EHS Support

ELG Utica Alloys Site
Utica, New York

Prepared for:
ELG Utica Alloys, Inc.

August 2014

consider it done

Supplemental Conceptual Site Model Investigation Work Plan Revision 3

Prepared by:
EHS Support, LLC

EHS Support
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I, Kristin A. VanLandingham, P.E., certify that I am currently a NYS-registered professional engineer and that this *Supplemental Conceptual Site Model Investigation Work Plan Revision 3* for the Utica Alloys Site No. 633047 dated August 2014 was prepared pursuant to all applicable statutes and regulations, and in substantial conformance with the DER *Technical Guidance for Site Investigation and Remediation* (DER-10).

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ACRONYMS

bgs	below ground surface
cc	cubic centimeter
cDCE	cis-1,2-dichloroethene
COPC	constituent of potential concern
CSM	Conceptual Site Model
1,1-DCE	1,1-dichloroethene
DER	Division of Environmental Remediation
DO	dissolved oxygen
ELGUA	ELG Utica Alloys Inc.
ft	feet
f_{oc}	fraction organic carbon
FFS	Focused Feasibility Study
gpm	gallons per minute
HASP	Health and Safety Plan
HVAC	heating, ventilation, and air conditioning
IDW	investigative derived waste
IRM	Interim Remedial Measure
ISCO	in-situ chemical oxidation
lpm	liter per minute
LWBZ	lower water-bearing zone
MDL	method detection limit
MS/MSD	matrix spike/matrix spike duplicate
NELAP	National Environmental Laboratory Accreditation Program
NGVD	National Geodetic Vertical Datum
NTU	Nephelometric Turbidity Units
NYCRR	New York Code of Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OB&G	O'Brien & Gere
OHSWA	Oneida-Herkimer Solid Waste Authority
ORP	oxidation reduction potential
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated biphenyl
ppm	parts per million
PVC	polyvinyl chloride
QA/QC	Quality Control/Quality Assurance
RL	reporting limit
RSCO	Recommended Soil Cleanup Objective
SVOC	semi-volatile volatile organic compound
S&W	Stearns & Wheler
TCE	trichloroethene
TOC	total organic carbon
TOGS	Technical and Operational Guidance Series
VOC	volatile organic compound
USCS	Unified Soils Classification System
USEPA	United States Environmental Protection Division
USGS	United States Geological Survey
UST	underground storage tank
UWBZ	upper water-bearing zone

µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter
VC	vinyl chloride

1.0 INTRODUCTION

This Supplemental Conceptual Site Model (CSM) Investigation Work Plan (Work Plan) for the ELG Utica Alloys, Inc. (ELGUA) site located in Utica, New York (herein referred to as the Site) is submitted in response to the New York State Department of Environmental Conservation (NYSDEC) request in their letter dated October 21, 2011. As part of the Draft Focused Feasibility Study (FFS), a preliminary CSM was developed for the Site, which reflects ELGUA's current understanding of the general physical, geological, hydrogeological, and chemical conditions and behavior at the Site. The preliminary CSM is based on the review of historical Site documents and United States Geological Survey (USGS) regional data. The primary data gaps in the CSM as identified in the Draft FFS Report prepared by EHS Support, Inc. for ELGUA and dated August 31, 2011 (EHS, 2011) are discussed in **Section 3** of this report.

1.1 Applicable Regulations

This Work Plan has been prepared in accordance with the substantive portions of Title 6 of the New York Code of Rules and Regulations (NYCRR) Part 375 for site characterization and remedial investigation, the NYSDEC Soil Cleanup Guidance (CP-51) dated October 21, 2010, and the Division of Environmental Remediation (DER), *Technical Guidance for Site Investigation and Remediation* (DER-10) dated May 2010 (DER, 2010).

1.2 Report Organization

This Work Plan is comprised of seven sections and the organization and content of the report are as follows:

- Section 1: Introduction and Scope – This section describes the purpose of this Work Plan.
- Section 2: Background – This section describes the Site features, location, and surrounding area and summarizes the previous Site and remedial investigations performed at the Site.
- Section 3: Scope of Work – This section describes the recommended scope of work based on the data gaps identified during development of the preliminary CSM.
- Section 4: Quality Assurance/Quality Control – This section describes health and safety procedures, management of investigative derived waste (IDW), and project documentation management procedures to ensure overall project safety and quality and details specific procedures that will be implemented and maintained to control and assure data quality for supplemental CSM investigations.
- Section 5: Proposed Schedule of Activities
- Section 6: References

2.0 BACKGROUND

2.1 Site Description and Operations

The Site is located at the corner of Wurz Avenue and Leland Avenue in an industrialized area of the City of Utica, New York as shown on **Figure 2-1**. The ELGUA facility recycles specialty metal turnings generated off-site by machining operations typically connected with the production of aerospace parts and equipment. The Site is approximately 1.5 acres in size, with a large building (approximately 38,000 square feet) that contains offices, laboratories and recycling machinery. The remainder of the property is used for outside storage of bundled metal turnings pending processing. The Site layout is provided on **Figure 2-2**.

The Site is bordered to the south by the Leland Avenue extension leading to the county sewer plant and Oneida-Herkimer Solid Waste Authority (OHSWA), and then a railroad-switching yard that runs east-west. The City of Utica Fire Department Training Facility, an industrial property (Universal Waste), a gravel road, and the Mohawk River are to the north of the Site and a bulk petroleum tank farm (terminal) is to the northwest. According to the *Preliminary Site Assessment* (Stearns & Wheler [S&W], 2000), the petroleum bulk facility was abandoned in 1972. The City of Utica Transit Authority, Leland and Wurz Avenues, a parking lot, and vacant land (United Contractors) are located to the west. Wooded vacant land is located to the east of the Site.

ELGUA's nickel alloy operations formerly occupying the Site have been moved to a new facility in Herkimer, New York facility. Presently, there are only three employees that periodically occupy the Site and are part of the ELGUA Stainless Division. The Stainless Division operates out of the warehouse located north of the Site (on the Universal Waste Site). However, the Site warehouse is utilized by the Stainless Division for staging material and warehousing equipment.

2.2 Site History

This section has been removed pursuant to NYSDEC comment letter dated June 21, 2013.

2.3 Previous Investigations and Remedial Measures

The following summary of previous investigations and remedial measures was originally documented in the Department-approved Interim Remedial Measure Report dated December 2010, prepared by O'Brien & Gere.

2.3.1 Remedial Investigation and Interim Remedial Measures Alternative Analysis

A Remedial Investigation and Interim Remedial Measures Alternative Analysis program was initiated in 1999 by Stearns & Wheler. These activities were conducted in accordance with Consent Order A6 -0001-98-08 following discovery of volatile organic compounds (VOCs) and polychlorinated biphenyls (PCBs) at the Site. Additional investigations were completed in 2005 to further characterize Site conditions. The latter evaluation is summarized in the *Supplemental Remedial Investigation* report (Site # 633047) completed by Stearns & Wheler dated September 2005.

Based on the findings of the investigations, Stearns & Wheler identified three issues of concern including:

- The presence of PCBs in shallow soil exceeding the Recommended Soil Clean Up Objectives (RSCOs) in several areas in the outside storage area of the site (PCB Areas).
- The presence of TCE in soils exceeding RSCOs in the vicinity of the former trichloroethylene (TCE) tank on the west side of the building (TCE Areas).

- The presence of TCE in the ground water at concentrations above the Class GA Ground Water Standard of 5 micrograms per liter (µg/L), in the vicinity and immediately downgradient (north) of the former TCE tank and TCE Areas.

2.3.2 Interim Remedial Measures (IRM)

Based on the findings above and subsequent conversations with NYSDEC personnel, Stearns & Wheler recommended an IRM in the Department-approved *Interim Remedial Measures Work Plan* dated September 2007. The objectives of the IRM were:

- Remove soil containing PCBs from areas previously identified in the outside storage area of the facility that are in excess of the RSCOs listed in NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046.
- Remove impacted soil above the water table near the former TCE storage tank containing concentrations of VOCs above RSCOs to the extent possible.
- Monitor ground water quality near the former TCE storage tank to assess ground water quality changes as a result of the soil removal actions.
- Collection and analysis of sub-slab and indoor air samples were added to the IRM program in 2008 as a result of the elevated TCE levels observed in soil adjacent to the building.

PCB Areas

Soil was initially excavated from the identified seven PCB Areas to the limits presented in the IRM Work Plan. Analytical results from the first set of verification samples collected from the sidewalls and base of the excavation were compared to the RSCOs for PCBs in soil as identified in the IRM Work plan and are provided below. Restricted use soil cleanup objectives (SCOs) for industrial sites as listed by NYSDEC in Table 375-6.8(b) of 6 NYCRR Part 375 (December 14, 2006) are also provided for reference:

Depth (ft bgs)	TAGM 4046 RSCOs (mg/kg)	Part 375 Restricted Industrial SCOs (mg/kg)
<1	1	25
>1	10	25

Verification sample results were reviewed with NYSDEC and subsequent additional excavation or completion of excavation was approved by NYSDEC. Based on the discussions with NYSDEC, excavation was continued along the wall or base where exceedances were noted, as appropriate. The proposed limits and the final excavation limits are presented on **Figure 2-3**.

Final verification sample results indicate that soils remaining in place did not exceed Part 375 SCOs. However, per IRM Work Plan, post-excavation verification samples were compared to TAGM 4046 RSCOs and indicate that the IRM objectives have been achieved with the exception of the following:

- Analytical results from verification samples in Area A indicated that PCBs exceeded the RSCO of 1 mg/kg for surface soils. The samples were collected at a depth of approximately 0.5 ft. Review of verification sample results from the initial and second phases of excavation indicated that similar slightly elevated concentrations were observed during both phases of excavation and the majority of soil containing the elevated concentrations was removed. Therefore, a decision was made to cease excavating and line the excavation with Mirafi® fabric prior to backfilling. This course of action was agreed upon by the NYSDEC representative.

- Analytical results from verification samples along the north wall of Area G excavation (0.5 ft bgs) indicated PCBs at 1.07 mg/kg. This concentration of PCBs was only slightly above the RSCO of 1 mg/kg; therefore, a field decision was made to cease excavating and line the excavation with Mirafi ® fabric prior to backfilling. This course of action was agreed upon by the on -site NYSDEC representative.

In total, 83.2 tons of soil was excavated and removed from the PCB areas.

TCE Areas

Soil excavation within the three TCE Areas began within the limits identified in the IRM Work Plan. A photoionization detector (PID) was used to screen soils to guide the excavation limits. Samples from the walls of the excavation were also collected evaluate concentrations of VOCs. Analytical results from the verification samples were compared to the RSCOs for chlorinated solvents as identified in the IRM Work plan and are provided below. Restricted use SCOs for industrial sites as listed by NYSDEC in Table 375-6.8(b) of 6 NYCRR Part 375 (December 14, 2006) are also provided for reference.

Compound	**TAGM 4046 RSCOs (mg/kg)**	**Part 375 SCOs Restricted Industrial Use (mg/kg)**
1,1-dichloroethene	0.4	1000
cis-1,2-dichloroethene	NA	1000
tetrachloroethene	1.4	300
trans-1,2-dichloroethene	0.3	1000
trichloroethene	0.7	400
vinyl chloride	0.2	27

As illustrated on **Figure 2-4**, soil was excavated beyond the original limits presented in the IRM Work Plan. Analytical results of the verification samples collected from the sidewalls at the final excavation limits are also provided on this figure.

Final verification sample results indicate that soils remaining in place did not exceed Part 375 SCOs. However, per IRM Work Plan, post-excavation verification samples were compared to TAGM 4046 RSCOs and indicate that the IRM objectives have been achieved with the exception of the following:

- Soil exceeding RSCOs for TCE in Area 1 remained in place along the east wall of the excavation.
    - East wall of the excavation was not extended further to the east, due to the proximity of an underground private electrical conduit and the building edge. The verification sample collected along the eastern wall contained 64 mg/kg of TCE.

- Soil exceeding RSCOs for TCE in Area 2 remained in place along the north, south, and west walls of the excavation.
  - The north wall of the excavation was not extended further to the north due to the proximity of underground electric utilities and a transformer pad. The verification sample on the North wall exhibited 8.1 mg/kg of TCE.
  - The south wall of the excavation was not extended further to the south due to the proximity of a natural gas pipeline and the building foundation. The verification sample collected from the South wall contained TCE at a concentration of 4.7 mg/kg.
  - The west wall of the excavation could not be extended further to the west due to the proximity of fencing and Wurz Ave. The verification sample collected from this wall contained 6.7 mg/kg of TCE.
- Soils exceeding RSCOs for TCE in Area 3 remained in place along the north, south, and west walls of the excavation.
  - The north wall of the excavation was not extended further north due to the proximity of a natural gas pipeline. The verification sample from this wall exhibited 3.2 mg/kg of TCE.
  - The south wall of the excavation was not extended further south due to the proximity of a propane tank along the western edge of the building and the temporary steel water tank along the fence line. The verification sample direction contained 75 mg/kg of TCE.
  - The west wall of the excavation was not extended further west due to the proximity of fencing and Wurz Ave. The verification sample collected along this wall contained 3.2 mg/kg of TCE.

In total, 527.5 tons of soil was excavated and removed from the TCE Areas.

2.3.3 Groundwater Monitoring Activities

As outlined in the IRM Work Plan, the objectives of the ground water sampling portion of the IRM consisted of the following:

- Evaluate changes in ground water quality following removal of impacted soil from the source area as documented in the Soil Removal Report (May 2008).
- Evaluate if the existing monitoring network is sufficient to monitor the ground water plume.

According to the IRM Work Plan, groundwater samples were to be collected from the following six monitoring wells: MW-3, MW-4, MW-7, MW-8, MW-9, and MW-B3R. As noted above, well MW-8 was determined to be missing and subsequently replaced with well MW -8R. Well MW-3 was removed during soil excavation activities and two wells were subsequently installed within the area of the TCE - impacted soil removal. As a result, the ground water monitoring network was made up of the following wells: MW-4, MW-7, MW-9, MW-B3R, replacement well MW-8R, and new wells MW-10 and MW-11 that were installed subsequent to the soil excavation activities. Locations of the wells are provided on **Figure 2-2**.

Per the IRM Work Plan, groundwater samples were collected on three separate occasions between December 2007 and October 2008. The collected samples were analyzed for VOCs. The results of these activities were submitted to NYSDEC in the Groundwater Monitoring Report dated February 2009 (O’Brien & Gere, 2009)

An additional set of groundwater samples was collected from monitoring wells in MW -4, MW-7, MW-9, MW-6, MW-8R, MW-10, and MW-11between December 15 and 17, 2009. The samples were collected using low flow methods and analyzed for volatile organic compounds (VOCs) and natural attenuation parameters. The purpose of this sampling event was to gather additional information for use in developing the Focused Feasibility Study for the site. The data was submitted to NYSDEC in February 2010 (REFERENCE, 2010).

Comparison of the historical groundwater data to that collected as part of the IRM indicates that the TCE concentrations in the groundwater in the area where the TCE -containing soil was removed during the IRM have declined. Additionally, the ratio of TCE to breakdown products, cis -1,2-dichloroethene (cDCE) and Vinyl Chloride (VC), at the edges of the TCE -impacted soil removal area suggests that degradation is occurring in these areas. However, concentrations of chlorinated VOCs in groundwater in this area are still above ground water criteria. A summary of the groundwater quality data is provided in **Table 2-1**.

2.3.4 Sub-Slab and Indoor Air Investigation

2008 Sampling Event

The initial sub-slab and indoor air sampling activities were conducted in accordance with a NYSDEC - approved *Revised Indoor Air Sampling Plan* (Air Sampling Plan) dated March 19, 2008. The purpose of the indoor air and sub-slab vapor sampling program was to assess the potential for intrusion of vapors from the soil and groundwater on the western side of the building into the indoor air. As outlined in the Air Sampling Plan, the sampling activities were focused on the office area of the building, as there is potential for TCE and other solvents to be associated with the material handled in the production areas.

Two sets of sub-slab and indoor air samples were collected from the office area of the facility (**Figure 2-5**). The samples were collected using methods and procedures outlined in the New York State Department of Health (NYSDOH) document entitled *Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York* dated October 2006 as outlined in the Work Plan. The samples were analyzed for VOCs using method TO-15.

Based on laboratory results from the March 2008 sampling event (**Table 2-2**) and the NYSDOH vapor intrusion guidance document, the sub -slab and indoor air concentrations identified for TCE and cDCE were at concentrations where mitigation is recommended. The indoor air concentrations observed were also higher than the indoor air background levels found in commercial and public buildings. However, the indoor air concentrations were well below the Occupational Safety and Health Administration (OSHA) permissible exposure limits (PELs) of micrograms per cubic meter 540,000 $\mu g/m^3$ for TCE and 790,000 $\mu g/m^3$ for cDCE.

