

**SOIL VAPOR INVESTIGATION WORK PLAN – SECOND PHASE  
COOPERVISION, INC.  
SCOTTSVILLE, NEW YORK  
(VCA SITE #V00175-8)**

**by**

**Haley & Aldrich of New York  
Rochester, New York**

**for**

**New York State Department of Environmental Conservation, Region 8  
Avon, New York**

**File No. 70665-014  
December 2008**

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10 December 2008  
File No. 70665-014

New York State Department of Environmental Conservation  
Region 8  
Division of Environmental Remediation  
6274 East Avon-Lima Road  
Avon, New York 14414-9519

Attention: Mr. Frank Sowers, P.E.

Subject: Soil Vapor Investigation Work Plan  
CooperVision, Inc.  
Scottsville, New York  
(VCA Site #V00175-8)

Ladies & Gentlemen:

On behalf of CooperVision, Inc., Haley & Aldrich is pleased to submit this Soil Vapor Investigation Work Plan for the next phase of work at the CooperVision, facility in Scottsville, New York. This work is being pursued under the Voluntary Cleanup Agreement (VCA) between CooperVision, Inc, and the New York State Department of Environmental Protection (NYSDEC), which was executed by NYSDEC in May 2001 for the above referenced site ("the Site").

This Work Plan is a follow-up to our phone meeting with the NYSDEC and the New York State Department of Health (NYSDOH) that occurred on 2 December 2008 relative to the next phase of vapor intrusion investigative work at the site.

We are seeking review and approval of this Work Plan to allow implementation of the work described herein, currently scheduled for 22-24 December 2008.

This Work Plan contains the following:

- A brief site description and recent project history that relates to the work plan activities;
- A work plan for the next phase of soil vapor investigation, including sample points on off-site properties located directly to the east of the CooperVision facility.
- Reporting, notification, and scheduling information related to the proposed investigation activities.

Please do not hesitate to contact the undersigned with any questions you may have.

NYSDEC

CooperVision Soil Vapor Investigation Work Plan – Second Phase

10 December 2009

Page 2 of 12

Sincerely yours,

HALEY & ALDRICH OF NEW YORK



Susan L. Boyle  
Senior Engineer



Vincent B. Dick  
Vice President

cc: Julia M. Kenney, New York State Department of Health  
Bernie Hallatt, CooperVision, Inc.  
Dennis Snyder, CooperVision, Inc.  
Tarun Patel, CooperVision, Inc.  
Carol Kaufman, CooperVision, Inc.  
Christopher Marraro, Howrey, LLP

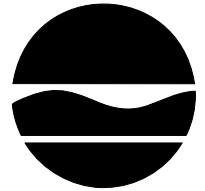
# New York State Department of Environmental Conservation

## Division of Environmental Remediation, Region 8

6274 East Avon-Lima Road, Avon, New York 14414-9519

**Phone:** (585) 226-2466 • **FAX:** (585) 226-8696

**Website:** [www.dec.ny.gov](http://www.dec.ny.gov)



Alexander B. Grannis  
Commissioner

December 12, 2008

Mr. Christopher H. Marraro, Esq.  
Howrey, LLP  
1299 Pennsylvania Avenue, NW  
Washington, DC 20004-2402

Dear Mr. Marraro:

**Re: CooperVision Site #V00175-8  
Soil Vapor Investigation Work Plan Second Phase; December 2008  
Village of Scottsville, Monroe County**

The New York State Department of Environmental Conservation (NYSDEC) has completed its review of the Soil Vapor Investigation Work Plan- Second Phase (the Work Plan) dated December 2008 prepared by Haley & Aldrich of New York (H&A) for the CooperVision facility located in the Village of Scottsville, Monroe County. Based upon the information and representations given in the Work Plan, the Work Plan is hereby approved as modified and clarified below:

1. Section 1.1: The phrase “likely resulting from activities by a former owner that occupied the property and used it for manufacturing beginning in the mid-1970s” is deleted. Similarly, the phrase “likely resulting from activities by the former owner” is deleted from the HASP.
2. Section 1.1 and 2.1: The results of the October 2006 groundwater monitoring event were submitted to NYSDEC as part of the Draft Final Engineering Report which was dated 7 May 2007 and received by NYSDEC on 2 July 2007.
3. Section 2 and Figure 2: An additional soil vapor point location will be installed and sampled at an on-site location along the southern property boundary as shown on the attached figure.
4. Section 2.2: Chloroethane and vinyl chloride are added to the target compound list.
5. Section 2.2: The minimum reporting limit for each compound will be 1 microgram per cubic meter.

6. Section 2.2: The soil vapor and ambient air results will be reported in units of micrograms per cubic meter.
7. Section 2.2: Consider having the laboratory prepare ASP-B format data packages so that the data can be validated if the results indicate that the exterior soil vapor plume has been delineated.
8. Section 2.2: Prior to sending the samples to the laboratory, field staff will confirm that a negative pressure remains in each canister. Initial and final vacuum readings will be documented and included in the report.
9. Section 2.2: Field logs will be completed and included in the report. Field logs will include the information specified in the October 2006 Soil Vapor Intrusion Guidance (see page 21) as well as results from the tracer gas tests, a summary of PID readings collected during implementation of the Community Air Monitoring Program, and any other significant observations.
10. Section 2.2.1: A soil probe construction log will be completed for each soil vapor sample location and included in the report.
11. Section 2.2.2: The sample duration for each canister will be a minimum of two hours (not one hour).
12. Section 2.2.3: In the event that the soil vapor samples are collected over multiple days, an ambient air sample will be collected each day.
13. Section 2.2.3: The ambient air sample will be collected from an upwind location.
14. Section 5: The Community Air Monitoring Plan included in the February 2001 CooperVision VCA Remediation Work Plan will be followed during all ground intrusive activities, including soil probe construction.
15. Section 6: The results will be submitted to NYSDEC, the New York State Department of Health (NYSDOH), and the Monroe County Health Department by January 16, 2009.

Based on discussions with H&A, it is understood that field work is scheduled to start on or about December 22, 2008. Please note that NYSDEC will be preparing a Fact Sheet to notify the community of the soil vapor sampling work. Please do not start field work until the Fact Sheet has been sent to the community. Additionally, please notify me at least 5 business days in advance of all field activities.

Mr. Christopher H. Marraro, Esq.  
December 12, 2008  
Page 3  
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Thank you for your assistance in this matter and we look forward to receiving the soil vapor results from this second phase of vapor samples. As previously discussed, some off-site structure sampling (sub-slab vapor, indoor air and ambient air) is requested based on the April to October 2008 sample results. The specific structures to sample will be determined upon receipt of the soil vapor results. In order to efficiently move from exterior soil vapor sampling to interior structure sampling, NYSDEC requests that CooperVision submit a preliminary work plan for the structure sampling by **December 22, 2008**.

Please contact me at (585) 226-5357 if you have any questions regarding these modifications to the Work Plan or if CooperVision does not accept these modifications.

Sincerely,

A handwritten signature in cursive script that reads "Frank Sowers".

Frank Sowers, P.E.  
Environmental Engineer 2

cc:w/attach  
Vince Dick (Haley & Aldrich)  
Claire DeBergalis (Haley & Aldrich)  
Tarun Patel (CooperVision)  
Susan Boyle (Haley & Aldrich)  
file

ec:  
Bart Putzig  
Jim Charles  
Julia Kenney  
Jeff Kosmala







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2	Site Plan with Proposed Soil Vapor Sample Locations

## **1 INTRODUCTION**

### **1.1 Project Description**

The CooperVision facility is located at 711 North Road in Scottsville, New York on an approximately 5.4 acre parcel of land (See Figures 1 and 2). The property includes an original building with additions having a total area of approximately 50,000 sq. ft. Soil and groundwater on some portions of the property have been found to have volatile organic compounds (VOCs), primarily 1,1,1-trichloroethane (TCA), likely resulting from activities by a former owner that occupied the property and used it for manufacturing beginning in the mid-1970s. CooperVision, Inc. applied to the NYSDEC and was accepted for participation in New York State's Voluntary Cleanup (VC) Program for the CooperVision facility.

