NYSDEC CONTRACT NO. D003826

REMEDIAL INVESTIGATION/FEASIBILITY STUDY WORK PLAN HIDDEN VALLEY ELECTRONICS

WORK ASSIGNMENT NO. D003826-9

Submitted to:

New York State Department of Environmental Conservation
Albany, New York

Submitted by:

Harding Lawson Associates
Portland, Maine

Project Number: 3612042017

August 26, 2004

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John Peterson Project Manager	William Weber, P.E. Program Manager

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1.0 INTRODUCTION

Harding Lawson Associates (HLA), under contract to the New York State Department of Environmental Conservation (NYSDEC), is submitting this Remedial Investigation/Feasibility Study (RI/FS) Work Plan (Work Plan) for the completion of the RI/FS of the Hidden Valley Electronics (HVE) site (Site) in East Vestal, Broome County, New York (Figure 1-1). The Site is listed as a Class 2 hazardous waste site, Site No. 7-04-029, in the Registry of Hazardous Waste Sites in New York State. This Work Plan has been prepared in accordance with the requirements of the NYSDEC as identified in Work Assignment (WA) No. D003826-9, dated April 1, 2004, under the July 1997 Superfund Standby Contract between HLA and the NYSDEC.

The RI and FS for the Site are being conducted using a phased approach in accordance with the WA, as well as with the United States Environmental Protection Agency (USEPA) RI/FS guidance (USEPA, 1988), the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4025 entitled "Guidelines for Remedial Investigations/Feasibility Studies" (NYSDEC, 1989), TAGM #4030 entitled Selection for the and the NYSDEC Site Investigation and Remediation Guidance, (NYSDEC, 2002). This approach integrates the RI and risk assessment (RA) with the screening and evaluation of alternatives performed during the FS. This Work Plan presents a technical scope of work, as well as an estimated level of effort and schedule for completing the RI and FS activities and preparing the RI and FS reports.

The objectives of the RI are to determine the nature and distribution of contamination associated with the Site, including locating potential source areas and delineating groundwater and vapor/indoor air contamination, and to assess the potential threats to human health and the environment presented by the release of hazardous substances at the Site. The objectives of the FS are to evaluate potential remedial alternatives from an engineering, environmental, public health, and economic perspective and to develop a preferred alternative based on that evaluation. The Work Plan presents the current understanding of the problems at the Site.

Task 1 of the WA is the preparation of this Work Plan. The Work Plan is organized into five sections.

- Section 1.0 is the introduction.
- Section 2.0 consists of a review of existing Site information and presents a conceptual model of the Site.
- Section 3.0 details work to be performed to complete the work assignment, including: Task 2, the RI field program and report; Task 3, the FS and FS report preparation; and Task 4, potential Interim Remedial Measures (IRM).
- Section 4.0 presents HLA's staffing plan and responsibilities of key staff positions.

- Section 5.0 presents project Costs, Schedules, and Assumptions.

The Work Plan is supplemented by appendices bound to the end of the document, including:

- Appendix A–The site specific Quality Assurance Project Plan (QAPjP);
- Appendix B–The site specific Health and Safety Plan (HASP);
- Appendix C–Community Participation Plan (CPP);
- Appendix D–Schedule; and
- Appendix E-Cost Tables.

2.0 SITE BACKGROUND AND PHYSICAL SETTING

On May 4 and 5, 2004, HLA personnel visited the Site, reviewed available records from the NYSDEC office in Albany and Kirkwood, New York, and visited the Town of Vestal municipal offices, the Broome County Health Department, the Broome County Department of Soil Conservation, and the Broome County government offices. The information was reviewed to help prepare the scope of work for the RI/FS field investigation. The information collected, as well as information provided in the WA letter, is summarized below.

2.1 SITE LOCATION

The Site is located at 1808 Vestal Parkway East (NY Route 434), in the Town of Vestal, Broome County, New York (Figure 1-1). The Site is situated on 4.5 acres in a commercial and residential area of the Town of Vestal. The property consists of a 30,052 square foot retail building, a paved parking lot, and a new self-storage facility. The majority of the retail building is used as a fitness center, with the remainder containing a radio station, an insurance company, a bridal boutique, an eyeglass store, and a sports store. According to the Town of Vestal Water Department, the HVE facility was connected to public water in 1961 and public sewer in 1962.

The Miller Sunoco site, a NYSDEC site, borders the HVE Site to the northeast (Figure 2-1). The Miller Sunoco property is surrounded on three sides by HVE Site property, and consists of a former automobile garage and gas station situated on 0.4 acres. An automobile repair shop is located west of the Site, and a printing shop is located up-slope and east of the Site. Additional commercial properties are located north of the Site, across Vestal parkway. These include an automobile repair/tire facility(Kost Tire), a new sandwich shop, and a wood products store (Amish Woodworks). Residential homes are located north of these commercial properties, in an area referred to as Twin Orchards (Figure 1-1). In addition, residential homes are located south of the Site, up a steep grade.

2.2 SITE HISTORY

No structures were reportedly built on the Site until approximately 1957, although according to the property title, a portion of the property historically contained an easement allowing the County of Broome to perform drainage improvements and stage minor equipment on the property.

According to the Town of Vestal code enforcement officer, the permit application for the first facility building structure was approved in December of 1956. The structure, an approximately 20,000 square foot facility, was presumably constructed around 1957 for

Federal Radio, a small electronics manufacturer. Federal Radio received approval for a facility addition in December of 1967, and built an approximate 10,000 square foot addition around 1968. Federal Radio, also known as Harvey Electronics, and Federal Electronics (NYSDEC, 2004), manufactured electrical equipment at the facility until 1991, when Hidden Valley Electronics purchased their assets from Key Bank (Tripp, 2003). The solvents or processes used by Federal Radio during their approximately 30 years at the Site are not known.

Hidden Valley Electronics, Inc., another electrical components manufacturer, was incorporated in 1990 out of Johnson City, New York. With the purchase of Federal Electronics assets, HVE continued to work as a contract electrical manufacturer at the Site. Manufacturing involved mounting electrical parts on bare circuit boards and assemblies and attaching them by machine or hand soldering (Tripp, 2003). HVE reportedly used a vapor degreaser for cleaning circuit boards for one of its customers. The degreaser apparently used 1-1-1-trichloroethane (1-1-1, TCA) that was re-circulated through an above ground sump that was part of the degreaser. The sump was drained to a 55-gallon drum when the 1,1,1-TCA was contaminated with residues. HVE reported that three drums of 1,1,1-TCA were purchased, used, repackaged, and sent off-site for disposal between January and June 1993. 1,1,1-TCA was reportedly no longer used at the facility after June 1993 (Tripp, 2003). The process for cleaning electrical boards for other customers was a water-based process. HVE relocated their operation to Apalachin, New York in March of 1995.

After HVE vacated the premises, the facility building was converted to its current use as retail space, a fitness center, and a radio station. In addition, construction of a self storage center began in approximately 2003 on the south side of the site property, south of the HVE paved parking area.

2.3 PREVIOUS FIELD INVESTIGATIONS

The HVE site came to the attention of the NYSDEC during the investigation of a petroleum spill at the Miller Sunoco service station in 1994 and 1995. The Miller Sunoco spill investigation, initially conducted for the NYSDEC by Maxim Technologies, included the installation of 33 monitoring wells (MW-1 to MW-33), many of which are also downgradient of the HVE Site (Figure 2-1). In addition, four extraction wells (RW-1 to RW-4) and an air sparging and soil vapor extraction system (located around the Kost Tire building) were installed. The highest chlorinated compound concentrations detected between 1994 and 1995 were in a groundwater sample collected from RW-2 (1,1,1-TCA at 513 micrograms per liter (µg/L), and TCE at 834 µg/L). 1,1,1-TCA was detected at a concentration of 343 µg/L in a sample collected from MW-26 in August 1995. Although quarterly sampling events have been conducted at the Miller Sunoco site since 1995, fuel related compounds are the primary contaminants of concern, and only limited data is available for chlorinated compounds. This data is presented in Table 2-1. The most

recent round of sampling was conducted in May 2004. Samples were collected using disposable bailers and a three volume purge technique. Analytical results of the most recent round of sampling are presented on Figure 2-2. Concentrations of 1,1,1-TCA and TCE have decreased dramatically (approximately 50 times in certain wells) over the past ten years. 1,1,1-TCA and TCE were detected at concentrations of at 12 µg/L and 10 µg/L, respectively, in a groundwater sample collected in May 2004 from RW-2. 1,1,1-TCA was detected at a concentration of 3.6 µg/L in a groundwater sample collected in May 2004 from MW-26. A number of the sample analytical results from the May 2004 sampling program were reported with method detection limits (MDLs) higher than the NYS Class GA groundwater standards (some MDLs were as high as 50 µg/L).

Two private supply wells (Kost Tire and Amish Woodworks) were also sampled during the May 2004 sampling event. These wells are reportedly 70-80 feet deep (deeper than the existing monitoring wells). No chlorinated solvents were detected in either well.

In December 1997, O'Brien and Gere (OBG) collected 8 soil samples from the hillside south of the HVE buildings as part of a property owner requested preliminary site assessment. No volatile organic compounds (VOCs) were detected using headspace analyses conducted with a flame-ionization detector, and no samples were sent to an analytical laboratory. In May 2001, OBG collected two samples (one sludge and one water) for VOC analyses from the Sites former septic tank (the Site facility is currently connected to public water and sewer). No VOCs were detected in the septic water sample, and only acetone and methylene chloride, two common laboratory contaminants, were detected in the sludge sample.

In 2001, OBG completed 12 soil borings and installed ten groundwater monitoring wells (MW-1[OBG], and TW-1 to TW-9), shown on Figure 2-3. One soil sample was collected from each boring and one groundwater sample was collected from each monitoring well. 1,1,1-TCA and/or trichloroethene (TCE) were detected in five of the borings at low concentrations (maximum detections of 7 micrograms per kilogram (µg/Kg) and 120 µg/Kg, respectively). These detections may reflect groundwater contamination at the water table fringe, and OBG determined that detected concentrations were not high enough to indicate a source area.

Methylene chloride and acetone were also detected in many of the samples. These are common laboratory contaminants that were detected in a subset of the laboratory sample blanks. VOC detections for 1,1,1-TCA and TCE in groundwater samples collected from the monitoring wells ranged from non-detect to 470 µg/L and 780 µg/L, respectively. Other VOCs, including fuel related compounds were detected at lower concentrations. Analytical results for 1,1,1-TCA and TCE are indicated on Figure 2-3.

2.4 PHYSICAL SETTING

Topography

The Site property is located approximately 2 miles east of the center of the Town of Vestal, New York. The Site is located in the Susquehanna River Valley at approximately 858 feet above mean sea level (msl). The valley walls rise up sharply to the south of the Site, reaching approximately 1390 feet above msl in 0.6 miles.

The Susquehanna River is located at an elevation of 800 feet above msl, approximately 0.5 miles north of the Site (Figure 1-1). A relatively flat plain is located between the Site and the river.

Climate

The climate of the area is characterized by moderately warm summers and cold winters. Average monthly temperatures range from a low of 22 degrees Fahrenheit (ºF) in January, to a high of 69 ºF in July. Average annual precipitation is 38 inches, with slightly higher monthly averages during the growing season from April to November. Average annual snowfall varies from approximately 50 inches in the valley to 85 inches at higher elevations, approximately 700 feet above the valley floor. Melting springtime snow occasionally causes flooding of the Susquehanna River (National Climatic Data Center, 2003).

Surface Water Hydrology

Surface drainage from the Site generally follows topography, flowing into storm drains and into a small stream located to the east of the Site. The stream is a losing stream and flows past the Site at an elevation above the groundwater table. The stream discharges to the Susquehanna River in approximately 0.6 miles. Some surface water run-off may also flow to a small depression in the topography located across Vestal Parkway, 0.6 miles to the northwest of the Site. Treated water from the Miller Sunoco site recovery wells is also discharge to this depression.

Groundwater Hydrology

The Susquehanna River is a local groundwater discharge area. Groundwater is located approximately 10 feet below ground surface (bgs) in overburden soils. Based on historical data from the Miller Sunoco site, groundwater is interpreted to flow to the north-northwest, towards Twin Orchard, and eventually to the Susquehanna River. Groundwater potentiometric surface contours using May 2004 data are presented on Figure 2-4. Data collected by OBG indicate that groundwater contours at the Site are steep, dropping approximately 4 feet over a distance of 100 feet.

The Site is located within a primary drinking water aquifer which provides drinking water to most of the local population. The two closest public water supply wells are located along the southern shore of the Susquehanna River; one approximately two miles east of the Site, and one approximately two miles west of the Site. According to the Town of Vestal water department, both these wells are equipped with air strippers.

Geology

Soils in the vicinity of the Site are characterized as Canaseraga silt loam with an eight to 15 percent slope. The Canaseraga series consists of deep, moderately well drained and well drained, acid silty soils with a coarse silt loam/very fine sandy loam over lying a medium textured, firm, acid basal till (Soils Conservation Service, 1971).

Boring logs completed by OBG indicate that overburden at the Site varies between medium dense sand and silt and very dense sandy silt, with some thin clay and gravel deposits.

Apparent bedrock was encountered by OBG at 38 feet bgs at MW-1 (OBG) (i.e., drilling refusal). No other borings were completed to bedrock. Bedrock mapped in the Site area is part of the West Falls Group, consisting of Upper Devonian shales and siltstones (New York State Geological Survey (NYSGS), 1970). Bedrock joint planes in the Binghamton area are mapped as vertical, or nearly vertical, with the primary joint feature north-northwest, and secondary joint features north-northeast and southeast (NYSGS, 1977).

2.5 SITE WALKOVER

On May 6, 2004 HLA, the NYSDEC, and the Broome County Health Department conducted a walkover of the Site.

SITE WALKOVER ATTENDEES

NAME	TITLE	AFFILIATION/TELEPHONE
Charles Staples	RI Lead	Harding Lawson Associates 207-775-5401
David Camp	Environmental Engineer NYSDEC Project Manager	NYSDEC Division of Environmental Remediation, Albany 518-402-9768
Gary Robinson	Health Specialist	Broome County Health Department 607-778-2887

SITE WALKOVER ATTENDEES

NAME	TITLE	AFFILIATION/TELEPHONE
John Okesson	Environmental Engineer NYSDEC Project Manager-Miller Sunoco Site	NYSDEC Division of Environmental Remediation, Kirkwood 607-775-2545

The Site walkover consisted of viewing the Site to assess possible contamination sources and logistical concerns for the field program. The property manager, Brian Andrulewich, provided access to the facility and assistance in locating possible indoor air sampling locations. Interior inspection of the building revealed that all floor spaces, except closets, were covered with either linoleum tiles, or rubber mats (exercise rooms). The Site walkover did not reveal the presence of existing or accessible floor drains.

The Site walkover also consisted of viewing the existing groundwater treatment facility and visiting the Twin Orchards residential area. HLA personnel documented the walkover with photographs.

2.6 CONCEPTUAL SITE MODEL

A Site conceptual model was formed based on historical data reviewed. The conceptual model is outlined in the table below.

Media	Known of Suspected Source or Contamination	Type of Contamination (General)	Contaminants of Potential Concern	Primary or Secondary Source Release mechanism	Migration Pathways	Potential Receptors
Soil	1) Degreaser and Sump 2) Drum Storage Area (Primary Source Gone)	Solvents	TCE; 1,1,1-TCA	Leaks and or Spills.	Infiltration / percolation	Human: Direct contact if excavation occurs below HVE building.
Groundwater	Contaminated Soil (Secondary Source)	Solvents	TCE, 1,1,1-TCA; 1,1-DCA; 1,1-DCE; 1,2-DCE	Infiltration / percolation from soils.	Groundwater flow north of the Site.	Human or ecological receptors north of the site are not expected to be exposed.
Air	1) Contaminated soil or groundwater at and/or under the HVE building. 2) Contaminated groundwater downgradient from the HVE building.	Solvents	TCE, 1,1,1-TCA; 1,1-DCA; 1,1-DCE; 1,2-DCE	Contaminated groundwater or soil.	Volatilization and migration into buildings	Human: Inhalation.
Surface Water and Sediment	Erosional or discharge mechanisms and pathways are not currently expected to exist.	Not available	Not available	Contaminants in groundwater are expected to attenuate prior to any discharge point (e.g. Susquehanna River).	Not Available	Human or ecological receptors are not expected to be exposed.

Historical documentation and previously collected data do not indicate the discharge (e.g. leaks, spills) of large quantities of chlorinated solvents at the Site and no continued primary source of chlorinated solvents appears to be present at the Site (i.e. no current use of solvents, and no sign of buried wastes). Releases of chlorinated solvents (TCE, and 1,1,1-TCA) from either storage drums or small containers most likely occurred to the ground surface either in the vicinity of the former storage shed to the south of the facility, in the vicinity of the former degreaser and sump, or through floor drains, or foundation cracks within the Site building addition. See Figure 2-5 for the former building layout that shows the location of the former degreaser and sump.

Concentration of contaminants detected in groundwater during the 2001 OBG investigation indicate the presence of dense nonaqeous phase liquids (DNAPL) is not likely, however, the RI will check for the potential presence of DNAPL. Contaminated soils are most likely contributing to the contamination of groundwater through rainwater

infiltration, groundwater flow through residual contamination (most notably during high water table conditions), and/or vapor migration.

Contaminated groundwater has migrated off-site, in a north-northwest direction. Contaminant concentrations in groundwater appear to attenuate through dispersion and dilution, as well as biological degradation. Biological degradation is expected, based on 1,1,1-TCA and TCE breakdown products detected at, and downgradient of, the Site. Although solvent concentrations appear to have diminished over time, chlorinated compounds were detected in May 2004 in groundwater samples collected approximately 500 feet downgradient of the Site at concentrations slightly above state groundwater standards. Although the Vestal Water Superintendent stated that approximately 95 percent of the Twin Orchards residences are serviced by public water, a small number of private wells exist in the area (Schimer, 2004). Available data did not indicate whether the private wells were in the vicinity of the potential chlorinated solvent plume. Further interviews with the Vestal Water Department will be conducted during the RI to determine which residences within the area of potential groundwater concern in the Twin Orchards area, if any, are not connected to the public water system.

Qualitative Human Health Exposure Assessment

A Qualitative Human Health Exposure Assessment will be performed as part of the RI and is described in Section 3.3. The site conceptual model has been developed to understand the nature of the site and to develop data gathering needs to support this exposure assessment. Initial conceptual understandings of the potential human exposures are described as follows. The potential threat to public health exists through exposure to contaminated groundwater. In addition, there is a potential for exposure to contaminated indoor air, resulting from vapor migrating from contaminated soil and groundwater. The potential threat to human health through the exposure to contaminated groundwater is not anticipated since potential receptors are not believed to exist at this time; however, this will be confirmed during the RI and potential exposures to VOCs in groundwater will be evaluated. The most likely exposure point for human receptors is through indoor air contamination. There is a potential for chlorinated solvents to volatilize into soil vapor from soils at the Site, and from groundwater at and downgradient of the Site. This soil vapor has the potential to migrate into buildings at concentrations above the New York State Department of Health (NYSDOH) guidance values for indoor air.

2.7 TECHNICAL OBJECTIVES

A preliminary Site characterization based on existing data indicates that 1,1,1-TCA and TCE exist in Site groundwater at concentrations above the state standards. TCE is a listed hazardous wastes under Title 6 of New York Codes, Rules, and Regulations (6 NYCRR) Part 371 (NYS, 1999a). In addition, these contaminants have migrated off-site in groundwater at concentrations in exceedance of the state Class GA groundwater

standards as defined in 6 NYCRR Part 700-705 (NYS, 1999b). Based on existing data, the Site poses a potential significant threat to pubic health and the environment as defined in 6 NYCRR 375 (NYS, 1998). Existing data reviewed was not sufficient to fully characterize the Site and therefore an RI will be performed. To complete the RI, the following information is needed:

- The areal and vertical extent of contaminants in Site groundwater needs to be delineated. The downgradient extent of 1,1,1-TCA and TCE has been defined at concentrations slightly above, or below the NYS Class GA drinking water standards, but the depth of contamination in the overburden, (and potentially bedrock), has not been defined. Groundwater samples need to be collected from discrete depths in the overburden to give a better understanding of the vertical distribution of contaminants.

- The location of the source of groundwater contamination needs to be defined. Although contaminated soil beneath the Site building addition is suspected as the source of groundwater contamination, this has not been determined. Sampling needs to be conducted in the vicinity of the Site building to confirm the suspected source areas.

- The potential and actual threat to human health and the environment needs to be defined. Potential present and future human health exposure pathways, such as through contaminated soils, groundwater and vapor migration to indoor air need to be evaluated. This includes the collection of data to allow the completion of a qualitative risk assessment.

- Sufficient data is needed to evaluate the remedial action alternatives for the Site to mitigate the potential or actual threat to human health and the environment.

- Data needs to be gathered to determine if IRMs will be required, and what remedies are the most applicable.

The RI field program described in Section 3 is planned to obtain the data needed to gather the information listed above and to characterize the Site. This information will allow the evaluation of remedial action alternatives, as well as potential IRMs.

3.0 SCOPE OF WORK

Existing data indicates that there is a contravention of applicable standards, criteria and guidance values (SCGs) for chlorinated solvents in groundwater at the Site. The Site appears to be the source of the chlorinated solvents detected in groundwater downgradient of the Site, indicating that the solvents have migrated beyond the Site property boundaries.

Existing data reviewed during Task 1, preparation of the Work Plan, is not sufficient to evaluate the remedial alternatives for the Site. Specifically, additional data collection is necessary to determine: 1) the vertical and areal extent of contamination; 2) the source of contamination; and 3) the migration paths and actual, or potential receptors. The data collection and evaluation to satisfy these data needs will be conducted as Task 2 of the work assignment. Task 2 activities include the RI fieldwork, described below, and preparing the RI report. The objective of Task 2 activities is to gather sufficient data to determine the risk to human health and the environment, and to evaluate the remedial alternatives for the Site. The evaluation of the feasibility of the remedial alternatives will be conducted under Task 3; the preparation and distribution of the FS report. Task 4, IRMs, will be completed if mitigation is deemed necessary to address potential human exposure, and if they are requested by the NYSDEC.

3.1 TASK 1 –WORK PLAN DEVELOPMENT

Task 1 of the WA is the preparation of the Work Plan. Task one included review of existing Site data, a limited historical review, a Site visit with the NYSDEC and Broome County Health Department representatives, and a scoping session with the NYSDEC. Upon agreement of the scope of work with the NYSDEC, this Work Plan was prepared. The Work Plan was prepared in accordance with the Draft DER-10 Technical Guidance for Site Investigation and Remediation (NYSDEC, 2002). In addition, applicable or relevant and appropriate requirements (ARARS) and New York SCGs were evaluated during the development of the Work Plan. Action-specific ARARs will also be identified for the proposed alternatives and will be used to evaluate the effectiveness and administrative feasibility of each alternative. The Work Plan includes the field activities plan, the QAPjP, the HASP, the CPP, the detailed WA budget, and the RI/FS project schedule.

3.2 TASK 2 - RI

The following subsections describe the RI fieldwork. The RI fieldwork will be conducted in accordance with the specifications presented in the Quality Assurance Program Plan (QAPP) (ABB-ES, 1995) and the Site-specific QAPjP, included as Appendix A to this Site Work Plan. Quality Control (QC) and Quality Assurance (QA) procedures for sample handling and sample shipment are presented in Section 5.0 of the QAPP. QA/QC sample frequencies are presented in the Site-specific QAPjP. Health and Safety procedures for

on-site activities are presented in the Program HASP (ABB-ES, 1994) and the Site-specific HASP, included as Appendix B to this Site Work Plan. Off-site laboratory analyses will be performed by Buck Environmental Laboratories, Inc., a New York State Department of Health approved laboratory. Off-site laboratory analysis will comply with the NYSDEC Analytical Services Protocols (ASP) (NYSDEC, 1995).

The RI fieldwork will be conducted in two phases. The data reviewed from the first phase will be used to refine the data collection needs of the second phase. Evaluations of Phase One data will be discussed with the NYSDEC prior to commencing Phase Two fieldwork. Proposed sampling techniques and rational are provided in Table 3-1. Proposed sample IDs and analyses are provided in Table 3-2.

3.2.1 General Field Activities

General field activities, including mobilization, health and safety, and decontamination, are described in the following subsections. Upon approval of the Work Plan, HLA will begin procurement of subcontractors.

Mobilization. Upon receiving the NYSDEC authorization, HLA and its subcontractors will mobilize to the Site and begin the RI fieldwork. Mobilization will include obtaining utility clearances and acquisition of the following:

- Transportation to and from the Site;
- Geoprobe® and drilling equipment and field supplies;
- health and safety equipment;
- decontamination supplies and equipment; and
- sampling equipment.

A field team orientation meeting will be held on-site with HLA personnel to familiarize field workers with Site history, health and safety requirements, equipment calibration procedures, and all other investigation methods and procedures.

Health and Safety. The Site-specific HASP is provided as Appendix B to this document. Based on available Site information, HLA anticipates that the RI fieldwork will be conducted at Level D personal protection. Specific investigation activities and required level of personal protection are set forth in the Site-specific HASP (see Appendix B). Criteria for upgrading or downgrading the specified level of protection are also provided in the Site-specific HASP. Additional health and safety requirements are set forth in the Program HASP (ABB-ES, 1994). Should Site conditions pose a threat to those present on-

site, and/or should Site conditions warrant an upgrade from Level D, as defined by the HASP, work will stop and the situation will be reevaluated by the NYSDEC and HLA.

Decontamination. Sampling methods and equipment for this field program have been chosen to minimize decontamination requirements and minimize possibility of cross-contamination. Disposable sampling equipment will be used as much as practical to minimize decontamination time and water disposal. Non-disposable sampling equipment will be decontaminated before and after the collection of each sample. Decontamination methods and materials are described in detail in Subsection 4.3 of the QAPP.

Non disposable sampling equipment will be decontaminated by 1) washing the sample collection equipment with potable water and Liquinox, rinsing with potable water, rinsing with deionized water, and then allowing the equipment to air dry, or 2) steam cleaning the equipment and then allowing the equipment to air dry. Decontamination fluids will be released on-site to the ground surface in the area of decontamination, so as to allow the liquids to infiltrate into the soil and not run off-site. In the event that decontamination fluids exhibit visual or olfactory evidence of contamination, fluids will be containerized for treatment at the NYSDEC Miller Sunoco site treatment system.

Investigation Derived Wastes. The method of disposing investigation-derived wastes (IDW) generated during this RI will be based upon whether the wastes are considered hazardous or non-hazardous. The approach to field screening and handling of the IDW are described in the following paragraphs.

United States Department of Transportation (USDOT)-approved 55-gallon containers filled during the field investigation will be staged on-site in an area designated by the NYSDEC. Transport and disposal of these containers will be arranged by HLA on behalf of NYSDEC. Containers will be labeled as described in the Site-specific QAPjP (see Appendix A).

Disposable Equipment. Used disposable equipment will be double-bagged in polyethylene trash bags and sealed with twist ties. HLA personnel will measure the headspace in the closed bags with a photoionization detector (PID) at least one hour after sealing the bags. If the headspace reading is greater than 5 parts per million (ppm), the tubing will be decontaminated by flushing with potable water and re-bagged. This process will be repeated until PID readings are below 5 ppm. If the headspace is below 5 ppm, the disposable equipment will be disposed of as non-hazardous refuse in a local receptacle.

Personal Protective Equipment. Used protective clothing will be double-bagged in polyethylene trash bags and sealed with twist ties. The bags will be disposed of as non-hazardous refuse in a local trash receptacle.

Well Purge Water. Purge water will be will be released on-site to the ground surface in the area of well, so as to allow the liquids to infiltrate into the soil and not

run off-site. In the event that purge water exhibits visual or olfactory evidence of contamination, fluids will be containerized for treatment at the NYSDEC Miller Sunoco site treatment system.

Drill Cuttings. Direct push and drilling soil cuttings will be screened for VOCs with a PID. Soils with visual evidence of contamination, or with sustained PID readings greater than 5 ppm will be containerized for off-site disposal in USDOT-approved 55-gallon drums. Soils with sustained PID readings of less than or equal to 5 ppm will be considered non-contaminated and will be used as backfill for the borings at the approximate interval from which they were extracted. Remaining uncontaminated soils will be spread evenly on the ground surface in unpaved areas of the Site.

3.2.2 Phase One

Phase one of the field program includes a detailed evaluation of the area surrounding, under, and within the site building, as well as the area downgradient from the Site. It includes: 1) groundwater sampling of the existing monitoring wells at the Site to evaluate current site groundwater conditions; 2) soil gas sampling around the facility buildings to evaluate potential source areas; 3) sub-slab and indoor air sampling within the facility to evaluate potential human exposure, as well as potential source areas; 4) Geoprobe® soil and groundwater sampling to evaluate potential source areas and characterize the vertical distribution of contaminants in groundwater; and 5) downgradient soil gas sampling to evaluate the potential for vapor migration downgradient of the Site. Detailed description of these activities is included in the following sections, and on Table 3-1.

Historical Records Review

A limited historical records review and title search was conducted during the preparation of this work plan. HLA will collect additional information, as needed, to augment the existing data. Additional information will include locating building plans and an attempt to contact former Site employees. In addition, attempts will be made while on-site, to the extent practical, to locate floor drains and their discharge points.

Site Survey and Base Map

Prior to commencing field investigation activities, HLA's survey subcontractor will complete a survey of the Site and surrounding area and create a base map. Horizontal locations will be tied to the New York State Plane Coordinate System. The site plan will provide horizontal locations of relevant Site features, including nearby buildings (three buildings located across Vestal Parkway from Site) at a scale of 1 inch to 50 feet. Relevant features include, but are not limited to all structures, buildings (including partition walls within the HVE building), roads, fences, existing wells, underground utilities, fire plugs, and power poles. The Site map will include 2-foot topographic

contours. In addition, downgradient features, including homes and roads from the former railway line to Old Vestal Road will be mapped at a scale of 1-inch equals 100 feet (an area approximately 1500 feet by 1500 feet in size).

The survey will also include the vertical and horizontal measurements of the existing 42 HVE and Miller Sunoco site wells. Vertical elevations of the wells will be tied to msl, North American Vertical Datum (NAVD) of 1988, and measured to an accuracy of 0.01 ft. Horizontal well measurements will be to an accuracy of 0.1 ft.

The base map will be used to accurately locate all Geoprobe® sample points, monitoring wells, and known past or present tank location, and any other media sampling locations.

Monitoring Well Sampling

To characterize current Site conditions, eleven existing monitoring wells located on the Site property will be sampled in accordance with the USEPA guidance "Low Stress (low flow) Purging and Sampling Procedure for the Collection of Ground Water Samples from Monitoring Wells" (USEPA, 1996) (see Appendix A). Groundwater parameters including water levels, turbidity, temperature, dissolved oxygen, specific conductance, pH and redox potential will be recorded in a field log. If low flow groundwater sampling protocols cannot be obtained due to excessive drawdown of the water in the well, the well will be drawn down as much as possible using the pump, and the well will be sampled upon recovery.

One sample will be collected from each well and analyzed for Target Compound List (TCL) VOCs using NYSDEC ASP Method 95-4. In addition, three Site wells, one background, one adjacent to the facility, and one downgradient will be sampled for TCL metals using NYSDEC Superfund Methods, Semivolatile Organic Compounds (SVOCs) using NYSDEC ASP Method 95-2, and pesticides and polychlorinated biphenyls (PCBs) using NYSDEC ASP Method 95-3 (See Table 3-1).

On-Site Geoprobe® Soil Gas Sampling

Direct push technology will be used to collect soil gas samples from around the eastern half of the Site facility to help delineate potential source areas in the expected source area of the chlorinated solvents (Figure 3-1). Points will be placed in a "grid like" pattern. It is anticipated that up to 20 soil gas points can be collected and analyzed in a two day period. Soil gas point locations may be modified based on results of the on-site analysis to adequately define identified hot spot "areas". The need to collect "outer ring" soil gas points will be based on the results of "inner ring" samples.

To collect samples, Geoprobe® rods will be pushed to a depth of approximately 6 feet bgs (close to the water table and below the expected frost wall of the building). Upon reaching the target depth, the rods are pulled back slightly, exposing the bottom of the

open rods to the soil. A sealed tubing system is then used to collect the soil vapor sample from the desired depth. Approximately 2 liters of soil gas, plus the volume of the tubing, will be purged using a personal air monitoring pump before collecting samples in glass collection tubes. During the soil gas purge, vapors will be screened with a PID.

Soil gas samples will be analyzed on-site for with a Photovac® gas chromatograph (GC), following procedures described in the QAPjP. Two split samples will be collected in one-liter SUMMA®-type canisters, with flow valves adjusted to a flow of less than 0.1 liters/minute (i.e., approximately 10 minutes/sample). Split samples will be collected by attaching the tubing to the canister valve after collection of the on-site samples. Split samples will be sent to Buck Environmental laboratory and analyzed for VOCs by USEPA Modified Method TO-15 using Selective Ion Monitoring (SIM) Quantitation.

Geoprobe® Soil and Groundwater Sampling

Field investigation activities include the completion of Geoprobe® borings, and the collection and analysis of groundwater and soil samples. The purpose of the activities is to provide groundwater data for comparison to NYS Class GA Groundwater Quality Standards set forth under 6 NYCRR Parts 700-705 (NYS, 1999b), and to assist the NYSDEC in evaluating significant threat to public health and the environment as defined by 6 NYCRR Part 375 (NYS, 1998). Soil sample analyses will be used to assess whether hazardous waste constituents are present in Site soils, and, if possible, confirm a source of the chlorinated solvents.

Geoprobe® Sampling. HLA will use a Geoprobe® sampling device to collect groundwater and soil samples to identify potential chlorinated solvents. The Geoprobe® pushes and/or hammers rods and probe tips into the subsurface for sample collection as described in Subsection 4.6 of the QAPP. Samples will be collect over a three-day period. It is anticipated that up to 11 borings can be completed, including the collection of up to 25 groundwater samples and 4 soil samples for off-site analyses. The actual number of borings completed will depend on the location, number, and depth of samples collected from each boring.

HLA will work closely with the NYSDEC, the Site owner, the Site manager, and utility companies, as well as the town engineer, where necessary, to obtain access to the exploration locations. Approximate boring locations are shown on Figure 3-1. Locations may vary, depending on field conditions, and results of the soil gas survey. Locations were chosen to better characterize soil and groundwater in the vicinity of the Site building addition and shed, the suspected source areas, as well as characterize Site conditions to the south and west of the Site facility, where no data exists. In addition, several locations were chosen northwest of the facility to better characterize possible groundwater migration pathways and delineate the western edge of the plume.

Soil Sampling. Discrete subsurface soil samples will be collected using a three or four-foot long 1-to-2 inch diameter core sampler with an acrylic liner. Soil samples will be collected continuously from the ground surface to the top of the groundwater table. PID headspace readings will be used to screen soil samples for the presence of VOCs as each soil sample is removed from the sample collection tube. To better characterize Site soils, up to four soil borings will be selected for continuous soil sampling to refusal. Samples will be described using the Unified Soil Classification System. The sample description and classification, VOC headspace reading, and boring observations will be recorded on the Data Record as discussed in Subsection 4.6 of the QAPP. Based on the PID readings and physical evidence such as color or odor, as many as four unsaturated soil samples, will be submitted to the off-site laboratory for analyses. Samples will be submitted in cut and capped sections of the acrylic liner to minimize exposure of the soils to air. In addition, the laboratory will be required to analyze VOC samples within 48 hours of receipt.

Groundwater Sampling. Groundwater samples will be collected using a small diameter stainless steel wire wound screen that will be exposed to the aquifer, after being pushed to the desired depth interval. A peristaltic pump or check valve (depending on sample depth) will be used for the collection of discrete groundwater samples. One tubing volume of water will be purged and one set of parameters including temperature, conductivity, pH, and turbidity will be collected before sampling. VOC samples will be collected at a low purge rate (approximately 100 milliliters per minute) to minimize potential volatilization.

To assess vertical extent of contamination and to aid in determining the location of the potential well installations, groundwater samples will be collected from two locations in each boring, the water table and 15 feet into the water table (15 feet below the fist sample). Each boring will be completed to at least 15 feet into the water table, expected to be present at 10 feet bgs. In addition, rods will be driven to refusal at up to three locations to collect a deep overburden groundwater sample (anticipated to be collected at approximately 35-40 feet bgs). This will allow HLA to determine the depth of contamination within the water column in the upper overburden, and assess the potential for groundwater contamination in the deeper overburden. The actual number of samples per boring and sample collection depths will vary according to field conditions.