2013 Sampling Event

In response to NYSDEC and NYSDOH comments regarding the draft Focused Feasibility Study (FFS) Report (EHS, 2011) prepared for the Site, ELGUA proposed collecting additional sub-slab vapor and indoor air samples to confirm the 2008 results. Therefore, two sets of sub-slab vapor and indoor air samples and one ambient air sample were collected on January 31, 2013 from the office area of the facility as shown on **Figure 2-6**. The sub-slab sample is designated as SS and the indoor air sample is designated as IA. Samples SS-1and IA-1 were collected from the grinding room located off the main office area. Samples SS-2 and IA-2 were collected from the locker room located on the west side of the office area. An ambient air sample, AA-1, was also collected from an area located upwind of the office area of the building.

Samples were collected into individually-certified clean, pre-evacuated, 6-liter Summa® canisters using the procedures identified in the Plan. The sample draw times were approximately eight (8) hours. Samples were shipped to TestAmerica in Vermont for analysis using United States Environmental Protection Agency (USEPA) Method TO-15.

Based on the laboratory results from the January 2013 sampling event (**Table 2-2**), the sub-slab and indoor air concentrations identified for TCE were at concentrations where mitigation is recommended by the NYSDOH Guidance. However, the indoor air concentrations are well below the OSHA PELs of 540,000 ($\mu g/m^3$) for TCE. Based on the data collected to date, a vapor intrusion mitigation system would not be necessary to meet the OSHA limits.

3.0 SCOPE OF WORK

Physical, hydrogeological, and analytical data from historical investigations and actions were used to develop the preliminary CSM presented in the Draft FFS Report (EHS Support, 2011). The recommended scope of work presented in this section is based on the data gaps identified during development of the preliminary CSM. The primary data gaps identified in the CSM are as follows:

- Lithology and thickness of upper water-bearing zone (UWBZ)
- Structural surface of confining unit (depth of the confining unit)
- Lack of water level control points to determine UWBZ groundwater flow direction
- Aquifer hydraulic properties of the UWBZ
- Physical properties of the confining unit
- Water and soil quality conditions in the conceptualized upgradient and downgradient region of the UWBZ (horizontal and vertical)
- Biogeochemical characterization

These data gaps need to be addressed before the CSM can be completed and remedial alternatives can be evaluated. To address these data gaps, it is recommended that up to eight (8) new or replacement monitoring wells (with soil sampling of the cores) and two (2) surface water gaging sites be installed to:

- Complete the identification of soil and groundwater migration pathways for VOCs, PCBs, and other Part 375 constituents in the UWBZ
- Complete the characterization of VOCs, PCBs, and Part 375-6.8(a) constituent impacts in Site soils and groundwater in the UWBZ
- Gain insight into aquifer properties of the UWBZ and confining unit that directly affect quantitative evaluations of remedial alternatives

The proposed activities to be completed in accordance with this Work Plan include, but are not limited to the following:

- lithology characterization
- vertical profiling of the VOCs, PCBs, and other Part 375 constituents listed in Part 375-6.8(a) in soil and groundwater at the proposed monitoring well locations (**Figure 3-1)**
- installation of groundwater monitoring wells
- installation of river staff gages
- collection and analysis of soil and groundwater samples
- measurement of groundwater and river levels
- measurement and performance of in situ hydraulic conductivity tests
- reporting.

3.1 Utility Location

Drilling locations will be marked for approval by the property owner, and underground utility clearance will be conducted in accordance with New York regulations. A private underground utility locating contractor will also be contracted to complete a Ground Penetrating Radar survey at each of the proposed boring locations. Property underground utility maps will be consulted when available to assist in utility location.

In addition, a visual inspection of floor drains, catch basins, sumps, and storm water pipes associated with the Site will be made. The approximate locations of the floor drains and sumps within the Site building are provided on **Figure 3-2**. Based on the visual inspection, ELGUA shall submit the work plan to investigate the subsurface structure e.g. floor drains, catch basins, sumps, storm water pipes, etc.

3.2 Lithology Characterization

Based on regional geologic conditions (Casey and Reynolds, 1988), the stratified-drift aquifer consists of three hydrostratigraphic units as shown in **Figure 3-3** and described below:

- UWBZ
  - Consists of the alluvium sediments.
  - Water-bearing zone is unconfined and depth to water occurs approximately 5 ft bgs.
  - Saturated thickness is approximately 30 feet.
- Confining Unit
  - Consists of the lacustrine and till sediments.
  - Approximate thickness of 145 ft.
- Lower Water-bearing Zone (LWBZ)
  - Consists of the outwash sand and gravel sediments with approximate thickness of 70 ft.
  - Water-bearing zone is confined by the overlying lacustrine and till sediments.

In order to better characterize the lithology and thicknesses of the UWBZ, Confining Unit and LWBZ at the Site, one continuous boring is proposed to the top of the bedrock unit, which occurs at approximately 240 ft bgs. In addition, a continuous boring to the top of the first confining unit will is proposed at each proposed monitoring well location as discussed in **Section 3.2.2**.

3.2.1 Location of Borings

It is recommended that the proposed boring be located in an area unaffected by historical constituents of potential concern (COPCs). The proposed location of the continuous boring is shown on **Figure 3-1** and is identified as UA-1. This location is near existing monitoring well MW-9 and was selected because it is located upgradient of the Site and historical sampling records show that groundwater in the vicinity is relatively unaffected.

In addition, continuous cores to the top of the Confining Unit will be collected from proposed monitoring well locations shown on **Figure 3-1** to characterize the lithology and thickness of the UWBZ on-site and in the immediate vicinity of the Site.

3.2.2 Installation of Borings

One continuous boring (UA-1) will be advanced to the top of the bedrock unit (bottom of the LWBZ) using sonic drilling technology. Five additional continuous borings at the proposed monitoring well locations shown on **Figure 3-1** will be advanced to the top of the Confining unit using direct-push technology. Each core sample will be screened with a photoionization detector for the presence of VOCs and characterized for impacts via visual and/or olfactory observations. The grain size of the soil sample will be visually identified in the field and described in accordance with the Unified Soils Classification System (USCS). All non-dedicated drilling tools and equipment will be decontaminated between boring locations using potable tap water and a phosphate-free detergent (e.g., Alconox). The continuous borings will be abandoned using a tremie pipe and grouted from the bottom to land surface with general purpose, non-shrinking (Type I) neat Portland cement.

3.2.3 Geotechnical Testing and Geochemical Analyses

To facilitate estimation of aquifer hydraulics and contaminant transport characteristics for development of a response action, geotechnical and geochemical testing will be performed on cores from the UWBZ, the Confining Layer, the LWBZ, and the top of the bedrock. Some of these tests require collection of undisturbed core samples during the drilling. Five undisturbed soil samples will be collected, one each from the UWBZ, the LWBZ, the low-permeability zone of the Confining Unit, the high-permeability zone of the Confining Unit, and the top of the underlying bedrock (**Figure 3-3**) and analyzed for grain-size distribution, fraction organic carbon (f_{oc}), effective porosity, moisture content, and permeability.

3.3 Vertical Profiling of COPCs in Soil

In addition to the geotechnical and geochemical testing, soil samples will be collected from deep boring UA-1 and from proposed monitoring well locations MW-12 and MW-13 at an initial sample depth interval of 0 to 2 inches bgs then on 2-ft intervals, thereafter, to a minimum of 10 ft bgs. All soil samples will be field screened on 2-ft intervals using a photoionization detector (PID). IF PID readings or visual inspection of cores below 10 ft bgs suggest contamination, additional soil samples will be collected upon discussion with NYSDEC oversight personnel and/or NYSDEC project manager. It should be noted that soil samples have already been collected from or in the immediate vicinity of the other proposed monitoring well locations as part of the Universal Waste Site investigation.

All soil samples will be analyzed for VOCs using USEPA Method 8260B. In addition, all surface soil samples and the termination samples (maximum depth interval based on field screening) will be analyzed for the following constituents as listed in 6 NYCRR Part 375-6.8(a) and DER-10

- Full Target Compound List (TCL) VOCs by USEPA Method 8260B
- Full TCL SVOCs by USEPA Method 8270C
- Target Analyte List (TAL) Metals by USEPA Method 6000-7000 series
- Full TCL Pesticides/PCBs by USEPA Method 801/8082
- Full TCL Herbicides by USEPA Method 8151.

Twenty percent (20%) of the TCL samples will also be analyzed for the 30 (10 VOCs and 20 SVOCs) highest concentrations of tentatively identified compounds (TIC) as required by DER-10, Chapter 2. Ten percent (10%) of the soil samples will be collected in duplicate for VOC analysis only.

Unvalidated soil analytical data will be submitted to NYSDEC within 14 days of receipt. Based upon the results of the proposed soil sampling and other data, a mutual determination will be made as to the need for additional borings and the constituents, which will be analyzed for in subsequent phases of the CSM investigation.

3.4 Vertical Profiling of COPCs in Groundwater

It is important to note that the Site monitoring wells are screened in the upper portion of the UWBZ with depths ranging between 10 ft to 15 ft bgs. Considering the stratified-drift aquifer in the Site area can potentially be at least 150 feet thick, the shallow well depths pose a data gap in understanding the deeper aquifer setting below water table conditions (lower portion of the UWBZ and LWBZ). Therefore, discrete groundwater samples will be collected on ten foot intervals to the top of the confining unit and analyzed for VOCs at each of the proposed replacement and new monitoring well locations (**Figure 3-1**), in order to determine the vertical extent of VOCs in groundwater and optimize the placement of each well screen.

3.4.1 Monitoring Well Locations

The rationale for the placement of the proposed new and replacement monitoring wells is as follows:

- *Monitoring well MW-13*: This well will be located in the immediate vicinity of former well MW-3 that no longer exists. Based on the sampling evidence, the former well MW-3 was observed to have relatively high concentrations of TCE (60,000 µg/L on May 25, 2005).
- *Monitoring wells MW-12, MW-14, and MW-15*: These wells will be located in the immediate vicinity of former wells MW-1, MW-5, and MW-2, respectively, which no longer exist. Based on the sampling evidence, these wells were observed with TCE above groundwater standards in their sampling history and represent plume boundary conditions.
- *Monitoring wells UW-2B, UW-3B, UW-4B, UW-5B, and UW-6B*: These monitoring wells will be used to evaluate water quality conditions as well as groundwater elevations in what is suspected to be a downgradient direction from the existing monitoring wells. The well locations serve to track potential migration from historically affected monitoring wells MW-3, MW-4, MW-5, MW-7 and MW-11 (60,000 µg/L at MW-3 in 2005; 325 µg/L at MW-4 in 2009; 6,500 µg/L at MW-5 in 2000; 1,570 µg/L at MW-7 in 2009; and 159 µg/L at MW-11 in 2009). These wells will also assist in confirming the groundwater flow direction.

3.4.2 Discrete Groundwater Sample Collection

Discrete groundwater samples will be collected at least every 10 ft to the top of the Confining Unit at each proposed monitoring well location using DPT. The discrete ground water samples will be collected using a sealed-screen sampler with a retractable screen implementing low flow purge sampling techniques until the sample is visually clear. One set of field parameters (pH, temperature, turbidity, dissolved oxygen (DO), oxidation reduction potential (ORP), and specific conductivity) will be collected per groundwater sample. The remaining open borehole will be filled with bentonite pursuant to NYSDEC oversight personnel direction during field work performed during October 2013 at the Universal Waste Site.

After receipt and review of the unvalidated discrete groundwater sampling data, the data along with proposed monitoring well construction specifications will be submitted to NYSDEC for review and approval.

3.4.3 Chemical Analyses

The discrete groundwater samples will be submitted to a NYSDOH-approved fixed laboratory to analyze for VOCs by USEPA Method 8260B. The VOC vertical delineation will be considered complete when the concentrations in each of two consecutive groundwater samples are less than the following groundwater quality standards pursuant to 6 NYCRR 703 and Technical and Operational Guidance Series (TOGS) 1.1.1 for each of the following VOCs:

- TCE = 5 µg/L
- cDCE = 5 µg/L
- 1,1-dichloroethene (DCE) = 5 µg/L
- VC = 2 µg/L
- Methylene chloride = 5 µg/L

3.5 Monitoring Well Installation

Nine new monitoring wells are proposed to better define groundwater flow direction beneath the Site and to delineate TCE (and its breakdown products) in groundwater.

Upon review of the vertical profiling groundwater analytical data, the monitoring wells will be installed to the appropriate depth as agreed upon with NYSDEC. Each monitoring well will be constructed of 2-inch diameter flush-joint Schedule 40 polyvinyl chloride (PVC) and completed with 0.010-inch machine slotted PVC screen. A silica sand filter pack (size #0) will be installed from the base of the well to a maximum of 2 ft above the top of the screen. A bentonite chip seal will then be installed and allowed to hydrate sufficiently to mitigate the potential for downhole grout contamination. Cement/bentonite grout will be installed to approximately 1 ft bgs. The newly installed monitoring wells will be completed with keyed-alike locks, a lockable J-plug, and an 8-inch diameter steel flush-mounted manhole within an approximate 2-ft by 2-ft by 1-ft square concrete pad.

Upon completion, but not within 24 hours, each newly installed monitoring well will be developed in accordance with NYSDEC protocols to remove fine-grained materials that may have entered the well screen during installation.

3.6 Surface Water Gage Installation

Two (2) surface water gages, SG-1 and SG-2, or river level measurement points on the Utica Harbor Dam will be installed at locations shown on **Figure 3-1.** The purpose of the river gaging sites is to provide surface water characteristics that verify groundwater recharge or discharge conditions near the Mohawk River control structure. Insights to surface water elevation and streambed elevation will assist in completing the groundwater flow conceptualization.

Enameled iron gages, such as the one shown, are preferred over other type gages (such as painted gages) since they resist rust, corrosion or discoloration and will last almost indefinitely with proper installation and maintenance. Any algae, organic/marine growth or other dirt buildup on the gage is easily washed off.

The surface water gage will be mounted on a redwood, cypress, cedar or synthetic board of suitable width and then the board will be attached to the concrete wall along the river bank upstream and downstream of the river control structure.

If the owner can be identified and permission obtained, the surface water gages will be mounted directly on the river control structure: one on the upstream side and one on the downstream side.

3.7 Location and Top-of-Casing Survey

Upon completion of the soil boring and monitoring wells, their locations and elevations will be surveyed by a New York licensed land surveyor. The survey will include location coordinates, ground surface elevation, and top-of-casing elevation of each monitoring well referenced to NYS Plane Coordinates and National Geodetic Vertical Datum (NGVD).

3.8 Water Level Measurements

Water level measurements will be obtained from all new and existing monitoring Utica Alloys Site and Universal Waste Site wells to measure the depth to, and develop the potentiometric surface of the UWBZ.

Each monitoring well will be opened and given the opportunity to equilibrate with outside air pressure. A water level meter will then be used to measure the depth to water from the top-of-casing to the nearest 0.01 ft.

The IDs for the existing monitoring wells are provided below:

Existing Utica Alloys Monitoring Wells

- MW-4
- MW-6
- MW-7
- MW-9
- MW-10
- MW-11

Existing Universal Waste Monitoring Wells

- MW-B3R
- MW-6R
- MW-8R
- B-5
- B-7
- UW-1
- UW-2
- UW-3
- UW-4
- UW-5
- UW-6
- UW-7

3.9 Groundwater Sampling and Analysis

Groundwater samples will be collected at least 24 hours after well development from the following monitoring wells:

- Proposed monitoring wells MW-12, MW-13, MW-14, MW-15, UW-2B, UW-3B, UW-4B, UW-5B, and UW-6B
- Existing monitoring wells MW-4, MW-6, MW-7, MW-9, MW-10, and MW-11

Upon arrival at each monitoring well, field personnel will visually inspect the monitoring wells for defects and/or vandalism. Following location and inspection of each monitoring well, the static water level and total depth will be recorded and one standing well volume will be calculated. Wells will be purged and sampled using a peristaltic pump and dedicated pump tubing following low-flow (minimal drawdown) purge (typically less than 0.1 liter per minute [lpm]) sampling procedures. Field measurements for pH, specific conductance, temperature, turbidity, dissolved oxygen (DO), oxidation reduction potential (ORP), and water level, as well as visual and olfactory field observations, will be periodically recorded and monitored for stabilization. Purging will be considered complete when pH, specific conductivity, temperature, DO and ORP stabilize and when turbidity measurements fall below 50 Nephelometric Turbidity Units (NTU), or become stable above 50 NTU. Stability is defined as variation between field measurements of 10 percent or less and no overall upward or downward trend in water level measurements.