Remedial activities completed under the VC Program at the CooperVision Site to-date, which included enhanced bio-remediation using Hydrogen Release Compound (HRC) and the installation of a sub-slab depressurization system, are described in the Preliminary Report on Remediation Activities dated 10 April 2002 and the Draft Final Engineering Report (FER) dated 7 May 2007.

### **1.2 Recent Activities**

To facilitate closeout of the VC Program two reports (Draft FER and Operations Maintenance and Monitoring (OM&M) Plan) were submitted to the NYSDEC for review in June 2007. After review of these documents and associated site conditions, the NYSDEC and NYSDOH expressed concerns regarding the potential for offsite migration of contaminated groundwater and vapor as a result of contaminant concentrations detected in 2006 at monitoring well MW-204 which is located on the easternmost edge of the Site.

Groundwater monitoring has occurred at the Site since 1997. In October 2006, concentrations of chlorinated compounds in MW-204, the easternmost downgradient well located along the eastern property boundary (see Figure 2), 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), and 1,1,1-trichloroethane (TCA) were detected at levels higher than what has historically been detected in this well. Since the 2006 sampling and results, the chlorinated compound detections have decreased to low concentrations, consistent with what otherwise historically had been detected in this well.

Even though the chlorinated compound detections have decreased, the NYSDEC and NYSDOH still expressed their view for sampling soil vapor concentrations offsite.

Accordingly and at the request of the NYSDEC, a soil vapor investigation work plan was submitted by CooperVision (dated 27 March 2008) and implemented in April-June 2008 to investigate for the potential presence of soil vapor at the easternmost property boundary and in the right-of-way along the east side of Briarwood Lane.

The results of that investigation program were in the timeframe between March and October 2008 as phases of the work were completed; an overall summary was developed and submitted to the NYSDEC in a report dated 28 October 2008. The program showed the presence of soil vapor at several onsite and offsite locations along the right-of-way of Briarwood Lane. Evaluation of the data indicated that the most likely migration pathway of the vapor contaminants appeared to be via utility lines, particularly a gas utility that crossed Briarwood Lane at the approximate locations of the soil vapor points with the highest concentrations. To mitigate this potential migration pathway, several bentonite collars were installed in September 2008 around the utility lines and bedding consistent with a work plan for the collars that was

developed, submitted to and approved by NYSDEC. The soil vapor points were then re-sampled in October 2008. While decreases in the concentrations of vapor were observed at some sample locations along the gas pipeline indicating effectiveness of the collars, not all locations showed decreased concentrations, and NYSDEC and NYSDOH requested that additional investigations on the offsite properties be performed.

A conference call was held on 2 December to discuss the approach for the next phase of work in the soil vapor investigation program. This work plan describes the details of the additional sampling program developed by Haley & Aldrich and discussed with the agencies in the 2 December call for this next phase.

### **1.3 Work Plan Objectives**

The objectives of soil vapor investigation work plan are listed below and discussed in the following sections of this document.

- Present a plan for the next phase of soil vapor investigation for the CooperVision property and off-site properties located directly to the east of the CooperVision facility.
- Develop data relative to potential chlorinated volatile compound presence in soil vapor along the subject gas utility pipeline(s), and at other step-out locations as presented in the plan.
- Present reporting, notification, and scheduling information related to the proposed investigation activities.

## **2 SOIL VAPOR INVESTIGATION WORK SCOPE**

### **2.1 Investigation Elements**

- To investigate for the potential presence of detectable soil vapor concentrations on offsite properties that may be associated with the contamination present on the CooperVision property.
- To perform “step out sampling” to the north of points SV-3 and SV-6 which were installed in the vicinity of the gas utility pipe during the initial phases of work.
- To collect information to further understand the potential migration pathway(s) that may exist for soil vapor. Specifically, this will include review of site utility and building configuration information with the off-site property owners.
- To collect information to identify potential follow-up actions, as may be indicated to be appropriate.

### **2.2 Soil Vapor Sampling**

As in previous sampling performed in this investigation under work plans previously approved by NYSDEC, soil vapor point installation and sampling will occur in general conformance to the New York State Department of Health Guidance for Evaluating Soil Vapor Intrusion in the State of New York dated October 2006, and as performed during the initial phase of soil vapor investigation work in April-June 2008. The procedure and work scope is described in the sections below.

#### **2.2.1 Point Installation**

Sampling on the off-site properties is subject to information currently being gathered and access being provided by the adjacent property owners. As shown in Figure 2, recently gathered information indicates a layout of the gas utility pipelines, and other nearby utilities that will factor into specific vapor point locations, as well as interpretation of associated data. Access is currently being coordinated with the property owners. Specific sample dates and coordination for individual locations to avoid impact to property tenants and use may affect timing and locations described herein. However, based on information and coordination to date, we do not anticipate significant modification of either the locations or sampling procedures described herein. As with previous sampling performed for this project, 5-day notice will be provided to NYSDEC in advance of field sampling.

Sampling will be performed at locations on the CooperVision property, as well as on two properties located immediately east of the CooperVision property. See Figure 2. The northern off-site property is occupied by six apartment complex buildings immediately south of North Road and east of Briarwood Lane, and flanking an east-west common driveway and parking lot. The southern property is also located east of Briarwood Lane, but is occupied by eight townhome buildings that flank a curved roadway named Nathaniel Drive.

Permanent soil vapor points will be installed at the seven locations as shown on Figure 2 and listed below:

- **SV-101, 102 and 103:** To the north of locations SV-3 and SV-6, to act as "Step out" samples from the initial phase of work
- **SV-102, SV-103:** On the eastern apartment property, to determine if soil vapor impacts are present at the northwest area of the property.
- **SV-104, SV-105:** On the eastern property, roughly along the property line between the northern and southern properties, to determine if soil vapor impacts are present east of SV-6 and further investigate if a relationship exists between soil vapor impacts and the adjacent gas pipeline alignment.
- **SV-106, SV107:** On the eastern townhome property, to determine if soil vapor impacts are present in the southern area of the offsite property

All sample locations to be installed are subject to coordination with the owners of each property, including Coopervision and each owner of the respective eastern properties. The locations are also subject to utility clearance for each location.

At each location listed above, two discrete sample points (shallow and deep) will be installed, at depths of approximately 3 feet (shallow) and 5 feet (or just above the water table, will depend upon field conditions). Vapor probes will be installed in a configuration as depicted in the October 2006 NYSDOH guidance Figure 2.2. The probes will be backfilled using a porous, inert backfill material (e.g., glass beads, silica sand, etc.) allowing a sampling zone of 1 to 2 feet in length, and sealed at the ground surface to prevent any inflow from ambient surface air. The surface seal design will include a 1.0 ft. (minimum) x 3-in. diameter seal of hydrated bentonite above the porous backfill material followed by a 1.0 ft. x 8-in. cement-bentonite surface seal and permanent 4.0 in. diameter flush-mount well cover installed to existing ground surface. This surface seal design is based on discussions of sampling technique with NYSDEC is an approved method to prevent short circuiting of ambient air into the sub-surface.

## 2.2.2 Soil Vapor Sample Collection

Samples will be analyzed by an ELAP certified laboratory for VOCs using EPA Method TO-15. The target compound list will consist of 1,1-DCA, 1,1-DCE, and TCA consistent with the NYSDOH air sampling guidance and with the compounds detected in groundwater at downgradient well MW-204. Samples will be collected at two sample depths at each location as described in Section 2.2.1 above, subject to subsurface conditions at the time of sampling. Each of the newly installed vapor points will be sampled as will existing vapor point couplets at SV-3, SV-6, SV-5 and SV-8 in order to provide a concurrent sample set from these previously sampled locations and further data on the performance of the bentonite collars.

The samples will be collected at least 24 hours after installation of the probes (due to the holiday schedule and drill rig availability, it is anticipated the sample points will be installed between 22 and 24 December, and samples will be collected approximately one week later). The soil vapor probes will be briefly evacuated to purge any stagnant vapors within the probe (the purge volume will approximate one borehole volume). In addition, as requested by the NYSDOH, during the purging process a tracer compound (specifically helium) will be released around the probe at the ground surface, and vapor samples will be collected from the installed probe and analyzed for helium to assess potential short-circuiting and ensure that the surface seal is intact.

