REMEDIAL INVESTIGATION/ALTERNATIVES ANALYSIS (RI/AA) OF THE YOUNGSTOWN COLD STORAGE SITE (NYSDEC SITE NO. E932122) 701 THIRD STREET EXTENSION (NANCY PRICE DRIVE) VILLAGE OF YOUNGSTOWN NIAGARA COUNTY, NEW YORK

REMEDIAL INVESTIGATION/ALTERNATIVES ANALYSIS WORK PLAN

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2004.0279.03

JANUARY 2006

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VILLAGE OF YOUNGSTOWN
NIAGARA COUNTY, NEW YORK

RI/AA WORK PLAN

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1.0 INTRODUCTION

1.1 General Discussion

This Work Plan has been prepared by TVGA Consultants (TVGA) to provide a detailed description of the Remedial Investigation/Alternatives Analysis (RI/AA) program to be implemented at the Youngstown Cold Storage Site located at 701 Third Street Extension (Nancy Price Drive), Niagara County, Village of Youngstown, New York. Figure 1 shows the location of the project site. The RI/AA will be completed on behalf of the Village of Youngstown (Village) pursuant to the Environmental Restoration, or Brownfield Program, component of Title 5 of the Clean Water/Clean Air Bond Act of 1996, administered by the New York State Department of Environmental Conservation (NYSDEC). The Village was selected to receive State financial assistance under this NYSDEC program for the investigation of this site, and ultimately intends to facilitate the restoration and beneficial use of this property. The purpose of the RI/AA program outlined herein is to characterize the nature and extent of contamination occurring on, and emanating from, the project site, and to develop and evaluate remedial alternatives, as appropriate.

The Village has identified the project site as a prime candidate for restoration and redevelopment. The project site's attributes include its size; the presence of existing infrastructure (e.g. municipal sanitary, water, natural gas, and proximity to the Village downtown and Veteran's Park.

This document has been developed in general accordance with the July 2004 NYSDEC Municipal Assistance for Environmental Restoration Projects Procedures Handbook and details the scope and objectives of the RI/AA program. The following supporting technical documents have also been prepared and appended to the Work Plan:

- Field Sampling Plan (FSP);
- Quality Assurance/Quality Control (QA/QC) Plan;
- Health and Safety Plan (HASP); and
- Citizen Participation Plan (CPP).

Collectively, these plans form one document that is intended to define the scope of tasks, technical approach and specific procedures to be utilized to complete the RI/AA for the project site.

The scope of the RI/AA program to be implemented at the project site is the product of a scoping process that involved the review of historical information concerning the property; meetings with NYSDEC and Village representatives; and preliminary site reconnaissance. Because the RI/AA process is dynamic and iterative, the Work Plan will be modified during the site characterization process to incorporate new information and refine project objectives, as necessary.

1.2 Work Plan Overview

This Work Plan summarizes and presents an initial evaluation of existing data and background information compiled during the scoping process, a general description of the RI/AA tasks, a project schedule, staffing and management plan, and a detailed project budget. The scope and content of the supporting technical plans appended to the Work Plan are described in the following paragraphs.

The *Field Sampling Plan* (FSP) presented in Appendix A identifies and describes:

- Sampling objectives;
- Sampling equipment and methods;
- Sample types, locations and frequency;
- Sample identification system;
- Sample handling and analysis; and
- Field documentation and record keeping procedures.

The *Quality Assurance/Quality Control* (QA/QC) *Plan* (Appendix B) addresses all elements of the site investigation and includes:

- A project description;
- A project organization chart illustrating the lines of responsibility of the sampling personnel;
- Quality assurance objectives for data;
- Sample custody procedures;
- The type and frequency of calibration procedures for field and laboratory instruments, internal quality control checks, and quality assurance performance audits and system audits;
- Preventative maintenance procedures and schedule and corrective action procedures for the field and laboratory instruments;
- Specific procedures to assess data precision, representativeness, comparability, accuracy, and completeness of specific measurement parameters; and
- Data documentation and tracking procedures.

Appendix C contains the site-specific *Health and Safety Plan* (HASP) complying with 29 CFR 1910.120 that was prepared for implementation prior to the commencement of field activities. The HASP provides a site background discussion and describes personnel responsibilities, protective equipment, health and safety procedures and protocols, decontamination procedures, personnel training, and the type and extent of any necessary medical surveillance. Procedures for protecting third parties, such as visitors or the surrounding community, are also specified in the HASP.

The *Citizen Participation Plan* (CPP) presented in Appendix D describes the types of information to be provided to the public and outlines the opportunities for community comment and input during the RI/AAR. This Plan includes a preliminary list of potentially interested parties, a list of information repositories, community outreach, and other appropriate citizen participation activities. Furthermore, the CPP will describe the procedures to be used to ensure that:

- Pertinent documents will be readily available to the public;
- Communication with the public takes place at critical decision points in the remedial program;
- Informational notices are mailed out and/or announced in the local media;
- Project staff are identified and made accessible to the public; and
- Interested and/or affected parties are identified.

2.0 SITE BACKGROUND AND PHYSICAL SETTING

2.1 Site Description

The project site consists of approximately 2.4 acres located within the Village of Youngstown limits, as shown on Figure 1. The location and configuration of the tax parcel (SBL 59.06-3-6) that comprises the project site are depicted on Figure 2. Figure 3 shows the layout of the project site, including the on-site structures. The site is occupied by three structures which include: a deteriorating three-story stone building (warehouse) occupying approximately 23,000 square-feet; a single-story brick building (ice house) approximately 4,500 square-feet in size; and a house that is approximately 875 square feet. The largest building contains a compressor room from which anhydrous ammonia was pumped through a pipe network throughout the cold storage portions of the facility. In addition, a spray wash area was present in the southeast corner of the project site where the apples were reportedly washed prior to storage within the facility. It is possible that pesticides and/or fungicides were sprayed on the apples at this location.

Immediately beyond Nancy Price Drive, Veteran's Park is located to the east of the project site. Elliot Street and 2nd Street bound the site to the north and west, respectively. Residential properties are located beyond these two streets. A Niagara Mohawk substation, undeveloped land, and a residential property lie to the south of the project site.

2.2 Project History

The project site was first developed as early as 1910 and was operated until 1996. The project site was used during this time period primarily for the storage, washing and packing of locally grown apples. The facility utilized a network of piping to chill the stored apples via anhydrous ammonia. Two large compressors located in the southeastern portion of the main building were used to pump the ammonia throughout the facility. The site has been vacant following cessation of activities at the project site in 1996.

The Village of Youngstown notified the USEPA of an anhydrous ammonia leak at the project site on September 5, 2003. After conducting a removal assessment, the USEPA determined that a removal action would be required. A February 2005 Administrative Record prepared by the United States Environmental Protection Agency (USEPA) indicated that a removal action took place in 2003 at the project site. The removal action was initiated on September 9, 2003 and completed on December 19, 2003. The removal action included the identification, removal, and disposal of hazardous substances from the project site. Materials removed from the site consisted of:

- 138 containers of miscellaneous chemicals which included, but may not have been limited to:
  - Ammonium hydroxide;
  - Potassium hydroxide;
  - Hydrochloric acid; and
  - Phosphoric acid.
- Seven lead acid batteries;
- 500 pounds of anhydrous ammonia;
- Eight drums of ammoniated refrigeration oil collected from the ammonia system; and
- 250 gallons of No. 2 fuel oil from a heating tank.

Following the removal activities, the USEPA collected four soil samples and one sump sediment sample from around the pesticide sprayer. Based on the results of these samples, the USEPA determined that additional removal activities were not warranted. It should be noted that the Administrative Record indicated that an asbestos survey was not performed in the buildings.

The Village initiated the acquisition of the Youngstown Cold Storage parcel via tax foreclosure. The Petition and Notice of Foreclosure was submitted and a Temporary Stay of Foreclosure was granted and filed in the Niagara County Courthouse, providing the temporary incidents of ownership of the project site for the sole purpose of entering the project site and conducting an environmental investigation.

2.3 Physical Setting

2.3.1 Physiography

The project site is located in the Eastern Lake section of the Central Lowlands physiographic province, which is divided into the Erie, Huron and Ontario Plains. The project site is located in the Ontario Plains, which extends from the shore of Lake Ontario to the foot of the Niagara Escarpment. Beginning at the foot of the escarpment, this nearly level plain slopes at a rate of 20 feet per mile toward Lake Ontario, which is eight miles from the escarpment. The land surface on this plain is fairly uniform with a few shallow valleys of minor streams. These minor irregularities in relief have a northeast-southwest trend. Drainage in the Ontario

Plain is northward into Lake Ontario. The topography of the project site, as shown on Figure 1, is generally flat-lying and the project site has an elevation of approximately 300 feet above mean sea level (AMSL).

2.3.2 Overburden

The Soil Survey of Niagara County, New York identifies the soil underlying a majority of the project site as Ovid Silt Loam (OvA). This soil is a deep, somewhat poorly drained soil formed in calcareous glacial till deposits, which are generally modified somewhat by glacial lake sediments of silt and clay. The permeability of this soil is moderately slow to slow. Additionally, approximately 4,000 square feet of the southeast corner of the project site is underlain by Madalin Silt Loam. This loamy sub-soil variant is a deep poorly to very poorly drained medium textured soil that is underlain by glacial till and were formed in glacial lake sediments of silt and clay. The permeability of this soil is low.

The Surficial Geologic Map of New York – Niagara Sheet (1988) indicates that the overburden underlying the project site consists of lacustrine silt and clay deposits consisting of laminated silt and clay formed in proglacial lakes.

2.3.3 Bedrock

The *Geologic Map of New York, Niagara Section*, depicts the uppermost bedrock formation beneath the project site as the Upper Ordovician Period shale associated with the Queenston Formation, which is approximately 800 feet in thickness.

2.3.4 Hydrogeology

Stormwater

Stormwater runoff occurring on the project site is not well understood at this time, although a large component is believed to infiltrate into the subsurface.

Surface Water Bodies

The project site is located in the Lake Erie (East End) – Niagara River Drainage Basin. While there are no surface water bodies located on or adjacent to the project site, the Niagara River is located approximately 0.15 miles west of the project site, flows in a northerly direction, and discharges into Lake Ontario, which is approximately 1.4 miles north of the project site. Both the Niagara River and Lake Ontario are listed Class A surface water bodies according to 6 NYCRR Part 837 and 847 respectively. The Niagara River is also designated as a Class A-Special, which indicates that it is an international boundary water. The best usage of Class A waters are source of water supply for drinking, culinary or food processing purposes, primary and secondary contact recreation and fishing.

2.4 Historical Records Review

This section of the Work Plan details historical information from typical sources, as well as sources that may be unique to the project site.

2.4.1 Historic Atlases and Fire Insurance Maps

Historical atlases maintained by the TVGA Consultants Survey department for the years 1893 and 1908 were reviewed for the project site. The 1893 depicts the project site as vacant undeveloped land owned by Jay Badgley. With the exception of a residential home to the west of the project site, properties to the north, south and east were vacant and undeveloped.

The 1908 historical atlas depicted no changes to the project site and only minor changes to the adjacent properties. Residential properties were depicted to the north and west of the project site, while vacant properties were depicted to the east and south. Additionally, the Lewiston & Youngstown Electric Railroad was shown along Third Street to the east of the project site.

A 1927 Sanborn Map for the project site from Environmental Data Resources (EDR) was also reviewed. This map shown in Figure 5. This map depicts the project site as being occupied by the Youngstown Cold Storage C. Inc. The existing warehouse building was shown on this map with the current configuration of the building with the exception of the western portion of the warehouse building, which was constructed in the early 1980's. The ice house building to the south of the main structure was also depicted on this map. An ice machine/engine room was depicted on the first floor in the southeast corner of the warehouse building. A fuel oil tank was depicted east of the engine room outside the warehouse building. Additionally, a lime and sulfur tank was located in the southwest corner of the project site. With the exception of a transformer house located on the adjoining property to the southeast, the remaining adjacent properties were residential.

2.4.2 Previous Environmental Reports

As identified in Section 2.2, a February 2005 Administrative Record prepared by the USEPA indicated that a removal action took place in 2003 at the project site. No other environmental investigations pertaining to the project site were discovered during the historical records review.

2.4.3 Environmental Database Search

An environmental database service company, Environmental Data Resources, Inc. (EDR), was contracted to provide a site-specific environmental database search report for the project site and vicinity. The project site is listed on Comprehensive Environmental Response, Compensation, Liability Information System (CERCLIS) database and referenced on the Emergency Response Notification System (ERNS) database as a result of the 2003 removal action outlined in Section 2.2. The Niagara Mohawk Substation that adjoins the project site to the southwest is listed as a RCRA-Small Quantity Generator with no violations. Additionally, seven Leaking Storage Tank Sites were identified within one-half mile of the project site; however, due to their regulatory status and/or their distance from the project site they are not viewed as environmental concerns.

2.5 Areas Of Potential Environmental Concern

Based upon the historical use of the project site and adjacent parcels and our current understanding of their environmental history, the following potential environmental concerns were identified in connection with the project site:

- The potential for surface and subsurface soil and/or groundwater contamination in connection with the former use of the project site for cold storage purposes for over 80 years. Contaminants of concern include:
  - Petroleum from heating and operating equipment including:
    - The fuel oil tank located in the northeast corner of the basement crawl space of the warehouse building; and
    - The potential presence of an outdoor fuel oil tank identified on the 1927 Sanborn Map to the east of the compressor room.
  - Pesticides, herbicides, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals related to:
    - The former storage and processing of apples at the project site;
    - The washing of apples in the outdoor wash located in the southeast portion of the site;
    - The reported use of pesticides and/or fungicides to preserve the apples during storage; and
    - The potential for on-site disposal of processing waste.
  - Polychlorinated biphenyls (PCBs) stemming from the probable historic operation and maintenance of electrical equipment with PCB-containing dielectric fluid including:
    - Equipment within the compressor room; and
    - The electrical substation adjoining the project site to the southeast.
- The potential for the presence of asbestos-containing building materials due to the age of the project site structures.

3.0 INITIAL EVALUATION

3.1 Potential Contaminants, Affected Media and Receptors

Known and suspected sources of contamination include past spills and releases of chemicals and wastes used, generated and/or stored on-site; past discharges and spills of process wastewater; leaking underground piping; past discharges and spills from fuel oil storage facilities; PCB-containing electrical equipment; and asbestos-containing building materials. Types of known or suspected contaminants include:

- Pesticides and fungicides
- Waste petroleum
- Fuel oil
- PCBs
- Metals
- Friable and non-friable asbestos

Affected on-site media potentially include surface soil/fill, subsurface soil/fill, and groundwater. Other potentially affected on-site media include building surfaces, drain and sump sediments, and soil. Soil/fill contaminated as a result of past spills or releases may continue to act as a source of groundwater and storm water contamination. The primary pathways for potential contaminant migration appear to be particulate emissions; groundwater transport; and storm water discharges.

Potentially affected off-site media include groundwater and storm water. The primary areas of potential impact to groundwater include areas downgradient of the project site. Also, storm water leaving the project site that comes into contact with on-site contaminants has the potential to carry contaminants off-site onto adjoining roadways and into the storm sewer located north of the project site. This storm sewer ultimately discharges to the Niagara River east of the project site.

Potential human receptors include persons living and working in, and visiting the area surrounding the project site; persons visiting, working or trespassing on the project site; and persons involved in utility work adjacent to the project site. Potential exposure routes for these receptors include:

- Inhalation of contaminated dust and organic vapors;
- Ingestion of, and/or dermal contact with, contaminated soil; and
- Dermal contact with surface soils, surface water and/or sediment.

In addition to household pets living in the vicinity of the project site, terrestrial wildlife occurring on the project site (e.g., rodents, birds, etc.) are considered potential environmental receptors.

3.2 Data Quality Objectives

The site-specific Data Quality Objectives (DQOs) for data collected during the remedial investigation are discussed in the QA/QC Plan, and are summarized below:

- To characterize the project site and determine the nature and extent of contamination occurring on or in soil, fill, sediment, and groundwater;
- To evaluate potential risks to human health and the environment associated with current project site conditions and potential future use scenarios;
- To identify, evaluate and select a long-term remedial action that is environmentally sound and cost-effective;
- To maintain a state-of-the-art standard of scientific/professional practice for each procedure; and
- To assure the ultimate defensibility of the data generated.

3.3 Scope of Remedial Investigation

The Remedial Investigation program to be implemented at the project site will initially focus on determining the nature and extent of contamination, within the following four areas of the project site:

- Surface Soil/Fill
- Subsurface Soil/Fill
- Groundwater
- On-Site Structures

Representative grab samples of surface soil/fill materials will be collected from previously identified areas of concern as well as from points selected to represent conditions across the project site, and will be submitted for laboratory analyses. Preliminary remedial action alternatives available to address impacted surface soils may include no action, containment, or the removal and proper off-site disposal.

On-site subsurface soil, fill and groundwater contamination will be investigated as part of the subsurface investigation program developed for the project site. This program will involve the completion of test pits, advancement of soil probes, and the installation of micro-wells to enable the collection and chemical analysis of samples from these media. Preliminary remedial action alternatives available to address these media include collection and treatment, excavation and disposal, containment or no action.

Representative grab samples of water from within the two elevator shafts will be collected and submitted for laboratory analyses. Preliminary remedial action alternatives available to address impacted materials may include no action, collection and treatment, or removal and proper off-site disposal.

The investigation of on-site structures and components will include the collection of wipe samples within the compressor room from stained floor surfaces and equipment to identify potential PCB contamination associated with the staining. Also, an asbestos-containing material (ACM) survey will be completed to evaluate the potential presence of ACMs on and within on-site structures. Lastly, representative samples of the wood flooring within the warehouse building will be collected for chemical analysis. Preliminary remedial action alternatives available to address these areas of concern may include the demolition and off-site disposal of on-site structures; removal and proper off-site disposal of PCB-contaminated materials and ACMs; decontamination of contaminated surfaces; encapsulation of contaminated surfaces or ACMs; institutional controls; or no action.

Remedial Action Objectives (RAOs) will be defined for the affected media and contaminants of concern identified as a result of the site investigation. The RAOs will consider the contaminant and media of interest, the exposure pathways, and preliminary remediation goals that permit a range of treatment and containment alternatives to be developed. It is anticipated that the RAOs for the above-referenced media will be achieved by either reaching the acceptable concentration or by reducing the exposure, and that the acceptable concentrations will be based upon Standard Criteria and Guidance Values (SCGs) and the intended end use of the project site. A preliminary listing of potentially relevant SCGs is provided below:

- Soil/Fill and Sewer Sediments: NYSDEC *Technical and Administrative Guidance Memorandum* (TAGM) *4046.*
- Surface Water, and Groundwater: NYSDEC *Technical and Operational Guidance Series* (TOGS) 1.1.1.

4.0 RI/AA TASKS

4.1 Scoping

This RI/AA Work Plan was developed based upon information compiled during the initial scoping phase that involved a review of historical information pertaining to the project site and operations occurring thereon; a site visit; and meetings with representatives of the NYSDEC and the Village. In addition, an environmental database service company was contracted to provide a report that included a review of State and Federal databases relating to the presence or occurrence of facilities or releases involving solid and hazardous waste, and petroleum products on the project site and vicinity.

The scope and objectives of the RI/AA program detailed in this Work Plan and supporting technical documents were formulated based upon the evaluation of information compiled during the scoping phase. Scoping of the RI/AA will conclude with the approval of this Work Plan by the NYSDEC.

4.2 Citizen Participation Program

A program designed to provide the community with information concerning the project as well as opportunities for their comment and input during the RI/AA process will be administered by the Village with technical support from TVGA and the NYSDEC. This program is detailed in the CPP provided in Appendix D.

4.3 Field Investigation

The following subsections outline the scope of the field activities associated with the main components of the site investigation. This scope is intended to define the initial phase of remedial investigation activities and will be modified as necessary to account for information obtained during the investigation. Data gathered as a result of these activities will be utilized to determine the necessity for additional investigation of the project site. The methods to be employed during the execution of the field tasks outlined below are detailed in the FSP (Appendix A), while the procedures to be implemented to ensure the quality of the resulting field and laboratory data are described in the QA/QC Plan (Appendix B). Figure 4 shows the proposed sampling locations.

4.3.1 Surveying

The objective of this task is to complete a boundary survey of the project site to establish the boundaries of the project site and to locate on-site structures with respect to site boundaries. The boundary survey will serve as the base map for the project site. Additionally, a survey will be completed to locate the actual location of the test pits, soil probes, test borings/monitoring wells, monitoring well riser elevations and any other sample locations. These locations will be superimposed on the base map prepared for the project site.

This task will be completed during two separate events. The initial event will involve the completion of the boundary survey to enable the preparation of the Site Plan. The second survey event will be performed after the remedial investigation is completed and will involve the survey of the actual sample locations.

Coordinants will be established by a New York State-licensed land surveyor for the test pits, soil probes, test borings/monitoring wells, monitoring well riser elevations and any other sample locations. Elevations for the monitoring wells will be relative to a regional, local, or project-specific datum. United States Geological Survey (USGS) benchmarks will be used if located within 0.5 miles of the project site and will take precedence over the use of project-specific datum.

4.3.2 Subsurface Investigation

A subsurface investigation will be conducted to characterize soil and groundwater conditions occurring on the project site. The investigation will include the excavation of test pits, advancement of test borings and soil probes and installation of groundwater monitoring wells to facilitate the collection and chemical analysis of soil/fill and groundwater samples. The preliminary scope of the subsurface investigation will include the following:

- Test pits will be excavated in areas across the project site and will be the primary means to:

  - Characterize surficial geology across the site;
  - Investigate the potential presence of the outdoor fuel oil tank;
  - Identify and delineate areas of subsurface contamination via the field screening and chemical analysis of soil samples.

  It is anticipated that this task will include two days of test pit excavations. The Village of Youngstown plans to provide an excavator and operator to complete the test pits as Force Account work.

- A network of soil probes will be installed across the project site using truck-mounted, direct-push sampling equipment (e.g., geoprobe or earth probe) to collect continuous samples. The soil probing will be completed in an effort to: more broadly characterize the surficial geology across the site; investigate the overburden at greater depths than achievable by the test pitting activities; and define the aerial and horizontal extent of any subsurface contamination identified during test pitting. It is anticipated that approximately 10 to 15 soil probes will be installed during one to two days of probing.

- Three of the soil probes will be completed as micro-wells to facilitate the determination of the gradient and flow direction of the groundwater in the upper-most water-bearing zone, as well as the collection of groundwater samples for chemical analysis.

  Micro-well locations will be based upon the project objectives, ease of access, freedom from obstructions, and safety considerations (appropriate set backs from overhead wires and buried services). The depth to groundwater is estimated to be approximately ten feet below ground surface (bgs). Therefore, it is assumed that the average depth of the micro-wells will be 20 feet bgs. The micro-wells will be constructed of 1-inch I.D. Schedule 40 polyvinyl-chloride (PVC) well screens/risers, and will be fitted with locking caps.

- All subsurface soil/fill samples collected from test pits, soil probes and test borings will be screened for total organic vapors (TOVs) using a photoionization detector. Visual observations will also be made to identify discolored or stained soils. Field screening results will be used to select up to seven subsurface soil/fill samples for chemical analysis.

- The three newly installed micro-wells will be developed and gauged to determine static water levels for the purpose of identifying groundwater gradient and flow direction.

- Representative groundwater samples will be obtained from the three new micro-wells for chemical analysis. Two separate groundwater sampling events will be conducted to ensure appropriate characterization of groundwater quality.

- Subsurface soil/fill and groundwater samples will be submitted and analyzed for VOCs, SVOCs, pesticides, herbicides and PCBs appearing on the Target Compound List (TCL) using NYSDEC Analytical Services Protocol (ASP) Method 2000. The samples will also be analyzed for the metals appearing on the Target Analyte List (TAL) using ASP methods. A laboratory that is accredited under the New York State Department of Health Environmental Laboratory Approval Program (ELAP) Contract Laboratory Program (CLP) will perform all chemical analyses. In addition, all the analytical results generated for the project will be validated in accordance with NYSDEC ASP guidelines.

4.3.3 Surface Soil Investigation

A sampling and analysis program will be implemented to characterize the chemistry of surface soil. The surface soil samples will be collected from zero to two inches below the vegetative layer. Grab samples will be collected from areas of concern (e.g., the apple wash area, loading docks, adjacent transformer substation and underneath the fuel oil tank located in basement of the warehouse building as well as from locations along western along the western property line. Additionally, five background soil samples will be collected from locations throughout the Village for the purpose of defining local baseline soil conditions. The locations of these samples included two from Veterans Park, two from Falkner Park and one from Lions Park. An estimated eight surface soil samples will be collected from the project site and an additional five surface soil samples will be collected as background samples. These samples will be analyzed for SVOCs, pesticides, herbicides and PCBs appearing on the TCL and the metals appearing on the TAL.

4.3.4 Investigation of On-site Structures

An asbestos-containing material (ACM) survey will be completed to evaluate the potential presence of ACMs on and within the project site structure. A licensed asbestos inspector will perform this inspection. Suspect materials will be sampled and analyzed for asbestos utilizing Polarized Light Microscopy (PLM) and, if necessary Transmission Electron Microscopy (TEM).

A sampling and analysis program will be implemented to characterize areas of potential concern identified within the warehouse building. Up to four wipe samples will be collected within the compressor room from stained floor surfaces and equipment in that room to identify potential PCB contamination associated with the staining. The wipe samples will be analyzed for PCBs. One sample of the standing water within each of the two elevator shafts will be collected in order to identify potential contamination associated with historical operations. These water samples will be analyzed for VOCs, SVOCs, pesticides, herbicides and PCBs appearing on the TCL and metals appearing on the TAL. Lastly, up to two samples from the wood flooring will be collected from the warehouse building to identify potential contamination associated with the storage of pesticide treated apples. These samples will be analyzed for TCL pesticides and arsenic.

If identified during the site investigation floor drains, storm sewers, sumps and vaults will be visually inspected in an effort to identify and sample suspect sediments and/or sludges that may be present. The resulting samples will be chemically analyzed to characterize these substances and/or materials. The actual number of samples will be dependant number and configuration of these features.

4.4 Sample Analysis/Validation

4.4.1 Laboratory Analysis

A laboratory accredited under the NYS Environmental Laboratory Approval Program (ELAP) Contract Laboratory Program (CLP) will perform chemical analyses. The target analytes and corresponding analytical methods to be utilized for the project are identified in the FSP. All groundwater, soil/fill, and suspect solids, liquid and/or sludge will be analyzed using the applicable methods prescribed by the NYSDEC Analytical Services Protocol (ASP), June 2000. Category B deliverables will be generated for these samples.

4.4.2 Data Validation

A qualified data validator will perform the validation of the ASP laboratory data in accordance with the *NYSDEC Guidance for the Development of Data Usability Summary Reports* (DUSR). The data package will be reviewed for completeness and compliance relative to the criteria specified in the aforementioned NYSDEC document. The validator will then conduct a detailed comparison of the reported data with the raw data submitted as part of the supporting documentation package, and will apply protocol-defined procedures for the identification and quantification of the individual analytes to determine the validity of the data. The validation report will include a narrative summary discussing all quality issues and their impact on the reported results, and copies of laboratory case narratives.

4.5 Data Evaluation and Qualitative Risk Assessment

Once the accuracy and precision of the data has been verified, evaluation of the data will be performed. All remedial investigation data will be analyzed and the results of the analyses will be presented in an organized and logical manner so that the relationship between remedial investigation results for each medium is apparent. Typical activities associated with data evaluation include:

- Data review, reduction and tabulation;
- Comparison with applicable regulatory levels; and
- Environmental fate and transport evaluation.

Using these data, a qualitative risk assessment will be performed to assess the potential human health and environmental risks associated with the project site. The following activities are typically associated with this task:

- Identification of contaminants of concern;
- Exposure assessment; and
- Qualitative risk assessment.

4.6 Identification of Potential Remedial Alternatives

A range of remedial alternatives will be developed to address contaminated media at the project site, as deemed necessary in the RI Report, and to provide adequate protection of human health and the environment. The potential alternatives will encompass a range of options including treatment, containment and removal.

General response actions will be identified for each medium of interest. General response actions typically include containment, excavation, extraction, treatment, disposal or other actions, singly or in combination to satisfy remedial action objectives. Volumes or areas of media to which general response actions may apply will be identified. Subsequently, treatment technologies for each general response action will be identified and screened relative to their technical and economic feasibility for implementation at the project site, and the potential technologies will be combined into media-specific or site-wide alternatives. The alternatives will be screened on a general basis with respect to their effectiveness, implementability, and cost, to limit the number of alternatives that undergo the detailed analysis and to provide consideration of the most promising options.

4.7 Detailed Analysis of Remedial Alternatives

A detailed analysis of each alternative will be completed in accordance with the requirements outlined in 6 NYCRR Part 375-1.10, Remedy Selection. An individual analysis of each alternative will be performed relative to the following criteria:

- Overall protection of human health and the environment;
- Compliance with Standards, Criteria and Guidance;
- Short-term effectiveness;
- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility, or volume;
- Feasibility; and
- Community Acceptance.

Furthermore, a comparative analysis of all of the remedial alternatives with respect to each other will be completed in terms of the above-listed criteria.

4.8 Remedial Investigation/Alternatives Analysis Report

A Remedial Investigation/Alternatives Analysis (RI/AA) Report will be prepared, which will:

- Summarize and document the investigative methods employed to characterize the project site;
- Describe the physical characteristics of the project site;
- Define the nature and extent of contamination;
- Presents the results of contaminant fate and transport modeling/evaluations;
- Identify potential health and environmental risks posed by the project site;
- Provide recommendations relative to future work requirements and remedial action objectives;
- Describes the process utilized to develop and screen remedial alternatives;
- Present the results of the detailed analysis of alternatives;
- Identify the most suitable remedy considering the remedial action objectives.

The RI/AA Report will present sufficient information to enable the preparation of a *Proposed Remedial Action Plan* (PRAP), which summarizes the proposed remedy for public review and comment.

4.9 Proposed Remedial Action Plan

Based on the RI/AA Report, TVGA will prepare a Proposed Remedial Action Plan (PRAP) that summarizes the results of the investigation as well as the proposed remedy in a template document that will be provided by the NYSDEC.