Following purging completion, groundwater samples will be collected from the monitoring well and placed in pre-cleaned, pre-preserved laboratory provided bottles, cooled to 4 degrees Celsius (℃) in the field, and transported under chain-of-custody to the laboratory for analysis.

All groundwater samples collected from the new and existing monitoring wells (identified above) during the first round of sampling will be analyzed for the following constituents as listed in 6 NYCRR Part 375-6.8(a) and DER-10:

- Full TCL VOCs by USEPA Method 8260B
- Full TCL SVOCs by USEPA Method 8270C
- TAL Metals by USEPA Method 6000-7000 series
- Full TCL Pesticides/PCBs by USEPA Method 801/8082
- Full TCL Herbicides by USEPA Method 8151.

Twenty percent (20%) of the TCL samples will also be analyzed for the 30 (10 VOCs and 20 SVOCs) highest concentrations of tentatively identified compounds (TIC) as required by DER-10, Chapter 2. Ten percent (10%) of the groundwater samples will be collected in duplicate for VOC analysis only.

Select groundwater samples may also be analyzed for the following geochemical parameters:

- Aqueous-Phase Native Electron Acceptors
    - Oxygen
    - Nitrate and Nitrite
    - Sulfate and Sulfide
    - Total Iron, Ferrous Iron, and Ferric Iron
    - Total Manganese and Dissolved Manganese
    - Phosphate
- Dissolved Gases
    - Oxygen
    - Carbon Dioxide
    - Carbon Monoxide
    - Nitrogen
- Light Hydrocarbons
    - Methane, Ethane, and Ethene
- Other
    - DO
    - pH
    - ORP
    - Total organic carbon (TOC)
    - Alkalinity
    - Chloride
    - Microbial community structure

3.10 In Situ Hydraulic Conductivity Testing

Following monitoring well development, a single-well constant-rate aquifer test (constant rate) will be conducted on three monitoring wells to assess aquifer transmissivity, aquifer hydraulic conductivity, and specific yield (unconfined) or storage coefficient (confined). .

The single-well test will be performed by stressing the aquifer via a short duration pump test (30 minutes to 1 hour). The test will monitor for both the groundwater drawdown and recovery phases.

The test will be performed as follows:

- Measure and record the static groundwater level in the well prior to installing the test equipment in the well.
- Install a datalogger transducer (In Situ miniTroll or equivalent) in the well and position the transducer approximately 1 ft above the pump.
- Install a submersible pump (Whale pump or equivalent) at the bottom of the well.
- Once the transducer and pump are secured so that they will not move or shift in the well (slippage into the well), the water level in the well will be allowed to equilibrate back to static condition prior to conducting the test. Confirm the groundwater has returned to static condition by manual measurement of the groundwater elevation and comparing with the static water level measured prior to equipment installation. Record the new static groundwater level. *Note:* Install a backflow prevention device at the top of the pump discharge port (if the well diameter allows for the device to be placed in the well) and immediately downstream from the discharge flow control value. Locate the flow control valve near the wellhead. The purpose of the two backflow prevention devices is to stop the discharged water that is contained in the discharge hose from going back into the well. The introduction of the water back into the well during monitoring of the recovery phase would provide erroneous test results.
- Pump the well at a rate sufficient to create a measurable drawdown of the water table within the well (1 to 5 ft). Once a drawdown is achieved, maintain a constant extraction rate throughout the duration of the test. The flow rate should be determined and held constant within the first 10 minutes of the test. *Note:* The anticipated extraction rate needs to be considered prior to conducting the test to properly plan for the management of the extracted water (investigative derived waste – IDW). It is preliminarily anticipated that the pumping rate will be at least 1 gallon per minute (gpm). For example, if the pumping rate is one gpm, then one 55-gallon drum will be required to contain the fluids.
- Groundwater drawdown and recovery levels will be recorded by an electronic device (miniTroll with data logger) and verified with manual measurements. Perform manual measurements at a high frequency during the beginning phase of the test and low frequency during the middle and late phases of the test.
- The groundwater level drawdown and recovery phase data measured in the pumped well will be analyzed with AQTESOLV analytical software package using the appropriate method of analyses.
- The transducer and submersible pump will be decontaminated prior to and after use in each well.

3.11 Indoor Air Sampling and Analysis

Indoor air and sub-slab vapor samples will be collected at the Site during the next heating season (November 15th to March 31st) to meet the following objectives:

- Assess the current potential for intrusion of vapors from the soil and groundwater on the western side of the building into the indoor air

- Evaluate fluctuation in concentrations due to the following:
  - Different weather conditions (e.g., seasonal effects)
  - Changes in building conditions (e.g., various operating conditions of the building's heating, ventilation, and air conditioning [HVAC] system)
  - Changes in source strength
- Compare these results to the results from 2008 (OB&G, 2008b). As in 2008, the sampling activities were focused on the office area of the building, as there is potential for TCE and other solvents to be associated with the material handled in the production areas. The sampling will be completed in general conformance with the NYSDOH document *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (NYSDOH, 2006).

3.11.1 Sample Locations

Two sets of sub-slab and indoor air samples will be collected from the office area of the facility as shown on **Figure 2-6**. The sub-slab samples will be designated as SS and the indoor air samples will be designated as IA. Samples SS-1 and IA-1 will be collected from the grinding room located off the main office area. Samples SS-2 and IA-2 will be collected from the locker room located on the west side of the office area. These sample locations are consistent with the locations of the samples collected in 2008 (OB&G, 2008b) and in 2013. An ambient air sample, AA-1, will also be collected from an area located upwind of the office area of the building.

3.11.2 Sub-Slab Vapor Probe Installation

Dedicated sub-slab vapor probes will be installed at locations SS-1 and SS-2 in accordance with the USEPA guidance (**Appendix A**). A quick-drying portland cement that expands upon drying (to ensure a tight seal) will be mixed with water to form a slurry and injected into the annular space between the probe and the outside of the hole.

3.11.3 Indoor Air Sampling Procedures

As outlined in the NYSDOH guidance document (2006), indoor air samples will be collected into individually certified, clean, 6-liter, pre-evacuated Summa® canisters with inlets positioned at approximately 4 to 5 ft above the floor to be consistent with the breathing zone. Details of the sample collection will be recorded on the field forms provided in **Appendix A.** A building survey and chemical inventory will be conducted during the sampling and documented on the field forms provided in **Appendix B**. The purpose of the survey and inventory will be to collect information pertaining to potential sources of VOCs within the building.

The sampling rate will be set to draw the air sample over an approximate 8-hour period. The sampling rate will be maintained by laboratory-supplied, constant-differential, low-volume flow controllers. Vacuum readings of the canisters will be obtained and documented prior to sample collection and upon completion of sampling. Sample identification, vacuum readings, flow controller identification numbers, and other relevant information will be recorded on sampling forms.

3.11.4 Sub-slab Vapor Sampling Procedures

Sub-slab samples will be collected by drilling an approximate ¾-inch diameter hole through the concrete floor (about 8 inches thick) using a hand-held drill. Approximately 14 inches of soil will then be drilled from beneath the slab. Consistent with the NYSDOH guidance document (2006), the following procedures for sub-slab sample collection will be followed:

- A section of 14-inch Teflon or polyethylene tubing will be inserted through a hole drilled through the slab. The tubing inlet will be installed approximately 14 inches below the slab. The annular space between the hole and tubing will be sealed using 100% beeswax or similar non-VOC containing material.
- The tubing will be purged using a polyethylene, 60 cubic centimeter (cc) syringe. One to three tubing volumes will be purged prior to sample collection at a rate no greater than 0.2 liters per minute (lpm). The tubing will then be connected to a sample canister.
- A sample of sub-slab soil vapor will be collected over an approximate 8-hour period, utilizing batch certified, clean, 6-liter, pre-evacuated canisters. The required sampling rate will be maintained by laboratory-supplied constant-differential low-volume flow controllers. Vacuum readings of the canisters will be obtained and documented prior to sample collection and upon completion of sampling. Sample identifications, vacuum readings, flow controller identification numbers, and other relevant information will be recorded on field forms.

3.11.5 Ambient Air Sampling Procedure

Concurrent with the sub-slab and indoor air samples, one outdoor, field-located air sample will be collected from a ground level location upwind of the office area of the building. This ambient air sample will be collected in the same manner as the indoor air samples. Sample identification, vacuum readings, flow controller identification numbers, and other relevant information will be recorded on field forms.

3.11.6 Sample Analysis

Samples (canisters) will be delivered to a laboratory that is certified by the National Environmental Laboratory Approval Program (NELAP) and certified by NYSDOH for USEPA Method TO-15 under routine chain-of-custody protocols.

3.12 Reporting

The results of the supplemental CSM investigations proposed herein will be submitted to NYSDEC in a Supplemental CSM Investigation Report. The report will include, at minimum, the following:

- Description of field activities
- Summary of lithology
- Figures showing monitoring well and surface gauging locations, potentiometric surface and groundwater analytical data
- Tables summarizing well construction data, groundwater levels, groundwater quality, and indoor air quality
- Boring logs and well construction diagrams
- Conclusions and recommendations

4.0 PROJECT QUALITY ASSURANCE/QUALITY CONTROL

The following sections detail specific procedures that will be implemented and maintained to control and assure data quality for the supplemental CSM investigations described in the previous sections.

4.1 Project Management Related QA/QC

The following sections describe health and safety, IDW management, and project documentation procedures to ensure overall project safety and quality.

4.1.1 Health and Safety

Field activities will be conducted in accordance with the Site-specific Health and Safety Plan (HASP). A review of the proposed field investigation activities will be completed prior to the start of field sampling activities. Based on this review, a HASP Addendum will be prepared to include any activities that are not adequately addressed in the current HASP. Field activities will be conducted in accordance with the HASP and any addenda that are approved for the Site at the time of sampling.

A Community Air Monitoring Plan (CAMP) has been developed for this project that will be followed during all invasive fieldwork (soil borings, borings for well installation, and test pitting). Included in the CAMP is a description of methods that may be used to control odors during the investigation if needed. The CAMP is provided in **Appendix C**.

4.1.2 IDW Management

All IDW, including but not limited to, well development water, soil cuttings, sample purge water, and decontamination water will be containerized, characterized, and properly disposed of off-site.

4.1.3 Project Documentation

All information pertinent to the investigation will be recorded in a bound field logbook and/or field data sheets. Entries will include the following, as applicable:

- Project name and number
- Sampler's and field personnel names
- Date and time of sample collection
- Observations at the sampling site such as weather conditions
- Sample number, location, and depth
- Sampling method
- Analyses requested
- Sampling media
- Sample type (grab or composite)
- Sample physical characteristics
- Summary of daily tasks and information concerning sampling changes and scheduling modifications dictated by field conditions

Field investigation situations vary widely. No general rules can include every type of information that must be entered in a logbook or data sheet for a particular site.

Laboratory and field data sheets will be included as an appendix to the Supplemental CSM Investigation Report. Site-specific recording will include sufficient information so that the sampling activity can be reconstructed without relying on the memory of field personnel. At the completion of the field activities, the logbooks will be maintained in the central project file.

4.2 Field Sampling Related QA/QC

Quality Assurance/Quality Control (QA/QC) procedures for the field sampling program will include the collection of QA/QC samples and proper processing and handling of samples. The following sections describe those procedures and the QA/QC procedures for analytical data.

4.2.1 Sample Identification, Handling, and Chain of Custody

Samples will be identified, handled, and recorded as described below. Each sample container will have a sample label affixed to the outside, and documentation will be completed in waterproof ink. Each label will be marked using waterproof ink with the following information:

- Project name
- Sample identification number
- Date and time of collection
- Initials of sampling technician
- Requested analysis
- Method of preservation

Sample containers will be packed in bubble wrap to minimize breakage and placed in plastic coolers. Ice will be placed around sample containers, and additional cushioning material will be added to the cooler, if necessary. A temperature blank will be included in each cooler. Paperwork will be placed in a sealable plastic bag and placed on top of the sample containers or taped to the inside lid of the cooler. The cooler will be sealed, and signed custody seals will be affixed to two sides of the cooler. Laboratory address labels will be placed on top of the cooler.

Sample coolers will be packaged and shipped as environmental samples in accordance with applicable federal and state regulations. Standard procedures applicable to the shipment of environmental samples to the analytical laboratory are outlined below.

- Environmental samples collected will be transported to the laboratory by field personnel, shipped via Federal Express or equivalent overnight service, or picked up by a laboratory courier. Shipments will be scheduled to meet holding time requirements.
- The laboratory will be notified prior to receipt of samples. If the number, type, or date of shipments changes due to Site constraints or program changes, the laboratory will be informed in advance to allow adequate time to prepare.

The transfer of custody of field-collected samples will follow an established sample chain-of-custody program. The primary purpose of chain-of-custody procedures is to ensure that sample traceability is maintained from collection through shipping, storage, and analysis, to data reporting and disposal.

Tracing sample possession will be accomplished by using the chain-of-custody record. A chain-of-custody entry will be recorded for every sample, and a chain-of-custody record will accompany every sample shipment to the laboratory. At a minimum, the chain-of-custody record will contain the following information for each sample:

- Project name and number
- Sample number and identification of sampling point
- Sample media
- Date and time of collection
- Sample type
- Number, type, and volume of sample container(s)
- Sample preservative
- Analysis requested
- Name, address, and phone number of laboratory or laboratory contact
- Signature, dates, and times of persons in possession
- Any necessary remarks or special instructions

Once the chain-of-custody is complete and the samples are prepared for shipment, the chain-of-custody will be placed inside the shipping container, and the container will be sealed. Samples are considered to be in custody if they are within sight of the individual responsible for their security or locked in a secure location. Each person who takes possession of the samples, except the shipping courier, is responsible for sample integrity and safekeeping. A copy of each chain-of-custody form will be retained by the sampling team for the project file. Bills of lading will also be retained as part of the chain-of-custody record.

4.2.2 Analytical QA/QC Samples

Field QA/QC samples are designed to help identify and minimize potential sources of sample contamination due to field procedures and to evaluate potential error introduced by sample collection and handling. Three (3) types of QA/QC samples will be collected as part of the proposed supplemental CSM investigations:

- Field (rinsate) blank samples: A field blank sample is intended to indicate potential contamination from sampling equipment. A field blank sample will be collected by rinsing laboratory-supplied, organic-free, deionized water over decontaminated sampling apparatus into a laboratory-supplied sample bottle. The field blank sample is assigned a distinct identification number and will be handled, transported, and analyzed in the same manner as the samples collected that day. Field blanks will be collected at a rate of one per day per sample matrix. A field blank does not need to be collected when dedicated or disposable sampling equipment is used.
- Duplicate samples: Blind field duplicate samples will be collected to evaluate the consistency of field techniques and laboratory analysis. Duplicate samples will be obtained by simultaneously filling aliquots of homogenized sample media into two sets of bottle ware: 1) the investigative set and 2) the duplicate set. The duplicate sample will be handled in the same manner as the primary sample, assigned distinct sample identification, and submitted to the laboratory with its primary sample. Duplicate samples will be collected at a rate of five (5) percent of the total samples collected for each matrix. Field duplicates will not be collected for geochemical analyses. Locations selected for the collection of duplicates will be based on professional judgment of the field team leader.
- Trip blank: A trip blank will be included in each cooler containing samples to be analyzed for VOCs. Analysis of trip blanks shows whether a sample bottle was contaminated during shipment from the manufacturer, while in bottle storage, in shipment to the laboratory, or during analysis at the lab. Trip blank will consist of an aliquot of distilled water sealed in a sample bottle and prepared by the laboratory prior to shipping the sample bottles to EHS Support.

- Matrix spike/matrix spike duplicate (MS/MSD) samples: MS/MSD samples are prepared at the laboratory by dividing a control sample into two aliquots, then spiking each with identical concentrations of specific analytes. The spiked samples are then analyzed separately, and the results are compared to evaluate the effects of the sample matrix on the analytical accuracy and precision. At sampling locations where MS/MSD samples are to be collected, a sufficient volume of sampling material, as required by the laboratory, will be collected. MS/MSD samples will be labeled and shipped to the laboratory along with the primary sample from which it was collected. MS/MSD samples will be collected at a rate of five (5) percent of the total number of samples in each matrix.
- Temperature blank: A temperature blank will be included in each cooler shipped in wet ice. A temperature blank is a vial of water shipped with samples and is used by the laboratory to measure the temperature of the cooler upon receipt at the laboratory. The temperature blank is not analyzed.