Sample Analysis. Geoprobe® groundwater and soil samples will be shipped to an off-site laboratory for analyses of TCL VOCs using NYSDEC ASP Method 95-4 and 95-1, respectively. Two of the soil samples will also be sampled for TCL metals using NYSDEC superfund methods, SVOCs using NYSDEC ASP Method 95-2, and pesticides and PCBs using NYSDEC ASP Method 95-3. Off-site laboratory analysis will include Category B deliverables.

Indoor Air and Sub Slab Vapor Sampling

Sub-slab vapor sampling and indoor air sampling will be conducted at the HVE Site facility to investigate the potential for vapor migration of contaminants from the groundwater and soil beneath the Site into the occupied indoor spaces. Up to six sub-slab vapor samples and six indoor air samples will be collected within the facility buildings, and one ambient air sample will be collected from outside of the building. Figure 3-2 shows the tentative sample locations. Prior to the selection of final sample locations, the layout of the heating, venting, and Air Conditioning system and the circulation of air inside of the HVE building will be determined to the extent practicable. Final locations will be reviewed and approved by the NYSDEC and the NYSDOH. Depending on when the samples are obtained, a second round of sampling may be collected during the heating season. The need to collect these samples will be determined by the NESDEC and the NYSDOH and will consider the timing of the samples (as noted above) to identify if and how potential for exposures related to soil vapor intrusion varies with seasonal fluctuations and changes in building operations.

In addition to the HVE samples, one sub-slab soil vapor sample will be collected from each of the following off-site buildings: Kost Tire, the Subway Sandwich Shop, and the Amish Woodworking building. Indoor and outdoor ambient air samples are not planned at this time since sampling is expected to take place prior to the heating season (lower potential for soil vapor intrusion). Also, given potential chemicals used in the normal business operations, determining the source of VOCs potentially detected inside the buildings may be difficult at this time.

Sample collection procedures are further described in the QAPjP. Vapor samples will be collected from below the building concrete slab. A one-inch diameter hole will be drilled with a hammer drill two inches into the building floor. The hole will be continued with a 3/8-inch drill bit, until the building slab is penetrated. The hole will be continued approximately 3-inches below the slab. A ¼-inch piece of Teflon tubing will be inserted through a 1" diameter rubber stopper, and placed into the hole, so that the bottom of the tubing is below the slab floor and the stopper rests inside the one-inch hole, forming a seal. The stopper will then be covered with bees wax to provide an impenetrable seal for the migration of indoor air into the sub-slab. One 60 cubic centimeter (cc) volume of air will be purged from the tubing with a polyethylene syringe. The syringe will be capped and the air released outside the building as to not interfere with the indoor air sample collection. A second syringe will be used to pull a 60 cc volume of air for on-site VOC analyses with the Photovac® GC. Upon completion of the collection of the on-site sample, a 6-liter SUMMA®-type canister with a 24-hour flow valve will be connected to the tubing as described in the QAPjP.

Indoor air samples will be collected in 6-liter SUMMA®-type canisters from the vicinity of the sub-slab vapor sample collection points. Samples will be collected from approximately three to five feet above the floor level. Indoor air samples will be set up with 24-hour flow valves.

Once the six sub-slab vapor sample canisters, six indoor air sample canisters, and one exterior ambient air canister have been set up with 24-hr flow valves, the valves from all containers will be opened. The time of sample collection, canister vacuum (in inches Hg), weather conditions, and barometric pressure will be recorded in the field log book.

Approximately 24 hours after sample collection, the flow valves will be shut off. The time, remaining vacuum in the canister, and barometric pressure will be noted in the field log book. The samples will be shipped to Buck Environmental Laboratories for analyses of VOCs by USEPA Method TO-15 using SIM quantitation. The modified compound list (including method detection limits) is included in Appendix A Tables.

Upon completion of the sampling, the tubing and stopper will be removed from the building floor and the holes will be sealed with a solid 1-inch stopper and covered with a fast drying hydraulic concrete (i.e. Quickcrete). On-site analyses of vapor samples will be used to add data points to the grid of soil gas samples collected with the Geoprobe® from around the Site building.

`Off-Site Geoprobe® Soil Gas Sampling

To characterize conditions downgradient of the Site, and to evaluate the potential vapor migration of contaminants from the groundwater,, three soil gas samples will be collected just north of the Vestal Parkway in the vicinity of the commercial buildings and a row of three samples will be collected near the paved foot trail/former railroad spur (Figure 3-1).

The Geoprobe® rods will be pushed to just above the groundwater table (between 10 and 18 feet bgs, depending on location). Soil gas collected just above the water table will give an indication of the possible vapor migration from potentially contaminated groundwater.

Soil gas samples will be collected from the Geoprobe® points as described in Subsection 3.1.2.2, except samples will be collected with SUMMA®-type canisters with flow valves (i.e., approximately 10 minutes per sample). Flow into the canisters will be less than 0.1 liters per minute, as requested by the NYSDOH. Samples will be sent to Buck Environmental Laboratories for VOC analysis by USEPA Modified Method TO-15 using SIM quantitation.

3.2.3 Phase Two

Upon completion of phase one, phase two will be initiated. Phase two includes: 1) the installation of up to five new monitoring wells to increase groundwater analytical data accuracy and to allow permanent groundwater monitoring points; and 2) groundwater sampling of all existing wells and new wells to evaluate groundwater conditions and provide data for evaluating the potential for natural attenuation

Groundwater Monitoring Well Installation

Further characterization of groundwater flow conditions and distribution of contamination at the Site, and northwest of the Site is required to define aquifer characteristics and potential receptors. Additional groundwater analytical data and permanent data monitoring points are required to determine the full extent of chlorinated solvent contamination in the vicinity of the Site, and to allow monitoring of that contamination.

Up to five 2-inch overburden monitoring wells (MW-101 to MW-105) are proposed. Wells will be installed in one upgradient location, one potential cross-gradient location, one potential source area location, one downgradient location, and one off-site downgradient location to quantitatively characterize groundwater quality (Figure 3-1). These proposed well locations are based on historical Site data. The exact numbers and locations of the wells may vary, based on analytical results of the Phase One sampling Program. Monitoring wells are anticipated to have 10-foot screens.

It is proposed that two of the wells be located next to existing shallow well locations (TW-5 and TW-8) to provide well pairs (one water table well [existing] and one deeper overburden well [proposed]). These will provide locations for assessing contamination in the deeper overburden aquifer and for measuring vertical gradients. Based on current site conceptual model, no bedrock wells are planned.

Each monitoring well boring will be advanced using HSA or flush joint 4-inch casing drive and wash drilling techniques. These techniques are described in Subsection 4.4.3 of the QAPP (ABB, 1994). Table 3-1 presents the rationale for the monitoring well locations. One sample will be collected from each well boring at the well screen interval and shipped to Buck Laboratories for TOC and grain size analyses by USEPA Method 415.1 and ASTM Method D422, respectively.

The monitoring wells will be constructed of 2-inch inside diameter schedule 40 polyvinyl chloride (PVC) with 10-foot well screens in accordance with Subsection 4.4.3 of the QAPP (ABB, 1994). Well screens will have 0.010-inch wide machine slots (unless geologic conditions dictate otherwise) with # 0 sand pack to 3 feet above the screen, a two foot bentonite seal above the sand pack and a bentonite grout backfill to the ground surface. The wells will be completed with a locking cap and a six inch flush mount cover.

Each of the newly installed monitoring wells will be developed using the procedures for well development presented in Subsection 4.4.3 of the QAPP (ABB, 1994). Field parameters, including pH, temperature, specific conductivity, and turbidity will be measured for each well volume removed. The wells will be developed until the turbidity of the well water discharge is less than 50 nephelometric units, or for a maximum duration of 2 hours. Wells will be allowed to equilibrate for approximately two weeks before sampling.

Upon completion of the first groundwater sampling event, hydraulic conductivity tests will be performed at each of the newly installed monitoring wells, and four of the existing monitoring wells to characterize shallow and deep aquifer characteristics. The procedures for conducting the hydraulic conductivity tests are presented in Subsection 4.8.2 of the QAPP (ABB, 1994). The hydraulic conductivity tests will consist of slug tests, using a solid mass of PVC (the slug) and a data logger. Two rising head tests will be conducted in all wells with screens that straddle the water table, and one rising and one falling head test will be conducted in wells with screens installed below the water table. Hydraulic conductivity test data will be analyzed by the methods of Hvorslev (1951) and Bouwer and Rice (1976).

Groundwater Sampling

No sooner than two weeks following the development of the newly installed monitoring wells, a round of groundwater samples will be collected for laboratory analysis. All existing and new monitoring wells, including the Miller Sunoco site wells, will be sampled using low-flow sampling procedures as described in the QAPjP, located in Appendix A. Samples will be collected from the least contaminated to the most contaminated locations as determined from the hydrogeology and known Site conditions. In addition, tap samples will be collected from both the Kost Tire private supply well and the Amish Woodworks private supply well. Field measurements for pH, temperature, specific conductivity, ORP, dissolved oxygen, and turbidity will be collected from each well during pre-sample purging.

Groundwater samples will be analyzed for VOCs by NYSDEC ASP Method 95-4. In addition, 30 of the wells will be sampled for monitoring natural attenuation (MNA) parameters. These include total organic carbon (TOC) by USEPA Method 415.1, Nitrate by NYSDEC ASP Method 352.1, Nitrite by NYSDEC ASP Method 354.1, Sulfate by NYSDEC ASP Method 375.4, Sulfide by NYSDEC ASP Method 376.2, Methane/Ethane/Ethene by ASTM Method 1945, carbon dioxide by HACH test kit method, Alkalinity by Method 310.1, chloride by Method 325.3, and iron and manganese by USEPA Method 6010B. The laboratory will provide NYSDEC Category B deliverables.

New Monitoring Well Survey

HLA's survey subcontractor will survey the new monitoring wells after completion of field activities. Monitoring well locations will be added to the existing base map (see Subsection 3.1.2.3). Vertical elevation accuracy will be 0.01 foot and horizontal accuracy will be 0.1 foot. Horizontal positions will be tied into the NYS Plane Coordinate System. Vertical elevations will be tied to mean sea level, NAVD 1988. The Site survey will be performed at Level D dermal and respiratory protection. Surveyed items will include:

- Horizontal locations of five new monitoring wells and;
- Vertical elevations of five new monitoring wells, including top of the riser, top of the protective casing, and the ground surface.

Groundwater Use Survey

During the RI investigation, the potential use of groundwater (downgradient of the HVE site) from commercial production wells or private wells will be identified. Groundwater use information will be obtained from the Vestal Water department and/or the County Health Department. If necessary, a private well survey may be conducted for residences and commercial buildings in the area of the HVE plume.

3.3 REMEDIAL INVESTIGATION REPORT

Upon completion of field investigations and receipt of analytical data, HLA will initiate the preparation of the RI Report.

The RI Report will include a summary of the Site background and history developed during Task 1, including results of investigations conducted prior to the RI. Additional background information reviewed during subsequent tasks will be included. The RI Report will summarize results of the field investigations and laboratory analytical activities performed during the field portion of Task 2. Boring logs and environmental sampling data will be included as appendices to the RI Report.

A revised contamination assessment, a revised conceptual site model, a contaminant fate and transport discussion, and the Site RA will be included as part of the single document produced with supporting appendices. The report will assess the extent of source and groundwater contamination, characterize groundwater flow pathways, discuss contaminant fate and transport, and qualitatively assess risks to human receptors. Conclusions and recommendations will be included that summarize the areas of concern, identify unacceptable exposure pathways, and recommend any future work. The RI report content will be developed once data have been reviewed and evaluated.

The information provided in the RI Report will be used to prepare and evaluate remedial alternatives for the Site during the FS.

Four copies of the Draft and six copies of the Final RI Report will be sent to the NYSDEC Project Manager, Central Office, Albany. One copy of the Draft and Final RI Report will be submitted directly to the NYSDOH. In addition, one copy of the Final RI Report will be submitted in electronic PDF format. The Draft report will be submitted for review and comment by the NYSDEC. The Final report will incorporate the NYSDEC review comments.

As discussed above, the RI report will include the following:

Data Usability Summary Report (DUSR)

The RI Report will present results of laboratory analyses for soil, groundwater, soil vapor, and indoor air samples collected during Task 2. To determine whether the laboratory data meets the project specific criteria for data quality and data use a DUSR will be prepared. The DUSR will be prepared in accordance with the "Guidance for the Development of Data Usability Reports" (NYSDEC, 1997) and included as an appendix to the RI Report.

A complete set of laboratory deliverables will be submitted to the NYSDEC as a separate attachment to the RI Report.

Contamination Assessment

Analytical results will be compared to the appropriate published SCGs, as indicated below. Reported concentrations of individual analytes indicating contravention of standards or guidelines will be noted in the report.

> **Soil Samples.** Analytical results will be compared to the Recommended Soil Cleanup Objectives in the NYSDEC TAGM No. 94-4046 (NYSDEC, 1994).
>
> **Groundwater Samples.** Analytical results will be compared to the NYS Class GA Groundwater Quality Standards from 6 NYCRR Parts 700-705 (NYS, 1999b).
>
> **Sub-Slab Vapor Samples and Indoor Air Samples.** The sub-slab vapor and indoor air sample results will be compared to appropriate guidelines and standards, including the NYSDOH guideline for TCE, and the NYSDOH and USEPA reference data for "typical" outdoor air concentrations.

Qualitative Human Health Exposure Assessment

The Human Health Evaluation (HHE) will be a characterization of the potential human exposure pathways under the current and potential future land use if no further remedial

action is taken. The HHE will also identify the exposure pathways and chemicals of greatest significance from a public health risk perspective. The information provided in the HHE will help support the development and evaluation of remedial alternatives.

The HHE will be performed in accordance with the NYSDEC technical guidance (NYSDEC, 2002). A conceptual exposure model will be developed and exposure pathway components evaluated, including: the potential contaminant source; the potential contaminant release and transport mechanisms; the potential point of exposure; the potential route of exposure; and the potential receptor population.

The conceptual exposure model will be used in conjunction with the information and data collected during the RI to identify exposure pathways that are potentially complete under the current and foreseeable future land uses.

The exposure pathways that are potentially complete will then be screened to identify the pathways and site related chemicals of greatest concern from a health risk perspective. This activity will be performed by comparing analytical data representative of the concentrations to which potential receptors could potentially be exposed to the appropriate SCGs. The results of this comparison will be used to make qualitative interpretations of the environmental media and chemicals that pose the greatest potential health risk. This information, in turn, will be used to help facilitate remedial and risk-management decisions.

3.4 INTERIM REMEDIAL MEASURES

If it is determined during the course of the remedial investigation that human health or the environment are threatened, an Interim Remedial Measure (IRM) may be conducted. The IRM will be conducted to "prevent, mitigate, or remedy environmental damage or human exposure to contaminants while remedial alternatives are being considered" (NYSDEC, 2002). Based on historic groundwater data, there is a possibility of vapor migration of contaminants into indoor air at the Site from contaminants in soil (secondary source material below the HVE building) and groundwater. If a threat to public health from vapor migration is identified during the RI, HLA will complete the necessary IRMs upon approval of the NYSDEC.

The anticipated IRM (if necessary) may utilize sub-slab depressurization for off-site buildings and the HVE building. Sub-slab depressurization systems (systems) are an example of an IRM that may be appropriate and may include venting sump(s) installed beneath the foundation connected to piping directed to the exterior of the building. Active extraction using blowers would be provided as necessary. After the installation of IRMs, selected indoor air confirmation sampling will be performed to assess the performance of the systems.

Upon receipt of indoor air sample data, HLA will review these data with NYSDEC. If a need is identified, a letter form IRM Work Plan will be prepared and submitted to NYSDEC and NYSDOH for review and approval. For the purposes of this work plan, installations of systems include 4 off-site systems and the HVE building. A budget has been established, based on these tentative locations, to provide immediate funding in the event that one or more IRMs are necessary. One to two systems are anticipated to be necessary for each off-site location and approximately three to five systems may be necessary for the HVE building. Five systems have been budgeted for the HVE building. This work plan includes seven post-system installation indoor air confirmation samples (4 off-site locations, 3 for the HVE building). HVE building confirmation sample locations will be based on anticipated "worst case" locations. HLA will provide scoping/planning and initial subcontractor coordination, subcontractor contracting should system installation become necessary, installation oversight, and post-system installation confirmation sampling.

3.5 FEASIBILITY STUDY

Upon completion of the RI Report, a FS will be completed to evaluate the most applicable remedial alternatives. Prior to proposing a remedy for the Site, Remedial Action Objectives (RAOs) will be developed. The proposed remedy for the Site will be aimed at restoring the Site to pre-release conditions, or, at a minimum, eliminating or mitigating all significant threats to public and health and the environment posed by the contaminants. Scientific and engineering principles will be applied to determine the most appropriate remedy for the Site, with the goal of protecting public health and the environment and complying with the state SCGs. The proposed remedial action will be based on the criteria outlined in 6 NYCRR 375-1.10.

For the HVE Site, the likely media to be addressed are contaminated soil (secondary source material) anticipated to be underneath the HVE building, contaminated groundwater as a result of contaminants leaching from secondary source material (soil), and contaminated air as a result of vapor migration into buildings from contaminated soil and groundwater. The contaminated air/vapor migration pathway into buildings and exposure to building occupants are likely to be addressed through IRMs discussed in Section 3.3 of this Work Plan. However, the FS will consider the air/vapor pathway to determine that the IRMs are adequate and cost effective. Based on the current conceptual model for the Site, surface water and sediment are not anticipated to be affected by Site contamination. Therefore, the FS will not plan to address surface water and sediment. DNAPL conditions will be considered during the RI Site characterization; however, DNAPL conditions are not anticipated. Therefore, the FS will not plan to address DNAPL.

The FS will develop and evaluate alternatives related to contaminated soil and groundwater. Since contaminated soil as secondary source material is anticipated to be

underneath the former HVE building, direct sampling and remediation (i.e., excavation) are not expected to be practicable. Although remediation using excavation may be evaluated, more indirect/in-situ remedial actions are likely alternatives for contaminated soil. Contaminated groundwater is relatively shallow (10 to 30 feet bgs) and anticipated to occur only in the unconsolidated overburden. After alternatives for soil and groundwater have been identified, selected alternatives will be "screened" from further consideration to retain the most favorable and technically implementable alternatives. These alternatives will undergo a detailed analysis which will result in a recommended remedy. For this FS, three alternatives (including the no-action alternative) for each of the retained media (soil and groundwater) will receive a detailed analysis.

Examples of soil alternatives might include:

1) No action
2) Soil vapor extraction (SVE)
3) Chemical Oxidation
4) Excavation

Groundwater alternatives might include:

1) No action
2) Air Sparging
3) Chemical oxidation
4) Groundwater extraction and treatment
5) Enhanced in-situ bioremediation and monitoring natural attenuation

Soil and groundwater alternatives will be combined, as appropriate, in the detailed analysis of alternatives (e.g., SVE with air sparging, SVE with groundwater extraction and treatment, etc…).

At this time, bench scale or pilot tests are not anticipated to be performed to support the detailed analysis of alternatives.

Four copies of the Draft and six copies of the Final FS Report will be sent to the NYSDEC Project Manager, Central Office, Albany. One copy of the Draft and Final FS Report will be submitted directly to the NYSDOH. In addition, one copy of the Final RI Report will be submitted in electronic PDF format. The Draft report will be submitted for review and comment by the NYSDEC. The Final report will incorporate the NYSDEC review comments.

4.0 PROJECT STAFFING PLAN

Project organization, including principal functions and responsibilities, are described below.

Program Manager – William Weber, P.E. Mr. Weber has overall responsibility for organizing and setting program operating procedures with the NYSDEC, and confirming that work assignments are implemented in accordance with contract requirements.

Project Manager – John Peterson. Mr. Peterson will be the primary contact with Mr. David Camp, P.E., the NYSDEC Project Manager. He will be responsible for establishing protocols to be used on HVE Work Assignment and confirming implementation, for maintaining quality and consistency within the HVE RI/FS reports, and for monitoring the overall Work Assignment schedule and budget.

RI Lead – Charles Staples. Mr. Staples is responsible for managing execution of the Site scope of work and for task-specific budgeting and scheduling issues. During field activities, Mr. Staples will be the liaison among field staff, subcontractors, and representatives from the NYSDEC, and county or municipal agencies. Mr. Staples will be responsible for preparation of the RI deliverables.

FS and IRM Lead – Stuart Pearson P.E.,. Mr. Pearson is responsible for managing the FS and IRM tasks. He will provide the potential remedial alternatives, recommend those alternatives that will receive a detailed evaluation, provide a detailed analysis, and recommend a preferred alternative. Mr. Pearson will also oversee the potential IRMs should indoor air contaminant concentration exceed IRM thresholds.

Human Health Exposure Assessment - Jay Peters. Mr. Peters will be responsible for the qualitative exposure assessment and characterization of the exposure setting.

Ecological Exposure Assessment – Andrea Fogg. Ms. Fogg is responsible for the qualitative exposure assessment, and the identification of potential exposure pathways and potential damage to natural resources.

Senior Project Assistant – Erva Gardner. Ms. Gardner will participate in budget tracking, management of files, data management, and report production.

Senior Technical Review – Peter Thompson, P.G. Mr. Thompson will provide technical guidance throughout the field program, data evaluation, and report preparation.

Health and Safety – Cynthia Sundquist, the Health and Safety Supervisor, is responsible for review and approval of the Site-specific HASP, and, throughout the duration of field activities, has authority to stop work should unacceptable health and safety risks occur. The on-site Health and Safety Officer will be appointed when the field investigation schedule is finalized.

5.0 PROJECT BUDGET, SCHEDULE AND ASSUMPTIONS

The proposed project schedule for the HVE Site RI/FS is provided in Figure 5-1.

HLA anticipates that field activities, and laboratory analysis will require three and-a-half months to complete. A Draft RI/FS Report will be submitted to the NYSDEC for review approximately one month following submission of laboratory data.

The proposed schedule for execution of this program depends upon scheduled NYSDEC review and comment on deliverables, and the NYSDEC confirmation of Site access approval. Cost tables are provided in Appendix E.

The project schedule and costs are dependent on the following assumptions:

- No laboratory data validation, other than the NYSDEC DUSR will be required for the project.
- The NYSDEC will acquire permission from property owners to gain access for the subsurface and interior investigations.
- HLA will arrange for transport and disposal of containerized IDW.
- Geoprobe® sampling can be accomplished at the Site and will be completed in six 10-hour days.
- No more than three off-site buildings and the HVE building are sampled for sub-slab vapor and/or indoor air.

REFERENCES

ABB Environmental Services, 1994. *Program Quality Assurance Program Plan*. Prepared for the New York State Department of Environmental Conservation, Albany, New York. June 1995.

ABB Environmental Services, 1994. *Program Health and Safety Plan, Part II, Revision 1*. Prepared for New York State Department of Environmental Conservation, Albany, New York. June 1994.

Bouwer, H. and R.C. Rice, 1976. Slug Test Method for Determining Hydraulic Conductivity of Unconfined Aquifers with Completely or Partially Penetrating Wells"; Water Resources Research; Vol. 12, No. 3; pp. 432-428.

Hvorslev, M.J., 1951. "Time Lag and Soil Permeability in Groundwater Investigations"; U.S. Army Corps of Engineers Waterway Experiments Station; Bulletin 36; Vicksburg, MS.

National Climactic Data Center (NCDC), 2003. Local Climatological Data, Annual Summary with Comparative Data, Binghamton, New York; 2003.

New York State (NYS), 1999a. *New York Codes, Rules, and Regulations, Title 6, Part 371-Identification and Listing of Hazardous Wastes*. Amended November 1999.

New York State (NYS), 1999b. *New York Codes, Rules, and Regulations, Title 6, Part 700-705 Water Quality Regulations Surface Water and Groundwater Classifications and Standards*. Amended August 1999.

New York State (NYS), 1998. *New York Codes, Rules, and Regulations, Title 6, Part 375-Inactive Hazardous Waste Disposal Sites Remedial Program.* Amended January 1998.

New York State Department of Environmental Conservation (NYSDEC), 2004. Superfund Standby Contract, Work Assignment # D003826-9, Hidden Valley Electronics, Site 37-04-029, East Vestal, Broome Co. April 1, 2004.

New York State Department of Environmental Conservation (NYSDEC), 2002. Draft DER-10, Technical Guidance for Site Investigation and Remediation. December 2002.

New York State Department of Environmental Conservation (NYSDEC), 1998. Division of Water Technical and Operational Guidance Series (TOGS)(1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. October 1998 (revised).

New York State Department of Environmental Conservation (NYSDEC), 1997. "Guidance for the Development of Data Usability Reports"; Division of Environmental Remediation; September 1997.

New York State Department of Environmental Conservation (NYSDEC), 1995. *"Analytical Services Protocols"*; 10/95 Edition; October 1995.

New York State Department of Environmental Conservation (NYSDEC), 1994. Revised Technical and Administrative Guidance Memorandum HWR 94-4046: Determination of Soil Cleanup Objectives and Cleanup Levels. January 1994.

New York State Department of Environmental Conservation (NYSDEC), 1989. Technical and Administrative Guidance Memorandum HWR 89-4025: Guidelines for Remedial Investigations / Feasibility Studies. March 1989.

New York State Geologic Survey (NYSGS), 1977. "*Generalized Map of Recorded Joint Systems in New York";* New York State Museum and Science Services; Map and Chart Series 31; March 1977.

New York State Geologic Survey (NYSGS), 1970. "*Geologic Map of New York, Finger Lakes Region";* New York State Museum and Science Services; Map and Chart Series 15; March 1970.

Schimer, Dennis, 2004. Telephone conversation with Dennis Schimer, Town of Vestal Water Department Superintendent. May 20, 2004.

Soil Conservation Service, 1969. Sheet Number 60 of Broome County Soils Survey Map; 1969.

Tripp, James, 2003. Letter from James Tripp, President of Hidden Valley Electronics, to Dolores Tounhy, attorney for the NYSDEC; Dated February 24, 2003.

United States Environmental Protection Agency (USEPA), 1996. "Low Stress (low flow) Purging and Sampling Procedure for the Collection of Ground Water Samples from Monitoring Wells"; July 30,1996.

United States Environmental Protection Agency (USEPA), 1988. "Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA" (Interim Final); EPA/540/G-89/004; October 1988.

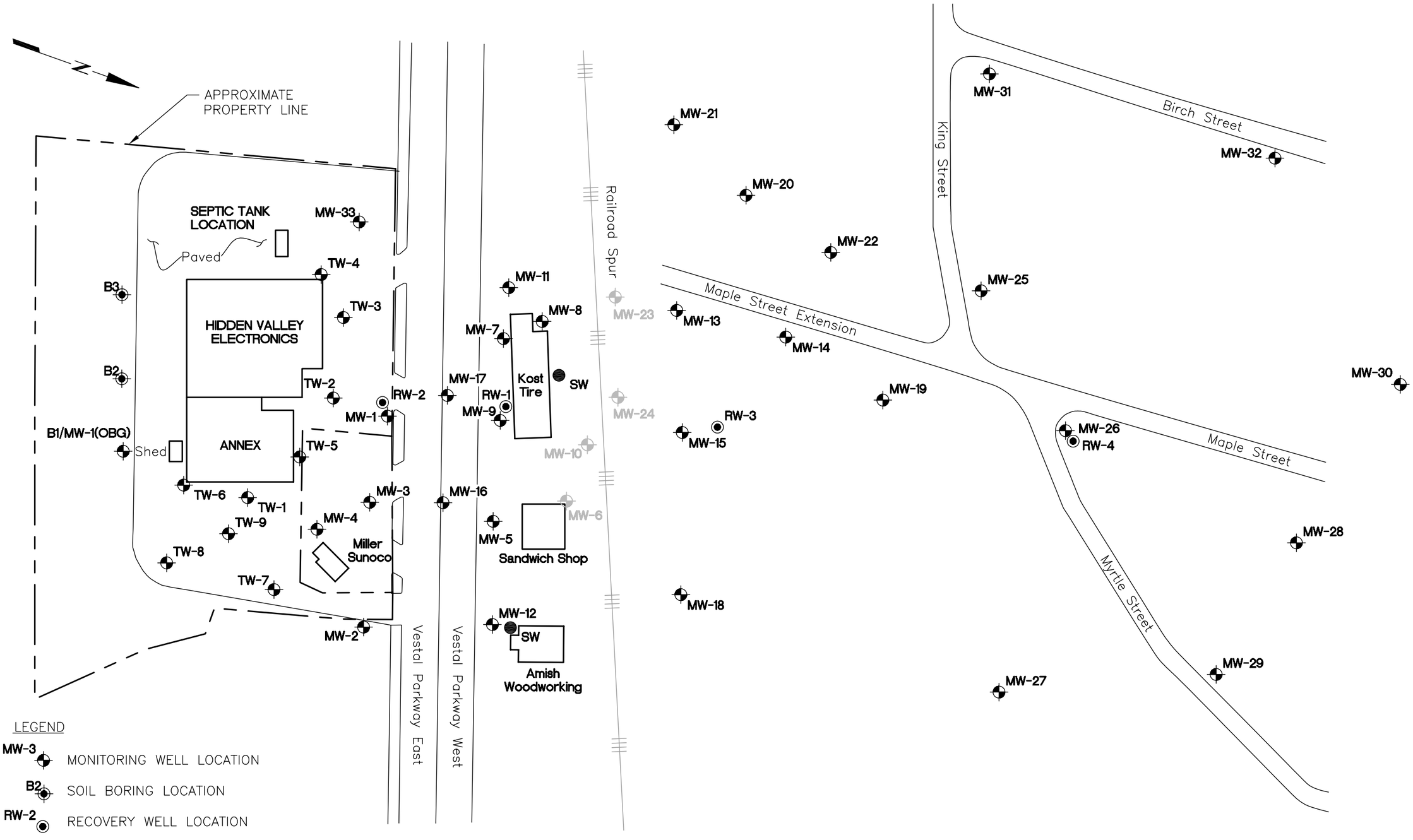
United States Geological Survey 1982. Geohydrology of the Valley-Fill Aquifer in the Endicott-Johnson City Area, Broome County, New York; 1982.

LIST OF ACRONYMS

ABB-ES	ABB Environmental Services, Inc.
ARARs	applicable or relevant and appropriate requirements
ASP	Analytical Services Protocols
bgs	below ground surface
cis-1,2-DCE	cis-1,2-dichloroethene
CPP	Community Participation Plan
1,1-DCA	1,1-dichloroethane
1,1-DCE	1,1-dichloroethene
1,2-DCE	1,2-dichloroethene
°F	Degrees Fahrenheit
DNAPL	dense nonaqeous phase liquids
DUSR	Data Usability Summary Report
FS	Feasibility Study
HASP	Health and Safety Plan
HLA	Harding Lawson Associates
HVE	Hidden Valley Electronics
IDW	investigation-derived wastes
IRM	Interim Remedial Measure
MDL	Method Detection Limit
msl	mean sea level
µg/Kg	microgram per kilogram
µg/L	microgram per liter
MW	Monitoring Well
NAVD	North American Vertical Datum
NYCRR	New York Codes, Rules, and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSGS	New York State Geological Survey
OBG	O'Brien and Gere
PCBs	polychlorinated biphenyls
PID	photoionization detector
ppm	parts per million
PVC	polyvinyl chloride

QA	Quality Assurance
QAPjP	Quality Assurance Project Plan
QAPP	Quality Assurance Program Plan
QC	Quality Control
RA	risk assessment
RAOs	Remedial Action Objectives
RI	Remedial Investigation
RW	extraction well
SARA	Superfund Amendment and Reauthorization Act
SCGs	standards, criteria and guidance values
SIM	selective ion monitoring
Site	Hidden Valley Electronics site
SVOC	semi-volatile organic compound
TAGM	Technical and Administrative Guidance Memorandum
1,1,1-TCA	1,1,1-trichloroethane
TCE	trichloroethene
TCL	Target Compound List
TOC	total organic carbon
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound
WA	Work Assignment
Work Plan	Remedial Investigation/Feasibility Study Work Plan

FIGURES



LEGEND

- MW-3 — MONITORING WELL LOCATION
- B2 — SOIL BORING LOCATION
- RW-2 — RECOVERY WELL LOCATION
- MW-23 — ABANDONED WELL
- SW — PRIVATE SUPPLY WELL

PREPARED:	CRS
CHECKED:	JWP

0 25 50 100
SCALE IN FEET
APPROXIMATE

NOTE:
BASE MAP FROM O'BRIEN & GERE, INC

FIGURE 2-1
SITE MAP
RI/FS WORK PLAN
HIDDEN VALLEY ELECTRONICS SITE
VESTAL, NEW YORK
Harding Lawson Associates

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APPROXIMATE PROPERTY LINE

Paved

SEPTIC TANK LOCATION

HIDDEN VALLEY ELECTRONICS

ANNEX

Shed

B1/MW-1(OBG)

Kost Tire

Miller Sunoco

Amish Woodworking

Vestal Parkway East

Vestal Parkway West

Railroad Spur

King Street

Maple Street Extension

Birch Street

Maple Street

Myrtle Street

MW-33	
All VOCs	<1

MW-11	
1,1-DCA	8.6
1,2-DCE	30
1,1,1-TCA	80
TCE	31

MW-8	
1,1-DCA	3
1,2-DCE (Total)	17
1,1,1-TCA	16
TCE	16
Vinyl Chloride	9.2
BTEX	268.3

MW-21	
All VOCs	<1

MW-7	
MTBE	32
1,2-DCA	89
1,1,1-TCA	66
TCE	61
BTEX	1854

MW-20	
All VOCs	<1

MW-17	
1,1-DCA	14
1,2-DCE	67
1,1,1-TCA	110
TCE	320
BTEX	954

RW-1	
MTBE	10
1,2-DCA	2.1
1,1,1-TCA	14
TCE	22
BTEX	18.5

MW-13	
MTBE	2.7
1,1,1-TCA	<2
TCE	<2

MW-22	
1,1-DCA	2.6
1,1,1-TCA	5
TCE	4.6

MW-31	
1,1-DCA	3.3
1,1,1-TCA	7.7
TCE	6.4

MW-32	
All VOCs	<1

MW-25	
1,1-DCA	3.1
1,1,1-TCA	<1
TCE	<1

RW-2	
MTBE	15
1,2-DCE (Total)	16
1,1,1-TCA	12
TCE	10
BTEX	16

MW-23	
Destroyed	

Kost	
MTBE	5.4
1,1,1-TCA	<1
TCE	<1

MW-14	
TCE	<20
Vinyl Chloride	<20
BTEX	31

MW-26	
1,1-DCA	2.4
1,1,1-TCA	3.6
TCE	<1

MW-30	
All VOCs	<1

MW-24	
Destroyed	

MW-19	
All VOCs	<50

MW-1	
1,2-DCE	1.4
1,1,1-TCA	34
TCE	77

MW-16	
MTBE	20
1,1,1-TCA	<10
TCE	<10

MW-15	
All VOCs	<20

RW-3	
MTBE	26
1,2-DCA	4.1
1,2-DCE (Total)	5.2
1,1,1-TCA	8
TCE	3.3
BTEX	35.6

RW-4	
MTBE	1.8
1,2-DCA	4.3
1,2-DCE (Total)	1.9
1,1,1-TCA	5.5
TCE	1.2

MW-10	
Destroyed	

MW-3	
1,1,1-TCA	210
TCE	<1
BTEX	122

MW-4	
1,1,1-TCA	3.6
TCE	4.8

MW-5	
MTBE	32
1,1,1-TCA	<20
TCE	<20
BTEX	1478

MW-6	
Destroyed	

MW-9	
MTBE	90
1,1,1-TCA	<50
TCE	<50
BTEX	3170

MW-18	
All VOCs	<1

MW-28	
1,1,1-TCA	2.1
TCE	5.6

MW-29	
1,1,1-TCA	1.2
TCE	<1

MW-2	
All VOCs	<1

Amish Wood	
All VOCs	<1

MW-12	
All VOCs	<1

MW-27	
All VOCs	<1

LEGEND

MW-3 MONITORING WELL LOCATION

RW-2 RECOVERY WELL LOCATION

MW-23 ABANDONED WELL

SW PRIVATE SUPPLY WELL

0 25 50 100

SCALE IN FEET APPROXIMATE

PREPARED:	CRS
CHECKED:	JWP

MW-3 — WELL ID

1,1,1-TCA 210 — VOC CONCENTRATION DETECTED IN GROUNDWATER SAMPLES COLLECTED.

TCE <1 CONCENTRATIONS IN BOLD EXCEED NEW YORK STATE CLASS GA

BTEX 122 GROUNDWATER STANDARDS.

