---|---|---|---|
| Aluminum | 1.945737 | 10 | 80-120% | < 20% |
| Antimony | 0.11186 | 0.5 | 80-120% | < 20% |
| Arsenic | 0.161049 | 0.5 | 80-120% | < 20% |
| Barium | 0.078126 | 0.5 | 80-120% | < 20% |
| Beryllium | 0.124308 | 0.5 | 80-120% | < 20% |
| Cadmium | 0.049833 | 0.2 | 80-120% | < 20% |
| Calcium | 32.07137 | 100 | 80-120% | < 20% |
| Chromium | 0.150481 | 1 | 80-120% | < 20% |
| Cobalt | 0.023759 | 0.2 | 80-120% | < 20% |
| Copper | 0.108009 | 1 | 80-120% | < 20% |
| Iron | 12.49011 | 50 | 80-120% | < 20% |
| Lead | 0.166202 | 1 | 80-120% | < 20% |
| Magnesium | 23.38641 | 70 | 80-120% | < 20% |
| Manganese | 0.136177 | 0.5 | 80-120% | < 20% |
| Molybdenum | 0.166736 | 0.5 | 80-120% | < 20% |
| Nickel | 0.079984 | 0.5 | 80-120% | < 20% |
| Potassium | 27.03 | 100 | 80-120% | < 20% |
| Selenium | 0.271706 | 5 | 80-120% | < 20% |
| Silver | 0.077899 | 0.25 | 80-120% | < 20% |
| Sodium | 14.71076 | 100 | 80-120% | < 20% |
| Thallium | 0.028279 | 0.2 | 80-120% | < 20% |
| Tin ** | 0.06086 | 0.5 | 80-120% | < 20% |
| Vanadium | 0.136343 | 5 | 80-120% | < 20% |
| Zinc | 1.189299 | 10 | 80-120% | < 20% |

**Trace Metals Soil - EPA 6020**

| Element | MDL mg/Kg | RL mg/Kg | LCS/MS % Rec | MSD RPD |
|---|---|---|---|---|
| Aluminum | 0.084585 | 10 | 75-125% | < 20% |
| Antimony | 0.001459 | 0.05 | 75-125% | < 20% |
| Arsenic | 0.006863 | 0.05 | 75-125% | < 20% |
| Barium | 0.00133 | 0.3 | 75-125% | < 20% |
| Beryllium | 0.006215 | 0.03 | 75-125% | < 20% |
| Cadmium | 0.002492 | 0.02 | 75-125% | < 20% |
| Calcium | 1.707592 | 50 | 75-125% | < 20% |
| Chromium | 0.00654 | 0.2 | 75-125% | < 20% |
| Cobalt | 0.000929 | 0.05 | 75-125% | < 20% |
| Copper | 0.00302 | 0.2 | 75-125% | < 20% |
| Iron | 0.602445 | 20 | 75-125% | < 20% |
| Lead | 0.003817 | 0.06 | 75-125% | < 20% |
| Magnesium | 0.041379 | 10 | 75-125% | < 20% |
| Manganese | 0.006241 | 0.2 | 75-125% | < 20% |
| Molybdenum | 0.003472 | 0.05 | 75-125% | < 20% |
| Nickel | 0.003785 | 0.1 | 75-125% | < 20% |
| Potassium | 0.566647 | 10 | 75-125% | < 20% |
| Selenium | 0.012551 | 0.2 | 75-125% | < 20% |
| Silver | 0.00205 | 0.05 | 75-125% | < 20% |
| Sodium | 0.630053 | 15 | 75-125% | < 20% |
| Thallium | 0.000577 | 0.02 | 75-125% | < 20% |
| Tin | 0.002434 | 0.02 | 75-125% | < 20% |
| Vanadium | 0.005657 | 0.1 | 75-125% | < 20% |
| Zinc | 0.059465 | 1 | 75-125% | < 20% |

* ICPMS '11, ICPMSX '11 - Highest MDL
** ICPMSX '12

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| Mercury Liquid - EPA 245.1 & 7470A | | | | |
|---|---|---|---|---|
| **Element** | **MDL * mg/L** | **RL mg/L** | **LCS % Rec** | **MS/MSD %Rec/RPD** |
| Mercury | 0.0000631 | 0.0002 | 80-120% - 7470A<br>85-115% - 245.1 | 70-130%/ <20% |

* FIMS3 '11 & FIMS4 '11 - MDL

| Mercury Soil - EPA 7471A | | | | |
|---|---|---|---|---|
| **Element** | **MDL mg/Kg** | **RL mg/Kg** | **LCS/MS % Rec** | **MS/MSD %Rec/RPD** |
| Mercury | 0.017642 | 0.08 | 80-120% | 70-130% / < 20% |

* FIMS3 '10 & FIMS4 '10 - Highest MDL

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Westborough, MA

| Wet Chemistry Parameters -Soil- | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Parameter** | **Method** | **MDL** | **RL** | **(units)** | **Accuracy LCS/MS** | **MS/DUP RPD** | **MDL Instrument and Date** |
| Cyanide-total | EPA 9010B | 0.234 | 1 | mg/Kg | 80-120% / 65-135% | < 40% | Lachat Nick 2012 |
| Cyanide-total | SM 4500CN-CE | 0.234 | 1 | mg/Kg | 90-110% / 90-110% | < 35% | Lachat Nick 2012 |

# APPENDIX B

## Applicable QAPP Worksheets

**The worksheets included in this appendix were provided by Alpha Analytical Services as an example.*

# QAPP Worksheet #12: Measurement Performance Criteria
## (UFP-QAPP Manual Section 2.6.2)
## (EPA 2106-G-05 Section 2.2.6)

Laboratory: Alpha Analytical, Westborough, MA
Matrix: Soils and Waters
Analytical Group or Method: 8260
Concentration Level: LOW

| Data Quality Indicator (DQI) | QC sample or measurement performance activity | Measurement Performance Criteria |
|---|---|---|
| Analytical Precision (laboratory) | Laboratory Control Sample Duplicates | RPD ≤ 20% |
| Analytical Precision (laboratory) | Matrix Spike Duplicates (at client's request) | RPD ≤ 30% |
| Analytical Accuracy/Bias (laboratory) | Laboratory Control Samples | Generally, 70-130%R – analyte specific |
| Analytical Accuracy/Bias (matrix interference) | Matrix Spike/ Matrix Spike Duplicates (at client's request) | Generally, 40-140%R – analyte specific |
| Accuracy/Extraction efficiency | Surrogates | 70-130%R |
| Overall accuracy/bias (contamination) | Method blank | No target compounds ≥ RL |
| Sensitivity | LOD verification (spiked at 1-4xDL) | Detected |
| Completeness | See Worksheet #34 | See Worksheet #34 |

Laboratory: Alpha Analytical, Westborough, MA
Matrix: Soils and Waters
Analytical Group or Method: 8270
Concentration Level: LOW

| **Data Quality Indicator (DQI)** | **QC sample or measurement performance activity** | **Measurement Performance Criteria** |
|---|---|---|
| Analytical Precision (laboratory) | Laboratory Control Sample Duplicates | RPD ≤ 50% |
| Analytical Precision (laboratory) | Matrix Spike Duplicates<br>(at client’s request) | RPD ≤ 50% |
| Analytical Accuracy/Bias (laboratory) | Laboratory Control Samples | Generally, 40-140%R for Base Neutrals; 30-130%R for Acids, analyte specific |
| Analytical Accuracy/Bias (matrix interference) | Matrix Spike/ Matrix Spike Duplicates<br>(at client’s request) | Generally, 40-140%R for Base Neutrals; 30-130%R for Acids, analyte specific |
| Accuracy/Extraction efficiency | Surrogates | Generally, 30-130%R, analyte specific |
| Overall accuracy/bias (contamination) | Method blank | No target compounds ≥ RL |
| Sensitivity | LOD verification (spiked at 1-4xDL) | Detected |
| Completeness | See Worksheet #34 | See Worksheet #34 |

Laboratory: Alpha Analytical, Westborough, MA
Matrix: Soils and Waters
Analytical Group or Method: Herbicides
Concentration Level: LOW

| **Data Quality Indicator (DQI)** | **QC sample or measurement performance activity** | **Measurement Performance Criteria** |
|---|---|---|
| Analytical Precision (laboratory) | Laboratory Control Sample Duplicates | RPD ≤ 25% |
| Analytical Precision (laboratory) | Matrix Spike Duplicates (at client's request) | RPD ≤ 30% |
| Analytical Accuracy/Bias (laboratory) | Laboratory Control Samples | 30-150%R |
| Analytical Accuracy/Bias (matrix interference) | Matrix Spike/ Matrix Spike Duplicates (at client's request) | 30-150%R |
| Accuracy/Extraction efficiency | Surrogates | 30-150%R |
| Overall accuracy/bias (contamination) | Method blank | No target compounds ≥ RL |
| Sensitivity | LOD verification (spiked at 1-4xDL) | Detected |
| Completeness | See Worksheet #34 | See Worksheet #34 |

Laboratory: Alpha Analytical, Westborough, MA
Matrix: Soils and Waters
Analytical Group or Method: Pesticides
Concentration Level: LOW

| **Data Quality Indicator (DQI)** | **QC sample or measurement performance activity** | **Measurement Performance Criteria** |
|---|---|---|
| Overall Precision | Field Duplicates<br>(at client's request) | RPD ≤ 30% |
| Analytical Precision (laboratory) | Matrix Spike Duplicates<br>(at client's request) | RPD ≤ 30% |
| Analytical Accuracy/Bias (laboratory) | Laboratory Control Samples | 30-150%R |
| Analytical Accuracy/Bias (matrix interference) | Matrix Spike/ Matrix Spike Duplicates<br>(at client's request) | 30-150%R |
| Accuracy/Extraction efficiency | Surrogates | 30-150%R |
| Overall accuracy/bias (contamination) | Method blank | No target compounds ≥ RL |
| Sensitivity | LOD verification (spiked at 1-4xDL) | Detected |
| Completeness | See Worksheet #34 | See Worksheet #34 |

Laboratory: Alpha Analytical, Westborough, MA
Matrix: Soils and Waters
Analytical Group or Method: PCBs
Concentration Level: LOW

| **Data Quality Indicator (DQI)** | **QC sample or measurement performance activity** | **Measurement Performance Criteria** |
|---|---|---|
| Analytical Precision (laboratory) | Laboratory Control Sample Duplicates | RPD ≤ 30% |
| Analytical Precision (laboratory) | Matrix Spike Duplicates (at client's request) | RPD ≤ 30% |
| Analytical Accuracy/Bias (laboratory) | Laboratory Control Samples | 40-140%R |
| Analytical Accuracy/Bias (matrix interference) | Matrix Spike/ Matrix Spike Duplicates (at client's request) | 40-140%R |
| Accuracy/Extraction efficiency | Surrogates | 30-150%R |
| Overall accuracy/bias (contamination) | Method blank | No target compounds ≥ RL |
| Sensitivity | LOD verification (spiked at 1-4xDL) | Detected |
| Completeness | See Worksheet #34 | See Worksheet #34 |

Laboratory: Alpha Analytical, Westborough, MA
Matrix: Soils and Waters
Analytical Group or Method: Petro
Concentration Level: LOW

| **Data Quality Indicator (DQI)** | **QC sample or measurement performance activity** | **Measurement Performance Criteria** |
|---|---|---|
| Analytical Precision (laboratory) | Laboratory Control Sample Duplicates | RPD ≤ 30% |
| Analytical Precision (laboratory) | Matrix Spike Duplicates (at client's request) | RPD ≤ 30% |
| Analytical Accuracy/Bias (laboratory) | Laboratory Control Samples | 40-140%R |
| Analytical Accuracy/Bias (matrix interference) | Matrix Spike/ Matrix Spike Duplicates (at client's request) | 40-140%R |
| Accuracy/Extraction efficiency | Surrogates | 30-130%R |
| Overall accuracy/bias (contamination) | Method blank | No target compounds ≥ RL |
| Sensitivity | LOD verification (spiked at 1-4xDL) | Detected |
| Completeness | See Worksheet #34 | See Worksheet #34 |