5.0 PROPOSED SCHEDULE OF ACTIVITIES

Figure 5-1 presents the proposed project schedule.

6.0 REFERENCES

Division of Environmental Remediation, 2010, *Technical Guidance for Site Investigation and Remediation* (DER-10), May 2010.

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Stearns and Wheler, 2000. *Preliminary Site Assessment* – Universal Waste, Inc. Property, Utica, New York, October.

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TABLES

Table 2-1
Groundwater Quality Results

ELG Utica Alloys Site
Utica, New York

		Downgradient From Source											
	Location ID	MW-B3R	MW-B3R	MW-B3R	MW-B3R	MW-6	MW-8R	MW-8R	MW-8R	MW-9	MW-9	MW-9	MW-9
	Sample Date	12/19/2007	4/4/2008	4/4/2008	10/9/2008	12/17/2009	8/21/2008	10/9/2008	12/17/2009	12/19/2007	4/4/2008	10/9/2008	12/16/2009
	Sample Type	N	N	FD	N	N	N	N	N	N	N	N	N
Parameter Name	Action Level [1]												
1,1-Dichloroethylene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Acetone	50	10 U	10 UJ	10 UJ	10 U	NA	10 U	10 U	NA	10 U	10 UJ	4.03 J	NA
Carbon disulfide	60	0.5 U	0.5 U	0.5 U	0.5 U	NA	0.5 U	0.5 U	NA	0.5 U	0.5 U	0.5 U	NA
cis-1,2-Dichloroethene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.56	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Cyclohexane	NC	0.5 U	0.5 U	0.5 U	0.5 U	NA	0.5 U	0.5 U	NA	0.12 NJ	0.44 J	0.5 U	NA
Dichloromethane (methylene chloride)	5	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Methyl Tert-Butyl Ether (MTBE)	8	0.5 U	1 U	1 U	1 U	0.5 U	1 U	1 U	0.5 U	5.89	**8.03**	3.06	2.77
Methylcylohexane	NC	0.5 U	0.5 U	0.5 U	0.5 U	NA	0.5 U	0.5 U	NA	0.5 U	0.39 J	0.5 U	NA
Toluene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,2-Dichloroethene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethylene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride	2	1 U	1 U	1 U	1 U	1.34	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total CVOCs	NC	ND	ND	ND	ND	1.9	ND	ND	ND	ND	ND	ND	ND

		Near TCE Source Area																			
	Location ID	MW-4	MW-4	MW-4	MW-4	MW-4	MW-7	MW-7	MW-7	MW-7	MW-7	MW-7	MW-10	MW-10	MW-10	MW-10	MW-10	MW-3	MW-11	MW-11	MW-11	MW-11
	Sample Date	12/8/1999	12/19/2007	4/4/2008	10/9/2008	12/16/2009	9/30/1999	12/19/2007	4/4/2008	10/9/2008	10/9/2008	12/15/2009	12/19/2007	12/19/2007	4/4/2008	10/9/2008	12/15/2009	12/8/1999	12/19/2007	4/4/2008	10/9/2008	12/16/2009
	Sample Type	N	N	N	N	N	N	N	N	N	FD	N	FD	N	N	N	N	N	N	N	N	N
Parameter Name	Action Level [1]																					
1,1-Dichloroethylene	5	**30 J**	50 U	50 U	50 U	50 U	U	25 U	25 U	50 U	50 U	50 U	2.5 U	1 U	1 U	2.5 U	1 U	U	10 U	10 U	5 U	5 U
Acetone	50	150 JB	1000 U	1000 UJ	1000 U	NA	210 JB	500 U	500 UJ	1000 U	1000 U	NA	50 U	20 U	20 UJ	50 U	NA	690 JB	200 U	200 UJ	100 U	NA
Carbon disulfide	60	U	50 U	50 U	50 U	NA	15 J	25 U	25 U	50 U	50 U	NA	2.5 U	1 U	1 U	2.5 U	NA	U	10 U	10 U	5 U	NA
cis-1,2-Dichloroethene	5	**4100**	**2310**	**2040**	**1360**	**1100**	**460**	**95**	**609**	**289**	**273**	**99**	**40.5**	**37.4**	**42.7**	**353 J**	**73.9**	**8500**	**479**	**27.2**	**192**	**169**
Cyclohexane	NC	NA	50 U	50 U	50 U	NA	NA	25 U	25 U	50 U	50 U	NA	2.5 U	1 U	1 U	2.5 U	NA	NA	10 U	10 U	5 U	NA
Dichloromethane (methylene chloride)	5	U	200 U	200 U	200 U	200 U	**36 J**	100 U	**8 J**	17 U	17 U	200 U	10 U	4 U	4 U	10 U	4 U	**94 J**	40 U	40 U	20 U	20 U
Methyl Tert-Butyl Ether (MTBE)	8	NA	50 U	100 U	100 U	50 U	NA	25 U	50 U	100 U	100 U	50 U	2.5 U	1 U	2 U	5 U	1 U	NA	10 U	20 U	10 U	5 U
Methylcylohexane	NC	NA	50 U	50 U	50 U	NA	NA	25 U	25 U	50 U	50 U	NA	2.5 U	1 U	1 U	2.5 U	NA	NA	10 U	10 U	5 U	NA
Toluene	5	U	50 U	50 U	50 U	50 U	5 J	25 U	25 U	50 U	50 U	50 U	2.5 U	1 U	1 U	2.5 U	1 U	U	10 U	10 U	5 U	5 U
trans-1,2-Dichloroethene	5	**17 J**	50 U	50 U	50 U	50 U	U	25 U	25 U	50 U	50 U	50 U	2.5 U	1 U	1 U	1.9 J	1 U	U	10 U	10 U	5 U	5 U
Trichloroethylene	5	**8000**	**953**	**702**	**279**	**325**	**6700**	**1480**	**3130 J**	**2680**	**2590**	**1570**	3.5	2.1	0.66 J	2.5 U	1 U	**27000**	**282**	**220**	**200**	**159**
Vinyl chloride	2	**140 J**	**138 J**	**463**	**915**	**206**	U	50 U	50 U	100 U	100 U	100 U	**37.4**	**39.1**	**24.5**	**101 J**	**43.7**	**390 J**	**188**	20 U	**28.5**	**28.2**
Total CVOCs	NC	12287	3401	3205	2554	1631	7196	1575	3747	2969	2863	1669	81.4	78.6	67.86	455.9	117.6	35984	949	247.2	420.5	356.2

Notes:

Units are in ug/L (micrograms per liter)

NJ- tentative in identification and estimated in value.

U - Compound analyzed but not detected above the method detection limit.

J - Estimate value

B - Analyte detected in the associated method blank

NA - Not Applicable

1999 data results from Stearns & Wheler Remedial Investigation (1999) for purposes of comparing to current data.

[1] Class GA Groundwater Criteria as identified in New York State Ambient Water Quality Standards and Guidance Values, Table 1, Division of Water Technical and Operational Guidance Series 1.1.1 (June 1998)

bold Concetration is greater than the action level.

Sample Type N - Normal

Sample Type FD - Field Duplicate

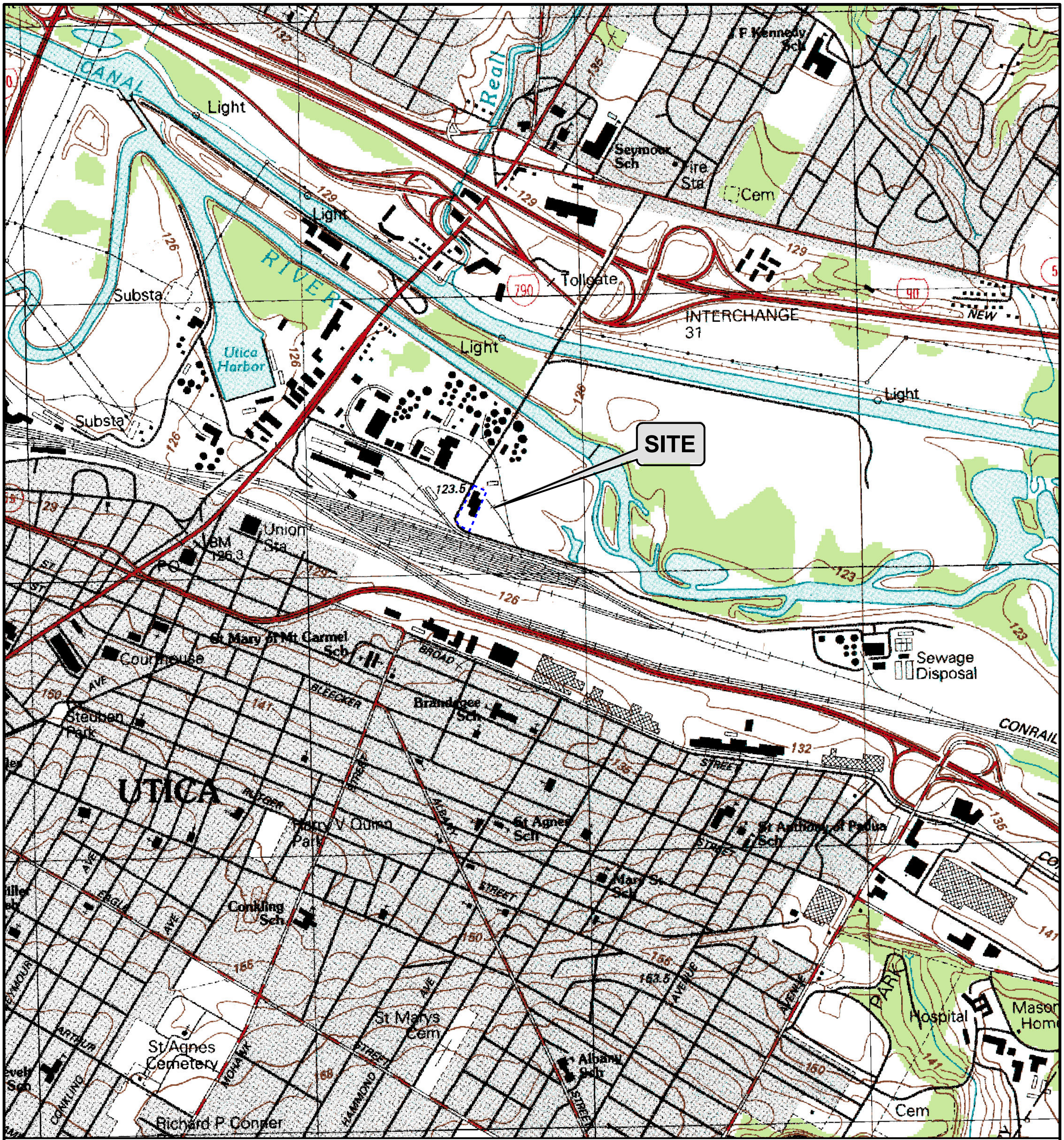
Total CVOCs = 1,1-Dichloroethylene, cis-1,2-Dichloroethene, Dichloromethane (methylene chloride), trans-1,2-Dichloroethene, Trichloroethylene, and Vinyl chloride.

Table 2-2
Summary of Vapor Intrusion Sampling Results
ELG Utica Alloys Site
Utica, New York

Compound	***Indoor Air Background Levels[a] (µg/m³)***	***NYSDOH Air Guidelines[b] (µg/m³)***	***Sample Location:***	***Outdoor***	***Grinding Room***				***Locker Room***				***Outdoor***	***Grinding Room***				***Locker Room***			
			Sample Type:	Ambient Upwind	Sub-Slab	Indoor Air	NYSDOH Matrix[C]	AF (α)	Sub-Slab	Indoor Air	NYSDOH Matrix[C]	AF (α)	Ambient Upwind	Sub-Slab	Indoor Air	NYSDOH Matrix[C]	AF (α)	Sub-Slab	Indoor Air	NYSDOH Matrix[C]	AF (α)
			Sample I.D.:	AA-1	SS-1	IA-1			SS-2	IA-2			AA-1	SS-1	IA-1			SS-2	IA-2		
			Sample Date:	**3/25/2008**	**3/25/2008**	**3/25/2008**			**3/25/2008**	**3/25/2008**			**1/31/2013**	**1/31/2013**	**1/31/2013**			**1/31/2013**	**1/31/2013**		
1,1,1-Trichloroethane	20.6	NA		<0.98	<180	<1.8	**NFA**	NA	4.9	<1.1	**NFA**	>0.2	<1.1	<6.5	<1.1	**NFA**	NA	<140	<2.2	**NFA**	NA
1,2-Dichloroethane	<0.9	NA		<0.72	<140	<1.4	NA	NA	3.7	<0.85	NA	>0.2	<0.81	<4.9	<0.81	NA	NA	<110	<1.6	NA	NA
1,2-Dichloroethene, Total	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.79	770	93	NA	0.121	3600	190	NA	0.05
2,2,4-Trimethylpentane	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.93	11	<0.93	NA	NA	<120	<1.9	NA	NA
Benzene	9.4	NA		0.68	<110	3.6	NA	<0.03	1.9	2.7	NA	1.4	<0.64	<3.8	3.2	NA	NA	<83	3.9	NA	NA
Bromomethane	<1.7	NA		<0.70	<130	1.4	NA	<0.01	<2.3	<0.82	NA	NA	<0.78	<4.7	1.5	NA	NA	<100	1.9	NA	NA
Carbon Tetrachloride	<1.3	NA		NA	NA	NA	**NA**	NA	NA	NA	**NA**	NA	0.43	<1.5	0.49	**NFA**	NA	<33	<0.50	**NFA**	NA
Chloroethane	<1.1	NA		<0.47	<89	<0.89	NA	NA	<1.6	0.61	NA	<0.4	<1.3	<7.9	<1.3	NA	NA	<170	<2.6	NA	NA
Chloroform	1.2	NA		<0.87	<160	<1.6	NA	NA	3.6	4.6	NA	1.3	<0.98	10	3.2	NA	0.320	<130	<2	NA	NA
cis-1,2-Dichloroethene	<1.9	NA		<0.71	5000	110	NA	0.022	430	52	NA	0.12	<0.79	740	92	NA	0.124	3500	190	NA	0.05
Cyclohexane	NA	NA		<0.62	<120	2.1	NA	<0.02	<2.0	1.8	NA	<0.9	<0.69	<4.1	<0.69	NA	NA	<89	<1.4	NA	NA
m&p-Xylenes	22.2	NA		<0.78	<140	4.2	NA	<0.03	<2.6	5	NA	<2	<2.2	<13	<2.2	NA	NA	<280	<4.3	NA	NA
Methylene Chloride	10	60		<1.2	<120	5.8	NA	<0.05	<4.1	3.2	NA	<0.8	<1.7	<10	2.2	NA	NA	<230	4.7	NA	NA
n-Heptane	NA	NA		<0.73	<140	5.1	NA	<0.04	<2.4	4.3	NA	<1.8	<0.82	6.7	1.9	NA	0.284	<110	<1.6	NA	NA
n-Hexane	10.2	NA		<0.63	<120	5.2	NA	<0.04	<2.1	4.5	NA	<2	0.7	27	0.99	NA	0.037	<92	<1.4	NA	NA
o-Xylene	7.9	NA		<0.78	<140	1.5	NA	<0.01	<2.6	1.5	NA	<0.6	<0.87	<5.2	<0.87	NA	NA	<110	<1.7	NA	NA
Tetrachloroethene (PCE)	15.9	100.0		<1.2	<230	<2.3	**UTD**	NA	14	<1.4	**NFA**	>0.10	<1.4	18	1.6	**NFA**	0.089	<180	<2.7	**NFA**	NA
Toluene	43	NA		0.91	<130	6.6	NA	<0.1	<2.2	5.3	NA	<2	<0.75	12	1.7	NA	0.142	<98	<1.5	NA	NA
trans-1,2-Dichloroethene	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.79	34	0.91	NA	0.027	<100	1.8	NA	NA
Trichloroethene (TCE)	4.2	5.0		<0.19	**32000**	**220**	**Mitigate**	0.007	**540**	**100**	**Mitigate**	0.19	0.27	**720**	**180**	**Mitigate**	0.250	**21000**	**330**	**Mitigate**	0.02
Trichlorofluoromethane	18.1	NA		1	<190	<1.90	NA	NA	<3.4	<1.2	NA	NA	<1.7	<6.7	1.8	NA	NA	<150	<2.2	NA	NA
Vinyl Chloride	<1.9	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.10	<0.61	0.12	NA	NA	<13	<0.20	NA	NA
Xylene, Total	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.87	<5.2	2.2	NA	NA	<110	<1.7	NA	NA

Note: Results are reported in units of micrograms per cubic meter (µg/m³)
[a] Indoor air concentrations measured commercial and public buildings that do not have vapor intrusion. The values are the 90th percentile values taken from the EPA 2001 BASE Database, as reported in the NYSDOH vapor intrusion guidance (October 2006).
[b] NYSDOH vapor intrusion guidance (Oct 2006) recommends actions based on the combination of sub-slab and corresponding indoor air concentrations (available for TCE, 111-TCA,cis-1,2-Dichloroethylene, 1,1-dichloroethene, Carbon Tetrachloride, vinyl chloride, and PCE only).
<## - Compound not detected above the reporting limit (##).
NA - Not available
E - Results reported as estimated values from the laboratory because compound was detected outside the analytical calibration range needed to achieve the lower reporting limits for all other compounds in that same sample.
Monitor - Monitoring is recommended by NYSDOH to assess changes in sub-slab and indoor air concentrations and/or building conditions.
Mitigate - Mitigation is recommended by NYSDOH to minimize current or potential exposures associated with vapor intrusion.
NFA - No further action as recommended by NYSDOH guidance.
UTD - Unable to determine.