NOTES:

1. ONLY CONCENTRATIONS OF DETECTED COMPOUNDS, AND TCE AND 1,1,1–TCA ARE SHOWN.
2. SAMPLES COLLECTED BY NATURE WAY ENVIRONMENTAL CONSULTANTS & CONTRACTORS, INC., ON 5/5/04 AND 5/6/04.
3. CONCENTRATIONS REPORTED IN ug/L.
4. BASE MAP FROM O'BRIEN & GERE, INC

FIGURE 2–2
MAY 2004 VOC CONCENTRATIONS IN GROUNDWATER
RI/FS WORK PLAN
HIDDEN VALLEY ELECTRONICS SITE
VESTAL, NEW YORK

Harding Lawson Associates

APPROXIMATE PROPERTY LINE

SEPTIC TANK LOCATION

Paved

MW-33 15/2

TW-4 13/4

TW-3 28/8

B3

B2

HIDDEN VALLEY ELECTRONICS

ANNEX

Shed

B1/MW-1(OBG) ND/ND

TW-2 130/150

RW-2

MW-1 100/150

TW-5 170/280

ND/ND

MW-3

TW-6 99/100

470/780

TW-1

TW-9 ND/ND

MW-4

TW-8 ND/ND

TW-7 ND/ND

Miller Sunoco

MW-2 ND/ND

Vestal Parkway East

Vestal Parkway West

Railroad Spur

MW-11

MW-8

MW-7

MW-17

RW-1

MW-9

Kost Tire

SW

MW-23

MW-24

MW-10

MW-16

MW-6

MW-5

Sandwich Shop

MW-12

SW

Amish Woodworking

MW-18

MW-21

MW-20

MW-22

MW-13

MW-14

MW-19

RW-3

MW-15

King Street

Maple Street Extension

MW-31

Birch Street

MW-32

MW-25

MW-30

MW-26

RW-4

Maple Street

MW-28

Myrtle Street

MW-29

MW-27

LEGEND

MW-3 MONITORING WELL LOCATION

B2 SOIL BORING LOCATION

RW-2 RECOVERY WELL LOCATION

MW-23 ABANDONED WELL

SW PRIVATE SUPPLY WELL

470/780 1,1,1-TCA/TCE CONCENTRATION (PPB)

ND/ND NOT DETECTED

0 25 50 100

SCALE IN FEET APPROXIMATE

PREPARED:	CRS
CHECKED:	JWP

NOTES:

1. SAMPLING PERFORMED BY O'BRIEN & GERE, INC., 2001.
2. BASE MAP FROM O'BRIEN & GERE, INC

FIGURE 2-3
2001 HVE SITE VOC CONCENTRATIONS IN GOUNDWATER
RI/FS WORK PLAN
HIDDEN VALLEY ELECTRONICS SITE
VESTAL, NEW YORK

Harding Lawson Associates

APPROXIMATE PROPERTY LINE

Paved

SEPTIC TANK LOCATION

HIDDEN VALLEY ELECTRONICS

ANNEX

B1/MW-1(OBG)

Shed

Miller Sunoco

Kost Tire

Sandwich Shop

Amish Woodworking

Railroad Spur

Vestal Parkway East

Vestal Parkway West

King Street

Birch Street

Maple Street Extension

Maple Street

Myrtle Street

MW-1	844.52
MW-2	846.87
MW-3	845.54
MW-4	847.58
MW-5	844.43
MW-6	
MW-7	837.20
	841.85
MW-8	833.74
MW-9	835.80
MW-10	
MW-11	834.69
MW-12	836.67
MW-13	832.06
MW-14	831.91
MW-15	832.30
MW-16	844.43
MW-17	
MW-18	832.35
MW-19	831.39
MW-20	831.24
MW-21	831.60
MW-22	830.53
MW-23	
MW-24	
MW-25	830.02
MW-26	829.15
MW-27	829.15
MW-28	825.62
MW-29	825.46
MW-30	826.91
MW-31	829.52
MW-32	828.17
MW-33	843.66
RW-1	(835.76)
RW-2	
RW-3	(831.75)
RW-4	(825.68)
SW	
TW-1	
TW-2	
TW-3	
TW-4	
TW-5	
TW-6	
TW-7	
TW-8	
TW-9	

LEGEND

- MW-3 — MONITORING WELL LOCATION
- RW-2 — RECOVERY WELL LOCATION
- MW-23 — ABANDONED WELL
- SW — PRIVATE SUPPLY WELL
- 833.74 — WATER LEVEL ELEVATION AS MEASURED ON 5/5/04 (EXCEPT MW-16, MW-17, AND MW-30 GUAGED ON 6/6/04)
- (835.76) — RECOVERY WELL GROUNDWATER ELEVATION NOT USED IN CONTOURING
- 844 — POTENTIOMETRIC SURFACE CONTOUR

0 25 50 100
SCALE IN FEET APPROXIMATE

PREPARED:	CRS
CHECKED:	JWP

NOTES:
1. SAMPLING PERFORMED BY NATURES WAY ENVIRONMENTAL CONSULTANTS AND CONTRACTORS, 2004.
2. BASE MAP FROM O'BRIEN & GERE, INC

FIGURE 2-4
2004 GROUNDWATER POTENTIOMETRIC SURFACE
RI/FS WORK PLAN
HIDDEN VALLEY ELECTRONICS SITE
VESTAL, NEW YORK
Harding Lawson Associates

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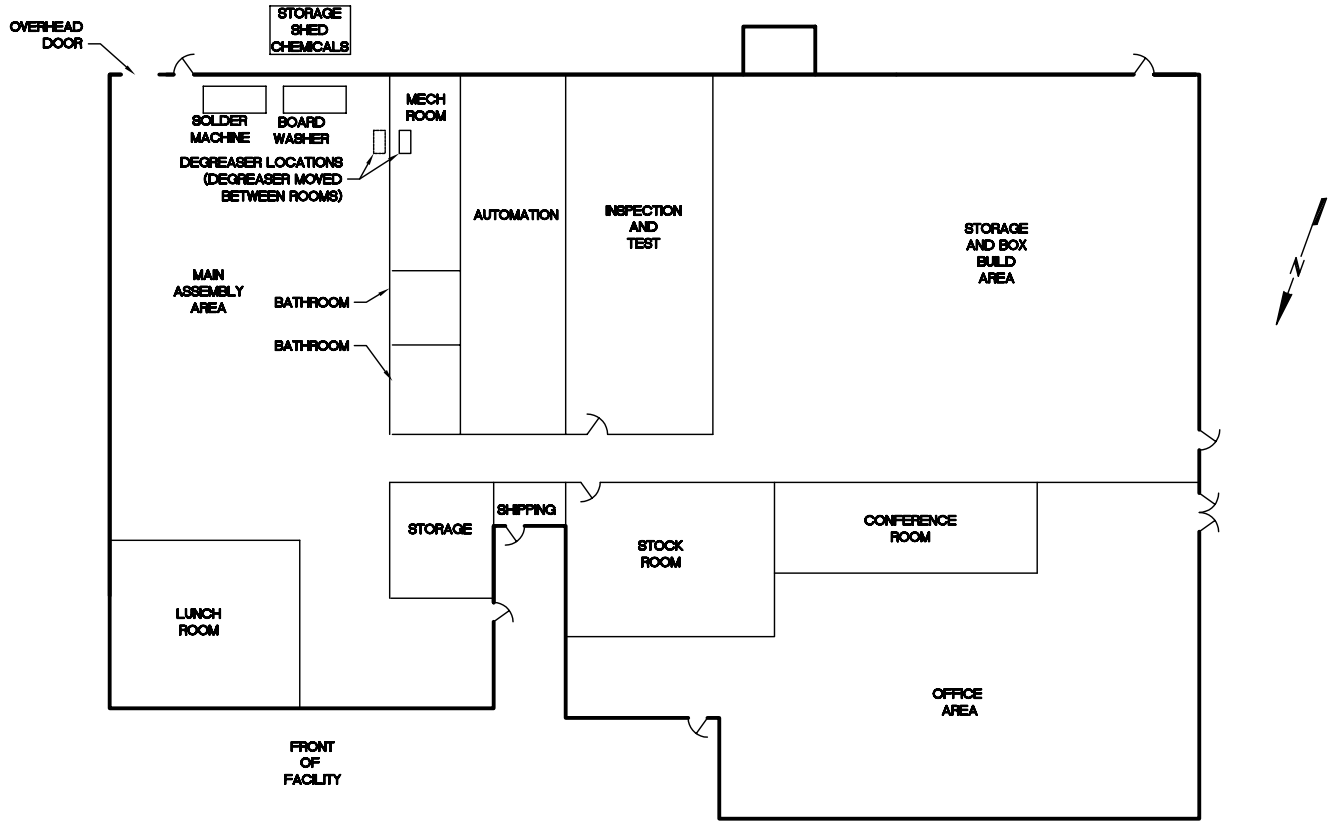

NOTE:
WALL AND DOOR LOCATIONS ARE APPROXIMATED BASED ON SKETCH BY ROBERT BEAUCHAMP, FORMER HVE QA MANAGER.

0 15 30 60

SCALE IN FEET
APPROXIMATE

PREPARED:	CRS
CHECKED:	JWP

FIGURE 2–5
HVE BUILDING FORMER LAYOUT
1808 VESTAL PARKWAY EAST
RI/FS WORK PLAN
HIDDEN VALLEY ELECTRONICS SITE
VESTAL, NEW YORK

Harding Lawson Associates

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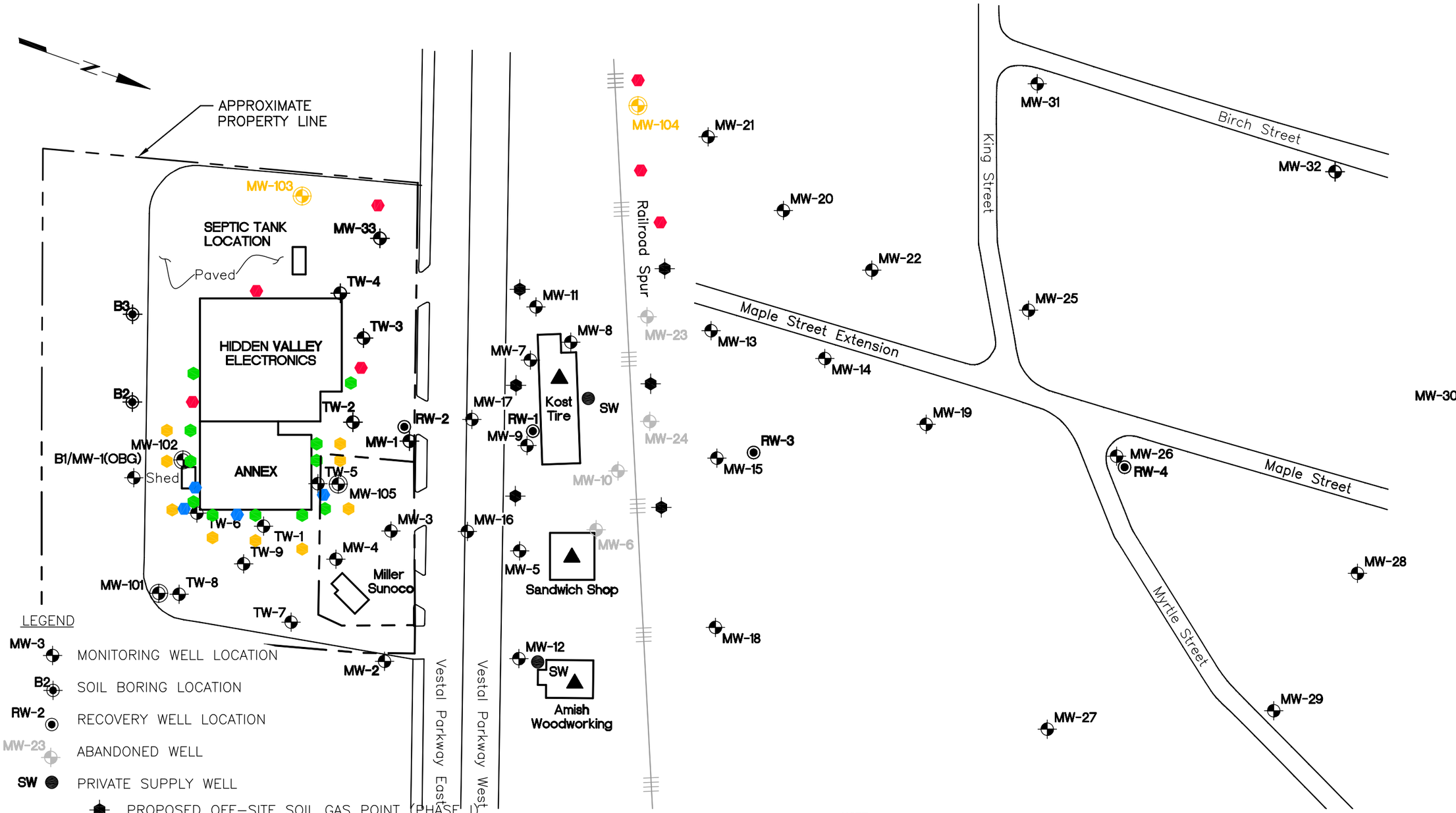

LEGEND

- MW-3 — MONITORING WELL LOCATION
- B2 — SOIL BORING LOCATION
- RW-2 — RECOVERY WELL LOCATION
- MW-23 — ABANDONED WELL
- SW — PRIVATE SUPPLY WELL
- PROPOSED OFF-SITE SOIL GAS POINT (PHASE I)
- PROPOSED OFF-SITE SUB-SLAB VAPOR SAMPLE
- PROPOSED MONITORING WELL LOCATION (PHASE II)
- OPTIONAL PROPOSED MONITORING WELL LOCATION (PHASE II) (BASED ON PHASE I RESULTS)
- PROPOSED ON-SITE SOIL GAS POINT (PHASE I)
- OPTIONAL PROPOSED ON-SITE SOIL GAS POINT (PHASE I) (BASED ON PHASE I RESULTS)
- PROPOSED GEOPROBE GROUNDWATER SAMPLE LOCATION (PHASE I)
- PROPOSED GEOPROBE SOIL & GROUNDWATER SAMPLE LOCATION (PHASE I)

0 25 50 100
SCALE IN FEET
APPROXIMATE

PREPARED:	CRS
CHECKED:	JWP

NOTE:
BASE MAP FROM O'BRIEN & GERE, INC

FIGURE 3-1
PROPOSED EXTERIOR SAMPLING LOCATIONS
RI/FS WORK PLAN
HIDDEN VALLEY ELECTRONICS SITE
VESTAL, NEW YORK
Harding Lawson Associates

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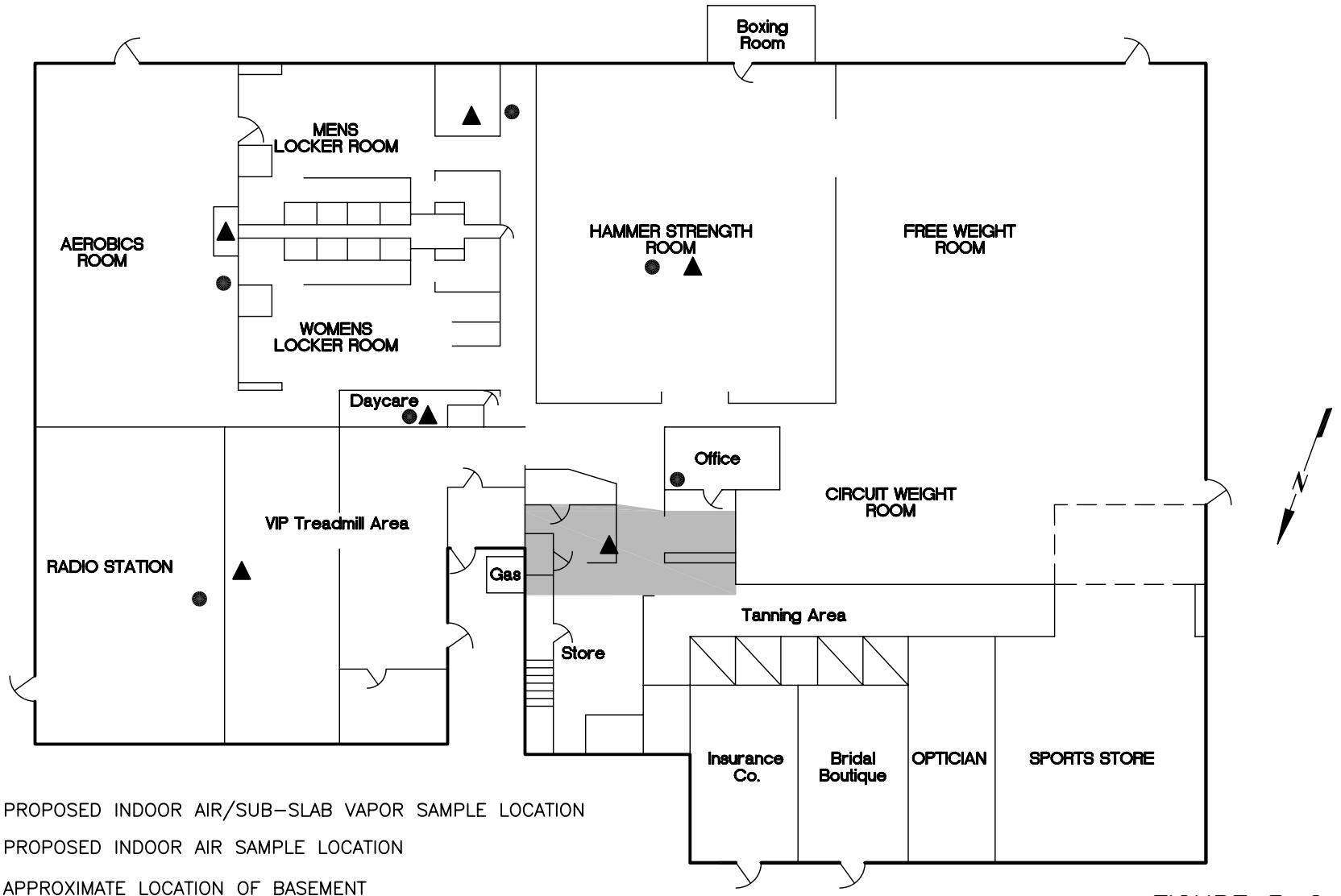

LEGEND

▲ PROPOSED INDOOR AIR/SUB–SLAB VAPOR SAMPLE LOCATION

● PROPOSED INDOOR AIR SAMPLE LOCATION

APPROXIMATE LOCATION OF BASEMENT

NOTE:
WALL AND DOOR LOCATIONS ARE APPROXIMATE.
PROPOSED SAMPLE LOCATIONS ARE TENTITIVE, FINAL LOCATIONS WILL BE DETERMINED IN PART ON EVALUATION OF HVAC SYSTEM

0 15 30 60

SCALE IN FEET
APPROXIMATE

PREPARED:	CRS
CHECKED:	JWP

FIGURE 3–2
PROPOSED HVE BUILDING INTERIOR SAMPLING LOCATIONS
1808 VESTAL PARKWAY EAST
RI/FS WORK PLAN
HIDDEN VALLEY ELECTRONICS SITE
VESTAL, NEW YORK
Harding Lawson Associates

TABLES

TABLE 2-1
HISTORIC MILLER SUNOCO SITE GROUNDWATER DATA FOR TCE AND 1,1,1-TCA
RI/FS WORK PLAN
HIDDEN VALLEY ELECTRONICS SITE
VESTAL, NEW YORK

Date	MW-1	MW-4	MW-7	MW-8	MW-11	MW-15	MW-21	MW-25	MW-26	MW-28	MW-29	MW-31	MW-33	RW-2	RW-3
7/12/1994	281	38.1	137	121				17.1	48.6						
8/18/1994*															
TCE	38.3	12													
1,1,1-TCA	30.8	20.9													
9/13/1994		110	419	201	73.4	88.1	6		144	31.8	14.6	37.5			
11/10/1994			55		34.1		1.4			8.5	1.6	16.1	1.1		
1/17/1995			546		65.9		1.5		143	21.5	11.2	28.3	1.9		
4/14/1995		42.3							190	38.4	9.8		2.2		103
8/17/1995*															
TCE		18.1			18.4					14			55.4		
1,1,1-TCA		19.1			172				343	7					
8/22/1995*															
TCE														834	260
1,1,1-TCA														513	105
5/5/2004*															
TCE	77	4.8	61	16	31	<20	<1	<1	<1	2.1	<1	6.4	<1	10	3.3
1,1,1-TCA	34	3.6	66	16	80	<20	<1	<1	3.6	5.6	1.2	7.7	<1	12	8

Notes:
Sample results from Buck Environmental Laboatories, Inc, laboratory reports, with the exception of the 5/5/2004 results from Life Science Laboratories, Inc.
* = Samples analyzed by USEPA Method 8240, USEPA Method 602, or USEPA Method 8260B. All other samples analyzed by USEPA Method 503.1.
Data not available to identify blank spaces as non-detect, or not sampled.
TCE = trichloroethene
1,1,1-TCA = 1,1,1-trichloroethane

Table Created By: CRS
Table Checked By: JWP

TABLE 2-2
EXISTING WELL DATA
RI/FS WORK PLAN
HIDDEN VALLEY ELECTRONICS SITE
VESTAL, NEW YORK

Well ID	Measured Well Depth (ft)	Screen Length	Screened Interval (ft bgs)	Casing Elevation (OBG)	Casing Elevation (NW)	DTW	Notes	Relative Difference NW-OBG*
ON-SITE WELLS								
MW-1	18.42	15	8-33	836.37	855.58	10		19.21
MW-2	17.76	15	4-19	838.02	857.22	10	Needs Cover	19.20
MW-3	17.96	15	5-20	837.12	855.95	10		18.83
MW-4	17.71	15	5-20	838.48	857.66	10		19.18
MW-33	19.16	15	5-20	834.88	855.19		Needs Cover	20.31
MW-1 (OBG)	20.05	10	10-20	837.5			Destroyed	
TW-1	19.11	10	10-20	838.21				
TW-2	19.21	10	10-20	838.12				
TW-3	19.61	10	10-20	838.06				
TW-4	19.71	10	10-20	838.08				
TW-5	19.8	10	10-20	838.46			buried?	
TW-6		10	9-19	NA				
TW-7		10	10-20	NA				
TW-8		10	10-20	NA			buried?	
TW-9		10	10-20	NA				
RW-2		NA	NA		855.19	9		
OFF-SITE WELLS								
RW-1		NA	NA		854.14	10		
RW-3		NA	NA		841.82	10		
RW-4		NA	NA		843.71	18		
MW-5		20	10-30		856.14	19		
MW-6		19	5-24		853.55	18	Destroyed	
MW-7		20	10-30		854.34	17		
MW-8		22	10-32		853.35	20		
MW-9		20	10-30		854.6	18		
MW-10		20	10-30		852.1	18	Destroyed	
MW-11		20	10-30		852.42	19		
MW-12		20	10-30		856.17	19		
MW-13		20	5-25		841.37	10		
MW-14		20	5-25		840.7	9		
MW-15		20	5-25		842.71	11		
MW-16		20	5-25		855.82	12		
MW-17		20	5-25		854.39	13		
MW-18		15	5-20		842.1	11		
MW-19		15	5-20		840.01	10		
MW-20		15	3-18		838.66	9		
MW-21		15	3-18		839.08	9		
MW-22		15	3-18		839.97	10		
MW-23		20	10-30		850.29	18	Destroyed	
MW-24		20	10-30		850.55	19	Destroyed	
MW-25		15	10-25		843.79	15		
MW-26		17?	8-25?		844.07	16		
MW-27		15	8-23		836.86	10		
MW-28		15	20-35		845.96	18		
MW-29		15	15-30		843.44	21		
MW-30		15	15-30		846.42	24		
MW-31		15	15-30		849.74	19		
MW-32		15	15-30		854.08	24		

Notes:
ft = feet
bgs = below ground surface
OBG = O'Brien and Gere
NW = Nature's Way Environmental Consultants and Contractors
* = well casing elevation difference betwenn NW and OBG measurements
NA = not available

Table Created By: CRS
Table Checked By: JWP

TABLE 3-1
PROPOSED FIELD TASKS AND METHODOLOGY
RI/FS WORK PLAN
HIDDEN VALLEY ELECTRONICS
VESTAL, NEW YORK

LOCATION ID	DESCRIPTION AND METHODOLOGY	RATIONALE	ANALYTICAL
PHASE ONE			
TW-1 to TW-9, MW-1, and MW-33	Collect one round of groundwater samples using low flow techniques.	Characterize existing groundwater conditions at site.	TCL VOCs at all locations. TAL metals, SVOCs and Pesticides/PCBs at three locations.
SV-1 to SV-6	Collect six sub-slab vapor samples with 6-liter, 24-hour flow, summa canister from within the HVE building.	Characterize soil vapor concentrations and potential for indoor air contamination.	1) VOCs by Modified TO-15 2) VOCs by Photovac GC
IA-1 to IA-6 and AA-1	Collect six indoor air samples to coincide with the six sub-slab vapor samples. Collect using 6-liter, 24-hour flow, Summa Canister. In addition, one ambient air sample will be collected.	Characterize indoor air concentrations for comparison to guidance values.	1) VOCs by Modified TO-15
SV-7 to GV-9	Collect three sub-slab vapor samples with 6-liter, 24-hour flow, summa canister from Kost Tire, Subway Sandwich, and Amish Woodwork buildings.	Characterize soil vapor concentrations and potential for indoor air contamination.	1) VOCs by Modified TO-15
GV-1 to GV-20	Collect 20 soil vapor grab samples from around the HVE facility. Samples collected through geoprobe rods set 6 ft bgs.	Characterize soil vapor concentrations and potential hot spots (i.e. source area).	1) VOCs by Photovac GC (On-site) 2) Two VOC split-samples by Modified TO-15 (Off-site)
GW/GS-1 to GW/GS-4	Collect four soil and ten groundwater samples from four geoprobe points in a potential source area.	Characterize soil above the water table and groundwater (three depths at two locations and two depths at remaining two locations) at potential source area locations near the former flammable storage shed, as well as north of the building addition.	TCL VOCs at all locations. TAL metals, SVOCs, and Pesticides/PCBs at two locations.
GW-5 to GW-8	Collect an additional eight groundwater samples from four geoprobe points (two depths each).	Characterize groundwater and delineate plume to the south and west, and north of HVE facility.	TCL VOCS
GW-9 to GW-11	Collect seven groundwater samples from three geoprobe points along former railroad track west of Kost Tire.	Characterize groundwater (three depths at one location, and two depths at remaining two locations) and delineate the downgradient western edge of the plume.	TCL VOCS

TABLE 3-1
PROPOSED FIELD TASKS AND METHODOLOGY
RI/FS WORK PLAN
HIDDEN VALLEY ELECTRONICS
VESTAL, NEW YORK

LOCATION ID	DESCRIPTION AND METHODOLOGY	RATIONALE	ANALYTICAL
GV-31 to GV-36	Collect 6 soil gas samples from locations south of Kost tire, and along the former railway spur. Samples will be collected using geoprobe soil vapor sampling techniques. Samples will be collected in Summa canisters with flow less than 0.1 liters per minute .	Characterize potential soil vapor downgradient of the HVE site and the potential for vapor intrusion to indoor air.	Modified TO-15
PHASE TWO			
MW-101 to MW-105	Install up to five new monitoring wells based on geoprobe analytical results. Two wells will be installed in deeper overburden, adjacent to existing wells, to determine vertical hydraulic gradients.	Development of additional monitoring points to bound plume, evaluate hydraulic gradients, and conduct long term monitoring of HVE Site.	Samples will be collected for TOC and grain size at the well screen depth at all locations. Samples will be collected from one background well for VOCs, SVOCs, TAL metals, and Pesticides/PCBs. Slug Tests at all new wells.
All existing wells (49): TW-1 to TW-9, MW-1 to MW-33 (minus destroyed wells MW-1 (OBG), MW-6, MW-10, MW-23, and MW-24), RW-1 to RW-4, and MW-101 to MW-105.	Collect an additional round of groundwater samples from the existing and new HVE Site monitoring wells, as well as the downgradient Miller Sunoco wells, using low flow sampling techniques.	Characterize groundwater at HVE Site and sample for natural attenuation parameters for feasibility study.	TCL VOCs at all locations. Monitoring Natural Attenuation Parameters at 30 selected wells.
Kost Tire and Amish Woodworking private wells.	Collected one sample from each of the two private wells.	Characterize groundwater at depth, downgradient of the HVE Site (wells estimated to be 70 to 80 feet deep).	TCL VOCs.
Optional Indoor Air/Sub-Slab Samples			
SV-1-2 to SV-6-2	Collect up to six sub-slab vapor samples with 6-liter, 24-hour flow, summa canister from within the HVE building.	Characterize soil vapor concentrations and potential for indoor air contamination during heating season.	1) VOCs by Modified TO-15
IA-1-2 to IA-6-2 and AA-1-2	Collect up to six indoor air samples to coincide with the six sub-slab vapor samples. Collect using 6-liter, 24-hour flow, Summa Canister. In addition, one ambient air sample will be collected.	Characterize indoor air concentrations for comparison to guidance values during heating season.	1) VOCs by Modified TO-15

TABLE 3-1
PROPOSED FIELD TASKS AND METHODOLOGY
RI/FS WORK PLAN
HIDDEN VALLEY ELECTRONICS
VESTAL, NEW YORK

LOCATION ID	DESCRIPTION AND METHODOLOGY	RATIONALE	ANALYTICAL

Notes:
TCL-VOCs = Target Compound List Volatile Organic Compounds analyzed by NYSDEC ASP Method 95-1 for soils, and 95-4 for water.
TAL metals = Target Analyte List metals analyzed by NYSDEC Superfund CLP methods.
SVOCs = Semi-Volatile Organic Compounds analyzed by NYSDEC ASP Method 95-2.
Pesticides/PCBs = Pesticides and polychlorinated biphenyls analyzed by NYSDEC ASP Method 95-3.
Modified TO-15 = Air and vapor samples analyzed for a modified VOC list by USEPA Method TO-15 using SIM quantitation.
Monitoring Natural Attenuation Parameters = TOC by USEPA Method 415.1, Nitrate by NYSDEC ASP Method 352.1, Nitrite by NYSDEC ASP Method 354.1, Sulfate by NYSDEC ASP Method 375.4, Sulfite by NYSDEC ASP Method 376.2, Methane/Ethane/Ethene by ASTM Method D-1945, carbon dioxide by HACH Method, Alkalinity by USEPA Method 310.1, and chloride by USEPA Method 325.3, and iron and manganese will be analyzed by USEPA Method 8260B.

Table Created By: CRS
Table Checked By: JWP

TABLE 3-2
PROPOSED SAMPLE IDENTIFICATION AND ANALYSES
RI/FS WORK PLAN
HIDDEN VALLEY ELECTRONICS SITE
VESTAL, NEW YORK

							Water Samples					Soil Samples							Air Samples	
Site Type	Media	Site ID	Sample ID	MS/MSD	DUP	RINS	VOCs	SVOCS	PEST/ PCBs	TAL Metals	MNA parameters	VOCs	SVOCS	PEST/ PCBs	TAL Metals	Percent Moisture	TOC	Grain Size	VOCs (TO-15)	Field Screening VOCs
PHASE ONE																				
Well Sampling																				
WELL	Groundwater	TW-1	HVMWTW101501XX	1	1		1	1	1	1										
WELL	Groundwater	TW-2	HVMWTW201501XX				1													
WELL	Groundwater	TW-3	HVMWTW301501XX				1													
WELL	Groundwater	TW-4	HVMWTW401501XX				1													
WELL	Groundwater	TW-5	HVMWTW501501XX		1		1	1	1	1										
WELL	Groundwater	TW-6	HVMWTW601501XX				1													
WELL	Groundwater	TW-7	HVMWTW701501XX				1													
WELL	Groundwater	TW-8	HVMWTW801501XX				1	1	1	1										
WELL	Groundwater	TW-9	HVMWTW901501XX				1													
WELL	Groundwater	MW-1	HVMW00101501XX				1													
WELL	Groundwater	MW-33	HVMW03301501XX				1													
HVE Facility Interior Sampling																				
Soil Gas	Vapor	SV-1	HVSV00100101XX		1														1	1
Soil Gas	Vapor	SV-2	HVSV00200101XX																1	1
Soil Gas	Vapor	SV-3	HVSV00300101XX																1	1
Soil Gas	Vapor	SV-4	HVSV00400101XX																1	1
Soil Gas	Vapor	SV-5	HVSV00500101XX																1	1
Soil Gas	Vapor	SV-6	HVSV00600101XX																1	1
Air	Indoor Air	IA-1	HVIA001XXX01XX																1	
Air	Indoor Air	IA-2	HVIA002XXX01XX																1	
Air	Indoor Air	IA-3	HVIA003XXX01XX																1	
Air	Indoor Air	IA-4	HVIA004XXX01XX		1														1	
Air	Indoor Air	IA-5	HVIA005XXX01XX																1	
Air	Indoor Air	IA-6	HVIA006XXX01XX																1	
Air	Ambient Air	AA-1	HVAA001XXX01XX																1	
HVE Site Geoprobe Soil Gas Sampling																				
Soil Gas	Vapor	GV-01	HVGV00100601XX		1														1	1
Soil Gas	Vapor	GV-02	HVGV00200601XX																	1
Soil Gas	Vapor	GV-03	HVGV00300601XX																	1
Soil Gas	Vapor	GV-04	HVGV00400601XX																	1
Soil Gas	Vapor	GV-05	HVGV00500601XX																	1
Soil Gas	Vapor	GV-06	HVGV00600601XX																	1
Soil Gas	Vapor	GV-07	HVGV00700601XX																	1
Soil Gas	Vapor	GV-08	HVGV00800601XX																	1
Soil Gas	Vapor	GV-09	HVGV00900601XX																	1
Soil Gas	Vapor	GV-10	HVGV01000601XX		1														1	1
Soil Gas	Vapor	GV-11	HVGV01100601XX																	1
Soil Gas	Vapor	GV-12	HVGV01200601XX																	1
Soil Gas	Vapor	GV-13	HVGV01300601XX																	1
Soil Gas	Vapor	GV-14	HVGV01400601XX																	1

TABLE 3-2
PROPOSED SAMPLE IDENTIFICATION AND ANALYSES
RI/FS WORK PLAN
HIDDEN VALLEY ELECTRONICS SITE
VESTAL, NEW YORK

				Water Samples								Soil Samples							Air Samples	
Site Type	**Media**	**Site ID**	**Sample ID**	**MS/MSD**	**DUP**	**RINS**	**VOCs**	**SVOCS**	**PEST/ PCBs**	**TAL Metals**	**MNA parameters**	**VOCs**	**SVOCS**	**PEST/ PCBs**	**TAL Metals**	**Percent Moisture**	**TOC**	**Grain Size**	**VOCs (TO-15)**	**Field Screening VOCs**
Soil Gas	Vapor	GV-15	HVGV01500601XX																	1
Soil Gas	Vapor	GV-16	HVGV01600601XX																	1
Soil Gas	Vapor	GV-17	HVGV01700601XX																	1
Soil Gas	Vapor	GV-18	HVGV01800601XX																	1
Soil Gas	Vapor	GV-19	HVGV01900601XX																	1
Soil Gas	Vapor	GV-20	HVGV02000601XX																	1
Geoprobe Soil and Groundwater Sapling																				
Water	Groundwater	GW-1	HVGW001___01XX	1	1		1													
Water	Groundwater	GW-1	HVGW001___01XX				1													
Water	Groundwater	GW-1	HVGW001___01XX				1													
Water	Groundwater	GW-2	HVGW002___01XX				1													
Water	Groundwater	GW-2	HVGW002___01XX				1													
Water	Groundwater	GW-2	HVGW002___01XX				1													
Water	Groundwater	GW-3	HVGW003___01XX				1													
Water	Groundwater	GW-3	HVGW003___01XX				1													
Water	Groundwater	GW-4	HVGW004___01XX				1													
Water	Groundwater	GW-4	HVGW004___01XX				1													
Water	Groundwater	GW-5	HVGW005___01XX				1													
Water	Groundwater	GW-5	HVGW005___01XX				1													
Water	Groundwater	GW-6	HVGW006___01XX				1													
Water	Groundwater	GW-6	HVGW006___01XX				1													
Water	Groundwater	GW-7	HVGW007___01XX				1													
Water	Groundwater	GW-7	HVGW007___01XX				1													
Water	Groundwater	GW-8	HVGW008___01XX				1													
Water	Groundwater	GW-8	HVGW008___01XX				1													
Water	Groundwater	GW-9	HVGW009___01XX				1													
Water	Groundwater	GW-9	HVGW009___01XX				1													
Water	Groundwater	GW-9	HVGW009___01XX				1													
Water	Groundwater	GW-10	HVGW010___01XX				1													
Water	Groundwater	GW-10	HVGW010___01XX				1													
Water	Groundwater	GW-11	HVGW011___01XX		1		1													
Water	Groundwater	GW-11	HVGW011___01XX				1													
Soil	Soil	GS-1	HVGS001___01XX		1	1						1	1	1	1	1				
Soil	Soil	GS-2	HVGS002___01XX	1								1	1	1	1	1				
Soil	Soil	GS-3	HVGS003___01XX									1				1				
Soil	Soil	GS-4	HVGS004___01XX									1				1				
Off-Site Geoprobe Soil Gas Sampling																				
Soil Gas	Vapor	GV-31	HVGV031___01XX		1														1	
Soil Gas	Vapor	GV-32	HVGV032___01XX																1	
Soil Gas	Vapor	GV-33	HVGV033___01XX																1	
Soil Gas	Vapor	GV-34	HVGV034___01XX																1	
Soil Gas	Vapor	GV-35	HVGV035___01XX																1	