# QAPP Worksheet #23: Analytical SOP's
# (UFP-QAPP Manual Section 3.2.1)
# (EPA 2106-G-05 Section 2.3.4)

Laboratory: Alpha Analytical, Westborough, MA

| SOP # | Title, Date, and URL (if available) | Definitive or Screening Data | Matrix/Analytical Group | SOP Option or Equipment Type | [‡]Modified for Project? Y/N |
|---|---|---|---|---|---|
| 2108 | *Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)* | Definitive | Waters, Soils | GC/MS | . |
| 2111 | *Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)* | Definitive | Waters, Soils | GC/MS | |
| 2116 | *Determination of Organochlorine Pesticides by Gas Chromatography/Electron Capture Detection (GC/ECD)* | Definitive | Waters, Soils | GC/ECD | |
| 2129 | *Determination of Polychlorinated Biphenyls (PCBs) as Aroclors by Gas Chromatography/Electron Capture Detection (GC/ECD)* | Definitive | Waters, Soils | GC/ECD | |
| 2128 | *Chlorinated Herbicides by GC Using Methylation Derivatization* | Definitive | Waters, Soils | GC/ECD | |
| 2125 | *Non-halogenated Organics by Gas Chromatography – Total Petroleum Hydrocarbons* | Definitive | Waters, Soils | GC/FID | |
| 1942 | *Extraction of Water Samples by Separatory Funnel* | Definitive | Waters/Organic Preparatory | GC/MS<br>GC/FID<br>GC/ECD | |
| 1959 | *Extraction of Soil Samples by Microwave* | Definitive | Soils/Organic Preparatory | GC/MS<br>GC/FID<br>GC/ECD | |

| SOP # | Title, Date, and URL (if available) | Definitive or Screening Data | Matrix/Analytical Group | SOP Option or Equipment Type | ‡Modified for Project? Y/N |
|---|---|---|---|---|---|
| 1964 | *Preparation of Samples for Chlorinated Herbicides Analysis by GC* | Definitive | Waters and Soils/Organic Preparatory | GC/ECD | |
| 1955 | *Sulfur Cleanup* | Definitive | Waters and Soils/Organic Preparatory | GC/ECD | |
| 1962 | *Florisil Cleanup Procedure* | Definitive | Waters and Soils/Organic Preparatory | GC/ECD | |
| 1960 | *Sulfuric Acid Cleanup Procedure* | Definitive | Waters and Soils/Organic Preparatory | GC/ECD | |
| 1954 | *Soxhlet Extraction* | Definitive | Soils/Organic Preparatory | GC/MS<br>GC/FID<br>GC/ECD | |

‡ A brief summary of project-specific SOP modifications must be provided on this worksheet or referenced.

# QAPP Worksheet #24: Analytical Instrument Calibration
## (UFP-QAPP Manual Section 3.2.2)
## (EPA 2106-G-05 Section 2.3.6)

Laboratory: Alpha Analytical, Westborough, MA

| Instrument | Calibration Procedure | Calibration Range | Frequency | Acceptance Criteria | Corrective Action (CA) | Title/position responsible for Corrective Action | SOP Ref |
|---|---|---|---|---|---|---|---|
| VOA<br>(GC/MS) | 4-Bromofluoro benzene (BFB) tune | Water:<br>5-1000ng<br>Solid:<br>5-1000ng | Prior to each ICAL;<br>At the beginning of analytical sequence;<br>Every 12hrs | Perform in full SCAN mode;<br>See SOP for BFB acceptance criteria; | Perform instrument/injection port maintenance as necessary;<br>Retune instrument | Analyst | 2108 |
| | Initial Calibration (ICAL) | | Initial instrument setup;<br>After non-routine instrument service;<br>CCV/ICV criteria are not met | Minimum of 5 standards;<br>Low standard must be ≤ RL;<br>%RSD ≤ 20 except for 10% of compounds may be > 20% but ≤ 30% RSD; r ≥ 0.99 (linear regression);<br>$r^2$ ≥ 0.99 (non-linear regression) | Review integrations and calculations;<br>Perform and document remedial action as required;<br>Repeat calibration | | |
| | Initial Calibration Verification (ICV) | | Immediately after each ICAL | %D ≤ 30; exclusions apply – see SOP;<br>Prepared using standard source different than used for initial calibration | Re-analyze ICV if analytical error is suspected;<br>Recalibrate as needed | | |
| | Continuing Calibration Verification (CCV) | | At the beginning of every analytical sequence; Every 12 hours | %D ≤ 20 except for 20% of compounds may be > 20 but ≤ 30%D;<br>Area counts of internal standards must be within 50–200% of the mid-level initial calibration standard | Review integrations and calculations;<br>Re-analyze samples as needed | | |

Laboratory: Alpha Analytical, Westborough, MA

| **Instrument** | **Calibration Procedure** | **Calibration Range** | **Frequency** | **Acceptance Criteria** | **Corrective Action (CA)** | **Title/position responsible for Corrective Action** | **SOP Ref** |
|---|---|---|---|---|---|---|---|
| SVOC<br>(GC/MS) | Decafluorotriphenyl-phosphine (DFTPP) tune | Water:<br>1-200ng<br>Solid:<br>1-200ng | Prior to each ICAL;<br>At the beginning of analytical sequence;<br>Every 12 hours | Perform in full SCAN mode;<br>See SOP for DFTPP criteria | Perform instrument/injection port maintenance as necessary;<br>Retune instrument | Analyst | 2111 |
| | Initial Calibration (ICAL) | | Initial instrument setup;<br>After non-routine instrument service;<br>CCV/ICV criteria are not met | Minimum of 5 standards;<br>Low standard must be ≤ RL;<br>%RSD ≤ 20%;<br>r ≥ 0.99 (linear regression) or<br>$r^2$ ≥ 0.99 (non-linear regression);<br>If linear regression is used, recalculated concentration of the lowest calibration point is within 30% of the true value,<br>All RFs must meet the minimum RFs listed in SOP | Review integrations and calculations;<br>Perform and document remedial action as required;<br>Repeat calibration | | |
| | Initial Calibration Verification (ICV) | | Immediately after each ICAL | %D ≤ 30%;<br>Sporadic marginal failure accepted;<br>Prepared using standard source different than used for initial calibration | Re-analyze ICV if analytical error is suspected;<br>Recalibrate as needed | | |
| | Continuing Calibration Verification (CCV) | | At the beginning of every analytical sequence;<br>Every 12 hours | %D ≤ 20 except for 20% of compounds may be > 20 but must be reported as estimated if present;<br>All RFs must meet the minimum RFs listed in SOP;<br>Area counts of internal standards must be within 50–200% of the mid-level initial calibration standard;<br>The retention times of the internal standards must be within +0.05 RRT of the previous daily standard. | Review integrations and calculations;<br>Evaluate samples bracketed by failing CCV for obvious matrix interference;<br>Re-analyze samples as needed; | | |

Laboratory: Alpha Analytical, Westborough, MA

| **Instrument** | **Calibration Procedure** | **Calibration Range** | **Frequency** | **Acceptance Criteria** | **Corrective Action (CA)** | **Title/position responsible for Corrective Action** | **SOP Ref** |
|---|---|---|---|---|---|---|---|
| PCB,<br>Pesticides,<br>Herbicides<br>(GC/ECD) | Initial Calibration (ICAL) | Method specific<br>PCBs<br>0.1-10 ug/mL<br>Pesticides<br>0.0005-0.2 ug/mL<br>Herbicides<br>0.05–2.0 ug/mL | Initial instrument setup;<br>After non-routine instrument service;<br>CCV/ICV criteria are not met | Minimum of 5 standards;<br>Low standard must be ≤ RL;<br>%RSD ≤ 20 or<br>r ≥ 0.99 (linear regression),<br>If linear regression is used, recalculated concentration of the lowest calibration point is within 30% of the true value | Review integrations and calculations;<br>Perform and document remedial action as required;<br>Repeat calibration | Analyst | 2129<br>2116<br>2128 |
| | Initial Calibration Verification (ICV) | | Immediately after each ICAL | PCBs and Herbicides %D ≤ 15;<br>Pesticides %D ≤ 20;<br>Prepared using standard source different than used for initial calibration | Re-analyze ICV if analytical error is suspected;<br>Recalibrate as needed | | |
| | Continuing Calibration Verification (CCV) | | At the beginning and end of every analytical sequence;<br>Every 12 hours | PCBs and Pesticides %D ≤ 20;<br>Herbicides %D ≤ 15;<br>Area counts of internal standards must be within 50–200% of the mid-level initial calibration standard.<br>The retention times of the internal standards must be within +0.05 RRT of the previous daily standard. | Review integrations and calculations;<br>Evaluate samples bracketed by failing CCV for obvious matrix interference;<br>Re-analyze samples as needed | | |

Laboratory: Alpha Analytical, Westborough, MA

| Instrument | Calibration Procedure | Calibration Range | Frequency | Acceptance Criteria | Corrective Action (CA) | Title/position responsible for Corrective Action | SOP Ref |
|---|---|---|---|---|---|---|---|
| Petro<br>(GC/FID) | Initial Calibration (ICAL) | Individual Alkanes<br>3-500 ug/mL<br>Range:<br>42-7000 ug/mL | Initial instrument setup;<br>After non-routine instrument service;<br>CCV/ICV criteria are not met | Minimum of 5 standards;<br>Low standard must be ≤ RL;<br>%RSD ≤ 20% or<br>r ≥ 0.99 (linear regression) | Review integrations and calculations;<br>Perform and document remedial action as required;<br>Repeat calibration | Analyst | 2125 |
| | Initial Calibration Verification (ICV) | | Immediately after each ICAL | %D ≤ 305;<br>Prepared using standard source different than used for initial calibration | Re-analyze ICV if analytical error is suspected;<br>Recalibrate as needed | | |
| | Continuing Calibration Verification (CCV) | | At the beginning of every analytical sequence;<br>Every 12 hours | %D ≤ 20% | Review integrations and calculations;<br>Evaluate samples bracketed by failing CCV for obvious matrix interference;<br>Re-analyze samples as needed | | |

# QAPP Worksheet #25: Analytical Instrument and Equipment Maintenance, Testing, and Inspection
## (UFP-QAPP Manual Section 3.2.3)
## (EPA 2106-G-05 Section 2.3.6)

| **Instrument / Equipment** | **Maintenance Activity** | **Testing Activity** | **Inspection Activity** | **Frequency** | **Acceptance Criteria** | **Corrective Action** | **Title/position responsible for corrective action** | **Reference** |
|---|---|---|---|---|---|---|---|---|
| GC/MS | Inlet Maintenance: Septa, Injection port liner, clip column | Passing Tune/CCAL; overall chromatogram | Instrument performance and sensitivity | Frequency is dependent on degree of contamination and standard recovery | See SOP | See SOP | Analyst or Section Supervisor | See specific analysis SOP |
| GC/MS | Column | Passing Tune/ICAL/ ICV; overall chromatogram | Instrument performance and sensitivity | Frequency is dependent on degree of contamination and standard recovery | See SOP | See SOP | Analyst or Section Supervisor | See specific analysis SOP |
| GC/MS | Source cleaning : Filaments, insulators | Tuning | Instrument performance and sensitivity | Frequency is dependent on degree of contamination and standard recovery | See SOP | See SOP | Analyst or Section Supervisor | See specific analysis SOP |
| GC/MS | Pump | Complete MS pump down. | Air and water check | Frequency is dependent on vacuum within instrument | See SOP | See SOP | Analyst or Section Supervisor | See specific analysis SOP |

| Instrument / Equipment | Maintenance Activity | Testing Activity | Inspection Activity | Frequency | Acceptance Criteria | Corrective Action | Title/position responsible for corrective action | Reference |
|---|---|---|---|---|---|---|---|---|
| GC/ECD/FID | Inlet Maintenance:<br>Septa, Injection port liner, clip column | Passing CCAL; overall chromatogram | Instrument performance and sensitivity | Frequency is dependent on degree of contamination and standard recovery | See SOP | See SOP | Analyst or Section Supervisor | See specific analysis SOP |
| GC/ECD/FID | Column | Passing CCAL; overall chromatogram | Instrument performance and sensitivity | Frequency is dependent on degree of contamination and standard recovery | See SOP | See SOP | Analyst or Section Supervisor | See specific analysis SOP |

## QAPP Worksheet #28: Analytical Quality Control and Corrective Action
## (UFP-QAPP Manual Section 3.4 and Tables 4, 5, and 6)
## (EPA 2106-G-05 Section 2.3.5)

Laboratory: Alpha Analytical, Westborough, MA
Matrix: Soils/Waters
Analytical Group: VOA
Analytical Method/SOP: 8260/SOP#2108

| QC Sample | Number/Frequency | Method/SOP Acceptance Criteria | Corrective Action | Title/position of person responsible for corrective action | Project-Specific MPC |
|---|---|---|---|---|---|
| Method Blank | One per preparatory batch of up to 20 samples | No analyte at or above the reporting limit. | Identify source and attempt to eliminate. Reanalyze blank and affected samples (if sufficient sample remains).<br>Qualify data as needed. Report data if sample results >5x blank or sample results ND. If contamination is widespread or reoccurring, analyses must be stopped and the source of contamination must be eliminated or reduced before analyses can continue. | Analyst / Laboratory Quality Assurance Officer | |

| QC Sample | Number/Frequency | Method/SOP Acceptance Criteria | Corrective Action | Title/position of person responsible for corrective action | Project-Specific MPC |
|---|---|---|---|---|---|
| LCS/LCSD | One each per preparatory batch of up to 20 samples. | Generally, 70-130% Recovery; 20% RPD – analyte specific | Correct problem; reanalyze LCS/LCSD and all samples in associated batch for failed analytes. If problem persists, contact Project Manager. | Analyst / Laboratory Quality Assurance Officer | |
| MS/MSD | One each per preparatory batch of up to 20 samples.<br>Per Client's Request | Generally, 70-130% Recovery; 20% RPD – analyte specific | Report if associated with passing LCS/LCSD. Discuss in narrative. | Laboratory Analyst/Section Supervisor | |