5.0 PROJECT SCHEDULE

The anticipated schedule for completion of the RI/AA is depicted in Figure 6 on a task-specific basis. Should changes to the scope of the site characterization program occur, or should the milestones change for any reason during the RI/AA program, TVGA will submit a revised schedule for approval.

6.0 PROJECT ORGANIZATION AND MANAGEMENT

6.1 Project Organization

TVGA will be the prime consultant providing professional environmental and engineering, services required for the project, and will perform all technical and administrative services for the project through our Elma, New York office.

TVGA has assembled an in-house team for this project that allows for both a clear division of responsibility and authority, as well as a reasonable span of control for each of the key project scientists and engineers. TVGA believes that it is vitally important to establish strong working groups with well-defined lines of authority and responsibility. One of the primary functions of the Project Manager will be to assure that such interaction is occurring in a timely fashion.

TVGA's staff is comprised of an integrated group of scientists, engineers and surveyors. The firm is structured to provide a diverse menu of abilities including: Environmental, Civil, Structural, Geotechnical, Transportation Engineering as well as Surveying, Planning and Construction Inspection Services. From TVGA's staff of over 90, a team of project professionals that are experienced in site investigation and remediation and who have the time available to be committed to this project were selected. Key project personnel have the credentials and extensive experience in similar projects to excel in their assigned tasks, and are identified on the organization chart provided included as Figure 7. Brief biographies of the key project team members are presented below.

Robert R. Napieralski, C.P.G. will serve as the Principal-in-Charge for this project. In this capacity, Mr. Napieralski will provide general oversight of contractual, scheduling, budgetary and quality control aspects of the project. Mr. Napieralski has over 18 years of experience focusing on environmental projects ranging from due diligence to soil and groundwater investigation and remediation.

Daniel E. Riker, P.G. will serve as the Project Manager, and will be directly responsible for Client communications, the technical and administrative management of task leaders and subcontractors, personnel and equipment scheduling, tracking and management of the project budget, and the preliminary technical review of project deliverables. Mr. Riker has over 12 years of experience in the field of environmental consulting. This includes soil and groundwater investigation and remediation projects for public and private sector clients, and brownfield characterization and remediation projects performed under the New York State Clean Water/Clean Air Bond Act of 1996 and the New York State Voluntary Cleanup Program. Mr. Riker will be the primary contact for project-related communications and will perform the final technical review of all reports and plans generated for the project.

Terry Ried will serve as Quality Assurance (QA) Officer for this project. In this capacity, Mr. Ried will oversee the quality assurance/quality control (QA/QC) program developed for the project, including review and approval of policies and procedures, program implementation, auditing, and corrective action selection, implementation and documentation. Mr. Ried has over 26 years of experience in the field of civil/environmental engineering. This includes soil and groundwater investigation and remediation projects for public and private sector clients, and brownfield characterization and remediation projects performed under the New York State Clean Water/Clean Air Bond Act of 1996 and the New York State Voluntary Cleanup Program.

James Manzella will serve as the Team Leader for the Remedial Investigation (RI) as well as for the Alternatives Analysis. In this capacity he will coordinate and oversee all field activities, and will be responsible for the scheduling and supervision of field personnel and subcontractors involved in the implementation of the Field Sampling Plan. Mr. Manzella will also function as the site health and safety officer responsible for ensuring compliance with the site Health and Safety Plan. Mr. Manzella has over seven years of experience with the planning and execution of site investigation programs, and has served in a similar capacity on three previous RI/AA projects.

In addition to these key personnel, the project team will include technical and clerical support staff designated based upon their capabilities and performance on similar previously completed projects.

As reflected by Figure 7, TVGA will select four specialized subcontractors to provide drilling, analytical laboratory, data validation and asbestos survey services. These subcontractors will be selected based upon their experience, capabilities and competitive pricing, as well as our experience with them on other projects of similar nature. Prior to selection, TVGA will submit to the Village and NYSDEC a list of subcontractors that submitted proposals for the project and recommendations for selection.

6.2 Project Management

TVGA has a standardized approach to project management that is chronicled in our *Project Development/Management Manual*. This approach focuses on the following issues:

- Communication
- Planning
- Scope Execution and Management
- Cost Control
- Schedule Management
- Quality Assurance and Control
- Staffing and Project Resources
- Delegation and Monitoring of Staff and Subconsultant Work
- Problem Resolution
- Project Close-Out
- Client Feedback

This process is initiated with the preparation of a project plan providing a task level breakdown of the project scope, staffing, budget, schedule, and management system. This plan is developed by the Project Manager and reviewed by all project team members, and provides a road map for the execution of the project scope. Throughout the course of the project, the management team, consisting of the Project Manager and Task Managers, will meet on a regular basis to review the technical approach and to coordinate the activities of the project. Other informal meetings between the management team and technical staff will also occur throughout the project on an as needed basis.

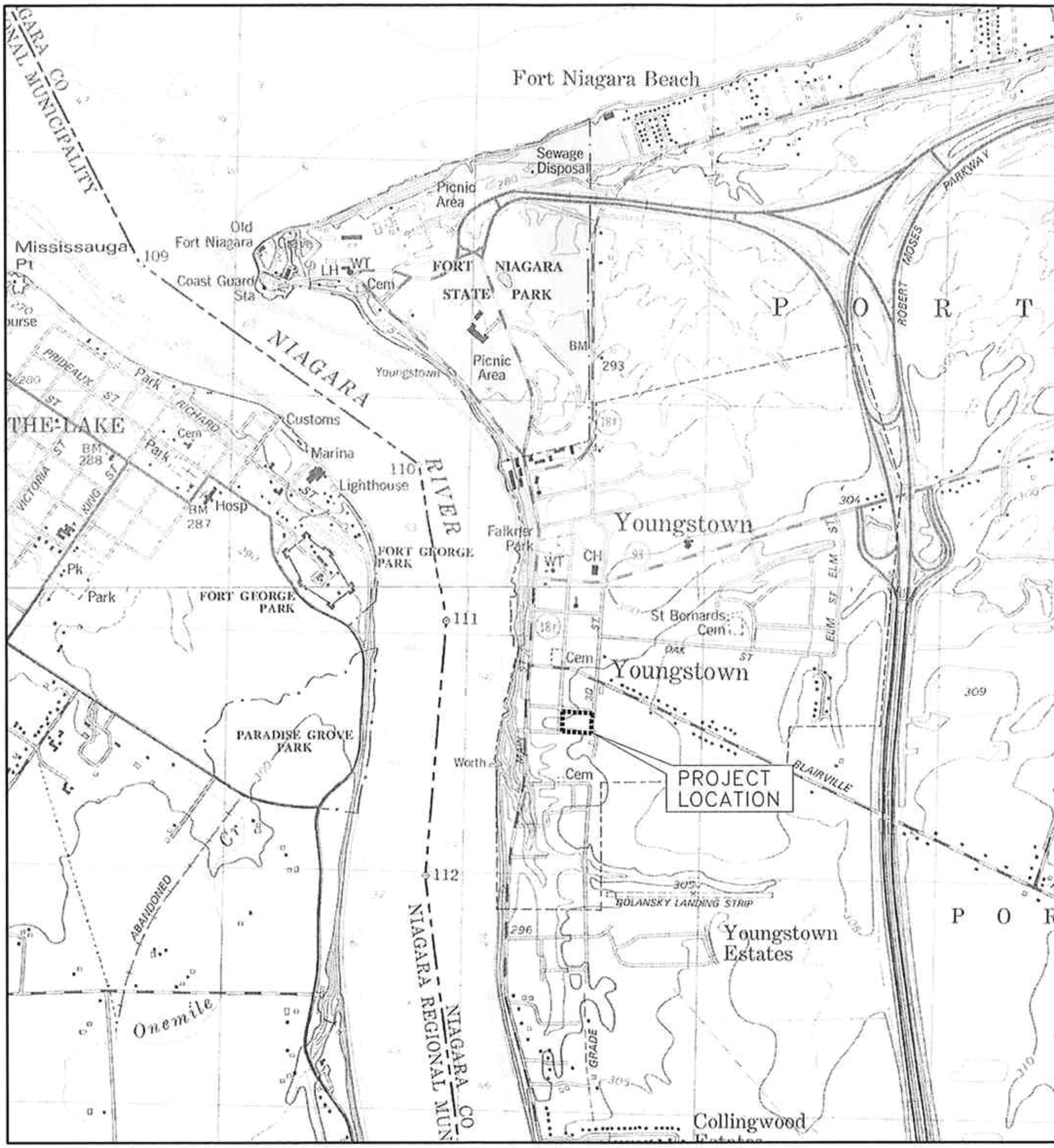
TVGA believes that successful project management also requires effective communications with the Client and other various parties involved in the project (e.g., regulatory agencies, community groups, etc.). Such communication is of paramount importance and must be established at project inception to define all goals, objectives, interrelationships, and technical requirements of the project. This will be accomplished through the designation of two key individuals at TVGA who will handle all communications with the Client and other involved parties, as well as the implementation of a program of periodic project meetings to provide a forum for discussing the progress of the project and other critical issues. For this project, all communications will be coordinated through the primary TVGA contact, the Project Manager, or the secondary TVGA contact, the SI Team Leader. Project management meetings will be held on a regular basis throughout the duration of the project.

7.0 PROJECT BUDGET

Table 1 outlines the budget for the initial RI/AA program, and identifies the level of effort to be expended per task by ASCE Grade; relate the level of effort to direct labor costs on a per task basis; detail direct non-salary costs including reimbursable expenses and subcontractor fees; summarize direct labor, overhead, and fixed fee values and sum these fees with the other direct costs to yield the total project budget.

N:\2004.0279.03-Youngstown Cold Storage\10Deliverables\RIAA Work Plan\Youngstown RIAA Work Plan.doc

FIGURES



U.S.G.S LEWISTON QUADRANGLE

PROJECT SITE LOCATION MAP

TVGA CONSULTANTS
1000 MAPLE ROAD
ELMA, NEW YORK 14059-9530
P. 716.655.8842
F. 716.655.0937
www.tvga.com

REMEDIAL INVESTIGATION/
ALTERNATIVES ANALYSIS PROGRAM
YOUNGSTOWN COLD STORAGE
VILLAGE OF YOUNGSTOWN, NEW YORK
NIAGARA COUNTY

PROJECT NO. 2004.0279.03	SCALE: 1" = 2000'	DATE: 10/12/05	FIGURE NO. 1

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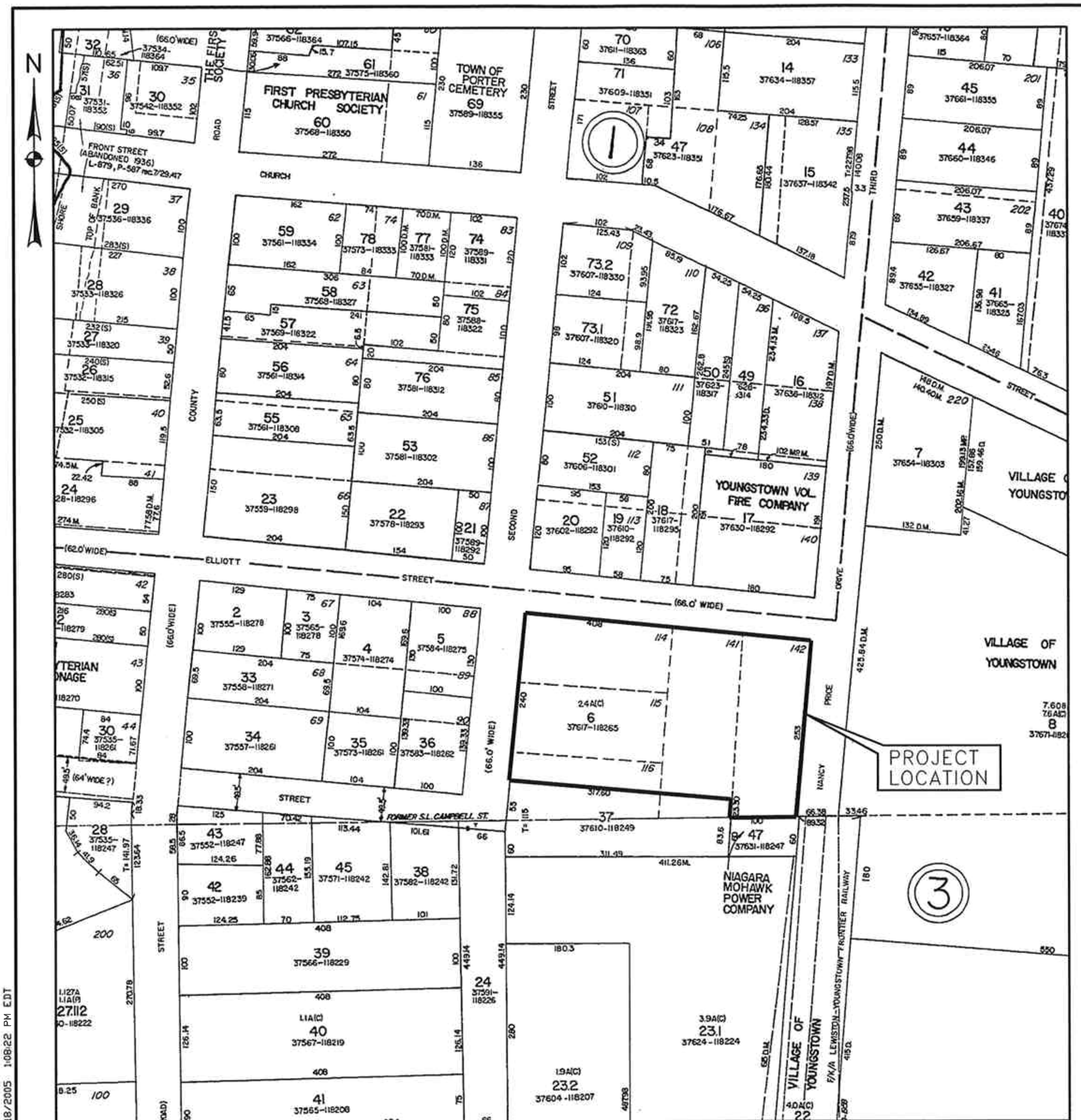

S.B.L. 59.06-3-6

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TAX MAP

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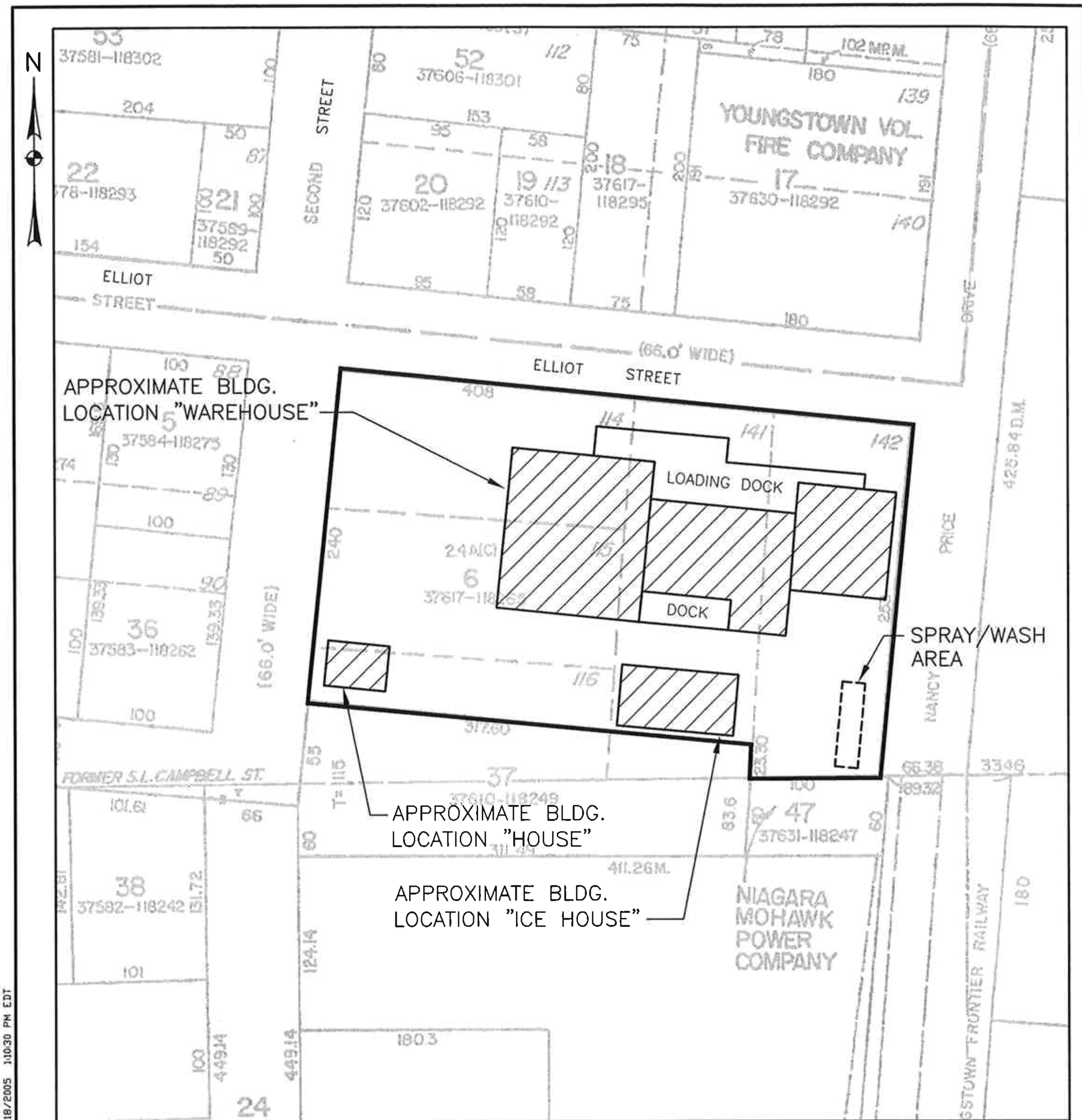
REMEDIAL INVESTIGATION/
ALTERNATIVES ANALYSIS PROGRAM
YOUNGSTOWN COLD STORAGE
VILLAGE OF YOUNGSTOWN, NEW YORK
NIAGARA COUNTY

PROJECT NO. 2004.0279.03	SCALE: 1" = 200'	DATE: 10/12/05	FIGURE NO. 2



PROJECT SITE PLAN

TVGA CONSULTANTS
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REMEDIAL INVESTIGATION/
ALTERNATIVES ANALYSIS PROGRAM
YOUNGSTOWN COLD STORAGE
VILLAGE OF YOUNGSTOWN, NEW YORK
NIAGARA COUNTY

PROJECT NO. 2004.0279.03	SCALE: 1" = 100'	DATE: 10/12/05	FIGURE NO. 3

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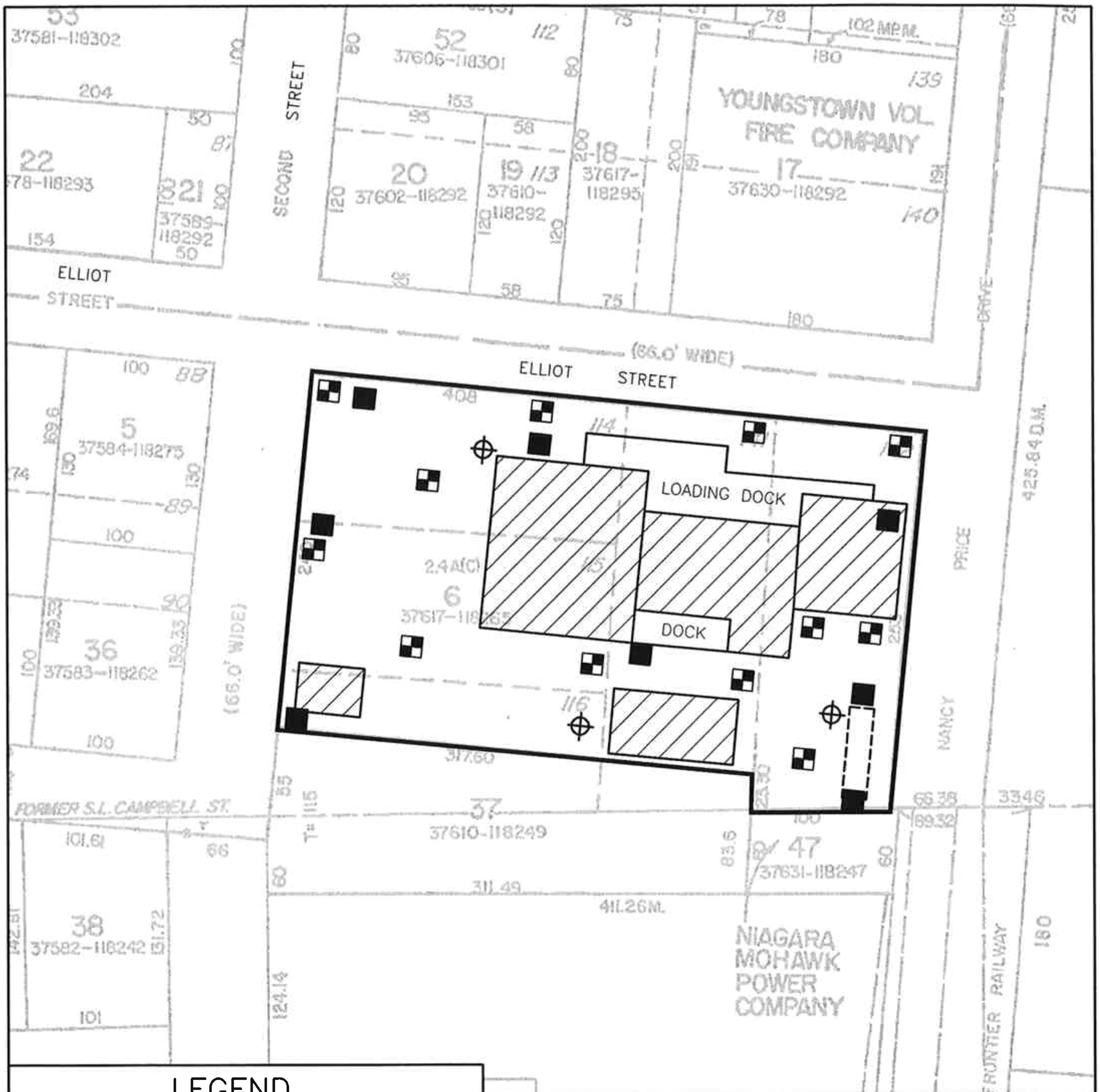

LEGEND

⌖	MICRO-WELL (3)
▚	TEST PIT (TP) (12)
■	SURFACE SOIL (SS) LOCATION (8)

NOTE:
THE LOCATION OF THE SURFACE SOIL SAMPLES, SOIL PROBES, TEST PITS AND MICRO-WELLS ARE SUBJECT TO FIELD CONDITIONS AND MAY BE MOVED OR ELIMINATED AS FIELD CONDITIONS DICTATE.

PROPOSED INVESTIGATION LOCATION MAP

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REMEDIAL INVESTIGATION/
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YOUNGSTOWN COLD STORAGE
VILLAGE OF YOUNGSTOWN, NEW YORK
NIAGARA COUNTY

PROJECT NO. 2004.0279.03	SCALE: 1" = 100'	DATE: 01/05/06	FIGURE NO. 4

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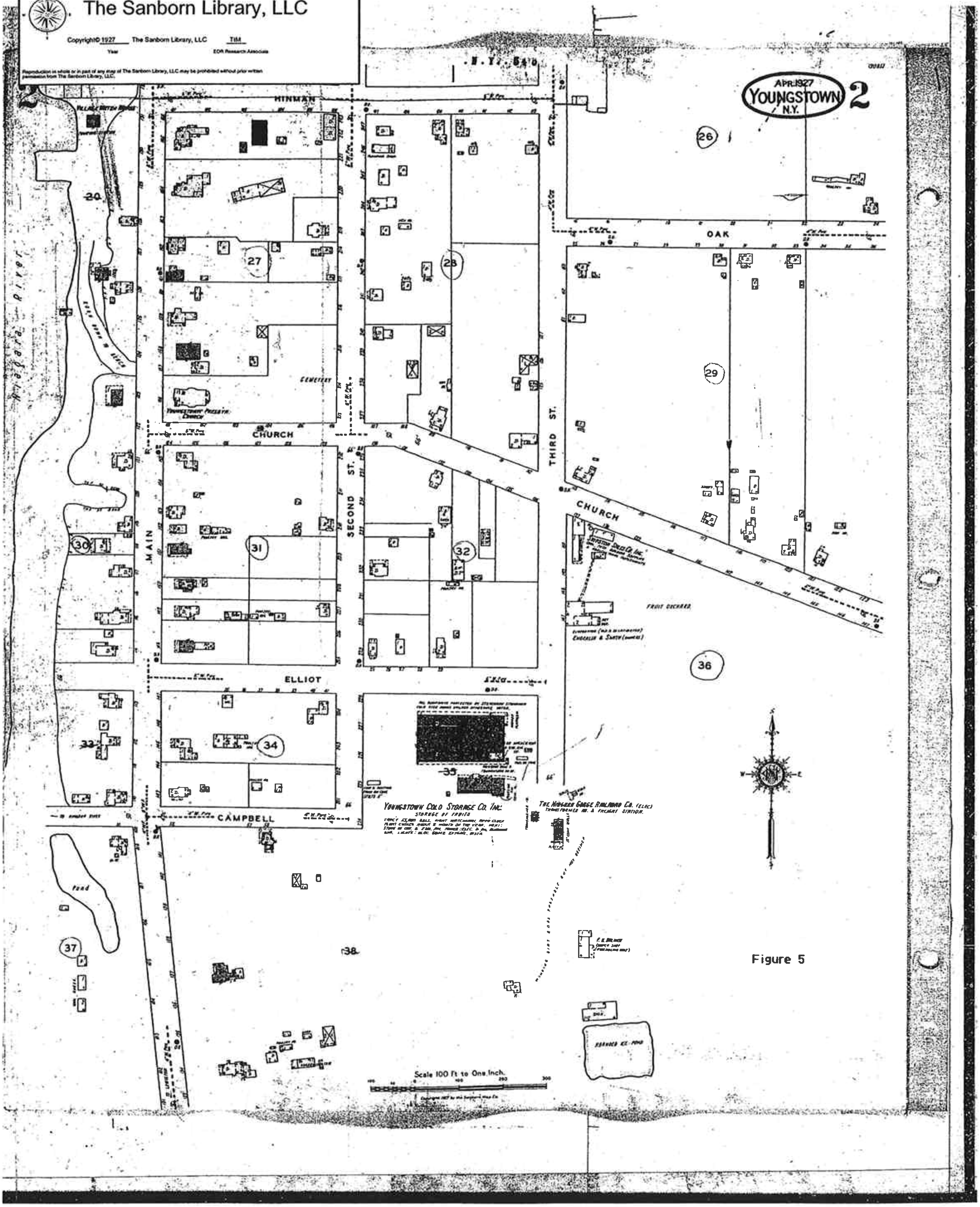
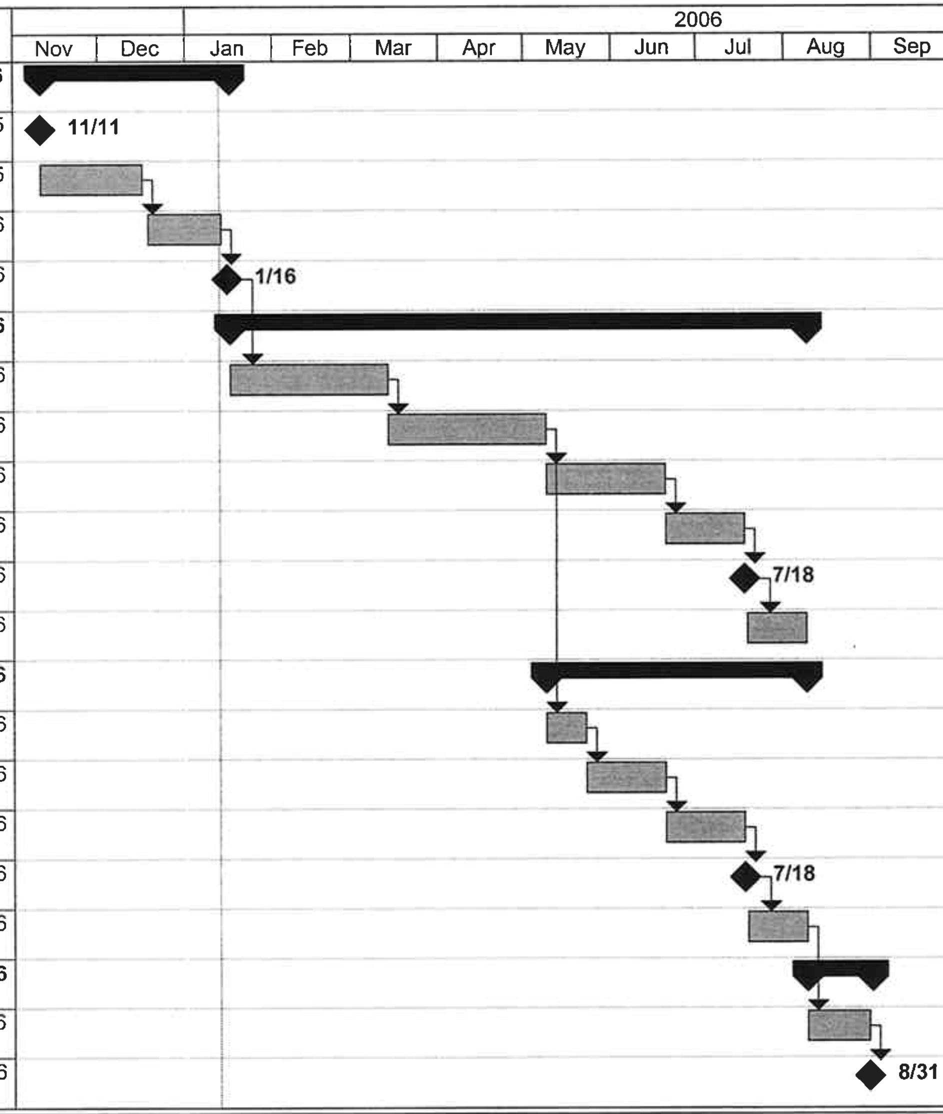