TABLE 3-2
PROPOSED SAMPLE IDENTIFICATION AND ANALYSES
RI/FS WORK PLAN
HIDDEN VALLEY ELECTRONICS SITE
VESTAL, NEW YORK

				Water Samples								Soil Samples							Air Samples	
Site Type	**Media**	**Site ID**	**Sample ID**	**MS/MSD**	**DUP**	**RINS**	**VOCs**	**SVOCS**	**PEST/ PCBs**	**TAL Metals**	**MNA parameters**	**VOCs**	**SVOCS**	**PEST/ PCBs**	**TAL Metals**	**Percent Moisture**	**TOC**	**Grain Size**	**VOCs (TO-15)**	**Field Screening VOCs**
Soil Gas	Vapor	GV-36	HVGV036___01XX																1	
Off-Site Sub-Slab Soil Vapor Sampling																				
Soil Gas	Vapor	SV-7	HVSV00700101XX																1	
Soil Gas	Vapor	SV-8	HVSV00800101XX																1	
Soil Gas	Vapor	SV-9	HVSV00900101XX																1	
PHASE TWO																				
Hallow Stem Auger Borings																				
Soil	Soil	BS-1(MW101)	HVBS001___01XX									1	1	1	1	1	1	1		
Soil	Soil	BS-2(MW102)	HVBS002___01XX														1	1		
Soil	Soil	BS-3(MW103)	HVBS003___01XX														1	1		
Soil	Soil	BS-4(MW104)	HVBS004___01XX														1	1		
Soil	Soil	BS-5(MW105)	HVBS005___01XX														1	1		
Well Sampling																				
WELL	Groundwater	TW-1	HVMWTW101502XX	1	1		1				1									
WELL	Groundwater	TW-2	HVMWTW201502XX				1				1									
WELL	Groundwater	TW-3	HVMWTW301502XX				1				1									
WELL	Groundwater	TW-4	HVMWTW401502XX				1				1									
WELL	Groundwater	TW-5	HVMWTW501502XX		1		1				1									
WELL	Groundwater	TW-6	HVMWTW601502XX				1				1									
WELL	Groundwater	TW-7	HVMWTW701502XX				1													
WELL	Groundwater	TW-8	HVMWTW801502XX				1				1									
WELL	Groundwater	TW-9	HVMWTW901502XX				1				1									
WELL	Groundwater	MW-1	HVMW00101502XX				1				1									
WELL	Groundwater	MW-2	HVMW00201501XX				1													
WELL	Groundwater	MW-3	HVMW00301501XX				1				1									
WELL	Groundwater	MW-4	HVMW00401501XX				1				1									
WELL	Groundwater	MW-5	HVMW00501501XX				1				1									
WELL	Groundwater	MW-7	HVMW00701501XX		1		1				1									
WELL	Groundwater	MW-8	HVMW00801501XX				1													
WELL	Groundwater	MW-9	HVMW00901501XX				1				1									
WELL	Groundwater	MW-11	HVMW01101501XX				1				1									
WELL	Groundwater	MW-12	HVMW01201501XX				1													
WELL	Groundwater	MW-13	HVMW01301501XX				1				1									
WELL	Groundwater	MW-14	HVMW01401501XX				1				1									
WELL	Groundwater	MW-15	HVMW01501501XX				1				1									
WELL	Groundwater	MW-16	HVMW01601501XX				1				1									
WELL	Groundwater	MW-17	HVMW01701501XX				1				1									
WELL	Groundwater	MW-18	HVMW01801501XX				1													
WELL	Groundwater	MW-19	HVMW01901501XX				1				1									
WELL	Groundwater	MW-20	HVMW02001501XX				1				1									
WELL	Groundwater	MW-21	HVMW02101501XX				1													
WELL	Groundwater	MW-22	HVMW02201501XX				1				1									

TABLE 3-2
PROPOSED SAMPLE IDENTIFICATION AND ANALYSES
RI/FS WORK PLAN
HIDDEN VALLEY ELECTRONICS SITE
VESTAL, NEW YORK

							Water Samples					Soil Samples							Air Samples	
Site Type	Media	Site ID	Sample ID	MS/MSD	DUP	RINS	VOCs	SVOCS	PEST/ PCBs	TAL Metals	MNA parameters	VOCs	SVOCS	PEST/ PCBs	TAL Metals	Percent Moisture	TOC	Grain Size	VOCs (TO-15)	Field Screening VOCs
WELL	Groundwater	MW-25	HVMW02501501XX				1				1									
WELL	Groundwater	MW-26	HVMW02601501XX	1	1		1				1									
WELL	Groundwater	MW-27	HVMW02701501XX				1													
WELL	Groundwater	MW-28	HVMW02801501XX				1													
WELL	Groundwater	MW-29	HVMW02901501XX				1				1									
WELL	Groundwater	MW-30	HVMW03001501XX				1													
WELL	Groundwater	MW-31	HVMW03101501XX		1		1				1									
WELL	Groundwater	MW-32	HVMW03201501XX				1													
WELL	Groundwater	MW-33	HVMW03301501XX				1				1									
WELL	Groundwater	RW-1	HVRW00102501XX				1													
WELL	Groundwater	RW-2	HVRW00202501XX				1													
WELL	Groundwater	RW-3	HVRW00302501XX				1													
WELL	Groundwater	RW-4	HVRW00402501XX				1													
WELL	Groundwater	MW-101-30	HVMW101___01XX				1													
WELL	Groundwater	MW-102-30	HVMW102___01XX				1				1									
WELL	Groundwater	MW-103-30	HVMW103___01XX				1				1									
WELL	Groundwater	MW-104-30	HVMW104___01XX				1													
WELL	Groundwater	MW-105-30	HVMW105___01XX				1													
WELL	Groundwater	Kost Tire	HVPWKOS___01XX				1													
WELL	Groundwater	Amish Wood	HVPWAMW___01XX				1													
Optional HVE Facility Interior Sampling																				
Soil Gas	Vapor	SV-1-2	HVSV00100102XX		1														1	
Soil Gas	Vapor	SV-2-2	HVSV00200102XX																1	
Soil Gas	Vapor	SV-3-2	HVSV00300102XX																1	
Soil Gas	Vapor	SV-4-2	HVSV00400102XX																1	
Soil Gas	Vapor	SV-5-2	HVSV00500102XX																1	
Soil Gas	Vapor	SV-6-2	HVSV00600102XX																1	
Air	Indoor Air	IA-1-2	HVIA001XXX02XX																1	
Air	Indoor Air	IA-2-2	HVIA002XXX02XX																1	
Air	Indoor Air	IA-3-2	HVIA003XXX02XX																1	
Air	Indoor Air	IA-4-2	HVIA004XXX02XX		1														1	
Air	Indoor Air	IA-5-2	HVIA005XXX02XX																1	
Air	Indoor Air	IA-6-2	HVIA006XXX02XX																1	
Air	Ambient Air	AA-1-2	HVAA001XXX02XX																1	
TOTAL SAMPLES							85	3	3	3	30	5	3	3	3	5	5	5	37	26

Notes:
Sample ID = 14-digit sample identification as outlined in the QAPjP. The 8,9, and 10 digit locations represent the sample depth below ground surface (__ = be determined in field)
MS/MSD = matrix spike and matrix spike duplicate sample collected
DUP = Duplicate sample collected
RINS = rinseate sample collected

TABLE 3-2
PROPOSED SAMPLE IDENTIFICATION AND ANALYSES
RI/FS WORK PLAN
HIDDEN VALLEY ELECTRONICS SITE
VESTAL, NEW YORK

							Water Samples					Soil Samples							Air Samples	
Site Type	Media	Site ID	Sample ID	MS/MSD	DUP	RINS	VOCs	SVOCS	PEST/ PCBs	TAL Metals	MNA parameters	VOCs	SVOCS	PEST/ PCBs	TAL Metals	Percent Moisture	TOC	Grain Size	VOCs (TO-15)	Field Screening VOCs

VOCs water and air = Target Compond List Volatile Organic Compounds analyzed by NYSDEC ASP Method 95-1 for soils, and 95-4 for water.
SVOCs = Semi-Volatile Organic Compounds analyzed by NYSDEC ASP Method 95-2.
PEST/PCBs = Pesticides and polychlorinated biphenyls analyzed by NYSDEC ASP Method 95-3.
TAL metals = Target Analyte List metals analyzed by NYSDEC Superfund CLP methods.
MNA Parameters = Monitoring Natural Attenuation Parameters = TOC by USEPA Method 415.1, Nitrate by NYSDEC ASP Method 352.1, Nitrite by NYSDEC ASP Method 354.1, Sulfate by NYSDEC ASP Method 375.4, Sulfide by NYSDEC ASP Method 376.2, Methane/Ethane/Ethene by ASTM Method D-1945, carbon dioxide by Hach Method, Alkalinity by USEPA Method 310.1, and chloride by USEPA Method 325.3. In addition, iron and manganese will be analyzed by USEPA Method 6010B.
TOC = total organic carbon by USEPA Method 415.1
Grain Size by ASTM method D422
TO-15 = Air and vapor samples analyzed for a Modified VOC list by USEPA Method TO-15 using selective ion monitoring quantitation.
Sample totals do not include QA/QC samples.

Table Created By: CRS
Table Checked By: JWP

APPENDIX A

QUALITY ASSURANCE PROJECT PLAN

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

This Quality Assurance Project Plan (QAPjP) identifies sections of the QAPP (ABB-ES, 1995) that apply to the activities described in the site Remedial Investigation/Feasibility Study (RI/FS) Work Plan (Work Plan), describes variances to those procedures, and specifies the analytical methods used for laboratory analysis of environmental samples.

1.0 General Procedures and Practices. The general procedures used to conduct the Remedial Investigation at the HVE site will be taken from the following sections of the QAPP:

Section 2.0	Program Organization and Responsibilities
Section 9.0	Internal Quality Control
Section 11.0	Preventive Maintenance
Section 12.0	Data Assessment
Section 13.0	Corrective Action
Section 14.0	Reports to Management

2.0 Field Procedures and Sampling. The following field investigation techniques and procedures set forth in the QAPP will be used at the site:

QA/QC Procedures	Section 3.0
Decontamination	Subsection 4.3
Sample Handling	Subsections 4.5 and 5.0
General Soil Sampling Methodology	Subsection 4.5.1
General Water Sampling Methodology	Subsection 4.5.2
Terraprobe Sampling	Subsection 4.6
Field Instrument Calibration	Section 6.0

Variances to the above procedures are described in the following subsections 2.1 to 2.6.

2.1 Low Flow Overburden Groundwater Sampling

The following procedure was developed in accordance with the USEPA guidance document "Low Stress (low flow) Purging and Sampling Procedure for the Collection of Ground Water Samples from Monitoring Wells", dated July 30, 1996. A Low Flow Groundwater Sampling Data Sheet will be completed for each sample.

Basic Materials and Equipment Required

- Geopump™ or Bladder Pump with Teflon™ or Teflon™ lined tubing capable of reaching the estimated depth of the well screen;
- Air compressor or compressed gas for bladder pump power supply;
- Water quality unit(s) capable of measuring pH, temperature, specific conductance, dissolved oxygen, redox potential and turbidity;
- Water level meter;
- Photoionization Detector;
- Graduated measuring device and stopwatch;
- Sample bottles and labels;
- Calculator, field data sheets, and logbook; and
- Well construction data.

Procedure

1. Remove well cap and immediately measure VOC concentrations at the well mouth using a PID.

2. If the well casing does not have a reference point [usually an indelible ink mark on the highest rim of the PVC casing], make one, and document it in the field logbook.

3. A static water level measurement will be collected using the top of riser as a reference point. Submersion of the water level meter probe should be minimized within the standing water column to avoid disturbance of colloidal particles.

4. The pump will be lowered into the water column so that the pump intake is located at the mid-point of the saturated screen interval. The pump should be lowered slowly into the water column to minimize the amount of mixing in the well. The discharge line should be secured to minimize movement of the pump during sampling activities.

5. Assemble air lines, bladder pump control box, and in-line water quality monitoring system for bladder pump. Assemble tubing and in-line water quality monitoring system for peristaltic pump. The water quality system should include the following parameters monitored in-line: pH, temperature, specific conductance, redox potential, dissolved oxygen. Turbidity will be monitored separately from those parameters monitored in-line.

6. The depth to water in the well will be re-measured after pump insertion and compared to the initial water level measurement; if the readings vary by greater than 0.5 feet,

wait a period of 5 minutes and re-measure the water level and document the measurement before purging is initiated.

7. The initial purging rate should be at the lowest rate obtainable with the pump. The pump start time should be recorded and the flow rate will be measured and recorded using a graduated measuring device and a stopwatch. Purging rates should not exceed 500 milliliters per minute. During the initial period of pumping, an estimated 5 to 10 minutes, the depth to water in the well should be measured frequently (approximately once per minute) to enable timely pumping rate adjustments in attempts to minimize significant drawdown (i.e., = 0.3 feet) in the well. If significant drawdown is observed, pumping rates should be decreased until drawdown is no longer occurring.

8. The initial groundwater sample discharged from the tubing will be monitored for in-line field parameters as described above and documented along with start time a Low Flow Groundwater Sampling Data Sheet.

9. In-line field parameters (as depicted in step 5) and the depth to water will be measured at five minute intervals (initially the water level will be measured more frequently as described in step 7). The data and the associated time will be documented on the Low Flow Groundwater Sampling Data Sheet. Attempts will be made to minimize the drawdown in the well during pumping to less than 0.3 feet, by adjusting the pump flow rate. Drawdown for each well will vary depending on the recharge capacity of the overburden and bedrock units.

10. During pump start-up, drawdown may exceed the 0.3 feet target and recover as flow adjustments are made. Purge volume calculations should include the stabilized drawdown value, not the initial drawdown. Do not allow the water level to fall below the intake of the pump (if the static water level is above the well screen, do not allow the water level to fall below the top of the well screen). The final purge volume must be greater than the stabilized drawdown volume, plus the extraction of the tubing volume.

11. Purging requirements are met once at least the minimum required purge volume is met (See #10) and when in-line (collected via a flow through cell) water quality readings (three consecutive readings at five minute intervals) meet the following criteria:

    - Turbidity (± 10% for values greater than 10 NTU);

- Temperature (± 10%);
- Dissolved Oxygen (±10%);
- Specific Conductance (±3%);
- pH (± 0.1 unit); and
- Redox Potential (± 10 millivolts).

If the final drawdown measures greater than 0.3 feet, the volume of water drawdown will be calculated and the calculated volume purged in addition to the minimum purge volume.

If the above criteria are not achieved, due to excessive drawdown, drawdown below the pump intake or excessive purging (> 1 hours) without stabilization of water quality measurements, alternative sampling procedures can be initiated. Details of reasons why low flow criteria were not obtainable should be clearly documented in the log book and on the sample sheet. The following three options may be implemented, depending on the specific situation.

a) Continue purging until parameter stabilization is achieved.

b) Discontinue purging activities and do not collect a sample.

c) Discontinue purging and collect samples documenting in the field logs the circumstances surrounding the sample collection.

If, while purging, the recharge rate is less than the lowest pumping rate obtainable with the pump, purge the saturated interval to dryness regardless of the water quality measurements. The well should be sampled as soon as the water level has recovered sufficiently to collect the appropriate volume needed for all anticipated samples (ideally the intake should not be moved during this recovery period). Samples may then be collected regardless of field water quality parameter readings.

12. Following purging procedures, the flow through cell will be disconnected, the flow rate re-adjusted to approximately 100 milliliter per minute (ml/minute). Samples will then be collected directly through the pump/tubing in the appropriate sample bottles.

    VOC samples should be collected first and directly into pre-preserved sample containers. Fill all sample containers by allowing the pump discharge to flow gently down the inside of the container with minimal disturbance.

During purging and sampling, the tubing should remain filled with water so as to minimize possible changes in water chemistry upon contact with the atmosphere. If the sampling tube is not completely filled to the sampling point, use one of the following procedures to collect the samples, 1) add a clamp, connector (Teflon or stainless steel) or valve to constrict the discharge end of the tubing; 2) insert a small diameter Teflon tube into the discharge end of the pump tubing, collect samples from the insert tubing. 3) collect non-VOC samples first, then increase the flow rate slightly until the water completely fills the tubing, collect samples and document the new flow rate, water quality readings, and associated drawdown measurements.

If sample containers are not pre-preserved, add preservatives immediately after sample collection. Check pH value (with pH paper) all preserved samples to ensure proper preservation. Do not check VOC samples or other samples with zero headspace.

If filtered samples are to be collected, collect samples using the same low flow technique. The filter should be pre-rinsed with 25-50 ml of groundwater prior to sample collection. The flow rate may have to be increased due to restrictions to flow subsequent to filter placement on the discharge line.

Label each sample with the appropriate sample identification code, sample date, and time of the last sample collected sample time. Samples requiring cooling (i.e., VOCs) will be placed in a cooler immediately after collection and kept at a temperature of 4 degrees Celsius until relinquished to the on-site laboratory or sample manager.

13. The bladder pump will then be removed and decontaminated using the following procedure: flushed with a Liquinox and potable water mixture (approximately 3 gallons), rinsed with potable water (approximately 3 gallons) and rinsed with deionized water (approximately 3 gallons). The peristaltic pump will be removed and tubing decontaminated using the following procedure: flushed with a Liquinox and potable water mixture (approximately 2 gallons), rinsed with potable water (approximately 2 gallons) and rinsed with deionized water (approximately 2 gallons). Dedicated peristaltic pump tubing will be used where possible.

Required Documentation

The following items represent the minimum required information to be documented in the field logbooks or field data records. Each individual shall document, in the field

logbook or field data record, the following appropriate level of detail for each well location prior to setting up on the next exploration location.

- Page number, job number, well ID and date at the top of each page;
- Clock time of all water levels measurements and reference point used;
- Calculation for one purge volume and the total volume purged;
- Clock time purging initiated;
- All purging rate adjustments and clock time adjustment made;
- All in-line water quality readings (i.e., pH, temperature, specific conductance, dissolved oxygen, redox potential, and turbidity);
- Drawdown measurements;
- Analytical parameters collected and associated volumes;
- Assign sample identification code;
- Decontamination of pump;
- Brief description of any problems or occurrences; and
- Time of demobilization.

2.2 Investigation Derived Waste

Decontamination of equipment will follow procedures described in the QAPP except for disposal of purge water. Headspace of well water purged prior to groundwater sampling will be screened for the presence of VOCs with a photoionization detector (PID). Water with headspace PID readings above 5 parts per million (ppm) will be considered contaminated, and placed in USDOT-approved 55-gallon containers. Water with PID readings of 5 ppm or less will be allowed to infiltrate into the ground surface at the site.

soil cuttings will be screened for VOCs with a PID. Soils with visual evidence of contamination, or with PID readings greater than 5 ppm will be containerized in USDOT-approved 55-gallon containers for off-site disposal. Soils with sustained PID readings of less than or equal to 5 ppm will be considered non-contaminated and will be used as backfill for the borings at the approximate interval from which they were extracted. Remaining uncontaminated soils will be spread evenly on the ground surface in unpaved areas of the Site.

Off-site transport and disposal of RI-generated wastes (hazardous and non-hazardous) will be the responsibility of HLA.

2.3 Sampling and Analysis Program

Data Quality Objectives (DQOs) for the HVE site sampling activities are summarized in Table A-1. DQOs are described in accordance with USEPA guidelines (USEPA, 1987) and the NYSDEC Analytical Services Protocols (ASP) (NYSDEC, 1995).

Analytical data requirements were established using the methods described in the ASP. Analytical methods to be used for laboratory analysis are presented in Table A-2. Analytical Level B deliverables as described in the ASP will be provided by the laboratory. Data Usability Summary Report will be issued based on DEC guidelines (NYSDEC, 1997).

2.4 On-site Field Screening Program

On-site soil gas analyses samples will be analyzed for TCE and 1,1,1-TCA by MACTEC with a Photovac® gas chromatograph (GC) for volatile organic compounds. The USEPA Standard Operating Procedure (SOP) for Air Sample Analysis for VOCs (USEPA 2002) will be followed, with the exception of a modification of the target analyte list. In addition, samples will be collected with glass tubes, in place of Tedlar Bags as outlined in the USEPA SOP. The USEPA SOP is attached to this Appendix as Appendix A-1.

2.5 Sub Slab Vapor and Indoor Air Sampling

Prior to commencing the residential and commercial sub-slab and indoor air sampling, the owner/occupant of the building will be interviewed and the Indoor Air Quality Questionnaire and Building Inventory Form will be completed by the sampler (Appendix A-2).

Indoor air samples will be collected as outlined in the SOP included as Appendix A-3. Sub-slab vapor samples will be collected as outlined in the SOP included as Appendix A-4. Ambient air samples will be collected as outlined in the SOP included as Appendix A-5.

2.6 Sampling Identification

Sample identification will adhere to the 14-digit system outlined in Subsection 4.1 of the QAPP with the following exception and clarifications:

Digits 1,2 Sample identification will begin with the site designator HV.

Digits 3,4 Sample Type will include the following identifications:
IA – Indoor Air

GS – Geoprobe® Soil
GW – Geoprobe® Water
GV – Geoprobe® Vapor

2.7 Drum Labeling

Drums will be labeled with the following information:

- Drum contents;
- Site name and the NYSDEC Site Number; and
- Date drum filling began and date drum was sealed.

Upon completion of the project, the NYSDEC Project Manager will be notified in writing about the location, number, and any relevant information regarding drums staged on the site. Drums are to be stored on wooden pallets. Drums shall be staged as directed by the NYSDEC. Final off-site transport and disposal of RI-generated wastes will be coordinated by Harding Lawson Associates.

Reference:

ABB Environmental Services, 1994. *Program Quality Assurance Program Plan*. Prepared for the New York State Department of Environmental Conservation, Albany, New York. June 1995.

New York State Department of Environmental Conservation (NYSDEC), 1997. "Guidance for the Development of Data Usability Reports"; Division of Environmental Remediation; September 1997.

New York State Department of Environmental Conservation (NYSDEC), 1995. *"Analytical Services Protocols"*; 10/95 Edition; October 1995.

U.S. Environmental Protection Agency (USEPA), 1987. *"Data Quality Objectives for Remedial Response Activities"*; Office of Emergency and Remedial Response and Office of Waste Programs Enforcement; Washington DC; EPA/540/G-87/003; March 1987.

U.S. Environmental Protection Agency (USEPA), 2002. "Air Grab Sample Analysis for Volatile Organic Compounds"; Region I Office of Environmental Measurement and Evaluation; EIA-FLDGRAB3.SOP; February 12, 2002.

Table A-1
Analytical DQO Levels

Parameter	Use	Data Quality Level
PH Temperature Specific Conductance Turbidity	Provides physical and chemical data on groundwater samples for use during sampling collection.	Level I
Photoionization detector (PID) screening	Provides qualitative real-time information on air quality in the breathing zone for health and safety decisions, and to identify potentially contaminated groundwater.	Level I
Onsite VOC field screening by GC/PID	Provides quantitative real-time information on soil vapors to aid in the delineation of potential source areas.	Level II
TCL VOCs, SVOCs, TAL metals, Pesticides/PCBs, MNA parameters, and sub-slab soil vapor and indoor air.	Provides analytical information to: 1) compare to standards and guidance values, 2) evaluate geochemistry for interpretation regarding MNA.	Level III

Notes:

TCL = target compound list
VOCs = volatile organic compounds
SVOCs = semi-volatile organic compounds
TAL = target analyte list
PCB = polychlorinated biphenyl
MNA = monitoring natural attenuation. Parameters include TOC, nitrate, nitrite, sulfate, sulfide, methane/ethane/ethane, carbon dioxide, alkalinity, chloride, iron, and manganese.

Table A-2
Summary of Analytical Methods

Media	Parameter	Method
Groundwater from Geoprobe® borings	TCL VOCs	95-4
Groundwater from monitoring wells	TCL VOCS, SVOCS, TAL metals, pesticides/PCBs, and MNA	95-4, 95-2, NYSDEC superfund methods, 95-3, see below for MNA.
Sub-slab Soil Vapor and Indoor Air	TCL VOCs	USEPA Modified Method TO-15
Soil Gas (not building related)	TCL VOCs	Photovac® GC
Soil from Geoprobe® borings	TCL VOCs	95-1

Notes:
TCL = target compound list
VOCs = volatile organic compounds
PCB = polychlorinated biphenyl
MNA = monitoring natural attenuation
MNA methods = TOC by USEPA Method 415.1, Nitrate by NYSDEC ASP Method 352.1, Nitrite by NYSDEC ASP Method 354.1, Sulfate by NYSDEC ASP Method 375.4, Sulfite by NYSDEC ASP Method 376.2, Methane/Ethane/Ethene by ASTM Method D-1945, carbon dioxide by HACH Method, Alkalinity by USEPA Method 310.1, chloride by USEPA Method 325.3, and iron and manganese by USEPA Method 8260B.

TABLE A-3
PHOTOVAC FIELD GC
METHOD DETECTION LIMITS
RI/FS WORK PLAN
HIDDEN VALLEY ELECTRONICS SITE
VESTAL, NEW YORK

Compound	Detection Limit (ppbv)
1,1,1-Trichloroethane	50
Trichloroethene	10

Note ppbv = parts per billion per volume

TABLE A-4
Buck Environmental Laboratory
EPA Method TO-15 - SIM Mode
Matrix: Air

Analyte	MDL (ppbv)	PQL (ppbv)
Vinyl Chloride	0.0028	0.01
1,1-Dichloroethene	0.0026	0.01
trans-1,2-Dichloroethene	0.0032	0.01
MTBE	0.0023	0.01
1,1-Dichloroethane	0.0029	0.02
cis-1,2-Dichloroethene	0.0082	0.02
1,1,1-Trichloroethane	0.0079	0.02
Benzene	0.0026	0.05
1,2-Dichloroethane	0.0032	0.02
Trichloroethene	0.0031	0.02
Toluene	0.0050	0.02
1,1,2-Trichloroethane	0.0027	0.02
Tetrachloroethene	0.0027	0.02
Ethylbenzene	0.0025	0.02
m&p Xylene	0.0021	0.04
o-Xylene	0.0022	0.02
1,1,2,2-Tetrachloroethane	0.0017	0.02

TABLE A-5
Buck Environmental Laboratory
NYSDEC Method 95-1
Matrix: Soil

Analyte	MDL (ug/kg)	PQL (ug/kg)
1,1,1-Trichloroethane	1.3	10
1,1,2,2-Tetrachloroethane	1.7	10
1,1,2-Trichloroethane	0.9	10
1,1-Dichloroethane	1.0	10
1,1-Dichloroethene	1.0	10
1,2-Dichloroethane	0.9	10
1,2-Dichloroethene (total)	1.4	10
1,2-Dichloropropane	1.0	10
2-Butanone	1.0	10
2-Hexanone	1.0	10
4-Methyl-2-pentanone	2.3	10
Acetone	1.0	10
Benzene	1.5	10
Bromodichloromethane	2.0	10
Bromoform	2.8	10
Bromomethane	1.3	10
Carbon disulfide	1.0	10
Carbon tetrachloride	5.7	10
Chlorobenzene	1.2	10
Chloroethane	1.5	10
Chloroform	1.1	10
Chloromethane	1.4	10
cis-1,3-Dichloropropene	1.0	10
Dibromochloromethane	1.9	10
Ethylbenzene	1.1	10
Methylene chloride	1.4	10
Styrene	1.2	10
Tetrachloroethene	0.9	10
Toluene	1.3	10
trans-1,3-Dichloropropene	1.0	10
Trichloroethene	1.2	10
Vinyl chloride	1.2	10
Xylenes, Total	1.3	10

TABLE A-6
Buck Environmental Laboratory
NYSDEC Method 95-2
Matrix: Soil

Analyte	MDL (ug/kg)	PQL (ug/kg)
1,2,4-Trichlorobenzene	20.5	330
1,2-Dichlorobenzene	34.4	330
1,3-Dichlorobenzene	23.3	330
1,4-Dichlorobenzene	48.8	330
2,4,5-Trichlorophenol	44.1	800
2,4,6-Trichlorophenol	38.8	330
2,4-Dichlorophenol	45.4	330
2,4-Dimethylphenol	108.6	330
2,4-Dinitrophenol	64.4	800
2,4-Dinitrotoluene	71.4	330
2,6-Dinitrotoluene	59.4	330
2-Chloronaphthalene	26.6	330
2-Chlorophenol	33.2	330
2-Methylnaphthalene	46.3	330
2-Methylphenol	41.2	330
2-Nitroaniline	63.0	800
2-Nitrophenol	59.4	330
3,3´-Dichlorobenzidine	62.9	330
3-Nitroaniline	102.1	800
4,6-Dinitro-2-methylphenol	79.3	800
4-Bromophenyl phenyl ether	35.9	330
4-Chloro-3-methylphenol	32.1	330
4-Chloroaniline	50.1	330
4-Chlorophenyl phenyl ether	30.1	330
4-Methylphenol	66.3	330
4-Nitroaniline	21.0	800
4-Nitrophenol	94.3	800
Acenaphthene	27.0	330
Acenaphthylene	25.0	330
Anthracene	53.4	330
Benz(a)anthracene	48.5	330
Benzo(a)pyrene	30.8	330
Benzo(b)fluoranthene	100.9	330
Benzo(g,h,i)perylene	50.7	330
Benzo(k)fluoranthene	74.5	330
Bis(2-chloroethoxy)methane	34.5	330
Bis(2-chloroethyl)ether	47.9	330
Bis(2-chloroisopropyl)ether	31.8	330
Bis(2-ethylhexyl)phthalate	52.6	330
Butyl benzyl phthalate	45.7	330

TABLE A-6
Buck Environmental Laboratory
NYSDEC Method 95-2
Matrix: Soil

Analyte	MDL (ug/kg)	PQL (ug/kg)
Carbazole	69.4	330
Chrysene	58.6	330
Di-n-butyl phthalate	48.7	330
Di-n-octyl phthalate	47.4	330
Dibenz(a,h)anthracene	36.4	330
Dibenzofuran	22.3	330
Diethyl phthalate	12.9	330
Dimethyl phthalate	33.4	330
Fluoranthene	70.2	330
Fluorene	29.4	330
Hexachlorobenzene	40.9	330
Hexachlorobutadiene	28.8	330
Hexachlorocyclopentadiene	77.4	330
Hexachloroethane	29.1	330
Indeno(1,2,3-cd)pyrene	44.6	330
Isophorone	35.1	330
N-Nitrosodi-n-propylamine	43.6	330
N-Nitrosodiphenylamine	52.2	330
Naphthalene	40.6	330
Nitrobenzene	32.1	330
Pentachlorophenol	66.7	800
Phenanthrene	30.9	330
Phenol	32.4	330
Pyrene	53.4	330

TABLE A-7
Buck Environmental Laboratory
NYSDEC Method 95-2
Matrix: Water

Analyte	MDL (ug/L)	PQL (ug/L)
1,2,4-Trichlorobenzene	0.6	10
1,2-Dichlorobenzene	1.0	10
1,3-Dichlorobenzene	0.7	10
1,4-Dichlorobenzene	1.5	10
2,4,5-Trichlorophenol	1.3	25
2,4,6-Trichlorophenol	1.2	10
2,4-Dichlorophenol	1.4	10
2,4-Dimethylphenol	3.3	10
2,4-Dinitrophenol	1.9	25
2,4-Dinitrotoluene	2.1	10
2,6-Dinitrotoluene	1.8	10
2-Chloronaphthalene	0.8	10
2-Chlorophenol	1.0	10
2-Methylnaphthalene	1.4	10
2-Methylphenol	1.2	10
2-Nitroaniline	1.9	25
2-Nitrophenol	1.8	10
3,3´-Dichlorobenzidine	1.9	10
3-Nitroaniline	3.1	25
4,6-Dinitro-2-methylphenol	2.4	25
4-Bromophenyl phenyl ether	1.1	10
4-Chloro-3-methylphenol	1.0	10
4-Chloroaniline	1.5	10
4-Chlorophenyl phenyl ether	0.9	10
4-Methylphenol	2.0	10
4-Nitroaniline	0.6	25
4-Nitrophenol	2.8	25
Acenaphthene	0.8	10
Acenaphthylene	0.7	10
Anthracene	1.6	10
Benz(a)anthracene	1.5	10
Benzo(a)pyrene	0.9	10
Benzo(b)fluoranthene	3.0	10
Benzo(g,h,i)perylene	1.5	10
Benzo(k)fluoranthene	2.2	10
Bis(2-chloroethoxy)methane	1.0	10
Bis(2-chloroethyl)ether	1.4	10
Bis(2-chloroisopropyl)ether	1.0	10
Bis(2-ethylhexyl)phthalate	1.6	10
Butyl benzyl phthalate	1.4	10

TABLE A-7
Buck Environmental Laboratory
NYSDEC Method 95-2
Matrix: Water

Analyte	MDL (ug/L)	PQL (ug/L)
Carbazole	2.1	10
Chrysene	1.8	10
Di-n-butyl phthalate	1.5	10
Di-n-octyl phthalate	1.4	10
Dibenz(a,h)anthracene	1.1	10
Dibenzofuran	0.7	10
Diethyl phthalate	0.4	10
Dimethyl phthalate	1.0	10
Fluoranthene	2.1	10
Fluorene	0.9	10
Hexachlorobenzene	1.2	10
Hexachlorobutadiene	0.9	10
Hexachlorocyclopentadiene	2.3	10
Hexachloroethane	0.9	10
Indeno(1,2,3-cd)pyrene	1.3	10
Isophorone	1.1	10
N-Nitrosodi-n-propylamine	1.3	10
N-Nitrosodiphenylamine	1.6	10
Naphthalene	1.2	10
Nitrobenzene	1.0	10
Pentachlorophenol	2.0	25
Phenanthrene	0.9	10
Phenol	1.0	10
Pyrene	1.6	10

TABLE A-8
Buck Environmental Laboratory
NYSDEC Method 95-3
Matrix: Soil

Analyte	MDL (ug/kg)	PQL (ug/kg)
Alpha-BHC	0.03	1.7
Beta-BHC	0.06	1.7
Delta-BHC	0.05	1.7
Gamma-BHC	0.08	1.7
Heptachlor	0.03	1.7
Aldrin	0.05	1.7
Heptachlor epoxide	0.03	1.7
Endosulfan I	0.07	1.7
Dieldrin	0.10	3.3
4,4'-DDE	0.10	1.7
Endrin	0.07	3.3
Endosulfan II	0.05	3.3
4,4'-DDD	0.28	3.3
Endosulfan sulfate	0.07	3.3
4,4'-DDT	0.15	3.3
Methoxychlor	0.87	17
Endrin ketone	0.07	3.3
Endrin aldehyde	0.08	3.3
Alpha-chlordane	0.03	1.7
Gamma-chlordane	0.03	1.7
Toxaphene	0.42	170
AROCLOR-1016	0.78	33
AROCLOR-1221	0.07	67
AROCLOR-1232	2.45	33
AROCLOR-1242	3.14	33
AROCLOR-1248	1.61	33
AROCLOR-1254	2.51	33
AROCLOR-1260	1.12	33

TABLE A-9
Buck Environmental Laboratory
NYSDEC Method 95-3
Matrix: Water

Analyte	MDL (ug/L)	PQL (ug/L)
Alpha-BHC	0.0009	0.05
Beta-BHC	0.0015	0.05
Delta-BHC	0.0012	0.05
Gamma-BHC	0.002	0.05
Heptachlor	0.0009	0.05
Aldrin	0.0012	0.05
Heptachlor epoxide	0.0009	0.05
Endosulfan I	0.0018	0.05
Dieldrin	0.0025	0.1
4,4'-DDE	0.0027	0.1
Endrin	0.0018	0.1
Endosulfan II	0.0013	0.1
4,4'-DDD	0.0073	0.1
Endosulfan sulfate	0.0018	0.1
4,4'-DDT	0.0039	0.1
Methoxychlor	0.0228	0.5
Endrin ketone	0.0019	0.1
Endrin aldehyde	0.002	0.1
Alpha-chlordane	0.0009	0.05
Gamma-chlordane	0.0009	0.05
Toxaphene	0.0109	5
AROCLOR-1016	0.0204	1
AROCLOR-1221	0.0019	2
AROCLOR-1232	0.0641	1
AROCLOR-1242	0.0821	1
AROCLOR-1248	0.042	1
AROCLOR-1254	0.0655	1
AROCLOR-1260	0.0292	1

TABLE A-10
Buck Environmental Laboratory
NYSDEC Method 95-4
Matrix: Water

Analyte	MDL (ug/L)	PQL (ug/L)
1,1,1-Trichloroethane	0.10	1
1,1,2,2-Tetrachloroethane	0.08	1
1,1,2-Trichloroethane	0.12	1
1,1-Dichloroethane	0.11	1
1,1-Dichloroethene	0.09	1
1,2,4-Trichlorobenzene	0.18	1
1,2-Dibromo-3-chloropropane	0.30	1
1,2-Dibromoethane	0.19	1
1,2-Dichlorobenzene	0.18	1
1,2-Dichloroethane	0.15	1
1,2-Dichloropropane	0.23	1
1,3-Dichlorobenzene	0.22	1
1,4-Dichlorobenzene	0.20	1
2-Butanone	0.48	5
2-Hexanone	0.48	5
4-Methyl-2-pentanone	0.32	5
Acetone	0.84	5
Benzene	0.05	1
Bromochloromethane	0.13	1
Bromodichloromethane	0.22	1
Bromoform	0.19	1
Bromomethane	0.17	1
Carbon disulfide	0.13	1
Carbon tetrachloride	0.27	1
Chlorobenzene	0.15	1
Chloroethane	0.09	1
Chloroform	0.10	1
Chloromethane	0.09	1
cis-1,2-Dichloroethene	0.10	1
cis-1,3-Dichloropropene	0.14	1
Dibromochloromethane	0.18	1
Ethylbenzene	0.21	1
Methylene chloride	0.17	2
Styrene	0.16	1
Tetrachloroethene	0.18	1
Toluene	0.12	1
trans-1,2-Dichloroethene	0.09	1
trans-1,3-Dichloropropene	0.09	1
Trichloroethene	0.34	1
Vinyl chloride	0.39	1
Xylenes, Total	0.39	1

TABLE A-11
Buck Environmental Laboratory
TCL Metals 95-M
Matrix: Soil

Analyte	MDL (mg/kg)	PQL (mg/kg)
Aluminum	2.29	20
Antimony	1.02	6
Arsenic	0.83	1
Barium	1.18	20
Beryllium	0.04	0.5
Cadmium	0.05	0.5
Calcium	4.71	500
Chromium	0.16	1
Cobalt	0.48	5
Copper	0.30	2.5
Iron	0.60	10
Lead	0.26	0.3
Magnesium	12.60	500
Manganese	0.15	1.5
Mercury	0.01	0.02
Nickel	0.39	4
Potassium	13.60	500
Selenium	0.47	0.5
Silver	0.23	1
Sodium	54.40	500
Thallium	0.94	1
Vanadium	0.38	5
Zinc	0.24	2
Cyanide	0.59	1

TABLE A-12
Buck Environmental Laboratory
TCL Metals 95-M
Matrix: Water

Analyte	MDL (ug/L)	PQL (ug/L)
Aluminum	22.9	200
Antimony	10.2	60
Arsenic	8.3	10
Barium	11.8	200
Beryllium	0.42	5
Cadmium	0.45	5
Calcium	47.1	5000
Chromium	1.6	10
Cobalt	4.8	50
Copper	3	25
Iron	6	100
Lead	2.6	3
Magnesium	126	5000
Manganese	1.5	15
Mercury	0.071	0.2
Nickel	3.9	40
Potassium	136	5000
Selenium	4.7	5
Silver	2.3	10
Sodium	544	5000
Thallium	9.4	10
Vanadium	3.8	50
Zinc	2.4	20
Cyanide	2.97	10

APPENDIX A-1

AIR SAMPLE ANALYSIS FOR VOLATILE ORGANIC COMPOUNDS

AIR SAMPLE ANALYSIS
FOR
VOLATILE ORGANIC COMPOUNDS

The Office of Environmental Measurement and Evaluation
EPA Region New England
11 Technology Dr
North Chelmsford, MA 01863

Prepared by:_____ Date:
Scott Clifford, Chemist
Investigations and Analysis Unit, OEME

Approved by:_____ Date:_____
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Investigations and Analysis Unit, OEME

Approved by:_____ Date:
Robert Maxfield, Chief
Investigations and Analysis Unit, OEME Unit Manager

Table of Contents

1.0 **Scope and Application:**

The procedure contained herein is applicable to all EPA Region I chemists performing screening for volatile organic compounds for air grab samples.