Matrix: Soils/Waters
Analytical Group: SVOC
Analytical Method/SOP: 8270/SOP#2111

| **QC Sample** | **Number/Frequency** | **Method/SOP Acceptance Criteria** | **Corrective Action** | **Title/position of person responsible for corrective action** | **Project-Specific MPC** |
|---|---|---|---|---|---|
| Method Blank | One per preparatory batch of up to 20 samples | No analyte at or above the reporting limit. | Identify source and attempt to eliminate.<br>Re-extract and/or reanalyze blank and affected samples (if sufficient sample remains).<br>Qualify data as needed.<br>Report data if sample results >5x blank or sample results ND. If contamination is widespread or reoccurring, analyses must be stopped and the source of contamination must be eliminated or reduced before analyses can continue. | Analyst / Laboratory Quality Assurance Officer | |

| **QC Sample** | **Number/Frequency** | **Method/SOP Acceptance Criteria** | **Corrective Action** | **Title/position of person responsible for corrective action** | **Project-Specific MPC** |
|---|---|---|---|---|---|
| LCS/LCSD | One each per preparatory batch of up to 20 samples | Generally, 40-140% Recovery, 50% RPD – analyte specific | Correct problem, reprep and reanalyze LCS/LCSD and all samples in associated batch for failed analytes. If problem persists, contact Project Manager. | Analyst / Laboratory Quality Assurance Officer | |
| MS/MSD | One each per preparatory batch of up to 20 samples.<br>Per Client's Request | Generally, 40-140% Recovery, 50% RPD – analyte specific | Report if associated with passing LCS/LCSD. Discuss in narrative. | Laboratory Analyst/Section Supervisor | |

Matrix: Soils/Waters
Analytical Group: Pesticides
Analytical Method/SOP: 8081 /SOP#2116

| QC Sample | Number/Frequency | Method/SOP Acceptance Criteria | Corrective Action | Title/position of person responsible for corrective action | Project-Specific MPC |
|---|---|---|---|---|---|
| Method Blank | One per preparatory batch of up to 20 samples | No analyte at or above the reporting limit. | Identify source and attempt to eliminate.<br>Re-extract and/or reanalyze blank and affected samples (if sufficient sample remains).<br>Qualify data as needed.<br>Report data if sample results >5x blank or sample results ND. If contamination is widespread or reoccurring, analyses must be stopped and the source of contamination must be eliminated or reduced before analyses can continue. | Analyst / Laboratory Quality Assurance Officer | |

| **QC Sample** | **Number/Frequency** | **Method/SOP Acceptance Criteria** | **Corrective Action** | **Title/position of person responsible for corrective action** | **Project-Specific MPC** |
|---|---|---|---|---|---|
| LCS/LCSD | One each per preparatory batch of up to 20 samples | 40-140% Recovery.<br>30% RPD. | Correct problem, reprep and reanalyze LCS/LCSD and all samples in associated batch for failed analytes. If problem persists, contact Project Manager. | Analyst / Laboratory Quality Assurance Officer | |
| MS/MSD | One each per preparatory batch of up to 20 samples.<br>Per Client's Request | 40-140% Recovery,<br>30% RPD | Report if associated with passing LCS/LCSD.<br>Discuss in narrative. | Laboratory Analyst/Section Supervisor | |

Matrix: Soils/Waters
Analytical Group: PCBs
Analytical Method/SOP: 8082 /SOP#2129

| **QC Sample** | **Number/Frequency** | **Method/SOP Acceptance Criteria** | **Corrective Action** | **Title/position of person responsible for corrective action** | **Project-Specific MPC** |
|---|---|---|---|---|---|
| Method Blank | One per preparatory batch of up to 20 samples | No analyte at or above the reporting limit. | Identify source and attempt to eliminate.<br>Re-extract and/or reanalyze blank and affected samples (if sufficient sample remains).<br>Qualify data as needed.<br>Report data if sample results >5x blank or sample results ND. If contamination is widespread or reoccurring, analyses must be stopped and the source of contamination must be eliminated or reduced before analyses can continue. | Analyst / Laboratory Quality Assurance Officer | |

| QC Sample | Number/Frequency | Method/SOP Acceptance Criteria | Corrective Action | Title/position of person responsible for corrective action | Project-Specific MPC |
|---|---|---|---|---|---|
| LCS/LCSD | One per preparatory batch of up to 20 samples | QC acceptance criteria<br>40-140% Recovery, Aqueous RPD 30%, Soil RPD 50% | Correct problem, reprep and reanalyze LCS/LCSD and all samples in associated batch for failed analytes. If problem persists, contact Project Manager. | Analyst / Laboratory Quality Assurance Officer | |
| MS/MSD | One each per preparatory batch of up to 20 samples.<br>Per Client's Request | 40-140% Recovery, Aqueous RPD 30%, Soil RPD 50% | Report if associated with passing LCS/LCSD. Discuss in narrative. | Laboratory Analyst/Section Supervisor | |

Matrix: Soils/Waters
Analytical Group: Herbicides
Analytical Method/SOP: 8151 /SOP#2128

| QC Sample | Number/Frequency | Method/SOP Acceptance Criteria | Corrective Action | Title/position of person responsible for corrective action | Project-Specific MPC |
|---|---|---|---|---|---|
| Method Blank | One per preparatory batch of up to 20 samples | No analyte at or above the reporting limit. | Identify source and attempt to eliminate.<br>Re-extract and/or reanalyze blank and affected samples (if sufficient sample remains).<br>Qualify data as needed.<br>Report data if sample results >5x blank or sample results ND. If contamination is widespread or reoccurring, analyses must be stopped and the source of contamination must be eliminated or reduced before analyses can continue. | Analyst / Laboratory Quality Assurance Officer | |

| QC Sample | Number/Frequency | Method/SOP Acceptance Criteria | Corrective Action | Title/position of person responsible for corrective action | Project-Specific MPC |
|---|---|---|---|---|---|
| LCS/LCSD | One each per preparatory batch of up to 20 samples | QC acceptance criteria<br>40-140% Recovery, 25% RPD | Correct problem, reprep and reanalyze LCS/LCSD and all samples in associated batch for failed analytes. If problem persists, contact Project Manager. | Analyst / Laboratory Quality Assurance Officer | |
| MS/MSD | One each per preparatory batch of up to 20 samples.<br>Per Client's Request | QC acceptance criteria<br>40-140% Recovery.<br>30% RPD | Report if associated with passing LCS/LCSD. Discuss in narrative. | Laboratory Analyst/Section Supervisor | |

Matrix: Soils/Waters
Analytical Group: TPH
Analytical Method/SOP: 8015 /SOP#2125

| **QC Sample** | **Number/Frequency** | **Method/SOP Acceptance Criteria** | **Corrective Action** | **Title/position of person responsible for corrective action** | **Project-Specific MPC** |
|---|---|---|---|---|---|
| Method Blank | One per preparatory batch of up to 20 samples | No analyte at or above the reporting limit. | Identify source and attempt to eliminate.<br>Re-extract and/or reanalyze blank and affected samples (if sufficient sample remains).<br>Qualify data as needed.<br>Report data if sample results >5x blank or sample results ND. If contamination is widespread or reoccurring, analyses must be stopped and the source of contamination must be eliminated or reduced before analyses can continue. | Analyst / Laboratory Quality Assurance Officer | |

| **QC Sample** | **Number/Frequency** | **Method/SOP Acceptance Criteria** | **Corrective Action** | **Title/position of person responsible for corrective action** | **Project-Specific MPC** |
|---|---|---|---|---|---|
| LCS/LCSD | One each per preparatory batch of up to 20 samples | QC acceptance criteria<br>40-140% Recovery.<br>40% RPD. | Correct problem, reprep and reanalyze LCS/LCSD and all samples in associated batch for failed analytes. If problem persists, contact Project Manager. | Analyst / Laboratory Quality Assurance Officer | |
| MS/MSD | One each per preparatory batch of up to 20 samples.<br>Per Client's Request | QC acceptance criteria<br>60-140% Recovery.<br>40% RPD. | Report if associated with passing LCS/LCSD.<br>Discuss in narrative. | Laboratory Analyst/Section Supervisor | |

# QAPP Worksheet #24: Analytical Instrument Calibration
## (UFP-QAPP Manual Section 3.2.2)
## (EPA 2106-G-05 Section 2.3.6)

Laboratory: Alpha Analytical, Westborough, MA

| Instrument | Calibration Procedure | Calibration Range | Frequency | Acceptance Criteria | Corrective Action (CA) | Title/position responsible for Corrective Action | SOP Reference |
|---|---|---|---|---|---|---|---|
| ICP-MS | Tune verification; External; multipoint | Varies by element | Daily or as required | CC > 0.998;<br>ICV 95-105%;<br>CCV 90-110%;<br>ICB/CCB < ±RL | Clean, inspect, adjust/recalibrate | ICP-MS Analyst, Dept. Manager | 2156 rev.3 |
| ICP | Response verification; External; multi-point | Varies by element | Daily or as required | CC > 0.995;<br>ICV 90-110%;<br>CRI 70-130%;<br>CCV 90-110%;<br>ICB/CCB < ±RL | Clean, inspect, adjust/recalibrate | ICP Analyst, Dept. Manager | 2144 rev 2 |
| CVAA | External; multi-point | 0.2-10 ppb | Per digestion batch | CC > 0.995;<br>ICV 90-110%;<br>CCV 90-110%;<br>ICB/CCB < ±RL | Clean, inspect, adjust/recalibrate | CVAA Analyst, Dept. Manager | 2145 rev. 2<br>2146 rev. 3 |

## QAPP Worksheet #19 & 30: Sample Containers, Preservation, and Hold Times
## (UFP-QAPP Manual Section 3.1.2.2)
## (EPA 2106-G-05 Section 2.3.2)

Laboratory: Alpha Analytical, Westborough, MA

List any required accreditations/certifications:

Back-up Laboratory:

Sample Delivery Method:

| Analyte/ Analyte Group | Matrix | Method/ SOP | Container(s) (number, size & type per sample) | Preservation | Preparation Holding Time | Analytical Holding Time | Data Package Turnaround |
|---|---|---|---|---|---|---|---|
| Trace Metals by ICP | Soil | EPA 6010C / 2144 | Amber 250ml unpreserved | 4 ± 2°C | N/A | 180 days | |
| Trace Metals by ICP | Liquid | EPA 6010C / 2144 | Plastic 500ml | HNO3 preserved | N/A | 180 days | |
| Trace Metals by ICP | Liquid | EPA 200.7 / 2149 | Plastic 500ml | HNO3 preserved | N/A | 180 days | |
| Trace Metals by ICPMS | Liquid | EPA 6020A / 2156 | Plastic 500ml | 4 ± 2°C<br>1:1 Nitric acid to a pH of <2 | N/A | 180 days | |
| Trace Metals by ICPMS | Liquid | EPA 200.8 / 2159 | Plastic 500ml | 4 ± 2°C<br>1:1 Nitric acid to a pH of <2 | N/A | 180 days | |

| Analyte/ Analyte Group | Matrix | Method/ SOP | Container(s) (number, size & type per sample) | Preservation | Preparation Holding Time | Analytical Holding Time | Data Package Turnaround |
|---|---|---|---|---|---|---|---|
| Trace Metals by ICPMS | Soil | EPA 6020A / 2156 | Amber 250ml unpreserved | 4 ± 2°C | N/A | 180 days | |
| Mercury | Liquid | EPA 7470A / 2145 | Plastic 500ml | HNO3 to a pH of <2. | N/A | 28 days | |
| Mercury | Liquid | EPA 245.1 / 2153 | Plastic 500ml | HNO3 to a pH of <2. | N/A | 28 days | |
| Mercury | Soil | EPA 7471B / 2146 | Amber 250ml unpreserved | 4 ± 2°C | N/A | 28 days | |
| Volatile Organic Compounds | Liquid | EPA 8260C / 2108 | 2, 40-ml VOA vials w/ PTFE-faced silicone septum | 4 ± 2°C<br>1:1 HCL to a pH of <2. | 14 days | 14 days | |
| Volatile Organic Compounds | Liquid | EPA 624 / 2022 | 2, 40-ml VOA vials | 4 ± 2°C | N/A | Unpreserved – 7 days<br>1:1 HCL - 14 days<br>Acrolein – 3days | |
| Volatile Organic Compounds | Soil | EPA 8260C / 2108 | 2, 40-ml VOA vials | 4 ± 2°C | 14 days | 14 days | |
| Purgeable Organic Compounds | Liquid | EPA 524.2 / 2107 | 2, 40-ml VOA vials, Ascorbic Acid/HCl preserved | 1:1 HCL to a pH of <2. | Preserved - 14 days<br>Unpreserved – 24 hours | 14 days | |
| Volatile Petroleum Hydrocarbons | Liquid | MA VPH / 2120 | 2, 40-ml VOA vials, HCl preserved | 1:1 HCL to a pH of <2. | N/A | 14 days | |