Figure 5

FIGURE 6
YOUNGSTOWN COLD STORAGE SITE - RI/AA SCHEDULE

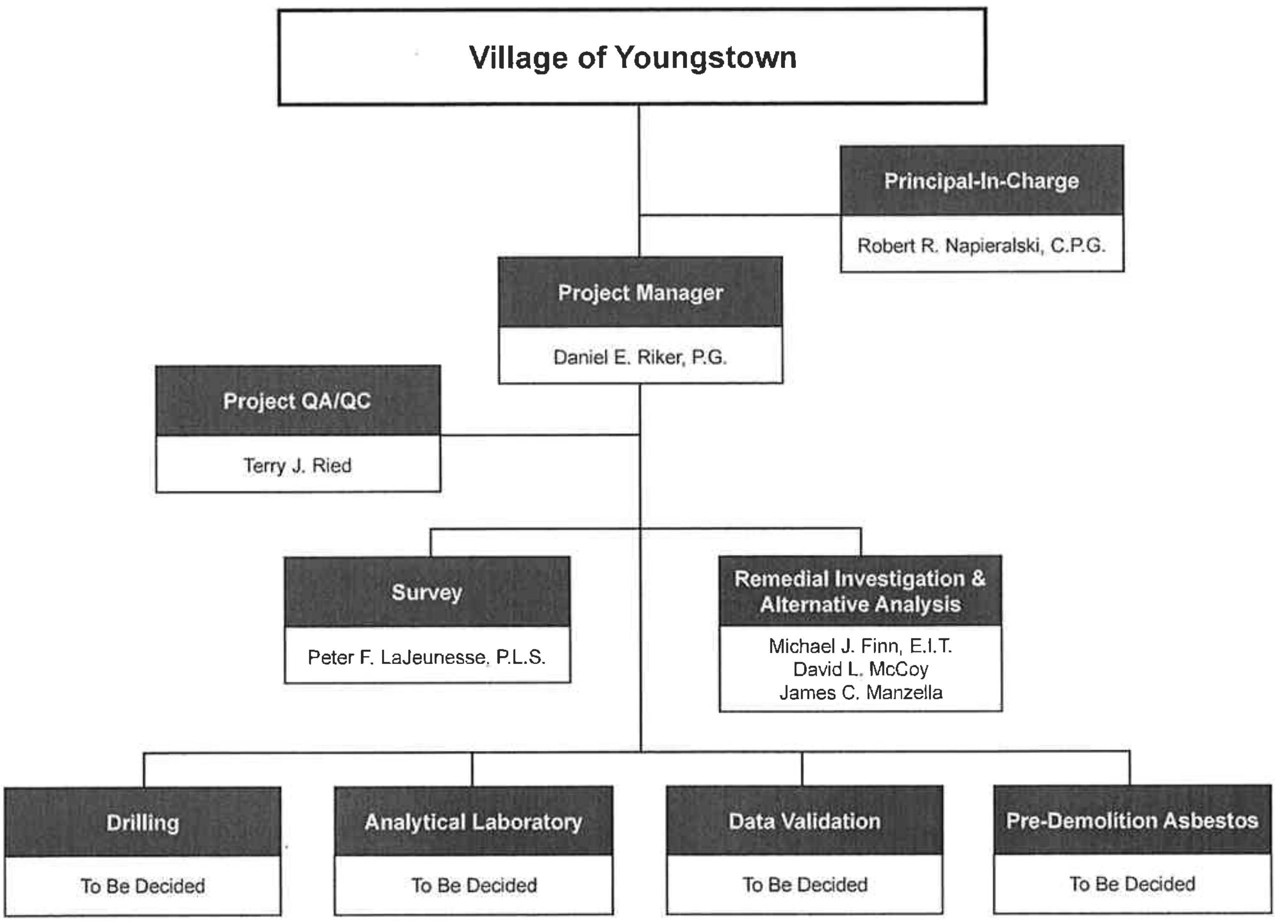
ID	Task Name	Duration	Start	Finish
1	**RI/AA WORK PLAN**	**47 days?**	**Fri 11/11/05**	**Mon 1/16/06**
2	Submittal of Draft Work Plan to NYSDEC	1 day?	Fri 11/11/05	Fri 11/11/05
3	NYSDEC Work Plan Review	26 days	Fri 11/11/05	Fri 12/16/05
4	Finalize Work Plan	20 days	Mon 12/19/05	Fri 1/13/06
5	Submittal of Final Work Plan to NYSDEC	1 day	Mon 1/16/06	Mon 1/16/06
6	**REMEDIAL INVESTIGATION**	**146 days**	**Tue 1/17/06**	**Tue 8/8/06**
7	Field Investigation	8 wks	Tue 1/17/06	Mon 3/13/06
8	Sample Analysis/Validation	8 wks	Tue 3/14/06	Mon 5/8/06
9	Data Evaluation Risk Assessment	6 wks	Tue 5/9/06	Mon 6/19/06
10	Draft RI Report Preparation	4 wks	Tue 6/20/06	Mon 7/17/06
11	Submittal of Draft RI Report to NYSDEC	1 day	Tue 7/18/06	Tue 7/18/06
12	NYSDEC Review of Draft RI Report	3 wks	Wed 7/19/06	Tue 8/8/06
13	**REMEDIAL ALTERNATIVES**	**66 days**	**Tue 5/9/06**	**Tue 8/8/06**
14	Identify Potential Remedial Alternatives	2 wks	Tue 5/9/06	Mon 5/22/06
15	Detailed Analysis of Remedial Alternatives	4 wks	Tue 5/23/06	Mon 6/19/06
16	Draft AA Report Preparation	4 wks	Tue 6/20/06	Mon 7/17/06
17	Submittal of Draft AA Report to NYSDEC	1 day	Tue 7/18/06	Tue 7/18/06
18	NYSDEC Review of Draft AA Report	3 wks	Wed 7/19/06	Tue 8/8/06
19	**FINAL RI/AA REPORT**	**17 days**	**Wed 8/9/06**	**Thu 8/31/06**
20	Report Finalization	16 days	Wed 8/9/06	Wed 8/30/06
21	Submittal of Final RI/AA Report	1 day	Thu 8/31/06	Thu 8/31/06



Project: Youngstown Cold Storage
Date: Fri 1/13/06

Task | Split | Progress | Milestone | Summary | Project Summary | External Tasks | External Milestone | Deadline

FIGURE No. 7


Village of Youngstown
Principal-In-Charge
Robert R. Napieralski, C.P.G.
Project Manager
Daniel E. Riker, P.G.
Project QA/QC
Terry J. Ried
Survey
Peter F. LaJeunesse, P.L.S.
Remedial Investigation & Alternative Analysis
Michael J. Finn, E.I.T.
David L. McCoy
James C. Manzella
Drilling
To Be Decided
Analytical Laboratory
To Be Decided
Data Validation
To Be Decided
Pre-Demolition Asbestos
To Be Decided

TABLES

Table 1

RI/AA of the Former Youngstown Cold Storage Site

Consultant Budget

Labor

Level	ASCE Grade	Avg. Rate	Task 1		Task 2		Task 3		Task 4		Task 5		Task 6		Task 7		Task 8		Task 9		Task 10		Task 11		Task 12		Task 13		Project Totals	
			Scoping/WP Prep		Test Pits		Soil Probes		Micro Wells		Surface Soil		Bldg Spls/Swr Seds		Site Survey		Asbestos Survey		Data Evaluation		Risk Assessment		RI/AA Report		PRAP		CPP			
			Hrs	Amount	Hrs	Amount	Hrs	Amount	Hrs	Amount	Hrs	Amount	Hrs	Amount	Hrs	Amount	Hrs	Amount	Hrs	Amount	Hrs	Amount	Hrs	Amount	Hrs	Amount	Hrs	Amount	Hrs	Amount
Principal	VI (RRN)	44.00	4	$ 176.00		$ -		$ -		$ -		$ -		$ -		$ -		$ -	2	$ 88.00		$ -	4	$ 176.00	1	$ 44.00	4	$ 176.00	15	$ 660.00
Project Manager	V (DER)	32.00	14	$ 448.00	2	$ 64.00	2	$ 64.00	4	$ 128.00	1	$ 32.00	1	$ 32.00	2	$ 64.00	2	$ 64.00	6	$ 192.00	4	$ 128.00	10	$ 320.00	2	$ 64.00	16	$ 512.00	66	$ 2,112.00
Project Scientist/Engineer	IV (DLM)	24.00		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -	12	$ 288.00	14	$ 336.00	18	$ 432.00	4	$ 96.00		$ -	48	$ 1,152.00
Environmental Scientist	II (JCM)	22.00	60	$ 1,320.00	24	$ 528.00	12	$ 264.00	24	$ 528.00	10	$ 220.00	10	$ 220.00	4	$ 88.00	8	$ 176.00	55	$ 1,210.00	14	$ 308.00	80	$ 1,760.00	20	$ 440.00	16	$ 352.00	337	$ 7,414.00
Designer	N/A (TJB)	21.00	8	$ 168.00		$ -		$ -		$ -		$ -		$ -	4	$ 84.00		$ -		$ -		$ -	16	$ 336.00		$ -		$ -	28	$ 588.00
Technical Typist	N/A (CJW)	13.00	8	$ 104.00		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -	8	$ 104.00	3	$ 39.00	2	$ 26.00	21	$ 273.00
Labor Total			94	$ 2,216.00	26	$ 592.00	14	$ 328.00	28	$ 656.00	11	$ 252.00	11	$ 252.00	10	$ 236.00	10	$ 240.00	75	$ 1,778.00	32	$ 772.00	136	$ 3,128.00	30	$ 683.00	38	$ 1,066.00	515	$ 12,199.00

Expenses

Desc.	Unit	Rate	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount
Mileage	$/mi	0.445	200	$ 89.00	200	$ 89.00	200	$ 89.00	200	$ 89.00	100	$ 44.50	100	$ 44.50		$ -		$ -		$ -		$ -		$ -		$ -	100	$ 44.50	1100	$ 489.50
Fed Ex	$/ea.	35.00	4	$ 140.00		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -	4	$ 140.00	2	$ 70.00	2	$ 70.00	12	$ 420.00
EDR Search	$/ea.	250.00	1	$ 250.00		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -	1	$ 250.00
Portable Telephone	$/day	5.00		$ -	2	$ 10.00	2	$ 10.00	2	$ 10.00	1	$ 5.00	1	$ 5.00		$ -		$ -		$ -		$ -		$ -		$ -		$ -	8	$ 40.00
Expenses Subtotal				$ 479.00		$ 99.00		$ 99.00		$ 99.00		$ 49.50		$ 49.50		$ -		$ -		$ -		$ -		$ 140.00		$ 70.00		$ 114.50		$ 1,199.50

Equipment and Supplies

Desc.	Unit	Rate	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount
Copies	$/pg.	0.15	1500	$ 225.00	100	$ 15.00		$ -	100	$ 15.00		$ -		$ -	500	$ 75.00	500	$ 75.00	250	$ 37.50	500	$ 75.00	2500	$ 375.00	250	$ 37.50	527	$ 79.05	6727	$ 1,009.05
PID	$/week	175.00		$ -	1	$ 175.00		$ -	1	$ 175.00		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -	2	$ 350.00
MIE pDR-1000	$/week	190.00		$ -	1	$ 190.00		$ -	1	$ 190.00		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -	2	$ 380.00
Water Level Meter	$/week	50.00		$ -		$ -		$ -	1	$ 50.00		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -	1	$ 50.00
Disp. Bailers w/VOC Device	$/each	10.00		$ -		$ -		$ -	3	$ 30.00		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -	3	$ 30.00
Horiba U-10	$/wk.	170.00		$ -		$ -		$ -	1	$ 170.00		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -	1	$ 170.00
Misc. Sampling Supplies	$/event	100.00		$ -	1	$ 100.00	1	$ 100.00	1	$ 100.00	1	$ 100.00	1	$ 100.00		$ -		$ -		$ -		$ -		$ -		$ -		$ -	5	$ 500.00
Equipment and Supplies Subtotal				$ 225.00		$ 480.00		$ 100.00		$ 730.00		$ 100.00		$ 100.00		$ 75.00		$ 75.00		$ 37.50		$ 75.00		$ 375.00		$ 37.50		$ 79.05		$ 2,489.05

Laboratory Costs

Desc.	Unit	Rate	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount
TCL Volatiles (Soil)	$/smp	89.25		$ -	6	$ 535.50	4	$ 357.00		$ -		$ -	2	$ 178.50		$ -		$ -		$ -		$ -		$ -		$ -		$ -	12	$ 1,071.00
TCL Volatiles (Aqueous)	$/smp	84.00		$ -		$ -		$ -	7	$ 588.00		$ -	2	$ 168.00		$ -		$ -		$ -		$ -		$ -		$ -		$ -	9	$ 756.00
TCL Semi-Volatiles (Soil)	$/smp	204.75		$ -	6	$ 1,228.50	4	$ 819.00		$ -	16	$ 3,276.00	2	$ 409.50		$ -		$ -		$ -		$ -		$ -		$ -		$ -	28	$ 5,733.00
TCL Semi-Volatiles (Aqueous)	$/smp	183.75		$ -		$ -		$ -	6	$ 1,102.50		$ -	2	$ 367.50		$ -		$ -		$ -		$ -		$ -		$ -		$ -	8	$ 1,470.00
TCL Pest/PCBs (Soil and Aqueous)	$/smp	157.50		$ -	6	$ 945.00	4	$ 630.00	6	$ 945.00	16	$ 2,520.00	4	$ 630.00		$ -		$ -		$ -		$ -		$ -		$ -		$ -	36	$ 5,670.00
TCL Herbs (Soil and Aqueous)	$/smp	136.50		$ -	6	$ 819.00	4	$ 546.00	6	$ 819.00	16	$ 2,184.00	4	$ 546.00		$ -		$ -		$ -		$ -		$ -		$ -		$ -	36	$ 4,914.00
TAL Metals (Soil and Aqueous)	$/smp	84.00		$ -	6	$ 504.00	4	$ 336.00	6	$ 504.00	16	$ 1,344.00	4	$ 336.00		$ -		$ -		$ -		$ -		$ -		$ -		$ -	36	$ 3,024.00
PCB Wipe Samples	$/smp	63.00		$ -		$ -		$ -		$ -		$ -	4	$ 252.00		$ -		$ -		$ -		$ -		$ -		$ -		$ -	4	$ 252.00
TCL Pesticides (wood)	$/smp	78.75		$ -		$ -		$ -		$ -		$ -	2	$ 157.50		$ -		$ -		$ -		$ -		$ -		$ -		$ -	2	$ 157.50
Arsenic (wood)	$/smp	15.75		$ -		$ -		$ -		$ -		$ -	2	$ 31.50		$ -		$ -		$ -		$ -		$ -		$ -		$ -	2	$ 31.50
Laboratory Costs Subtotal				$ -		$ 4,032		$ 2,688		$ 3,959		$ 9,324.00		$ 3,077		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ 23,079.00

Data Quality/Usability Review

Desc.	Unit	Rate	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount
TCL Volatiles	$/smp	18.90		$ -	6	$ 113.40	4	$ 75.60	7	$ 132.30		$ -	2	$ 37.80		$ -		$ -		$ -		$ -		$ -		$ -		$ -	19	$ 359.10
TCL Semi-Volatiles	$/smp	19.95		$ -	6	$ 119.70	4	$ 79.80	6	$ 119.70	16	$ 319.20	2	$ 39.90		$ -		$ -		$ -		$ -		$ -		$ -		$ -	34	$ 678.30
TCL Pest/PCBs	$/smp	23.10		$ -	6	$ 138.60	4	$ 92.40	6	$ 138.60	16	$ 369.60	2	$ 46.20		$ -		$ -		$ -		$ -		$ -		$ -		$ -	34	$ 785.40
TCL Herbs	$/smp	18.90		$ -	6	$ 113.40	4	$ 75.60	6	$ 113.40	16	$ 302.40	2	$ 37.80		$ -		$ -		$ -		$ -		$ -		$ -		$ -	34	$ 642.60
TAL Metals	$/smp	31.50		$ -	6	$ 189.00	4	$ 126.00	6	$ 189.00	16	$ 504.00	2	$ 63.00		$ -		$ -		$ -		$ -		$ -		$ -		$ -	34	$ 1,071.00
Data Quality/Usability Review Subtotal				$ -		$ 674		$ 449		$ 693		$ 1,495		$ 225		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ 3,536.40

Site Survey

Desc.	Unit	Rate					Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount
Survey Implementation	LS	3315.00		$ -		$ -		$ -		$ -		$ -		$ -	1	$ 3,315.00		$ -		$ -		$ -		$ -		$ -		$ -	1	$ 3,315.00
Site Survey				$ -		$ -		$ -		$ -		$ -		$ -		$ 3,315		$ -		$ -		$ -		$ -		$ -		$ -		$ 3,315.00

Asbestos Survey

Desc.	Unit	Rate	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount
Sample Collection / Report	lump sum	4200.00		$ -		$ -		$ -		$ -		$ -		$ -		$ -	1	$ 4,200.00		$ -		$ -		$ -		$ -		$ -	1	$ 4,200.00
Asbestos Survey				$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ 4,200.00		$ -		$ -		$ -		$ -		$ -		$ 4,200.00

Soil Probing Cost

Desc.	Unit	Rate	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount	Unit	Amount
Mobilization	$/hr.	68.25		$ -		$ -	1	$ 68.25	1	$ 68.25		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -	2	$ 136.50
Probing Equip. & Crew	$/day	866.25		$ -		$ -	1	$ 866.25	1	$ 866.25		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -	2	$ 1,732.50
Plastic Liners	$/ea.	2.10		$ -		$ -	60	$ 126.00		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -	60	$ 126.00
Borehole Abandonment	$/foot	2.10		$ -		$ -	30	$ 63.00		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -	30	$ 63.00
Micro-Well Installation	$/foot	4.20		$ -		$ -		$ -	60	$ 252.00		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -	60	$ 252.00
Soil Probing Cost Subtotal				$ -		$ -		$ 1,123.50		$ 1,186.50		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ 2,310.00

Project Totals

Level	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7	Task 8	Task 9	Task 10	Task 11	Task 12	Task 10	Project Totals	
Description	Scoping/WP Prep	Test Pits	Soil Probes	Micro Wells	Surface Soil	Bldg Spls/Swr Seds	Site Survey	Asbestos Survey	Data Evaluation	Risk Assessment	RI/AA Report	PRAP	CPP		
LABOR	Amount	Amount	Amount	Amount	Amount	Amount	Amount	Amount	Amount	Amount	Amount	Amount	Amount		Amount
Labor Total	$ 2,216.00	$ 592.00	$ 328.00	$ 656.00	$ 252.00	$ 252.00	$ 236.00	$ 240.00	$ 1,778.00	$ 772.00	$ 3,128.00	$ 683.00	$ 1,066.00	0	$ 12,199.00

Total Direct Labor	$ 12,199.00
Indirect Labor (1.65%)	$ 20,128.00
Fixed Fee (7.5%)	$ 2,425.00
Labor Subtotal	$ 34,752.00

DIRECT COSTS															
Expenses	$ 479.00	$ 99.00	$ 99.00	$ 99.00	$ 49.50	$ 49.50	$ -	$ -	$ -	$ -	$ 140.00	$ 70.00	$ 114.50	0	$ 1,199.50
Equipment	$ 225.00	$ 480.00	$ 100.00	$ 730.00	$ 100.00	$ 100.00	$ 75.00	$ 75.00	$ 37.50	$ 75.00	$ 375.00	$ 37.50	$ 79.05	0	$ 2,489.05
Laboratory	$ -	$ 4,032.00	$ 2,688.00	$ 3,958.50	$ 9,324.00	$3,076.50	$ -	$ -	$ -	$ -	$ -	$ -	$ -	0	$ 23,079.00
Data Quality/Usability	$ -	$ 674.10	$ 449.40	$ 693.00	$ 1,495.20	$ 224.70	$ -	$ -	$ -	$ -	$ -	$ -	$ -	0	$ 3,536.40
Site Survey	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,315.00	$ -	$ -	$ -	$ -	$ -	$ -	0	$ 3,315.00
Asbestos Survey	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,200.00	$ -	$ -	$ -	$ -	$ -	0	$ 4,200.00
Probing/Well Installation	$ -	$ -	$ 1,123.50	$ 1,186.50	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	0	$ 2,310.00
Direct Costs Total	$ 704.00	$ 5,285.10	$ 4,459.90	$ 6,667.00	$ 10,968.70	$3,450.70	$ 3,390.00	$ 4,275.00	$ 37.50	$ 75.00	$ 515.00	$ 107.50	$ 193.55		$ 40,128.95
COST/TASK (labor and direct)	$ 7,016.83	$ 6,971.56	$ 5,394.29	$ 8,535.78	$ 11,686.59	$4,168.59	$ 4,062.31	$ 4,958.70	$ 5,102.58	$ 2,274.24	$ 9,425.89	$ 2,053.20	$ 3,230.32	PROJECT TOTAL	$ 74,900.00

ATTACHMENT A

RESUMES

TVGA CONSULTANTS

ROBERT R. NAPIERALSKI, C.P.G.

Principal
Municipal Market Sector Leader

PROJECT EXPERIENCE:

Remedial Investigation/Alternatives Analysis Program (RI/AA), Former Niagara Motors Site, Dunkirk, NY – Quality Assurance Officer for the RI/AA of an abandoned four-acre site formerly utilized for the manufacture of marine engines. Project is being performed under the New York State Environmental Restoration Program (ERP). Responsibilities include review of project Quality Assurance Plan, implementation of project audits, Quality Assurance reviews of project staff and subcontractors involved in site characterization and remedial alternatives analysis, as well as client and regulatory communications. Duties also include technical review of project plans, reports and estimates.

Remedial Investigation/Alternatives Analysis Program (RI/AA), Former Felmont Oil Site, Olean, NY – Project Manager for the RI/AA of a 22-acre former oil refining, storage, and distribution facility. The scope of the RI program includes a passive soil gas survey, a geophysical survey, and the characterization of potentially contaminated fill, soil, groundwater, surface water, and sediment. The project involves the identification and detailed analysis of remedial alternatives available to address the affected media. Responsibilities included client and regulatory communications, implementation of community involvement plan, coordination of project staff and subcontractors, and technical review of project plans and reports.

Site Investigation/Remedial Alternatives Report (SI/RAR), Flintkote Site, Lockport, NY – Project Manager for the SI/RAR of an abandoned six-acre site utilized for industrial purposes since the 1880s. Responsibilities include technical and administrative oversight of project staff and subcontractors involved in site characterization and remedial alternatives analysis, as well as client and regulatory communications. Duties also include technical review of project plans, reports and estimates, and analysis of potential funding opportunities via insurance asset recovery. Project also requires close communication with County planning agency to ensure integration of end use planning and remedial alternative selection.

Site Investigation/Remedial Alternatives Report (SI/RAR), Brownfield Site, Dunkirk, NY – Project Manager for the SI/RAR of an abandoned 12-acre site utilized for heavy industrial purposes since the early 1900s. The scope of the SI program included a radiological survey and the characterization of fill, soil, groundwater, surface water, building components, and drainage systems contaminated with chlorinated solvents, PCBs and lead. The project involved the identification and detailed analysis of remedial alternatives available to address the affected media. Responsibilities included client and regulatory communications, implementation of community involvement plan, technical and administrative oversight of project staff and subcontractors, technical review of project plans and reports. Duties also included the coordination of efforts to obtain cleanup funding via insurance asset recovery.

QUALIFICATIONS:

- Has 17 years of professional environmental consulting experience for public and private sector clients and specializes in the management of multi-disciplined projects.
- His background includes extensive experience with Phase I and II Environmental Site Assessments, soil and groundwater remediation, Environmental Impact Statement (EIS) preparation, solid and hazardous waste management facility permitting, investigation, and remediation, and regulatory compliance issues.
- Has a working knowledge of State and Federal regulatory programs including Chemical and Petroleum Bulk Storage, CWA, RCRA, CERCLA, SARA, TSCA, SPDES, Voluntary Cleanup Programs, Brownfield and Recycling Grant Programs under the Clean Water/Clean Air Bond Act of 1996, and 6 NYCRR Parts 360, 420-426, 371-375, 617, and 621.

PROFESSIONAL CREDENTIALS:

Years Experience:
17

Education:
BA/1988/Geology/Hydrogeology/
Boston University

Professional Registrations:
- 1997/Certified Professional Geologist #10110
- Current OSHA 40-Hour HAZWOPER Certification
- OSHA 8-Hour HAZWOPER Supervisor Certification

TVGA CONSULTANTS

DANIEL E. RIKER, P.G.

Project Manager

PROJECT EXPERIENCE:

Site Investigation/Remedial Alternatives Report (SI/RAR), Brownfield Site, Buffalo, NY - SI Team Leader for the SI/RAR of a 16-acre former fertilizer manufacturing facility later developed as a public park. The scope of the SI program included a geophysical survey and the characterization of fill, soil, groundwater, and surface water potentially contaminated with arsenic and lead. The project involves the identification and detailed analysis of remedial alternatives available to address the affected media. Responsibilities included client and regulatory communications, implementation of community involvement plan, coordination of project staff and subcontractors, and technical review of project plans and reports.

Remedial Investigation/Alternatives Analysis Program (RI/AA), Former Niagara Motors Site, Dunkirk, NY – Project Manager for the SI/AA of a four-acre former engine manufacturing facility. The scope of the SI program includes a passive soil gas survey, a geophysical survey, and the characterization of potentially contaminated fill, soil, groundwater, surface water, and sediment. The project involves the identification and detailed analysis of remedial alternatives available to address the affected media. Responsibilities include client and regulatory communications, implementation of community involvement plan, coordination of project staff and subcontractors, and technical review of project plans and reports.

Remedial Investigation/Alternatives Analysis Program (RI/AA), Former Felmont Oil Site, Olean, NY – Project Manager for the SI/AA of a 22-acre former oil refining, storage, and distribution facility. The scope of the SI program includes a passive soil gas survey, a geophysical survey, and the characterization of potentially contaminated fill, soil, groundwater, surface water, and sediment. The project involves the identification and detailed analysis of remedial alternatives available to address the affected media. Responsibilities include client and regulatory communications, implementation of community involvement plan, coordination of project staff and subcontractors, and technical review of project plans and reports.

Brownfield Investigation/Remedial Plan Development, Iron Manufacturing Facility, Buffalo, NY – Deputy Project Manager that implemented the investigation of two parcels of the Hanna Furnace brownfield site and developed a Remedial Action Work Plan for the first parcel. Project work included development and implementation of investigation work plan, data analysis, risk assessment and reporting. The Remedial Action Work Plan included development of site-specific action levels (SSALs), a soil/fill management plan, an erosion control plan, a QA/QC plan, a citizen participation plan, and a beneficial use determination for use of water treatment plant sludge as a soil amendment.

QUALIFICATIONS:

- Has been involved with assorted projects including brownfields, preliminary site assessments, Phase I and II environmental site assessments, treatment technology assessments, and remedial investigations.
- Extensive experience in contaminant characterization at hazardous and solid waste facilities, including development of project scopes, on-site implementation of characterization efforts, data collection and interpretation, and final report preparation.
- Other experience includes sampling of a wide variety of media and the performance of hydrogeologic testing, oversight of geophysical surveys, underground storage tank removal, soil remediation and well drilling.

PROFESSIONAL CREDENTIALS:

Years Experience:
11

Education:
- BA/1991/Geology/ Colgate University
- MS/1994/Hydrogeology/ Duke University

Registrations:
2000/PA/Professional Geologist, License No. PG-003806-E

TVGA
CONSULTANTS

TERRY J. RIED

Senior Engineer

PROJECT EXPERIENCE:

Chautauqua County Department of Public Facilities, Site Investigation/Remedial Alternatives Report (SI/RAR), Brownfield Site, Dunkirk, NY – Project Manager for the SI/RAR of an abandoned 12-acre site utilized for heavy industrial purposes since the early 1900s. The scope of the SI program included a radiological survey and the characterization of fill, soil, groundwater, surface water, building components, and drainage systems contaminated with chlorinated solvents, PCBs and metals. The project involved the identification and detailed analysis of remedial alternatives available to address the affected media. Responsible for ensuring the proper implementation of the QA/QC plan for all aspects of the project, as well as the technical review of project deliverables.

City of Buffalo Office of Strategic Planning, Site Investigation/ Remedial Alternatives Report at Franczyk Park, Buffalo, NY – Project Manager for the SI/RAR of a 16.5-acre public park constructed on a site that was a former agricultural fertilizer company for over 90 years. The scope of the SI will include conducting a site survey and mapping, preparation of a Phase I ESA report, and characterization of the surface soils, subsurface fill materials, groundwater and native soils to determine the levels of potential contamination associated with metals, semi-volatile organic compounds, and PCBs. The project will involve identification and detailed analysis of remedial alternatives available to address the affected media.

LTV Steel Company/Hanna Furnace Corporation, Voluntary Cleanup of Former Steel Manufacturing Site, Buffalo, NY – Project Manager on a 200 acre brownfields development project located on an inactive steel manufacturing site. Project responsibilities included planning and directing site investigation activities to characterize site conditions, negotiating site specific cleanup standards with the NYSDEC, and preparation of a voluntary cleanup Work Plan to define the details of the remedial approach. The site will ultimately be redeveloped for light industrial and commercial uses.

LTV Steel Company, Marilla Street Landfill Wetland Remediation, Buffalo, NY – Project Manager responsible for preparation of design documents and remediation of a 16-acre wetland project located adjacent to a closed industrial landfill. Project involved excavation and on site disposal of 90,000 cubic yards of contaminated sediments, covering the wetland bottoms with a new soil cover system, construction of a groundwater cutoff wall, repair of the existing landfill cover system and restoration of wetland vegetation, and preparing a construction certification report to NYSDEC upon completion of remedial activities.

QUALIFICATIONS:

- Has been actively involved in nearly every aspect of solid waste management including planning, permitting, site selections and investigations, transfer station operations, consent order negotiations, waste collection, landfill design, landfill construction, and daily facility operations.
- Has extensive experience in hazardous waste site investigation and remediation projects, New York State's Voluntary Cleanup Program for brownfield sites, and wastewater plant design and operation.
- Routinely acts as principal liaison between regulatory agencies and clients.