The soil vapor samples will be collected in dedicated, laboratory-supplied "batch certified clean" stainless steel Summa canisters at rates no greater than 0.2 L/min (i.e., and estimated 30 minutes completion time to fill one 6L Summa canister), with an average target fill-time of approximately 1 hour per canister.



### **2.2.3 Ambient Air Sample Collection**

Concurrent with soil vapor sampling, one ambient air sample will be collected at the CooperVision Site at one downwind location to be determined in the field. This sample will be collected using a “certified-clean” 6.0-liter canister equipped with an 8-hour flow controller. The ambient air sample will also be submitted to an ELAP certified laboratory for VOCs using EPA Method TO-15. The ambient air sample will be collected and analyzed in general conformance to the New York State Department of Health Guidance for Evaluating Soil Vapor Intrusion in the State of New York dated October 2006.

## **3 SAMPLE ANALYSIS**

### **3.1 Interpretation of Results**

Upon receipt of the data from the analytical laboratory, the data will be evaluated in conjunction with the data received previously to identify the following:

- Are concentrations of soil vapor present on the adjacent property?
- If detected, what pattern of apparent vapor presence or migration is evident relative to the detection locations and the layout of the gas pipeline(s), buildings and other site features?
- What follow up actions are indicated by the results?

The collected data will be shared with the agencies and respective property owners. The results will be evaluated relative to the questions above and follow up activities determined relative potential need for further sampling on the off-site properties, as may be warranted.

## **4 WASTE MANAGEMENT PLAN**

As with past vapor sampling performed at the site, it is not anticipated that contaminated soil and/or groundwater will be generated as a result of soil vapor sampling point installation or sampling. All personal protective equipment, such as disposable gloves, will be disposed of in onsite dumpsters.

## **5 HEALTH & SAFETY PLAN**

A Health and Safety plan (HASP) for the work described herein is contained in Appendix A. No changes in the HASP appear to be warranted as the sampling planned is the same as previously performed at the site.

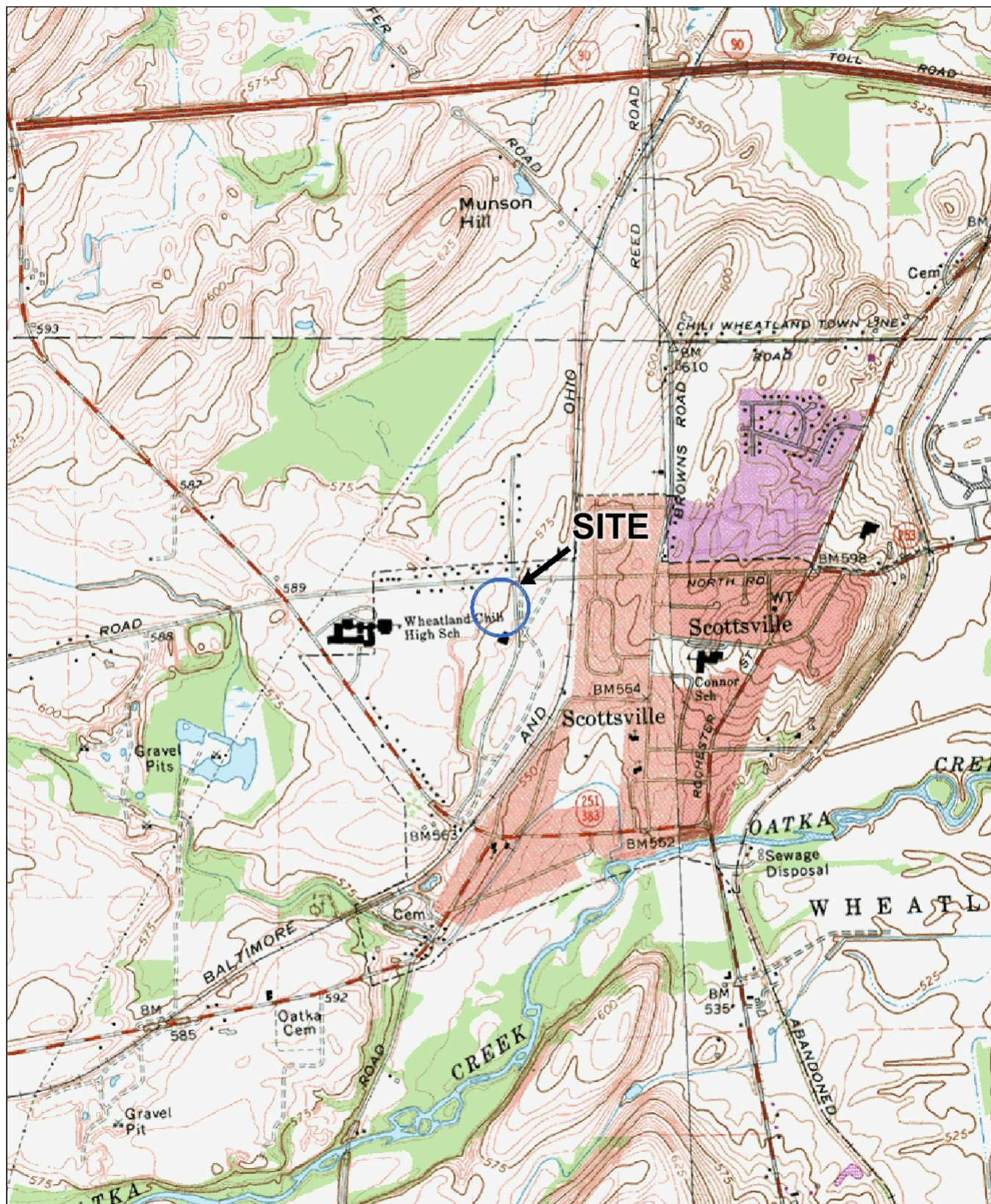
## **6 REPORTING & SCHEDULING**

The field work to install the points is scheduled for 22-24 December. While this work is dependent upon obtaining access from the adjacent property owners, the access agreement work is proceeding smoothly and is not anticipated to be a hurdle for completing this work on schedule.

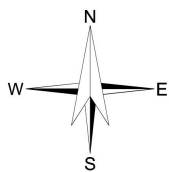
The soil vapor points will be sampled on 29-30 December and immediately submitted to the laboratory for analysis. The results will be submitted to the NYSDEC and NYSDOH as soon as

possible upon receipt; a 5 business-day sample turn-around-time is being requested of the analytical laboratory.





SITE COORDINATES: 43°1'39"N 77°45'27"W



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

**HALEY & ALDRICH**

COOPERVISION, INC.  
SCOTTSVILLE, NEW YORK

PROJECT LOCUS

SCALE: 1:24,000  
MARCH 2008

FIGURE 1





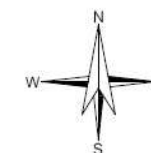
## LEGEND

- ◆ SV-1 Location of existing soil vapor point
- ◆ SV-106S/  
SV-106D Location of proposed soil vapor point

- Location of known natural gas pipeline utilities.
- - - Location of storm sewer easement.
- . - Property Boundary

## NOTES:

1. All locations are approximate and not to scale.
2. Gas pipeline locations based on records provided by RG&E and Atlantic Surveying & mapping.
3. Property boundaries based on records from Monroe Co. and Atlantic Surveying & Mapping. Property boundaries are approximate.
4. Vapor point installation locations subject to utility clearance.



**HALEY & ALDRICH**

COOPERVISION, INC –  
711 NORTH ROAD  
SCOTTSVILLE, NEW YORK

## SITE SCHEMATIC – PROPOSED PHASE 2 SOIL VAPOR POINTS

SCALE: NONE  
DECEMBER 2008

**FIGURE 2**



## **APPENDIX A**

### **Health & Safety Plan**





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

For

CooperVision, Inc.