| Analyte/ Analyte Group | Matrix | Method/ SOP | Container(s) (number, size & type per sample) | Preservation | Preparation Holding Time | Analytical Holding Time | Data Package Turnaround |
|---|---|---|---|---|---|---|---|
| Volatile Petroleum Hydrocarbons | Soil | MA VPH / 2120 | 2, 40-ml VOA vials | 4 ± 2°C | N/A | 28 days | |
| Gasoline Range Organics | Liquid | EPA 8015C(M) / 2126 | 2, 40-ml VOA vials, HCl preserved | 1:1 HCL to a pH of <2.<br>4 ± 2°C | 14 days | 14 days | |
| Gasoline Range Organics | Soil | EPA 8015C(M) / 2126 | 1, 40-mL VOA vial, MeOH preserved | Methanol<br>4 ± 2°C | 14 days | 14 days | |
| Semivolatile Organics | Liquid | EPA 8270D / 2111 | 2, 1-liter amber glass jars | 4 ± 2°C | 7 days | 40 days | |
| Semivolatile Organics | Liquid | EPA 625 / 2110 | 2, 1-liter amber glass jars | 4 ± 2°C | 7 days | 40 days | |
| Semivolatile Organics by SIM | Liquid | EPA 8270D-SIM / 2109 | 2, 1-liter amber glass jars | 4 ± 2°C | 7 days | 40 days | |
| Semivolatile Organics | Soil | EPA 8270D / 2111 | 1, 250mL amber glass jar | 4 ± 2°C | 14 days | 40 days | |
| Semivolatile Organics by SIM | Soil | EPA 8270D-SIM / 2109 | 1, 250mL amber glass jar | 4 ± 2°C | 14 days | 40 days | |
| EBD/DBCP | Liquid | EPA 504.1 / 2113 | 2, 40mL vials | 3-5mg of sodium thiosulfate crystals<br>4 ± 2°C | 14 days | 24 hours | |
| Pesticides | Liquid | EPA 8081B / 2116 | 2, 1-liter amber glass jars | 4 ± 2°C | 7 days | 40 days | |

| Analyte/ Analyte Group | Matrix | Method/ SOP | Container(s) (number, size & type per sample) | Preservation | Preparation Holding Time | Analytical Holding Time | Data Package Turnaround |
|---|---|---|---|---|---|---|---|
| Pesticides | Soil | EPA 8081B / 2116 | 1, 250mL amber glass jar | 4 ± 2°C | 14 days | 40 days | |
| PCB | Liquid | EPA 8082A / 2129 | 2, 1-liter amber glass jars | 4 ± 2°C | 7 days | 40 days | |
| PCB | Soil | EPA 8082A / 2129 | 1, 250mL amber glass jar | 4 ± 2°C | 14 days | 40 days | |
| Pesticide & PCB | Liquid | EPA 608 / 2122 | 2, 1-liter amber glass jars | 4 ± 2°C | 7 days | 40 days | |
| Herbicides | Liquid | EPA 8151A / 2128 | 2, 1-liter amber glass jars | 4 ± 2°C | 7 days | 40 days | |
| Herbicides | Soil | EPA 8151A / 2128 | 1, 250mL amber glass jar | 4 ± 2°C | 14 days | 40 days | |
| PCB – Oil | Oil | EPA 600/4-81-045 / 2123 | Glass jar | 4 ± 2°C | 14 days | 40 days | |
| Extractable Petroleum Hydrocarbons | Liquid | MA EPH / 2119 | 2, 1-liter amber glass jars | 1:1 HCL to a pH of <2.<br>4 ± 2°C | 14 days | 40 days | |
| Extractable Petroleum Hydrocarbons | Soil | MA EPH / 2119 | 1, 250mL amber glass jar | 4 ± 2°C | 14 days | 40 days | |
| NJ Extractable Petroleum Hydrocarbons | Liquid | NJ EPH / 2131 | 2, 1-liter amber glass jars | 1:1 HCL to a pH of <2.<br>4 ± 2°C | 14 days | 40 days | |
| NJ Extractable Petroleum Hydrocarbons | Soil | NJ EPH / 2131 | 1, 250mL amber glass jar | 4 ± 2°C | 14 days | 40 days | |

| Analyte/ Analyte Group | Matrix | Method/ SOP | Container(s) (number, size & type per sample) | Preservation | Preparation Holding Time | Analytical Holding Time | Data Package Turnaround |
|---|---|---|---|---|---|---|---|
| TPH Diesel Range Organics | Liquid | EPA 8015C(M) / 2125 | 2, 1-liter amber glass jars | 4 ± 2°C | 7 days | 40 days | |
| TPH Diesel Range Organics | Soil | EPA 8015C(M) / 2125 | 1, 250mL amber glass jar | 4 ± 2°C | 14 days | 40 days | |
| CT – Extractable Total Petroleum Hydrocarbons | Liquid | CT-ETPH / 2127 | 2, 1-liter amber glass jars | 4 ± 2°C | 7 days | 40 days | |
| CT – Extractable Total Petroleum Hydrocarbons | Soil | CT-ETPH / 2127 | 1, 250mL amber glass jar | 4 ± 2°C | 14 days | 40 days | |
| Explosives | Liquid | EPA 8330A / 2250 | 2, 1-liter amber glass jars | 4 ± 2°C | 7 days | 40 days | |
| Explosives | Soil | EPA 8330A / 2250 | 1, 250mL amber glass jar | 4 ± 2°C | 14 days | 40 days | |
| Perchlorate | Liquid | EPA 332.0 & 6860 / 2251 | 1, 120mL plastic or amber glass | 4 ± 2°C | 28 days | 28 days | |
| Perchlorate | Soil | EPA 6860 / 2251 | 1, 250mL amber glass jar | 4 ± 2°C | 28 days | 28 days | |
| pH | Liquid | EPA 9040B & SM 4500H-B/ 2202 | 1, 250mL plastic or amber glass | 4 ± 2°C | N/A | ASAP, within 24 hours | |
| pH | Soil | EPA 9045D & 9040C / 2202 | 1, 4oz glass jar | 4 ± 2°C | N/A | ASAP, within 24 hours | |

| **Analyte/ Analyte Group** | **Matrix** | **Method/ SOP** | **Container(s) (number, size & type per sample)** | **Preservation** | **Preparation Holding Time** | **Analytical Holding Time** | **Data Package Turnaround** |
|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | Liquid | SM 3500Cr-D / 2204 | 1, 500mL Plastic | 4 ± 2°C | N/A | 24 hours | |
| Hexavalent Chromium | Soil | SM 3500Cr-D & EPA 7196A / 2204 | 1, 500mL Plastic | 4 ± 2°C | 30 days | 7 days | |
| Biochemical Oxygen Demand | Liquid | SM 5210B / 2205 | 1, 1-liter Plastic | 4 ± 2°C | N/A | 48 hours | |
| Chemical Oxygen Demand | Liquid | SM 5220D, EPA 410.4 / 2208 | 1, 250mL Plastic | 1:1 $H_2SO_4$ to a pH of <2.<br>4 ± 2°C | N/A | 28 days | |
| Nitrogen, Ammonia | Liquid | SM4500NH3-BH, EPA 350.1 / 2206 | 1, plastic 500ml | H2SO4 preserved<br>4 ± 2°C | N/A | 28 days | |
| Nitrogen, Ammonia | Soil | SM4500NH3-BH, / 2206 | 1, 250mL amber glass jar | 4 ± 2°C | N/A | 28 days | |
| Nitrogen, Total Kjeldahl | Liquid | SM 4500Norg-C, EPA 351.1 / 2207 | 1, plastic 500ml | H2SO4 preserved<br>4 ± 2°C | N/A | 28 days | |
| Nitrogen, Total Kjeldahl | Soil | SM 4500Norg-C, / 2207 | 1, 250mL amber glass jar | 4 ± 2°C | N/A | 28 days | |
| Oil & Grease | Liquid | EPA 1664A / 2209 | 2, 1-liter amber glass jars | 1:1 HCL to a pH of <2.<br>4 ± 2°C | N/A | 28 days | |

| Analyte/ Analyte Group | Matrix | Method/ SOP | Container(s) (number, size & type per sample) | Preservation | Preparation Holding Time | Analytical Holding Time | Data Package Turnaround |
|---|---|---|---|---|---|---|---|
| Total Petroleum Hydrocarbons | Liquid | EPA 1664A / 2209 | 2, 1-liter amber glass jars | 1:1 HCL to a pH of <2.<br>4 ± 2°C | N/A | 28 days | |
| Total Cyanide | Liquid | SM 4500CN-CE / 2210 | 1, Plastic 250ml NaOH preserved | 50% sodium hydroxide pH > 12<br>4 ± 2°C | 14 days | 14 days | |
| Total Cyanide | Soil | EPA 9010C, 9012B, 9014(M) / 2210 | 1, 250mL amber glass jar | 4 ± 2°C | 14 days | 14 days | |
| Phenol, Total | Liquid | EPA 510AC, EPA 420.1 / 2211 | 1, 1-liter amber glass jars | H2SO4 preserved, pH<4<br>4 ± 2°C | N/A | 28 days | |
| Phenol, Total | Soil | EPA 9065 / 2211 | 1, 250mL amber glass jar | 4 ± 2°C | 28 days | 24 hours | |
| Sulfate | Liquid | EPA 426C, 375.4, SM 4500SO4-E / 2212 | 1, Plastic 500ml | 4 ± 2°C | N/A | 28 days | |
| Sulfate | Soil | EPA 9038 / 2212 | 1, 250mL amber glass jar | 4 ± 2°C | N/A | 28 days | |
| Alkalinity | Liquid | SM 2320B / 2213 | 1, Plastic 500ml | 4 ± 2°C | N/A | 14 days | |
| Acidity | Liquid | SM 2310B / 2232 | 1, Plastic 250ml | 4 ± 2°C | N/A | 14 days | |

| Analyte/ Analyte Group | Matrix | Method/ SOP | Container(s) (number, size & type per sample) | Preservation | Preparation Holding Time | Analytical Holding Time | Data Package Turnaround |
|---|---|---|---|---|---|---|---|
| Inorganic Anions by IC | Liquid | EPA 300.0 / 2214 | 1, Plastic 500ml | 4 ± 2°C | N/A | NO3 – 48 hours<br>Br, Cl, F, SO4 - 28 days | |
| Total Organic Carbon | Liquid | SM 5310C / 2215 | 2, Vial H2SO4 preserved | 1:1 $H_2SO_4$ pH <2,<br>4 ± 2°C | N/A | 28 days | |
| Chloride | Liquid | SM 4500Cl-E, EPA 9251 / 2216 | 1, Plastic 250ml | 4 ± 2°C | N/A | 28 days | |
| Nitrate, Nitrite & Nitrate/Nitrite | Liquid | EPA 353.2, 354.1, SM4500NO3-F, 4500NO2-B / 2217 | 1, Plastic 250ml | Individual:<br>unpreserved<br>Combined:<br>1:1 $H_2SO_4$<br>4 ± 2°C | N/A | Individual:<br>48 hours<br>Combined:<br>28 days | |
| Total Solids Dried<br>Total Volatile Solids | Liquid | SM 2540B / 2218 | 1, Plastic 500ml | 4 ± 2°C | N/A | 7 days | |
| Total Dissolved Solids<br>Total Volatile Dissolved Solids | Liquid | SM 2540C / 2219 | 1, Plastic 500ml | 4 ± 2°C | N/A | 7 days | |
| Total Suspended Solids<br>Total Volatile Suspended Solids | Liquid | SM 2540D / 2220 | 1, Plastic 1-Liter | 4 ± 2°C | N/A | 7 days | |