PROFESSIONAL CREDENTIALS:

Years Experience:
28

Education:
- AAS/1975/Construction Technology, Erie Community College
- BT/1978/Civil and Environmental Engineering/ Rochester Institute of Technology
- Hazardous Waste Site Worker/ OSHA 29CFR 1910.120

JAMES C. MANZELLA

Scientist

PROJECT EXPERIENCE:

City of Buffalo Office of Strategic Planning, Site Investigation/ Remedial Alternatives Report (SI/RAR) for Franczyk Park, Buffalo, NY – Field Scientist responsible for the preparation and implementation of the Field Sampling Plan (FSP) for the site investigation of a 16-acre public park that was historically operated as an agricultural fertilizer manufacturing facility. The field program included direct-push soil sampling, hollow stem auger drilling, installation sampling and hydraulic conductivity testing of overburden groundwater monitoring wells, and the collection of soil samples. Additionally, was responsible for the preparation of a draft report to present the findings of field investigation including review and evaluation of analytical results. Also assisted in the development of remedial alternatives and remedial cost estimates as part of the RAR.

Niagara County Office of Planning Development and Tourism, Site Investigation/Remedial Alternatives Report (SI/RAR), Flintkote Site, Lockport, NY – Field Scientist responsible for the implementation of the Field Sampling Plan (FSP) of an abandoned six-acre site utilized for industrial purposes since the 1880s. The field program included direct-push soil sampling, hollow stem auger drilling, installation, sampling and hydraulic conductivity testing of overburden and bedrock groundwater monitoring wells, and the collection of soil, surface water, concrete and sediment samples. Additionally, was responsible for the preparation of a draft report to present the findings of field investigation including review and evaluation of analytical results. Also assisted in the development of remedial alternatives and remedial cost estimates as part of the RAR.

Chautauqua County Department of Public Facilities, Site Investigation/Remedial Alternatives Report (SI/RAR), Brownfield Site, Dunkirk, NY – Field Scientist responsible for the preparation and implementation of the Field Sampling Plan (FSP) for the site investigation of a 12-acre brownfield site. The field program included a radiological survey, direct-push soil sampling, drilling, installation and sampling of overburden and bedrock monitoring wells, field screening of soil and fill samples for metals using an XRF unit, and the collection of surface water and sediment samples. Additionally, was responsible for the preparation of a draft report to present the findings of field investigation including review and evaluation of analytical results. Also assisted in the development of remedial alternatives and remedial cost estimates as part of the RAR.

QUALIFICATIONS:

- Has experience with Federal and State regulatory requirements, remedial investigations, aboveground storage tank inspections and evaluations, underground storage tank closures and removal oversight, lead investigations, storm water discharge permits and pollution prevention plans, environmental site assessments, environmental data evaluation and field screening.
- Has participated in the sampling of soils, surface water, groundwater, and storm water at numerous hazardous and non-hazardous contaminated sites.
- Trained and experienced in the use of both Level-C safety equipment and monitoring instruments.

PROFESSIONAL CREDENTIALS:

Years Experience:
7

Education:
BA/1997/Environmental Studies/Allegheny College

APPENDIX A

FIELD SAMPLING PLAN

REMEDIAL INVESTIGATION/ALTERNATIVES ANALYSIS (RI/AA) OF THE YOUNGSTOWN COLD STORAGE SITE (NYSDEC SITE NO. E932122) 701 THIRD STREET EXTENSION (NANCY PRICE DRIVE) VILLAGE OF YOUNGSTOWN NIAGARA COUNTY, NEW YORK

FIELD SAMPLING PLAN

Prepared for:

Village of Youngstown
Village Center
240 Lockport Street, P.O. Box 168
Youngstown, New York 14174

Prepared by:

TVGA CONSULTANTS

One Thousand Maple Road
Elma, NY 14059-0264

(716) 655-8842
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2004.0279.03

JANUARY 2006

RI/AA OF THE YOUNGSTOWN COLD STORAGE SITE
(NYSDEC SITE NO. E932122)
701 THIRD STREET EXTENSION (NANCY PRICE DRIVE)
VILLAGE OF YOUNGSTOWN
NIAGARA COUNTY, NEW YORK

FIELD SAMPLING PLAN

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1.0 INTRODUCTION

This Field Sampling Plan (FSP) contains procedural directives to guide the execution of the field activities outlined in the Work Plan for the Remedial Investigation/Alternatives Analysis (RI/AA) program to be implemented at the Youngstown Cold Storage Site. This FSP identifies the scope and objectives of the field sampling program, and provides detailed step-by-step procedures for field activities required for the procurement, collection, handling and documentation of field samples and data. Adherence to these procedures will ensure the quality and usability of the field data collected. This FSP is intended for use in conjunction with the RI/AA Work Plan, Quality Assurance/Quality Control (QA/QC) Plan, and Health and Safety Plan (HASP) developed for the project site.

2.0 SCOPE AND OBJECTIVES OF FIELD SAMPLING PROGRAM

The site-specific Data Quality Objectives (DQOs) for data collected during the remedial investigation are discussed in the QA/QC Plan, and are summarized below:

- To characterize the site and determine the nature and extent of contamination occurring on or in soil, fill, sediments, groundwater, and specific building surfaces, components and materials;
- To evaluate potential risks to human health and the environment associated with current site conditions and potential future use scenarios;
- To identify, evaluate and select a long-term remedial action that is environmentally sound and cost-effective;
- To maintain a state-of-the-art standard of scientific/professional practice for each procedure; and
- To assure the ultimate defensibility of the data generated.

The Remedial Investigation program to be implemented at the project site will initially focus on determining the nature and extent of contamination within the following four areas of the site:

- Surface Soil/Fill
- Subsurface Soil/Fill
- Groundwater
- On-site Structures

Representative grab samples of surface soils and fill materials will be collected from previously identified areas of concern as well as from points selected to represent conditions across the site, and these samples will be submitted for laboratory analyses. Background soil samples will be collected from Veterans Park and Falkner Park for the purpose of defining local baseline soil conditions.

Subsurface soil, fill and groundwater contamination will be investigated as part of the subsurface investigation program developed for the site. This program will involve completion of test pits, advancement of soil probes, and the installation of micro-wells to enable the collection and chemical analysis of samples from these media.

Grab samples of liquids will be collected from the two elevator shafts in the main building and wipe samples will be collected from stained areas within the compressor room. In addition, a pre-demolition asbestos survey will be conducted.

The number of samples to be collected from each of the above-referenced media, including QA/QC samples, and the corresponding analytical methods are summarized in Table 1.

3.0 FIELD DOCUMENTATION

The documentation of field activities will entail the recording of project information, observations and measurement in a field logbook, the completion of applicable field log forms, and the compilation of a photographic record of site conditions and the field program.

3.1 Field Logbook and Forms

All pertinent field survey and sampling information shall be recorded in a logbook during each day of the field activity. No general rules can specify the extent of information that must be entered in a logbook. However, logbooks shall contain sufficient information so that someone can reconstruct the field activity without relying on the memory of the field crew.

A Daily Field Report Form shall be completed for each day of field activities. The form shall be filled out with all relevant information in the appropriate spaces on the form. Other field log forms that relate to specific site investigation tasks (e.g., test pit, soil probe and test boring logs; well installation, development and sampling logs; etc.), shall also be completed in accordance with the procedures specified in the applicable sections of this document. Examples of these forms have been provided in Attachment A.

Procedure

All entries shall be made in indelible ink. At the conclusion of each day, the author will initial the day's entries, and a line will be drawn through the remainder of the page. All corrections shall consist of line-out deletions that are initialed. At a minimum, entries shall include:

- Date and Time of starting work;
- Names of all personnel at site;
- Purpose of proposed work effort;
- Sampling equipment to be used and calibration of equipment;

- Description of work area;
- Location of work area, including map reference;
- Details of work effort, particularly any deviation from the field operations plan or standard operating procedures;
- Field observations;
- Field measurements;
- Personnel and equipment decontamination procedures;
- Daily health and safety entries, including levels of protection;
- Type and number of samples;
- Sampling method, particularly deviations from the Work Plan;
- Sample location and number; and
- Sample handling, packaging, labeling, and shipping information (including destination).

3.2 Photographs

Photographs will be taken to provide the most accurate depiction of the field worker's observations. The photographs provide significant assistance to the field team in future inspections, informal meetings, and hearings.

Procedure

Photographs should be taken with a digital camera, which will offer the most reasonable observation point in relation to what was observed by the naked eye. A photograph must be documented if it is to be a valid representation of an existing situation. For each photograph taken, several items shall be recorded in the field logbooks:

- Date and Time;
- Name of the photographer;
- Direction faced and description of the subject; and
- Sequential number of the photograph.

Immediately following the performance of the field activity, the photographs will be downloaded and saved in an appropriate directory in TVGA's computer system.

4.0 TEST PIT EXCAVATION

Test pits will be completed in the vicinity of the outdoor fuel oil tank identified on the 1927 Sanborn Map. Additionally, the test pits will be excavated in areas to determine the presence or absence of former utilities (subsurface piping associated with that apple spray/wash area, discharge lines, oil water separator, etc.) and where the soil probes and or test borings might prove ineffective (i.e. on-site gravel roads). It is anticipated that there will be approximately two days of test pitting. The test pits will be completed following the procedures outlined below.

Procedure

- Downward excavation will take place in one-foot increments until a subsurface feature (e.g. tank, piping, bedrock, impassable fill material) is encountered or to the maximum reach of the backhoe (which will be a minimum of ten feet), whichever occurs first. The material removed from the test pit or trench will be temporarily staged on plastic adjacent to the excavation. The excavated material will be characterized as described in Section 6.3, and a test pit log will be completed.
- Screening and sampling of excavated soil will be performed in accordance with applicable provisions of Sections 9.1.3 and 9.1.1, respectively.
- Soil and/or fill that display visual or photoionic evidence of contamination will be segregated from materials that do not display any evidence of contamination.
- Photographs of the completed test pit and excavated material will be collected.
- All soil/fill will be returned to the excavation from which it originated upon completion of the test pit and the area will be graded.

5.0 SOIL PROBES

The soil probing will be completed in an effort to: more broadly characterize the surficial geology across the site; investigate the overburden at greater depths than achievable by the test pitting activities; and define the aerial and horizontal extent of any subsurface contamination identified during test pitting. It is anticipated that 10 to 15 soil probes will be installed across the project site using direct hydraulic push sampling equipment (e.g., geoprobe or earthprobe) to collect continuous samples.

Three of the soil probes will be completed as micro-wells to facilitate the determination of the gradient and flow direction of the groundwater in the upper-most water-bearing zone, as well as the collection of groundwater samples for chemical analysis. Micro-well locations will be based upon the project objectives, ease of access, freedom from obstructions, and safety considerations (appropriate set backs from overhead wires and buried services). The depth to groundwater is estimated to be approximately ten feet below ground surface (bgs). Therefore, it is assumed that the average depth of the micro-wells will be 20 feet bgs. The micro-wells will be constructed of 1-inch I.D. Schedule 40 polyvinyl-chloride (PVC) well screens/risers, and will be fitted with locking caps.

The advancement of these soil probes and installation of micro-wells for the characterization, screening and sampling of subsurface soils/fill and groundwater will be completed following the procedures outlined below.

5.1 Direct-Push Soil Sampling

The advancement of soil probes will be completed using direct-push soil sampling equipment (e.g., geoprobe or earthprobe) to collect continuous samples in accordance with the procedures outlined below. Direct-push soil sampling is a standard method of subsurface soil sampling to obtain samples for characterization, and laboratory analysis. Subsurface samples obtained via direct-push sampling will be classified per Section 6.3; field screened for organic vapors as per Section 9.1.3; and may be submitted for chemical analysis in an effort to define the horizontal and vertical extent of contamination, as per Section 9.1.2.

Procedure

- Mobilize the probe rig to the project site, ensure that the probe technician has appropriate equipment and that the rig and equipment have been decontaminated and are in good working condition.
- Measure the sampling equipment lengths and widths to ensure that they conform to specifications.
- With the sampler resting on the bottom of the hole, drive the sampler a total of 48 inches using direct-push sampling equipment.
- Remove the sampler, open the liner or split-spoon sampler, and screen the contents immediately after opening using a Photoionization Detector (PID) and the procedures presented in Section 9.1.3. Record the PID measurement on the Soil Probe Log.
- Classify the sample pursuant to Section 6.3 and place a representative portion of the sample in a clean soil jar(s), ensuring that sufficient sample volume is collected to satisfy sample volume requirements for laboratory analysis (See Table 2 for volume requirements). If the list of possible analytes includes VOCs, place a portion of the sample directly into the laboratory provided sample container.
- Additionally, a representative portion of the sample should be placed in a drillers jar or a ziplock bag for headspace screening. The opening of drillers jar sample for headspace screening should be lined with aluminum foil prior to closing the lid.
- Secure the lid(s), and label the jar(s) with the project code (YCS), date, soil probe number (SP-#), and sample interval (feet bgs).
- Document all soil properties and sample locations on the Soil Probe Log (Attachment A).
- Once the sample is logged, containerized and labeled, the measurement of "headspace" can be completed in accordance with the procedures outlined in Section 9.1.3.
- Continue sampling using these procedures until an impassable subsurface feature is encountered, or to a depth confirming the absence of fill material and/or contamination.

5.2 Micro-Well Installation

Micro-well installations will be designed and constructed in accordance with the procedures listed below. The newly installed micro-wells will be screened across the uppermost water-bearing zone that exists in the overburden.

Design Materials

- Well Screen and Riser – Only new flush threaded, Schedule 40 PVC screen (machine slotted) and riser of a minimum 1-inch I.D. will be used. Screen slot opening size and length to be approximately 10 feet or less as required by formation characteristics. A vented cap shall be placed over the riser and a V-slot cut in the top edge of the riser as a monitoring reference point.
- Filter Pack – Only non-reactive granular material of known chemistry and particular graduation should be used. The filter pack should be suitable for use with the selected screen slot size.
- Bentonite Well Seal – The bentonite should be from a commercial source free of chemical additives (granular or powdered for grout and pelletized for seal).
- Cement – Low heat of hydration cement for grout and cementing protective casing such as ASTM Type II or Type IV Portland.
- Water – From a potable source of known chemistry and free of chemical constituents that may compromise integrity of installation.
- Grout – Mixture of bentonite, cement and water according to the following specifications by weight: 1.5% to 3.0% bentonite, 40% to 60% cement, and 40% to 60% water.
- A Locking Cap – A lockable cap should be placed in the top of the riser pipe. All locks should be keyed alike.

Construction Procedures

- Advance borehole to the desired depth by means of direct hydraulic push sampling equipment.
- Remove the macro-cores and verify borehole depth using weighted measuring tape.
- Add pre-washed medium graded sand as needed, up to one-foot in depth, to the base of the probehole through the open hole. If dense non-aqueous phase liquids are present, this step may be omitted.
- Insert well screen and riser pipe into the open probehole.
- Add appropriately graded sand to the annulus of the screen section of the well. Measure the depth of the sand pack frequently with the weighted tape while adding sand. Sand pack should extend one to two feet above the screen section within the probehole.
- Add bentonite pellets to seal the probehole. The bentonite seal should extend at least two feet above the top of the sand pack. Measure the depth with the weighted tape before, during and after adding the bentonite pellets. If the bentonite seal is placed above the water table level, then potable water should be added to hydrate the bentonite pellets. The pellets should be allowed to hydrate for a minimum of two hours.
- Mix cement/bentonite grout and add to the borehole annulus from the top of the bentonite seal to the approximately two-feet below the surface.

- Cut well riser pipe to about two feet above ground surface for stick-up type well installation. Cut well riser pipe just below ground surface for flush-mount well installation.
- Install cap and lock, and cement the riser pipe in place.
- Seal riser with a J-Plug and lock plug.
- Document well design and construction data in the field logbook and on a Well Installation Report Form (included in Attachment A).

5.3 Borehole Abandonment

Each of the soil probes will be abandoned following the completion of probing activities at each location as follows:

Procedure

- Probeholes will be backfilled with removed soil in general accordance with NYSEC TAGM HWR-89-4032.
- At a minimum, the uppermost six inches of each probehole will consist of compacted cohesive soil or pelletized bentonite to reduce the potential vertical migration of contaminants into the subsurface.
- Remaining spoils will be managed in accordance with the procedures outlined in Section 14.0.

6.0 TEST BORINGS AND MONITORING WELL INSTALLATION

In the event that field conditions dictate, it may be necessary to install test borings on the project site with a rotary drill rig to facilitate the classification, field screening and collection of subsurface soil samples for laboratory analysis. Additionally, if significant groundwater contamination is discovered in the micro-wells it may also be necessary to complete the test borings with groundwater monitoring wells to facilitate the collection of groundwater samples for chemical analysis. These wells will be constructed of two-inch Schedule 40 PVC.

If required test boring and monitoring well locations will be based upon the results of the test pits and soil probing activities as well as other considerations including: project objectives; ease of access; freedom from obstructions; and safety considerations (appropriate set backs from overhead wires and buried services).

The following sections define the applicable drilling and monitoring well installation procedures to be implemented at the site, including:

- Hollow-Stem Auger Drilling;
- Split-Spoon Sampling;
- Soil Classification; and

- Monitoring Well Installation/Construction.

6.1 Hollow-Stem Auger Drilling

The test borings will be advanced to an average depth of 20 feet using hollow-stem augers with continuous split-spoon samples collected throughout the total depth of each borehole. Hollow-stem auger drilling is the standard method of subsurface drilling which enables the recovery of representative subsurface samples for identification and laboratory analysis and the installation of monitoring wells in the overburden.

Procedure

- Mobilize the drill rig to the project site, ensure that the driller has appropriate equipment and that the rig and equipment has been decontaminated and are in good working condition.
- Drilling will utilize 4.25 inch I.D. hollow-stem augers (HSAs) which are turned into the subsurface under hydraulic downpressure to allow continuous sampling of the subsurface and also the installation of the groundwater monitoring equipment.
- Assemble auger and drill rods, and advance the boring the desired distance into the subsurface by rotating and applying down pressure with the rig hydraulics.
- The borings will be advanced incrementally to permit continuous split-spoon sampling as described in Section 6.2.
- Remove drill rods and center plug from augers and sample subsurface soils per Section 6.2, or, if the boring has been advanced to sampling refusal depth, commence rock coring or roller-bit drilling to penetrate the obstruction. Encountering bedrock is not anticipated based on our understanding of the regional geology. However, it may be necessary to core or roller-bit through former foundations to achieve the design depth.

6.2 Split-Spoon Sampling

Split-spoon sampling is a standard method of subsurface soil sampling to obtain representative samples for identification, and laboratory analysis, and as a measure of resistance of soil to sample penetration. Split-spoon sampling will be performed as outlined below, in accordance with ASTM D1586-84, Standard Method for Penetration Test and Split Barrel Sampling of Soils. Subsurface samples obtained via split-spoon sampling will be classified per Section 6.3, field screened for organic vapors as per Section 9.1.3, and may be submitted for chemical analysis pursuant to Section 9.1.2 in an effort to define the horizontal and vertical extent of contamination, if any, occurring on the project site. The samples will be collected at boring locations with the use of a drill rig under the direct supervision of an experienced TVGA scientist or engineer.

Procedure

- Measure the sampling equipment lengths to ensure that they conform to specifications.
- Select additional components as required (i.e., leaf spring core retainer for clays or a sand trap for non-cohesive sands).
- Clean out the auger flight to the bottom depth prior to sampling.
- Remove the drill rods and lower a two-inch I.D. split-spoon sampler to the bottom of the auger column and check the depth against the length of the rods and the sampler.
- Attach the drive head sub and hammer to the drill rods without the weight resting on the rods.
- Mark four six-inch intervals on the drill rods relative to a drive reference point on the rig.
- With the sampler resting on the bottom of the hole, drive the sampler a total of 24 inches using a 140-pound hammer free falling 30 inches.
- Record the number of blows per six-inch interval on a Test Boring Log (Attachment A) and determine the "N" value by adding the blows for the six- to twelve- inch and twelve- to 18- inch interval of each sample attempt.
- Remove the sampler and screen the contents immediately after opening using a PID and the procedures presented in Section 9.1.3. Record the PID measurement on the Test Boring Log.
- Classify the sample pursuant to Section 6.3 and place a representative portion of the sample in a clean soil jar(s), ensuring that sufficient sample volume is collected to satisfy sample volume requirements for laboratory analysis (See Table 2 for volume requirements). If the list of possible analytes includes VOCs, place a portion of the sample directly into the laboratory provided sample container.
- Additionally, a representative portion of the sample should be placed in a drillers jar or a ziplock bag for headspace screening. The opening of drillers jar sample for headspace screening should be lined with aluminum foil prior to closing the lid.
- Secure the lid(s), and label the jar with the project code (YCS), date, test boring/monitoring well number, sample number, sample interval (feet bgs), and blow counts.
- Document all soil properties and sample locations on the Test Boring Log.
- Once the sample is logged, containerized and labeled, the measurement of "headspace" can be completed in accordance with the procedures outlined in Section 9.1.3.

6.3 Soil Classification (USCS)

This procedure is presented as a means for insuring proper field identification and description of soil collected from the test pits, soil probes and test borings. The lithology and moisture content of each soil sample will be visually and physically characterized according to the Unified Soil Classification System (USCS). This method of soil classification describes the soil types on the basis of grain size and the liquid and plastic limits. The soil logging procedures are based on ASTM D 2487-00 Standard Classification of Soils for Engineering Purposes (USCS).

Procedure

According to the USCS, all soils are divided into three major groups: coarse-grained, fine-grained and highly organic (peat). The distinction between the coarse- and fine-grained soils can be seen with the unaided eye. The soil is considered coarse-grained if more than 50 percent of the soil by weight is judged to consist of grains that can be distinguished separately.

The coarse-grained soils are divided into gravelly (G) or sandy (S) soils, depending on whether more or less than 50 percent of the visible grains are larger than the No. 4 sieve (3/16 inch). Gravelly and sandy soils are each further divided into four groups:

W – Well graded; fairly clean (< 5% finer than 0.074 mm)
P – Poorly graded (gap-graded); fairly clean (< 5% finer than 0.074 mm)
C - Clayey (> 12% finer than 0.074 mm), plastic (clayey) fines.
M - Silty (> 12% finer than 0.074 mm), non-plastic or silty fines.

Soils are represented by symbols such as GW or SP and borderline materials are represented by double symbols as GW-GC.

The fine-grained soils are divided into three groups: inorganic silts (M), inorganic clays (C), and organic silts and clays (O). The soils are further divided into those having liquid limits lower (L), or higher (H) than 50 percent.

Soil Properties and other observed characteristics normally identified in the field, using the USCS, are defined below:

- Color;
- Moisture content;
- Grain size (estimated maximum grain size and estimated percent by weight of fines);
- Gradation;
- Plasticity;
- Predominant soil type;
- Secondary soil type;
- Classification symbol, and
- Other features including: organic; chemical or metal content; compactness; consistency; cohesiveness; dry strength and source.

6.4 Monitoring Well Installation

Monitoring well installations will be designed and constructed according to ASTM D 5784-00. The newly installed groundwater monitoring wells will be screened across the uppermost water-bearing zone that exists in the overburden. A typical construction detail for an overburden monitoring well is presented as Figure 1.

Design Materials

- Well Screen and Riser – Only new flush threaded, Schedule 40 PVC screen (machine slotted) and riser of a minimum 2-inch I.D. will be used. Screen slot opening size and length to be approximately 10 feet or less as required by formation characteristics. A vented cap shall be placed over the riser and a V-slot cut in the top edge of the riser as a monitoring reference point.
- Filter Pack – Only non-reactive granular material of known chemistry and particular graduation should be used. The filter pack should be suitable for use with the selected screen slot size.
- Bentonite Well Seal – The bentonite should be from a commercial source free of chemical additives (granular or powdered for grout and pelletized for seal).
- Cement – Low heat of hydration cement for grout and cementing protective casing such as ASTM Type II or Type IV Portland.
- Water – From a potable source of known chemistry and free of chemical constituents that may compromise integrity of installation.
- Grout – Mixture of bentonite, cement and water according to the following specifications by weight: 1.5%-3.0% bentonite, 40%-60% cement, and 40%-60% water.
- Protective Casing, Locking Cap and Lock – Protective casing with a lockable cap should be cemented in place around the riser. The inside diameter should be two to four inches larger than the outside diameter of the riser. The annular space between the casing and riser should be filled with pea gravel or coarse sand. All locks should be keyed alike.

Construction Procedures

- Advance borehole to the desired depth by means of HSA drilling.
- Remove drill rods from augers and verify borehole depth using weighted measuring tape.
- Add pre-washed medium graded sand as needed, up to one-foot in depth, to the base of the borehole through the augers. If dense non-aqueous phase liquids are present, this step may be omitted.
- Insert well screen and riser pipe into the borehole through the HSAs.
- Add appropriately graded sand to the annulus of the screen section of the well while slowing removing HSAs. Measure the depth of the sand pack frequently

with the weighted tape while adding sand. Sand pack should extend one to two feet above the screen section within the borehole.

- Add bentonite pellets to seal the borehole while slowly removing the augers. The bentonite seal should extend at least two feet above the top of the sand pack. Measure the depth with the weighted tape before, during and after adding the bentonite pellets. If the bentonite seal is placed above the water table level, then potable water should be added to hydrate the bentonite pellets. The pellets should be allowed to hydrate for a minimum of two hours.
- Mix cement/bentonite grout and add to the borehole annulus from the top of the bentonite seal to the approximately two-feet below the surface.
- Remove remaining HSAs.
- Cut well riser pipe to about two feet above ground surface for stick-up type well installation. Cut well riser pipe just below ground surface for flush-mount well installation.
- Install protective casing, cap and lock, and cement in place.
- Drill a weep hole at the bottom, near the base, of the protective casing to allow accumulated water from between the well riser and casing to drain.
- Seal riser with a J-Plug and lock plug for flush-mount installation and tighten bolts, securing lid to the casing. For stick-up type casings, seal riser with a J-Plug and lock the protective casing cap.
- Document well design and construction data in the field logbook and on a Monitoring Well Installation Report Form (included in Attachment A).

7.0 WELL DEVELOPMENT, AND GAUGING

7.1 Well Development

Following the completion of the soil probes and micro-well installation, or auger drilling and monitoring well installation, each newly installed well will be developed until the discharged water is relatively sediment free and the indicator parameters (turbidity, pH, temperature, conductivity) have stabilized. Well development not only removes any sediment, but may improve the hydraulic properties of the filter pack. The effectiveness of the development procedures will be closely monitored in an effort to keep the volume of development fluids to the minimum necessary to obtain low turbidity samples. The stabilization of indicator parameters will be used as a guide for the discontinuation of well development.

Procedure

- An appropriate well development method should be selected based on well depth, length of water column, well productivity and sediment content of water. Well development options include bailing, manual pumping, powered suction-lift or submersible pumping, and air-lift method.

- Equipment should be assembled, decontaminated, if necessary and installed in the well while taking precautions not to introduce contaminants.
- Well development should proceed by the repeated removal of water from the well until the discharged water is relatively sediment free and/or indicator parameters have stabilized.
- Development effectiveness should be monitored at regular intervals using the Horiba U-10 portable water quality meter, which is capable of measuring turbidity, pH, temperature, and conductivity.
- The Horiba U-10 meter shall be calibrated in accordance with the SOP for this in Attachment B at the beginning of each operating period.
- Both the volume of water removed and the field water quality measurements should be recorded on a "Well Development Log" form (Attachment A).
- Well development may be discontinued either when the turbidity of the discharged water is less than 50 NTU or when the indicator parameter measurements stabilize.

7.2 Water Level Monitoring

The groundwater levels measured in the wells can be used to determine the groundwater gradient and flow direction. Water levels in all wells will be measured using an electronic water level indicator and/or an oil/water interface probe. For newly installed wells, measurements should be taken frequently following well development until the well has recovered to anticipated static conditions. The procedures in Section 9.3.2 will be followed when non-aqueous phase liquids (NAPLs) are present. The following procedures apply when NAPL is not present in the wells.

Procedure

- Pre-clean water level probe and lower portion of cable following the standard decontamination procedures described in Section 13.0.
- Test water level meter to check batteries and adjust sensitivity.
- Lower probe slowly into the well until the audible alarm sounds, indicating water.
- Read depth to the nearest 0.01 foot from the graduated cable using the V-notch on the well riser as a reference point.
- Repeat the measurement for confirmation and record the water level.
- Remove the cable and probe from the well, drying the cable and probe with a clean paper towel or disposable wipe.
- Replace J-Plug, protective casing cap or casing lid and lock.

8.0 SURVEY

The objective of this task is to complete a boundary survey of the project site to establish the boundaries of the project site and to locate on-site structures with respect to site boundaries. The boundary survey will serve as the base map for the project site. Additionally, a survey will be completed to locate the actual location of the test pits, soil probes, micro-wells, test borings, monitoring wells, well riser elevations and any other sample locations. These locations will be superimposed on a base map prepared for the project site.

This task will be completed during two separate events. The initial event will involve the completion of the boundary survey to enable the preparation of the Site Plan. The second survey event will be performed after the site investigation is completed and will involve the survey of the actual sample locations.

Coordinants will be established by a New York State-licensed land surveyor for each test pits, soil probes, test borings, micro-wells, monitoring wells, monitoring well riser elevations and any other sample locations. Elevations for the wells will be relative to a regional, local, or project specific datum. United States Geological Survey (USGS) benchmarks will be used if located within 0.5 miles of the project site and will take precedence over the use of project-specific datum.

9.0 ENVIRONMENTAL SAMPLING

Surface and subsurface soil and fill, and groundwater samples will be collected for chemical analysis to determine the magnitude and extent of contamination, if any, occurring in these media. A summary of the samples to be collected from these media, including the number and type of QA/QC samples, and the corresponding analytical methods is presented in Table 1. The following sections describe the sampling procedures that apply to these media.

9.1 Subsurface Soil/Fill Sampling

Up to 12 samples will be collected for chemical analysis from test pits, soil probes, and test borings. The goal of the subsurface soil/fill sampling is to obtain analytical data from the various soil types and a range of contaminant concentrations. Factors that will be considered when selecting soil samples for analysis include TOV levels, visual and olfactory observations of contamination, the lack of visible or olfactory contamination, the soil type (i.e. fill or native), and the areal and vertical distribution of other soil samples.