711 North Road, Scottsville, New York

Project/File No. 70665-012

Prepared by: Claire DeBergalis

Date: 18 March 2008

Revised by: Michael G. Beikirch

Date: 10 December 2008

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

  
\_\_\_\_\_  
Michael G. Beikirch - Local H&S Coordinator

12/10/08  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
for  
Susan L. Boyle - Site Project Manager

10 December 2008  
\_\_\_\_\_  
Date

Date printed: 12/10/2008 at 2:04 PM

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

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**APPENDIX A - HASP AMENDMENT FORM****APPENDIX B – ISSUANCE AND COMPLIANCE, SITE SAFETY OFFICER ROLES AND RESPONSIBILITIES, AND TRAINING REQUIREMENTS**

**1. PROJECT INFORMATION AND EMERGENCY RESOURCES**

<b>Project Name:</b> CooperVision, Inc.	<b>H&amp;A File No.:</b> 70665-012
<b>Location:</b> 711 North Road, Scottsville, New York	
<b>Client/Site Contact:</b> Phone Number: Emergency Phone Number:	Bernie Hallatt 585-264-3222
<b>H&amp;A Project Manager:</b> Phone Number: Emergency Phone Number:	Susan L. Boyle 585-321-4222 585-760-3548
<b>Local Health &amp; Safety Coordinator:</b> Phone Number: Emergency Phone Number:	Michael G. Beikirch 585-321-4229 585-370-6568
<b>Nearest Hospital:</b> Address: (see map on next page)  Phone Number:	Strong Memorial Hospital 601 Elmwood Avenue Rochester, NY 14624  585-275-2100
<b>Emergency Response Number:</b>	911
<b>Other Local Emergency Response Number:</b>	911
<b>Other Ambulance, Fire, Police, or Environmental Emergency Resources:</b>	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: Semi-Annual Groundwater Monitoring: Thirteen (13) onsite groundwater monitoring wells will be sampled using Waterra tubing and low-flow techniques during the Spring and Fall of each calendar year.

Task #2: Soil Vapor Probe Installation: Seven (7) permanent soil vapor points will be installed onsite and at the western property-right-of-way. The probes will be installed to a depth of up to 9 feet below ground using a hand auger. In the event that a hand auger can not be used, the points will be installed using direct-push (GeoProbe) methods. [In December 2008 an additional seven \(7\) permanent soil vapor points will be installed onsite \(1\) and offsite in the residential neighborhood east of the site. \(6\) Methods will be similar as performed in March 2008.](#)

Task #3: Soil Vapor Sampling: One soil vapor sample will be obtained from each of the seven (7) soil vapor points. One confirmation sample will also be obtained from each of the points no longer than approximately six months following the initial sampling. Subsequent samples will be collected as requested or necessary. In addition to the soil vapor samples, one ambient air sample will be collected from the site during each soil vapor sampling event. [In December 2008 one soil vapor sample will be obtained from each of the additional seven \(7\) permanent soil vapor points. Sampling methodology will be similar as performed in March 2008.](#)

Task #4: Well Decommissioning & Site Restoration: Following completion of site monitoring and Department approval, the existing onsite monitoring wells will be decommissioned and other miscellaneous site restoration activities (such as asphalt patching) will be performed.

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

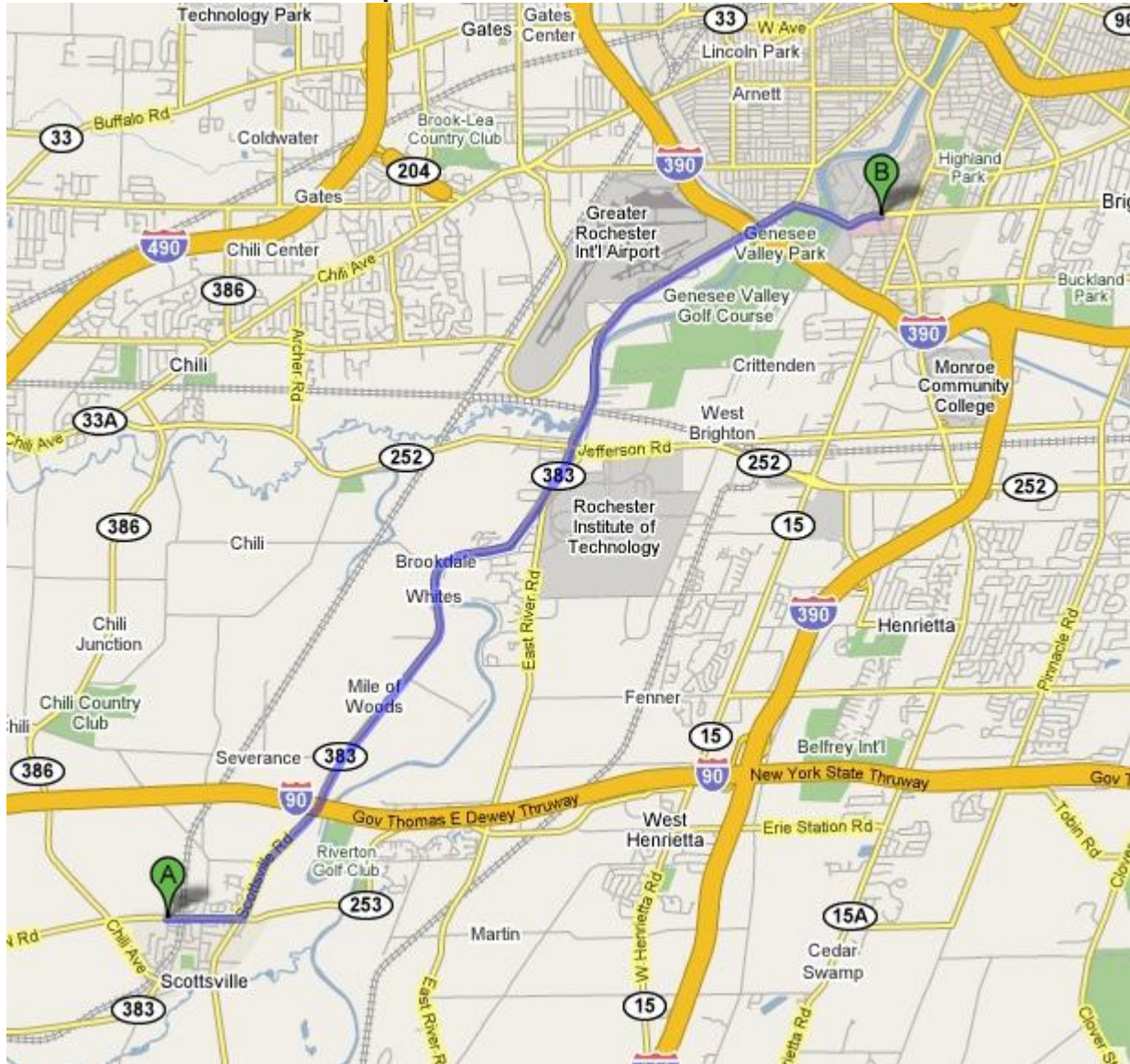
Firm Name	Work Activity
Drilling Subcontractor	Well Decommissioning

**Projected Start Date:** April 2008; [December 2008](#)

**Projected Completion Date:** To Be Determined;

**Estimated Number of Days to Complete Field Work:** 3 to 7 days semiannually until completion of the project; 2-3 days to decommission wells following project completion.

**Directions to the Nearest Hospital:**



**A From:** 711 N Rd  
Scottsville, NY 14546 [Edit](#)

**Drive:** 10.6 mi – about 21 mins

1. Head **east** on **N Rd** toward **Fairview Rd** 0.7 mi
2. Turn **left** at **RT-383/Scottsville Rd** 9.1 mi
3. Slight **right** at **Elmwood Ave** 0.8 mi

**B To:** **Strong Memorial Hospital**  
601 Elmwood Ave #655, Rochester,  
NY 14642 [Edit](#)



## 2. SITE DESCRIPTION

### Site Classification:

<input checked="" type="checkbox"/> Industrial	<input type="checkbox"/> Commercial	<input type="checkbox"/> Other
--	-------------------------------------	--------------------------------

### General Description:

The CooperVision facility is located at 711 North Road in Scottsville, New York on an approximately 5.4 acre parcel of land. The property includes an original building with additions having a total area of approximately 50,000 sq. ft. Also on the property is a paved parking lot and grass areas. A drainage ditch is present along the western portion of the site. [Residential townhouse properties are present east of the site.](#)

### Background and Historic Site Usage:

Prior to 1976, the site consisted of undeveloped agricultural land. The site was purchased, developed, and operated by Union Corporation thereafter for the manufacturing of contact lens eyewear. CooperVision acquired the property in 1983. Today, CooperVision continues to manufacture contact lenses at the facility. Soil and groundwater on some portions of the property have been found to be impacted by volatile organic compounds (VOCs), primarily 1,1,1-trichloroethane (TCA), likely resulting from activities by the former owner.