Reporting Levels:

Reporting levels can vary depending upon instrument performance and settings, as well as data quality objectives. Typical achievable reporting levels using a photoionization detector (PID) and an electron capture detector (ECD) are given below.

Analyte	RL, ppb/v
1,1- Dichloroethene :	10
trans 1,2- Dichloroethene:	10
cis 1,2-Dichloroethene:	15
Benzene:	10
Trichloroethylene:	10
Toluene:	40
Tetrachloroethylene:	2
Ethylbenzene:	50
Chlorobenzene:	50
m/p-xylenes:	50
o-xylene:	80
1,1,1- Trichloroethane:	6

1.3 This method may be used when the quality assurance objectives are either QA1 or QA2 as defined in Interim Final Guidance for the Quality Assurance/Quality Control Guidance for Removal Activities, April 1990. Briefly, QA1 is a screening objective to afford a quick preliminary assessment of site contamination. QA2 is a verification objective used to verify analytical (field or lab) results. A minimum of 10% of samples screened must be analyzed by a full protocol method for qualitative and quantitative confirmation.

2.0 Summary of Method:

Field screening using the portable gas chromatograph is used for tentative identification and quantitation of volatile organic compounds in air samples. This screening technique can provide quick and reliable results to assist in important on-site decision making.

2.2 An aliquot of the air sample is injected into a calibrated gas chromatography (GC) equipped with a photoionization detector (PID) and electron capture detector (ECD). The compounds are separated on a megabore capillary or packed column. Retention times are used for compound identification and peak heights are used for quantitation of the identified compounds.

This method can be used to provide analytical data in a timely manner for guidance of ongoing work in the field.

Based on the project's data quality objectives (DQOs), the operator can modify some conditions. For example, the injection volumes can be changed depending on the levels found at the site.

3.0 Definitions:

FIELD DUPLICATES (FD1 and FD2): Two separate samples collected at the same time and place under identical circumstances and treated exactly the same throughout field and laboratory procedures. Analyses of FD1 and FD2 give a measure of the precision associated with sample collection, preservation, and storage, as well as with laboratory procedures.

Headspace: Air above water standard in sample vial.

Laboratory Duplicate (LD1 and LD2): Two injections from the same sample. The analyses of LD1 and LD2 give a measure of the precision associated with the laboratory procedure.

LABORATORY REAGENT BLANK (LRB) -- An aliquot of reagent water or other blank matrix that is treated exactly as a

sample including exposure to all glassware, equipment, solvents, reagents, internal standards, and surrogates that are used with other samples. The LRB is used to determine if method analytes or other interferences are present in the laboratory environment, the reagents, or the apparatus.

3.5 STOCK STANDARD SOLUTION -- A concentrated solution containing one or more method analytes prepared in the laboratory using assayed reference materials or purchased from a reputable commercial source.

WORKING STANDARD SOLUTION -- A solution of several analytes prepared in the laboratory from stock standard solutions and diluted as needed to prepare calibration solutions and other needed analyte solutions.

SECONDARY STANDARD - A standard from another vender or a different lot number that is used to check the primary standard used for quantitation.

Health and Safety Warnings:

4.1 The toxicity or carcinogenicity of each reagent used in this method has not been precisely determined; however, each chemical should be treated as a potential health hazard. Exposure to these reagents should be reduced to the lowest possible level. The laboratory is responsible for maintaining a current awareness file of OSHA regulations regarding the safe handling of the chemicals specified in this method. A reference file of data handling sheets should be made available to all personnel involved in these analyses. Use these reagents in a fume hood whenever possible and if eye or skin contact occurs flush with large volumes of water.

Always wear safety glasses or a shield for eye protection, protective clothing, and observe proper mixing when working with these reagents.

Some method analytes have been tentatively classified as known or suspected human or mammalian carcinogens. Pure standard materials and stock standard solutions of these compounds should be handled with suitable protection to

skin, eyes, etc.

Cautions:

5.1 The stock standard and secondary stock standard are replaced every three months.

The working and secondary standards are good for 7 days provided these standards are stored on ice with no headspace.

Interferences:

Method interferences may be caused by contaminants in solvents, reagents, glassware and other sample processing hardware that lead to discrete artifacts and/ord elevated baselines in the chromatograms. All of these materials must routinely be demonstrated to be free from interferences under the conditions of the analysis by running laboratory method blanks.

Matrix interferences may be caused by contaminants that coelude with the target compounds. The extent of matrix interferences will vary considerably from source to source A different column or detector may eliminate this interference.

Contamination by carry-over can occur whenever high level and low level samples are sequentially analyzed. To reduce carry-over, a VOA free water blank should be analyzed following an unusually concentrated sample to assure that the syringe is clean.

Personnel Qualifications:

The analyst should have at least a four year degree in a physical science.

The analyst should be trained at least one week and have a

working knowledge of this method and quality control before initiating the procedure.

All personnel shall be responsible for complying with all quality assurance/quality control requirements that pertain to their organizational/technical function.

Equipment and Supplies:

8.1 Photovac 10A10 portable gas chromatography equipped with a PID and a 4 ft, 1/8 in, SE-30 packed column.

Shimadzu 14A portable gas chromatography equipped with a PID, ECD, and a 30 m, 0.53 mm megabore capillary column.

Syringes: Hamilton, steel barrel, 250 µL to 500 µL

Vial: 40 mL VOA vials with Teflon lined septum caps.

Air Standard:

8.5.1 Standard Preparation and Use: Standard should be prepared in water at a 10 µg/L concentration, and labeled. Standards should be made up fresh weekly from a methanol stock solution (Supelco or equivalent vender), and stored with no head space on ice until ready for use. Standard preparation should be recorded in the **Field Standard Log** notebook. After preparation, the standard is placed into a 40 mL VOA vial, filling the vial to the top leaving no head space. The standard is then put into a cooler on an ice bath for storage until it is ready to use. When the standard is ready to use in connection with air sampling and analysis, 10 mL of liquid from the 10 µg/L standard VOA vial are withdrawn to give a head space above the liquid standard. The standard is then placed into an ice bath. It is important to realize that the concentration of the volatile organic compounds in the head space was calibrated at approximately 0 - 1°C. Therefore, it is **mandatory** that the working standard be stored in a cooler in an ice bath, septa side down.

8.5.2 The head space above a 10 µg/L aqueous standard at

approximately 0 - 1°C **(Standard must be in an ice bath)** is used for an air standard. Through in-house experimentation, we have determined the vapor concentration* of various volatile organic compounds in the head space of a 10 µg/L aqueous standard at approximately 0 - 1°C to be as follows:

1,1- Dichloroethene:	554 ppb/v
trans 1,2- Dichloroethene:	202 ppb/v
cis 1,2- Dichloroethene:	90 ppb/v
Benzene:	151 ppb/v
Trichloroethylene:	142 ppb/v
Toluene:	159 ppb/v
Tetrachloroethylene:	201 ppb/v
Ethylbenzene:	145 ppb/v
Chlorobenzene:	70 ppb/v
m/p-xylenes:	136 ppb/v
o-xylene:	112 ppb/v
1,1,1- Trichloroethane:	330 ppb/v

Instrument Preparation:

The Photovac 10A10 GC and the Shimadzu GC 14A should always have carrier gas flowing through their columns. The Photovac uses zero air and the Shimadzu uses zero nitrogen as carrier gas.
The following steps are taken before analysis of samples on the Photovac:

Check detector. Insure that the detector source is on by observing the "source off" lamp (red) on the face of the instrument. When the source is on, the "source off" lamp should not be illuminated. Another method of checking the detector is to remove the detector housing with an allen wrench. With the detector on, you will observe a purple glow inside the Teflon detector chamber.

Check carrier gas flow. The gas flow is checked using a flow meter hooked up to the detector out

* Concentration in ppb by volume (ppb/v

vent port. Flow can be adjusted to the desired rate by using the vernier knobs on the left side of the instrument face or by adjusting the delivery pressure on the carrier gas cylinder regulator. A desirable flow is from 200 - 600 cc/min, depending upon application.

Check injection port septum. It is a good idea to put in a new septum before analyzing a large number of samples.

Check to be sure that signal cable is connected from Photovac output to strip chart recorder input.

Set strip chart recorder input to 100 MV full scale and chart speed to 60 cm/hr. for Photovac 10A10. (Recorder input for Photovac 10S50 should be set to 1 V full scale).

Adjust needle on Photovac output meter using the offset dial so when instruments attenuation is changed, the needle does not deflect. Setting the output somewhere between 4-10 Mv DC will usually achieve this.

Set recorder zero to 5% of chart full scale and establish an acceptable base line.

9.2 The following steps are taken before analysis of samples on the Shimadzu GC 14A. Using isothermal conditions.

Check injection port septum. It is a good idea to put in a new septum before analyzing a large number of samples. The system must be cool before changing the septum.

Check PID detector Temperature. It should be set to 150°C from the external PID power source. It can take up to 3 hrs. to warm up the detector from cold. Insure that the detector lamp is on by quickly observing the lamp (purple) on the left side of the instrument.

Turn on the instrument and the instrument heaters on the face of the instrument. On the control keyboard, hit the START button and set the default temperature conditions.

Injector 125°C
ECD detector 190°C
Oven 60°C

After a 30 -60 minute warm-up, monitor actual temperatures using the control keyboard.

Check zero nitrogen carrier gas flow. The gas flow is checked using a flow meter hooked up to the detector out vent port. Flow can be adjusted to the desired rate by using the vernier knobs on the gas control unit on top of the instrument. A desirable flow is from 20 - 60 cc/min, depending upon application.

Check to be sure that signal cables are connected from PID and ECD outputs to strip chart recorder inputs.

Set strip chart recorder input to 5 MV full scale for the PID and 50 MV full scale for the ECD, and chart speeds to 60 cm/hr.

Set recorder zero to 5% of chart full scale and establish acceptable base lines.

10.0 Sample Analysis:

Air analysis generally consists of taking an 200 µL volume grab sample of air using a 250 µL steel barrel syringe with a 2 inch, 25 gauge needle, and injecting it into the GC injection port.

At the sample collection location, flush the syringe barrel three times using the plunger. After flushing, pull the plunger up to the 200 µL point on the barrel and place a spare GC septa on the tip of the needle to seal in the sample. Get the sample to the GC as soon as possible for analysis. Put the syringe needle into

the GC injection port, and push the needle through the septum until the barrel comes up against the injection port and immediately push the plunger with a quick action. Turn on the strip chart recorder and note on the chart:

1. start of run
2. sample number
3. sample volume
4. attenuation or gain
5. any other relevant comments

The order in which analyses of a group of samples is performed is as follows:

1. Standard - Inject a 200 µL sample of your 10 µg/L standard, at 0 - 1 °C head space into the GC. Keep standard peaks at approximately 50% scale or more, if possible, by adjusting the attenuation or gain.

2. Repeat 10 µg/L standard to check for reproducibility. Standard chromatograms should have compound peak heights within ± 15% of each other and identical retention times.

3. Inject the secondary standard for confirmation. The acceptance criteria is ± 20% of the true value.

4. Blank - Inject a 200 µl sample of clean air into the gas chromatograph with the attenuation set at the same level or lower than what your samples will be run on. Blank clean air is taken from the head space above VOA free water in a 40 ml VOA vial.

5. Samples - Inject 200 µl sample volumes into the GC at the same attenuation or lower, than the standard was run. If contaminant levels on the chromatograms are off-scale on the recorder, adjust the attenuation or gain to decrease instrument response. If the chromatographic peaks are still off-scale

rerun the samples using a smaller injection volume.

6. Repeat 10 µg/L standard every 10 samples and at the end of the sample batch to check the calibration and reproducibility. Standard chromatograms should have compound peak heights within ± **20%** of each other and identical retention times.

11.0 **Identification and Quantitation:**

Identifications of compounds present in a sample are made by matching retention times of peaks in the sample chromatogram to the retention times of standard peaks. After a compound is identified, quantitation is done by a peak height comparison.

Example: If the 10 µg/L aqueous standard head space had a benzene peak height of 32 units from a 200 µL injection with instrument attenuation at 2, an identified benzene peak 12 units high from an 200 µL sample injection with instrument attenuation at 2 would represent a sample concentration of 57 ppb benzene.

$$\frac{32 \text{ units}}{151 \text{ ppb/v } *} = \frac{12 \text{ units}}{X \text{ ppb/v}}$$

X = 57 ppb/v Benzene

* See Air Standard Section 8.5.2

12.0 **Data and Records Management:**

12.1 All work performed for the analyses of samples should be entered into the field screening logbook. The analyses data should be presented to the project manager on site. This is followed up by an Internal Correspondence Report, that is reviewed by the Advanced Analytical Chemistry Expert from the Chemistry Section of the EIA Laboratory. Chromatograms

generated should be saved and filed in the project folder The samples analyzed should also be logged into the laboratory information management system.

Chromatograms:

12.2.1 Site name, analyst name, and date at the start of the chromatogram strip chart.

12.2.2 Every chromatogram/every sample/standard

Sample number or standard
Sample volume injected
Instrument gain or attenuation setting

13.0 **Quality Control:**

13.1 A blank and a one point standard is used for instrument's calibration. Initially run 10 µg/L standard to determine retention times and response factors of instrument. Repeat a second 10 µg/L standard to check the reproducibility. **Acceptance criteria: within ± 15% difference from the first standard.**

13.2 Blanks are analyzed at the initial calibration and periodically to be sure of no carry over from previous injections. Technical judgement is used to determine frequency. **Acceptance criteria: No target compound peaks greater than one-half the reporting level.**

13.3 A second source standard containing some compounds of interest is analyzed daily to verify calibration standard. **Acceptance criteria: within ± 20% agreement of true value.**

A standard is run at least every 10 samples and at the end of the sample batch to update the instrument's calibration due to changes from temperature fluctuations with respect to retention times and response factors. **Acceptance criteria: ± 20%D agreement with the previous calibration.**

Analyze upwind samples to determine background

concentrations during outdoor ambient air sample events and report results.

13.6 Run field and laboratory duplicates when possible (i.e.,soil gas analysis and passive vapor sample analysis). **The acceptance criteria is agreement within ± 20% RPD between the two values.**

13.7 When possible (ie. soil gas, ambient air), GC/MS confirmation of 10% of the field samples analyzed should be performed. This is done, dependent upon the project data quality objective. Summa canisters are used for collecting confirmation samples for GC/MS confirmation.

14.0 **References:**

14.1 Interim Final Guidance for the Quality Assurance/Quality Control Guidance for Removal Activities, April 1990.

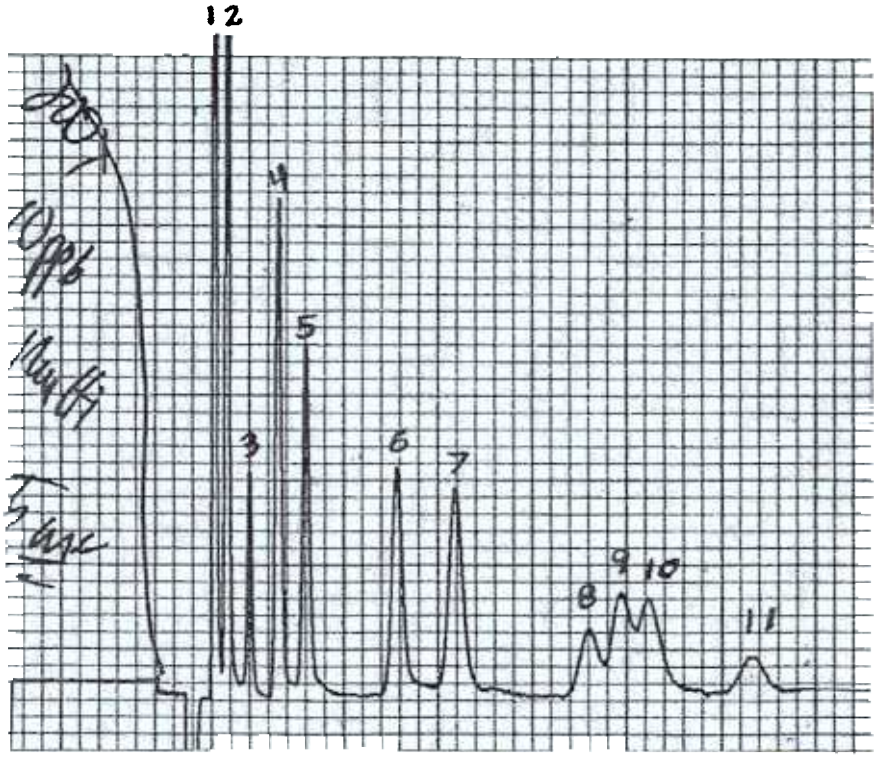
Quality Control Table			
QC Item	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Initial Calibration	Daily, before samples	< 15%D from the first std[3]	Inject another std, check system
Blank	Daily, every batch	< 1/2 RL [3]	Repeat blank injection, prepare a new blank, check system, increase RLs depending on the DQOs
Second Source Std	Daily, every batch	< 20%D, from the true value[3]	Inject another std, repeat initial calibration, check system
Cont. Cal	Every 10 samples and at the end	< 20%D, from the previous std [3]	Inject another std, repeat initial calibration, check system
Upwind Samples	Option, if the situation warranted	None. Report results [3]	
Field Duplicate	Option, depends on DQOs	< 20% RPD [3]	Repeat injection, run another duplicate
Laboratory Duplicate	Option, depends on DQOs	< 20% RPD, [3]	Repeat injection, run another duplicate

[1]= Acceptance criteria from Reference Method #####(e.g. CLP SOW, 524.2) or Reference QC documentation
[2]= Acceptance criteria calculated from in-house historical data (control charts)
[3]= Acceptance criteria defined based on technical judgment

Figure 1

Volatile Organic Screening Method
Target Compound Chromatogram (PID)

1 1,1-Dichloroethylene
2 t-1,2-Dichloroethylene
3 c-1,2-Dichloroethylene
4 Benzene
5 Trichloroethylene
6 Toluene
7. Tetrachloroethylene
8. Chlorobenzene
9. Ethyl Benzene
10 m/p-Xylenes
11 o-Xylene

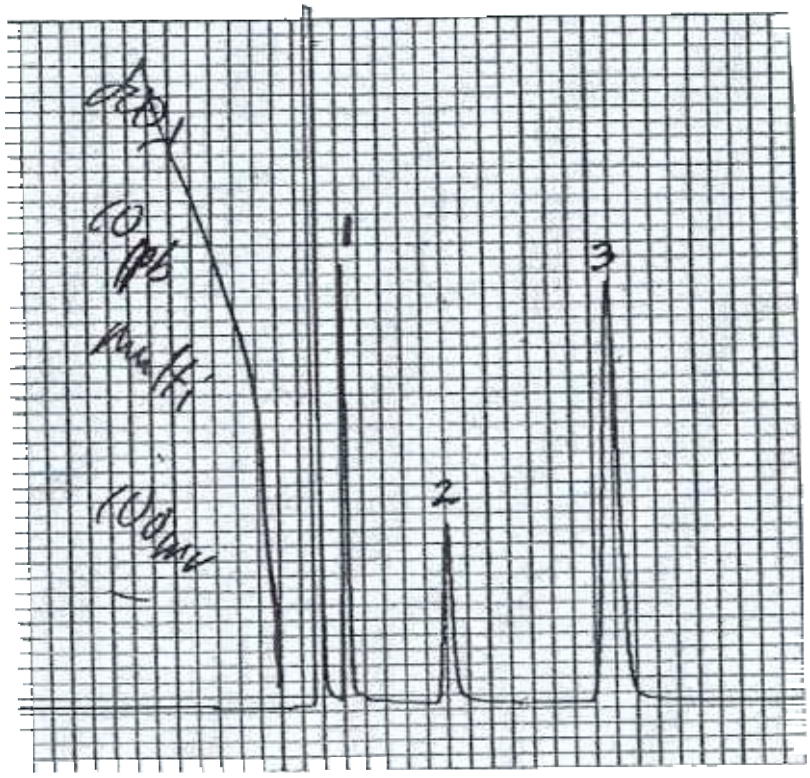


Instrument : Shimadzu gas chromatography 14A
Detector : Photoionization Detector (PID)
Column : DBPS 624, 30 m, 0.53 micron
Temperature : 60°C
Carrier Gas : Zero grade nitrogen
Flow Rate : 30 - 60 cc/min
Chart Speed : 1 cm/min

Figure 2

Volatile Organic Screening Method
Target Compound Chromatogram (ECD)

1. 1,1-Dichloroethylene
2. Trichloroethylene
   Tetrachloroethylene



Instrument	Shimadzu gas chromatography 14A
Detector :	Electron Capture Detector (ECD)
Column :	DBPS 624, 30 m, 0.53 micron
Temperature	60°C
Carrier Gas	Zero grade nitrogen
Flow Rate :	30 - 60 cc/min
Chart Speed	1 cm/min

APPENDIX A-2

INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY

INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY

Performed by _____ Date Performed _____

Company Name _____ Phone No. _____

1. Occupant

Name:_____
Street Address:_____
Town:_____
County:_____
Home Phone No._____Office Phone No._____

2. Owner or Landlord
(if different from above)

Name:_____
Street Address:_____
Town:_____
County:_____
Home Phone No._____Office Phone No._____

A. Building Construction Characteristics:

Type (circle appropriate responses): Single Family Multiple Dwelling Commercial

Ranch	2-Family
Raised Ranch	Duplex
Split Level	Apartment House_____Units
Colonial	Number of Floors_____
Mobile Home	Other specify_____

Building Age_____ General Description of Building Construction Material _____
_____

Is the building insulated? Yes / No How air tight is the building_____
_____

B. Basement Construction Characteristics (circle all that apply):

1. Full basement, crawlspace, slab on grade, other_____
2. Basement floor: concrete, dirt, other _____
3. Concrete floor: unsealed, painted, covered; with _____

4. Foundation walls: poured concrete, block, laid up stone, other_____
5. The basement is: wet, damp, dry___Sump present? y / n ____water in sump y / n
   If the basement has a moisture problem, how many times a year?_____
   Comment:_____
6. The basement is: finished, unfinished_____
   If finished, how many rooms?_____
   How many used for more than 2 hours/day?_____
7. Identify potential soil vapor entry points (e.g., cracks, utility ports, floor drains, etc.)____
8. Describe how air tight the basement is:_____

_____

C. HVAC (circle all that apply):

1. The type of heating system(s) used in this residence is/are:

Hot Air Circulation	Heat Pump
Hot Water Radiation	Unvented Kerosene Heater
Steam Radiation	Wood Stove
Electric Baseboard	Other (specify)_____

2. The type(s) of fuel(s) used is/are: Natural Gas, Fuel Oil, Electric, Wood, Coal, Solar, Other (specify)_____
3. Is the heating system's power plant located in the basement or other area:_____
4. Is there air conditioning? Yes / No Central Air, or Window Units?
   Specify the location_____
5. Are there air distribution ducts present? Yes / No
6. Describe the supply and cold air return duct work in the basement including whether there is a cold air return. How tight are the duct joints?

_____

_____

D. Potential Indoor Sources of Pollution

1. Has the house ever had a fire? Yes / No
2. Is there an attached garage? Yes / No
3. Is a vehicle normally parked in the garage? Yes / No
4. Us there a kerosene heater present? Yes / No
5. Is there a workshop, hobby, or craft area in the residence? Yes / No
   If Yes, where and what _____
6. Is there a kitchen exhaust fan? Yes / No Where is it vented?_____
7. Is there a clothes dryer? Yes / No Where is it located?_____
   Where is it Vented?_____
8. Has a new carpet been installed in the home within the last year? Yes / No

If yes, where?_____

9. Has any painting been completed in the last 6-months. Yes / No
   If yes, where?_____
10. Has the house ever been fumigated? If yes describe date, type, and location of treatment._____
11. Does anyone in the home regularly use or work in a dry cleaning service? Yes/No
    If Yes, explain (i.e. how often)_____
12. Does anyone in the home use solvents at work? Yes / No
    If yes, what solvents, and are clothes washed at home?_____
    _____
13. Use attached page to complete inventory of products used and stored in the building. Any product that contains volatile organic compounds, or chemicals similar to the target compounds should be listed, along with photoionization detector readings.

E. Water and Sewage (Circle appropriate responses):

Source of Water:

Public Water Drilled Well Driven Well Dug Well Other(specify)_____

Do you have a private well for purposes other than drinking? Yes / No
If yes, what is it used for_____

Water Specifications:

Well Diameter_____ Grouted or Ungrouted_____
Well Depth _____ Type of Storage Tank_____
Depth to Bedrock_____ Size of Storage Tank_____
Feet of Casing_____ Describe type(s) of treatment_____

Water Quality:

Taste and/or odor problems y / n If so describe_____
How long has the taste and/or odor been a present___

Sewage Disposal: Public Sewer Septic Tank Leach Field Other (specify)_____
Distance from well to septic system_____Type of septic tank additive_____

F. Plan View:

Draw a plan view sketch for each floor of the residence and if applicable, indicate air sample locations, possible indoor air pollution sources and PID meter readings.

G. Potential Outdoor Sources of Pollution:

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on the spill location (if known), potential air contamination sources (industry, gas stations, repair shops, etc.), outdoor sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the location of the well and septic system if applicable, and a qualifying statement to help locate the site on a topographic map.

PRODUCT INVENTORY FORM

Product and Contents	PID Reading

APPENDIX A-3

INDOOR AIR SAMPLING

STANDARD OPERATING PROCEDURES USING SUMMA®-TYPE CANISTERS

Appendix A-3
Indoor Air Sampling
Standard Operating Procedures Using SUMMA®-Type Canisters

This document is a standard operating procedure (SOP) for the setup and collection of indoor air samples from residential, commercial, industrial, institutional, and multiuse buildings. This SOP is intended to be a general directive for the collection of indoor air samples using SUMMA®-type air canisters equipped with metering flow controllers for the purpose of collecting a "time-averaged" indoor air sample. This SOP is intended for 24-hour sample collection.

For the purposes of evaluating the potential vapor migration from soils and groundwater into indoor air, samples will be collected from the lowest usable area of the building. Indoor air samples may be collected from one of the following areas:

1) Unfinished basement or unfinished first floor of slab-on-grade building;
2) Finished basement or finished first floor of slab-on-grade building; or
3) First floor living area above a dirt-floored crawl space.

EQUIPMENT / MATERIAL LIST:

- Documentation of access permission from the owner to complete the sampling
- 6-liter, stainless steel, pre-evacuated SUMMA®-type canister - .laboratory provided
- Pressure gage with integrated 24-hour metering valve- laboratory provided
- Two, 9/16-inch, open-end wrenches
- Photoionization Detector (PID) – part per billion range detector for screening indoor air
- Wristwatch
- Digital camera
- Indoor Air Quality Questionnaire and Building Inventory Form (attached)
- Chain-of-Custody (COC) form -laboratory provided

Procedure for Indoor Air Sample Collection:

The following section provides a general guidance on the collection of indoor air samples; the sequence can be modified as needed based on site specific conditions at the time of sample collection.

Selection and Preparation of sample collection area

A. Conduct interview with occupant/owner. Complete Indoor Air Quality Questionnaire and Building Inventory Form

B. Observe the area for the apparent presence of items or materials that may potentially produce or emit VOCs and interfere with analytical laboratory analysis of the collected sample. Record relevant information on Building Inventory Form and document with digital photographs.

C. Using the PID, screen indoor air in the location intended for sampling and in the vicinity of potential VOC sources (i.e. paints, glues, household cleaners, dry cleaned clothes, etc.) to assess the potential gross presence of VOCs. Record PID readings on the sampling form. Items or materials exhibiting PID readings shall be considered probable sources of VOCs and, given approval of the owner or occupant, will be removed prior to sampling. If practical, sampling will be rescheduled for 24-hours later.

Preparation of SUMMA®-type canister and collection of sample

A. Place SUMMA®-type canister at breathing zone height (approximately 3 to 5 feet above floor). Canister can be placed on a stable surface, such as a table or bookshelf, or affixing to a wall or ceiling support with nylon rope. Avoid placing canisters near windows or other potential sources of drafts and air supply vents.

B. Record SUMMA®-type canister serial number on sampling summary form and COC.

C. Record sample identification on canister ID tag, and record on sampling summary form and COC.

D. Remove brass plug from canister fitting.

E. Install pressure gage / metering valve on canister valve fitting and tighten. If pressure gage has additional (2nd) fitting, install brass plug from canister fitting into gage fitting and tighten.

F. Open and close canister valve.

G. Record gage pressure on sample summary form and COC. Gage pressure must read >25 inches Hg. Replace SUMMA®-type canister if gage pressure reads <25 inches Hg.

H. Remove brass plug from gage fitting and store for later use.

I. Open canister valve to initiate sample collection.

J. Record date and local time (24-hour basis) of valve opening on sampling summary form and COC.

K. Take digital photograph of SUMMA®-type canister and surrounding area.

Termination of sample collection

A. Revisit SUMMA®-type canister approximately at end of sample collection period (e.g., 24 hours after initiation of sample collection) and record gage pressure on sampling form and COC.

B. Record date and local time (24-hour basis) of valve closing on sampling form and COC.

C. Close canister valve.

D. Remove pressure gage / flow valve from canister.

E. Reinstall brass plug on canister fitting and tighten.

F. Remove SUMMA®-type canister from sample collection area.

Preparation and shipment of sample to analytical laboratory

A. Pack SUMMA®-type canister in shipping container, note presence of brass plug installed in tank fitting.

B. Complete COC and place requisite copies in shipping container.

C. Close shipping container and affix custody seal to container closure.

Quality Assurance/Quality Control (QA/QC) samples:

The collection of QA/QC samples will include the submittal of blind sample duplicates to the analytical laboratory for analyses of target compounds. Duplicate samples will be collected "side-by-side" over the same time interval.

APPENDIX A-4

SUBSTRUCTURE SOIL GAS SAMPLING STANDARD OPERATING PROCEDURES USING SUMMA® -TYPE CANISTERS

Appendix A-4
Substructure Soil Gas Sampling
Standard Operating Procedures Using SUMMA ® type Canisters

This document is a standard operating procedure (SOP) for the setup and collection of substructure soil gas samples from beneath residential, commercial, industrial, institutional, and multiuse buildings. This SOP is intended to be a general directive for the collection substructure soil gas using SUMMA®-type air canisters equipped with metering flow controllers for the purpose of collecting a "time-averaged" indoor air sample. This SOP is intended for 24-hour sample collection. Substructure soil gas samples may be collected from one of the following areas:

Area 1) Subslab soil gas sample obtained via a temporary installed sampling port through apparent vapor barrier (such as floor slab or plastic liner); or
Area 2) Air sample obtained from crawl space or basement without an apparent vapor barrier.

EQUIPMENT / MATERIAL LIST:

- Documentation of access permission from the owner to complete the sampling
- 6-liter, stainless steel, pre-evacuated SUMMA®-type canister -laboratory provided
- Pressure gage with integrated 24-hour metering valve -laboratory prol1ided
- Two, 9/16-inch, open-end wrenches
- Photo Ionization Detector (PID) -for screening crawl space
- Utility Knife
- Electric hammer drill with 1-inch and 3/8-inch diameter drill bits
- Two 50-foot long electrical extension cords
- ¼-inch outer diameter (O.D.) Teflon® tubing
- ¼-inch stainless steel valve and stainless steel "tee" type fitting
- 60 cc polyethylene syringe for purging tubing
- 1-inch diameter rubber stopper with ¼-inch port and solid 1-inch diameter rubber stopper
- Quick-drying expansive Portland cement
- Wristwatch
- Digital camera
- Flashlight
- Indoor Air Quality Questionnaire and Building Inventory Form (attached)
- Chain-of-Custody (COC) form -laboratory provided

Procedure for Substructure Soil Gas Sample Collection:

The procedures for substructure soil gas sample collections will be dependant on location category. During the occupant/owner interview and building survey the lowest accessible portion of the building (e.g., crawl space, basement, or first floor of slab-on-grade construction) will be observed to assess which substructure sampling area category is applicable. The steps provided below should be considered a general guidance on the collection of substructure soil gas samples for each location category; the sequence can be modified as needed based on site- or project-specific conditions at the time of sample collection.

Area 1: Subslab soil gas sample obtained via temporary installed sampling port through apparent vapor barrier (i.e. floor slab or plastic liner).