FIGURES



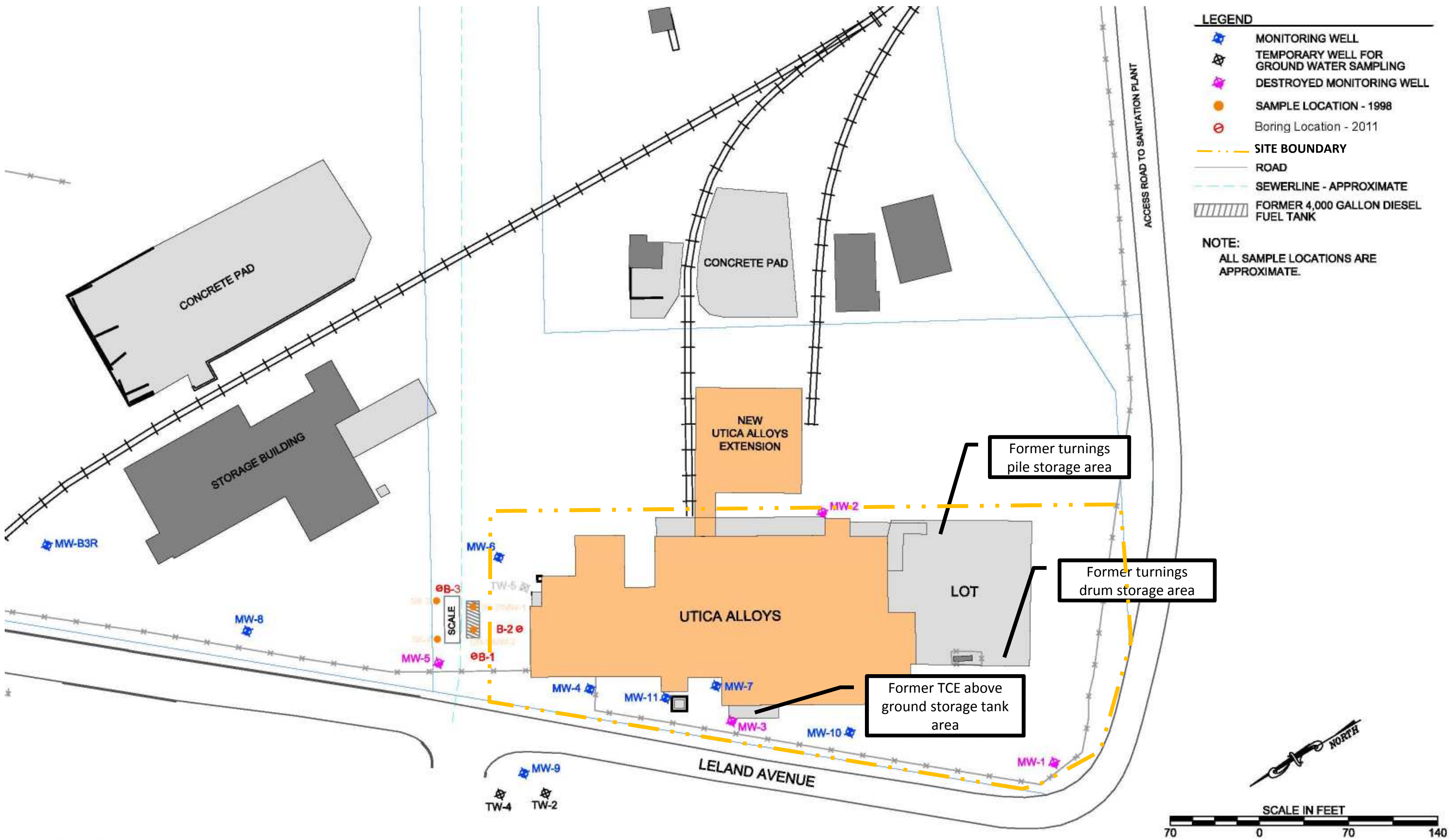
Source: 1983 USGS QUADRANGLE SHEET, QUAD NAME UTICA EAST

2,000 1,000 0 2,000

Feet

N

EHS Support *consider it done* www.ehs-support.com	**ELG UTICA ALLOYS** **UTICA, NEW YORK**	**FIGURE 2-1** **SITE LOCATION**



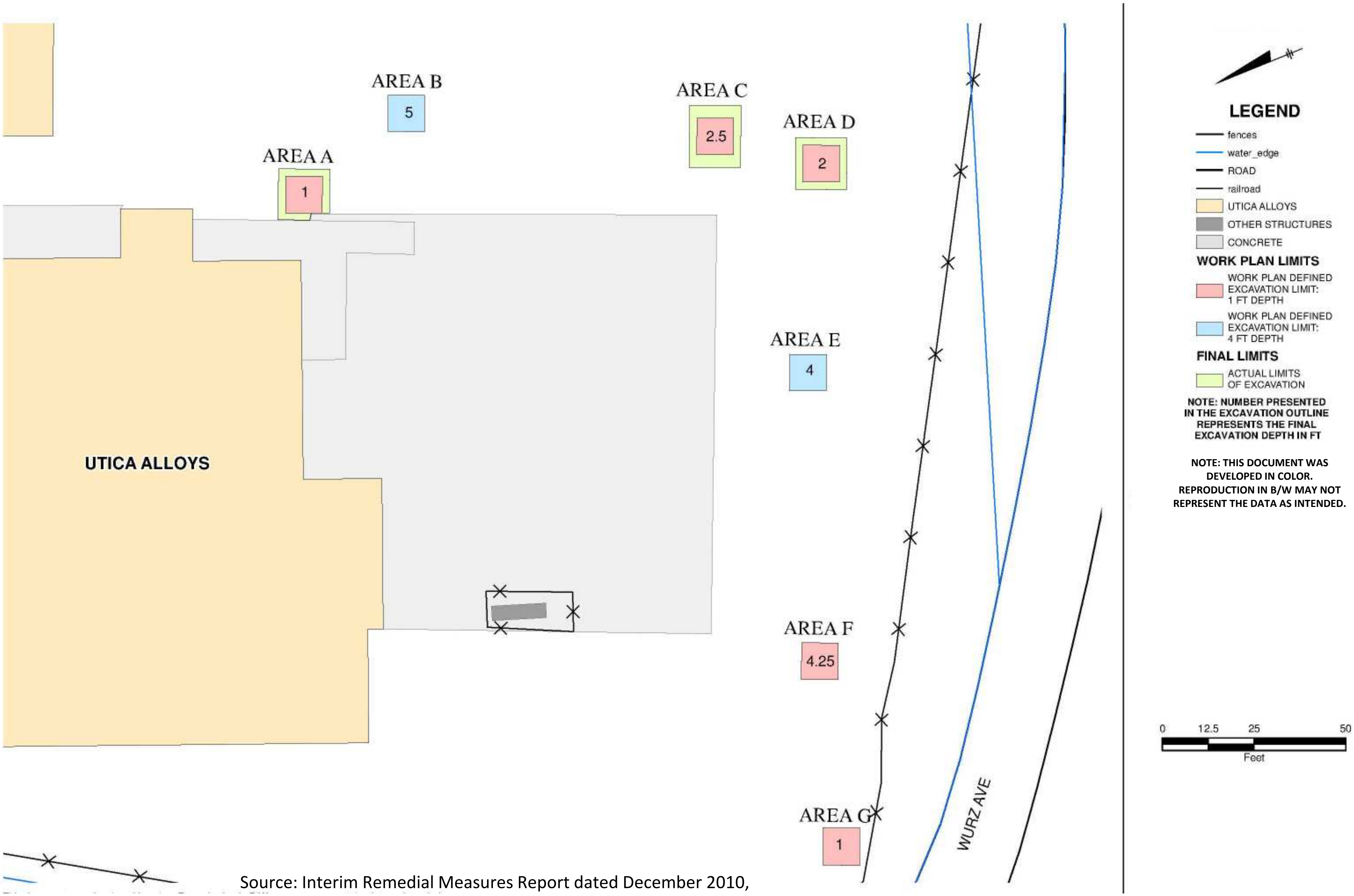
ELG UTICA ALLOYS SITE
UTICA, NY

EHS Support

August, 2011

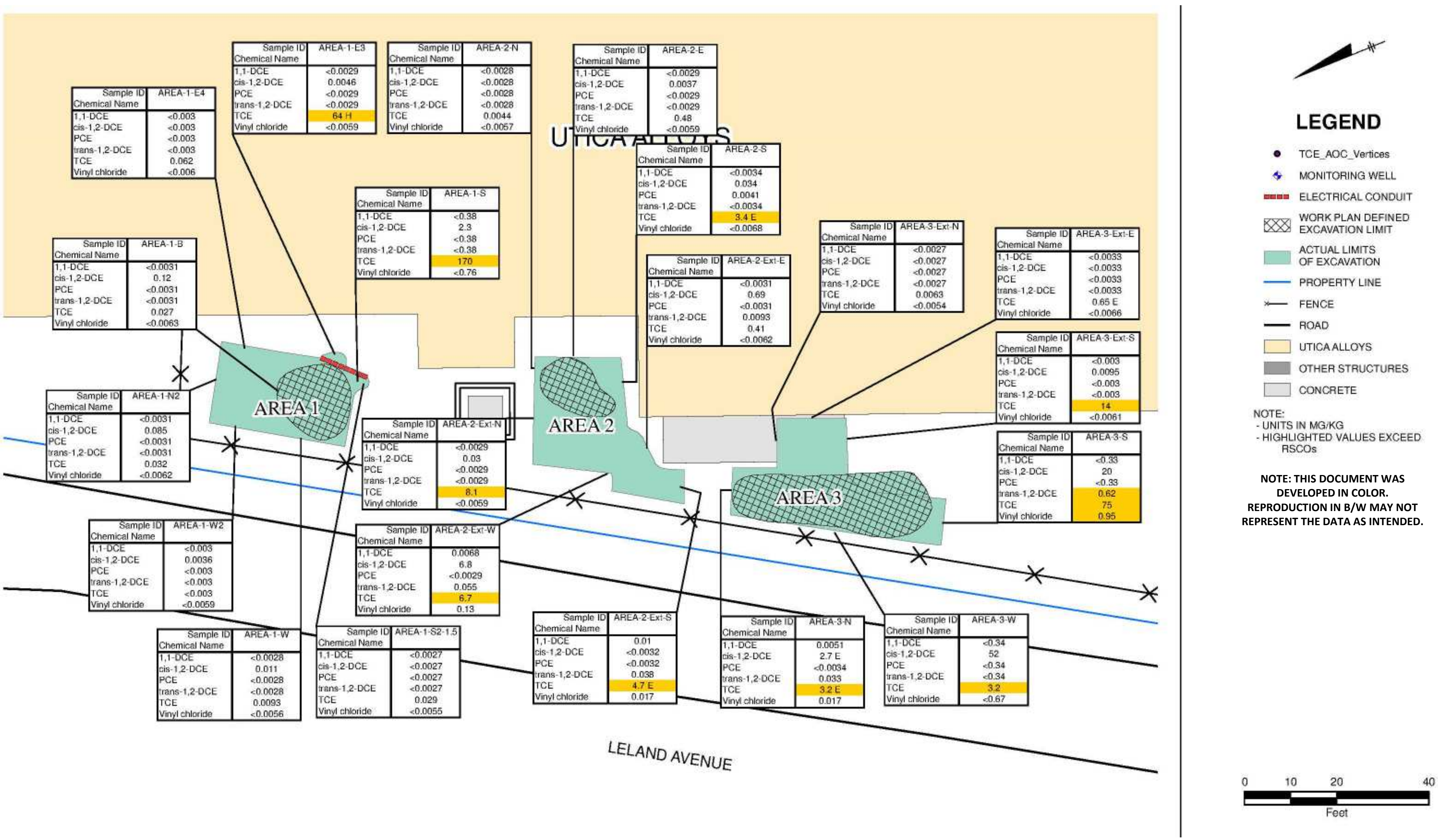
SITE LAYOUT

FIGURE 2-2



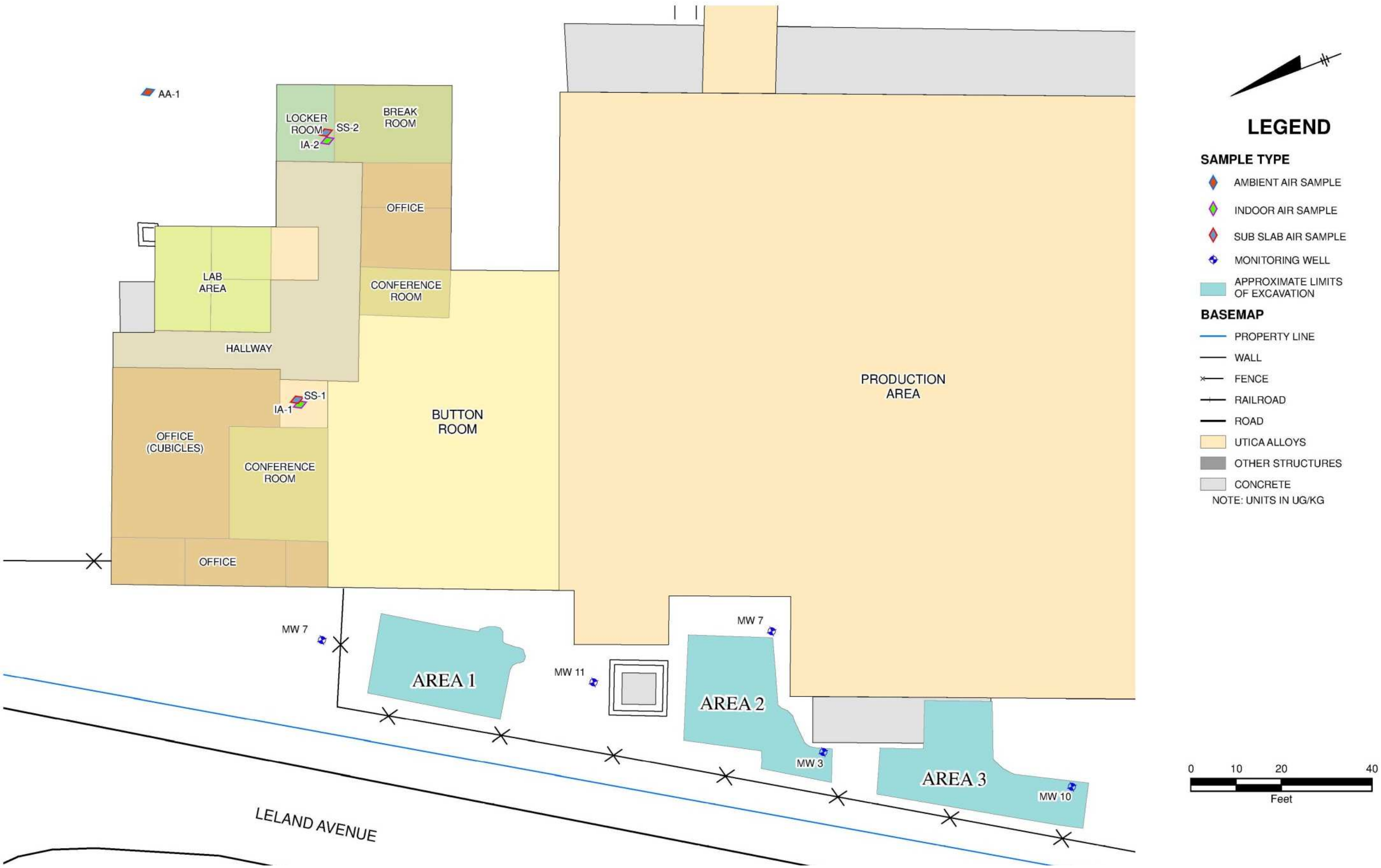
Source: Interim Remedial Measures Report dated December 2010, prepared by O'Brien & Gere