| Analyte/ Analyte Group | Matrix | Method/ SOP | Container(s) (number, size & type per sample) | Preservation | Preparation Holding Time | Analytical Holding Time | Data Package Turnaround |
|---|---|---|---|---|---|---|---|
| Percent Solids | Soil | SM 2540G / 2229 | 1, Plastic 2oz | 4 ± 2°C | N/A | 7 days | |
| Fixed & Volatile Solids | Soil | SM 2540G / 2241 | 1, 250mL amber glass jar | 4 ± 2°C | N/A | 7 days | |
| Solids, Settable | Liquid | SM 2540F / 2240 | 1, Plastic 1-Liter | 4 ± 2°C | N/A | 48 hours | |
| Total Sulfide | Liquid | EPA 376.2, SM 4500S2-AD / 2221 | 2, Plastic 250ml | 2N zinc Acetate and 6N NaOH | N/A | 7 days | |
| Total Sulfide | Soil | EPA 9030B / 2221 | 1, 250mL amber glass jar | 2N zinc Acetate and 6N NaOH | N/A | 7 days | |
| MBAS | Liquid | SM 5540C / 2222 | 1, Plastic 1-Liter | 4 ± 2°C | N/A | 48 hours | |
| Fluoride | Liquid | SM 4500F-BC / 2223 | 1, Plastic 500ml | 4 ± 2°C | 28 days | 48 hours | |
| Turbidity | Liquid | SM 2130B, EPA 180.1 / 2224 | 1, Plastic 500ml | 4 ± 2°C | N/A | 48 hours | |
| Orthophosphate | Liquid | SM 4500P-E / 2225 | 1, Plastic 250ml | 4 ± 2°C | N/A | 48 hours | |
| Phosphorous | Liquid | SM 4500P-E, 4500P-B / 2226 | 1, Plastic 500ml | $H_2SO_4$, pH < 2<br>4 ± 2°C | N/A | 28 days | |
| Flashpoint | Soil | EPA 1010 / 2227 | 1, 250mL amber glass jar | 4 ± 2°C | N/A | N/A | |

| **Analyte/ Analyte Group** | **Matrix** | **Method/ SOP** | **Container(s) (number, size & type per sample)** | **Preservation** | **Preparation Holding Time** | **Analytical Holding Time** | **Data Package Turnaround** |
|---|---|---|---|---|---|---|---|
| Ignitability | Soil | EPA 1030 / 2238 | 1, 250mL amber glass jar | N/A | N/A | 14 days | |
| Reactive Sulfide & Cyanide | Liquid | SW-846 Ch. 7 / 2228 | 1, 500mL amber glass jar | 4 ± 2°C | N/A | 7 days | |
| Reactive Sulfide & Cyanide | Soil | SW-846 Ch. 7 / 2228 | 1, 250mL amber glass jar | 4 ± 2°C | N/A | 14 days | |
| Specific Conductance | Liquid | SM 2510B, EPA 120.1, 9050 / 2230 | 1, Plastic 250ml | 4 ± 2°C | N/A | 28 days | |
| Color | Liquid | STM 2120B / 2231 | 1, 500mL amber glass jar | 4 ± 2°C | N/A | 24 Hours | |
| Formaldehyde | Liquid | EPA 8315A / 2233 | 1, 1-liter amber glass jars | 4 ± 2°C | 3 days | 3 days | |
| Sulfite | Liquid | SM 4500SO32B, EPA 377.1 / 2234 | 1, Plastic 250ml | 4 ± 2°C | N/A | 24 hours | |
| Ferrous Iron | Liquid | SM 3500-Fe D / 2235 | 1, Plastic 250ml | 4 ± 2°C | N/A | 24 hours | |
| Chlorine (Residual) | Liquid | SM 4500-Cl –D, EPA 330.1 / 2236 | 1, Plastic 500ml | N/A | N/A | 24 hours | |
| Oxidation – Reduction Potential | Liquid | ASTMD1498 (M) / 2237 | 1, Plastic 500ml | N/A | N/A | 24 hours | |
| Oxidation – Reduction Potential | Soil | ASTM D1498 (M) / 2237 | 1, 250mL amber glass jar | N/A | N/A | 28 days | |

| **Analyte/ Analyte Group** | **Matrix** | **Method/ SOP** | **Container(s) (number, size & type per sample)** | **Preservation** | **Preparation Holding Time** | **Analytical Holding Time** | **Data Package Turnaround** |
|---|---|---|---|---|---|---|---|
| Physiologically Available Cyanide | Liquid | EPA 9014(M) / 2239 | 1, Plastic 250ml NaOH preserved | 50% sodium hydroxide pH > 12<br>4 ± 2°C | 14 days | 14 days | |
| Physiologically Available Cyanide | Soil | EPA 9014(M) / 2239 | 1, 250mL amber glass jar | 4 ± 2°C | 14 days | 14 days | |
| Tannin & Lignin | Liquid | SM 5550B / 2242 | 1, Plastic 500ml | 4 ± 2°C | N/A | N/A | |
| Nitrite (Manual) | Liquid | SM 4500NO2-B / 2243 | | 4 ± 2°C | N/A | 48 hours | |
| Paint Filter | Soil | EPA 9050B / 2244 | 1, 250mL amber glass jar | 4 ± 2°C | N/A | N/A | |
| Odor | Liquid | SM 2150B / 2245 | 1, 1-liter amber glass jars | 4 ± 2°C | N/A | 24 hours | |
| Dissolved Oxygen | Liquid | SM 4500O-C, EPA 360.2 / 2249 | 1, 300mL BOD bottle | Manganeous Sulfate, Alkali-Iodide-Azide, store in dark at temperature of water source | N/A | 8 hours | |
| Free Cyanide | Soil | EPA 9016 | 1, 250mL amber glass jar | 4 ± 2°C, in the dark | 14 days | 24 hours | |

## QAPP Worksheet #23: Analytical SOP's
## (UFP-QAPP Manual Section 3.2.1)
## (EPA 2106-G-05 Section 2.3.4)

Laboratory: Alpha Analytical, Westborough, MA

| SOP # | Title, Date, and URL (if available) | Definitive or Screening Data | Matrix/Analytical Group | SOP Option or Equipment Type | ‡Modified for Project? Y/N |
|---|---|---|---|---|---|
| 2144 rev.2 | *Inductively coupled plasma-atomic emission spectrometry (ICP-AES),* 2/2007, rev. 3 6010C | Definitive | Aqueous, Solids, Sludges, and Groundwater | Argon ICP | N |
| 2156 rev.3 | *Inductively coupled mass spectrometry*, 2/2007,rev.1 6020A | Definitive | Aqueous, Solids, Sludges, and Groundwater | ICP-MS | N |
| 2146 rev.3 | *Mercury in Solid and Semi Solid Wastes, (Semi-Automated Cold-Vapor)* 2/2007, rev. 2 7471B | Definitive | Solids, Sludges and Wastes | CVAA | N |
| 2145 rev.2 | *Mercury In Liquid Waste (Semi-Automated Cold-Vapor Technique) 09/1994, Rev. 1 7470a* | Definitive | Mobility-procedure extracts, aqueous wastes, and ground waters | CVAA | N |
| 2136 rev.3 | *Acid Digestion of Sediments, Sludges, and Soils Using Block Digestion,* 12/1996, rev 2, 3050B | Definitive | sediments, sludges, and soil samples | Hot Block digestion | N |

| SOP # | Title, Date, and URL (if available) | Definitive or Screening Data | Matrix/Analytical Group | SOP Option or Equipment Type | ‡Modified for Project? Y/N |
|---|---|---|---|---|---|
| 2134 rev. 2 | *Acid Digestion of Waters for Total Recoverable or* Dissolved Metals for Analysis by ICP Spectroscopy, 7/1992, rev 1 3005A | Definitive | Surface and Groundwater Samples | Hot Block digestion | N |
| 2132 rev.2 | *Microwave Assisted Acid Digestion of Aqueous Samples and Extracts*, 12/1997, 3015A | Definitive | Aqueous, and Extraction Leachates | Microwave Digestion | N |

‡ A brief summary of project-specific SOP modifications must be provided on this worksheet or referenced.

# QAPP Worksheet #25: Analytical Instrument and Equipment Maintenance, Testing, and Inspection
## (UFP-QAPP Manual Section 3.2.3)
## (EPA 2106-G-05 Section 2.3.6)

Laboratory: Alpha Analytical, Westborough, MA

| Instrument / Equipment | Maintenance Activity | Testing Activity | Inspection Activity | Frequency | Acceptance Criteria | Corrective Action | Title/position responsible for corrective action | Reference |
|---|---|---|---|---|---|---|---|---|
| ICP-MS | Introduction system cleaning. Torch and Cones cleaning. Rough pump oil change | Nebulizer backpressure monitoring. Vacuum reading. | Software monitored. Oil reservoir. | Continuous | <2.4 PSI Neb.<br><2.1X104 vacuum | Clean and restore Change oil, evacuate ballast | ICP-MS Analyst | 1558 QM<br>2156 rev.3 ICP |
| ICP | Introduction system cleaning. Torch Clean Flow adjustment. Cell conditioning | Nebulization monitoring | Visual | Daily | Flow consistent and unobstructed | Dismantle, clean | ICP Analyst | 1558 QM<br>2144 rev. 2 |
| CVAA | Sensitivity Test | Adjust and rerun | Flow rate acceptance | Adjust and rerun | Flow rate acceptance | Adjust, line replacement | Analyst | 1558 QM<br>2145 rev.2<br>2146 rev.3 |

| Instrument / Equipment | Maintenance Activity | Testing Activity | Inspection Activity | Frequency | Acceptance Criteria | Corrective Action | Title/position responsible for corrective action | Reference |
|---|---|---|---|---|---|---|---|---|
| CVAA | Sample delivery tubing | Inspect for wear | Visual | Daily inspection<br>Weekly replacement | Uptake acceptance | Replacement | Analyst | 1558 QM<br>2145 rev.2<br>2146 rev.3 |
| CVAA |  | Lamp output |  | Semi-annual | Low standard sensitivity | Replacement of lamp | Analyst | 1558 QM<br>2145 rev.2<br>2146 rev.3 |
| CVAA | Autosampler control arms | Freely moving, sample position acquired |  | Daily | Working condition | Lubricate with silicon | Analyst | 1558 QM<br>2145 rev.2<br>2146 rev.3 |

# QAPP Worksheet #26 & 27: Sample Handling, Custody, and Disposal
## (UFP-QAPP Manual Section 3.3)
## (EPA 2106-G-05 Section 2.3.3)

Sampling Organization: Project Specific

Laboratory: Alpha Analytical, Westborough, MA

Method of sample delivery (shipper/carrier): UPS, Fed-EX or laboratory courier

Number of days from reporting until sample disposal: Project Specific

| Activity | Organization and title or position of person responsible for the activity | SOP reference |
|---|---|---|
| Sample labeling | Client-assigned field staff | N/A |
| Chain-of-custody form completion | Client-assigned field staff | N/A |
| Packaging | Client-assigned field staff | N/A |
| Shipping coordination | Client-assigned field staff | N/A |
| Sample receipt, inspection, & log-in | Laboratory Log-In/Custody Staff | 1559 |
| Sample custody and storage | Laboratory Log-In/Custody Staff | 1559, 1560 |
| Sample disposal | Laboratory Log-In/Custody Staff | 1559, 1560 |

# APPENDIX G

## RESPONSIBILITIES OF OWNER AND REMEDIAL PARTY

# Responsibilities of the Owner and Remedial Party

The responsibilities for implementing the Site Management Plan ("SMP") for the United Cleaners site (the "site"), number 828152, are divided between the site owner(s) and a Remedial Party, as defined below. The owner(s) is/are currently listed as:

Frontier Center, LLC (the "owner")
90 Air Park Drive, Suite 301
Rochester, New York 14624
Contact: Richard J. Chiarenza

**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:

S-P Associates, L.P. (the "responsible party")
1265 Scottsville Road
Rochester, New York 14624
Contact: Ron Cocquyt

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 a(n) 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 NYSDEC in accordance with the timeframes indicated in Section 2.4.2-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 Section 2.4.2- 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. 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 2.4 of the SMP. A 60-Day Advance Notification Form and Instructions are found at http://www.dec.ny.gov/chemical/76250.html.

8) The owner will ensure that the sub-slab depressurization system is running on behalf of the RP and will notify the RP if any system components are not property functioning. The RP remains ultimately responsible for maintaining the engineering controls.

9) Until such time as the NYSDEC deems the vapor mitigation system unnecessary, the owner shall operate the system, pay for the utilities for the system's operation, and report any maintenance issues to the RP and the NYSDEC.

10) 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 2.4.2- Notifications of the SMP.

7) The RP is responsible for the proper maintenance of any installed vapor intrusion mitigation systems associated with the site, as required in Section 4 (Operation and Maintenance) of the SMP.

8) 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.

9) 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.