Selection and preparation of sample collection point

A. Observe the condition of the building floor slab for apparent penetrations such as concrete floor cracks, floor drains, or sump holes. Note the floor conditions on the sampling form and select a potential location or locations for a temporary subsurface probe. The location or locations should be central to the building away from foundation walls and apparent penetrations. Review the proposed location or locations with the occupant/owner describing how the sampling port or ports will be installed. After receiving' permission from the occupant/owner, mark the proposed location(s) and describe the location(s) on the sampling form.

B. Using the PID, screen indoor air in the area of floor penetrations such as concrete floor cracks, floor drains, or sump holes. Record the indoor air PID readings on the sampling form.

Installation of temporary subsurface sample point

A. Drill a 1-inch diameter hole about to 2 inches into the concrete slab using an electric hammer drill.
B. Extend the hole through the remaining thickness of the slab using a 3/8-inch drill bit. Extend the hold about three inches into the subslab material using either the drill bit or a steel probe rod.
C. Insert a section of ¼-inch O.D. Teflon® tubing to the bottom of the floor slab. Seal the annular space between the 1-inch hole and 1/4-inch tubing by seating

a tapered laboratory-grade rubber plug perforated with a 1/4.-inch hole into the probe hole and if necessary capping the stopper with a beeswax seal. The beeswax will be melted with an electric heat gun.

D. Connect the ¼ -inch Teflon® tubing to a stainless steel valve using compression fittings. Open the in-line valve and purge the probe tubing using a polyethylene 60 cubic centimeter (cc) syringe. Close the valve, remove and cap the syringe, and connect the ¼-inch Teflon® tubing and in-line valve to a SUMMA®-type canister. The air/soil gas syringe will be discharge out of doors. For duplicate sample locations connect a second canister before purging by installing a 1/4-inch stainless steel "tee" fitting between the probe discharge tubing and the stainless steel valve.

Preparation of SUMMA®-type canister and collection of sample

A. Place SUMMA®-type canister adjacent to the temporary sampling port.

B. Record SUMMA®-type canister serial number on sampling summary form and COC.

C. Record sample identification on canister ID tag, and record on sampling summary form and COC.

D. Remove brass plug from canister fitting.

E. Install pressure gage / metering valve on canister valve fitting and tighten. If pressure gage has additional (2nd) fitting, install brass plug from canister fitting into gage fitting and tighten.

F. Open and close canister valve.

G. Record gage pressure on sample summary form and COC. Gage pressure must read >25 inches Hg. Replace SUMMA®-type canister if gage pressure reads <25 inches Hg.

H. Remove brass plug from gage fitting and store for later use.

I. Connect subsurface probe to end of in-line particular filter via ¼-inch O.D. Teflon® tubing and "swagelok®-type" fittings.

J. Open canister valve and in-line stainless steel valve to initiate sample collection.

K. Record date and local time (24-hour basis) of valve opening on sampling summary form and COC.

L. Take digital photograph of SUMMA®-type canister and surrounding area.

Termination of sample collection

A. Revisit SUMMA®-type canister approximately at end of sample collection period (e.g., 24 hours after initiation of sample collection) and record gage pressure on sampling form and COC.
B. Record date and local time (24-hour basis) of valve closing on sampling form and COC.
C. Close canister valve.
D. Disconnect Teflon® tubing and remove pressure gage / flow valve from canister.
E. Reinstall brass plug on canister fitting and tighten.
F. Remove SUMMA®-type canister from sample collection area.
G. Remove temporary probe and rubber stopper and push solid stopper into hole, allowing approximately 1-inch for sealer. Fill the remaining hole with a quick drying hydraulic cement. Finish flush with floor surface.

Area 2: Air sample obtained from crawl space or basement without an apparent vapor barrier.

Selection and Preparation of sample collection area

A. Conduct interview with occupant/owner. Complete Indoor Air Quality Questionnaire and Building Inventory Form
B. Observe the area for the apparent presence of items or materials that may potentially produce or emit VOCs and interfere with analytical laboratory analysis of the collected sample. Record relevant information on Building Inventory Form and document with digital photographs.
C. Using the PID, screen indoor air in the location intended for sampling and in the vicinity of potential VOC sources (i.e. paints, glues, household cleaners, dry cleaned clothes, etc.) to assess the potential gross presence of VOCs. Record PID readings on the sampling form. Items or materials exhibiting PID readings shall be considered probable sources of VOCs and, given approval of the owner or occupant, will be removed prior to sampling. If practical, sampling will be rescheduled for 24-hours later.

Preparation of SUMMA®-type canister and collection of sample

A. Place SUMMA®-type canister at breathing zone height (approximately 3 to 5 feet above basement floor or about 1 foot above floor of crawl space). Canister can be placed on a stable surface, such as a table or bookshelf, or affixing to a wall or ceiling support with nylon rope. Avoid placing canisters near windows or other potential sources of drafts and air supply vents.

B. Record SUMMA®-type canister serial number on sampling summary form and COC.

C. Record sample identification on canister ID tag, and record on sampling summary form and COC.

D. Remove brass plug from canister fitting.

E. Install pressure gage / metering valve on canister valve fitting and tighten. If pressure gage has additional (2nd) fitting, install brass plug from canister fitting into gage fitting and tighten.

F. Open and close canister valve.

G. Record gage pressure on sample summary form and COC. Gage pressure must read >25 inches Hg. Replace SUMMA®-type canister if gage pressure reads <25 inches Hg.

H. Remove brass plug from gage fitting and store for later use.

I. Open canister valve to initiate sample collection.

J. Record date and local time (24-hour basis) of valve opening on sampling summary form and COC.

K. Take digital photograph of SUMMA®-type canister and surrounding area.

Termination of sample collection

A. Revisit SUMMA®-type canister approximately at end of sample collection period (e.g., 24 hours after initiation of sample collection) and record gage pressure on sampling form and COC.

B. Record date and local time (24-hour basis) of valve closing on sampling form and COC.

C. Close canister valve.

D. Remove pressure gage / flow valve from canister.

E. Reinstall brass plug on canister fitting and tighten.

F. Remove SUMMA®-type canister from sample collection area.

Preparation and shipment of sample to analytical laboratory

A. Pack SUMMA®-type canister in shipping container, note presence of brass plug installed in tank fitting.
B. Complete COC and place requisite copies in shipping container.
C. Close shipping container and affix custody seal to container closure.

Quality Assurance/Quality Control (QA/QC) samples:

The collection of QA/QC samples will include the submittal of blind sample duplicates to the analytical laboratory for analyses of target compounds. Area 2- type duplicate samples will be collected "side-by-side" over the same time interval. Area 1- type duplicate samples will be obtained using a stainless steel "tee" type fitting and 1/4-inch O.D. Teflon- tubing connected to the same subsurface probe.

APPENDIX A-5

AMBIENT (OUTDOOR) AIR SAMPLING STANDARD OPERATING PROCEDURES USING SUMMA®-TYPE CANISTERS

Appendix A-5
Ambient (Outdoor) Air Sampling
Standard Operating Procedures Using SUMMA®-type Canisters

This document is a standard operating procedure (SOP) for the setup and collection of ambient (outdoor) air samples from residential, commercial, industrial, institutional, and multiuse buildings. This SOP is intended to be a general directive for the collection of ambient air samples using SUMMA®-type air canisters equipped with metering flow controllers for the purpose of collecting a "time-averaged" indoor air sample. This SOP is intended for 24-hour sample collection.

EQUIPMENT / MATERIAL LIST:

- Documentation of access permission from the owner to complete the sampling
- 6-liter, stainless steel, pre-evacuated SUMMA®-type canister - .laboratory provided
- Pressure gage with integrated 24-hour metering valve- laboratory provided
- Two, 9/16-inch, open-end wrenches
- Photoionization Detector (PID) – part per billion range detector for screening indoor air
- Wristwatch
- Digital camera
- Indoor Air Quality Questionnaire and Building Inventory Form (attached)
- Chain-of-Custody (COC) form -laboratory provided

Procedure for Ambient (outdoor) Air Sample Collection:

The following section provides a general guidance on the collection of ambient air samples; the sequence can be modified as needed based on site specific conditions at the time of sample collection.

Selection and Preparation of sample collection area

A. Conduct interview with occupant/owner. Complete Indoor Air Quality Questionnaire and Building Inventory Form.

B. Choose an area for sample collection that is upwind of the property (properties) being assessed, if possible. Collect sample away from wind breaks, if possible.

C. Observe the area for the apparent presence of items or materials that may potentially produce or emit VOCs and interfere with analytical laboratory analysis of the collected sample (i.e. fuel tanks, gasoline, paint storage, etc.). Record relevant information on Building Inventory Form and document with digital photographs.

D. Using the PID, screen ambient air in the location intended for sampling to assess the potential gross presence of VOCs. Record PID readings on the sampling form.

Preparation of SUMMA® canister and collection of sample

A. Place SUMMA®-type canister approximately 5 feet above ground (or equivalent to the mid-point of the ground story of the building(s). Canister can be placed on a stable surface, or suspended from structure with nylon rope.

B. Record SUMMA®-type canister serial number on sampling summary form and COC.

C. Record sample identification on canister ID tag, and record on sampling summary form and COC.

D. Remove brass plug from canister fitting.

E. Install pressure gage / metering valve on canister valve fitting and tighten. If pressure gage has additional (2nd) fitting, install brass plug from canister fitting into gage fitting and tighten.

F. Open and close canister valve.

G. Record gage pressure on sample summary form and COC. Gage pressure must read >25 inches Hg. Replace SUMMA®-type canister if gage pressure reads <25 inches Hg.

H. Remove brass plug from gage fitting and store for later use.

I. Open canister valve to initiate sample collection.

J. Record date and local time (24-hour basis) of valve opening on sampling summary form and COC.

K. Take digital photograph of SUMMA®-type canister and surrounding area.

Termination of sample collection

A. Revisit SUMMA®-type canister approximately at end of sample collection period (e.g., 24 hours after initiation of sample collection) and record gage pressure on sampling form and COC.

B. Record date and local time (24-hour basis) of valve closing on sampling form and COC.

C. Close canister valve.

D. Remove pressure gage / flow valve from canister.

E. Reinstall brass plug on canister fitting and tighten.

F. Remove SUMMA®-type canister from sample collection area.

Preparation and shipment of sample to analytical laboratory

A. Pack SUMMA®-type canister in shipping container, note presence of brass plug installed in tank fitting.

B. Complete COC and place requisite copies in shipping container.

C. Close shipping container and affix custody seal to container closure.

Quality Assurance/Quality Control (QA/QC) samples:

The collection of QA/QC samples will include the submittal of blind sample duplicates to the analytical laboratory for analyses of target compounds. Duplicate samples will be collected "side-by-side" over the same time interval.

APPENDIX B

HEALTH AND SAFETY PLAN

Harding Lawson Associates

HEALTH AND SAFETY PLAN

Harding Lawson Associates (HLA), under contract to the New York State Department of Environmental Conservation (NYSDEC), is implementing a Remedial Investigation/Feasibility Study (RI/FS) of the Hidden Valley Electronics (HVE) site (Site) in East Vestal, Broome County, New York. The Site is listed as a Class 2 hazardous waste site, Site No. 7-04-029, in the Registry of Hazardous Waste Sites in New York State. This Health and Safety Plan (HASP) has been prepared in accordance with the requirements or the NYSDEC as identified in Work Assignment (WA) No. D003826-9, dated April 1, 2004, under the July 1997 Superfund Standby Contract between HLA and the NYSDEC.

The purpose of this HASP is to protect the health and safety of on-site personnel and the surrounding community during remedial activities at the HVE site. This HASP is based on the HLA Program HASP (ABB-ES, 1994) and consists of a site-specific HASP Addendum to document site-specific aspects of the HVE RI/FS.

Prior to initiation of remedial activities, HLA will notify the local fire, police, and potential emergency responders to advise them of the remedial act ivies that will take place and the schedule of these activities. The HVE tenants will also be notified. If necessary adjacent property owners will be notified, however, the HVE site is a low hazard site and notification of adjacent property owners is not anticipated as a necessary procedure.

In the event of an emergency or corresponding evacuation procedure, evacuation procedures documented in the HASP Addendum will be followed and the emergency contacts notified.

Attachement:

Harding Lawson Associates
Health and Safety Plan Addendum
(See Program Health and Safety Plan for more details)

Site: **Hidden Valley Electronics** Contact: John Peterson

Street Address: 1808 Vestal Parkway East

Proposed Date(s) of Investigation: 7/26/2004 Job Number: 3612042017 Task 01

Prepared by: C.Staples Date: 5/17/2004

Approved by: Cindy Sundquist Date: 5/19/2004

Proposed Activity(s): Terra Probe-soil and water sampling, well groundwater sampling, soil gas and indoor air sampling (see field sampling plan)

Known or Suspected Chemicals (include PELs): See attached table.

HAZARD EVALUATION (Check all that apply):

Overall Hazard Estimation:		Serious		Moderate	X	Low		Unknown		None
Major Exposure Route(s):		Dermal	X	Inhalation		Ingestion		Puncture		
Contaminant Location(s):		Surface	X	Underground	X	Soil		Sediment	X	Water
		Tank		Other (list):						
Health Hazard(s):		Liquid		Solid		Sludge		Corrosive		Ignitable
	X	Volatile		Radioactive		Reactive		Unknown		
Safety Hazard(s):		Height	X	Equipment		Cold Stress	X	Noise		Eye
		Near Water		Confined Space	X	Heat Stress	X	Machinery		Burns
		Lifting		Slips/Falls		Other (list):				

EQUIPMENT (check all that apply): Initial Level of Personal Protection: Modified D

PPE Selected: ***	X	Cartridge Respirator-See Below	X	Coveralls		Gloves	
		Escape Respirator	X	Safety Glasses	X	·inner - vinyl	
	X	Safety Boots/Shoes		Face Shield	X	·outer - nitrile	
		Chemical Resistant Boots	X	Hard Hat		Tyveks	
	X	Disposable Boot Covers	X	Ear Protection		regular	
		Other (list):			X	coated	
Monitoring Equipment:		Combustible Gas/Oxygen Meter		Explosimeter		OVA	
		Hydrogen Sulfide Meter	X	Draeger Tubes	X	PID	
		Radiation Alert Meter		list: vinyl chloride 0.5/a; benzene 0.5/C			
		Dosimeter Badge		Other (list):			
Emergency Equipment:	X	First Aid Kit		Fire Extinguisher	X	Eye Wash	
		Other (list):					

CONTAMINANT LEVELS FOR MODIFICATION OF PROTECTIVE EQUIPMENT:

*** Cartridge Respirator - GMC w/N95 prefiltered (or equivalent) (change twice daily).

Drilling and Direct Push: Monitor breathing zone with a 10.6 eV Lamp (10.0 or 10.2 ok too) PID. If PID readings are detected in the breathing zone above background, monitor with a Vinyl Chloride 0.5/a Drager tube (to detect 1,1-DCE). If 1,1-DCE readings (as read on the VC Drager Tube) are greater than 0.5 ppm, upgrade to Level B PPE. Otherwise, continue working until PID readings reach or exceed 22 ppm. If PID is greater than 22 ppm, upgrade to Level C PPE. Upgrade to Level B PPE if PID readings in the breathing zone are greater than 100 ppm.

VOCs will also be continuously monitored at the perimerter of the designated work zone for each location as a measure of protection for the downwind community. The continuous monitoring will be performed in acordance with NYSDOH gCAMP rev 1 06/00 (see attached).

Drilling and direct push sampling are not anticipated to be performed in source areas, therefore particulate monitoring will not be performed on a continuous basis. Significant amounts of dust is not anticipated to be generated during drilling and direct push sampling. Dust suppression measures will be used to minimize the generation of dust. In the event that dust conditions do arise, a respirable dust meter will be used to monitor particulates in accordance with NYSDOH gCAMP rev 1 06/00. If particulate levels exceed 100 ug/m^3 above background or greater than 150 ug/m^3, work will be stopped and dust control measures and continuous particulate monitoring will be instituted prior to work being resumed.

GW Sampling and Survey: Monitor breathing zone with a 10.6 eV Lamp (10.0 or 10.2 ok too) PID. If PID readings are detected in the breathing zone above background, monitor with a Vinyl Chloride 0.5/a Drager tube (to detect 1,1-DCE) and a Benzene 05./C Drager tube. If benzene levels are greater than 0.5 ppm, upgrade to level C PPE. If 1,1-DCE readings (as read on the VC Drager Tube) are greater than 0.5 ppm and/or benzene Drager tube readings are greater than 5 ppm, upgrade to Level B PPE. Otherwise, continue working until PID readings reach or exceed 22 ppm. If PID is greater than 22 ppm, upgrade to Level C PPE. Upgrade to Level B PPE if PID readings in the breathing zone are greater than 100 ppm.

DECONTAMINATION/DISPOSAL: All personnel and/or equipment leaving contaminated sites are subject to decontamination. Under no circumstances (except emergency evacuation) will personnel be allowed to leave the site prior to decontamination. The decontamination procedures to be used at the site are as follows:
Remove all protective clothing and place PPE in double lined garbage bags. If PID headspace within bag is less than 5ppm, the PPE will be disposed of as garbage. Drilling equipment in contact with subsurface soil and water will be cleaned with a pressure sprayer over the boring location. The boring will be backfilled with bentonite pellets.

EMERGENCY MEDICAL TREATMENT/FIRST AID: First aid will be rendered to any person injured on-site, as appropriate. The injured person will then be transported to a medical facility for further examination and/or treatment. An ambulance will be used to transport the injured person to the hospital unless one is not readily available or could result in excessive delay. In this case, other transport is authorized. Under no circumstances will injured persons transport themselves to a medical facility for emergency treatment.

EMERGENCY EVACUATION: In the event of an emergency requiring evacuation, the HSO assumes the role of on-site coordinator. Evacuation responses will occur at three levels: (1) withdraw from the immediate work area (100+ feet upwind); (2) site evacuation; and (3) evacuation of surrounding area. If the residences and commercial operations require evacuation, the local agencies will be notified and assistance requested. Designated on-site personnel will initiate evacuation of the immediate off-site area without delay.

EMERGENCY TELEPHONE NUMBERS:

Local Police Department	(607) 754-2386
Local Fire Department	(607) 754-1313 or 911
Local Rescue Service	(607) 754-1313 or 911
Primary Hospital: Lourdes Hospital	(607) 798-5111
Secondary Hospital: United Health Scs Hospital	(607) 772-6257
Health Resources	(800) 350-4511
National Poison Control Center	(800) 492-2414
Chemical Manufacturing Association-Chemical Referral Center	(800) 262-8200
Health and Safety Manager: Cindy Sundquist	(207) 775-5401 (w)
	(207) 650-7593 (cell)

AUTHORIZED PERSONNEL:

CHUCK STAPLES *+

* Current First-aid Certification
+ Current CPR Certification

FIELD TEAM REVIEW: I have read and reviewed the health and safety information in the HASP. I understand the information and will comply with the requirements of the HASP.

Name:_____ Date:_____
Name:_____ Date:_____
Name:_____ Date:_____
Name:_____ Date:_____
Name:_____ Date:_____
Name:_____ Date:_____

ROUTES TO EMERGENCY MEDICAL FACILITIES

PRIMARY HOSPITAL:

Facility Name: Lourdes Hospital
Address: 169 Riverside Drive, Binghamton, NY
Telephone Number: 607-798-5111

DIRECTIONS TO PRIMARY HOSPITAL (attach map):

Leave the site and take a right on Vestal Parkway East.
Go 2.5 miles and continue on towards Rt 201 North/Johnson City for 0.4 miles.
Continue on Rt 201 North for 0.9 miles.
Bear right on a local road for 0.1 miles.
Continue on Riverside Drive for 1.9 miles until you arrive at Lourdes Hospital

See attached map

ALTERNATE HOSPITAL:

Facility Name: United Health Svc Hospital
Address: 168 Water Street, Binghamton, NY
Telephone Number: 607-772-6257

DIRECTIONS TO ALTERNATE HOSPITAL (attach map):

See attached map

HIGHEST CONCENTRATIONS OF MOST RECENTLY DETECTED COMPOUNDS
HEALTH AND SAFETY PLAN
HIDDEN VALLEY ELECTRONICS SITE
VESTAL, NEW YORK

Parameter	Concentration (Groundwater)	Units	Date Detected	PELs/TLV	
Site Contaminants					
TCE	780	µg/L	5/8/2001	50	ppm
1,1,1-TCA	470	µg/L	5/8/2001	350	ppm
1,1-DCE	47	µg/L	5/8/2001	1	ppm
1,1-DCA	9	µg/L	5/8/2001	100	ppm
Off-Site (downgradient) Contaminants					
Benzene	450	µg/L	11/10/2003	0.5	ppm
Toluene	530	µg/L	11/10/2003	50	ppm
Ethylbenzene	470	µg/L	11/10/2003	100	ppm
Xylenes	3,100	µg/L	11/10/2003	100	ppm

Off-site chlorinated compound concentrations unknown, but anticipated lower than site contaminants

Note:

PELs = Permissible Exposure Limits
ppm = parts per million

New York State Department of Health
Generic Community Air Monitoring Plan

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

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

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

Community Air Monitoring Plan

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

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

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

VOC Monitoring, Response Levels, and Actions

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

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

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

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

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

Particulate Monitoring, Response Levels, and Actions

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

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

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

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

June 20, 2000

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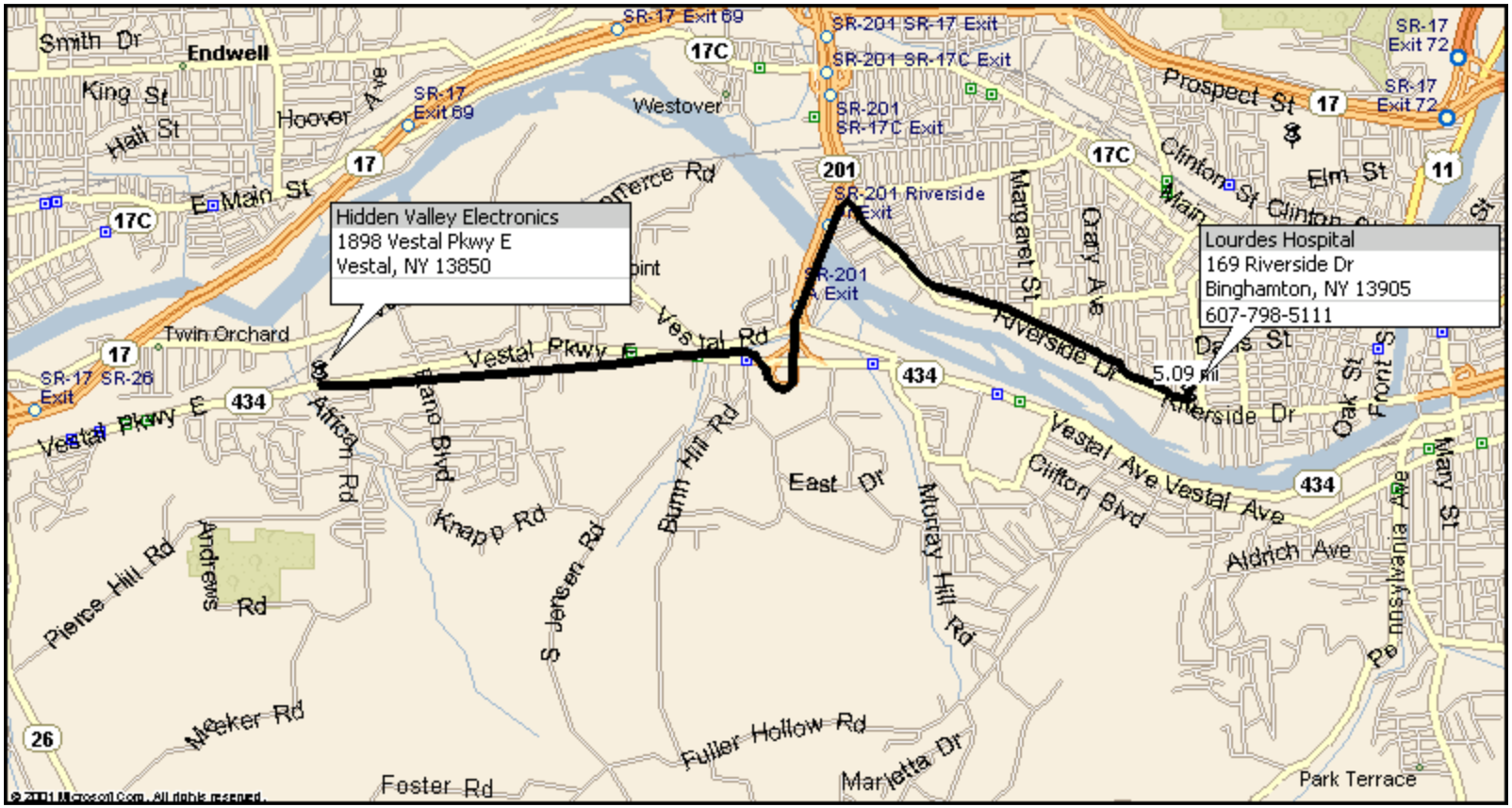
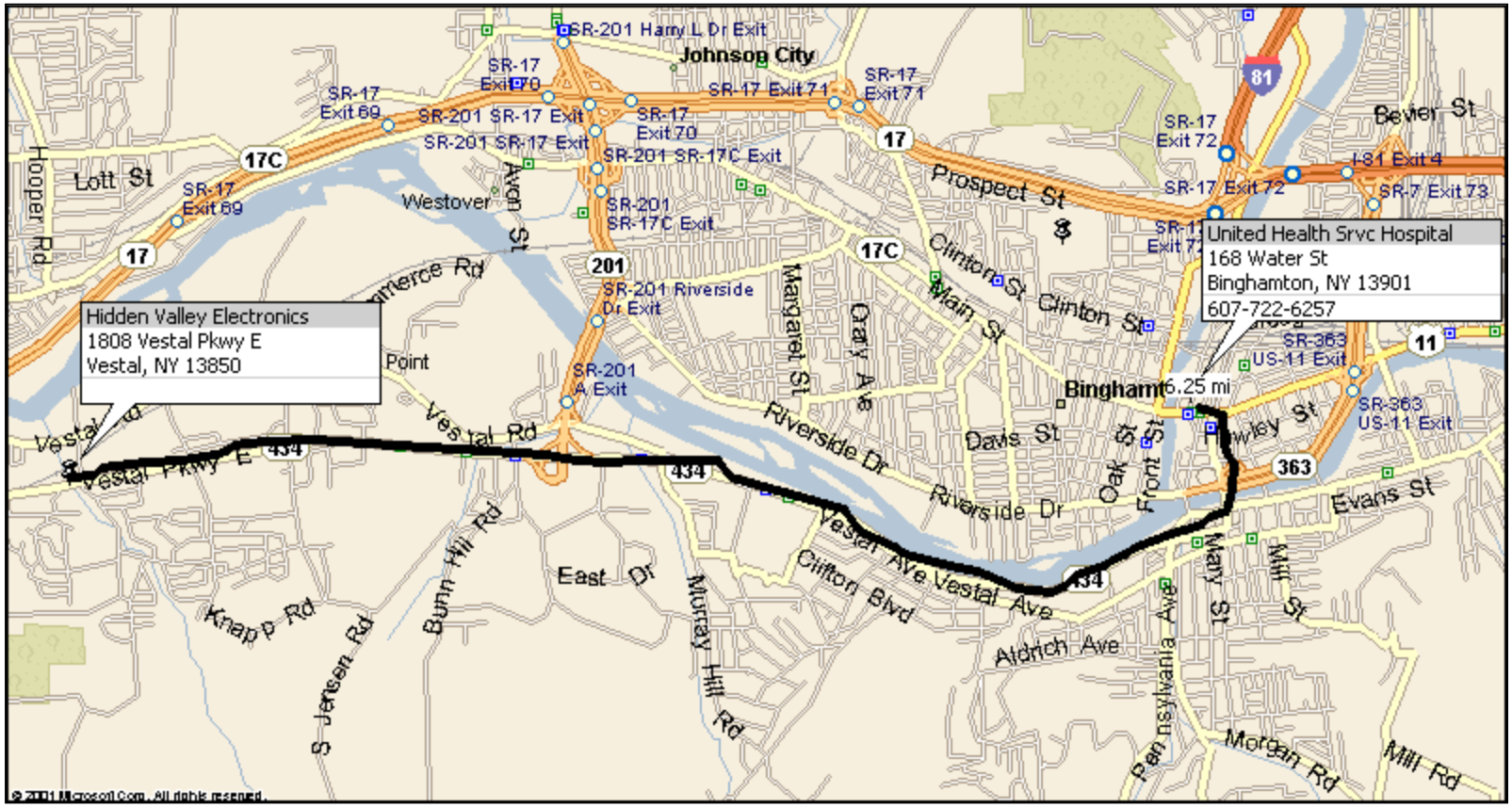
PRIMARY HOSPITAL

LOURDES HOSPITAL



ALTERNATE HOSPITAL

UHS HOSPITAL



APPENDIX C

COMMUNITY PARTICIPATION PLAN

1.0 INTRODUCTION

A major goal of citizen participation (CP) is to foster communication and trust between the public and the New York State Department of Environmental Conservation (NYSDEC) in the effort to restore and maintain the environment and protect public health. Citizen participation also provides opportunities to gather the public's knowledge and information. This input will be needed to make informed decisions about the remedial investigation/feasibility study (RI/FS) to be conducted at the Hidden Valley Electronics (HVE) site, and the proposed remedial actions that may follow. Effective public input will help residents in the East Vestal area and the NYSDEC to develop and implement a plan for Site restoration that is environmentally sound and that has public acceptance and high probability of timely implementation.

This Citizen Participation (CP) plan identifies the CP activities to be conducted during the RI/FS and Site restoration evaluations at the HVE site. A glossary of terms associated with New York's hazardous waste site citizen participation program is attached as Appendix A.

2.0 SITE BACKGROUND

The Site is located at 1808 Vestal Parkway east (NY Route 434), in the Town of Vestal, Broome County, New York. Situated on 4.5 acres in a commercial and residential area of the Town of Vestal, the property consists of a 30,052 square foot retail building, a paved parking lot, and a new self storage facility. The majority of the retail building is used as a fitness center, with the remainder containing a radio station, an insurance company, a bridal boutique, an eyeglass store, and a sports store.

The Miller Sunoco site, a NYSDEC Spills site, is located to the northeast of the HVE Site. An automobile repair shop is located west of the Site, and a printing shop is located up-slope and east of the Site. Additional commercial properties are located north of the Site, across Vestal Parkway. These include an automobile repair/tire facility (Kost Tire), a sandwich shop, and a wood products store (Amish Woodworks). Residential homes are located north of these commercial properties. In addition, residential homes are located south of the Site, up a steep grade.

The first site structure, an approximately 20,000 square foot facility, was constructed around 1957 for Federal Radio, a small electronics manufacturer. Federal Radio built an approximate 10,000 square foot addition around 1968. Federal Radio, also known as Harvey Electronics, and Federal Electronics manufactured electrical equipment at the facility until 1991, when HVE purchased their assets. The solvents or processes used by Federal Radio during their approximately 30 years at the site are not known.

HVE continued to manufacturer electrical components at the site. Manufacturing involved mounting electrical parts on bare circuit boards and assemblies and attaching them by machine or hand soldering. HVE reportedly used a vapor degreaser for cleaning circuit boards for one of its customers. The degreaser apparently used 1-1-1, TCA that was re-circulated through a sump. The sump was drained to a 55-gallon drum when the 1,1,1-TCA was contaminated with residues. HVE reported that three drums of 1,1,1-TCA were purchased, used, repackaged, and sent off-site for disposal between January and June 1993, when 1,1,1-TCA was no longer used at the facility. The process for cleaning electrical boards for other customers was a water based process. HVE relocated their operation to Apalachin, New York in March of 1995.

After HVE vacated the premises, the facility building was converted to its current use as retail space, a fitness center, and a radio station.

The Site came to the attention of the NYSDEC during the investigation of a petroleum spill at the Miller Sunoco service station in 1994 and 1995. During that investigation, chlorinated solvents were detected in groundwater samples collected from the Miller Sunoco site. Quarterly groundwater sampling has been conducted at the Miller Sunoco site since 1995, where fuel related compounds are the primary contaminants of concern. Only limited data is available for chlorinated compounds, the chemicals of concern at the HVE site. The most recent round of groundwater sampling was conducted in May 2004.

On May 6, 2004 representatives from Harding Lawson Associates, the NYSDEC, and the Broome County Health Department conducted a walkover of the Site. The site walkover consisted of assessing possible contaminant sources, and identifying logistical concerns for the RI field program.

Historical documentation and previously collected data do not indicate the disposal of large quantities of chlorinated solvents at the Site; a contaminant source (i.e. current use of solvents or signs of buried wastes or chlorinated solvents) does not appear to be present at the Site. A historical release (or releases) of chlorinated solvents from storage drums or small containers may have occurred to the ground surface either in the vicinity of the former storage shed to the south of the facility, or through floor drains or foundation cracks within the Site building addition.

Contaminated soils are most likely contributing to the contamination of groundwater through rainwater infiltration, groundwater flow through residual contamination (most notably during high water table conditions), and/or vapor migration.

Contaminated groundwater has migrated off-site, in a north-northwest direction. Contaminant concentrations in groundwater appear to attenuate through dispersion and dilution, as well as biological degradation. Although approximately 95% of the Twin

Orchards residences are serviced by public water, a small number of private wells exist in the area. Available data do not indicate whether the private wells are in the vicinity of the potential chlorinated solvent plume.

Although not expected, there is a potential threat to human health through the exposure to contaminated groundwater. The most likely exposure point for human receptors is the presence of chlorinated solvent concentrations in soil vapor resulting from potentially contaminated soils at the Site, and contaminated groundwater at and downgradient of the Site. Soil vapor has the potential to migrate into local buildings at concentrations above the NYDOH guidance values for indoor air.

3.0 PROJECT DESCRIPTION

This section describes the objectives of the HVE RI/FS and presents a summary of proposed investigation tasks.

3.1 PROJECT OBJECTIVES

To complete the RI, the following information is needed:

- The areal and vertical extent of contaminants in site groundwater needs to be delineated. The depth of contamination in the overburden, and potentially bedrock, groundwater has not been defined.

- The location of the source of groundwater contamination needs to be defined. Although contaminated soil beneath the building addition is suspected as the source of groundwater contamination, this has not been determined.

- The potential and actual threat to human health and the environment needs to be defined. Potential present and future human health exposure pathways, such as through contaminated soils, groundwater and vapor migration to indoor air need to be evaluated.

- Sufficient data is needed to evaluate the remedial action alternatives for the site to mitigate the potential or actual threat to human health and the environment.

Proposed field investigations tasks planned to meet project objectives are described below.

3.2 SURVEYING AND SITE MAPPING

HLA's survey subcontractor will complete a survey of the site and surrounding area for the creation of a base map. The site map will include 2 foot contours. In addition, downgradient features, including homes and roads from the former railway line to Old Vestal Road will be mapped at a scale of 1 inch equals 100 feet (approximately 1500 feet by 1500 ft).

3.3 GROUNDWATER MONITORING WELL SAMPLING

Existing monitoring wells located on the site property will be sampled. In addition, one round of groundwater samples will be collected for laboratory analysis from all existing downgradient wells and up to five proposed monitoring wells. For existing and new monitoring wells, including the Miller Sunoco site wells, samples will be collected from the least contaminated to the most contaminated locations as can best be determined from the hydrogeology and known site conditions.

3.4 GEOPROBE® SOIL AND GROUNDWATER SAMPLING

A Geoprobe® sampling device will be used to collect groundwater and soil samples to identify potential chlorinated solvents. The Geoprobe® pushes and/or hammers rods and probe tips into the subsurface for sample collection. Samples will be collect over a three-day period. It is anticipated that up to 11 borings can be completed, including the collection of up to 25 groundwater samples and 4 soil samples for off-site analyses. The actual number of borings completed will depend on the location, number, and depth of samples collected from each boring.

3.5 INDOOR AIR AND SUB SLAB VAPOR SAMPLING

Sub-slab vapor sampling and indoor air sampling will be conducted to evaluate potential vapor migration of contaminants from the groundwater and soil beneath the Site into occupied indoor spaces. Up to six sub-slab vapor samples and six indoor air samples will be collected within the HVE building, and one ambient air sample will be collected from the exterior of the building.

3.6 OFF-SITE SUB SLAB VAPOR SAMPLING

In addition to the HVE samples, one sub-slab soil vapor sample will be collected from each of the following off-site buildings: Kost Tire, the Subway Sandwich Shop, and the Amish

Woodworking building. Indoor and outdoor ambient air samples are not planned at this time since sampling is expected to take place prior to the heating season (lower potential for soil vapor intrusion). Also, given potential chemicals used in the normal business operations, determining the source of VOCs potentially detected may be difficult at this time.