ELG UTICA ALLOYS SITE UTICA, NY EHS Support *August, 2011*	INTERIM REMEDIAL MEASURES PCB SOIL AREA EXCAVATION LIMITS	FIGURE 2-3



Source: Interim Remedial Measures Report dated December 2010, prepared by O'Brien & Gere

ELG UTICA ALLOYS SITE UTICA, NY EHS Support August, 2011	INTERIM REMEDIAL MEASURES TCE SOIL AREA EXCAVATION LIMITS	FIGURE 2-4



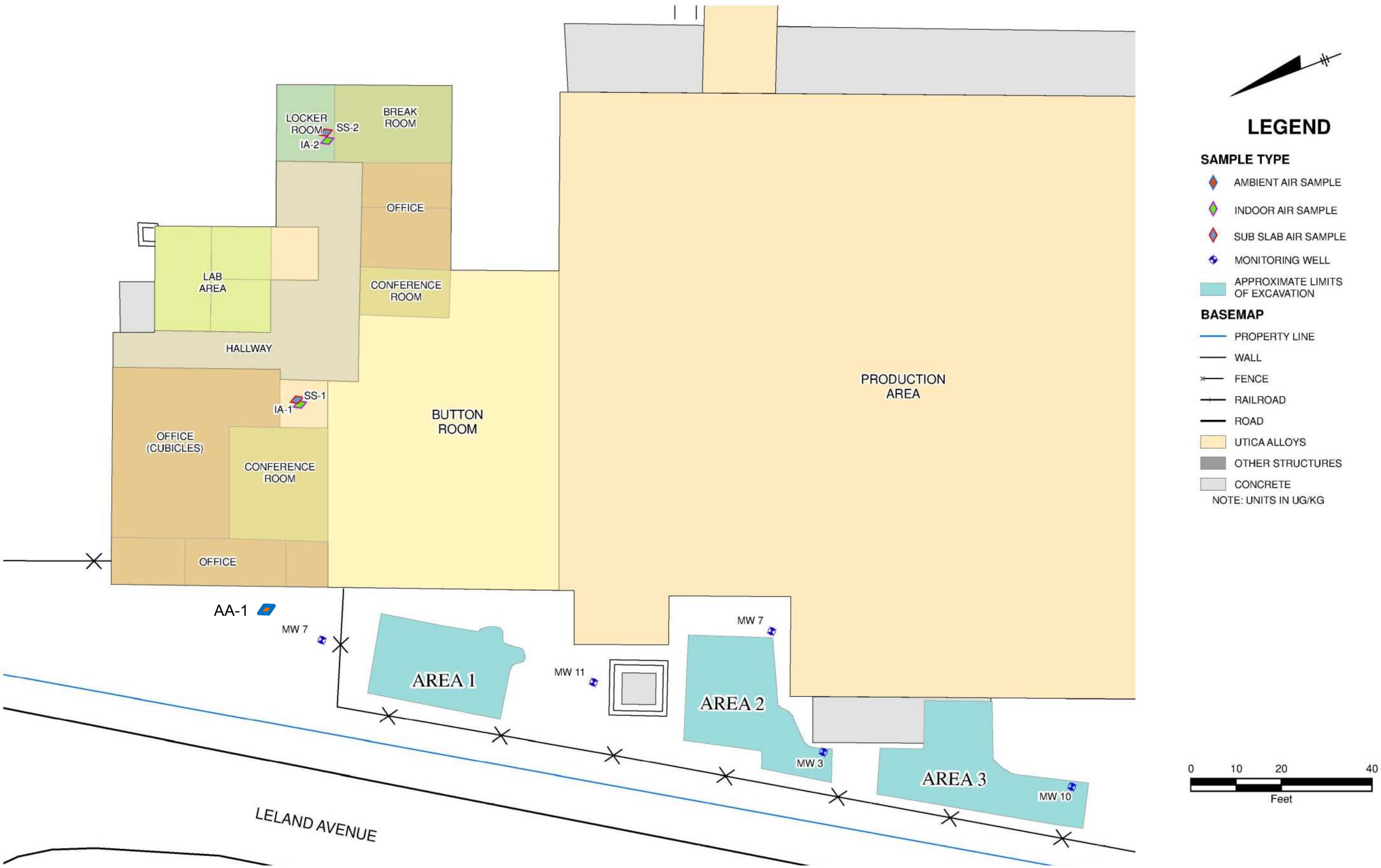
ELG UTICA ALLOYS SITE
UTICA, NY

EHS Support

August, 2011

2008 INDOOR AIR SAMPLE LOCATIONS

FIGURE 2-5



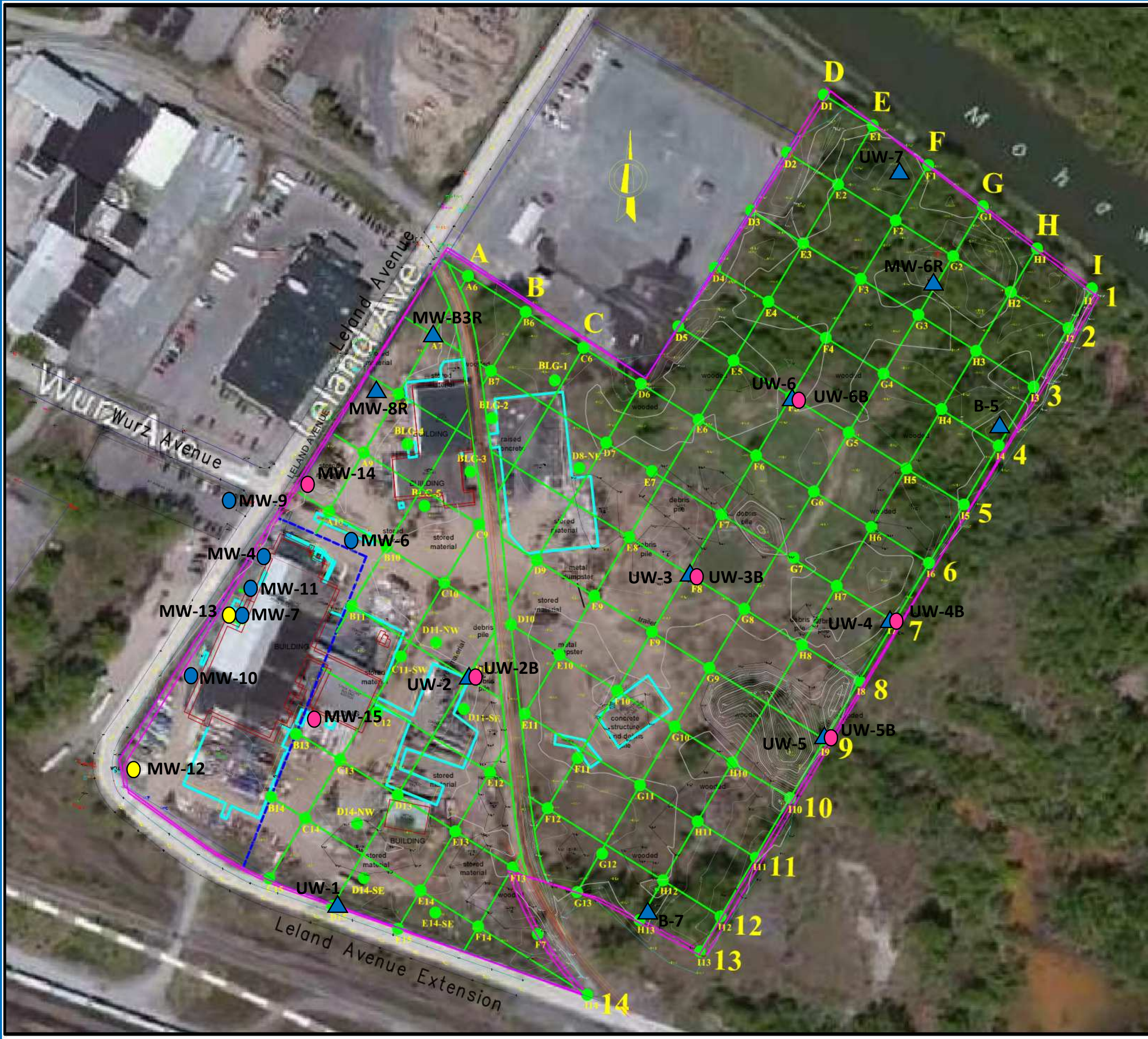
ELG UTICA ALLOYS SITE
UTICA, NY

EHS Support

August, 2011

2013 INDOOR AIR SAMPLE LOCATIONS

FIGURE 2-6



LEGEND

- Sampling Borings
- Concrete Slab
- Property Boundary
- Utica Alloys Site Boundary
- Railroad Tracks
- Existing Utica Alloys Monitoring Well
- Existing Universal Waste Monitoring Well
- Proposed Soil Sampling and Monitoring Well
- Proposed Monitoring Well (Only)

Notes:
1. Discrete groundwater samples to the top of the confining unit will be collected from each proposed monitoring well location to assist in determining final monitoring well screened interval and depth

N
approximately

New York State Plane - Central, NAD83, US Survey Feet

150 75 0 75 150 ft

Scale: One inch equals approximately One-hundred and fifty feet

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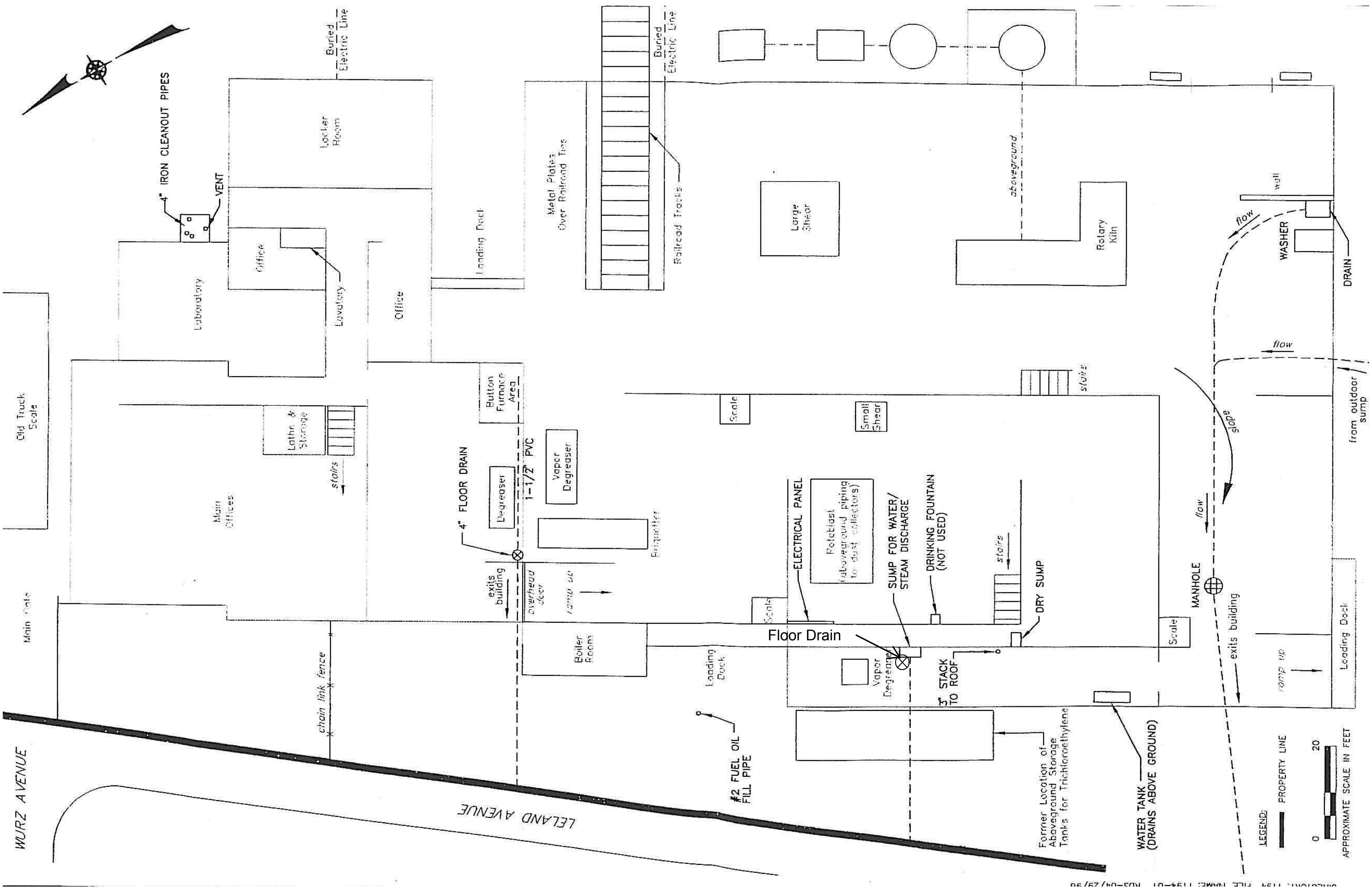
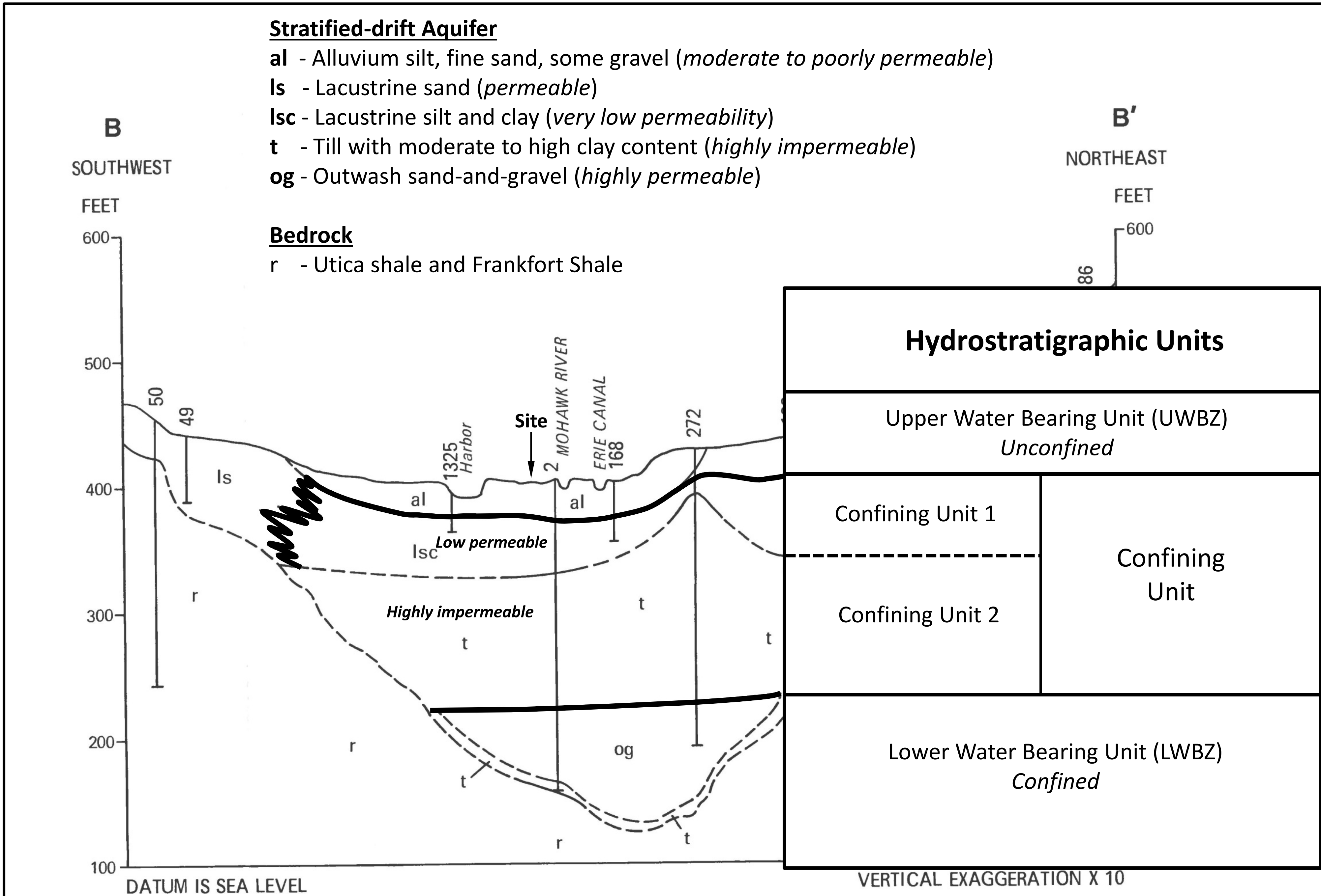
5976 Thornton Lane
Tallahassee, FL 32308
(850) 251-0582
(412) 774-2990 FAX

Figure 3-1
Proposed Monitoring Well Locations
Utica Alloys Site
Utica, New York



Source: William F. Cosulich Associates, P.C.