# APPENDIX 2

# H&A Decommissioning Documentation

HALEY ALDRICH

HALEY & ALDRICH OF NEW YORK
200 Town Centre Drive
Suite 2
Rochester, NY 14623
585.359.9000

28 July 2021
File No. 127833-001

New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 8
6274 East Avon-Lima Road
East Avon, New York 14414

Attention: Ms. Danielle Miles

Subject: Well Decommissioning Summary Report
United Cleaners Site
2199 East Henrietta Road, Henrietta, New York
Site Number: 828152

Dear Ms. Miles:

On behalf of S-P Associates, L.P. (SP), Haley & Aldrich of New York (Haley & Aldrich) is submitting this well decommissioning summary report in connection with the United Cleaners site located in Henrietta, New York. In a letter dated 29 March 2021, New York State Department of Conservation (NYSDEC) approved SP's request to discontinue groundwater monitoring at the site and required decommissioning of the remaining groundwater monitoring wells. Haley & Aldrich submitted a well decommissioning work plan on 22 April 2021, which was conditionally approved by NYSDEC via letter dated 17 May 2021. Well decommissioning was performed on 2 and 3 June 2021, in accordance with the approved work plan and NYSDEC Policy CP-43: Groundwater Monitoring Well Decommissioning Policy.

## Well Decommissioning Procedures

Trec Environmental Inc. (Trec) located in Spencerport, New York was contracted to perform the well decommissioning work. See Figure 1 for the locations of the nine (9) monitoring wells that were decommissioned and Appendix A for the well decommissioning logs.

Five of the nine groundwater monitoring wells were located onsite, currently owned by Frontier Center LLC (Frontier), and four were located adjacent to the site on Town of Henrietta property. Notifications were made to Frontier and the Town of Henrietta for access to the wells prior to initiating well decommissioning activities. The wells were decommissioned as described below.

- Trec utilized a mini-excavator to pull the well casing while pumping a cement grout mixture into the borehole using tremie pipes and a mechanical pump. Two of the well casings were fully removed using this method. Six of the well casings were unable to be fully removed and were cut off at five feet below grade and grouted in place in accordance with the decommissioning procedures. At one well, MW-15R, the casing was cut at five feet below grade but was unable to be removed at that point. The casing was then cut at four feet below grade, removed and the remaining subgrade casing was grouted in place.

- The cement/bentonite grout mixture consisted of approximately one pound of bentonite per 25-pounds of Portland cement.
- Concrete surface seals and protective casings were mechanically broken up and removed.

Three of the monitoring wells, MW-15, MW-18 and HA-4, were located in the Soil Management Area (SMA) as shown on Figure 1. Vapor monitoring with a photoionization device (PID) was implemented within the work zone during well decommissioning activities to screen for elevated volatile organic compound vapors. Volatile organic vapors were not detected using the PID.

## Site Restoration and Waste Disposal

### BACKFILLING AND SITE RESTORATION

The uppermost portion of the boreholes were filled with bagged topsoil (per the approved Site Management Plan). The ground surface of each borehole was restored in kind to the area surrounding the borehole with either topsoil or asphalt cold patch.

### WASTE DISPOSAL

No soils were generated during well decommissioning activities. The PVC riser pipe, protective casing, concrete, and road box materials removed during decommissioning were brought to Trec's shop for placement in the dumpster and disposal as non-hazardous, general construction and demolition waste by Casella at an approved waste disposal facility.

Should you have any questions regarding this letter, please do not hesitate to contact us.

Sincerely yours,
HALEY & ALDRICH OF NEW YORK

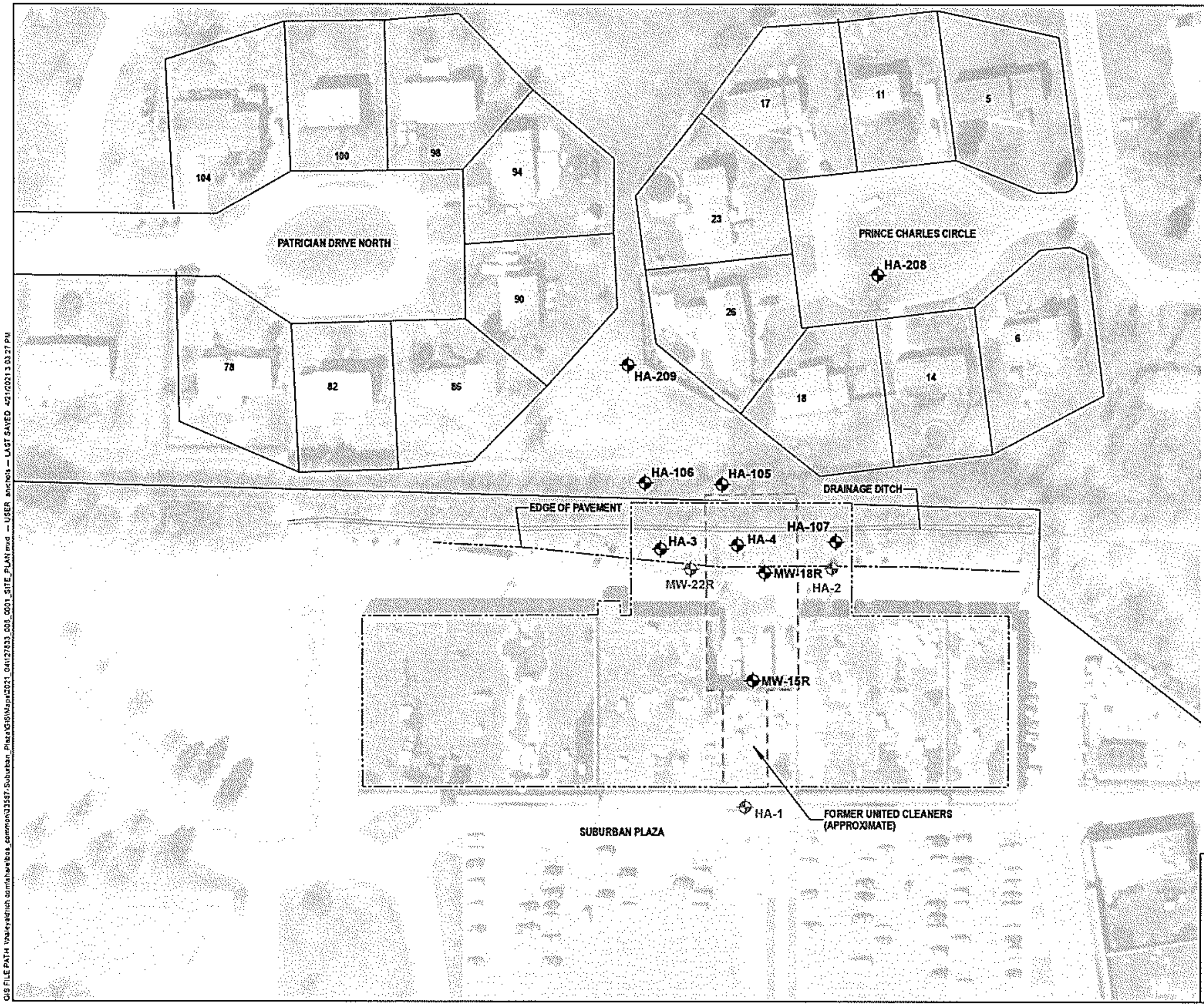
Janice Szucs

Janice D. Szucs, P.E. (NY)
Senior Project Manager

Glenn M. White
Associate

Attachments:
Figure 1 – Site Plan
Appendix A – Well Decommissioning Logs

# FIGURE



LEGEND

| | |
|---|---|
| ⯐ | MONITORING WELL DECOMMISSIONED 2021 |
| ⯐ | MONITORING WELL MISSING OR DESTROYED AS OF JANUARY 2016 |
| ⬚ | LIMITS OF SOIL MANAGEMENT AREA (SMA) |
| ⬚ | SITE BOUNDARY |

NOTES

1. WELL LOCATIONS ARE PER SURVEYS DATED 2007 & 2009 BY PARRONE ENGINEERING AND FISHER ASSOCIATES, RESPECTIVELY.

2. AERIAL IMAGERY SOURCE: ESRI

N

0 80 160

SCALE IN FEET

HALEY
ALDRICH

UNITED CLEANERS
2199 EAST HENRIETTA ROAD
HENRIETTA, NEW YORK

SITE PLAN

APRIL 2021

FIGURE 1

GIS FILE PATH \\haleyaldrich.com\share\bos_common\33597-Suburban_Plaza\GIS\Maps\2021_04\127833_005_0001_SITE_PLAN.mxd — USER anchors — LAST SAVED 4/21/2021 3:03:27 PM

# APPENDIX A

## Well Decommissioning Logs

HALEY ALDRICH

# WELL DECOMMISSIONING REPORT

Well No.

HA-105

| | | | |
|---|---|---|---|
| **PROJECT** | Well Decommissioning | **H&A FILE NO.** | 127833-009 |
| **LOCATION** | Henrietta, NY | **PROJECT MGR.** | J. Szucs |
| **CLIENT** | United Cleaners | **FIELD REP.** | R. Lydell |
| **CONTRACTOR** | Trec Environmental | **REMOVAL DATE** | 6/2/2021 |

**Well Designation** HA-105

**Well Diameter** 2in

**Decommissioning Technique** Pull casing and grout in place

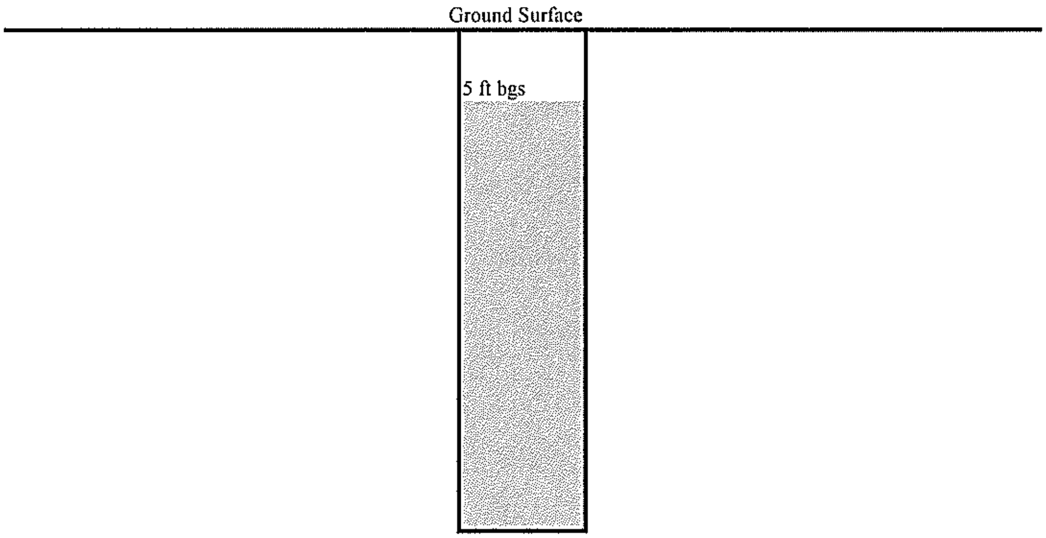
**Depth to Groundwater** 2.70

**Total Depth of Well** 18.50

| | **Cement (Lbs. - Bags*)** | **Additive (Lbs. - Gals.)** | **Water (Gals.)** | **Total Volume (Gals.)** |
|---|---|---|---|---|
| **Type** | **I/II Portland** | **Bentonite granular** | ▨ | ▨ |
| **Manufacturer** | **Quikrete** | **Benseal** | ▨ | ▨ |
| **Quantity** | **25 lbs.** | **1 lbs.** | 4 | 6 |

***1 Bag = 94 Lbs.**

**Sketch:**



**COMMENTS:** Trec removes the well stickup, surface completion and bush adjacent to well utilizing a mini excavator. Trec attempts to pull pvc riser and breaks at threads. Trec cuts the pvc riser 5 ft below ground surface utilizing a down hole cutter and grouts utilizing a grout pump and tremmie hose. Trec backfills and restores ground surface with topsoil.