### Project Scope:

The project scope consists of ongoing semi-annual groundwater sampling at existing groundwater monitoring wells and soil vapor investigation (installation of soil vapor points and subsequent sampling) on the subject and at the property line to determine if there is a potential for migration of soil vapor offsite to the west of the site. In the future, the project will be expanded to include decommissioning of the onsite groundwater monitoring wells and soil vapor sampling points and site restoration so that the site may be closed.

### Overview of Hazards:

Site hazards include traffic hazards given that the groundwater and soil vapor sampling locations are located in an active parking lot and right-of-way, noise hazards from an air handling unit at one of the groundwater monitoring locations, and chemical hazards from groundwater and potentially soil vapor impacted by chlorinated compounds. A potential pinch hazard is present during the installation of the soil vapor points due to the use of slam-bars. A drilling hazard is anticipated to exist when the groundwater wells are decommissioned.

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

☒ Active ☐ Inactive

☐ Partially active☐ Other

The site is currently an active contact-lens manufacturer. Operations occur at the site 24-hours a day, seven days a week.

**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 Wells – (outdoor locations)  
MW-2, MW-3, MW-202, MW-203, MW-204, MW-205, OWD-302D, OWS-302S, OW-304, MW-401, MW-402, MW-501, MW-502: Located throughout parking lot to the south and west of the site building.
2. Soil Vapor Sampling Points – (outdoor locations)  
SV-1 and SV-2: South of the site building  
SV-3, SV-4, and SV-5: Along the eastern property boundary  
SV-6 and SV-7: Along the eastern right-of-way  
SV-101: Along the eastern site property boundary  
SV-102 through SV-107: in the residential neighborhood east of the site.

**3. PROJECT TASK BREAKDOWN**

List and describe each distinct work task below.

<b>Task No.</b>	<b>Detailed Task Description</b>	<b>Employee(s)</b>	<b>Work Date(s) or Duration</b>
<b>1</b>	Semi-annual groundwater monitoring	Two (2) H&A field staff	3 days/Semi-annually
<b>2</b>	Soil Vapor Point Installation	Two (2) H&A field staff/possible drilling subcontractor	1-2 days
<b>3</b>	Soil Vapor Sampling/ambient air sampling	Two (2) H&A field staff	1 to 2 days semi-annually or as necessary
<b>4</b>	Well Decommissioning and Site Restoration	Drilling Subcontractor H&A field staff	1 week at the completion of project

Task #1: Semi-Annual Groundwater Monitoring: Thirteen (13) onsite groundwater monitoring wells will be sampled using Waterra tubing and low-flow techniques during the Spring and Fall of each calendar year.

Task #2: Soil Vapor Probe Installation: Seven (7) permanent soil vapor points will be installed onsite and at the western property-right-of-way. The probes will be installed to a depth of up to 9 feet below ground using a hand auger. In the event that a hand auger can not be used, the points will be installed using direct-push (GeoProbe) methods. [In December 2008 an additional seven \(7\) soil vapor points will be installed onsite \(1\) and offsite \(6\) in the residential neighborhood east of the site. Methods will be similar as performed in March 2008.](#)

Task #3: Soil Vapor Sampling: One soil vapor sample will be obtained from each of the seven (7) soil vapor points. One confirmation sample will also be obtained from each of the points no longer than approximately six months following the initial sampling. Subsequent samples will be collected as requested or necessary. In addition to the soil vapor samples, one ambient air sample will be collected from the site during each soil vapor sampling event. [In December 2008 one soil vapor sample will be obtained from each of the additional seven \(7\) soil vapor points. Sampling methodology will be similar as performed in March 2008.](#)

Task #4: Well Decommissioning and Site Restoration: Following completion of site monitoring and Department approval, the existing onsite monitoring wells will be decommissioned and other miscellaneous site restoration activities (such as asphalt patching) will be performed.

**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. MSDSs are not required for waste materials.

**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

☐ Sludge

☒ Liquid

☐ Solid/Particulate

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

☐ Asbestos

☐ Inorganics

☐ BTEX

☐ Pesticides

☒ Chlorinated Solvents

☐ Petroleum products

☐ Heavy Metals

☐ Other

**Impacted Environments:**

Indicate media in which contamination is expected.

☒ Air

☒ Groundwater

☐ Soil

☐ Sediment

☐ Surface water

☐ Other

**Estimated concentrations:**

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

Work Activity	Media	Chemical	Anticipated Concentration
Groundwater Monitoring	GW	1,1,1-TCA, 1,1-DCA, 1,1-DCE, Chloroethene, VC	ND – 400 ppm
Soil Vapor Point Installation	SO, A	1,1,1-TCA, 1,1-DCA, 1,1-DCE, Chloroethene, VC	ND – 30 ppb in air ND - 0.2 ppm in soil
Soil Vapor Sampling	A	1,1,1-TCA, 1,1-DCA, 1,1-DCE, Chloroethene, VC	D – 30 ppb in air ND - 0.2 ppm
Monitoring Well Decommissioning & Site Restoration	GW, SO	1,1,1-TCA, 1,1-DCA, 1,1-DCE, Chloroethene, VC	ND – 400 ppm in GW ND - 0.2 ppm

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

**Chemicals of Concern:****1,1,1 Trichloroethane**

The health effects for 1,1,1 TCA are as follows- Inhalation of vapors will irritate the respiratory tract. Affects the central nervous system. Symptoms include headache, dizziness, weakness, and nausea. Higher levels of exposure (> 5000 PPM) can cause irregular heart beat, kidney and liver damage, fall in blood pressure, unconsciousness and even death. Harmful if swallowed. Symptoms similar to inhalation will occur along with nausea, vomiting. Aspiration of material into the lungs can cause chemical pneumonitis, which can be fatal. If aspirated, may be rapidly absorbed through the lungs and result in injury to other body systems. Causes mild irritation and redness, especially on prolonged contact. Repeated contact may cause drying or flaking of the skin. Liquids and vapors cause irritation. Symptoms include tearing, redness, stinging, and swelling. Prolonged or repeated skin contact may cause dermatitis. Chronic exposure may affect the kidneys and liver. Dioxane is a suspected human carcinogen based on animal data. Personnel with CNS, kidney, liver or heart disease may be more susceptible to the effects of this substance. Use of alcoholic beverages may aggravate symptoms.

The OSHA permissible exposure limit (PEL) for 1,1,1 TCA is 350 PPM for an 8-hour time weighted average.

**1,1-Dichloroethylene (1,1-DCE)**

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



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

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-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 an 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.

### **1,1-Dichloroethane (1,1-DCA)**

1,1-Dichloroethane (1,1-DCA) is a colorless, class IB flammable, oily liquid with a chloroform-like odor.

1,1-DCA is incompatible with strong oxidizers and strong caustics.

The OSHA PEL for 1,1-DCA is 100 ppm as an 8-hour TWA. The standard routes of entry in the body are through inhalation, ingestion, skin and eye contact. The points of attack are the liver, kidney, lungs, central nervous system, skin and eyes.

Symptoms that may occur as a result of exposure to 1,1-DCA include irritation to the skin; central nervous system depression; and liver, kidney, and lung damage.

### **Chloroethane**

Chloroethane is a colorless gas at room temperature and pressure with a sharp odor. It can be kept as a liquid under pressure, however it quickly evaporates when exposed to room air. Chloroethane is flammable.

The OSHA PEL for Chloroethane is 1,000 ppm as an 8-hour TWA. The standard routes of entry into the body are through ingestion and inhalation. High levels of Chloroethane can affect your nervous system, causing lack of muscle control and unconsciousness.