9.1.1 Test Pits

Test pits will be completed in the vicinity of the outdoor fuel oil tank identified on the 1927 Sanborn Map. Additionally, the test pits will be excavated in areas to evaluate for former utilities (subsurface piping associated with that apple spray/wash area, discharge lines, oil water separator, etc.) and where the soil probes and or test borings might prove ineffective (i.e. on-site gravel roads). The number of samples collected from the test pits will be determined upon field conditions. The following procedure allows for the collection of subsurface samples without having to enter the excavation.

Procedure

- Using the backhoe bucket, excavate soil/fill from the desired area and screen for organic vapors using the procedure outlined in Section 9.1.3.
- Collect a sample from the backhoe bucket using a decontaminated stainless steel trowel or disposable plastic scoop.
- Material for VOCs analysis will be placed directly into the appropriate sample containers identified in Table 2.
- The remainder of the sample will be placed in a stainless steel mixing bowl.
- Homogenize soil in the mixing bowl with the same stainless steel trowel or scoop used to collect the sample.
- Place homogenized sample in the appropriate sample containers identified in Table 2.
- Sample handling, labeling, custody and shipping shall be in accordance with the procedures outlined in Section 11.0.
- Decontaminate mixing bowl and trowel prior to each use following the procedures outlined in Section 13.0.

9.1.2 Soil Probes and Test Borings

Continuous soil/fill samples collected from the soil probes and the test borings will be reviewed and evaluated for the purpose of selecting samples for chemical analysis. Sample selection will focus on soil/fill samples that exhibit elevated organic vapor levels or visual evidence of contamination. The procedures for sample selection are detailed below.

Procedure

- Measure and record the organic vapor levels in the headspace of all of the samples from the soil probes and test borings using the procedures outlined in Section 9.1.3.
- Select the samples that exhibit the highest headspace concentration of organic vapors and/or display visual or olfactory evidence of contamination for chemical analysis.
- Material for VOCs analysis will be placed directly into the appropriate sample containers identified in Table 2.
- The remainder of the sample will be placed in a stainless steel mixing bowl.
- Homogenize soil in the mixing bowl with the same stainless steel trowel or scoop used to collect the sample.
- Place homogenized sample in the appropriate sample containers identified in Table 2.
- Sample handling, labeling, custody and shipping shall be in accordance with the procedures outlined in Section 11.0.

- Decontaminate stainless steel spatula prior to each use following the procedures outlined in Section 13.0.

9.1.3 Soil Screening

The MiniRAE 2000 photoionization detector (PID) will be utilized to screen soil for organic vapors.

Procedure

Upon successful unit zeroing and calibration (refer to Attachment B) the PID is ready for use. Prior to screening soil, background readings should be determined in the vicinity of the sampling area by holding the probe tip at shoulder level and noting any readings on the digital meter. Record any sustainable background readings noted in the logbook and the appropriate log form. Vinyl tubing, measuring approximately one-inch long (one-quarter inch outer diameter), should be placed on the end of the aluminum or plastic probe tip to avoid contaminating the PID.

Direct sample screening:

- With a spatula or spoon, the soil will be moved apart to reveal soil previously unexposed to the atmosphere.
- The tip of the PID will be placed as close to the top of the newly exposed soil sample as possible without contacting it.
- The digital meter will record the largest concentration detected and that number should be recorded in the field logbook and on the appropriate log form as well.

Sample headspace screening:

- Allow the samples to warm in the sealed split-spoon jars or zip-lock bags to room temperature for an appropriate duration depending upon ambient temperatures.
- Remove the lid from the split-spoon jar, taking care not to remove the underlying foil or carefully open one corner of the zip-lock bag.
- Immediately pierce the foil with the PID probe.
- The digital meter will record the largest concentration detected and that number should be recorded in the field logbook and on the test pit, soil boring or soil probe log.
- Secure the appropriate lid onto the sample jar.

9.2 Surface Soil/Fill

Eight surface soil and/or fill samples will be collected from areas of concern (e.g., the apple wash area, loading docks, adjacent transformer substation and underneath the fuel oil tank located in basement of the warehouse building), as well as from locations along western along the western property line. Additionally, five background soil samples will be collected from locations throughout the Village for the purpose of defining local baseline soil conditions. The locations of these samples included two from Veterans Park, two from Falkner Park and one from Lions Park. One MS/MSD pair and one equipment rinseate blank will be collected for laboratory analysis.

<u>Sampling Procedure</u>

- Excavate approximately two inches of soil using a decontaminated stainless steel trowel or disposable plastic scoop and collect a sample from the selected location and screen for organic vapors using the procedure outlined in Section 9.1.3.
- The soil will be placed in a stainless steel mixing bowl.
- Homogenize soil in the mixing bowl with the same stainless steel trowel or scoop used to collect the sample.
- Place homogenized sample in the appropriate sample containers identified in Table 2.
- Sample handling, labeling, custody and shipping shall be in accordance with the procedures outlined in Section 11.0.
- Decontaminate mixing bowl and trowel prior to each use following the procedures outlined in Section 13.0.

9.3 Groundwater

9.3.1 Well Purging

In order to collect representative groundwater samples, wells must be adequately purged prior to sampling. Purging requires the removal of at least one well volume of water from wells with slow recharge rate, and the removal of three to five volumes of standing water in rapidly recharging wells.

<u>Procedure</u>

- Remove and unlock the well cover and J-Plug carefully to avoid foreign material from entering the well.
- The interior of the riser pipe should be monitored for organic vapors with a PID. If a reading greater than five parts per million (ppm) is recorded, allow the well to vent until levels drop below five ppm before proceeding with purging.
- Using an electronic water level indicator, determine the static water level below the top of the riser according to the procedure detailed in Section 7.2. If non-aqueous phase liquids (NAPLs) are suspected, use an oil/water interface probe to determine the NAPL thickness, water levels, and well depths in accordance with the procedures detailed in Section 9.3.2.
- Determine the depth of the well and subtract the depth to the water level to determine the length of the water column.

- Determine the volume of water in the well by multiplying the length of the water column by the appropriate conversions found on the Well Sampling Log form (Attachment A).
- Calibrate the Horiba U-10 field water quality meter in accordance with the procedures outlined in Section 12.0.
- Chose a purging technique outlined below (e.g. HDPE bailer or peristaltic pump). A peristaltic pump will generally not work in wells with water levels greater than 20 feet below grade.
- Purge water will be placed into graduated five-gallon buckets to assist in measuring volumes removed.
- Use the Horiba U-10 to periodically measure the pH, temperature, conductivity, salinity and turbidity of the purge water.
- Record the field parameter measurements on the Well Sampling Log (Attachment A).
- Record the volume removed and succeeding field parameter measurements on the Well Sampling Log form.
- Decontaminate the Horiba U-10 following the procedures outlined in Section 13.0 prior to use at each well location.
- Purging shall continue until three to five well volumes of water have been removed, or, in the case of wells with slow recharge rates, until the well is evacuated to dryness.
- In the event a well is purged to dryness, then purging should be stopped and the well allowed to recharge to near static water level before sampling.
- All well purging data shall be recorded on a Well Sampling Log form (Attachment A) and in the field notebook.

9.3.1.1. Purging with a Peristaltic Pump

The groundwater monitoring wells may be purged utilizing USEPA low-flow purging techniques and a peristaltic pump with polyethylene tubing. Low-flow purging is a technique to obtain samples with minimal alterations to water chemistry and will be accomplished utilizing the procedures outlined in the USEPA Region 1 *Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells* (Attachment C).

9.3.1.2. Purging with an HDPE Bailer

The wells may be purged using a dedicated, disposable high density polyethylene (HDPE) bailer. The dedicated, disposable HDPE bailer will have a one-liter capacity and a new section of nylon rope that will be discarded after use. The use of bailers may be necessary because the peristaltic pumps are physically limited to lifting water from depths of 20 feet or less.

9.3.2 Groundwater Sampling

Groundwater sampling should be performed as soon as practical after purging has been completed and the well has recovered sufficiently to sample, or within 24 hours after evacuation if the well recharges slowly. If a well does not contain or yield sufficient volume for all required laboratory analytical testing (including quality control), a decision will be made to prioritize analyses.

Procedure

If Non-Aqueous Phase Liquid (NAPL) is suspected to be present, a discrete sample from this phase must be obtained prior to purging. The determination of NAPL will be made through the use of an oil/water interface probe. The probe typically emits two different types of signals or tones; one for NAPL (free product) and one for water.

The procedure to measure the thickness of Light Non-Aqueous Phase Liquid (LNAPL) is initiated by lowering the probe until the first signal indicates the interface between air and free product has been reached. Then continue to slowly lower the probe until the second signal indicates the interface between free product and water. The probe is then lowered to the bottom of the well for the detection of Dense Non-Aqueous Phase Liquid (DNAPL). In this case, the probe will first encounter the interface between water and DNAPL, and then will encounter the contact between the DNAPL and the bottom of the well. All measurements will be recorded to the nearest 0.01-foot.

If a LNAPL is detected floating on the water surface in the well, sampling may be accomplished by the following manner:

- Using an oil/water interface probe, determine the LNAPL thickness and the static water level according to the procedure detailed above.
- Slowly lower a single check valve bailer (i.e., a bailer with a single ball valve on the bottom) down the well into the immiscible layer of NAPL. Care should be taken to lower the bailer just through the NAPL layer, but not significantly down into the underlying groundwater.
- Remove the bailer from the well, while being sure not to agitate the sample. Allow the bailer with sample to stand for a few minutes so the immiscible phases will separate.
- Decant the denser groundwater portion of the bailer into a wastewater barrel through the stopcock on the bottom of the bailer. The less dense immiscible NAPL layer may be emptied into the proper sampling containers by the same method

Sampling DNAPL may be accomplished by the following procedure:

- Using an oil/water interface probe, determine the DNAPL thickness and the static water level according to the procedure detailed above.

- Slowly lower a double check valve bailer (i.e., a bailer with a ball valve on top and bottom of the bailer) down the well until it reaches the bottom of the well.
- Slowly raise and lower the bailer in a controlled manner to collect the dense NAPL layer in the lower portion of the well.
- Slowly remove the bailer from the well, being sure not to agitate the sample. Allow the bailer with sample to stand for a few minutes so the immiscible phases separate.
- Carefully attach a threaded stopcock to the bottom of the bailer and discharge the dense immiscible layer through the stopcock into the proper sampling containers.

If LNAPL or DNAPL is not detected in the well, sampling may be accomplished by the following manner:

- Using an electronic water level indicator, determine the static water level below the top of the riser according to the procedure detailed in Section 7.2.
- The samples will be collected either from a peristaltic pump or a dedicated bailer. The samples will be collected directly from the peristaltic pump if the water level is less than 20 feet below grade. A bailer will be used when the water level is greater than 20 feet below grade.
- If a peristaltic pump is used to collect the samples, the sampling containers will be placed directly under the discharge outlet of the dedicated peristaltic tubing.
- If a bailer is used to collect the samples, the following method will be employed:
    - Slowly submerge a disposable, single check valve HDPE bailer into the water column to collect a groundwater sample.
    - Allow sufficient time for the bailer to sink and fill with water, and then retrieve it to the surface in a manner that minimizes sample agitation.
    - Transfer the sample from the bailer directly into the appropriate sample containers identified in Table 2 in a manner that minimizes agitation and aeration of the sample to the greatest extent possible.
- During sampling, field parameters (pH, temperature, conductivity, and turbidity) will be measured through the use of a Horiba U-10. This information will be recorded on the Well Sampling Log (Attachment A) and compared the resulting measurements with those taken at the conclusion of purging to ensure that representative groundwater samples are being collected.
- Samples will be collected in decreasing order of volatilization sensitivity (i.e., VOCs, SVOCs, then metals).
- If the turbidity level exceeds 50 nephalometric turbidity units (NTUs), implement the field filtration protocols described in the following subsection for the collection of groundwater samples for metals analysis.
- Samples will be collected in verifiably clean sample bottles (containing required preservatives) provided by the laboratory.
- All sample bottles will be labeled in the field using a waterproof permanent marker following the procedures outlined in Section 11.0.

- Sample handling, labeling, custody and shipping shall be performed in accordance with the procedures outlined in Section 11.0.
- After all sample containers have been filled at the well location (including QA/QC samples), measure and record the field parameters of the water using the Horiba U-10 meter to ensure that representative groundwater samples have been collected.
- Record all sampling data in the field notebook and on the Well Sampling Log (Attachment A).

Field Filtration of Unacceptably High Turbidity Groundwater Samples for Metals Analysis

If a representative aliquot of the groundwater to be sampled and analyzed for metals exhibits turbidity concentrations greater than 50 NTUs, the following filtration protocol consistent with NYSDEC TAGM #4015, *Policy Regarding Alternation of Groundwater Samples Collected for Metals Analysis*, shall be implemented:

1. Split the sample into two portions for metals analysis;
2. Measure and record the turbidity of the samples at the time of collection;
3. Immediately preserve the first sample collected in an unaltered state with nitric acid (HNO3) to a pH of 2 or below;
4. Field filter the second sample as soon as possible after collection using an in-line filter with a filter pore size of 0.45 um and preserve immediately after filtering with nitric acid as described above;
5. Complete sample documentation for both samples as noted above including identification of the unfiltered and filtered nature of the two samples and the different types of analysis they may be subjected to as described below.

Due to the relatively long holding time allowed for most metals (six months) the following analytical protocol shall be implemented:

- Analyze the unfiltered sample first for total metals.
- If the unfiltered sample exceeds standards, guidelines, or other applicable regulations, analyze the filtered sample for dissolved metals.
- If the unfiltered sample meets the standards, guidelines, or regulations, there will be no need to analyze the filtered sample.

9.4 Air Monitoring

Real-time air monitoring for volatile organic compounds (VOCs) and/or particulate levels within the work area and at the perimeter of the exclusion zone will be conducted during intrusive activities. Ground intrusive activities include, but are not limited to, soil/fill excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

9.4.1 Organic Vapors

VOCs must be monitored within the work zone and at the downwind perimeter of the immediate work areas (i.e., the exclusion zone) as described below and as specified in the site-specific HASP (Appendix C). Field monitoring of all intrusive excavation activities with the MiniRAE 2000 photoionization detector (PID) will be performed in accordance with the procedures outlined below.

Procedure

Upon successful unit zeroing and calibration, the PID is ready for use.

- Background readings should be determined upwind of the sampling area by holding the probe tip at shoulder level and noting any readings on the digital meter.
- Record any sustainable background readings noted in the logbook and the Direct Air Monitoring Form included as an attachment to the HASP.
- The PID meter should be operated on a continuous basis during any intrusive activities conducted during the site investigation.
- Readings should be recorded in 15-minute intervals on Direct Air Monitoring Form.
- Readings over the action levels listed in Section 5.2 of the HASP should be recorded in the log book and the health and safety procedures listed in this section should be implemented.

9.4.2 Particulate Monitoring

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the work zone at temporary particulate monitoring stations. The Thermo MIE pDR-1000 DataRam will be used for real-time active aerosol monitoring in accordance with the site-specific HASP and the procedure below:

Procedure

- Calibrate the unit in accordance with the manufacturer's directions.
- Background readings should be determined upwind of the sampling area by holding the meter at shoulder level and noting any readings on the digital meter.
- Record any sustainable background readings noted in the logbook and the Direct Air Monitoring Form included as an attachment to the HASP.
- The meter should be operated on a continuous basis during any intrusive activities conducted during the site investigation.
- Readings should be recorded in 15-minute intervals on Direct Air Monitoring Form.

- Readings over the action levels listed in the HASP should be recorded in the log book and the health and safety procedures in the HASP section should be implemented.

10.0 INSPECTION AND SAMPLING OF BUILDING MATERIALS/FACILITY COMPONENTS

The inspection and sampling of building materials and facility components will focus on asbestos containing materials (ACMs); stained floor and equipment surfaces within the compressor room; wood flooring within the warehouse building; and standing water within each of the two elevator shafts. The inspection and sampling procedures to be implemented for these media are outlined in the following sections. The number of samples to be collected from these media, including QA/QC samples, and the corresponding laboratory methods are summarized in Table 1.

10.1 Asbestos Containing Materials Sampling

The survey of the on-site structure for ACMs will be performed in accordance with NYCRR, Title 12, Part 56 (Industrial Code Rule No. 56), and will comply with applicable provisions of 40 CFR Part 61 (NESHAPS) and Occupational Safety and Health Administration (OSHA) 29 CFR 1910. The survey will include the review of readily available building plans and records for references to asbestos or asbestos material used in construction, renovation or repair.

An EPA and NYSDOL certified asbestos inspector will complete an inspection of accessible portions of the on-site building to visually identify, quantify and assess the condition of potential ACMs, including surface treatments, thermal system insulation, roofing and siding, and other miscellaneous materials (e.g., floor and ceiling tiles, fire doors, etc.). Bulk samples of the potential ACMs identified will be collected using standard protocols, and suspect materials will be sampled and analyzed for asbestos utilizing Polarized Light Microscopy (PLM) and, as necessary, Transmission Electron Microscopy (TEM). The actual number of samples will be determined by the number and type of potential ACMs encountered during the inspection.

10.2 Wipe Samples

Up to four wipe samples will be collected from within the compressor room for analysis of polychlorinated biphenyls (PCBs). Areas of the floor, walls and/or equipment in the former compressor room that appear stained, discolored or are otherwise suspected to have been impacted by dielectric fluid will be selected for sampling. The resulting samples will be analyzed for PCBs by EPA SW-846 Method 8082, as indicated in Table 1. Sampling techniques will be utilized as outlined below.

Procedure

Wipe sampling is accomplished by using a sterile gauze pad, adding a solvent in which the contaminant is most soluble (i.e. hexane), then wiping a pre-determined, pre-measured area. The sample is packaged in an amber jar to prevent photodegradation and packed in coolers for shipment to the lab. Each gauze pad is used for only one wipe sample.

- Choose appropriate sampling points and secure a 10 cm x 10 cm (100 cm^2) sampling template to define the area to be sampled.
- Open new sterile package of gauze pad.
- Moisten the sterile gauze pad with hexane by placing it in the 40 mL VOA bottle provided by the analytical laboratory.
- Wipe the surface area within the template using firm strokes. Wipe vertically, then horizontally to insure complete surface coverage.
- Place the gauze pad directly into the appropriate sample containers identified in Table 2.
- Sample handling, labeling, custody and shipping shall be in accordance with the procedures outlined in Section 11.0.

10.3 Elevator Shaft Sampling

One sample of the standing water within each of the two elevator shafts will be collected in order to identify potential contamination associated with historical operations. Sample collection procedures for this standing water are described below.

Procedure

- A telescoping rod equipped with a new disposable polyethylene dipper will be slowly submerged into the liquid with minimal surface disturbances and allowed to fill up.
- The liquid sample will be transferred into appropriate sample containers identified in Table 2, allowing the sample to flow gently down the side of the bottle with minimal turbulence.
- Samples will be collected in verifiably clean sample bottles (containing required preservatives).
- Sample handling, labeling, custody and shipping shall be in accordance with the procedures outlined in Section 11.0.

10.4 Wood Floor Sampling

Two composite samples of the plywood flooring will collected will be collected from the warehouse building in order to identify potential contamination associated with the storage of pesticide treated apples. The samples will be collected in accordance with the following procedures.

Procedure

- Using a battery powered drill with a 2-inch diameter wood coring drill bit, core through the approximate ¾-inch thick plywood flooring.
- Collect the wood core sample and the associated wood dust generated from each core using a decontaminated stainless steel trowel or disposable plastic scoop.
- Place sample in the appropriate sample containers identified in Table 2.
- Sample handling, labeling, custody and shipping shall be in accordance with the procedures outlined in Section 11.0.
- Decontaminate wood coring bit prior to each use following the procedures outlined in Section 13.0.

10.5 Drain, Sewer and Sump Sampling

If identified during the course of the site investigation exterior and interior floor drains, storm sewers, sumps and vaults will be visually inspected in an effort to identify and sample chemical residues and suspect sediments and/or sludges that may be present. The resulting samples will be chemically analyzed to characterize these substances and/or materials. The actual number of samples will be dependant number and configuration of these features. Sample collection procedures are described below.

Procedure

- A telescoping rod equipped with a new disposable polyethylene dipper or a decontaminated stainless steel hand trowel attached to a telescoping pole will be used to initially collect sufficient material for VOC analysis.
- The resulting sample will be transferred into the appropriate sample container specified in Table 2 using a disposable plastic spatula and sealed.
- The sampling device will be used to collect additional sample volume that will be placed into a decontaminated stainless steel bowl.
- Homogenize and quarter the sample in the bowl, with an equal amount of the material from each quartered segment placed into the appropriate sample vessel specified in Table 2 using a disposable plastic scoop or spatula.
- Samples will be collected in verifiably clean sample bottles.
- All sample bottles will be labeled in the field using a waterproof permanent marker following the procedures outlined in Section 11.1.
- Sample handling, labeling, custody and shipping shall be in accordance with the procedures outlined in Sections 11.0-11.3.
- Decontaminate the stainless steel sampling equipment and/or mixing bowl prior to each use following the procedures outlined in Section 13.0.

11.0 SAMPLE HANDLING

Proper sample labeling, handling, packing and shipping will help ensure collected samples are accurate, secure and intact when they arrive at the laboratory for analysis.

11.1 Sample Labeling

Proper labeling is required to prevent sample misidentification of samples collected in the field and will be performed using the procedures detailed below.

Procedure

- Affix a non-removable (when wet) label to each sample container.
- Cover the label with 2-inch cellophane or mylar tape.
- Write the following information on the label with a permanent waterproof marker:
    - Site Name
    - Sample Identification Code
    - Project Number
    - Date/Time
    - Sampler's Initials
    - Sample Preservative
    - Analysis Required
- Each sample of each matrix will be assigned a unique alpha-numeric identification code consisting of four (4) sequential components: (1) project site code, (2) sample location, (3) sample matrix, and (4) sample type. Each of these components is defined below:
    - Project Site Code: YCS (Youngstown Cold Storage)
    - Sample Location:

      Monitoring Well Designation: MW#XX
# = Well Number
XX = Well Type:OB – Overburden

      Micro-Well Designation: Micro#
= Well Number

      Soil Probe Designation: SP#D
# = Soil Probe Number
D= Depth Interval: D02 = 0-2 feet
D24 = 2-4 feet
D46 = 4-6 feet, etc.

Test Boring Designation: TB#D

= Test Boring Number

D = Depth Interval: D02 = 0 – 2 feet

D24 = 2 – 4 feet

D46 = 4 – 6 feet, etc.

Test Pit Designation: TP#D

= Test Pit Number

D = Depth Interval: D02 = 0 – 2 feet

D24 = 2 – 4 feet

D46 = 4 – 6 feet, etc.

Surface Soil Sample Designation: SS#

= Sample Number

Elevator Shaft Sample Designation: ES#

= Sample Number

- Sample Matrix:
  GW = Groundwater
  SW = Standing Water
  WW = Waste Water
  S = Soil
  SED = Sediment
  SLD = Sludge

- Sample Type:
  O – Original
  FD – Field Duplicate
  MS – Matrix Spike
  MSD – Matrix Spike Duplicate
  MD – Matrix Duplicate
  TB – Trip Blank
  RB – Rinseate Blank

1. Examples of this code are provided below

- YCS-Micro4-GW-O
  YCS = Youngstown Cold Storage
  MW4 = Micro-Well No. 4
  GW = Groundwater Sample
  O = Original

- YCS-TB5-D46-S-O
  YCS = Youngstown Cold Storage

TB5-D46 = Test Boring No. 5 (4-6 foot depth)
S = Soil Sample
O = Original

- YCS-ES2-SLD-O
  YCS = Youngstown Cold Storage
  ES2 = Elevator Shaft Sample No. 2
  SW = Standing Water
  O = Original

11.2 Chain-Of-Custody

The documentation of sample collection and the method used to standardize the action is referred to as a chain-of-custody (COC). The COC is a legally defensible document that may be utilized as evidence in litigation or administrative hearings by regulatory agencies. The COC procedure is based on the American Standards and Testing Materials (ASTM) Standard Guide for Sampling Chain-of-Custody Procedures (ASTM D 4840-99).

Procedure

COC procedures are essential for the presentation of sample analytical chemistry in the form of an analytical report. Proper COC procedure will minimize the loss or misidentification of samples and may ensure unauthorized persons do not tamper with collected samples.

- The COC should be filled out with all relevant information in the appropriate space on the form. Information required at a minimum:
    - Site Name;
    - Sample Identification;
    - Project Number;
    - Date And Time;
    - Sampler's Signature,
    - Sample Preservation; And
    - Required Analysis.
- COCs should be completed in indelible ink.
- The COC is typically a carbon copy, which requires the preparer to apply sufficient pressure to mark all other pages.
- The top copy, usually a white original, should be sent to the laboratory with the samples.
- The preparer should retain the bottom copy, and any other carbon copies should be sent to the laboratory with the samples.

- The top copy of the COC should be placed in a zip-type plastic bag and placed in the cooler along with the samples and sealed according to the procedure outlined in next section.

11.3 Sample Shipping

The proper shipping of samples will help ensure sample security, by limiting access, integrity, by avoiding breakage, and validity, by maintaining temperature conditions.

Procedure

- Place about three inches of cushioning material in the bottom of the cooler.
- Place bottles in the cooler with VOA vials in the center of the cooler within zip-type bags.
- Separate bottles from one-another with cardboard or bubble-wrap plastic.
- Pack top of bottles with ice in plastic zip-type bags. Ice should originate from a potable water source.
- Place additional cushioning material in cooler as needed.
- Place COC in zip-type plastic bag inside cooler on to the top of packing material and sample bottles.
- Wrap cooler with strapping tape at two locations and secure lid, complete with two custody labels on the cooler.
- Be sure any drain plugs on cooler are closed and sealed with tape.
- Place "this side up" and "fragile" labels on cooler
- Samples should be shipped the same day they are collected to a New York State Department of Health (NYSDOH) ELAP-certified (Environmental Laboratory Approval Program) laboratory for analysis.

12.0 FIELD INSTRUMENTATION CALIBRATION

Numerous field instruments will be utilized during completion of the RI that require periodic calibration and routine maintenance in order to function properly.

Procedure

Calibration and maintenance procedures for the following field instruments are presented in Attachment B.

- MiniRAE 2000 Photoionization Detector (PID)
- Solinist Model 101Water Level Indicator
- Horiba U-10 Water Quality Meter
- Solinist Model 122 Oil-Water Interface Probe

The MiniRAE 2000 PID should be calibrated at the beginning of each day of use as well as in the event ambient air temperatures vary by 15 ° F from the time of initial calibration. Calibration of the PID should be recorded in the field logbook and the air monitoring form (found in the HASP). The Solinst water level meter and oil/water interface probe are factory calibrated and should not require any calibration as long as the probes remain clean. Decontamination of the meters should be recorded in the field logbook. The Horiba water quality meter will be calibrated at the beginning and end of each operating period. The initial, and any subsequent calibrations, should be documented in the field logbook.

13.0 SAMPLING EQUIPMENT DECONTAMINATION

Sampling methods and equipment have been chosen to minimize decontamination requirements and prevent the possibility of cross-contamination. All drilling and excavating equipment that comes in contact with soils will be decontaminated prior to each use at new locations. Special attention will be given to the drilling assembly, augers, and shovels. Split-spoons, soil probes and other non-disposable sampling equipment (e.g., mixing bowls, trowels, etc.) will be decontaminated prior to each use. Field instruments, such as the water level meter, and the field water quality meter will be decontaminated prior to use at new well locations, and will be triple rinsed prior to each use at a specific well location.

<u>Procedure</u>

Drilling and Excavating Equipment (e.g., direct-push probes, hollow-stem augers, shovels):

- Position equipment on heavy plastic sheeting.
- Manually remove foreign matter.
- Steam clean equipment and allow to air dry.
- Unless it is apparent that there may be contamination present, based upon visual and/or photoionic evidence, decontamination fluids will be allowed to infiltrate the ground surface of the site.
- Should evidence of contamination be observed, decontamination fluids will be contained for characterization and proper future management in accordance with Section 17.0.

Non-Disposable Sampling Equipment (e.g., split-spoons, stainless steel mixing bowls, etc.) and field instruments (e.g., water level meter and field water quality meter):

- Position equipment on plastic sheeting or within wash tub or bucket.
- Manually remove foreign matter.
- Wash equipment with brushes in an alconox or liquinox and potable water mixture.
- Triple rinse with deionized water.
- Allow equipment to air dry.

14.0 MANAGEMENT OF INVESTIGATION-DERIVED WASTE

This section addresses the minimization and management of investigation-derived waste generated as a result of subsurface investigation activities. Wastes expected to be generated include expendable sampling-related equipment, soil and/or fill removed during test pitting, soil probe advancement, auger cuttings from test boring and well drilling, well development and purge water, and decontamination fluids.

Efforts will be made by the field team to minimize the quantity of waste generated by re-using expendable sampling equipment whenever possible, by purging only the quantity of well water necessary, and by using the least amount of decontamination fluids practicable. The field team will also attempt to minimize the quantity of waste generated by segregating clean materials from potentially contaminated materials.

It is anticipated that most waste generated during excavating, drilling and sampling activities will not require containment. All decontamination water, surplus geologic material and auger cuttings will be returned to the test pit, soil probe and test boring from which they originated, or spread on the ground surface within the interior of the site if:

- Free product is not observed; and
- Direct TOV readings are below 5 ppm.

Similarly, development and purge water will be discharged to the ground surface within the interior of the site if:

- Free product is not observed on the water; and
- TOV readings from above the water are below 5 ppm.

If containment is required, excess soil materials will be placed on and covered with polyethylene sheeting in a central portion of the site. Surplus water will be placed into 55-gallon drums and staged in a central portion of the site. Analytical testing and off-site disposal will be completed by the Village of Youngstown. Soils from test pit excavations will be returned to the excavation in the same general order as it was excavated.