Form # 2013

HALEY ALDRICH

# WELL DECOMMISSIONING REPORT

**Well No.** HA-106

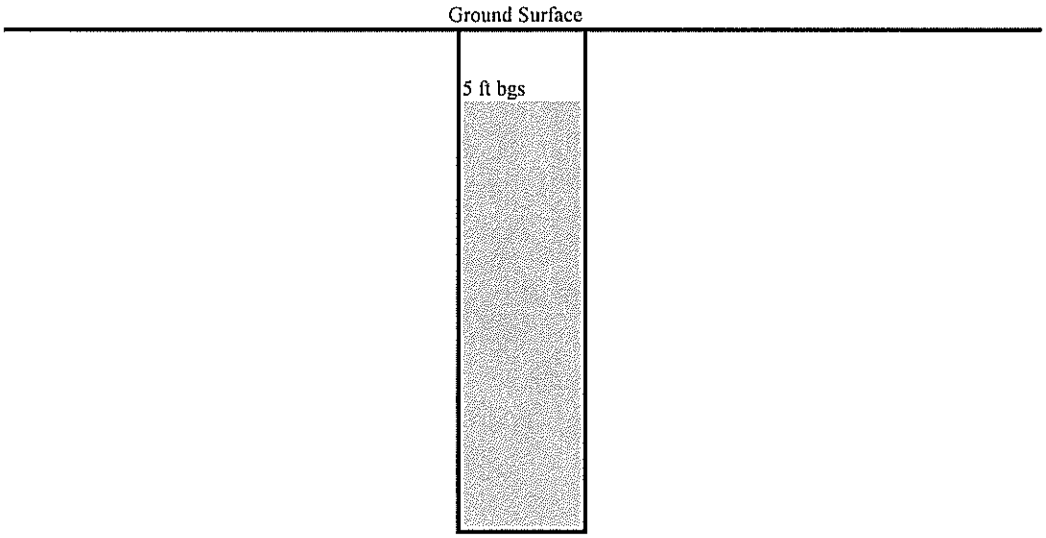
|  |  |  |  |
|---|---|---|---|
| **PROJECT** | Well Decommissioning | **H&A FILE NO.** | 127833-009 |
| **LOCATION** | Henrietta, NY | **PROJECT MGR.** | J. Szucs |
| **CLIENT** | United Cleaners | **FIELD REP.** | R. Lydell |
| **CONTRACTOR** | Trec Environmental | **REMOVAL DATE** | 6/2/2021 |

|  |  |
|---|---|
| **Well Designation** | HA-106 |
| **Well Diameter** | 2in |
| **Decommissioning Technique** | Pull casing |
| **Depth to Groundwater** | 2.51 |
| **Total Depth of Well** | 17.61 |

|  | **Cement (Lbs. - Bags*)** | **Additive (Lbs. - Gals.)** | **Water (Gals.)** | **Total Volume (Gals.)** |
|---|---|---|---|---|
| **Type** | **I/II Portland** | **Bentonite granular** |  |  |
| **Manufacturer** | **Quikrete** | **Benseal** |  |  |
| **Quantity** | **25 lbs.** | **1 lbs.** | **4** | **6** |

***1 Bag = 94 Lbs.**

**Sketch:**



**COMMENTS:** Trec removes the well stickup utilizing a mini excavator. Trec pulls pvc riser and grouts in tandem utilizing a grout pump and tremmie hose. Trec backfills and restores ground surface with topsoil.

Form # 2013

HALEY ALDRICH

# WELL DECOMMISSIONING REPORT

**Well No.** HA-107

**PROJECT** Well Decommissioning
**LOCATION** Henrietta, NY
**CLIENT** United Cleaners
**CONTRACTOR** Trec Environmental

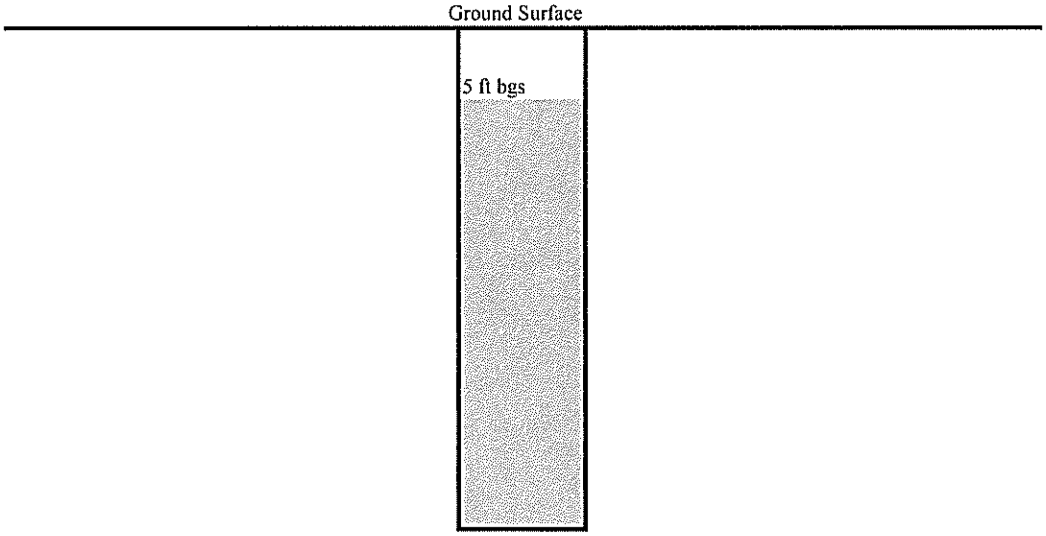
**H&A FILE NO.** 127833-009
**PROJECT MGR.** J. Szucs
**FIELD REP.** R. Lydell
**REMOVAL DATE** 6/2/2021

**Well Designation** HA-107
**Well Diameter** 2in
**Decommissioning Technique** Pull casing and grout in place
**Depth to Groundwater** 8.53
**Total Depth of Well** 17.80

| | Cement (Lbs. - Bags*) | Additive (Lbs. - Gals.) | Water (Gals.) | Total Volume (Gals.) |
|---|---|---|---|---|
| Type | I/II Portland | Bentonite granular | | |
| Manufacturer | Quikrete | Benseal | | |
| Quantity | 25 lbs. | 1 lbs. | 4 | 6 |

*1 Bag = 94 Lbs.

**Sketch:**



**COMMENTS:** Trec removes the well stickup and surface completion utilizing a mini excavator. Trec attempts to pull pvc riser and breaks at threads. Trec cuts the pvc riser 5 ft below ground surface utilizing a down hole cutter and grouts utilizing a grout pump and tremmie hose. Trec backfills and restores ground surface with topsoil.

HALEY ALDRICH

# WELL DECOMMISSIONING REPORT

**Well No.** HA-208

**PROJECT** Well Decommissioning
**LOCATION** Henrietta, NY
**CLIENT** United Cleaners
**CONTRACTOR** Trec Environmental

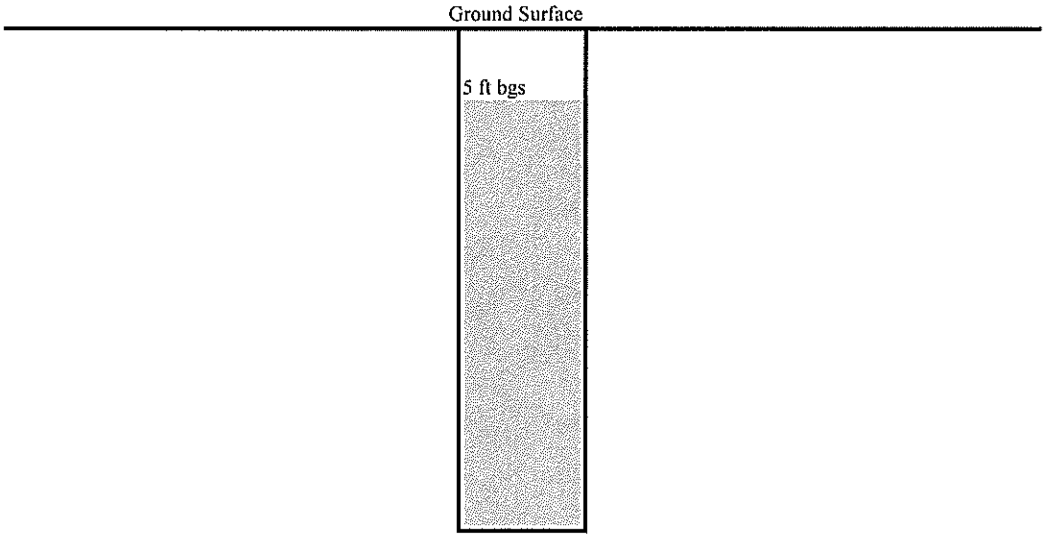
**H&A FILE NO.** 127833-009
**PROJECT MGR.** J. Szucs
**FIELD REP.** R. Lydell
**REMOVAL DATE** 6/3/2021

**Well Designation** HA-208
**Well Diameter** 2in
**Decommissioning Technique** Pull casing and grout in place
**Depth to Groundwater** 2.65
**Total Depth of Well** 14.47

| | Cement (Lbs. - Bags*) | Additive (Lbs. - Gals.) | Water (Gals.) | Total Volume (Gals.) |
|---|---|---|---|---|
| Type | I/II Portland | Bentonite granular | | |
| Manufacturer | Quikrete | Benseal | | |
| Quantity | 25 lbs. | 1 lbs. | 4 | 6 |

*1 Bag = 94 Lbs.

**Sketch:**



**COMMENTS:** Trec removes the well flushmount and surface completion utilizing a mini excavator. Trec attempts to pull pvc riser and breaks at threads. Trec cuts the pvc riser 5 ft below ground surface utilizing a down hole cutter and grouts utilizing a grout pump and tremmie hose. Trec backfills and restores ground surface with topsoil.

Form # 2013

HALEY ALDRICH

# WELL DECOMMISSIONING REPORT

**Well No.** HA-209

| | | | |
|---|---|---|---|
| **PROJECT** | Well Decommissioning | **H&A FILE NO.** | 127833-009 |
| **LOCATION** | Henrietta, NY | **PROJECT MGR.** | J. Szucs |
| **CLIENT** | United Cleaners | **FIELD REP.** | R. Lydell |
| **CONTRACTOR** | Trec Environmental | **REMOVAL DATE** | 6/2/2021 |

**Well Designation** HA-209

**Well Diameter** 2in

**Decommissioning Technique** Pull casing

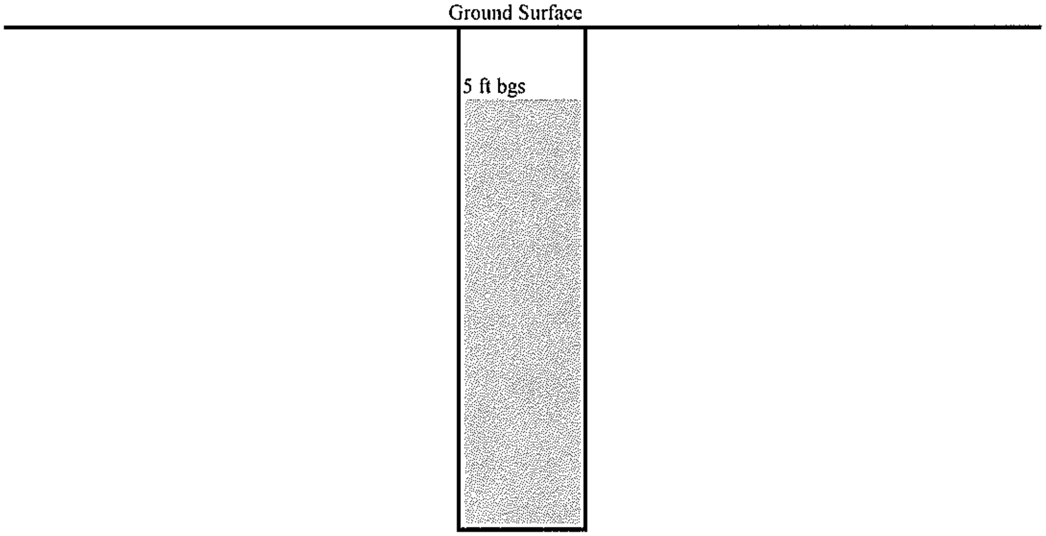
**Depth to Groundwater** 2.06

**Total Depth of Well** 19.55

| | **Cement (Lbs. - Bags*)** | **Additive (Lbs. - Gals.)** | **Water (Gals.)** | **Total Volume (Gals.)** |
|---|---|---|---|---|
| **Type** | **I/II Portland** | **Bentonite granular** | ▨ | ▨ |
| **Manufacturer** | **Quikrete** | **Benseal** | ▨ | ▨ |
| **Quantity** | **25 lbs.** | **1 lbs.** | 4 | 6 |

***1 Bag = 94 Lbs.**

**Sketch:**



**COMMENTS:** Trec removes the well flushmount and surface completion utilizing a mini excavator. Trec pulls pvc riser and grouts in tandem utilizing a grout pump and tremmie hose. Trec backfills and restores ground surface with topsoil.