ELG UTICA ALLOYS SITE UTICA, NY EHS Support August, 2011	UTICA ALLOYS BUILDING DETAIL MAP	FIGURE 3-2

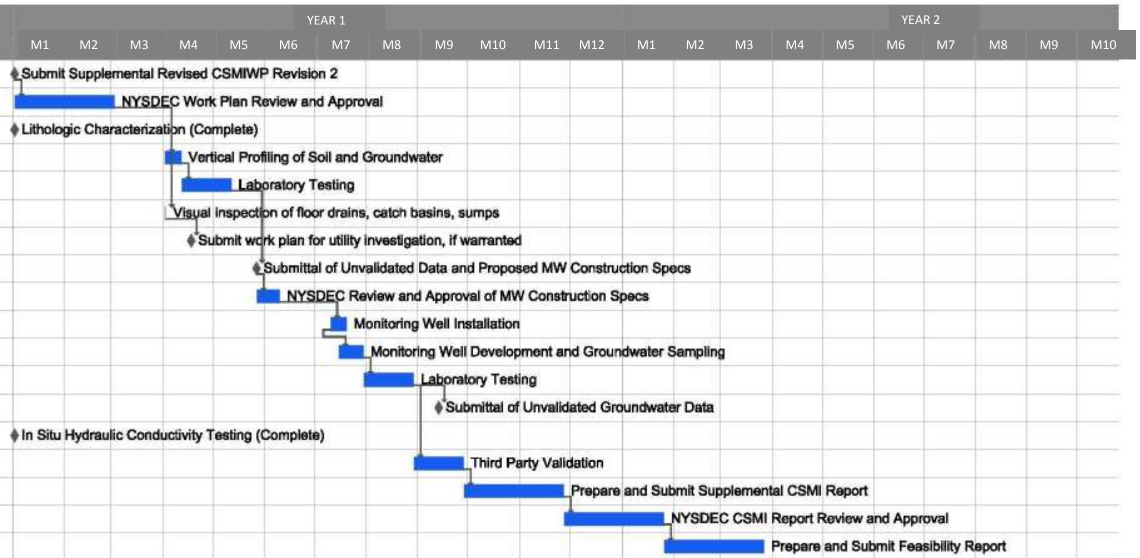


ELG UTICA ALLOYS SITE UTICA, NY EHS Support August, 2011	CONCEPTUAL HYDROGEOLOGIC FRAMEWORK	FIGURE 3-3

Figure 5-1
Proposed Project Schedule
Supplemental Conceptual Site Model Investigation

Utica Alloys Site Site #633047
Utica, New York

	Task Name	Duration	Predecessors
1	Submit Supplemental Revised CSMIWP Revision 2	0	
2	NYSDEC Work Plan Review and Approval	60	1
3	Lithologic Characterization (Complete)	0	
4	Vertical Profiling of Soil and Groundwater	10	2FS +30 days
5	Laboratory Testing	30	4
6	Visual inspection of floor drains, catch basins, sumps	1	2FS +30 days
7	Submit work plan for utility investigation, if warranted	0	6FS +14 days
8	Submittal of Unvalidated Data and Proposed MW Construction Specs	0	5FS +14 days
9	NYSDEC Review and Approval of MW Construction Specs	14	8
10	Monitoring Well Installation	10	9FS +30 days
11	Monitoring Well Development and Groundwater Sampling	15	10SS +5 days
12	Laboratory Testing	30	11
13	Submittal of Unvalidated Groundwater Data	0	12FS +14 days
14	In Situ Hydraulic Conductivity Testing (Complete)	0	
15	Third Party Validation	30	12
16	Prepare and Submit Supplemental CSMI Report	60	15
17	NYSDEC CSMI Report Review and Approval	60	16
18	Prepare and Submit Feasibility Report	60	17



Revision Date:
05/02/14

APPENDIX A

Standard Operating Procedures for the Installation of Sub-Slab Vapor Probes

Draft

Standard Operating Procedure (SOP) for Installation of Sub-Slab Vapor Probes and Sampling Using EPA Method TO-15 to Support Vapor Intrusion Investigations

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Office of Research and Development
National Risk Management Research Laboratory
Ground-Water and Ecosystem Restoration Division
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Background

Vapor intrusion is defined as vapor phase migration of volatile organic and/or inorganic compounds into occupied buildings from underlying contaminated ground water and/or soil. Until recently, this transport pathway was not routinely considered in RCRA, CERCLA, or UST investigations. Therefore the number of buildings or homes where vapor intrusion has occurred or is occurring is undefined. However, considering the vast number of current and former industrial, commercial, and waste processing facilities in the United States capable of causing volatile organic or inorganic ground-water or soil contamination, contaminant exposure via vapor intrusion could pose a significant risk to the public. Also, consideration of this transport pathway may necessitate review of remedial decisions at RCRA and CERCLA sites as well as implementation of risk-reduction technologies at Brownsfield sites where future development and subsequent potential exposure may occur. EPA's Office of Solid Waste and Emergency Response (OSWER) recently (2002) developed guidance to facilitate assessment of vapor intrusion at sites regulated by RCRA and CERCLA where halogenated organic compounds constitute the bulk of risk to human health. EPA's Office of Underground Storage Tanks (OUST) is considering modifying this guidance to include underground storage tank sites where petroleum compounds primarily determine risk and biodegradation in subsurface media may be a dominant fate process.

The OSWER guidance recommends indoor air and sub-slab gas sampling in potentially affected buildings at sites containing elevated levels of soil-gas and ground-water contamination. To support the guidance and improve site-characterization and data interpretation methods to assess vapor intrusion, EPA's Office or Research and Development is developing a protocol for sub-slab gas sampling. When used in conjunction with indoor air, outdoor air, and soil gas and/or ground-water sampling, sub-slab gas sampling can be used to differentiate indoor and outdoor sources of volatile organic and/or inorganic compounds from compounds emanating from contaminated subsurface media. This information can then be used to assess the need for sub-slab depressurization or other risk-reduction technologies to reduce present or potential future indoor air contamination due to vapor intrusion.

Sub-Slab Vapor Probe Construction and Installation

1. Prior to drilling holes in a foundation or slab, contact local utility companies to identify and mark utilities coming into the building from the outside (e.g., gas, water, sewer, refrigerant, and electrical lines). Consult with a local electrician and plumber to identify the location of utilities inside the building.

2. Prior to fabrication of sub-slab vapor probes, drill a pilot hole to assess the thickness of a slab. As illustrated in **Figure 1**, use a rotary hammer drill to create a "shallow" (e.g., 2.5 cm or 1 in) "outer" hole (e.g., 2.2 cm or 7/8 in diameter) that partially penetrates the slab. Use a small portable vacuum cleaner to remove cuttings from the hole if penetration has not occurred. Removal of cuttings in this manner in a competent slab will not compromise sampling because of lack of pneumatic communication between sub-slab material and the source of vacuum.

3. Then use the rotary hammer drill to create a smaller diameter "inner" hole (e.g., 0.8 cm or 5/16 in) through the remainder of the slab and some depth (e.g., 7 to 8 cm or 3 in) into sub-slab material. **Figure 2** illustrates the appearance of "inner" and "outer" holes. Drilling into sub-slab material will create an open cavity which will prevent obstruction of

probes during sampling by small pieces of gravel.

4. The basic design of a sub-slab vapor probe is illustrated in **Figure 3**. Once the thickness of the slab is known, tubing should be cut to ensure that probes "float" in the slab to avoid obstruction of the probe with sub-slab material. Construct sub-slab vapor probes from small diameter (e.g., 0.64 cm or 1/4 in OD x 0.46 cm or 0.18 in ID) chromatography grade 316 stainless steel tubing and stainless-steel compression to thread fittings (e.g., 0.64 cm or 1/4 in OD x 0.32 cm or 1/8 in NPT Swagelok female thread connectors) as illustrated in **Figure 4.** Use of stainless-steel materials to ensure that construction materials are not a source of VOCs.

5. Set sub-slab vapor probes in holes. As illustrated in **Figure 5**, the top of the probes should be completed flush with the slab and have recessed stainless steel or brass plugs so as not interfere with day-to-day use of buildings. Mix a quick-drying portland cement which expands upon drying (to ensure a tight seal) with water to form a slurry and inject or push into the annular space between the probe and outside of the "outer" hole. Allow cement to cure for at least 24 hours prior to sampling.

6. Install at least 3 sub-slab vapor probes in each residence. As illustrated in **Figure 6**, create a schematic identifying the location of each sub-slab probe.

Sub-Slab Sampling

1. Connect dedicated a stainless-steel fitting and tubing (e.g., 1/8 in NPT to 1/4 in tube Swagelok fitting and 30 cm or 1 ft of 1/4 in I.D. Teflon tubing to a sub-slab vapor probe as illustrated in **Figure 7**. Use of dedicated fitting and tubing will avoid cross-contamination issues.

2. Connect the Teflon tubing to 1/4" ID Masterflex (e.g., 1.4 in ID high performance Tygon LFL) tubing and a peristaltic pump and 1-L Tedlar bag as illustrated in **Figure 8**. Use of a peristaltic pump will ensure that sampled air does not circulate through a pump causing potential cross contamination and leakage.

3. Purge vapor probe by filling two dedicated 1-L Tedlar bags. The internal volume of sub-slab probes is insignificant (< 5 cm^3). A purge volume of 2 L was chosen based on the assumption of a 0.64 cm (1/4") air space beneath a slab and an affected sample diameter of 0.61 m (2 ft).

4. Use a portable landfill gas meter to analyze for O_2, CO_2 and CH_4 in Tedlar bags as illustrated in **Figure 9**.

5. Collect sub-slab vapor samples in evacuated 10% or 100% certified 1-L Summa polished canisters and dedicated particulate filters as illustrated in **Figure 10**. Check vacuum in canisters prior to sampling. Sampling will cease when canister pressure reaches atmospheric pressure. Submit canisters to a commercial laboratory for analysis by EPA Method TO-15.

6. Collect at least one duplicate sub-slab sample per building using dedicated stainless-steel tubing as illustrated in **Figure 11**.