TABLES

Table 1
Sampling/Analysis Summary

RI/AA of the Youngstown Cold Storage Site

Village of Youngstown, New York

			Sample Type and Number						
Parameter	Method	Source	Samples	Field Duplicates	MS	MSD	Rinseate Blanks	Trip Blanks	Total Samples
Water Samples									
TCL VOCs	ASP 2000	Micro-Wells/Elevator Shafts	5	1	1	1	-	1	9
TCL SVOCS	ASP 2000	Micro-Wells/Elevator Shafts	5	1	1	1	-	-	8
TCL PCBs/Pest	ASP 2000	Micro-Wells/Elevator Shafts	5	1	1	1	-	-	8
TCL Herbs	ASP 2000	Micro-Wells/Elevator Shafts	5	1	1	1	-	-	8
TAL Metals	ASP 2000	Micro-Wells/Elevator Shafts	5	1	1	1	-	-	8
Subsurface Soil									
TCL VOCs	ASP 2000	Test Pits/Soil Probes	7	-	1	1	1	-	10
TCL SVOCs	ASP 2000	Test Pits/Soil Probes	7	-	1	1	1	-	10
TCL PCBs/Pest	ASP 2000	Test Pits/Soil Probes	7	-	1	1	1	-	10
TCL Herbs	ASP 2000	Test Pits/Soil Probes	7	-	1	1	1	-	10
TAL Metals	ASP 2000	Test Pits/Soil Probes	7	-	1	1	1	-	10
Surface Soil									
TCL SVOCs	ASP 2000	Grab Samples (8 On-site, 5 Background)	13	-	1	1	1	-	16
TCL PCBs/Pest	ASP 2000	Grab Samples (8 On-site, 5 Background)	13	-	1	1	1	-	16
TCL Herbs	ASP 2000	Grab Samples (8 On-site, 5 Background)	13	-	1	1	1	-	16
TAL Metals	ASP 2000	Grab Samples (8 On-site, 5 Background)	13	-	1	1	1	-	16
Sewer Sediments									
TCL VOCs	ASP 2000	Sewers, if Present	2	-	-	-	-	-	2
TCL SVOCs	ASP 2000	Sewers, if Present	2	-	-	-	-	-	2
TCL PCBs/Pest	ASP 2000	Sewers, if Present	2	-	-	-	-	-	2
TCL Herbs	ASP 2000	Sewers, if Present	2	-	-	-	-	-	2
TAL Metals	ASP 2000	Sewers, if Present	2	-	-	-	-	-	2
Building Samples									
Pesticides/Arsenic	ASP 2000	Wood Floor	2	-	-	-	-	-	2
PCBs	Wipe	Floor/Equipment	4	-	-	-	-	-	4

Table 2
Summary of Requirements for Sample Containers, Preservation and Holding Times for Sampling/Analysis Program

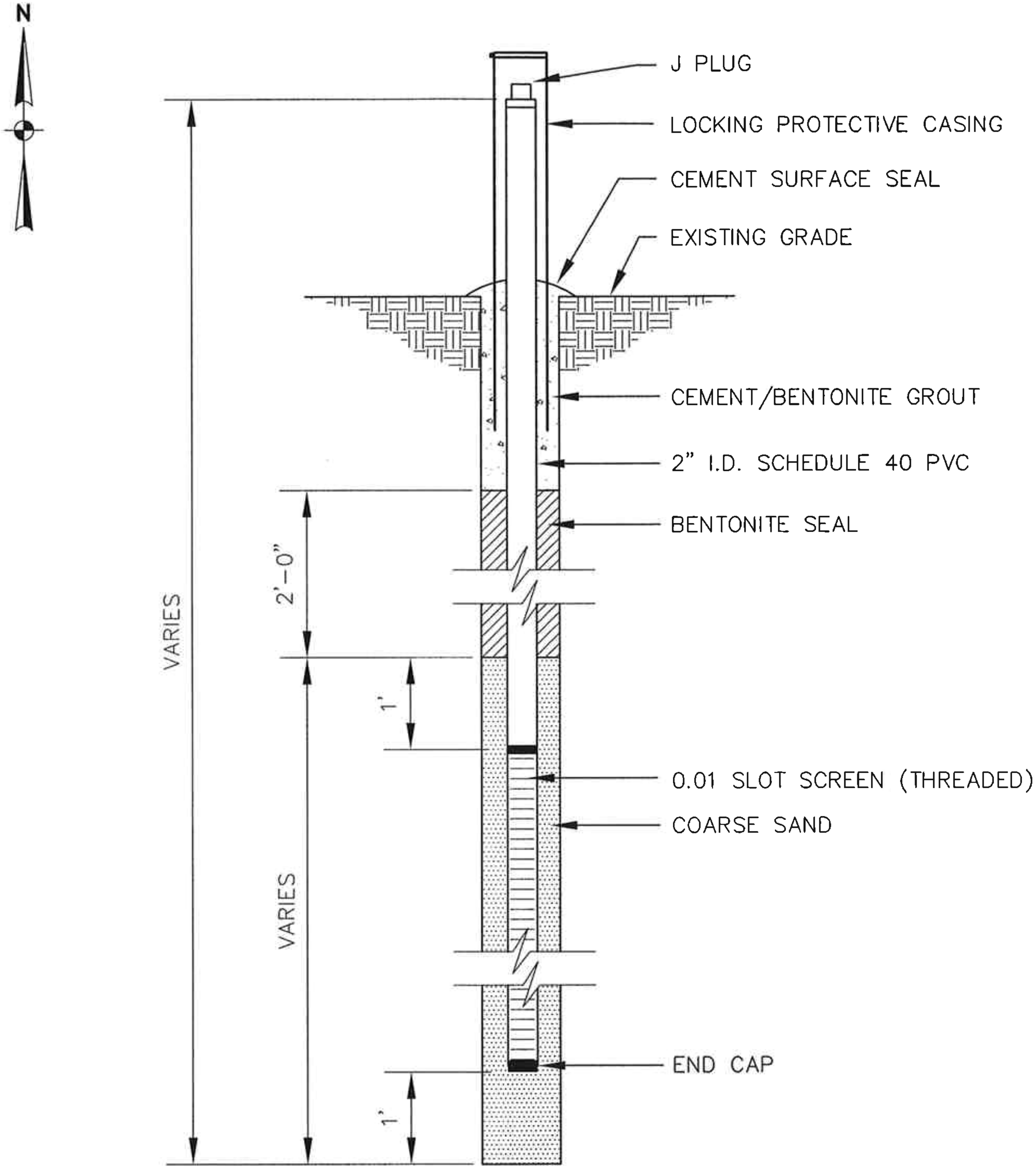
RI/AA of the Youngstown Cold Storage Site

Village of Youngstown, New York

			Sample						
Parameter	Method [1]	Source	Containers	Size	Amount	Type [2]	Lid	Preservation [3]	Hold Time [4]
Aqueous									
TCL Volatiles	ASP 2000	Micro Wells/Elevator Shafts	2	40 mL	40 mL	VOA	Septum	HCL	10 days
TCL Semi Volatiles	ASP 2000	Micro Wells/Elevator Shafts	2	1 L	1 L	Amber	Non-septum	-	5 days
TCL PCBs/Pesticides	ASP 2000	Micro Wells/Elevator Shafts	2	1 L	1 L	Amber	Non-septum	-	5 days
TCL Herbicides	ASP 2000	Micro Wells/Elevator Shafts	2	1 L	1 L	Amber	Non-septum	-	5 days
TAL Metals	ASP 2000	Micro Wells/Elevator Shafts	1	500 mL	500 mL	HDPE	HDPE	HNO_3 <pH 2	6 mos.
Soil/Sediments									
TCL Volatiles	ASP 2000	Test Pits / Soil Probes / Background / Surface / Sewers	2	4 oz.	5 grams	CWM	Non-septum	-	10 days
TCL Semi Volatiles	ASP 2000	Test Pits / Soil Probes / Background / Surface / Sewers	2	8 oz.	50 grams	CWM	Non-septum	-	5 days
TCL PCBs/Pesticides	ASP 2000	Test Pits / Soil Probes / Background / Surface / Sewers	2	8 oz.	50 grams	CWM	Non-septum	-	7 days
TCL Herbicides	ASP 2000	Test Pits / Soil Probes / Background / Surface / Sewers	2	8 oz.	50 grams	CWM	Non-septum	-	5 days
TAL Metals	ASP 2000	Test Pits / Soil Probes / Background / Surface / Sewers	2	8 oz.	30 grams	CWM	Non-septum	-	6 mos.
Building Samples									
Pesticides/Arsenic	ASP 2000	Wood Floor	2	8 oz.	50 grams	CWM	-	Non-septum	5 days/6 mos.
PCBs	Wipe	Floor/Equipment	1	2 oz.	1 wipe	AWM	-	Non-septum	5 days

1 NYSDEC Analytical Services Protocol (2000)
2 VOA = Volatile Organic Analysis Vial, HDPE = High Density Polyethylene, CWM = Clear Wide Mouth, AWM = Amber Wide Mouth
3 Cool Samples to 4 degrees celcius.
4 The holding time for mercury for both aqueous and soil/sediment samples is 26 days.

FIGURES



TYPICAL OVERBURDEN MONITORING WELL DETAIL

TVGA CONSULTANTS
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YOUNGSTOWN COLD STORAGE SITE
701 THIRD STREET EXTENSION
VILLAGE OF YOUNGSTOWN, NEW YORK
NIAGARA COUNTY

PROJECT NO. 2004.0279.03	SCALE: NTS	DATE: 10/12/05	FIGURE NO. 1

N:\2004.0279.03-Youngstown Cold Storage\CAD\104.dwg 10/14/2005 7:14:25 AM EDT

ATTACHMENT A

FIELD FORMS

SOIL PROBE LOG

TVGA CONSULTANTS

PROBE NO.

Project: Youngstown Cold Storage Site RI/AA	Project No. 2004.0279.03
Client: Village of Youngstown	GS Elev
Contractor:	WS Ref Elev

Groundwater Data (feet)				Equipment Data				
Date	Time	Depth	Elev		Casing	Sampler	Core	N-S Coord
								E-W Coord
				Type	Acetate	Macro Core		Start Date
				Diameter	1.75"	2.0"		Finish Date
				Weight				Driller
				Fall				Geologist J. Manzella

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct	Head
	5								
	10								
	15								
	20								
	25								
	30								

TVGA CONSULTANTS

TEST BORING LOG

BORING NO.

Project: Youngstown Cold Storage Site RI/AA
Client: Village of Youngstown
Contractor:

Project No. 2004.0279.03
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date
Finish Date
Driller
Geologist J. Manzella

Groundwater Data (feet)			
Date	Time	Depth	Elev

Equipment Data	Casing	Sampler	Core
Type	HSA	SS	
Diameter	4.25"	2.0"	
Weight		140 #	
Fall		30"	

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct	Head
	5								
	10								
	15								
	20								
	25								
	30								

TVGA
CONSULTANTS

INSPECTOR'S DAILY REPORT

JOB TITLE: ____________________ **DATE:** ____________________

TVGA JOB NO.: ____________________ **Day of Week: S M T W T F S**

CLIENT: ____________________ **I.R. No.:** ____________________

CONTRACTOR: ____________________ **Sheet No.** __________ **of** __________

Contractor Hours Worked:

VISITORS: ____________________ __________ **AM** __________ **PM**

____________________ **Inspector Hours Worked:**

____________________ __________ **AM** __________ **PM**

PHOTOS TAKEN: ____________________ **Weather:**

____________________ __________ **AM** __________ **PM**

Temperature:

__________ **AM** __________ **PM**

DESCRIPTION OF WORK PERFORMED AND INSPECTED

Specify for each operation: Item No., Sub-Contractor (if any), Location and Nature of Work

ITEM NO.	INTERIM QUANT.	FINAL QUANT.	EST. NO.	DESCRIPTION OF WORK

The above described work was incorporated into this project and was inspected by:

____________________ Reviewed by: ____________________

__________ Inspector's Signature

☐ **REVERSE SIDE USED FOR ADDITIONAL REMARKS AND SKETCHES.**

MANPOWER						EQUIPMENT				
TYPE	**PRIME**					**TYPE**	**PRIME**			
Foreman										
Operators										
Laborers										

TVGA CONSULTANTS

WELL SAMPLING LOG

HOLE NO:

Project Name: ______________________________
Project Location: ______________________________

Project No: ______________________
Date: ______________________
Screen Length: ______________________

Purge Information:

(1) Depth to Bottom of Well: __________________
(from TOC)

(2) Depth to Water: ____________________ ft
(from TOC)

(3) Column of Water: ______________________
(#1 - #2)

(4) Casing Diameter: __________________ in

(5) Volume Conversion: _________________gal/ft

(6) 1 Vol. of Well: ____________________ gal

Method of Purging: WaTerra/Bailer/Submersible/Other: ______________________________

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Vol Purged (gal)								
Time								
ORP/EH (MV)								
pH								
Cond. (MS/CM)								
Turb. (NTU)								
Salinity (%)								
D.O. (mg/l)								
Temp. (°C)								

Total Volume Purged: ______________________ gal Total Purge Time: __________________

Sampling Info:

Sample Method: __________________

No. of Bottles: ______________________

Sample Time: ________________________

Sample Analyses: ____

Comments: ____

____

____

Logged By:

TVGA CONSULTANTS

WELL DEVELOPMENT LOG

HOLE NO:

Project Name: ______________________________
Project Location: ______________________________

Project No: ______________________
Date: ______________________
Screen Length: ______________________

Purge Information:

(1) Depth to Bottom of Well: __________________
(from TOC)

(2) Depth to Water: __________________ ft
(from TOC)

(3) Column of Water: __________________
(#1 - #2)

(4) Casing Diameter: __________________ in

(5) Volume Conversion: __________________gal/ft

(6) 1 Vol. of Well: __________________ gal

Method of Purging: WaTerra/Bailer/Submersible/Other: ______________________________

Volume Conversion:

2" = 0.163   4" = 0.653   6" = 1.469   8" = 2.611   10" = 4.08

Field Analysis:

Vol Purged (gal)								
Time								
ORP/EH (MV)								
pH								
Cond. (MS/CM)								
Turb. (NTU)								
D.O. (mg/l)								
Salinity (%)								
Temp. (°C)								

Total Volume Purged: ______________________ gal   Total Purge Time: ______________________

Development Info:

Development Method: ____

Comments: ____

____

____

Logged By:

PIT NO:____________	TEST PIT LOG	TVGA CONSULTANTS

Project Name: ______________________________	Project No: ____________________
Project Location: ____________________________	Date: ________________________

Description

Depth	
0	Surface:
1	
2	
3	
4	
5	
6	

Comments:

Location Sketch	Cross Section:
Geologist:	Operator:

TVGA CONSULTANTS

WELL INSTALLATION REPORT

Project Name ____________________
Project Number ____________________
Contractor ____________________
Date of Installation ____________________
Project Location ____________________

Geologist ____________________
Driller ____________________
Well No. ____________________
Boring No. ____________________
Sheet__of ____________________

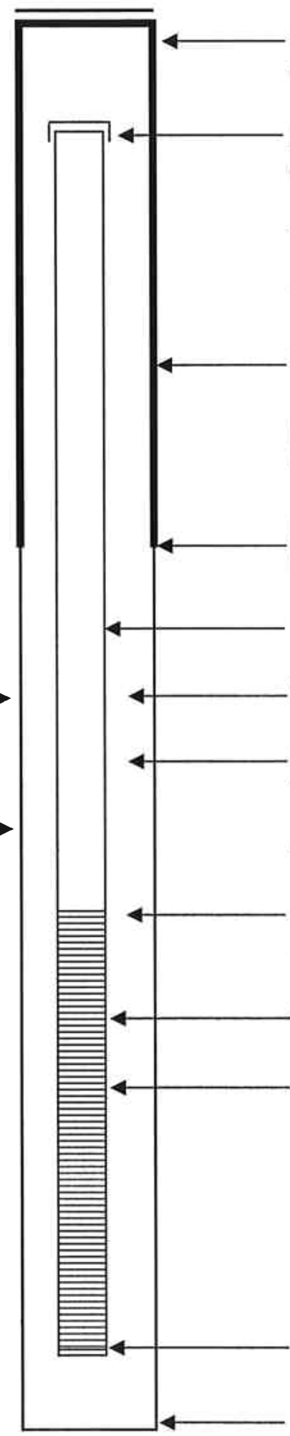
Lock No. _______

Survey Datum _______

Ground Elevation _______

_____ Top of Seal →

_____ Top of Sand →



Elevation/Stick up Above/Below Ground Surfae of Casing	____________________
Elevation/Stick up Above/Below Ground Surfae of Riser Pipe	____________________
Thickness of Surface Seal	____________________
Type of Surface Seal	____________________
Type of Protective Casing	____________________
Inside Diamater of Protective Casing	____________________
Elevation/Depth of Bottom of Protective Casing	____________________
Inside Diamter of Riser Pipe	____________________
Type of Backfill Around Riser	____________________
Diamter of Bore Hole Within Test Section	____________________
Type of Coupling	____________________
Elevation/Depth of Top of Screen	____________________
Type of Well Screen	____________________
Screen Slot Size	____________________
Diameter of Well Screen	____________________
Type of Backfill Around Well Screen	____________________
Elevation/Depth of Bottom of Well Screen	____________________
Elevation/Depth of Bottom of Bore Hole	____________________

ATTACHMENT B

EQUIPMENT USAGE AND CALIBRATION PROCEDURES

Horiba U-10 Water Quality Meter

ACCURACY:

The Horiba U-10 Water Quality Meter measures six water quality parameters. Measurements can be made for pH, temperature, dissolved oxygen, conductivity, turbidity, and salinity. Operation in standard mode will allow resolution to the following units: 0.1 pH, 1 ° C for temperature, 0.1 mg/l for dissolved oxygen, 0.1 mS/cm for conductivity in 10-100 range, 10 NTU for turbidity and 0.1% for salinity. Operation in expanded mode, will allow resolution to the following units: 0.01 pH, 0.1 ° C temperature, 0.01 mg/l for dissolved oxygen, 0.01 mS/cm for conductivity in 10-100 range, 1 NTU for turbidity and 0.01% for salinity.

CALIBRATION:

Calibration is necessary for all parameters except temperature and salinity, which are factory, calibrated. Calibration for the remaining parameters is completed by filling the supplied beaker with the supplied standard solution approximately 2/3 full (to the line on the beaker) and placing the probe tip in the calibration beaker. Then, press the following keystrokes:

- Turn power **ON**,
- Press **MODE** key,
- Move cursor to AUTO,
- Press **ENTER,**
- Wait until calibration is complete. Display will briefly show "END" and then "MEAS," indicating unit is reading for measuring
- If auto-calibration errors are detected the display will show "Er", which requires re-calibrating the unit. Refer to the

Consult the operations manual or seek help from the manufacturer or supplier if calibration is unsuccessful or if two-point calibration is desired.

PROCEDURE:

1. Ensure that the wire and probe have been properly cleaned before use.
2. After calibration, turn unit on. When "MEAS" is visible on the LCD, the unit is ready.
3. Record water level meter and then place probe into monitoring well into water column.
4. Depress the **ENTER** button to measure parameters.
5. Record data on log form and/or well development form.
6. Follow on-screen commands to store data. Up to 20 measurements may be stored.
7. Remove wire and attached probe while cleaning tape by holding a damp paper towel or moist toilette on the tape.
8. Decon wire and probe according to decon procedures prior to taking measurements in other monitoring wells.

MAINTENANCE:

The Horiba U-10 main unit is water-resistant and requires little maintenance other than frequent cleaning with non-abrasive soap.

MiniRAE 2000 Photoionization Detector

ACCURACY:

The useful range of the instrument is from 0 to 2000 ppm with an accuracy of +/- 2.0 ppm and > 2000 is +/- 20% if reading. Response time is less than three seconds to 10,000 ppm.

CALIBRATION:

The MiniRAE 2000 will be calibrated using a pressurized cylinder of "span" gas. The calibration gas will be in the same matrix in which the measurements will be taken. Prior to performing the span calibration, a fresh air calibration will be performed in a clean ambient air environment to determine the zero point of the sensor calibration curve.

Fresh Air Calibration

1. Press and hold down both the **[N/-]** and **[MODE]** keys for three seconds scroll down to the "Calibrate/select Gas" option and press **[Y/+]**.

2. The first menu item in this sub menu is the "Fresh air Cal", press **[Y/+]** to begin fresh air calibration. This will take approximately 15 seconds, after which the display will return to the "Fresh air Cal" sub menu. Press the **[MODE]** to return to the previous menu.

Span Calibration

1. Connect the calibration adapter to the inlet port of the MiniRAE 2000 Monitor, and connect the tube to the regulator or Tedlar bag.

2. Press the **[Y/+]** key when the "Span Cal?" option is highlighted.

3. The display will then show "Apply gas now!". Turn on the valve of the span gas supply. The calibration can be started manually by pressing any key while "Apply gas now!" is on the display.

4. The display will count down from 30 seconds, and when it reaches 0, the display shows the calibrated value.

5. The display will read "No Gas" if the gas was improperly attached or not turned on.

6. After a span calibration is completed, the display will show the message "Span Cal Done! Turn Off Gas".

7. Turn of the gas and disconnect the calibration adapter, and press any key to return to the "Span Gas Cal?" menu.

PROCEDURE:

1. Turn the unit on in a clean environment by pressing the **[MODE]** button, located under the display screen.

2. Once the unit has run through the start up menu, which it will do every time it is turned on, cycle through to the *Current battery voltage and shutdown voltage* display by pressing the **[MODE]** key until the menu appears. The battery is fully charged at 4.8 volts or higher, and when the voltage falls below 4.4 volts there will be 20-30 min of run time left and the unit will need to be recharged.

3. The MiniRAE supports two (2) operational modes: Survey mode for the manual start/stop of measurements and display of certain exposure values; Hygiene mode for automatic measurements, running and datalogging continuously and calculation of additional exposure values.

4. To operate in the Survey mode after checking the battery cycle back through the menu until **Ready** appears on the display screen. Press the **[Y/+]** to start the measurement cycle. The pump will start and the reading will be displayed.

5. To operate in the Hygiene mode, after checking the battery cycle through to the Survey, Site ID, and Gas Name menu option and press **[Y/+]**. The "Change Op Mode" will be the first sub-menu to appear, press **[Y/+]** when this display highlighted. The unit will display the current operational mode to switch modes press the **[N/-]** to toggle to other selections. Select the Hygiene mode then press the **[MODE]** key, if there has been a change to the existing setting "save?" will appear on the display screen. To accept the change press the **[Y/+]** key.

6. Once the desired mode has been selected place probe in the atmosphere to be monitored and record the reading.

MAINTENANCE:

1. If any of the following conditions occur, consult the troubleshooting guide provided in the instruction manual:

   - Can not turn on the power after charging the battery.
   - No LED or LCD backlight.
   - Reading abnormally high or low.
   - Inlet flow to low.
   - Full scale measurement in humid environment.
   - "Lamp" message during operation.
   - The "Bat" indicator display is on.

2. In the event the troubleshooting techniques fail to resolve the problem, then the unit may require servicing by the manufacturer or supplier.

- The light source window will require cleaning every four weeks during periods of continued use.
- The meter battery will be checked at the beginning and end of each day. If the voltage is 4.4 volts or less the unit will flash the "Bat" display and will have a run time of 20-30 min.

Solonist Model 122 Oil/Water Interface Probe

ACCURACY:

The Solonist Model 122 Oil/Water Interface Probe has English graduations in feet, 10ths of feet and 100ths of feet, therefore measurements should be made to the 100^{th} of a foot. The range of the measuring tape is 100 feet. The probe typically emits two different types of signals or tones; one for free product and one for water.

CALIBRATION:

No calibration is necessary as the unit is factory calibrated and all electronics are fully encapsulated to protect against water and mechanical damage.

PROCEDURE:

1. Ensure that the tape and probe have been properly cleaned before use.
2. Turn unit on, and then depress test button to check battery, sensitivity and audio signal.
3. Place tape guide on to the top of the well, loosen wheel tightening knob, place unit on ground. Slowly unwind tape into monitoring well until the first signal indicates the interface between air and free product has been reached. Note level on tape. Then continue to slowly lower the probe until the second signal indicates the interface between free product and water. Note level on tape. For each signal raise tape until beep stops and then lower again until beep is heard.
4. Note water level to the 100^{th} of a foot.
5. Wind tape onto wheel while cleaning tape by holding a damp paper towel or moist toilette on the tape.
6. Decon tape and probe according to decon procedures prior to taking measurements in other monitoring wells.

MAINTENANCE:

The Solonist Model 122 Oil/Water Interface Probe is constructed of a stainless steel probe and a polyethylene tape that require frequent cleaning with non abrasive soap.

Troubleshooting items are as follows:

- No audible response,
  - Turn unit on,
  - adjust sensitivity,
  - check and replace 9 volt battery, or
  - inspect tape for damage.

- Continuos audible response,
  - Clean probe tip to remove debris or water, or
  - inspect tape for damage.

- Tape will not unwind,.
    - loosen measuring wheel stopper, or
    - inspect tape for tangling or damage.

If these do not solve the problem, consult the operations manual or seek help from the manufacturer or supplier.

Solonist Model 101 Water Level Meter

ACCURACY:

The Solonist Model 101 Water Level Meter has English graduations in feet, 10ths of feet and 100ths of feet, therefore measurements should be made to the 100th of a foot. The range of the measuring tape is 100 feet.

CALIBRATION:

No calibration is necessary as the unit is factory calibrated and all electronics are fully encapsulated to protect against water and mechanical damage.

PROCEDURE:

1. Ensure that the tape and probe have been properly cleaned before use.
2. Turn unit on, and then depress test button to check battery, sensitivity and audio signal.
3. Place tape guide on to the top of the well, loosen wheel tightening knob, place unit on ground. Slowly unwind tape into monitoring well until an audible beep is heard. Note level on tape. Raise tape until beep stops and then lower again until beep is heard.
4. Note water level to the 100th of a foot.
5. Wind tape onto wheel while cleaning tape by holding a damp paper towel or moist toilette on the tape.
6. Decon tape and probe according to decon procedures prior to taking measurements in other monitoring wells.

MAINTENANCE:

The Solonist Model 101 Water Level Meter is constructed of a stainless steel probe and a polyethylene tape that require frequent cleaning with non abrasive soap.

Troubleshooting items are as follows:

- No audible response,
  - Turn unit on,
  - adjust sensitivity,
  - check and replace 9 volt battery, or
  - inspect tape for damage.

- Continuos audible response,
  - Clean probe tip to remove debris or water, or
  - inspect tape for damage.

- Tape will not unwind,.
  - loosen measuring wheel stopper, or
  - inspect tape for tangling or damage.

If these do not solve the problem, consult the operations manual or seek help from the manufacturer or supplier.

ATTACHMENT C

LOW FLOW PURGING AND SAMPLING PROCEDURES

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION I

LOW STRESS (low flow) PURGING AND SAMPLING PROCEDURE FOR THE COLLECTION OF GROUND WATER SAMPLES FROM MONITORING WELLS

July 30, 1996
Revision 2

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION I

LOW STRESS (low flow) PURGING AND SAMPLING PROCEDURE FOR THE COLLECTION OF GROUND WATER SAMPLES FROM MONITORING WELLS

I. SCOPE & APPLICATION

This standard operating procedure (SOP) provides a general framework for collecting ground water samples that are indicative of mobile organic and inorganic loads at ambient flow conditions (both the dissolved fraction and the fraction associated with mobile particulates). The SOP emphasizes the need to minimize stress by low water-level drawdowns, and low pumping rates (usually less than 1 liter/min) in order to collect samples with minimal alterations to water chemistry. This SOP is aimed primarily at sampling monitoring wells that can accept a submersible pump and have a screen, or open interval length of 10 feet or less (this is the most common situation). However, this procedure is flexible and can be used in a variety of well construction and ground-water yield situations. Samples thus obtained are suitable for analyses of ground water contaminants (volatile and semi-volatile organic analytes, pesticides, PCBs, metals and other inorganics), or other naturally occurring analytes.

This procedure does not address the collection of samples from wells containing light or dense non-aqueous phase liquids (LNAPLs and DNAPLs). For this the reader may wish to check: Cohen, R.M. and J.W. Mercer, 1993, DNAPL Site Evaluation; C.K. Smoley (CRC Press), Boca Raton, Florida and U.S. Environmental Protection Agency, 1992, RCRA Ground-Water Monitoring: Draft Technical Guidance; Washington, DC (EPA/530-R-93-001).

The screen, or open interval of the monitoring well should be optimally located (both laterally and vertically) to intercept existing contaminant plume(s) or along flowpaths of potential contaminant releases. It is presumed that the analytes of interest move (or potentially move) primarily through the more permeable zones within the screen, or open interval.

Use of trademark names does not imply endorsement by U.S.EPA but is intended only to assist in identification of a specific type of device.

Proper well construction and development cannot be overemphasized, since the use of installation techniques that are appropriate to the hydrogeologic setting often prevents "problem well" situations from occurring. It is also recommended that as part of development or redevelopment the well should be tested to determine the appropriate pumping rate to obtain stabilization of field indicator parameters with minimal drawdown in shortest amount of time. With this information field crews can then conduct purging and sampling in a more expeditious manner.

The mid-point of the saturated screen length (which should not exceed 10 feet) is used by convention as the location of the pump intake. However, significant chemical or permeability contrast(s) within the screen may require additional field work to determine the optimum vertical location(s) for the intake, and appropriate pumping rate(s) for purging and sampling more localized target zone(s). Primary flow zones (high(er) permealability and/or high(er) chemical concentrations) should be identified in wells with screen lengths longer than 10 feet, or in wells with open boreholes in bedrock. Targeting these zones for water sampling will help insure that the low stress procedure will not underestimate contaminant concentrations. The Sampling and Analysis Plan must provide clear instructions on how the pump intake depth(s) will be selected, and reason(s) for the depth(s) selected.

Stabilization of indicator field parameters is used to indicate that conditions are suitable for sampling to begin. Achievement of turbidity levels of less than 5 NTU and stable drawdowns of less than 0.3 feet, while desirable, are not mandatory. Sample collection may still take place provided the remaining criteria in this procedure are met. If after 4 hours of purging indicator field parameters have not stabilized, one of 3 optional courses of action may be taken: a) continue purging until stabilization is achieved, b) discontinue purging, do not collect any samples, and record in log book that stabilization could not be achieved (documentation must describe attempts to achieve stabilization) c) discontinue purging, collect samples and provide full explanation of attempts to achieve stabilization (note: there is a risk that the analytical data obtained, especially metals and strongly hydrophobic organic analytes, may not meet the sampling objectives).