3.7 PROJECT SCHEDULE

Field investigations and laboratory analysis will require two and-a-half months to complete. A Draft RI Report will be submitted to the NYSDEC for review in the Spring of 2005.

4.0 CITIZEN PARTICIPATION ACTIVITIES

This section of the CP Plan lists the CP activities to be conducted during the RI/FS. The CP activities include, but are not limited to the following:

- Develop, maintain, and update a project contact list (see Section 7.0),
- Establish document repositories (Section 6.0) Documents will be sent to these locations for public review; the documents include work plans, RI/FS report, Proposed Remedial Action Plan [PRAP], Record of Decision [ROD], and fact sheets),
- Schedule public meetings (will include an optional meeting during the RI and a meeting after the PRAP, with 30 day comment period),
- Prepare fact sheets (announcing availability of work plan/start of RI, announcing the PRAP and the ROD release) will be prepared and distributed as necessary,
- Schedule availability sessions may be held as necessary to keep public apprised of project status,
- Prepare a responsiveness summary (after 30 day PRAP comment period), and
- Release of reports (including RI/FS Report).

The CPP will be updated as necessary to reflect changes and updates to the above items.

5.0 PROJECT CONTACTS

For additional information abut the program to investigate the Hidden Valley Electronics Site, the public is encouraged to contact any of the following staff:

David A. Camp, Project Manager
Specialist I
NYSDEC
625 Broadway
Albany, New York 12233-7016
(518) 402-9768
dxcamp@gw.dec.state.ny.us

Jennifer Cunningham, Public Health

NYSDOH
Flanigan Square
547 River Street
Troy, New York 12180-2216
(518) 402-7860
jac22@health.state.ny.us

6.0 DOCUMENT REPOSITORIES AND LIST OF AVAILABLE DOCUMENTS

Three document repositories have been established to provide the public with convenient access to project documents and other information. This information will include work plans and reports developed during the course of the RI/FS as well as fact sheets, public meeting announcements, the proposed remedial action plan (PRAP), and record of decision (ROD).

Vestal Public Library
320 Vestal Parkway East
Vestal, NY 13850
(607) 754-4243
Contact: Carol Boyce

Hours of service:
Mon 2 pm - 9 pm
Tue - Thur 9 am - 9 pm
Fri 9 am - 6 pm
Sat 9 am - 5 pm
Sun 1 pm - 5 pm

NYSDEC Kirkwood Office
1967 N.Y. Route 11
Kirkwood, NY 13795-9772
(607) 775-2545

Hours of service:
Mon-Fri 8:30 am - 5 pm

NYSDEC
625 Broadway
Albany, NY 12233-7016
(518) 402-9768
Contact: David Camp

Hours of service:
Mon-Fri 8:30 am - 5 pm

Available Documents:

At the start of the RI/FS the following documents were placed in the document repositories:

- RI/FS Work Plan, August 2004 (includes this Citizen Participation Plan)

Other documents will be placed in the repository as they become available.

7.0 Public Contact List

The following contact list has been developed to help the NYSDEC keep the community informed and involved in the RI/FS process for the Hidden Valley Electronics Site. The list includes local, regional and state officials, local media, business and environmental organizations, and adjacent /nearby property owners. The contact list will be periodically reviewed and updated as appropriate.

Town of Vestal Officials

Anndrea Starzak, Supervisor
Vestal Town Hall
605 Vestal Parkway West
Vestal, NY 13850-1495

Connie Lightner, Clerk
Vestal Town Hall
605 Vestal Parkway West
Vestal, NY 13850-1495

Francis Majewski
Councilperson
Vestal Town Hall
605 Vestal Parkway West
Vestal, NY 13850-1495

David Marnicki
Councilperson
Vestal Town Hall
605 Vestal Parkway West
Vestal, NY 13850-1495

Frank Valletta
Councilperson
Vestal Town Hall
605 Vestal Parkway West
Vestal, NY 13850-1495

Daniel L. Gorman, Esq.
Vestal Town Attorney
605 Vestal Parkway West
Vestal, New York 13850-1495

Dennis R. Shimer
Water Superintendent
Town of Vestal
701 Vestal Parkway West
Vestal, New York 13850

James L. Holley, Director
Vestal Public Library
320 Vestal Parkway East
Vestal, NY 13850

Broome County Officials

Broome Co. Industrial Development Agency
Edwin L. Crawford County Office Bldg.
33 Hawley St. PO Box 1510
Binghamton, NY 13902

Broome County Chamber of Commerce
49 Court St.

Daniel A. Schofield, Chairman
Broome County Legislature
PO Box 1766
Binghamton, NY 13902

Louis Augostini, Clerk
Broome County Legislature

Metro Center, PO Box 995
Binghamton, NY 13902

Charles McElwee
Broome County SWCD
1163 Upper Front Street
Binghamton, NY 13905

Thomas Hull
Broome County Legislature
PO Box 1766
Binghamton, NY 13902

Brian Mather
Broome County Legislature
PO Box 1766
Binghamton, NY 13902

Dan Reynolds
Broome County Legislature
PO Box 1766
Binghamton, NY 13902

Jeffrey P. Kraham
Broome County Executive
PO Box 1766
Binghamton, NY 13902

Barbara Fiala, County Clerk
Broome County Office Building
Government Plaza, PO Box 2062
Binghamton, NY 13902

Mary Lou Regulski, President
Binghamton City Council
23 Howard Avenue

Binghamton, NY 13904

PO Box 1766
Binghamton, NY 13902

John Hutchings
Broome County Legislature
PO Box 1766
Binghamton, NY 13902

Mayor Richard Bucci
City Hall
38 Hawley Street
Binghamton, NY 13901

Don Leonard
Regional Representative
1507 State Office Building
44 Hawley Street
Binghamton, NY 13901-4455

Stacy Merola, Director
Broome Co. EMC
PO Box 1766
Binghamton, NY 13902

Claudia Edwards, Director
Broome County Health Dept.
225 Front Street
Binghamton, NY 13905

Robert Denz
Director Environmental Health Services
Broome County Health Department
225 Front Street
Binghamton, NY 13905

State Officials and Agencies

Senator Thomas W. Libous
1607 State Office Building
44 Hawley Street
Binghamton, NY 13901

Assemblyman Clifford Crouch
Sidney Civic Center
21 Liberty Street
Sidney, NY 13838

Assemblyman Gary Finch
69 South Street
Auburn, NY 13021

Assemblyman Robert Warner
17th floor, State Office Building
44 Hawley Street
Binghamton, NY 13901

Congressman Maurice Hinchey
100-A Federal Building
Binghamton, NY 13901

Jack Williams, Director
NYS Department of Transportation
44 Hawley Street
Binghamton, NY 13901

Mary Jane Peachey
Regional Engineer
NYSDEC Region 7
615 Erie Boulevard West

Syracuse, NY 13204

The Honorable Charles Schumer
U.S. Senate
Federal Bldg., Room B6
Binghamton, NY 13901

The Honorable Hillary R. Clinton
100 South Clinton Street, Rm 1470
PO Box 7378
Syracuse, NY 13261-7378

Congressman Sherwood Boehlert
10 Broad Street, Room 200
Utica, NY 13501-1270

Congressman James Walsh
PO Box 7306, Federal Building
Syracuse, NY 13261
James E. Burke
NYSDEC Region 7
Division of Water
615 Erie Boulevard West
Syracuse, NY 13204

Thomas Suozzo
NYSDEC Kirkwood Office
1697 NY Route 11

Kirkwood, NY 13795-9772

Local Media

WIVT - TV 34
203 Ingraham Hill Road
Binghamton, NY 13903-5511

WSKG - TV 46
601 Gates Road
Vestal, NY 13850-2330

WICZ - TV 40
4600 Vestal Parkway East
Vestal, NY 13850-3674

WBNG - TV 12
12 Gateway Plaza, Columbia Drive
Johnson City, NY 13790

Binghamton Press and Sun
Attn: Tom Wilber
4421 Vestal Parkway East
Vestal, NY 13850-3556

Adjacent/Nearby Property Owners:

(Maintained confidentially in the project file, not in CP Plan or repositories.)

APPENDIX A

TO APPENDIX C

HAZARDOUS WASTE SITE PROGRAM GLOSSARY AND ACRONYMS

SOURCE:

Citizen Participation in New York's Hazardous Waste Site Remediation Program:

A GUIDEBOOK

June 1998

New York State Department of Environmental Conservation Division of Environmental Remediation

Appendix D

Hazardous Waste Site Program Glossary and Acronyms

GLOSSARY

This glossary defines terms associated with New York's hazardous waste site citizen participation program, and important elements of the hazardous waste site remedial program. Words in **bold** in the definitions are defined elsewhere in the glossary. A list of acronyms often used in the remedial program begins on page D-7.

Administrative Record — Part of a site's **Record of Decision** which lists and defines documents used in the development of NYSDEC's decision about selection of a remedial action.

Availability Session — A scheduled gathering of program staff and members of the public in a casual setting, without a formal presentation or agenda but usually focusing on a specific aspect of a site's remedial process.

Citizen Participation — A program of planning and activities to encourage communication among people affected by or interested in hazardous waste sites and the government agencies responsible for investigating and remediating them.

Citizen Participation Plan — A document which must be developed at a site's **Remedial Investigation** stage. A CP Plan describes the citizen participation activities that will be conducted during a site's remedial process.

Citizen Participation Record — A document prepared at a major remedial stage which describes the citizen participation activities required at that stage. A CP Record also directs a scoping process to determine if additional citizen participation activities are appropriate and feasible.

Citizen Participation Specialist

A staff member from an NYSDEC central office or regional office who has specialized training and experience to assist a **project manager** and other staff to plan, conduct and evaluate a site-specific citizen participation program.

Classification

A process to place a hazardous waste site within a category which defines its hazardous waste status and its threat or potential threat to public health and the environment. Sites are listed along with their classifications in the **Registry of Inactive Hazardous Waste Disposal Sites.**

Class 1 - causing or representing an imminent danger of causing irreversible or irreparable damage to public health or environment -- immediate action required.
Class 2 - significant threat to public health or environment -- action required.
Class 2a - temporary classification assigned to a site for which there is inadequate or insufficient data for inclusion in any other classification.
Class 3 - does not present a significant threat to public health or environment -- action may be deferred.
Class 4 - site properly closed -- requires continued management.
Class 5 - site properly closed -- no further action required.
Delisted - site no longer considered an inactive hazardous waste disposal site.

Comment Period

A time period for the public to review and comment about various documents and DER actions. For example, a 30-day comment period is provided when DER issues a **Proposed Remedial Action Plan (PRAP)**, and when DER proposes to **Delist** a site from the **Registry of Inactive Hazardous Waste Disposal Sites.**

Consent Order

A legal and enforceable agreement negotiated between NYSDEC and a **responsible party**. The order sets forth agreed upon terms by which a responsible party will undertake site investigation and/or cleanup, or pay for the costs of those activities. The order includes a description of the remedial actions to be taken by the responsible party with NYSDEC oversight, and a schedule for implementation.

Contact List — Names, addresses and/or telephone numbers of individuals, groups, organizations, government officials and media affected by or interested in a particular hazardous waste site. The size of a contact list and the categories included are influenced by population density, degree of interest in a site, the stage of the remedial process and other factors. It is an important tool needed to conduct outreach activities.

Delist — Action by which DER removes a hazardous waste site from the **Registry of Inactive Hazardous Waste Disposal Sites** upon determination that: the site contains inconsequential amounts of hazardous waste; or that a remediated site no longer requires **Operation and Maintenance;** or that a remediated site does not require Operation and Maintenance. A proposal to delist a site triggers a public notification and **comment period** process.

Division of Environmental Enforcement (DEE) — A unit within the New York State Department of Environmental Conservation which works with the **Division of Environmental Remediation** and others to negotiate with **responsible parties** to achieve agreements for the investigation and remediation of hazardous waste sites. A negotiated agreement is contained in a **consent order.**

Division of Environmental Remediation — Formerly the **Division of Hazardous Waste Remediation,** a major program unit within the New York State Department of Environmental Conservation created to manage the hazardous waste site remedial program from site discovery through **Operation and Maintenance** activities. Staff include: engineers, geologists, chemists, attorneys, citizen participation specialists, environmental program specialists and support staff.

Division of Hazardous Waste Remediation — (See **Division of Environmental Remediation**

Document Repository — A file of documents pertaining to a site's remedial and citizen participation programs which is made available for public review. The file generally is maintained in a public building near the hazardous waste site to provide access at times and a location convenient to the public.

Enforcement — NYSDEC's efforts, through legal action if necessary, to compel a **responsible party** to perform or pay for site remedial activities. NYSDEC may perform this effort by itself or in concert with other agencies.

Environmental Quality Bond Act (EQBA) — The 1986 Environmental Quality Bond Act which gives New York State bonding authority of up to $1.2 billion to fund the State's share of the total cost of remediating hazardous waste sites in New York State.

Fact Sheet — A written discussion about part or all of a site's remedial process, prepared and provided by DER to the public. A fact sheet may focus on: a particular element of the site's remedial program; opportunities for public involvement; availability of a report or other information, or announcement of a **public meeting** or **comment period**. A fact sheet may be mailed to all or part of a site's **contact list**, distributed at meetings, placed in a **document repository** and/or sent on an "as requested" basis.

Interim Remedial Measure (IRM) — A discrete action which can be conducted at a site relatively quickly to reduce the risk to people's health and the environment from a well-defined hazardous waste problem. An IRM can involve removing contaminated soil and drums, providing alternative water supplies or securing a site to prevent access.

National Priorities List — The U.S. Environmental Protection Agency's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial response using money from a special trust fund.

New York State Department of Health — Agency within the executive branch of New York State government which: performs health-related inspections at suspected hazardous waste sites; conducts health assessments to determine potential risk from environmental exposure; reviews Risk Assessments prepared during the **Remedial Investigation and Feasibility Study**; conducts health-related community outreach around sites; and reviews remedial actions to assure that public health concerns are adequately addressed.

New York State Department of Law — Agency within the executive branch of New York State government which takes the lead on hazardous waste sites requiring civil enforcement through court action. Litigation can involve negotiations and court action with **responsible parties** to clean up sites; natural resource damage claims, and recovery of remedial costs.

New York State Registry of Inactive Hazardous Waste Disposal Sites

The "Registry." A document which NYSDEC is directed by law to maintain and which lists and provides information about every hazardous waste site in New York State which meets criteria established through a definition of hazardous waste and a **classification** system.

Operable Unit

A discrete part of an entire site that produces a release, threat of release, or pathway of exposure. An Operable Unit can receive specific investigation, and a particular remedy may be proposed. A **Record of Decision** is prepared for each Operable Unit.

Operation and Maintenance

A period in which remedial action may be conducted following construction at a site (for example, operation of a "pump and treat" system), or which is performed after a remedial action to assure its continued effectiveness and protection of people's health and the environment. Activities can include site inspections, well monitoring and other sampling.

Preliminary Site Assessment (PSA)

A PSA is DER's first investigation of a site. A PSA is performed to determine if a site meets New York State's definition of an inactive hazardous waste disposal site by confirming the presence of hazardous waste and determining if the site poses a significant threat to public health or the environment.

Project Manager

An NYSDEC staff member within the **Division of Environmental Remediation** (usually an engineer, geologist or hydro geologist) responsible for the day-to-day administration of remedial activities at, and ultimate disposition of, a hazardous waste site. The Project Manager works with legal, health, **citizen participation** and other staff to accomplish site-related goals and objectives.

Proposed Remedial Action Plan (PRAP)

An analysis by DER of each alternative considered for the remediation of a hazardous waste site and a rationale for selection of the alternative it recommends. The PRAP is created based on information developed during the site's **Remedial Investigation and Feasibility Study**. The PRAP is reviewed by the public and other state agencies.

Public Meeting — A scheduled gathering of **Division of Environmental Remediation** staff with the affected/interested public to give and receive information, ask questions and discuss concerns about a site's remedial program. Staff from other NYSDEC divisions, legal and health staff, and staff from consultants and a responsible party often also attend. A public meeting, unlike an **availability session**, generally features a formal presentation and a detailed agenda.

Reclassification — A process by which DER redefines the threat posed by a hazardous waste site to public health and the environment by developing and assessing site information and, based on findings and conclusions, assigning a new **classification** code.

Record of Decision (ROD) — A document which provides definitive record of the cleanup alternative that will be used to remediate a hazardous waste site. The ROD is based on information and analyses developed during the **Remedial Investigation/Feasibility Study** and public comment.

Remedial Construction — The physical development, assembly and implementation of the remedial alternative selected to remediate a site. Construction follows the **Remedial Design** stage of a site's remedial program.

Remedial Design — The process following finalization of a **Record of Decision** in which plans and specifications are developed for the **Remedial Construction** of the alternative selected to remediate a site.

Remedial Investigation/ Feasibility Study (RI/FS) — The RI fully defines and characterizes the type and extent of hazardous waste contamination at the site. The FS, which may be conducted during or after the RI, uses information developed during the RI to develop alternative remedial actions to eliminate or reduce the threat of hazardous waste contamination to public health and the environment.

Responsible Party — An individual or business who: currently owns or operates a hazardous waste site; or historically owned or operated a site when hazardous waste was disposed; or generated hazardous waste at a site; or transported hazardous waste to a site.

Responsiveness Summary — A written summary of major oral and written comments received by DER during a **comment period** about key elements of a site's remedial program, such as a **Proposed Remedial Action Plan**, and DER's response to those comments.

Site Issues and Community Profile Scoping Sheet — A document prepared to support each **Citizen Participation Record**. Each Scoping Sheet identifies issues and information important to DER and the community and information that needs to be exchanged at a particular remedial stage. The Scoping Sheet also summarizes information about the surrounding community, including demographics, special needs, etc.

Superfund — The common name for the Federal program established by the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended in 1986. The Superfund law authorizes the U.S. Environmental Protection Agency to investigate and clean up sites nominated to the **National Priorities List**.

Title 3 Project — Remediation of a municipally owned site through the State Superfund Title 3 Program whereby New York State pays 75 percent of eligible costs for remediation and the municipality pays 25 percent.

Toll-Free "800" Number — An information line maintained by the **Division of Environmental Remediation** to provide convenient access for people who have questions, concerns or information about hazardous waste sites and their remedial programs.

ACRONYMS

AG -- New York State Attorney General's Office
ARAR -- Applicable, Relevant and Appropriate Requirement
C & D -- Construction and Debris
CERCLA -- Comprehensive Environmental Response, Compensation and Liability Act of 1980
CO -- Consent Order
CP -- Citizen Participation
CPP -- Citizen Participation Plan
CPS -- Citizen Participation Specialist
CQC/CQA -- Construction Quality Control/Construction Quality Assurance
DEE -- Division of Environmental Enforcement
DER -- Division of Environmental Remediation, formerly the Division of Hazardous Waste Remediation
DHWR -- Division of Hazardous Waste Remediation, now the Division of Environmental Remediation
DOD -- Department of Defense
DOL -- Department of Law
DOW -- Division of Water
ENB -- Environmental Notice Bulletin

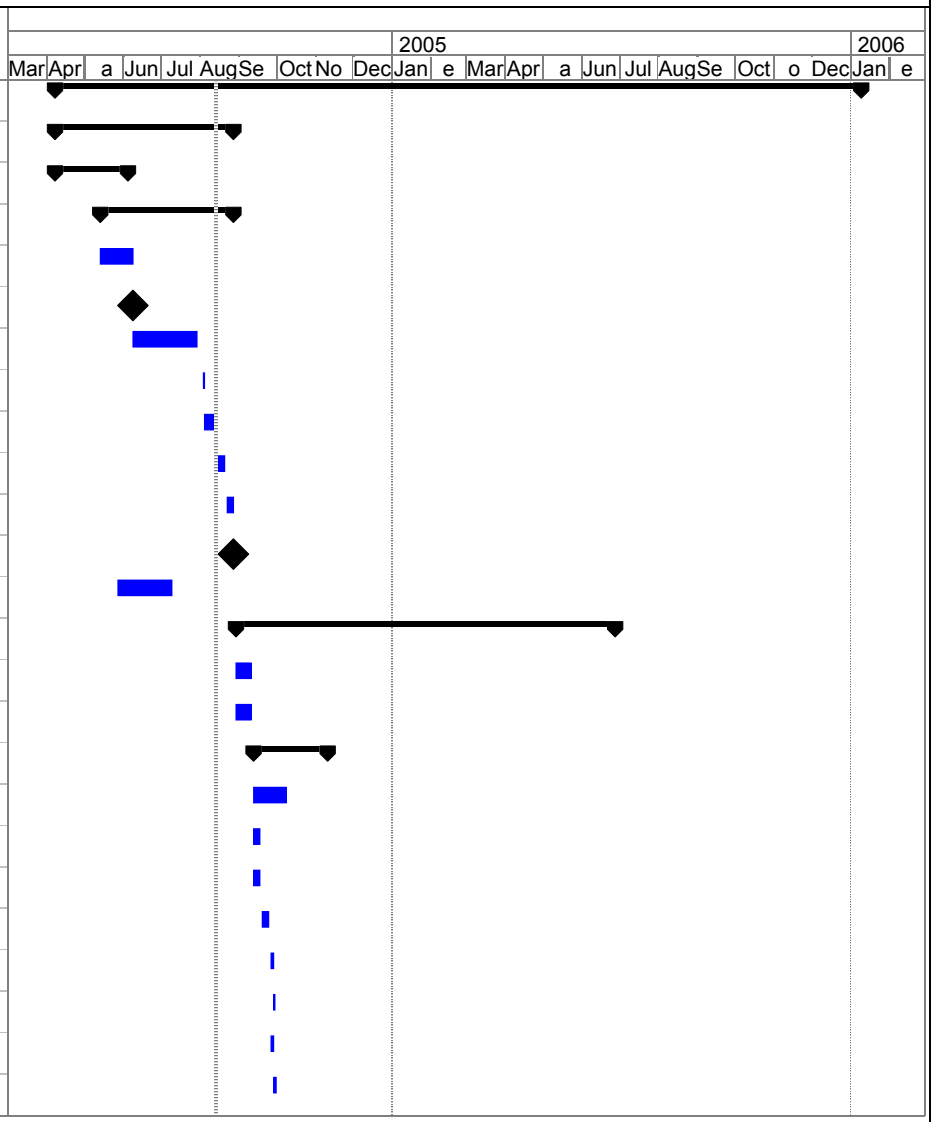
EQBA	--	1986 Environmental Quality Bond Act
EPA	--	Environmental Protection Agency
F & W	--	Division of Fish and Wildlife
FDA	--	Food and Drug Administration
FSF	--	Federal Superfund
FOIL	--	Freedom of Information Law
FS	--	Feasibility Study
FY	--	Fiscal Year
GPM	--	Gallons Per Minute
HeLP	--	Health Liaison Program
IRM	--	Interim Remedial Measure
mg/kg	--	milligrams per kilogram
NAPL	--	Non-Aqueous Phase Liquid
NPL	--	National Priorities List
NYSDEC	--	New York State Department of Environmental Conservation
NYSDOH	--	New York State Department of Health
O & M	--	Operation and Maintenance
OSHA	--	Occupational Safety and Health Administration
OU	--	Operable Unit
PAH	--	Poly-Aromatic Hydrocarbon
PCB	--	Poly-Chlorinated Biphenyl
PM	--	Project Manager
ppm/ppb/ppt	--	parts per million/parts per billion/parts per trillion
PRAP	--	Proposed Remedial Action Plan
PRP	--	Potentially Responsible Party
PRS	--	Priority Ranking System
PSA	--	Preliminary Site Assessment
QA/QC	--	Quality Assurance/Quality Control
RA	--	Remedial Action
RCRA	--	Resource Conservation and Recovery Act
RD	--	Remedial Design
RFP	--	Request for Proposals
RHWRE	--	Regional Hazardous Waste Remediation Engineer
RI	--	Remedial Investigation
RI/FS	--	Remedial Investigation/Feasibility Study
ROD	--	Record of Decision
RP	--	Responsible Party
SSF	--	State Superfund
TAGM	--	Technical and Administrative Guidance Memorandum
TCLP	--	Toxicity Characteristic Leaching Procedure
TSDF	--	Treatment, Storage and Disposal Facility
ug/l	--	micrograms per liter
USGS	--	U.S. Geological Service
VCP	--	Voluntary Cleanup Program
VOC	--	Volatile Organic Compound

APPENDIX D

SCHEDULE

Appendix D
Hidden Valley Electronics Schedule
Work Assignment D003826-9

ID	Task Name	Duration (Work Days)	Start	Finish
1	**Hidden Valley Electronics RI/FS**	**458 days**	**Thu 4/8**	**Mon 1/9**
2	**Task 1 - Work Plan Development**	**102 days**	**Thu 4/8**	**Fri 8/27**
3	**Subtask A - Project Scoping Plan**	**42 days**	**Thu 4/8**	**Fri 6/4**
12	**Subtask B - Final RI/FS Work Plan**	**76 days**	**Fri 5/14**	**Fri 8/27**
13	Prepare Draft Work Plan	18 days	Fri 5/14	Tue 6/8
21	Submit Draft Work Plan for NYSDEC Review	0 days	Tue 6/8	Tue 6/8
22	NYSDEC/NYSDOH Review	37 days	Wed 6/9	Thu 7/29
23	Work Plan Comment Review Meeting	1 day	Wed 8/4	Wed 8/4
24	Prepare Draft Final Work Plan	6 days	Thu 8/5	Thu 8/12
25	NYSDEC/NYSDOH Review and Approval	6 days	Fri 8/13	Fri 8/20
26	Prepare Final Work Plan	5 days	Mon 8/23	Fri 8/27
27	Submit Final Work Plan	0 days	Fri 8/27	Fri 8/27
28	Initial Subcontracting	31 days	Fri 5/28	Fri 7/9
29	**Task 2 - Remedial Investigation**	**216 days**	**Mon 8/30**	**Mon 6/27**
30	Historic Records and Title Search	10 days	Mon 8/30	Fri 9/10
31	Final Subcontracting & Mobilization	10 days	Mon 8/30	Fri 9/10
32	**Phase I Field Work**	**43 days**	**Mon 9/13**	**Wed 11/10**
33	Base Map Development	20 days	Mon 9/13	Fri 10/8
34	Building and Drain Inspection	5 days	Mon 9/13	Fri 9/17
35	Building Survey	5 days	Mon 9/13	Fri 9/17
36	Establish Sampling Locations	5 days	Mon 9/20	Fri 9/24
37	HVE Indoor & Subfloor Air Sampling	2 days	Mon 9/27	Tue 9/28
38	Sub Slab Air Sampling	1 day	Wed 9/29	Wed 9/29
39	Shallow Soil Gas & GW sampling	2 days	Mon 9/27	Tue 9/28
40	GW and Subsurface Soil Sampling	2 days	Wed 9/29	Thu 9/30



Project: Hidden Valley 0804 Electronic
Date: Fri 8/13
3612042017-01

Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
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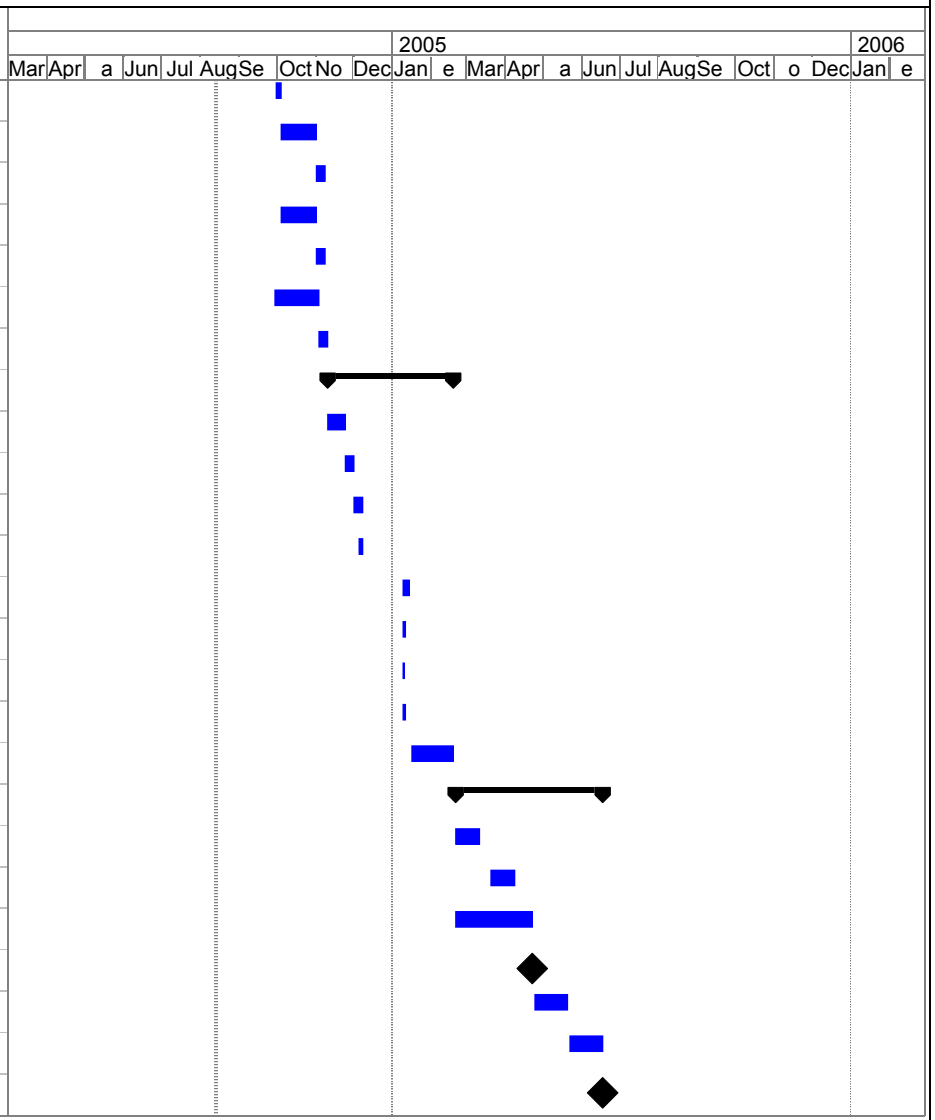
Appendix D
Hidden Valley Electronics Schedule
Work Assignment D003826-9

ID	Task Name	Duration (Work Days)	Start	Finish
41	Soil Gas Sampling	2 days	Fri 10/1	Mon 10/4
42	GW & Soil Lab Analysis	20 days	Tue 10/5	Mon 11/1
43	Review GW & Soil Data	5 days	Tue 11/2	Mon 11/8
44	Soil Gas Analysis	20 days	Tue 10/5	Mon 11/1
45	Review Soil Gas Data	5 days	Tue 11/2	Mon 11/8
46	Indoor/sub Slab Air Lab Analysis	25 days	Thu 9/30	Wed 11/3
47	Review Indoor/Sub Slab Air Results	5 days	Thu 11/4	Wed 11/10
48	**Phase II field Investigation**	**72 days**	**Thu 11/11**	**Fri 2/18**
49	Determine Phase II w/ NYSDEC & NYSDOH	10 days	Thu 11/11	Wed 11/24
50	Mobilization	5 days	Thu 11/25	Wed 12/1
51	MW Installation	5 days	Thu 12/2	Wed 12/8
52	MW Development	3 days	Mon 12/6	Wed 12/8
53	Groundwater Sampling	5 days	Mon 1/10	Fri 1/14
54	HVE Indoor & Subfloor Air Sampling	2 days	Mon 1/10	Tue 1/11
55	Water Level Survey	1 day	Mon 1/10	Mon 1/10
56	Location Survey	2 days	Mon 1/10	Tue 1/11
57	GW\Air Lab Analysis	25 days	Mon 1/17	Fri 2/18
58	**RI Report**	**85 days**	**Mon 2/21**	**Fri 6/17**
59	Data Validation/Usability Report	15 days	Mon 2/21	Fri 3/11
60	Exposure Assessment	15 days	Mon 3/21	Fri 4/8
61	Prepare Draft RI Report	45 days	Mon 2/21	Fri 4/22
62	Submit Draft RI Report for NYSDEC Review	0 days	Fri 4/22	Fri 4/22
63	NYSDEC Review Draft RI Report	20 days	Mon 4/25	Fri 5/20
64	Prepare Final RI Report	20 days	Mon 5/23	Fri 6/17
65	Submit Final RI Report	0 days	Fri 6/17	Fri 6/17



Project: Hidden Valley 0804 Electronic
Date: Fri 8/13
3612042017-01

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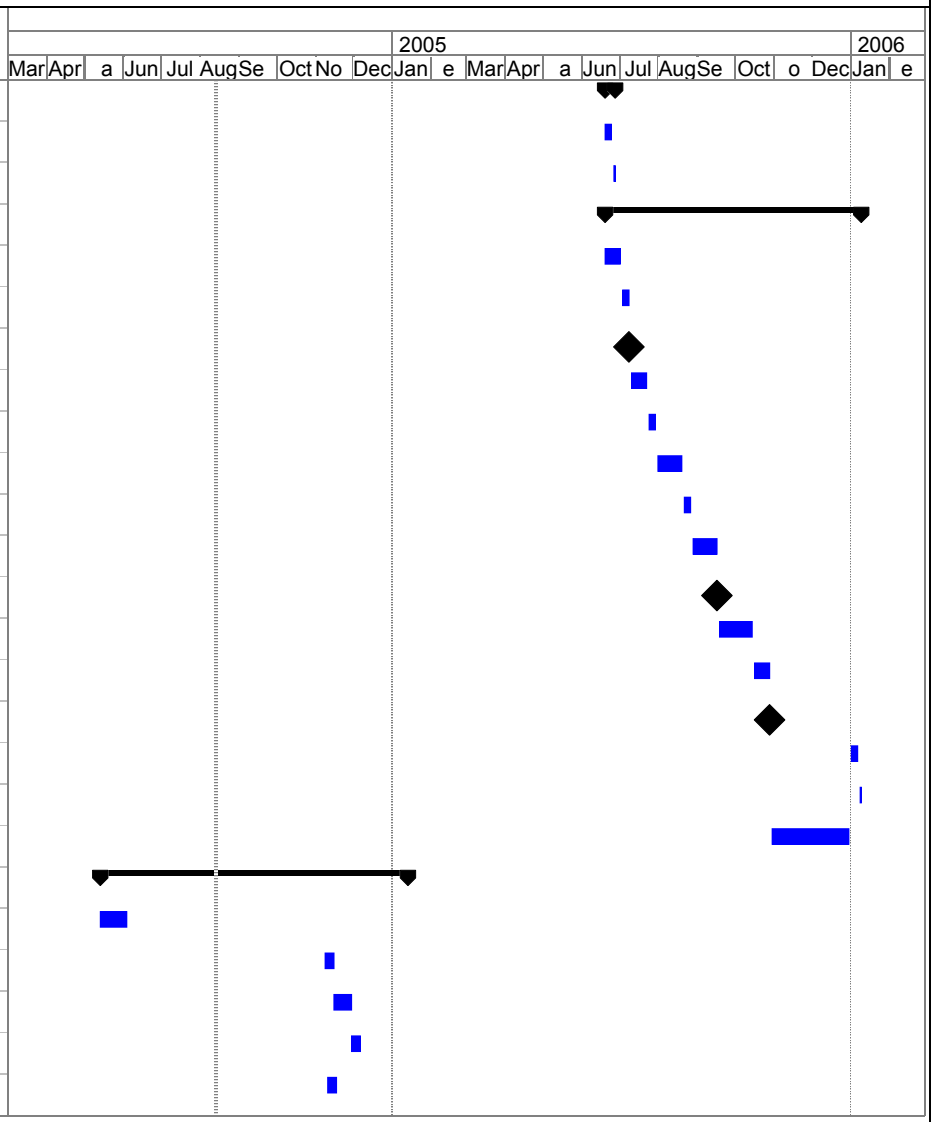
Appendix D
Hidden Valley Electronics Schedule
Work Assignment D003826-9