Brief exposure to chloroethane can induce feelings of inebriation, and at higher levels and can lack of muscle coordination and unconsciousness as well as stomach cramps, nausea, vomiting, and eye irritation. It can produce a numbing sensation when applied to the skin, but can cause frost-bite if applied too long. Chloroethane is not classified as a carcinogen.

**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 (eV)	(IP	FID	ODOR THRESHOLD	IRRITATION THRESHOLD	ODOR DESCRIPTION
VAPORS & GASES													
Acetone	R, I, C	2500	-	750 [ACGIH]	1000	500	250	9.69	60	13	-	-	fragrant, 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 [NOSH; 2.5 [ACGIH]	1	0.5	0.1	9.24	150	4.68	-	-	Solvent, aromatic
Carbon tetrachloride (Tetrachloromethane)	R,A,I,C	Ca [200]	[instantaneous] 200 [5 min peak in any 4	2 [NOSH, 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 [NOSH, 60-min]	-	10	-	11.42**	65	50	-	-	Sweet, pleasant
o-Dichlorobenzene	R,A,I,C	200	50 [NOSH, 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 [NOSH]; 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 [NOSH, ACGIH]	100	100	100	8.76	100	2.3	E 200	-	Aromatic
Ethylene Glycol	R,I,C	ND	50 [OSHA]; 100 mg/m <sup>3</sup> [ACGIH]	-	-	-	-	-	-	-	-	-	Odorless
Formaldehyde	I,C	Ca [20]	0.1 [NOSH, 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 [NOSH - 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 [NOSH, ACGIH, skin]	200	200 [skin]	200	10.84**	12	1000	-	-	Pungent
Methyl Ethyl Ketone Peroxide	R,I,C	ND	0.2 [NOSH, ACGIH]; 0.7 [OSHA]	-	-	-	-	-	-	-	-	-	Characteristic odor
Methyl Chloroform (1,1,1-SCA)	R,I,C	700	350 [NOSH, 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 [NOSH, 15-min]	-	-	0.5	-	9.44	-	-	-	-	Garlic, rotten cabbage
MBK (Hexone)	R,I,C	500	-	75 [NOSH, ACGIH]	100	50	50	9.30	-	-	-	-	Pleasant
Napha (coal tar)	R,I,C	1000	-	-	100	400	100	-	-	-	-	-	Aromatic
Naphthalene	R,A,I,C	250	-	15 [NOSH, ACGIH]	10	10	10	8.12	-	0.3	E 15	-	Mothball-like
Octane	R,I,C	1000	385 [NOSH, 15-min]	-	500	300	75	9.82	80	48	-	-	Gasoline-like
Pentachlorophenol	R,A,I,C	2.5 mg/m <sup>3</sup>	-	-	0.5 mg/m <sup>3</sup> [skin]	0.5 mg/m <sup>3</sup> [skin]	0.5 mg/m <sup>3</sup> [skin]	-	-	-	-	-	Pungent when hot, benzene-like
Phenol	R,A,I,C	250	15.6 [NOSH, 15 min]	-	5 [skin]	5 [skin]	5 [skin]	8.50	-	0.04	E.N.T. 68	-	Sweet, acid
Propane	R,C	2100	-	-	1000	1000	1000	11.07**	80	1600	-	-	Odorless (commonly smells foul due to additive for odor detection)
Stoddard Solvent (Mineral Spirits)	R,C,I	20000 mg/m <sup>3</sup>	1800 mg/m <sup>3</sup> [ACGIH, 15-min]	-	500	100	350 mg/m <sup>3</sup>	-	-	1	E 400	-	Kerosene-like
Styrene	R,I,A,C	700	200 [OSHA]	100 [NOSH]; 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 [NOSH]; 500 [OSHA, 10-min max peak in any 2 hours]; 100 [ACGIH]	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 3 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 [NOSH, ACGIH]	100	100	100	8.56 (m- and o-); 8.44 (p-)	111/116	1.1	E.N.T. 200	-	Aromatic

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CHEMICAL	ROUTES OF EXPOSURE	IDLH	Ceiling	STEL	PEL	TLV	REL	PID (eV)	IP	FID	ODOR THRESHOLD	IRRITATION THRESHOLD	ODOR DESCRIPTION
<b>DUSTS, MISTS, FUMES, AND MISCELLANEOUS COMPOUNDS</b>													
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 <sup>3</sup> ]	-	-	1 mg/m <sup>3</sup> [skin]	1 mg/m <sup>3</sup> [skin]	0.001 mg/m <sup>3</sup>	-	-	-	-	-	Mild, hydrocarbon
PCBs-54% Chlorine	R,A,I,C	Ca [5 mg/m <sup>3</sup> ]	-	-	0.5 mg/m <sup>3</sup> [skin]	0.5 mg/m <sup>3</sup> [skin]	0.001 mg/m <sup>3</sup>	-	-	-	-	-	Mild, hydrocarbon
Aluminum - metal dust	R,C	ND	-	-	15 mg/m <sup>3</sup> (total); 5 mg/m <sup>3</sup> (respirable)	10 mg/m <sup>3</sup>	10 mg/m <sup>3</sup> (total); 5 mg/m <sup>3</sup> (respirable)	-	-	-	-	-	-
Aluminum - soluble salts	R,I,C	ND	-	-	2 mg/m <sup>3</sup>	2 mg/m <sup>3</sup>	2 mg/m <sup>3</sup>	-	-	-	-	-	-
Arsenic- inorganic	R,A,I,C	Ca [5 mg/m <sup>3</sup> ]	0.002 mg/m <sup>3</sup> [NIOSH, 15-min]	-	0.01 mg/m <sup>3</sup>	0.01 mg/m <sup>3</sup>	Ca	-	-	-	-	-	-
Barium: soluble compounds	R,I,C	50 mg/m <sup>3</sup>	-	-	0.5 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>	-	-	-	-	-	-
Beryllium	R,C	Ca [4 mg/m <sup>3</sup> ]	0.005 mg/m <sup>3</sup> [OSHA]; 0.025 mg/m <sup>3</sup> [OSHA, 30-min max peak]; 0.0005 mg/m <sup>3</sup>	0.01 mg/m <sup>3</sup> [ACGIH]	0.002 mg/m <sup>3</sup>	0.002 mg/m <sup>3</sup>	Ca	-	-	-	-	-	-
Cadmium dusts	R,I	Ca [9 mg/m <sup>3</sup> ]	-	-	0.005 mg/m <sup>3</sup>	0.01 mg/m <sup>3</sup>	Ca	-	-	-	-	-	-
Chromates (Cr(VI) Compounds) & Chromic Acid	R,I,C	Ca [15 mg/m <sup>3</sup> ]	0.1 mg/m <sup>3</sup> [OSHA]	-	0.001 mg/m <sup>3</sup>	0.05 mg/m <sup>3</sup> [water soluble]; 0.01 mg/m <sup>3</sup> [insoluble]	Ca	-	-	-	-	-	-
Chromium (III) Compounds	R,I,C	25 mg/m <sup>3</sup>	-	-	0.5 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>	-	-	-	-	-	-
Chromium Metal	R,I,C	250 mg/m <sup>3</sup>	-	-	1 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>	-	-	-	-	-	-
Copper - dust & mist	R,I,C	100 mg/m <sup>3</sup>	-	-	1 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>	-	-	-	-	-	-
Lead	R,I,C	100 mg/m <sup>3</sup>	-	-	0.050 mg/m <sup>3</sup>	0.05 mg/m <sup>3</sup>	0.050 mg/m <sup>3</sup>	-	-	-	-	-	-
Manganese (compounds and fume)	R,I	500 mg/m <sup>3</sup>	5 mg/m <sup>3</sup> [OSHA]	3 mg/m <sup>3</sup> [NIOSH]	-	0.2 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>	-	-	-	-	-	-
Mercury & Inorganic Mercury Compounds	R,I,A,C	10 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup> [NIOSH, Skin]; 0.1 mg/m <sup>3</sup> [OSHA]	-	-	0.025 mg/m <sup>3</sup>	0.05 mg/m <sup>3</sup> [skin]	-	-	-	-	-	-
Organo-Mercury Compounds	R,A,I,C	2 mg/m <sup>3</sup>	0.04 mg/m <sup>3</sup> [NIOSH, Skin]; 0.02 mg/m <sup>3</sup> [OSHA]	0.03 mg/m <sup>3</sup> [NIOSH]	0.01 mg/m <sup>3</sup>	0.01 mg/m <sup>3</sup> [absorbable]; 0.1 mg/m <sup>3</sup> [insoluble]	0.01 mg/m <sup>3</sup>	-	-	-	-	-	-
Nickel (metal and compounds)	R,I,C	Ca [10 mg/m <sup>3</sup> ]	-	-	1 mg/m <sup>3</sup>	1 mg/m <sup>3</sup> (soluble); 1 mg/m <sup>3</sup> (insoluble)	0.015 mg/m <sup>3</sup>	-	-	-	-	-	-
Particulate (Not otherwise regulated)	R, C	ND	-	-	15 mg/m <sup>3</sup> (total); 5 mg/m <sup>3</sup> (respirable)	10 mg/m <sup>3</sup> (inhalable); 3 mg/m <sup>3</sup> (respirable)	-	-	-	-	-	-	-
Portland cement	R,I,C	5000 mg/m <sup>3</sup>	-	-	50 mppcf	10 mg/m <sup>3</sup>	10 mg/m <sup>3</sup> (total); 5 mg/m <sup>3</sup>	-	-	-	-	-	-
Selenium compounds	R,I,C	1 mg/m <sup>3</sup>	-	-	0.2 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>	-	-	-	-	-	-
Silica, crystalline	R, C	Ca [25 mg/m <sup>3</sup> (crystalline, respirable); 50 mg/m <sup>3</sup> (quartz, respirable)]	-	-	Dependent on silicon dioxide content of silica [see Appendix C of the NIOSH Pocket Guide to Chemical Hazards]	Dependent on mineralogy [see ACGIH 2005 TLV's and BEI's Handbook]	0.05 mg/m <sup>3</sup>	-	-	-	-	-	-
Silver (metal and soluble compounds)	R,I,C	10 mg/m <sup>3</sup>	-	-	0.01 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>	0.01 mg/m <sup>3</sup>	-	-	-	-	-	-
Thallium, soluble	R,A,I,C	15 mg/m <sup>3</sup>	-	-	0.1 mg/m <sup>3</sup> [skin]	0.1 mg/m <sup>3</sup> [skin]	0.1 mg/m <sup>3</sup> [skin]	-	-	-	-	-	-
Tin (metal)	R,C	100 mg/m <sup>3</sup>	-	-	2 mg/m <sup>3</sup>	2	2 mg/m <sup>3</sup>	-	-	-	-	-	-
Tin (organic compounds)	R,A,I,C	25 mg/m <sup>3</sup>	-	-	0.1 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup> [skin]	0.1 mg/m <sup>3</sup> [skin]	-	-	-	-	-	-
Zinc oxide dust & fume	R	500 mg/m <sup>3</sup>	15 mg/m <sup>3</sup> [NIOSH, dust]	10 mg/m <sup>3</sup> [NIOSH, ACGIH, fume]	15 mg/m <sup>3</sup> (total dust); 5 mg/m <sup>3</sup> (respirable dust); 5 mg/m <sup>3</sup> (fume)	2 mg/m <sup>3</sup> (respirable)	5 mg/m <sup>3</sup> (total dust); 5 mg/m <sup>3</sup> (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: Electronvolts