Changes to this SOP should be proposed and discussed when the site Sampling and Analysis Plan is submitted for approval. Subsequent requests for modifications of an approved plan must include adequate technical justification for proposed changes. All changes and modifications must be approved before implementation in field.

II. EQUIPMENT

A. Extraction device

Adjustable rate, submersible pumps are preferred (for example, centrifugal or bladder pump constructed of stainless steel or

Teflon).

Adjustable rate, peristaltic pumps (suction) may be used with caution. Note that EPA guidance states: "Suction pumps are not recommended because they may cause degassing, pH modification, and loss of volatile compounds" (EPA/540/P-87/001, 1987, page 8.5-11).

The use of inertial pumps is discouraged. These devices frequently cause greater disturbance during purging and sampling and are less easily controlled than the pumps listed above. This can lead to sampling results that are adversely affected by purging and sampling operations, and a higher degree of data variability.

B. Tubing

Teflon or Teflon lined polyethylene tubing are preferred when sampling is to include VOCs, SVOCs, pesticides, PCBs and inorganics.

PVC, polypropylene or polyethylene tubing may be used when collecting samples for inorganics analyses. However, these materials should be used with caution when sampling for organics. If these materials are used, the equipment blank (which includes the tubing) data must show that these materials do not add contaminants to the sample.

Stainless steel tubing may be used when sampling for VOCs, SVOCs, pesticides, and PCBs. However, it should be used with caution when sampling for metals.

The use of 1/4 inch or 3/8 inch (inner diameter) tubing is preferred. This will help ensure the tubing remains liquid filled when operating at very low pumping rates.

Pharmaceutical grade (Pharmed) tubing should be used for the section around the rotor head of a peristaltic pump, to minimize gaseous diffusion.

C. Water level measuring device(s), capable of measuring to 0.01 foot accuracy (electronic "tape", pressure transducer). Recording pressure transducers, mounted above the pump, are especially helpful in tracking water levels during pumping operations, but their use must include check measurements with a water level "tape" at the start and end of each record.

D. Flow measurement supplies (e.g., graduated cylinder and stop watch).

E. Interface probe, if needed.

F. Power source (generator, nitrogen tank, etc.). If a gasoline generator is used, it must be located downwind and at least 30 feet from the well so that the exhaust fumes do not contaminate the samples.

G. Indicator field parameter monitoring instruments - pH, Eh, dissolved oxygen (DO), turbidity, specific conductance, and temperature. Use of a flow-through-cell is required when measuring all listed parameters, except turbidity. Standards to perform field calibration of instruments. Analytical methods are listed in 40 CFR 136, 40 CFR 141, and SW-846. For Eh measurements, follow manufacturer's instructions.

H. Decontamination supplies (for example, non-phosphate detergent, distilled/deionized water, isopropyl alcohol, etc.).

I. Logbook(s), and other forms (for example, well purging forms).

J. Sample Bottles.

K. Sample preservation supplies (as required by the analytical methods).

L. Sample tags or labels.

M. Well construction data, location map, field data from last sampling event.

N. Well keys.

O. Site specific Sample and Analysis Plan/Quality Assurance Project Plan.

P. PID or FID instrument (if appropriate) to detect VOCs for health and safety purposes, and provide qualitative field evaluations.

III. PRELIMINARY SITE ACTIVITIES

Check well for security damage or evidence of tampering, record pertinent observations.

Lay out sheet of clean polyethylene for monitoring and sampling equipment.

Remove well cap and immediately measure VOCs at the rim of the well with a PID or FID instrument and record the reading in the field logbook.

If the well casing does not have a reference point (usually a V-cut or indelible mark in the well casing), make one. Describe its location and record the date of the mark in the logbook.

A synoptic water level measurement round should be performed (in the shortest possible time) before any purging and sampling activities begin. It is recommended that water level depth (to 0.01 ft.) and total well depth (to 0.1 ft.) be measured the day before, in order to allow for re-settlement of any particulates in the water column. If measurement of total well depth is not made the day before, it should not be measured until after sampling of the well is complete. All measurements must be taken from the established referenced point. Care should be taken to minimize water column disturbance.

Check newly constructed wells for the presence of LNAPLs or DNAPLs before the initial sampling round. If none are encountered, subsequent check measurements with an interface probe are usually not needed unless analytical data or field head space information signal a worsening situation. Note: procedures for collection of LNAPL and DNAPL samples are not addressed in this SOP.

IV. PURGING AND SAMPLING PROCEDURE

Sampling wells in order of increasing chemical concentrations (known or anticipated) is preferred.

1. Install Pump

Lower pump, safety cable, tubing and electrical lines slowly (to minimize disturbance) into the well to the midpoint of the zone to be sampled. The Sampling and Analysis Plan should specify the sampling depth, or provide criteria for selection of intake depth for each well (see Section I). If possible keep the pump intake at least two feet above the bottom of the well, to minimize mobilization of particulates present in the bottom of the well. Collection of turbid free water samples may be especially difficult if there is two feet or less of standing water in the well.

2. Measure Water Level

Before starting pump, measure water level. If recording pressure transducer is used-initialize starting condition.

3. Purge Well

3a. Initial Low Stress Sampling Event

Start the pump at its lowest speed setting and slowly increase the speed until discharge occurs. Check water level. Adjust pump speed until there is little or no water level drawdown (less than 0.3 feet). If the minimal drawdown that can be achieved exceeds 0.3 feet but remains stable, continue purging until indicator field parameters stabilize.

Monitor and record water level and pumping rate every three to five minutes (or as appropriate) during purging. Record any pumping rate adjustments (both time and flow rate). Pumping rates should, as needed, be reduced to the minimum capabilities of the pump (for example, 0.1 - 0.4 l/min) to ensure stabilization of indicator parameters. Adjustments are best made in the first fifteen minutes of pumping in order to help minimize purging time. During pump start-up, drawdown may exceed the 0.3 feet target and then "recover" as pump flow adjustments are made. Purge volume calculations should utilize stabilized drawdown value, not the initial drawdown. Do not allow the water level to fall to the intake level (if the static water level is above the well screen, avoid lowering the water level into the screen). The final purge volume must be greater than the stabilized drawdown volume plus the extraction tubing volume.

Wells with low recharge rates may require the use of special pumps capable of attaining very low pumping rates (bladder, peristaltic), and/or the use of dedicated equipment. If the recharge rate of the well is lower than extraction rate capabilities of currently manufactured pumps and the well is essentially dewatered during purging, then 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 even though the indicator field parameters have not stabilized.

3b. Subsequent Low Stress Sampling Events

After synoptic water level measurement round, check intake depth and drawdown information from previous sampling event(s) for each well. Duplicate, to the extent practicable, the intake depth and extraction rate (use final pump dial setting information) from previous event(s). Perform purging operations as above.

4. Monitor Indicator Field Parameters

During well purging, monitor indicator field parameters (turbidity, temperature, specific conductance, pH, Eh, DO) every three to five minutes (or less frequently, if appropriate). Note: during the early phase of purging emphasis should be put on minimizing and stabilizing pumping stress, and recording those adjustments. Purging is considered complete and sampling may begin when all the above indicator field parameters have stabilized. Stabilization is considered to be achieved when three consecutive readings, taken at three (3) to five (5) minute intervals, are within the following limits:

turbidity (10% for values greater than 1 NTU),
DO (10%),
specific conductance (3%),
temperature (3%),
pH (± 0.1 unit),
ORP/Eh (± 10 millivolts).

All measurements, except turbidity, must be obtained using a flow-through-cell. Transparent flow-through-cells are preferred, because they allow field personnel to watch for particulate build-up within the cell. This build-up may affect indicator field parameter values measured within the cell and may also cause an underestimation of turbidity values measured after the cell. If the cell needs to be cleaned during purging operations, continue pumping and disconnect cell for cleaning, then reconnect after cleaning and continue monitoring activities.

The flow-through-cell must be designed in a way that prevents air bubble entrapment in the cell. When the pump is turned off or cycling on/off (when using a bladder pump), water in the cell must not drain out. Monitoring probes must be submerged in water at all times. If two flow-through-cells are used in series, the one containing the dissolved oxygen probe should come first (this parameter is most susceptible to error if air leaks into the system).

5. Collect Water Samples

Water samples for laboratory analyses must be collected before water has passed through the flow-through-cell (use a by-pass assembly or disconnect cell to obtain sample).

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 turbulence.

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. It is recommended that 1/4 inch or 3/8 inch (inside diameter) tubing be used to help insure that the sample tubing remains water filled. If the pump tubing is not completely filled to the sampling point, use one of the following procedures to collect samples: (1) add clamp, connector (Teflon or stainless steel) or valve to constrict sampling end of tubing; (2) insert small diameter Teflon tubing into water filled portion of pump tubing allowing the end to protrude beyond the end of the pump tubing, collect sample from small diameter tubing; (3) collect non-VOC samples first, then increase flow rate slightly until the water completely fills the tubing, collect sample and record new drawdown, flow rate and new indicator field parameter values.

Add preservative, as required by analytical methods, to samples immediately after they are collected if the sample containers are not pre-preserved. Check analytical methods (e.g. EPA SW-846, water supply, etc.) for additional information on preservation. Check pH for all samples requiring pH adjustment to assure proper pH value. For VOC samples, this will require that a test sample be collected during purging to determine the amount of preservative that needs to be added to the sample containers prior to sampling.

If determination of filtered metal concentrations is a sampling objective, collect filtered water samples using the same low flow procedures. The use of an in-line filter is required, and the filter size (0.45 um is commonly used) should be based on the sampling objective. Pre-rinse the filter with approximately 25 - 50 ml of ground water prior to sample collection. Preserve filtered water sample immediately. Note: filtered water samples are not an acceptable substitute for unfiltered samples when the monitoring objective is to obtain chemical concentrations of total mobile contaminants in ground water for human health risk calculations.

Label each sample as collected. Samples requiring cooling (volatile organics, cyanide, etc.) will be placed into a cooler with ice or refrigerant for delivery to the laboratory. Metal samples after acidification to a pH less than 2 do not need to be cooled.

6. Post Sampling Activities

If recording pressure transducer is used, remeasure water level with tape.

After collection of the samples, the pump tubing may either be dedicated to the well for resampling (by hanging the tubing inside the well), decontaminated, or properly discarded.

Before securing the well, measure and record the well depth (to 0.1 ft.), if not measured the day before purging began. Note: measurement of total well depth is optional after the initial low stress sampling event. However, it is recommended if the well has a "silting" problem or if confirmation of well identity is needed.

Secure the well.

V. DECONTAMINATION

Decontaminate sampling equipment prior to use in the first well and following sampling of each subsequent well. Pumps will not be removed between purging and sampling operations. The pump and tubing (including support cable and electrical wires which are in contact with the well) will be decontaminated by one of the procedures listed below.

Procedure 1

The decontaminating solutions can be pumped from either buckets or short PVC casing sections through the pump or the pump can be disassembled and flushed with the decontaminating solutions. It is recommended that detergent and isopropyl alcohol be used sparingly in the decontamination process and water flushing steps be extended to ensure that any sediment trapped in the pump is removed. The pump exterior and electrical wires must be rinsed with the decontaminating solutions, as well. The procedure is as follows:

Flush the equipment/pump with potable water.

Flush with non-phosphate detergent solution. If the solution is recycled, the solution must be changed periodically.

Flush with potable or distilled/deionized water to remove all of the detergent solution. If the water is recycled, the water must be changed periodically.

Flush with isopropyl alcohol (pesticide grade). If equipment blank data from the previous sampling event show that the level of contaminants is insignificant, then this step may be skipped.

Flush with distilled/deionized water. The final water rinse must not be recycled.

Procedure 2

Steam clean the outside of the submersible pump.

Pump hot potable water from the steam cleaner through the inside of the pump. This can be accomplished by placing the pump inside a three or four inch diameter PVC pipe with end cap. Hot water from the steam cleaner jet will be directed inside the PVC pipe and the pump exterior will be cleaned. The hot water from the steam cleaner will then be pumped from the PVC pipe through the pump and collected into another container. Note: additives or solutions should not be added to the steam cleaner.

Pump non-phosphate detergent solution through the inside of the pump. If the solution is recycled, the solution must be changed periodically.

Pump potable water through the inside of the pump to remove all of the detergent solution. If the solution is recycled, the solution must be changed periodically.

Pump distilled/deionized water through the pump. The final water rinse must not be recycled.

VI. FIELD QUALITY CONTROL

Quality control samples are required to verify that the sample collection and handling process has not compromised the quality of the ground water samples. All field quality control samples must be prepared the same as regular investigation samples with regard to sample volume, containers, and preservation. The following quality control samples shall be collected for each batch of samples (a batch may not exceed 20 samples). Trip blanks are required for the VOC samples at a frequency of one set per VOC sample cooler.

Field duplicate.

Matrix spike.

Matrix spike duplicate.

Equipment blank.

Trip blank (VOCs).

Temperature blank (one per sample cooler).

Equipment blank shall include the pump and the pump's tubing. If tubing is dedicated to the well, the equipment blank will only include the pump in subsequent sampling rounds.

Collect samples in order from wells with lowest contaminant concentration to highest concentration. Collect equipment blanks after sampling from contaminated wells and not after background wells.

Field duplicates are collected to determine precision of sampling procedure. For this procedure, collect duplicate for each analyte group in consecutive order (VOC original, VOC duplicate, SVOC original, SVOC duplicate, etc.).

If split samples are to be collected, collect split for each analyte group in consecutive order (VOC original, VOC split, etc.). Split sample should be as identical as possible to original sample.

All monitoring instrumentation shall be operated in accordance with EPA analytical methods and manufacturer's operating instructions. EPA analytical methods are listed in 40 CFR 136, 40 CFR 141, and SW-846 with exception of Eh, for which the manufacturer's instructions are to be followed. Instruments shall be calibrated at the beginning of each day. If a measurement falls outside the calibration range, the instrument should be re-calibrated so that all measurements fall within the calibration range. At the end of each day, check calibration to verify that instruments remained in calibration. Temperature measuring equipment, thermometers and thermistors, need not be calibrated to the above frequency. They should be checked for accuracy prior to field use according to EPA Methods and the manufacturer's instructions.

VII. FIELD LOGBOOK

A field log shall be kept to document all ground water field monitoring activities (see attached example matrix), and record all of the following:

Well identification.

Well depth, and measurement technique.

Static water level depth, date, time and measurement technique.

Presence and thickness of immiscible liquid (NAPL) layers and detection method.

Pumping rate, drawdown, indicator parameters values, and clock time, at the appropriate time intervals; calculated or measured total volume pumped.

Well sampling sequence and time of each sample collection.

Types of sample bottles used and sample identification numbers.

Preservatives used.

Parameters requested for analysis.

Field observations during sampling event.

Name of sample collector(s).

Weather conditions.

QA/QC data for field instruments.

Any problems encountered should be highlighted.

Description of all sampling equipment used, including trade names, model number, diameters, material composition, etc.

VIII. DATA REPORT

Data reports are to include laboratory analytical results, QA/QC information, and whatever field logbook information is needed to allow for a full evaluation of data useability.

EXAMPLE (Minimum Requirements)
Well PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Location (Site/Facility Name)______________________________ Depth to _______/________ of screen
Well Number______________ Date______________________________ (below MP) top bottom
Field Personnel____ Pump Intake at (ft. below MP)______________
Sampling Organization____ Purging Device; (pump type)______________
Identify MP____

Clock Time 24 HR	Water Depth below MP ft	Pump Dial[1]	Purge Rate ml/min	Cum. Volume Purged liters	Temp. °C	Spec. Cond.[2] µS/cm	pH	ORP/Eh[3] mv	DO mg/L	Turb-idity NTU	Comments

1. Pump dial setting (for example: hertz, cycles/min, etc).
2. µSiemens per cm(same as µmhos/cm)at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

APPENDIX B

QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) PLAN

REMEDIAL INVESTIGATION/ALTERNATIVES ANALYSIS (RI/AA) OF THE YOUNGSTOWN COLD STORAGE SITE (NYSDEC SITE NO. E93211) 701 THIRD STREET EXTENSION (NANCY PRICE DRIVE) VILLAGE OF YOUNGSTOWN NIAGARA COUNTY, NEW YORK

QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) PLAN

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2004.0279.03

JANUARY 2006

RI/AA OF THE YOUNGSTOWN COLD STORAGE SITE
(NYSDEC SITE NO. E932122)
701 THIRD STREET EXTENSION (NANCY PRICE DRIVE)
VILLAGE OF YOUNGSTOWN
NIAGARA COUNTY, NEW YORK

QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) PLAN

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1.0 INTRODUCTION

This Quality Assurance/Quality Control (QA/QC) Plan addresses the major QA/QC programs and procedures to be implemented during the RI/AA of the Youngstown Cold Storage site to ensure the quality and ultimate validity of the data generated as a result of the site investigation activities identified in the Work Plan and detailed in the Field Sampling Plan (FSP). The Work Plan contains a description of the project site, its history of use and occupancy, and a preliminary evaluation of potential areas of environmental concern, while the FSP provides a detailed description of the methods and equipment to be employed to collect and analyze environmental samples. The purpose of this QA/QC Plan is to establish the policies, organization, objectives, functional activities, and specific QA/QC activities required to ensure the quality of the field and laboratory data generated in association with the investigation of the project site.

2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

The organization of the project team and general responsibilities of each of its members are outlined in Section 6.0 of the Work Plan and illustrated in the organization chart presented therein. The following paragraphs detail the specific responsibilities relative to quality assurance of key members of the project team.

TVGA Project Manager

Responsible for project implementation and the commitment of the resources necessary to meet project objectives and requirements. The Project Manager's primary function is to ensure that technical, financial and scheduling objectives are achieved. The Project Manager will serve as the primary point of contact and control for matters concerning the project. Specific duties and functions of the Project Manger include, but are not limited to, the following:

- Define project objectives, including Data Quality Objectives (DQOs), and develop and implement a detailed work plan and schedule;
- Establish project policy and procedures to address the specific needs of the project as a whole, as well as the objectives of each task;
- Acquire and apply technical and corporate resources as needed to ensure performance within budget and schedule constraints;
- Inform all staff concerning the project's special considerations;
- Develop and meet ongoing project and/or task staffing requirements, including mechanisms to review and evaluate each task product;
- Review the work performed on each task to ensure its quality, responsiveness and timeliness;
- Review and analyze overall task performance with respect to planned requirements and authorizations;
- Oversee field and laboratory QA/QC programs to ensure compliance with the QA/QC Plan;

- Review results of performance and system audits and initiate, implement and document corrective actions;
- Approve all external reports (deliverables) before their submission to the client and/or regulatory agencies;
- Ultimately responsible for the preparation and quality of interim and final reports; and
- Represent the project team at meetings.

TVGA QA Officer

The QA Officer will remain independent of direct job involvement and routine, daily operations and will have direct access to corporate management as necessary to resolve any QA disputes. The QA Officer will be responsible for implementing the QA program in conformance with the demands of specific investigations, TVGA policies, and client requirements. Specific functions and duties include:

- Review and approval of QA policies and procedures;
- Conducting QA program training sessions for technical staff;
- Verification of compliance with corporate and project specific QA procedures and requirements;
- Conducting or supervising field and office audits and documenting results;
- Notifying the Project Manager of QA problems;
- Assist in corrective action selection and implementation;
- Documentation of corrective actions; and
- Review of external reports (project deliverables).

TVGA Remedial Investigation Team Leader

The RI Team Leader will be responsible for the implementation of the site characterization program, including the coordination and direct supervision of field personnel and subcontractors. Specific responsibilities include:

- Oversight of field operations;
- Provide on-site technical support to field personnel;
- Supervise proper implementation of procedures specified in the Field Sampling Plan;
- Ensure adherence to all field QA/QC protocols (e.g., sample collection, labeling, handling, packaging, and shipment; calibration of field instruments, field documentation, etc.);
- Recognize the need for, and implement necessary corrective actions during field operations;
- Ensure health and safety guidelines are followed to avoid compromising sample integrity;
- Validate field data on an ongoing basis;
- Serve as technical liaison with analytical laboratory; and
- Communicate QA problems to Project Manager and QA Officer and implement corrective actions as directed.

Laboratory Quality Assurance Manager

The selected analytical laboratory will provide a Laboratory QA Officer, whom is responsible for ensuring that all of the specific requirements of the quality assurance program are followed on a daily basis. Additional responsibilities are as follows:

- Develop and implement QA plan;
- Update the QA Plan on a regular basis (annually), or as often as necessary to ensure the generation of data which meets client requirements;
- Oversee the daily functions of the QA program to verify that all elements of the program are followed;
- Perform regular audits, both scheduled and unscheduled;
- Document variations from the QA program and notify the Laboratory Director and laboratory administration of variations and corrective actions taken;
- Develop, implement and oversee in-house QC program for alternate source reference standards;
- Evaluate data from in-house QC program and make recommendations to laboratory management for corrective actions;
- Prepare QC reports for specialty projects;
- Be knowledgeable of developments in industry standards and apply new procedures in QA/QC to the laboratory program;
- Audit subcontract laboratories and prepare reports to document compliance with equivalent QA/QC programs and standards; and
- Prepare and submit reports to the laboratory administration on the ongoing status of the laboratory QA/QC programs.

Data Validator

A qualified data validator will review and assess of the analytical data generated by the laboratory to determine the acceptability or validity of the data relative to stated project goals and requirements for usability. The data validator will be responsible for reviewing the data package with respect to completeness and compliance, and will complete a detailed evaluation of the validity of the data, the results of which are to be reported to the TVGA Project Manager and QA Officer.

3.0 QA OBJECTIVES FOR MEASUREMENT DATA

3.1 Data Quality Objectives

Data Quality Objectives (DQOs) are qualitative or quantitative statements that specify the quality of the data required from a data collection program to support the intended use of the data and associated decisions. Pursuant to the United States Environmental Protection Agency (USEPA) publication, *Data Quality Objectives Process for Hazardous*

Waste Site Investigations (2000), the project DQOs will be achieved utilizing the definitive data category. The analyses of samples will provide definitive data generated using rigorous analytical methods, such as reference methods approved by the NYSDEC and USEPA. A summary of the analytical methods to be utilized is presented in the FSP.

The site-specific DQOs for data collected during the site investigation are as follows:

- To characterize the site and determine the nature and extent of contamination occurring on or in soil, fill, groundwater, and surface water;
- To evaluate the potential risks to human health and the environment associated with current site conditions and potential future use scenarios;
- To identify, evaluate and select a long-term remedial action that is environmentally sound and cost-effective;
- To maintain the highest possible scientific/professional standards for each procedure; and,
- To assure the ultimate defensibility of the data generated.

3.2 Standard Criteria and Guidance Values

Data generated during the site investigation will be compared with the applicable Standard Criteria and Guidance Values (SCGs) that are protective of human health and the environment under current and future use scenarios. A preliminary listing of potentially relevant SCGs is provided below:

- Soil/Fill: NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046
- Surface Water, and Groundwater: NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1
- Building Floor and Equipment Surfaces: 40 CFR Part 761 – Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions

3.3 Data Quality Assessment

The USEPA specifies five major characteristics of data quality that must be addressed in environmental sampling and analytical projects. These include precision, accuracy, representativeness, comparability, and completeness. Specific QA objectives established for each of these parameters are identified and discussed below for chemical analytical data to be generated for the project.

Precision

A measurement of agreement among individual measurements of the same property under similar conditions. It is expressed in terms of relative percent difference (RPD) between replicates or in terms of the standard deviation. Precision may be affected by the natural variation of the matrix or contamination within that matrix, as well as by errors made in the field and/or laboratory handling procedures. Precision is evaluated using analyses of laboratory matrix spike/matrix spike duplicates and matrix duplicates, which not only exhibit sampling and analytical precision, but indicate precision through the reproducibility of the analytical results. The QA objective for precision is to comply with the RPD criteria specified for the New York State Department of Environmental Conservation (NYSDEC) Analytical Service Protocol (ASP) or USEPA methods to be employed for this project.

Accuracy

The degree of agreement of a measurement (or measurement average) with an accepted reference or true value. It is a measure of system bias, and is usually expressed as the difference of measured verses true values or as a percentage of the difference. Sources of error include the sampling process, field contamination, preservation, handling, sample matrix, sample preparation, and analytical techniques. Accuracy will be determined on the basis of blank sample analysis (e.g., equipment blanks, trip blanks, etc.) and surrogate recoveries from spiked samples. The QA objective for accuracy is to achieve the acceptable percent recovery criteria specified for the methods identified in the FSP.

Representativeness

Expresses the degree of accuracy and precision of data that represents a characteristic of a data population, process condition, a sampling point, or an environmental condition. It is a qualitative parameter that is most dependant on the proper design of the sampling program. Objectives for representativeness are defined for sampling and analysis tasks and are a function of the investigative objectives. The sampling procedures described in the FSP have been selected with the goal of obtaining representative samples for the media of concern.

Completeness

A measure of the amount of valid data obtained compared to the amount expected to be collected under normal conditions. It is usually expressed as a percentage. The QA objective for completeness is to collect and analyze all environmental samples in a manner such that valid data is obtained from 95 percent of the samples. Achievement of this objective will rely on the use of strict sample identification and custody procedures, use of standard reference materials, proper instrument calibration and maintenance, analysis of quality control samples, performance audits, and corrective action anytime QC acceptance criteria are exceeded.

Comparability

Expresses the confidence with which one data set can be compared to another. The objective for comparability is the generation of site characterization data that can be used to make valid comparisons with other data that may be generated in the future at this or other sites. This objective also involves the analysis of the environmental samples collected during the investigation in a manner that produces results comparable to the results that would be obtained by another laboratory using the same analytical procedure. This goal will be achieved through the application of standard techniques for sample collection and analysis, and the reporting of data in appropriate units. Complete field documentation using standardized data collection forms will support the assessment of comparability.

4.0 SAMPLING PROCEDURES

A detailed discussion of sampling activities for the project site is found in the FSP (Appendix A). The following considerations form the basis for the sampling program developed for the project site:

- Site background and history;
- Sampling objectives;
- Sample location and frequency;
- Sample designation;
- Sampling equipment and procedures; and
- Sample handling and analysis.

The sampling objectives, locations and frequency are based upon an evaluation of the data quality objectives discussed in Section 3.1. Sampling procedures are derived from standard protocols that are consistent with USEPA and NYSDEC methods of sample collection. A summary of the analytical parameters, number of samples, sample preservation, and holding times for the project is shown in the FSP.

5.0 SAMPLE CUSTODY

Sample custody is a vital aspect of the remedial investigation program. The samples must be traceable by chain-of-custody procedures from the time of sample collection until the time the data are utilized for any major decision. Evidence of sample collection, shipment, and laboratory receipt must be documented to accomplish this. Specific procedures regarding sample custody are described in Section 11.2 of the FSP.

6.0 CALIBRATION PROCEDURES

6.1 Field Instruments

Field instruments will be utilized for the real-time measurement of the chemical and/or physical characteristics of ambient air, groundwater, soil and fill. The instruments will also be utilized for health and safety monitoring during the field sampling program. The field instruments to be used will include the following:

- A photoionization detector (PID) – for measuring total organic vapors (TOVs);
- A personal dust monitor - for measuring airborne particulate levels;
- A water level meter – for measuring depths in monitoring wells;
- An oil/water interface probe – to determine levels of oil product in monitoring wells;
- A water quality meter - capable of measuring pH, temperature, conductivity, turbidity and salinity;

The procedures to be utilized to calibrate and maintain these instruments shall be in accordance with Section 12.0 of the FSP and/or the manufacturer's recommendations.

6.2 Laboratory Instruments

Calibration procedures, frequencies and standards for laboratory measurement variables and systems shall be in accordance with the applicable NYSDEC ASP methodologies. These procedures are part of the system audits outlined in the laboratory Quality Assurance Plan.

7.0 ANALYTICAL PROCEDURES

The FSP summarizes the laboratory methods to be employed for the chemical analysis of soil, fill, sediment, and groundwater samples generated during the site investigation. These analyses will be performed by a NYSDEC ELAP CLP accredited laboratory utilizing the applicable protocols and QA procedures required for the respective NYSDEC ASP and USEPA methods.

8.0 DATA REDUCTION, VALIDATION AND REPORTING

The following procedures summarize the practices to be utilized for the reduction, validation, and reporting of both field and laboratory data.

8.1 Field and Technical Data

Both objective (measurement) and subjective (description) data are subject to data validation. All data collection in the field shall be documented following the procedures detailed in Section 3.0 of the FSP. Objective data shall be validated at the time of collection (for example, triplicate measurements) as well as by the RI Team Leader to ensure that the correct codes and units have been included.

After data reduction into tabular or figure form, the objective data shall be reviewed for anomalous or inconsistent values by the RI Team Leader. Any anomalous or inconsistent data shall be resolved or clarified by evaluating the raw field data, equipment calibration logs, etc., and consultation with field personnel.

Subjective field and technical data shall be evaluated by the RI Team Leader for reasonableness and completeness. Whenever possible, peer review shall also be utilized in the data validation process in order to maximize consistency in data evaluation. Periodic field reviews of subjective data collection shall be conducted.

Data reduction, validation and reporting of engineering analysis and calculation data shall follow the procedures documented in TVGA's Standard Operating Procedure (SOP) for Engineering Analysis and Calculation Validation Procedures (Attachment A).

All validated field and technical data shall be reported in draft and final RI reports for review and comment.

8.2 Laboratory Data

For the full Target Compound List (TCL) of organic chemicals and the Target Analyte List (TAL) of metals analyses, NYSDEC ASP Category B deliverable requirements will be employed for the documentation and reporting of all the groundwater, soil/fill, sediment, and liquid sample data. The standard NYSDEC report forms will be completed by the analytical laboratory and included in the deliverable data packages. Data will also be reported in computer disk deliverable formats as specified in NYS ASP. Specific laboratory data reduction, review and reporting procedures are detailed in the laboratory Quality Assurance Plan, which can be made available upon request.

The validation of the laboratory data will be performed by a qualified data validator. Validation of 100 percent of the data will be performed in accordance with the NYSDEC Guidance for the Development of Data Usability Summary Reports. The data package will be reviewed for completeness and compliance relative to the criteria specified in the aforementioned NYSDEC document. The validation report will include a narrative summary discussing all quality issues and their impact on the reported results, and copies of laboratory case narratives.