# WELL DECOMMISSIONING REPORT

**Well No.** HA-3

|  |  |  |  |
|---|---|---|---|
| **PROJECT** | Well Decommissioning | **H&A FILE NO.** | 127833-009 |
| **LOCATION** | Henrietta, NY | **PROJECT MGR.** | J. Szucs |
| **CLIENT** | United Cleaners | **FIELD REP.** | R. Lydell |
| **CONTRACTOR** | Trec Environmental | **REMOVAL DATE** | 6/2/2021 |

**Well Designation** HA-3

**Well Diameter** 2in

**Decommissioning Technique** Pull casing and grout in place

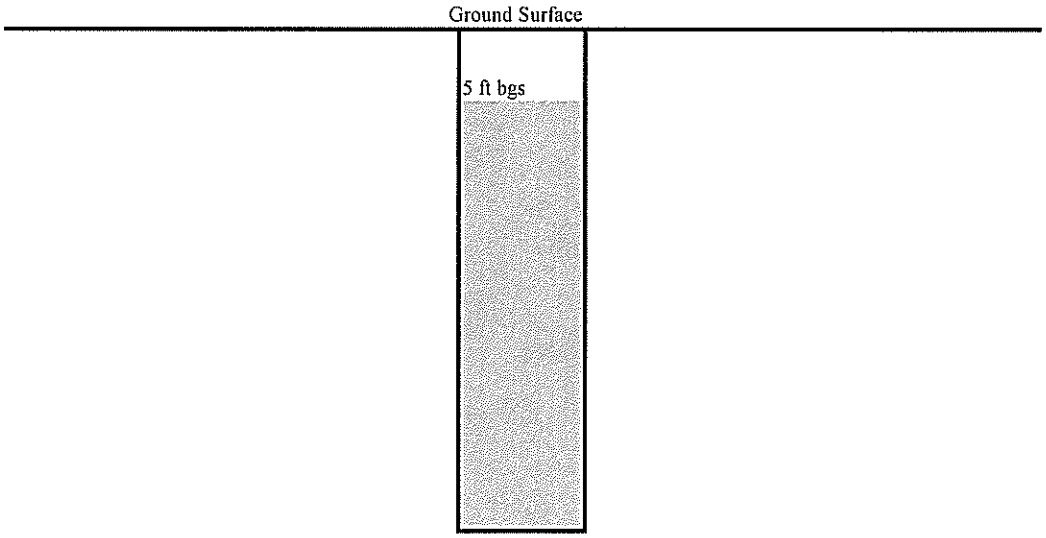
**Depth to Groundwater** 25.34

**Total Depth of Well** 42.74

|  | **Cement (Lbs. - Bags*)** | **Additive (Lbs. - Gals.)** | **Water (Gals.)** | **Total Volume (Gals.)** |
|---|---|---|---|---|
| **Type** | **I/II Portland** | **Bentonite granular** | ▨ | ▨ |
| **Manufacturer** | **Quikrete** | **Benseal** | ▨ | ▨ |
| **Quantity** | **50 lbs.** | **2 lbs.** | 8 | 12 |

***1 Bag = 94 Lbs.**

**Sketch:**



**COMMENTS:** Trec removes the well stickup and surface completion utilizing a mini excavator. Trec attempts to pull pvc riser and breaks at threads. Trec cuts the pvc riser 5 ft below ground surface utilizing a down hole cutter and grouts utilizing a grout pump and tremmie hose. Trec backfills and restores ground surface with topsoil.

HALEY ALDRICH

# WELL DECOMMISSIONING REPORT

**Well No.** HA-4

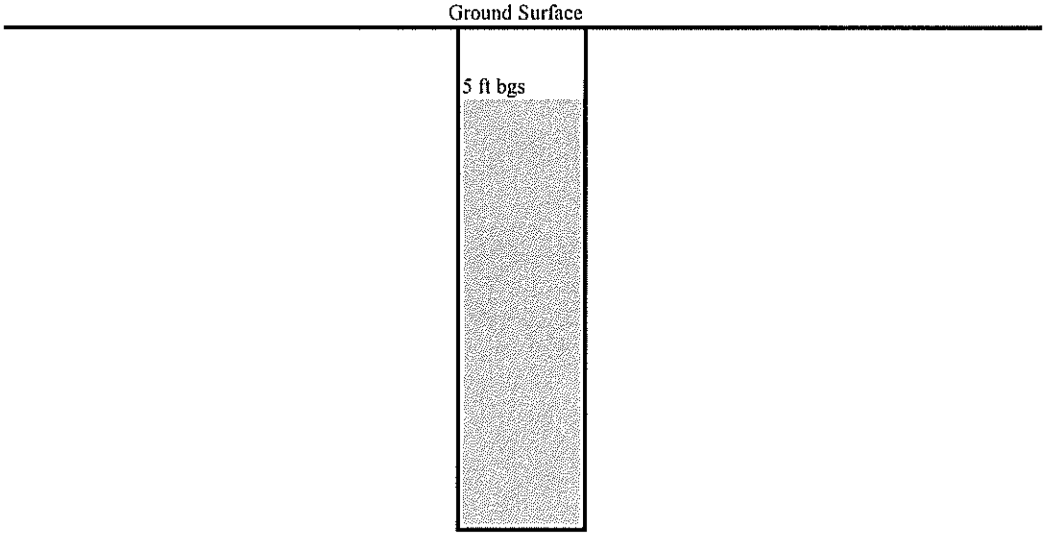
**PROJECT** Well Decommissioning
**LOCATION** Henrietta, NY
**CLIENT** United Cleaners
**CONTRACTOR** Trec Environmental
**H&A FILE NO.** 127833-009
**PROJECT MGR.** J. Szucs
**FIELD REP.** R. Lydell
**REMOVAL DATE** 6/2/2021

**Well Designation** HA-4
**Well Diameter** 2in
**Decommissioning Technique** Pull casing and grout in place
**Depth to Groundwater** 26.58
**Total Depth of Well** 42.85

| | Cement (Lbs. - Bags*) | Additive (Lbs. - Gals.) | Water (Gals.) | Total Volume (Gals.) |
|---|---|---|---|---|
| **Type** | **I/II Portland** | **Bentonite granular** | | |
| **Manufacturer** | **Quikrete** | **Benseal** | | |
| **Quantity** | **50 lbs.** | **2 lbs.** | **8** | **12** |

***1 Bag = 94 Lbs.**

**Sketch:**



**COMMENTS:** Trec removes the well stickup and surface completion utilizing a mini excavator. Trec attempts to pull pvc riser and breaks at threads. Trec cuts the pvc riser 5 ft below ground surface utilizing a down hole cutter and grouts utilizing a grout pump and tremmie hose. Trec backfills and restores ground surface with topsoil.

HALEY ALDRICH

# WELL DECOMMISSIONING REPORT

**Well No.** HA-15R

| | | | |
|---|---|---|---|
| **PROJECT** | Well Decommissioning | **H&A FILE NO.** | 127833-009 |
| **LOCATION** | Henrietta, NY | **PROJECT MGR.** | J. Szucs |
| **CLIENT** | United Cleaners | **FIELD REP.** | R. Lydell |
| **CONTRACTOR** | Trec Environmental | **REMOVAL DATE** | 6/3/2021 |

**Well Designation** HA-15R

**Well Diameter** 2in

**Decommissioning Technique** Pull casing and grout in place

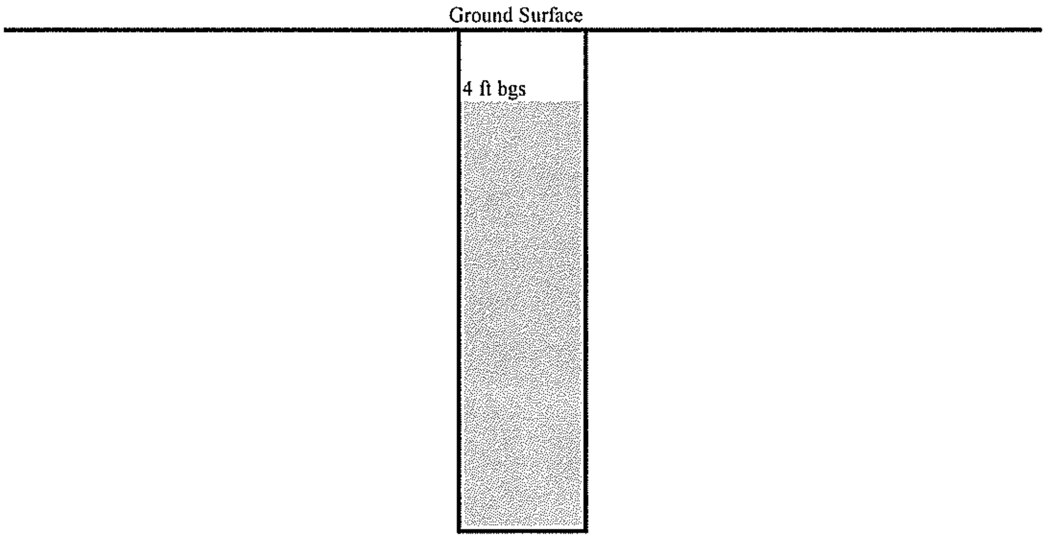
**Depth to Groundwater** 6.69

**Total Depth of Well** 14.96

| | **Cement (Lbs. - Bags*)** | **Additive (Lbs. - Gals.)** | **Water (Gals.)** | **Total Volume (Gals.)** |
|---|---|---|---|---|
| **Type** | **I/II Portland** | **Bentonite granular** | | |
| **Manufacturer** | **Quikrete** | **Benseal** | | |
| **Quantity** | **25 lbs.** | **1 lbs.** | **4** | **6** |

***1 Bag = 94 Lbs.**

**Sketch:**



**COMMENTS:** Trec removes the well flushmount and surface completion utilizing a mini excavator. Trec attempts to pull pvc riser and breaks at threads. Trec cuts the pvc riser 5 ft below ground surface utilizing a down hole cutter but can not be removed. Trec re-cuts the pvc riser 4 ft below ground surface, removes and grouts utilizing a grout pump and tremmie hose. Trec backfills and restores ground surface with topsoil.

HALEY ALDRICH

# WELL DECOMMISSIONING REPORT

**Well No.** MW-18R

**PROJECT** Well Decommissioning
**LOCATION** Henrietta, NY
**CLIENT** United Cleaners
**CONTRACTOR** Trec Environmental

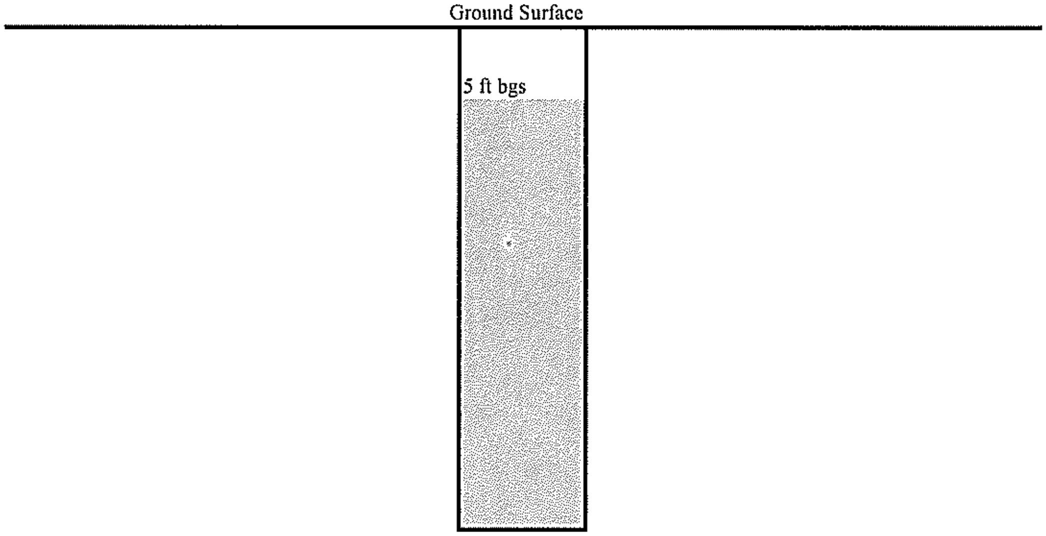
**H&A FILE NO.** 127833-009
**PROJECT MGR.** J. Szucs
**FIELD REP.** R. Lydell
**REMOVAL DATE** 6/3/2021

**Well Designation** MW-18R
**Well Diameter** 2in
**Decommissioning Technique** Pull casing and grout in place
**Depth to Groundwater** 6.61
**Total Depth of Well** 14.74

| | Cement (Lbs. - Bags*) | Additive (Lbs. - Gals.) | Water (Gals.) | Total Volume (Gals.) |
|---|---|---|---|---|
| Type | I/II Portland | Bentonite granular | ▨ | ▨ |
| Manufacturer | Quikrete | Benseal | ▨ | ▨ |
| Quantity | 25 lbs. | 1 lbs. | 4 | 6 |

***1 Bag = 94 Lbs.**

**Sketch:**



**COMMENTS:** Trec removes the well flushmount and surface completion utilizing a mini excavator. Trec attempts to pull pvc riser and breaks at threads. Trec cuts the pvc riser 5 ft below ground surface utilizing a down hole cutter and grouts utilizing a grout pump and tremmie hose. Trec backfills with topsoil and restores ground surface with asphalt patch.