Figure 1. Drilling through a slab

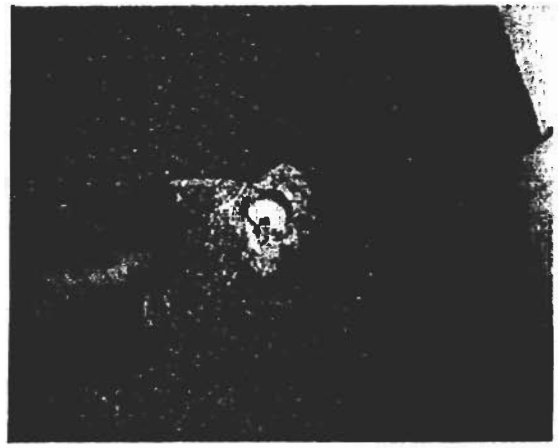

Figure 2. "inner and "outer

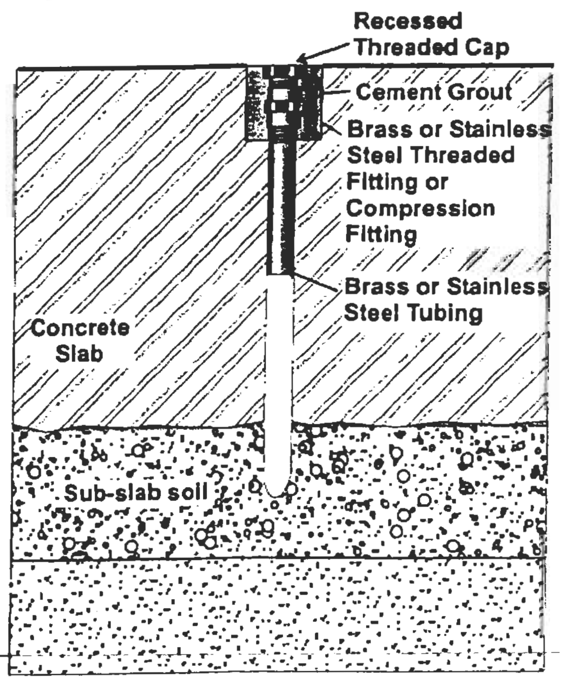

Figure 3. General schematic of sub-slab vapor probe

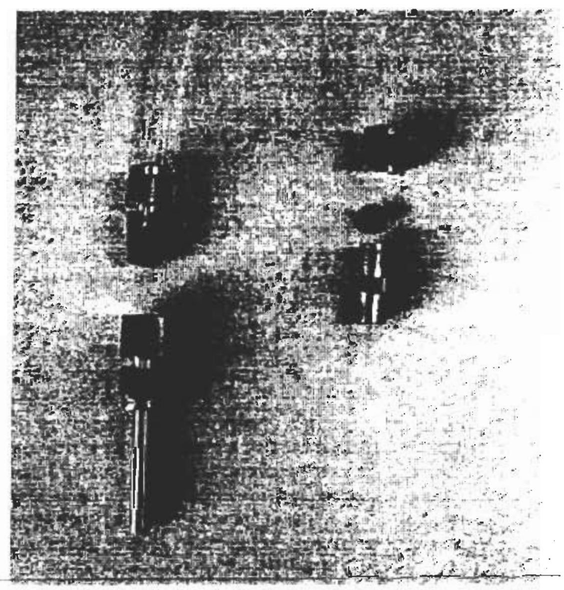

Figure 4. Stainless steel sub-slab vapor probe components

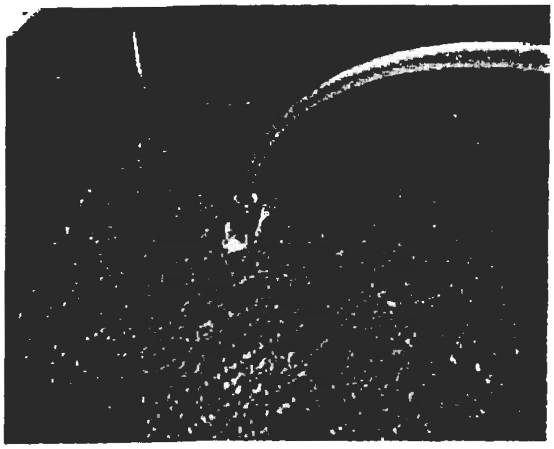

Figure 7. Compression fitting to probe

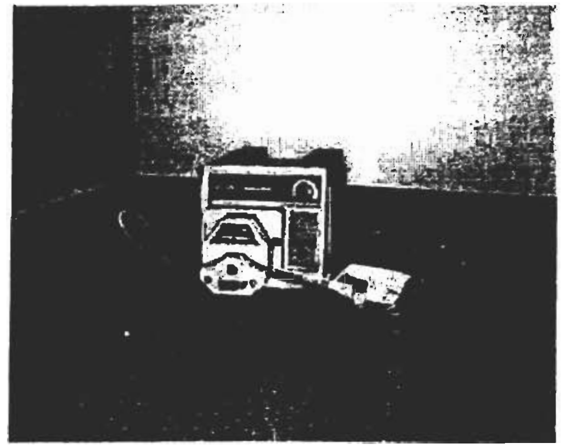

Figure 8. Purge prior to sampling

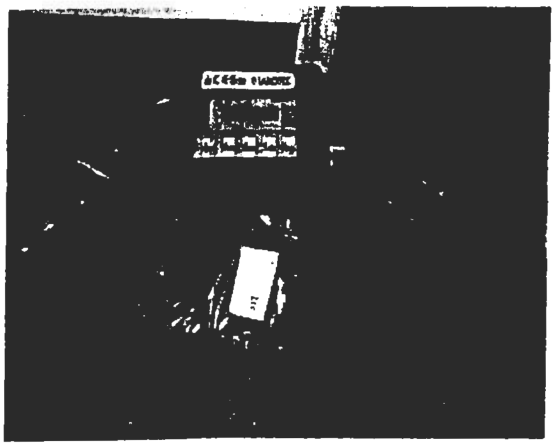

Figure 9. Analysis of O2, CO2, and CH4

Figure 10. Sampling in 1-L evacuated canister for TO-15 analysis

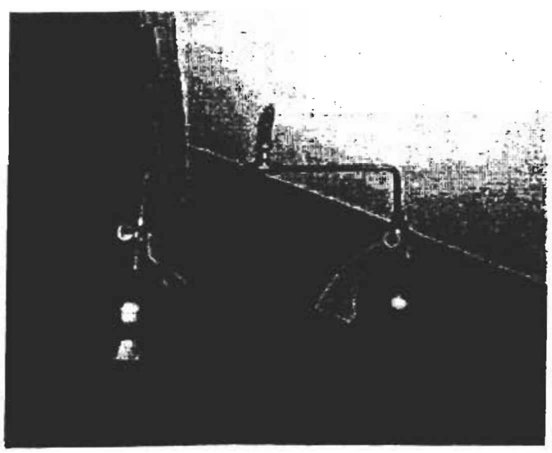

Figure 11. Collection of duplicate sample

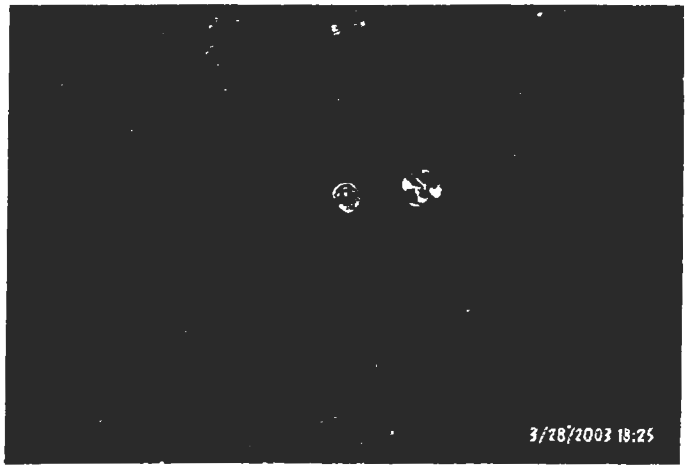

Figure 5. Competed vapor probe installation

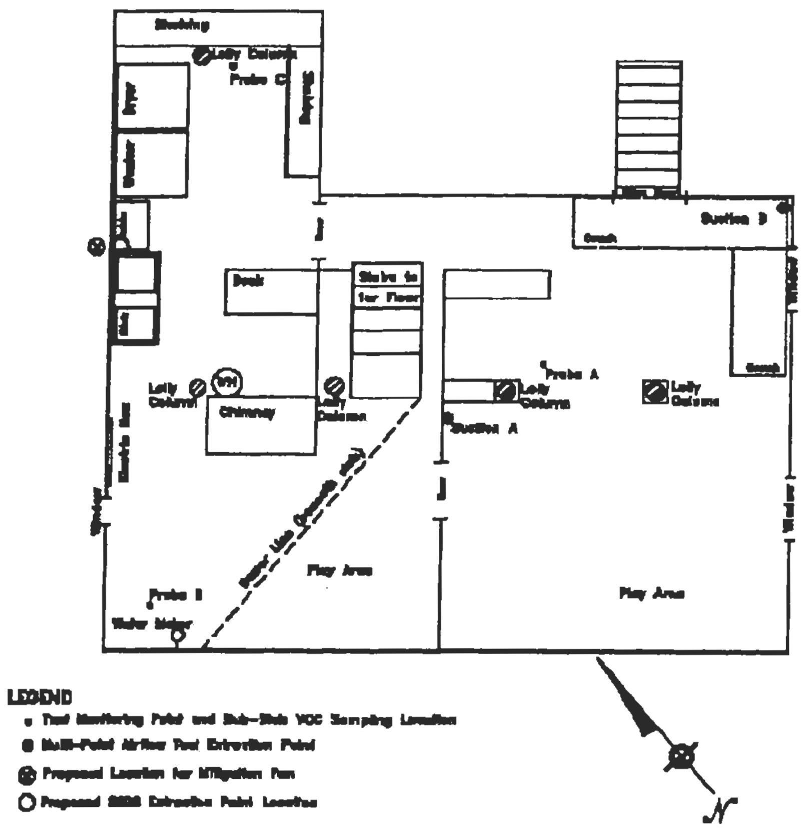

Figure 6. Schematic illustration location of vapor probes in a basement

APPENDIX B

Field Forms

O'BRIEN & GERE

Multiple Vapor Intrusion Sampling Form

Project # 13053/40931
Project Name Utica Alloy
Date 3/25/08
Collector EA/BG

Structure Location

Sample Locations
Locker Room

PID/FID meter ID 250-100960
Sample Duration (Intended) 8 hr

Indoor Air Sample		Sub-structure Sample		Circle Sample Type: Indoor Air / SS-DUP / Ambient / IA-DUP	
Sample ID	032508-IA-2	Sample ID	032508-SS-2	Sample ID	
Canister ID	9920	Canister ID	~~9920~~ 5746	Canister ID	
Flow Controller ID	None	Flow Controller ID	None	Flow Controller ID	
Date/Time start	3/25/08 757	Date/Time start	3/25/08 757	Date/Time start	
Date/Time end	3/25/08 1557	Date/Time end	1557	Date/Time end	
Gauge prior to start	0	Gauge prior to start	0	Gauge prior to start	
Start vacuum	-29.8	Start vacuum	-29.7	Start vacuum	
End vacuum	-6.4	End vacuum	-8.1	End vacuum	
Complete all that apply:		Complete all that apply:		Complete all that apply:	
Air temperature (°F)	~67°	Air temperature (°F)	~67°	Air temperature (°F)	
PID/FID reading	~720 ppb	PID/FID reading	~720 ppb in Air	PID/FID reading	
in. tubing used	—	in. tubing used	~42"	in. tubing used	
Tubing purged?	—	Tubing purged?	Yes	Tubing purged?	
For indoor location:		**For indoor location:**		**For outdoor location:**	
Noticeable odor	No	Noticeable odor	No	Noticeable odor	
Intake height above floor (in)	~36"	Floor slab depth	~8"	Distance to road (ft)	
Floor surface type	Concrete	Intake depth below floor (in)	~1"	Direction to closest building (degrees)	
Room	Locker Room	Floor surface type	Concrete	Distance to closest building (ft)	
Story/level	1st	Room	Locker Room	Intake height above ground level (in)	
		Story/level	1st		

Building Survey and Chemical Inventory Form Completed? ________
Photographs Taken? ________

Comments:

Analytical method required

Laboratory used

ATTACHMENT 2

Material Inventory

O'BRIEN & GERE

Indoor Air Quality Building Survey

Date
Collector
Affiliation

Access Contact: Bret Copple
Phone:
Best time to contact:

Address: Utica Alloys, Wurz + Leland Ave, Utica, NY

Owner [X] Renter [ ] Other [ ]

Access Agreement Signed:

Date built: ~1940's
Yrs. of residence:
No. of occupants:

Building type:
Residential [ ] Commercial [ ] School [ ] Church [ ] Industrial [X] Other:

Check all that apply:

Ranch [ ] Cape [ ] 3-Family [ ]
Raised Ranch [ ] Colonial [ ] Mobile Home [ ]
2-Family [ ] Duplex [ ] Other (specify): INDUSTRIAL
Apartments [ ] Condominium [ ]

Above grade building construction

Wood frame [ ] Brick [ ]
Poured concrete [ ] Concrete block [X]
Stone [ ] Other:

Foundation construction

Fieldstone [ ] Poured concrete [ ]
Solid top concrete block [ ] Open top concrete block [ ]
Slab on grade [X] Other:

Is the owner aware of any additions made to the original design of the structure? (please specify)
MULTIPLE ADDITIONS, HOWEVER CANNOT CONFIRM

Utilities

Sewer:
Public [X]
Private [ ]
Other:

Water:
Public [X]
Private [ ]
Other:
Spring [ ]
Well [ ]

Hot water heater type:
Gas [ ] Oil [ ]
Electric [ ] Other:

Heating, ventilation, and air conditioning systems

Primary heat type:
Hot air [X] office + production
Hot water [ ]
Steam radiator [ ]
Electric [ ]
Solar [ ]
Other:

Fuel type (heat):
Natural gas [ ]
Fuel oil [ ]
Electric [ ]
Wood [ ]
Other:

Secondary heat type:
Kerosene [ ]
Wood stove [ ]
Electric [ ]
Propane [ ]
Other:

Ventilation types:
Attic fan [ ]
Kitchen hood [ ]
Bathroom fan [ ]
Other: SOLVENT HOODS PRESENT IN LAB AREA

Ceiling fan [ ]
Air filtration [ ]
Induced fireplace [ ]
Other:

Air conditioning:
Window units [ ]
Furnance unit [X]
Electric [ ]
Other:

Basement type

None [X] Half [ ] Vented crawlspace [ ] Other ________
Full [ ] Slab on grade [ ] Unvented crawlspace [ ] ________

If slab on grade, is there a garage with occupied space above? ________

Basement depth below grade (feet)
Front None Rear None Side 1 None Side 2 None

Basement characteristics

General:
No. of rooms [ ]
Bathroom [ ]
Basement use ________

Floor:
Earth [X]
Concrete [X]
Tile [X]
Carpet [ ]
Other ________

Walls:
Finished [X]
Unfinished [X]
Painted [X]
Sheetrock [X]
Other ________

Paneling [ ]
Tile [ ]
Insulated [ ]
Uninsulated [ ]

Check if present:
Fireplace [ ]
Sump pump [ ]
Floor drains [X]
Interior walls [X]

Elevator [ ]
Ash cleanout [ ]
Water damage [ ]
Jacuzzi/hot tub [ ]

French drain [ ]
Floor cracks [ ]
Wall cracks [ ]
Other ________

Does the basement have a moisture problem? No
Does the basement ever flood? (specify frequency) No
Does the basement have a radon system installed? No
Has there been recent purchases of furnishings (carpets, rugs, linoleum, tile, or funiture) or remodeling (new construction,roofing, or floor stripping? (please specify) None Recently

---

Chemical usage, exposure and storage

Identify occupant hobbies:
Painting [ ]
Stained glass [ ]
Jewelry making [ ]

Electronics [ ]
Woodworking [ ]
Furniture refinishing [ ]

Model making [ ]
Auto repair [ ]
Other ________

Where in the structure are these hobbies conducted? ________
Does the occupants' job require chemical exposure? ________
If so, where are the occupants clothes cleaned? ________

Has the structure been fumigated in the last year? No
If so, is fumigation regularly performed? (how often) —
Are pesticides frequently applied to lawn or garden? No
If so, are they stored on the property? —

Identify chemicals stored in the basement/1st floor living space, or garage if structure is slab on grade (include fuels, solvents, cleaners, etc.) Use separate inventory sheet for each area surveyed

Brand	Product	Amount stored
Kutol	Citra-Scrub Waterless Hand cleaner	1 Gal 2100 ppb - Locker Room
CMS	Applause Industrial Hand cleaner	~1/2 Gal 650 ppb - Locker Room
Misc Oil Cans	Lubricant	~25 oz 490 ppb - Grinding Room
Quick Mont	Self-Setting Resin	30 oz 505 ppb - Grinding Room
EMD	Acetone (unopened)	2 L 1000 ppb - Grinding Room
Marvel	Mystery Oil (unopened)	(2) 32 oz 620 ppb - Grinding Room
3M High Strength 90	Spray Adhesive [Dimethyl ether, Acetone]	16 oz 600 ppb - Grinding Room
Fisher	HCL	1 Gal 650 ppb - Grinding Room
WD 40	Lubricant	11 oz 800 ppb - Grinding Room
Coral Industrial Supply	Super Butyl cleaner (corrosive)	32 Gal 780 ppb - Grinding Room
Orange Power	Citrus Non-Butyl Degreaser Sodium Metasilicate CAS# 6834-92-0 4-02-08	Approx 16 L 525 ppb - Cleaning Products
WePAK	Mild Bowl + Porcelain Cleaner	Approx 16 L 530 ppb - Cleaning Products
Dutch Boy	Acrylic Latex Enamel	1 Gal 568 ppb - Cleaning Products
Parabond	Solvent Free Acrylic Cove Base Adhesive	1 Qt 520 ppb - Cleaning Products
Sherwin Williams	Acrylic Primer	1 Gal 550 ppb - Cleaning Products
CMS	Bulls Eye Blue	4 Gal 525 ppb - Cleaning Products
Taylor ~~Hea~~	Heavy Duty Floor Wax	4 Gal 525 ppb - Cleaning Products
Raid	Flying Insect	18 oz 530 ppb - Cleaning Products
Rust oleum	Hammered	2 18 oz 530 ppb - Cleaning Products
Pledge	Natural Beauty	2 18 oz 525 ppb - Cleaning Products
Techtride NPD-DG	Degreaser	Many 55 Gal Drums - Production Area, Button Room

Comments

Is there any other information about the structural features of this building, the habits of its occupants or potential sources for chemical contaminents to the indoor air that may be of importance in facilitating the evaluation of the indoor air quality of the building?

Removed TCE containing products ~2003. Products used today do not contain TCE

Wet part of lab not in use.

Cleaning activities taking place in office area during sampling around 1000 AM

Occasional grinding activities taking place in grinding room (~5 min ea ~2x an hour)

~90% of floor covered with tile. Floor condition difficult to determine

Involved in scrap processing - Reprocess + Clean

Identify chemicals stored in the basement/1st floor living space, or garage if structure is slab on grade (include fuels, solvents, cleaners, etc.) Use separate inventory sheet for each area surveyed

Brand	Product	Amount stored	
Pine-Sol	Cleaner	1.1 GAL	540ppb – cleaning products
Various Misc Cleaners	Pre-mixed in empty containers	Various	530 ppb - cleaning products
Windex	Window cleaner	5 GAL	525 ppb - cleaning products
Rustoleum	Thinner 1,2,4 Trimethylbenzene 1,3,5 Trimethylbenzene Siloxane	1 GAL	750 ppb - cleaning products
Techhride	NPB-DG	1 GAL	740 ppb - cleaning products
Rustoleum	Unidentified Aerosols in Box	12 CANS	750ppb - cleaning products
Various Chemicals	Not in use (many years)	Various	880 ppb - LAB

Comments

Is there any other information about the structural features of this building, the habits of its occupants or potential sources for chemical contaminents to the indoor air that may be of importance in facilitating the evaluation of the indoor air quality of the building?

APPENDIX C

Community Air Monitoring Plan

APPENDIX C

Community Air Monitoring Plan

Utica Alloys Site NYS #633047

This Community Air Monitoring Plan has been designed to conform to the guidelines presented by the New York State Department of Health (NYSDOH) in Appendix 1A of the New York State Department of Conservation (NYSDEC), DER-10, Technical Guidance for Site Investigation and Remediation.

This Community Air Monitoring Plan (CAMP) has been prepared for the Utica Alloys Site located in Utica, Oneida County, New York (NYS #633047). The purpose of the CAMP is to provide a measure of protection for the downwind community from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind communities from potential airborne contaminant releases as a direct result of investigative and remedial activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shut down. Additionally, the CAMP helps to confirm that work activities did not spread contaminants off-site through the air.

Activities completed under this scope of work include soil sampling, groundwater sampling, monitoring well installation, and investigation derived waste management (i.e., handling soil and groundwater in drums). The primary constituents of potential concern (COPCs) are volatile organic compounds (VOCs) and polychlorinated biphenyls (PCBs).

Real-time air monitoring for VOCs at the perimeter of the exclusion zone will be conducted. Monitoring for odors will also be conducted and odor suppressant foams and water sprays will be readily available to address dust and odor emissions. The following procedures will be implemented during field activities as appropriate:

Continuous monitoring will be completed for all ground intrusive activities. Site specific Continuous monitoring will be conducted with a flame ionization detector (FID) or photoionization detector (PID) within the work zone to monitor change in Site conditions. Any sustained readings above background for great than 15 minutes will require a stop work action.

Continuous monitoring will include screening soil cores, workers breathing zone, establishing background concentrations and downwind perimeter of the immediate work area.

Periodic monitoring will be completed during non-intrusive activities. Site specific non-intrusive activities include groundwater gauging, groundwater sampling and surveying. Periodic monitoring will be conducted with a FID or PID within the work zone during each sampling event to monitor changes in site conditions. Any sustained reading above background for great than 15 minutes will require a stop work action. "Periodic" monitoring includes taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil monitoring during well bailing/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

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

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

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

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

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

Particulate Monitoring, Response Levels, and Actions

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

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

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

All readings must be recorded and be available for NYSDEC and NYSDOH personnel to review.