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 "ü" into appropriate boxes.

<b>Physical Hazard Checklist</b>				
<b>Potential Job Hazards</b>	<b>Task 1</b>	<b>Task 2</b>	<b>Task 3</b>	<b>Task 4</b>
	GW Sampling	SV Point Installation	SV Sampling	MW Decom.
Confined space entry*				
Underground utilities		ü		
Overhead utilities				
Electrical hazards				
Excavations greater than 4' depth				
Open excavation fall hazards				
Heavy equipment				
Drilling hazards				ü
Noise (above 85 dBA)	ü			ü
Traffic concerns	ü	ü	ü	ü
Extreme weather conditions	ü	ü	ü	ü
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: Pinch hazard for soil vapor installation		ü		

**\*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 “u” adjacent to potential activity hazards and relevant hazard controls.

### POTENTIAL ACTIVITY HAZARDS

Abrasions and Cuts ü  
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 ü  
Ergonomics  
Excavations  
Explosions  
Fatigue  
Fire  
Flammability  
Flying debris  
Foreign Body in Eye ü  
Frostbite/Cold ü

Fueling and Fuel Storage  
Fugitive Dust ü  
Fumes ü  
Generated Wastes  
Guards removed  
Hazardous Materials ü  
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 ü  
Illumination - Poor  
Impact ü  
Inability to Maintain Communication  
Inclement Weather ü  
Inclines  
Insects/Reptiles  
Mold  
Moving Equipment, Conveyors or Vehicles ü  
Muddy Site Conditions  
New Personnel  
Noise ü  
Odor ü  
Overhead Utilities  
Overhead Work

Overloaded Equipment  
Oxygen deficiency  
Pinch Points ü  
Poisonous Plants  
Pressure  
Pressurized Lines  
Radiation  
Repetitive Motion  
Rigging - Improper  
Sharp Objects ü  
Silicosis  
Slips, Trips, and Falls ü  
Sprains and Strains ü  
Steam  
Sunburn ü  
Surface Water Run-off  
Toxicity ü  
Traffic ü  
Underground Utilities ü  
Uneven Terrain  
Unsafe Atmosphere  
Vibration  
Visibility - Poor  
Visitors Known/Unknown ü  
VOC Emissions ü  
Weight ü  
Work at Depth  
Work at Heights  
Work over Water  
Working on Ice

### HAZARD CONTROLS

Air Monitoring ü  
Appropriate Clothing/Monitoring Of Weather ü  
Appropriate Labels/Signage  
Barricades/Fencing/Silt Fencing  
Buddy System - Attendantü  
Chock Blocks  
Confined Space Procedures  
Decontamination Procedures ü  
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 ü

Fall Protection  
Fire Extinguisher  
Flotation Devices/Lifelines  
Gloves ü  
Ground Fault Interrupter  
Grounded Hydraulic Attachments  
Grounded Equipment/Tanks  
Hand Signal Communication  
Hard Hat  
Hazardous/Flammable Material Storage  
Hearing Protection ü  
High Visibility Safety Vest  
Hoses, Access to Water ü  
Hotwork Procedures  
Isolation of Energy Sources(Lockout/Tagout)  
Machine/Equipment Guards

Manual Lifting Equipment  
Police Detail  
Proper Lifting Techniques  
Proper Tool for Job ü  
Proper Work Position/Tools  
Protective Equipment ü  
Radio Communication  
Respirator, (Specify Type)  
Safety Harness  
/Lanyard/Scaffold  
Security Escort  
Sloping, Shoring, Trench Box  
Spill Prevention Measures  
Spill Kits  
Stormwater Control  
Traffic Controls ü  
Procedures/Methods  
Vehicle Inspection  
Visitor Orientation Escortü  
(public)  
Window Cleaning/Defrost



**Specific Activity Hazards and Precautions**

The site is a manufacturing site that is active 24-hours per day, 7 days per week. Because the work tasks must take place in a utilized parking lot, work will have to be temporarily ceased in-between shift changes to avoid car hazards.

**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 and commercial utility clearance 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. 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**

Equipment will not be left onsite during none work hours. The monitoring wells and soil vapor points will be closed and not accessible during non work hours.

**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.

**5. PROTECTIVE MEASURES**
**Personal Protective Equipment Requirements:**

Copy and paste a checkmark “Ü” into appropriate boxes.