ID	Task Name	Duration (Work Days)	Start	Finish
66	**RI Public Meeting**	**6 days**	**Mon 6/20**	**Mon 6/27**
67	Prepare for RI Report Public Meeting	5 days	Mon 6/20	Fri 6/24
68	Conduct/Attend Public Meeting	1 day	Mon 6/27	Mon 6/27
69	**Task 3 - Feasibility Study**	**146 days**	**Mon 6/20**	**Mon 1/9**
70	Development of Remedial Alternatives	10 days	Mon 6/20	Fri 7/1
71	Preliminary Screening of Alternatives	5 days	Mon 7/4	Fri 7/8
72	Submit List of Alternatives to NYSDEC	0 days	Fri 7/8	Fri 7/8
73	NYSDEC Review List of Alternatives	10 days	Mon 7/11	Fri 7/22
74	Prepare Final List of Alternatives	5 days	Mon 7/25	Fri 7/29
75	Detailed Analysis of Alternatives	15 days	Mon 8/1	Fri 8/19
76	Remedy Selection	5 days	Mon 8/22	Fri 8/26
77	Prepare Draft FS Report	15 days	Mon 8/29	Fri 9/16
78	Submit Draft FS Report to NYSDEC	0 days	Fri 9/16	Fri 9/16
79	NYSDEC Review Draft FS	20 days	Mon 9/19	Fri 10/14
80	Prepare Final FS	10 days	Mon 10/17	Fri 10/28
81	Submit Final FS	0 days	Fri 10/28	Fri 10/28
82	Prepare for FS Public Meeting	5 days	Mon 1/2	Fri 1/6
83	Conduct/Attend Public Meeting	1 day	Mon 1/9	Mon 1/9
84	**NYSDEC Prepares PRAP**	**45 days**	**Mon 10/31**	**Fri 12/30**
85	**Task 4 - Interim Remedial Measures (IRMs)**	**175 days**	**Fri 5/14**	**Thu 1/13**
86	Scoping\Planning\Subcontract Coordination	15 days	Fri 5/14	Thu 6/3
87	Review HVE Air Data with NYSDEC	5 days	Tue 11/9	Mon 11/15
88	Mobilize IRM Subcontractor	10 days	Tue 11/16	Mon 11/29
89	Install Systems in HVE	5 days	Tue 11/30	Mon 12/6
90	Review Residence Air Data with NYSDEC	5 days	Thu 11/11	Wed 11/17



Project: Hidden Valley 0804 Electronic
Date: Fri 8/13
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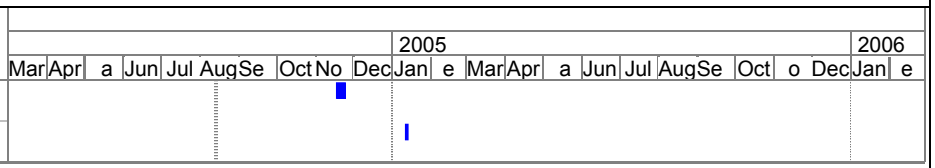
Appendix D
Hidden Valley Electronics Schedule
Work Assignment D003826-9

ID	Task Name	Duration (Work Days)	Start	Finish
91	Install Systems in Residences	5 days	Thu 11/18	Wed 11/24
92	Confirmation Sampling	2 days	Wed 1/12	Thu 1/13



Project: Hidden Valley 0804 Electronic
Date: Fri 8/13
3612042017-01

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APPENDIX E

COST TABLES

Engineer: Harding Lawson Associates, Inc. Date Prepared: 08/13/04
Contract No.: D003826
Project Name: Hidden Valley Electronics
Work Assigment No.: D003826-9

Schedule 2.11(a)
Summary of Work Assignment Price

1	DIRECT SALARY COSTS (Schedules 2.10(a) and 2.11 (b))	**$58,680**
2	INDIRECT COSTS (Schedule 2.10(g))	**$91,424**
3	DIRECT NON-SALARY COSTS (Schedules 2.10(d)(e)(f) and 2.11 (c) and (d))	**$16,097**

SUBCONTRACT COSTS

COST-PLUS-FIXED-FEE SUBCONTRACTS
(Schedule 2.11(e))

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
YEC	Sampling & Inspection (Task 2)	$ 26,954
4 TOTAL COST-PLUS-FIXED-FEE SUBCONTRACTS		$26,954

UNIT PRICE SUBCONTRACTS
(Schedule 2.11(f))

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
Scientific Testing	IRM Services (Task 4)	$22,500
GeoLogic	Drilling and Direct Push (Task 2)	$18,520
Buck Labs	Analytical Laboratory Services (Task 2)	$34,438
Buck Labs	Analytical Laboratory Services (Task 4)	$1,785
OP-TECH Enviro. Services	IDW Services (Task 2)	$1,434
		$0
5 TOTAL UNIT PRICE SUBCONTRACTS		$78,677

6	SUBCONTRACT MANAGEMENT FEE	$3,090
7	TOTAL SUBCONTRACT COSTS (Lines 4 + 5 + 6)	**$108,721**
8	FIXED FEE (Schedule 2.10(h))	**$10,507**
9	**TOTAL WORK ASSIGNMENT PRICE (Lines 1 + 2 + 3 + 7 + 8)**	**$285,430**

Engineer: Harding Lawson Associates, Inc.
Contract No.: D003826
Project Name: Hidden Valley Electronics
Work Assigment No.: D003826-9

Date Prepared: 8/13/2004

Schedule 2.11(b)
Direct Labor Hours Budgeted

GRADE LEVEL	IX	VIII	VII	VI	V	IV	III	II	I	TOTAL DIRECT LABOR HOURS	TOTAL DIRECT LABOR DOLLARS
2004 RATES	$53.44	$47.94	$44.30	$39.39	$35.43	$32.00	$29.63	$25.95	$21.18		
2005 RATES	$54.44	$48.94	$45.30	$40.39	$36.43	$33.00	$30.63	$26.95	$22.18		
LABOR CLASSIFICATION - SUMMARY											
TASK 1 - Work Plan Development											
TOTAL HOURS (2004)	6	2	0	53	2	22	0	109	30	224	
TOTAL LABOR COST	$321	$96	$0	$2,088	$71	$704	$0	$2,829	$635		$6,743
TASK 2 - Remedial Investigation											
TOTAL HOURS (2004)	9	44	15	114	18	165	0	807	61	1233	
TOTAL LABOR COST	$481	$2,109	$665	$4,490	$638	$5,280	$0	$20,942	$1,292		$35,897
TASK 3 - Feasibility Study											
TOTAL HOURS (2005)	8	14	0	46	0	160	0	60	30	318	
TOTAL LABOR COST	$436	$685	$0	$1,858	$0	$5,280	$0	$1,617	$665		$10,541
TASK 4 - Interim Remedial Measures (IRMs)											
TOTAL HOURS (2004)	2	0	0	14	0	40	0	134	4	194	
TOTAL LABOR COST	$107	$0	$0	$551	$0	$1,280	$0	$3,477	$85		$5,500
TOTAL LABOR HOURS	25	60	15	227	20	387	0	1,110	125	1,969	
TOTAL DIRECT LABOR COST	$1,344	$2,890	$665	$8,988	$709	$12,544	$0	$28,865	$2,678		$58,680

NOTE: Direct administrative labor hours budgeted are broken out on Schedule 2.11(b-1).

Engineer: Harding Lawson Associates, Inc. Date Prepared: 08/13/04
Contract No.: D003826
Project Name: Hidden Valley Electronics
Work Assigment No.: D003826-9

Schedule 2.11(b-1)
Direct Adminstrative Labor Hours Budgeted

GRADE LEVEL	IX	VIII	VII	VI	V	IV	III	II	I	TOTAL DIRECT LABOR HOURS	TOTAL DIRECT LABOR DOLLARS
2004 RATES	$53.44	$47.94	$44.30	$39.39	$35.43	$32.00	$29.63	$25.95	$21.18		
2005 RATES	$54.44	$48.94	$45.30	$40.39	$36.43	$33.00	$30.63	$26.95	$22.18		
LABOR CLASSIFICATION - SUMMARY											
TASK 1 - Work Plan Development											
TOTAL HOURS (2004)	2	0	0	20	0	0	0	4	6	32	
TOTAL LABOR COST	$107	$0	$0	$788	$0	$0	$0	$104	$127		$1,126
TASK 2 - Remedial Investigation											
TOTAL HOURS (2004)	4	0	0	24	0	0	0	12	12	52	
TOTAL LABOR COST	$214	$0	$0	$945	$0	$0	$0	$311	$254		$1,725
TASK 3 - Feasibility Study											
TOTAL HOURS (2005)	2	0	0	8	0	0	0	4	4	18	
TOTAL LABOR COST	$109	$0	$0	$323	$0	$0	$0	$108	$89		$629
TASK 4 - Interim Remedial Measures (IRMs)											
TOTAL HOURS (2004)	0	0	0	6	0	0	0	2	2	10	
TOTAL LABOR COST	$0	$0	$0	$236	$0	$0	$0	$52	$42		$331

2004 Total Labor Hours	6	0	0	50	0	0	0	18	20	94	
2004 Total Direct Labor Cost ($)	$321	$0	$0	$1,970	$0	$0	$0	$467	$424		$3,181
2005 Total Labor Hours	2	0	0	8	0	0	0	4	4	18	
2005 Total Direct Labor Cost ($)	$109	$0	$0	$323	$0	$0	$0	$108	$89		$629
TOTAL LABOR HOURS	8	0	0	58	0	0	0	22	24	112	
TOTAL DIRECT LABOR COST	$430	$0	$0	$2,293	$0	$0	$0	$575	$512		$3,809

Contract/Project administrative hours would include (subject to contract allowability) but not necessarily be limited to the following activities:

1) Work Plan Development
   - Conflict of Interest
   - Develop budget schedules & supporting documentation
2) Review work assignment (WA) progress
   - Conduct progress reviews
   - Prepare monthly project report
   - Update WA progress schedule
   - Prepare monthly M/WBE Utilization Report
3) Review WA costs
   - Prepare monthly cost control report
   - Cost control reviews

Contract/Project administration hours would not include activities such as:

1) QA/QC reviews
2) Technical oversight by management
3) Develop subcontracts
4) CAP Preparation
   - Oversee and prepare monthly CAP
   - Respond to payment issues/disallowances
   - NSPE list updates
   - Equipment Inventory
5) Manage subcontracts
6) Implement and manage program management and staffing plans
7) Conduct Health and Safety Reviews
8) Word processing and graphic artists
9) Report editing
10) Review of deliverables

Engineer: Harding Lawson Associates, Inc. Date Prepared: 08/13/04
Contract No.: D003826
Project Name: Hidden Valley Electronics
Work Assigment No.: D003826-9

Schedule 2.11(c)
Direct Non-Salary Costs

Item	Maximum Reimbursement Rate	Unit	Estimated No. of Units	Total Estimated Cost
A) Sample Analysis Rates (In-House Cost Only)				
1)	$0.00	each	0	$0.00
2)	$0.00	each	0	$0.00
3)	$0.00	each	0	$0.00
	TOTAL			**$0.00**
B) Miscellaneous				
1) TRAVEL				
Lodging	$55.00	night	41	$2,255.00
Meals	$31.00	day	42	$1,302.00
Car Rental	$70.00	day	47	$3,290.00
Cargo Van Rental	$390.00	week	0	$0.00
Mileage	$0.38	mile	0	$0.00
Parking	$7.00	day	5	$35.00
Gas	Actual Costs	N/A	$ 470.00	$470.00
Air Fare	Actual Costs	round trip	0	$0.00
	TOTAL			**$7,352.00**
2) CONSULTANT OTHER DIRECT COSTS				
Printing/Photocopy	$0.05	page	11500	$575.00
CAD Computer	$7.50	hour	20	$150.00
Telephone	Actual Costs	N/A	N/A	$190.00
Shipping	Actual Costs	N/A	N/A	$1,210.00
Other	$0.00	N/A	N/A	$950.00
	TOTAL			**$3,075.00**
Total ODCs				**$10,427.00**

Engineer: Harding Lawson Associates, Inc. Date Prepared: 08/13/04
Contract No.: D003826
Project Name: Hidden Valley Electronics
Work Assigment No.: D003826-9

Schedule 2.11(d) 3
Maximum Reimbursement Rates for Vendor Rented Equipment

(1) Item	(2) Max. Reimbursement Rate ($)*	(3) Est. Usage (Unit of Time) +		(4) Est. Rental Cost ($) (Col. 2 x 3)
Geopump	$75	4	wk	$300
Horiba U-22 w/ flow cell	$270	4	wk	$1,080
Turbidity Meter	$80	4	wk	$320
Minirae PID	$180	2	wk	$360
Hermit 3000 Data Logger	$375	1	wk	$375
Transducer	$105	1	wk	$105
Metal Detector	$108	1	wk	$108
Hammer Drill	$50	4	day	$200
Dust Meter	$150	2	wk	$300
Photovac Portable GC	$675	1	wk	$675
Total Vendor Rented Equipment				$3,823

Notes:
* Reimbursement will be made at the Maximum Reimbursement rate or the actual rental rate, whichever is less.
+ Usage time includes shipping to and from site.

Engineer: Harding Lawson Associates, Inc. 08/13/04
Contract No.: D003826
Project Name: Hidden Valley Electronics
Work Assigment No.: D003826-9

Schedule 2.11(d) 5
Consumable Supplies

Item	Estimated Quantity	Unit Cost ($)	Total Budgeted Cost ($) (Col. 2 x 3)
FIELDBOOK - HARDCOVER	2	$10.50	$21.00
TOPOGRAPHIC MAPS	1	$8.25	$8.25
AERIAL PHOTOGRAPHS	1	$6.50	$6.50
FILM AND DEVELOPMENT	1	$15.00	$15.00
MISCELLANEOUS	4	$50.00	$200.00
			$250.75
1 LITER SQUIRT BOTTLE	1	$2.43	$2.43
2 OZ SOIL JAR		$2.13	$0.00
4 OZ SOIL JAR		$2.69	$0.00
40 ML GLASS VIAL		$1.33	$0.00
5 GALLON COLLAPSIBLE JUG	6	$4.45	$26.70
ACETONE, PESTICIDE GRADE		$34.98	$0.00
BRUSH - LONG HANDLED	1	$6.04	$6.04
BUBBLE PACK	200	$0.16	$32.00
CAUTION TAPE	1	$17.30	$17.30
DEIONIZED WATER	20	$2.29	$45.80
DISPOSALE BAILER		$7.65	$0.00
DISPOSABLE INLINE FILTER		$14.14	$0.00
DRAEGER TUBE	2	$5.70	$11.40
EMERGENCY HORN		$13.13	$0.00
EYE WASH BOTTLES - DISPOSABLE		$5.64	$0.00
FIELD BOOK		$7.47	$0.00
FILM AND DEVELOPMENT	1	$15.00	$15.00
FLAGGING	50	$1.11	$55.50
GRADE STAKES	10	$12.36	$123.60
HEXANE, PESTICIDE GRADE		$38.06	$0.00
LIQUINOX	1	$23.42	$23.42
METHANOL		$28.89	$0.00
MISCELLANEOUS	1	$50.00	$50.00
NITRIC ACID		$47.00	$0.00
pH PAPER		$9.08	$0.00
PLASTIC SHEETING	1	$34.06	$34.06
PLASTIC TUB	2	$16.66	$33.32
RECORDABLE CD MEDIA		$9.00	$0.00
SPAN GAS (ISOBUTYLENE & ZERO AIR)	4	$33.63	$134.52
STAINLESS STEEL BOWL	2	$16.21	$32.42
STAINLESS STEEL SPATULA	20	$1.55	$31.00
STAINLESS STELL SPOON	2	$2.68	$5.36
SUPER WHALE PUMP - COMPLETE **		$46.35	$0.00
SUPER WHALE PUMP ONLY **		$128.23	$0.00
TAPE DISPENSER	2	$6.80	$13.60
TEFLON COATED BAILER LINE		$0.89	$0.00
TUBING - PVC -CLEAR	1300	$0.33	$429.00
TUBING - PVC - REINFORCED		$0.57	$0.00
TUBING - TEFLON/SILICON	100	$3.22	$322.00
			$1,444.47
Personal Protective Equipment			
BOOTIES	1	$2.57	$2.57
COVERALLS	2	$1.28	$2.56
COVERALLS, INSULATED		$5.74	$0.00
EAR PLUGS	20	$0.15	$3.00
GLOVES - NITRILE	10	$1.34	$13.40
GLOVES - VITON *		$54.00	$0.00
GLOVES - COTTON LINERS		$0.33	$0.00
GLOVES - DISPOSABLE, VINYL	200	$0.36	$72.00
GLOVES - SILVER SHIELD		$4.15	$0.00
GOGGLES/SAFETY GLASSES	4	$0.64	$2.56
PACKING/DUCT TAPE	3	$4.27	$12.81
RESPIRATOR CARTRIDGES	2	$17.25	$34.50
TYVEK SUIT - POLY COATED	2	$4.10	$8.20
			$151.60
TOTAL CONSUMABLE SUPPLIES			**$1,846.82**

Notes:
* Rates are in accordance with Table 2.10(c)5 of contract.
* * Shall only be used on a case by case basis subject to DEC project manager approval.

Engineer: Harding Lawson Associates, Inc. Date Prepared: 08/13/04
Contract No.: D003826
Project Name: Hidden Valley Electronics
Work Assigment No.: D003826-9

Schedule 2.11(e)
Cost-Plus-Fixed-Fee Subcontracts

Name of Subcontractor	Services to be Performed	Subcontract Price
YEC	Sampling & Inspection/Survey & Base Map	$ 26,953.93

A) Direct Salary Costs

Professional Responsibility Level	Labor Classification	Ave. Reimbursement Rate ($/hr)	Max. Reimbursement Rate ($/hr)	Est. No. of Hours	Total Est. Direct Salary Cost (Ave. Reimb. Rate x Est. # of Hrs.)
Principal	VIII	$ 59.42	$ 64.19	14	$ 831.88
Senior Geologist	V	$ 39.29	$ 43.22	24	$ 942.96
Staff Geologist	IV	$ 34.16	$ 37.57	0	$ -
Staff Geologist	III	$ 29.64	$ 32.89	66	$ 1,956.24
Senior Technician	III	$ 21.92	$ 24.57	100	$ 2,192.00
Technician/Draftsperson	I	$ 19.86	$ 22.26	0	$ -
Total Direct Salary Costs					$ 5,923.08

Notes:
1) These rates will be held firm until December 31, 2004.
2) Reimbursement will be limited to the lesser of either the individuals actual hourly rate or the maximum rate for each labor category.
3) Reimbursement will be limited to the maximum reimbursement rate for the professional responsibility level of the actual work performed.
4) Only those labor classifications indicated with an asterisk will be entitled to overtime premium.
5) Reimbursement for technical time of principals, owners and officers will be limited to the maximum reimbursement rate of that labor category, the actual hourly labor rate paid, or the State M-6 job rate, whichever is lower.
6) The maximum rates in each labor category can be modified only by mutual written agreement and approved by both the Department and the Comptroller.
7) This Footnote applies to Schedules for years 4 through 7 only. If the U.S. cost-of-living index increases at a rate greater than 6% compounded annually, the maximum salary rates will be subject to renegotiation for future years of the contract. There shall be no retroactive adjustments of payment as a result of renegotiated salary schedules.

Engineer: Harding Lawson Associates, Inc. Date Prepared: 08/13/04
Contract No.: D003826
Project Name: Hidden Valley Electronics
Work Assigment No.: D003826-9

Schedule 2.11(e)
Cost-Plus-Fixed-Fee Subcontracts

B) Indirect Costs

Indirect costs shall be paid based on a percentage of direct salary costs incurred which shall not exceed a maximum of 117%% or the actual rate calculated in accordance with 48 CFR Federal Acquisition Regulation, whichever is lower.

Amount budgeted for indirect costs is: $ 6,930.00

C) Maximum Reimbursement Rates for Direct Non-Salary Costs

Item	Max. Reimbursement Rate (Specify Unit)	Est. No. of Units	Total Est. Cost
1) Travel			
Mileage	0.38 mile	676	$ 256.88
Tolls	10 trip	2	$ 20.00
Per Diem	86 overnight	16	$ 1,376.00
2) Supplies			
Level D PPE	15 man-day	15	$ 225.00
3) Survey & Base Map			
CAD	15 CAD PC hours	16	$ 240.00
1 inch = 50 ft base map*	5,200.00	1	$ 5,200.00
1 inch = 50 ft interior map	915.00	1	$ 915.00
1 inch = 100 ft map**	1,475.00	1	$ 1,475.00
Survey of Additional Wells	1,550.00	1	$ 1,550.00
Survey New Wells	915.00	1	$ 915.00
Total Direct Non-Salary Costs			$ 12,172.88

D) Fixed Fee

The fixed fee is: (15% of Total Direct and Indirect Salary Costs) $ 1,927.96
See Schedule 2.10(h) for how the fixed fee should be claimed.

Engineer: Harding Lawson Associates, Inc. Date Prepared: 08/13/04
Contract No.: D003826
Project Name: Hidden Valley Electronics
Work Assigment No.: D003826-9

Schedule 2.11(f)
Unit Price Subcontracts

NAME OF SUBCONTRACTOR	SERVICE	PRICE	MGMT FEE*
IRM Subcontractor Scientific Testing		$22,500	$900
ITEM		Unit Cost	Total Cost
Install Sub-Slab Depressurization Systems			
Residences	4	$2,500	$10,000
HVE Building	5	$2,500	$12,500
Price is based on budgetary estimates from subcontractors			
Unit price may vary depending on the actual number of systems installed			
Required number of bids will be obtained when the actual number of systems to be installed are determined			

Note: Task 4

Subtotal Cost:	$22,500
Management Fee:	$900
Total:	**$23,400**

* Work assignment aggregate subcontract is greater than $10,000.

Engineer: Harding Lawson Associates, Inc. Date Prepared: 08/13/04
Contract No.: D003826
Project Name: Hidden Valley Electronics
Work Assigment No.: D003826-9

Schedule 2.11(f)
Unit Price Subcontracts
(continued)

NAME OF SUBCONTRACTOR	SERVICE	PRICE	MGMT FEE*
GeoLogic	Drilling/Direct Push	$18,520	$741
ITEM	Number of Units	Unit Cost	Total Cost
Direct Push			
Mob/Demob	1	$200.00	$200
Day Rate Level D	6	$1,275.00	$7,650
Day Rate Level C	0	$1,500.00	$0
55 Gallon Drum - soil	1	$50.00	$50
Drilling			$0
Mob/Demob	1	$300.00	$300
4.25" HAS Drillling	170	$12.00	$2,040
2-inch OD SS (2 foot) Sample	85	$12.00	$1,020
Decon Rig and Augers	6	$150.00	$900
Install PVC Well Screen	50	$18.00	$900
Install PVC Riser	120	$18.00	$2,160
Install new 6" flush mount well cover	5	$150.00	$750
Replace exisitng flush mount well cover	2	$150.00	$300
MW Development	5	$150.00	$750
Standbby	6	$150.00	$900
55 Gallon Drum - soil	2	$50.00	$100
Transport Soil drums to staging area	3	$50.00	$150
55 Gallon Drum - water	2	$50.00	$100
Transprot Soil drums to staging area	5	$50.00	$250

Note: Task 2

Subtotal Cost:	$18,520
Management Fee:	$741
Total:	**$19,261**

* Work assignment aggregate subcontract is greater than $10,000.

Engineer: Harding Lawson Associates, Inc. Date Prepared: 08/13/04
Contract No.: D003826
Project Name: Hidden Valley Electronics
Work Assigment No.: D003826-9

Schedule 2.11(f)
Unit Price Subcontracts
(continued)

NAME OF SUBCONTRACTOR	SERVICE	PRICE	MGMT FEE *
Buck Labs	Analytical	$34,438	$1,378
ITEM	Number of Units	Unit Cost	Total Cost
Air Samples			
TLC - VOCs TO14	37	$255.00	$9,435
Soil Samples			$0
TCL - VOCs	9	$105.00	$945
TCL - SVOCs	6	$290.00	$1,740
TCL - Metals	6	$160.00	$960
Pest/PCB	6	$140.00	$840
TOC	5	$45.00	$225
Grain Size	5	$95.00	$475
Water Samples			$0
TCL - VOCs	117	$84.00	$9,828
TCL - SVOCs	6	$260.00	$1,560
TCL - Metals	6	$160.00	$960.00
Pest/PCB	6	$140.00	$840.00
TOC	30	$30.00	$900.00
Nitrate	30	$10.00	$300.00
Nitrite	30	$10.00	$300.00
Sulfate	30	$10	$300
Sulfide	30	$14	$420
Methane/Ethane/Ethene	30	$85	$2,550
CO2	30	$12	$360
Alkalinity	30	$10	$300
Chloride	30	$10	$300
Manganese/Iron	30	$30	$900

Note: Task 2

Subtotal Cost:	$34,438
Management Fee:	$1,378
Total:	**$35,816**

* Work assignment aggregate subcontract is less than $10,000.

Engineer: Harding Lawson Associates, Inc. Date Prepared: 08/13/04
Contract No.: D003826
Project Name: Hidden Valley Electronics
Work Assigment No.: D003826-9

Schedule 2.11(f)
Unit Price Subcontracts
(continued)

NAME OF SUBCONTRACTOR	SERVICE	PRICE	MGMT FEE *
Buck Labs	Analytical	$1,785	$71
ITEM	Number of Units	Unit Cost	Total Cost
Air Samples			
TLC - VOCs TO15	7	$255.00	$1,785

Note: Task 4

Subtotal Cost:	$1,785
Management Fee:	$71.40
Total:	**$1,856**

* Work assignment aggregate subcontract is greater than $10,000.

Engineer: Harding Lawson Associates, Inc. Date Prepared: 08/13/04
Contract No.: D003826
Project Name: Hidden Valley Electronics
Work Assigment No.: D003826-9

Schedule 2.11(f)
Unit Price Subcontracts
(continued)

NAME OF SUBCONTRACTOR	SERVICE	PRICE	MGMT FEE *
OP-TECH Environmental Services	IDW Disposal	$1,434	$0
ITEM	Number of Units	Unit Cost	Total Cost
Soil Drum Disposal	3	$478.00	$1,434

Note: Task 2

Subtotal Cost:	$1,434
Management Fee:	$0.00
Total:	**$1,434**

* Work assignment aggregate subcontract is less than $10,000.

SCHEDULE 2.11(g)

MONTHLY COST CONTROL REPORT
SUMMARY OF FISCAL INFORMATION

Engineer: Harding Lawson Associates, Inc.
Contract No.: D003826
Project Name: Hidden Valley Electronics
Work Assigment No.: D003826-9
Task #/Name: All Tasks
Complete: 0.0%

Page: 1 OF 6
Date Prepared: 08/13/04
Billing Period:
Invoice No.

Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+C)	E Estimated Costs To Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1. Direct Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$58,681	0.00
2. Indirect Costs 155.8%	0.00	0.00	0.00	0.00	0.00	0.00	$91,425	0.00
3. Subtotal Direct Salary Costs and Indirect Costs	0.00	0.00	0.00	0.00	0.00	0.00	$150,106	0.00
4. Travel	0.00	0.00	0.00	0.00	0.00	0.00	$7,317	0.00
5. Other Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$8,745	0.00
6. Subtotal Direct Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$16,062	0.00
7. Subcontractors	0.00	0.00	0.00	0.00	0.00	0.00	$108,721	0.00
8. Total Site Cost	0.00	0.00	0.00	0.00	0.00	0.00	$274,889	0.00
9. Fixed Fee 7%	0.00	0.00	0.00	0.00	0.00	0.00	$10,509	0.00
10. Total Site Price	0.00	0.00	0.00	0.00	0.00	0.00	$285,398	0.00

Program Manager (Engineer) _____ Date: _____

SCHEDULE 2.11(g)

MONTHLY COST CONTROL REPORT
SUMMARY OF FISCAL INFORMATION

Engineer: Harding Lawson Associates, Inc.
Contract No.: D003826
Project Name: Hidden Valley Electronics
Work Assigment No.: D003826-9
Task #/Name: TASK 1 - Work Plan Development
Complete: 0.0%

Page: 2 OF 6
Date Prepared: 08/13/04
Billing Period:
Invoice No.

Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+C)	E Estimated Costs To Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1. Direct Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$6,743.00	0.00
2. Indirect Costs 155.8%	0.00	0.00	0.00	0.00	0.00	0.00	$10,506.00	0.00
3. Subtotal Direct Salary Costs and Indirect Costs	0.00	0.00	0.00	0.00	0.00	0.00	$17,249.00	0.00
4. Travel	0.00	0.00	0.00	0.00	0.00	0.00	$166.00	0.00
5. Other Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$380.00	0.00
6. Subtotal Direct Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$546.00	0.00
7. Subcontractors	0.00	0.00	0.00	0.00	0.00	0.00	$0.00	0.00
8. Total Task Cost	0.00	0.00	0.00	0.00	0.00	0.00	$17,795.00	0.00
9. Fixed Fee 7%	0.00	0.00	0.00	0.00	0.00	0.00	$1,207.00	0.00
10. Total Task Price	0.00	0.00	0.00	0.00	0.00	0.00	$19,002.00	0.00

Program Manager (Engineer) _____ Date: _____

SCHEDULE 2.11(g)

MONTHLY COST CONTROL REPORT
SUMMARY OF FISCAL INFORMATION

Engineer: Harding Lawson Associates, Inc.
Contract No.: D003826
Project Name: Hidden Valley Electronics
Work Assigment No.: D003826-9
Task #/Name: TASK 2 - Remedial Investigation
Complete: 0.0%

Page: 3 OF 6
Date Prepared: 08/13/04
Billing Period:
Invoice No.

Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+C)	E Estimated Costs To Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1. Direct Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$35,897	0.00
2. Indirect Costs 155.8%	0.00	0.00	0.00	0.00	0.00	0.00	$55,927	0.00
3. Subtotal Direct Salary Costs and Indirect Costs	0.00	0.00	0.00	0.00	0.00	0.00	$91,824	0.00
4. Travel	0.00	0.00	0.00	0.00	0.00	0.00	$4,747	0.00
5. Other Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$7,050	0.00
6. Subtotal Direct Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$11,797	0.00
7. Subcontractors	0.00	0.00	0.00	0.00	0.00	0.00	$83,464	0.00
8. Total Task Cost	0.00	0.00	0.00	0.00	0.00	0.00	$187,085	0.00
9. Fixed Fee 7%	0.00	0.00	0.00	0.00	0.00	0.00	$6,428	0.00
10. Total Task Price	0.00	0.00	0.00	0.00	0.00	0.00	$193,513	0.00

Program Manager (Engineer) _____ Date: _____

SCHEDULE 2.11(g)

MONTHLY COST CONTROL REPORT
SUMMARY OF FISCAL INFORMATION

Engineer: Harding Lawson Associates, Inc.
Contract No.: D003826
Project Name: Hidden Valley Electronics
Work Assigment No.: D003826-9
Task #/Name: TASK 3 - Feasibility Study
Complete: 0.0%

Page: 4 OF 6
Date Prepared: 08/13/04
Billing Period:
Invoice No.

Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+C)	E Estimated Costs To Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1. Direct Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$10,541	0.00
2. Indirect Costs 155.8%	0.00	0.00	0.00	0.00	0.00	0.00	$16,423	0.00
3. Subtotal Direct Salary Costs and Indirect Costs	0.00	0.00	0.00	0.00	0.00	0.00	$26,964	0.00
4. Travel	0.00	0.00	0.00	0.00	0.00	0.00	$332	0.00
5. Other Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$950	0.00
6. Subtotal Direct Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$1,282	0.00
7. Subcontractors	0.00	0.00	0.00	0.00	0.00	0.00	$0	0.00
8. Total Task Cost	0.00	0.00	0.00	0.00	0.00	0.00	$28,246	0.00
9. Fixed Fee 7%	0.00	0.00	0.00	0.00	0.00	0.00	$1,887	0.00
10. Total Task Price	0.00	0.00	0.00	0.00	0.00	0.00	$30,133	0.00

Program Manager (Engineer) _____ Date: _____

SCHEDULE 2.11(g)

MONTHLY COST CONTROL REPORT
SUMMARY OF FISCAL INFORMATION

Engineer: Harding Lawson Associates, Inc.
Contract No.: D003826
Project Name: Hidden Valley Electronics
Work Assigment No.: D003826-9
Task #/Name: TASK 4 - Interim Remedial Measures (IRMs)
Complete: 0.0%

Page: 5 OF 6
Date Prepared: 08/13/04
Billing Period:
Invoice No.

Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+C)	E Estimated Costs To Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1. Direct Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$5,500	0.00
2. Indirect Costs 155.8%	0.00	0.00	0.00	0.00	0.00	0.00	$8,570	0.00
3. Subtotal Direct Salary Costs and Indirect Costs	0.00	0.00	0.00	0.00	0.00	0.00	$14,070	0.00
4. Travel	0.00	0.00	0.00	0.00	0.00	0.00	$2,072	0.00
5. Other Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$365	0.00
6. Subtotal Direct Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	$2,437	0.00
7. Subcontractors	0.00	0.00	0.00	0.00	0.00	0.00	$25,256	0.00
8. Total Task Cost	0.00	0.00	0.00	0.00	0.00	0.00	$41,763	0.00
9. Fixed Fee 7%	0.00	0.00	0.00	0.00	0.00	0.00	$985	0.00
10. Total Task Price	0.00	0.00	0.00	0.00	0.00	0.00	$42,748	0.00

Program Manager (Engineer) _____ Date: _____

Schedule 2.11(g) - Supplemental
COST CONTROL REPORT FOR SUBCONTRACTS

Engineer: Harding Lawson Associates, Inc.
Contract No.: D003826
Project Name: Hidden Valley Electronics
Work Assigment No.: D003826-9
Task #/Name: TASK 2 - Remedial Investigation

Page 1 of 1
Date Prepared: 08/13/04
Billing Period:
Invoice No.

Subcontract Name	A Subcontract Costs Claimed This Application Incl. Resubmittals	B Subcontract Costs Approved For Payment on Previous Applications	C Total Subcontract Costs To Date (A plus B)	D Subcontract Approved Budget	E Management Fee Budget	F Management Fee Paid	G Total Costs To Date (C plus F)
1. GeoLogic				$18,520	$741		
2. Buck Labs				$34,438	$1,378		
3. OP-TECH Environmental Services				$1,434	$0		
TOTALS				$54,392	$2,118		

Project Manager: _____ Date: _____

NOTES:
(1) Costs listed in Columns A, B, C & D do not include any management fee costs.
(2) Management fee is applicable to only properly procured, satisfactorily completed, unit price subcontracts over $10,000.
(3) Line 11, Column G should equal Line 7 (Subcontractors), Column D of Summary Cost Control Report.

Schedule 2.11(g) - Supplemental
COST CONTROL REPORT FOR SUBCONTRACTS

Engineer: Harding Lawson Associates, Inc.
Contract No.: D003826
Project Name: Hidden Valley Electronics
Work Assigment No.: D003826-9
Task #/Name: TASK 4 - Interim Remedial Measures (IRMs)

Page 1 of 1
Date Prepared: 08/13/04
Billing Period:
Invoice No.

Subcontract Name	A Subcontract Costs Claimed This Application Incl. Resubmittals	B Subcontract Costs Approved For Payment on Previous Applications	C Total Subcontract Costs To Date (A plus B)	D Subcontract Approved Budget	E Management Fee Budget	F Management Fee Paid	G Total Costs To Date (C plus F)
1. Scientific Testing				$22,500	$900		
2. Buck Labs				$1,785	$71		
TOTALS				$24,285	$971		

Project Manager: _____ Date: _____

NOTES:
(1) Costs listed in Columns A, B, C & D do not include any management fee costs.
(2) Management fee is applicable to only properly procured, satisfactorily completed, unit price subcontracts over $10,000.
(3) Line 11, Column G should equal Line 7 (Subcontractors), Column D of Summary Cost Control Report.

SCHEDULE 2.11(h)
MONTHLY COST CONTROL REPORT
SUMMARY OF LABOR HOURS
Number of Direct Labor Hours Expended to Date/Estimated Number of Direct Labor Hours to Completion

Engineer: Harding Lawson Associates, Inc.
Contract No.: D003826
Project Name: Hidden Valley Electronics
Work Assigment No.: D003826-9

Date Prepared: 08/13/04
Billing Period:
Invoice #:

NSPE Labor Classification	IX Exp/Est*		VIII Exp/Est		VII Exp/Est		VI Exp/Est		V Exp/Est		IV Exp/Est		III Exp/Est		II Exp/Est		I Exp/Est		Total No. of Direct Labor Hours Exp/Est	
TASK 1 - Work Plan Development	0.0	6	0.0	2	0.0	0	0.0	53	0.0	2	0.0	22	0.0	0	0.0	109	0.0	30	0.0	224
TASK 2 - Remedial Investigation	0.0	9	0.0	44	0.0	15	0.0	114	0.0	18	0.0	165	0.0	0	0.0	807	0.0	61	0.0	1233
TASK 3 - Feasibility Study	0.0	8	0.0	14	0.0	0	0.0	46	0.0	0	0.0	160	0.0	0	0.0	60	0.0	30	0.0	318
TASK 4 - Interim Remedial Measures (IRMs)	0.0	2	0.0	0	0.0	0	0.0	14	0.0	0	0.0	40	0.0	0	0.0	134	0.0	4	0.0	194
Total Hours	0.0	25	0.0	60	0.0	15	0.0	227	0.0	20	0.0	387	0.0	0	0.0	1110	0.0	125	0.0	1969

* Expended/Estimated