Required PPE	Task 1	Task 2	Task 3	Task 4
	GW Sampling	SV Point Installation	SV Sampling	MW Decom.
Hard hat				Ü
Safety glasses w/side shields	Ü	Ü		Ü
Steel-toe footwear	Ü	Ü		Ü
Hearing protection (plugs, muffs)	Ü	Ü		Ü
Tyvek™ coveralls	Ü	Ü		
PE-coated Tyvek™ coveralls				
Boots, chemical resistant	Ü			
Boot covers, disposable				
Leather work gloves				
Inner gloves - <u>Nitrile</u>	Ü	Ü	Ü	Ü
Outer gloves - <u>Neoprene</u>	Ü	Ü		
Tape all wrist/ankle interfaces				
Half-face respirator*				
Full-face respirator*				
Organic vapor cartridges				
Acid gas cartridges				
Other cartridges: <u>GME-P100</u>				
P-100 (HEPA) filters				
Face shield				
Personal Flotation Device (PFD)				
High-Visibility Safety Vest	Ü	Ü	Ü	Ü
Other:				
Level of protection required [C or D]:	D Mod	D Mod	D Mod	D Mod

\* 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**

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> Fire Extinguisher         | <input checked="" type="checkbox"/> First Aid Kit  | <input type="checkbox"/> Flashlight      |
| <input type="checkbox"/> Air horn/signaling device | <input checked="" type="checkbox"/> Cellular Phone | <input type="checkbox"/> Duct tape       |
| <input type="checkbox"/> Ladder                    | <input type="checkbox"/> Barricade tape            | <input type="checkbox"/> Drum dolly      |
| <input type="checkbox"/> Two-way radio             | <input checked="" type="checkbox"/> Safety cones   | <input type="checkbox"/> Harness/Lanyard |
| <input type="checkbox"/> Other                     |  |  |

**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.**

<b>6. MONITORING PLAN AND EQUIPMENT</b>
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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**

- |  |   |
|--|---|
| <input type="checkbox"/> Photo-Ionization Detector (PID) 10.2eV<br><input type="checkbox"/> Photo-Ionization Detector (PID) 11.7eV<br><input type="checkbox"/> Photovac Micro Tip (PID) 10.6eV<br><input type="checkbox"/> Organic Vapor Monitor (FID)<br><input type="checkbox"/> Photovac Gas Chromatograph (GC) | <input type="checkbox"/> Combustible Gas Indicator (CGI) (LEL)<br><input type="checkbox"/> Multiple Gas Detector LEL/O2/H2S/CO<br><input type="checkbox"/> Dust Monitors (RAMs)<br><input checked="" type="checkbox"/> Colorimetric tubes<br><input checked="" type="checkbox"/> Other    RAE Mini Rae 2000; Air Samples for VC & DCE |
|--|---|

**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 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.
- § Monitor breathing zone during groundwater purging and sampling activities

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<sup>3</sup> (8 hour TWA). Action levels for fugitive dust at the site perimeter are based upon the daily PM<sub>10</sub> dust standard of 0.15 mg/m<sup>3</sup> 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:	<u>1,2,3,4</u>	Frequency	<u>Continuous</u>	times per	<u>All Day during task activities</u>
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VOC monitoring using a PID will occur continuously during groundwater monitoring (task 1), soil vapor installation (task 2), soil vapor sampling (task 3), and site restoration (task 4) when personnel are present onsite.

**TABLE 2  
Last Revised September 2002**

**MONITORING METHOD, ACTION LEVELS AND PROTECTIVE MEASURES**

<b>INSTRUMENT</b>	<b>HAZARD</b>	<b>ACTION LEVEL</b>	<b>ACTION RESPONSE</b>
Respirable Dust Monitor	Total Particulates	> 5 mg/m <sup>3</sup>	Upgrade to Level C Protection
OVA, HNU <sup>(2)</sup> , Photovac Microtip	Total Organic Vapors	Background  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.  50 ppm over background, unless lower values required due to respirator protection factors	Level D Protection  Upgrade to Level C - site evacuation may be necessary for specific compounds  Cease work; upgrade to Level B <sup>(3)</sup> may be required
Explosimeter <sup>(4)</sup> (LEL)	Flammable/Explosive Atmosphere	<10% Scale Reading  10-15% Scale Reading  >15% Scale Reading	Proceed with work  Monitor with extreme caution  Evacuate site
Oxygen Meter <sup>(5)</sup>	Oxygen-Deficient Atmosphere	19.5% - 23.5% O <sub>2</sub> < 19.5% O <sub>2</sub> > 23.5% O <sub>2</sub>	Normal - Continue work Evacuate site; oxygen deficient Evacuate site; fire hazard
Radiation Meter <sup>(6)</sup>	Ionizing Radiation	0.1 Millirem/Hour  > 1 Millirem/Hour	If > 0.1, radiation sources may be present <sup>(7)</sup> Evacuate site; radiation hazard
Drager Tubes	Vapors/Gases	Species Dependent > 1 ppm vinyl chloride > 1 ppm benzene > 1 ppm 1,1-DCE	Consult Table 1 or other resources for concentration toxicity/detection data. Upgrade to Level C if concentration of compounds exceed thresholds shown at left; 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, if applicable
9. Remove inner gloves

**Location of Decontamination Station:**

At each work/installation location.

**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 client-approved, on-site disposal.

Waste PPE shall not be brought back to the H&A office or lab.



**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.

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> Acetone                   | <input type="checkbox"/> Distilled water | <input type="checkbox"/> Poly sheeting        |
| <input checked="" type="checkbox"/> Alconox soap   | <input type="checkbox"/> Drums for water | <input type="checkbox"/> Steam cleaner        |
| <input type="checkbox"/> Brushes                   | <input type="checkbox"/> Hexane          | <input checked="" type="checkbox"/> Tap water |
| <input checked="" type="checkbox"/> Disposal bags  | <input type="checkbox"/> Methanol        | <input type="checkbox"/> Washtubs             |
| <input checked="" type="checkbox"/> 5 gallon pails | <input type="checkbox"/> Other           | Paper towels                                  |

**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 glasses 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

Standard decontamination procedure:

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

**Specific Equipment Decontamination Procedures:**

1. Wash using a solution of Alconox and water
2. Rinse in potable water

Waste equipment/decon materials shall not be brought back to the H&A office.

**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. Purge water from the groundwater wells and associated decontamination water is to be discharged to the sanitary sewer system via the basin drain in the janitor's closet. PPE may be discarded in onsite dumpsters.

**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:**

- ¾ Major Fires - Major fires will be mitigated by the local fire departments or by client's on-site fire/emergency response departments.
- ¾ 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 documented using the Supervisor's Accident / Injury / Near Miss Report (SAIR). This form is available on the Intranet.

- ¾ 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.
- ¾ 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:**

- ¾ 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.
- ¾ Large spills (e.g. large leak from heavy equipment fuel tank). The contractor is responsible for cleanup. In the event that it poses 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 ACKNOWLEDGMENT 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.

- ¾ 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.
- ¾ This HASP or a current signed copy must be retained at the site at all times when H&A staff members are present.
- ¾ 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.
- ¾ 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.
- ¾ 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.
- ¾ 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. Claire L. DeBergalis
2. David Nostrant

**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:

- ¾ Act as H&A's liaison for health and safety issues with client, staff, subcontractors, and agencies.
- ¾ Verify that utility clearance has been performed by H&A subcontractors.
- ¾ Oversee day-to-day implementation of the HASP by H&A employees on site.
- ¾ Interact with subcontractor project personnel on health and safety matters.
- ¾ Verify use of required PPE as outlined in the HASP.
- ¾ Inspect and maintain H&A safety equipment, including calibration of air monitoring instrumentation used by H&A.
- ¾ Perform changes to HASP and document in Appendix A of the HASP as needed and notify appropriate persons of changes.
- ¾ Investigate and report on-site accidents and incidents involving H&A and its subcontractors.
- ¾ Verify that site personnel are familiar with site safety requirements (e.g., the hospital route and emergency contact numbers).
- ¾ 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:

- ¾ Client specific training or orientation
- ¾ Competent person excavations
- ¾ Confined space entry (entrant, supervisor, and attendant)
- ¾ Heavy equipment including aerial lifts and forklifts
- ¾ First aid/ CPR
- ¾ Diving certification
- ¾ Use of fall protection
- ¾ Commercial drivers license
- ¾ Use of nuclear density gauges
- ¾ Asbestos awareness