9.0 INTERNAL QUALITY CONTROL

Internal QC checks are used to determine if analytical operations at the laboratory are in control, as well as the effect the sample matrix may have on the data being generated. Two types of internal checks are performed and are described as batch QC and matrix-specific QC procedures. The type and frequency of specific QC samples performed by the laboratory will be according to the specified analytical method and project specific requirements. Acceptable criteria and/or target ranges for these QC samples are presented within the procedures for the specific analytical methods used for the project samples.

QC results that vary from acceptable ranges shall result in the implementation of appropriate corrective measures, potential application of qualifiers, and/or an assessment of the impact these corrective measures have on the established data quality objectives. QC samples including any project-specific QC to be analyzed are discussed below.

9.1 Batch QC

Method Blanks

A method blank is defined as laboratory-distilled or deionized water that is carried through the entire analytical procedure. The method blank is used to determine the level of background contamination. Method blanks are analyzed at a frequency of one per analytical batch.

Matrix Spike Blank Samples

A matrix spike blank (MSB) sample is an aliquot of water that is spiked with all elements being analyzed for calculation of precision and accuracy to verify that the analysis that is being performed is in control. A MSB will be performed for each matrix and organic parameter only.

9.2 Matrix-Specific QC

Matrix Spike Samples

An aliquot of a matrix is spiked with known concentrations of specific compounds as stipulated by the methodology. The matrix spike (MS) and matrix spike duplicate (MSD) are subjected to the entire analytical procedure in order to assess both accuracy and precision of the method for the matrix by measuring the percent recovery and relative percent difference of the two spiked samples. The samples are used to assess matrix interference effects on the method, as well as to evaluate instrument performance. MS/MSDs are analyzed at a frequency of one each per 20 samples per matrix. MS/MSDs (and MS/MD for metals only) will be performed.

Matrix Duplicates

The matrix duplicate (MD) is two representative aliquots of the same sample which are prepared and analyzed identically. Collection of duplicate samples provides for the evaluation of precision both in the field and at the laboratory by comparing the analytical results of two samples taken from the same location. Obtaining duplicate samples from a soil matrix requires homogenization (except for volatile organic compounds) of the sample aliquot prior to filling sample containers in order to best achieve representative samples; however, due to interferences, lack of homogeneity, and the nature of the soil samples, the analytical results are not always reproducible. Duplicate samples are to be included at a frequency of one per 20 samples per matrix for metals only.

9.3 Additional QC

Rinseate (Equipment) Blanks

A rinseate or equipment blank is a sample of laboratory-demonstrated analyte-free water passed through and over the cleaned sampling equipment. An equipment blank is used to indicate potential contamination from ambient air and from sample instruments used to collect and transfer samples. This water must originate from one common source within the laboratory and must be the same water used by the laboratory performing the analysis. The equipment blank should be collected, transported, and analyzed in the same manner as the samples acquired that day. Equipment blanks for non-aqueous matrices should be performed at a rate of one per set of sampling equipment.

Trip Blanks

Trip blanks are not required for non-aqueous matrices, but are necessary for aqueous sampling events. They consist of a set of sample bottles filled at the laboratory with laboratory demonstrated analyte-free water. These samples then accompany the bottles that are prepared at the lab into the field and back to the laboratory, along with collected samples for analysis. These bottles are never opened in the field, and must be returned to the lab with the same set of bottles they accompanies into the field. Trip blanks will be analyzed for volatile organic compounds (VOCs) only at a frequency of one per VOC sample shipment.

Blind Field Duplicates

A blind field duplicate (BFD) is a duplicate sample collected from a given sampling location, the identity of which is documented by the sampling team but is not revealed to the laboratory. The BFD is subjected to the same analytical methods as the field sample of the same matrix collected from the same location. The data resulting from the analysis of the BFD are compared with those associated with the field sample from the same location to assess the data precision and to verify the reproducibility of the laboratory results. BFD samples are to be collected at a frequency of one per 20 samples per matrix.

10.0 PERFORMANCE AND SYSTEM AUDITS

Audits shall be performed to ascertain whether the QA/QC Plan is being correctly implemented, and to review and evaluate the adequacy of field and laboratory performance, where applicable. Performance audits are a quantitative evaluation of the laboratory's measurement systems, and are conducted by introducing control samples into the data production process. System audits are on-site qualitative inspections and reviews of the components and implementation of the quality assurance program, including field, laboratory and office aspects of the program, to verify compliance with the QA/QC Plan.

10.1 Field Audits

At least one unannounced field audit will be conducted during the field investigation program. Follow-up audits shall be conducted should inconsistencies or problems be identified. The audit, to be performed by the QA Officer or designated TVGA personnel, will assess the effectiveness of the QA program, identify non-conformances, and verify that identified deficiencies are corrected. At a minimum, the field audit shall evaluate:

- Project responsibilities and staffing;
- Health and safety provisions (e.g., personal protective equipment, air monitoring, etc.);
- Sample collection, handling and custody procedures;
- Sample identification;
- QC samples;
- Sample packaging and shipping procedures;
- Equipment calibration and decontamination procedures; and
- Field documentation; and
- Corrective action procedures.

The results of the field audit will be the basis for any corrective actions deemed appropriate.

10.2 Laboratory Audits

Internal and external laboratory performance and system audits will be conducted by the laboratory. The laboratory QA Plan (available upon request) describes the laboratory's program for internal performance audits. In addition to conducting internal reviews and audits, as part of its established quality assurance program, the laboratory is required to participate in regularly scheduled evaluations and audits administered by state and federal agencies. These external audits are performed as part of the certification process and to monitor the laboratory performance. The audits also provide an external quality assurance check of the laboratory and provide reviews and information on the management systems, personnel, standard operating procedures, and analytical measurement systems. Acceptable performance on evaluation samples and audits is required for certification and accreditation. The laboratory shall use the information provided from these audits to monitor and assess the quality of its performance.

10.3 Office Audits

Office audits may also be performed on files containing relevant project documentation. Project files are evaluated against internal document control procedures. Office audits are performed by the QA Officer on a random percentage of projects. For this project, random field logbooks and project files will be audited by the project QA Officer and the results will be presented in the monthly progress report.

11.0 PREVENTATIVE MAINTENANCE

Preventative maintenance of equipment is essential if project resources are to be used cost-effectively. Preventative maintenance will consist of two forms: (1) a schedule of routine preventative maintenance activities to minimize down-time and ensure accuracy of the measurement systems; and (2) availability of critical spare parts and backup systems and equipment. The preventative maintenance approach for specific pieces of equipment used in sampling, monitoring, and documentation will follow manufacturer specifications and good field and laboratory practices. Performance of these maintenance procedures will be documented in the field notebooks.

Field instruments, in general, will be maintained in accordance with manufacturer's recommendations. Support equipment, including safety devices, vehicles, etc., are also periodically inspected to maintain performance standards necessary for all site activities. Responsibilities for instrument maintenance activities of laboratory equipment, and appropriate schedules, are discussed in the laboratory QA Plan (available upon request).

12.0 DATA ASSESSMENT PROCEDURES

12.1 Precision

Precision is evaluated using analyses of a field duplicate and/or laboratory MS/MSD which not only exhibits sampling and analytical precision, but also indicates analytical precision through the reproducibility of the analytical results. Relative Percent Difference (RPD) is used to evaluate precision, and is calculated as follows:

$$RPD = \frac{|x_1 - x_2|}{\left[(x_1 + x_2)/2 \right]} \times 100$$

Where:

X_1 = Measured value of sample or matrix spike

X_2 = Measured value of duplicate or matrix spike duplicate

Precision will be determined through the use of MS/MSD (for organics) and ms/mp (for inorganics) analyses. RPD criteria for this project must meet the method requirements.

12.2 Accuracy

Accuracy is defined as the degree of difference between the measured or calculated value and the true value. The closer the numerical value of the measurement comes to the true value or actual concentration, the more accurate the measurement is. Analytical accuracy is expressed as the percent recovery of a compound or element that has been added to the environmental sample at known concentrations before analysis. Analytical accuracy may be assessed through the use of known and unknown QC samples and spiked samples. It is presented as percent recovery. Accuracy will be determined from matrix spike, matrix spike duplicate, and matrix spike blank samples, as well as from surrogate compounds added to the organic fractions (e.g., volatiles, semi-volatiles, PCBs), and is calculated as follows:

$$Accuracy(\%R) = \frac{(x_s - x_u)}{K} \times 100$$

Where: x_s = Measured value of the spiked sample;

x_u = Measured value of the unspiked sample; and

K = Known amount of spike in the sample.

Accuracies between 70 to 130 percent will be required for analytical results generated during this project.

12.3 Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the total amount expected to be obtained, and is calculated as follows:

$$Completeness(\%) = \frac{(x_v - x_n)}{N} \times 100$$

Where: x_v = Number of valid measurements;

x_n = Number of invalid measurements; and

N = Number of valid measurements expected to be obtained

The completeness goal for analytical results generated during the project is 95 percent.

13.0 CORRECTIVE ACTIONS

The Project Manager has the primary responsibility for initiating and implementing corrective action relative to field activities, while the analytical Laboratory Director is responsible for taking corrective action in the laboratory. It is their combined responsibility to see that all sampling and analytical procedures are followed as specified in applicable documents and that the data generated meet the prescribed acceptance criteria. Other project team members shall also be responsible for problem recognition and corrective actions within the context of their assigned tasks. Some potential incidents that would elicit corrective action, and the corresponding responses are outlined in the following subsections.

13.1 Field Incidents

During the field program, corrective action may be initiated by the Project Manager, RI Team Leader, Field Auditor, or the NYSDEC on-site representative. The need for corrective action may arise due to field audits or in the normal course of field operations. Typical corrective actions may include:

- Replacement of equipment, either in part or totally, due to malfunction;
- Recalibration of field instruments;
- Additional instruction of personnel in the proper procedures, whenever necessary;
- Discussion of any unique on-site problems in order to arrive at an appropriate solution;
- Correction of custody forms and field logs and notebooks when errors occur.

13.2 Laboratory Incidents

Laboratory corrective actions shall be implemented to resolve problems and restore proper function to the analytical system when errors, deficiencies, or out-of-control situations exist at the laboratory. Full documentation of the corrective action procedure needed to resolve the problem shall be filed in the project records, and the information summarized in the case narrative. The following subsections discuss potential laboratory corrective actions.

13.2.1 Incoming Samples

Problems noted during sample receipt shall be documented by the laboratory. The TVGA Project Manager shall be contacted immediately for problem resolution.

13.2.2 Sample Holding Times

If any sample extraction and/or analyses exceed method holding time requirements, the TVGA Project manager shall be notified immediately for problem resolution.

13.2.3 Instrument Calibration

Sample analysis shall not be allowed until all initial calibrations meet the appropriate requirements. All laboratory instrumentation must be calibrated in accordance with the method requirements. If any initial/continuing calibration standards exceed QC limits, recalibration must be performed and, if necessary, reanalysis of all affected samples back to the previous acceptable calibration check.

13.2.4 Reporting Limits

The laboratory must meet the required detection limits for each analytical method. If difficulties arise in achieving these limits due to a particular sample matrix, the laboratory must notify the TVGA Project Manager for problem resolution. In order to achieve those detection limits, the laboratory must utilize all appropriate cleanup procedures in an attempt to retain the required detection limits. When any sample requires a secondary dilution due to high levels of target analytes, the laboratory must document all initial analyses and secondary dilution results. Secondary dilution will be permitted only to bring target analytes within the linear range of calibration. If samples are analyzed at a secondary dilution with no target analytes detected, the TVGA Project Manager will be immediately notified so that appropriate corrective actions can be initiated.

13.2.5 Method QC

All QC, including blanks, matrix duplicates, matrix spikes, matrix spike duplicates, surrogate recoveries, matrix spike blank samples, and other method-specified QC samples, shall meet the method requirements. Failure of method-required QC will result in the review and possible qualification of all affected data. If the laboratory cannot find any errors, the affected samples shall be reanalyzed and/or re-extracted/re-digested, then reanalyzed within method-required holding times to verify the presence or absence of matrix effects. If matrix effect is confirmed, the corresponding data shall be flagged accordingly using the flagging symbols and criteria. If matrix effect is not confirmed, then the entire batch of samples may have to be reanalyzed and/or re-extracted/re-digested, then reanalyzed. TVGA shall be notified as soon as possible to discuss possible corrective actions should unusually difficult sample matrices be encountered.

13.2.6 Calculation of Errors

All analytical results must be reviewed systematically for accuracy prior to submittal. If upon data review, calculation and/or reporting errors exist, the laboratory will be required to reissue the analytical data report with the corrective actions appropriately documented in the case narrative.

13.3 Documentation

Immediate corrective actions taken in the field will be documented in the field logbook and approved by the RI Team Leader or Project Manager. Corrective actions that result in deviations from the work plan or QA/QC Plan should be documented in a memo to the Project Manager or QA Officer, who will ensure that the appropriate changes are incorporated in the final report. Corrective actions initiated as a result of the field audit must be thoroughly documented by the RI Team Leader and submitted to the QA Officer and Project Manager. All documentation shall be maintained in the project file.

The laboratory maintains a rigorous corrective action documentation system that includes corrective action memos and database change forms that are permanently filed in the sample delivery group file for future reference. The Laboratory Director and Lab QA Officer are notified in writing of all corrective actions taken. Furthermore, the laboratory will notify the TVGA Project Manager of all corrective actions that may have an impact on the quality of the data. A more detailed discussion of laboratory corrective action documentation procedures is presented in the laboratory QA Plan.

14.0 QUALITY ASSURANCE REPORTS

Periodically during the performance of this investigation, field and laboratory personnel will be required to report the performance of all measurement systems to management. Field personnel will report to the TVGA Project Manager or QA Officer. Laboratory personnel reporting requirements are discussed in the laboratory QA Plan.

The frequency of reporting will be daily or weekly as appropriate during the period of time that measurements are being made in the field and/or laboratory. Reporting of measurement system performance will generally be verbal. However, if a problem requiring corrective action is encountered, a formal written report will be prepared.

The results of the field audit as well as any office audits conducted during the course of the project will be formally recorded by, or on behalf of, the TVGA QA Officer and will be reported to the TVGA, NYSDEC Project Managers. The audit reports will summarize the results of the audit and will specifically identify any problems identified as well as the corresponding corrective actions.

The results of performance and system audits conducted by the laboratory are compiled by the Lab QA Officer and formally reported to the Lab Director. If a QC problem arises in the laboratory, the Laboratory Director will immediately contact the TVGA Project Manager to discuss an appropriate corrective action. Whenever a laboratory QA/QC problem requiring corrective action arises, the Laboratory Director will prepare a formal written report to document the nature of the QA/QC problem and the corrective action(s) taken to resolve the problem. This report will be submitted as soon as possible to the TVGA Project Manager.

Serious analytical or sampling problems will be reported to the NYSDEC Project Managers. The time and type of corrective action, if warranted, will depend on the severity of the problem and relative overall importance of the project. Corrective actions may include altering procedures in the field or modifying laboratory protocol. The NYSDEC will be consulted by the TVGA Project Manager prior to the selection and implementation of corrective actions that represent significant modifications to the RI/AA Work Plan or supporting technical plans.

ATTACHMENT A

SOP FOR ENGINEERING CALCULATIONS

STANDARD OPERATING PROCEDURE
ENGINEERING ANALYSIS AND CALCULATION VALIDATION PROCEDURE

All analysis and calculations activities shall be completely documented and the resulting documentation formally checked in accordance with the procedures detailed below:

General:

Calculations/drawings/logs/tables/etc. shall be performed on standard calculation paper whenever possible or applicable. All calculations/drawing pages shall be individually identified, with the exception of large computer output. Calculations/drawing paper will provide spaces for the originator's name and date of work, the checker's name and date, calculation subject, project number, and page number. All of this information shall be completed for each page. For extra pages, such as large graphs, this information shall also be included.

Calculations/drawing shall, as appropriate, include a statement of calculation intent, description of methodology used, assumptions and their justification, input data and equation references, numerical calculations including units, and results. Input data may include:

- Regulatory requirements
- Performance and operational requirements under various conditions
- Material, geological, environmental, and geotechnical requirements
- Results of field and laboratory testing or calculations
- Information obtained from external personnel or literature and site data surveys

Computer printout that becomes an integral part of the calculations shall be referenced in the calculations by run number or other unique means of identification.

Calculations:

Prior to any calculations, the following procedures will be followed:

A. Have experienced lead-person check design criteria for completeness and accuracy before design begins.

   1. Prepare checklists for various type projects to avoid omissions.

B. Require approval of basic design system before starting detailed calculations.

C. Set up standard design procedures and format for use as guide.

D. Establish format requirements for calculations.

   1. Must be neat and legible.

   2. List all design assumptions.

   3. List all formulae and define symbols.

   4. Group calculations for various portions of project.

Once all calculations have been completed, assignments for checking calculations will be made by the Project Manger. An individual with technical expertise in the calculation subject chosen will be chosen for checking purposes.

Drawings

The following procedures will be followed:

A. Require experienced lead-person to check basic system sketches and typical details for completeness and accuracy before placing on final drawings.

B. Require detailed check of all dimension and notes on drawings.

C. Require lead designer to check all schedules, design criteria, and typical details.

D. Require lead designer to review all drawings to verify that sections and details are labeled correctly.

E. Require lead designer to coordinate drawings with other disciplines' drawings for workability and conformity.

F. Require supervisor (principal, department head) to "review" all drawings for general check.

G. Prepare a form of standard "General Notes" as a guide to avoid omitting necessary criteria.

H. Once all drawings have been completed, the drawings will be checked by procedures similar to the calculations check.

Specifications

The following specification procedures will be followed:

A. Do not specify untried or untested materials without reasonable research.

B. Develop standard master guide specifications.

    1. Edit master copies for each particular project.

    2. Do not use specifications from similar or past projects.

C. Require lead designer to prepare technical sections for his/her portion of project.

Once specifications have been prepared, a complete technical review of the specifications will be completed prior to printing, using similar checking procedures.

APPENDIX C

HEALTH AND SAFETY PLAN (HASP)

REMEDIAL INVESTIGATION/ALTERNATIVES ANALYSIS (RI/AA) OF THE YOUNGSTOWN COLD STORAGE SITE (NYSDEC SITE NO. E932122) 701 THIRD STREET EXTENSION (NANCY PRICE DRIVE) VILLAGE OF YOUNGSTOWN NIAGARA COUNTY, NEW YORK

HEALTH AND SAFETY PLAN

Prepared for:

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Village Center
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2004.0279.03

JANUARY 2006

DISCLAIMER

This Health and Safety Plan has been written for the exclusive use of TVGA and its employees. Properly trained and experienced TVGA subcontractors may also use it as a guideline document. However, TVGA does not guarantee the health and safety of any person entering the site.

Due to the potentially hazardous nature of the site and the activity occurring thereon, it is not possible to discover, evaluate, and provide protection for all possible hazards that may be encountered. Strict adherence to the health and safety guidelines set forth herein will reduce, but not eliminate, the potential for injury at the site. The health and safety guidelines in this plan were prepared specifically for this site and should not be used on any other site without prior research by trained health and safety specialists.

TVGA claims no responsibility for the use of this Plan by others. The Plan is written for the specific site conditions, purpose, dates, and personnel specified and must be amended if these conditions change.

RI/AA OF THE YOUNGSTOWN COLD STORAGE SITE
(NYSDEC SITE NO. E932122)
701 THIRD STREET EXTENSION (NANCY PRICE DRIVE)
VILLAGE OF YOUNGSTOWN
NIAGARA COUNTY, NEW YORK

HEALTH AND SAFETY PLAN

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1.0 INTRODUCTION

TVGA Consultants, on behalf of the Village of Youngstown, will provide engineering and environmental services associated with the Remedial Investigation/Alternatives Analysis (RI/AA) program to be implemented at the Youngstown Cold Storage Site located at 701 Third Street Extension (Nancy Price Drive), Niagara County, Village of Youngstown, New York. The sources of environmental concern at this site include the potential presence surface and subsurface soil and/or groundwater contamination in connection with the former use of the project site for the storage, washing and packing of locally grown apples for over 80 years. Additionally, the dilapidated condition of the on-site buildings present a physical hazard.

This Health and Safety Plan (HASP) has been developed to govern all field investigation work at the former Flintkote Plant Site. This plan is intended to ensure that the procedures used during planned field investigation activities meet reasonable professional standards to protect human health and safety of workers and the surrounding community. This Plan incorporates, by reference, the applicable requirements of the Occupational Safety and Health Administration in 29 CFR Parts 1910 and 1926.

The requirements and guidelines in the HASP are based on a review of available site specific information and an evaluation of potential hazards. These requirements can and will be modified by Senior Level Management (SLM), the Project Team Leader (PTL), the Site Safety Officer (SSO) or the Work Party Personnel (WPP), if necessary.

All field personnel working on this project must familiarize themselves with this HASP and abide by its requirements. Since every potential health and safety hazard encountered at a site cannot be anticipated, it is imperative that personnel are equipped and trained to respond promptly to a variety of possible hazards. Adherence to this HASP will minimize the possibility that personnel at the site and the public will be injured or exposed to significant health hazards. Information on potential health, safety and environmental hazards is discussed in conjunction with appropriate protective measures including assignment of responsibility, personal protective equipment (PPE) requirements, work practices, and emergency response procedures.

In general, contractors and subcontractors are responsible for complying with the HASP, as well as all Federal, State and local regulations pertaining to their work. With TVGA's permission, a contractor should modify this HASP to address activities of their employees within the scope-of-work this Plan addresses. These changes to the HASP by the contractor must be approved by TVGA. TVGA personnel can and must stop work by a TVGA contractor who is not following the health and safety procedures required by this HASP. However, the contractor/subcontractor expressly retains all responsibility for the safety of their personnel while working on this site.

This HASP is specifically intended for those personnel who will be conducting activities within the defined scope of work in specified areas of the site. Specific tasks covered by this HASP may include, but are not limited to:

- Performing inspections to characterize environmental hazards;

- Conducting non-intrusive inspections and instrument surveys;
- Collecting samples from drains, sewers, and sumps;
- Excavating earthen materials, fill, debris, etc.;
- Collecting soil/fill samples from soil probes and test borings;
- Surface water/ sediment sampling;
- Installation and sampling of groundwater monitoring wells;
- Sampling of potentially contaminated building surfaces; and
- Decontaminating personnel and equipment.

2.0 KEY PERSONNEL

2.1 Off-Site Personnel

Title: Principal
Description: Responsible for defining project objectives, allocating resources, determining the chain of command, and evaluating program outcome.
Contact: Robert R. Napieralski, C.P.G., TVGA, (716) 655-8842

Title: Project Manager
Description: Reports to upper level management, has authority to direct response operations, assumes total control over site activities.
Contact: Daniel E. Riker, P.G.,TVGA, (716) 655-8842

2.2 On-Site Personnel

Title: Site Safety Officer
Description: Advises the field team on all aspects of health and safety issues, recommends stopping work if any operation threatens worker or public health and safety.
Contact: James C. Manzella, TVGA (716) 655-8842

Title: Project Team Leader
Description: Responsible for field team operations.
Contact: James C. Manzella, TVGA (716) 655-8842

Title: Work Party Personnel
Description: Performs field operations
Contact: TVGA personnel, Village of Youngstown personnel, and subcontractor personnel.

2.3 Personnel Responsibilities

The primary safety personnel include the Project Team Leader (PTL), the Site Safety Officer (SSO) and the Work Party Personnel (WPP). Additionally, Senior Level Management (SLM) has the responsibility to ensure all project personnel are aware of the requirements of the HASP. The SLM may also recommend policy changes on safety matters including work practices, training and response actions and will provide the necessary resources to conduct the project safely. The PTL is responsible for the implementation of the HASP. The PTL is also responsible for conducting the initial on-site training.

The SSO is responsible for the day-to-day implementation of the HASP. The SSO will assist the PTL in providing initial training for all project personnel and for providing additional training in the form of safety meeting to discuss changed site conditions or upgrade training on an as needed basis. The SSO is also responsible for daily calibration of real-time air monitoring equipment and will ensure that all personnel assigned to operate the instrumentation are properly trained in its use and maintenance.

The SSO has the following specific responsibilities:

- Assuring that a complete copy of this HASP is at the site prior the start of field activities and that all workers are familiar with the document;
- Conducting training and briefing sessions if appropriate, prior to the start of field activities at the site and repeat sessions as necessary;
- Ensuring the availability, use, and proper maintenance of specified personal protective, decontamination, and other health and safety equipment;
- Maintaining a high level of safety awareness among team members and communicating pertinent matters to them promptly;
- Assuring that all field activities are performed in a manner consistent with Company policy and the HASP;
- Monitoring for dangerous conditions during field activities;
- Assuring proper decontamination of personnel and equipment;
- Preparing all health and safety documentation;
- Coordinating with emergency response personnel and medical support facilities, and representatives of the NYSDEC;
- Initiating immediate corrective actions in the event of an emergency or unsafe condition;
- Notifying the SLM and PTL promptly of an emergency, unsafe condition, problem encountered, or significant exceptions to the requirements in this HASP;
- Recommending improved health and safety measures to the SLM, or the PTL.

The SSO has the authority to:

- Suspend field activities or otherwise limit exposures if the health and safety of any persons appears to be endangered;
- Direct Company or contractor personnel to alter work practices that are deemed not properly protective of human health of the environment; and
- Suspend an individual from field activities for significant infraction of the requirements in this HASP.

The WPP is responsible for providing air monitoring during intrusive activities at the site. The WPP is directly responsible to the SSO and will assist the SSO in the day-to-day implementation of the HASP.

Site personnel are responsible for following the requirements of the HASP. They should become thoroughly familiar with the requirements of exposures that may adversely affect the health and safety of on-site personnel, off-site population, or the environment.

3.0 SITE ENTRY

3.1 Objectives

The objectives of the site entry will initially focus on determining the nature and extent of contamination associated with environmental media and building surfaces and components. The investigation of subsurface conditions will be completed through the completion of test pits, soil probe advancement; hollow-stem auger drilling and spilt-spoon sampling; and groundwater monitoring well installation, development, and sampling. The investigation of surface conditions will be completed by collecting surface soil samples from suspect areas, and field screening of soils and fill with a photoionization detector (PID). Standing water samples will be collected from the two elevator shafts within the warehouse building. The investigation of building surfaces and components will include the collection of wipe samples from the compressor room of the warehouse building. Additionally, an asbestos-containing material (ACM) survey will be completed to evaluate the potential presence of ACMs on and within the project site structures.

A boundary survey of the project site will also be completed to enable the preparation of an accurate base map that will include locations of test pits, soil probes, test borings, monitoring wells, and other sample locations.

3.2 Safety Meetings

To ensure that the HASP is being followed, the Project Team Leader (PTL) shall conduct a safety meeting prior to initiating any site activity.

3.3 Safety Training

The SSO will confirm that every person assigned to a task has had adequate training for that task and that the training is up-to-date by checking with the TVGA Human Resources Office. TVGA and subcontractor personnel working on the site shall have a minimum of at least 24 hours of classroom-style health and safety training and 3 days of on-site training, as required by OSHA 29 CFR 1910.120. All training will have been conducted and certified in accordance with OSHA regulations outlined in 29 CFR 1910.120.

Personnel will be conducting an asbestos pre-demolition survey will be Environmental Protection Agency (EPA) and New York State Department of Labor (NYSDOL) certified asbestos inspectors. Asbestos technicians in New York State will be trained to comply with applicable provisions of 40 CFR Part 61 (NESHAPS) and Occupational Safety and Health Administration (OSHA) 29 CFR 1910.

3.4 Medical Surveillance

All TVGA and subcontractor personnel working on this investigatory project will have had a medical surveillance physical consistent with OSHA regulations in 29 CFR 1910.120, and performed by a qualified occupational health physician. The SSO shall confirm prior to initiation of work on this site that every person assigned to a task has had an annual physical, has passed the medical examination, and has been determined medically fit by the occupational health physician for this type of work.

3.5 Site Mapping

A map of the site showing all areas to be accessed during the environmental investigation is depicted on Figure 3 of the Work Plan. A map showing the route from the site to the nearest hospital has been included as Figure 1.

3.6 Meteorological Data

Fieldwork is expected to be completed between December 2005 and February 2006. Average temperatures for these months are expected to reach highs of approximately 35°F and lows of 15°F. Precipitation for these months is likely to be in the form of snow. Prior to each day's activities, the daily forecast should be monitored for indications of adverse work conditions.

4.0 HAZARD EVALUATION

4.1 Physical Hazards

Physical hazards such as the following may be encountered on site:

- Slippery surfaces - trip/fall
- Electrical - shock, fire
- Mechanical/Large Equipment - cuts, amputation, trauma
- Uneven Terrain/Excavations/Soil piles/Sink Holes - trip/fall
- Low/unstable overhead structures – cuts, trauma
- Floor holes – falls
- Little natural light – inability to see

Due to the potentially hazardous conditions resulting from an overall deterioration of the on-site structures, site personnel will abide by the buddy system. The buddy system is a method of maintaining safety by having a person in close proximity (i.e. ear shot) at all times while on-site. The buddy system provides an extra set of eyes and ears to foresee a hazard and to assist in the event of an emergency. Personnel activities in the site buildings will be limited to the sampling activities described in the Work Plan. There will be no loitering or lingering in the site buildings for any other reason.

The planned test pitting, soil probing and drilling investigations also presents hazards specific to working with heavy equipment. Personnel working on or around the drill rig or backhoe should be aware of the precautions listed below. The practices are meant to be guidelines, and are not all-inclusive of the safety measures necessary while performing intrusive activities.

Utility Clearance

Personnel involved in intrusive work shall determine the minimum distance from marked utilities which work can be conducted with the assistance of the locator line service.

- Elevated superstructures (e.g., drill rig, backhoe, scaffolding, ladders, cranes) shall remain a distance of 10 feet away from utility lines and 20 feet away from power lines.

- During all intrusive activities (e.g., drilling, excavating, probing), the locator line service should be contacted to mark underground lines before any work is started.

Drilling Safety

TVGA personnel working in the vicinity of drilling or direct-push soil probing rigs shall adhere to the following practices:

- The drilling site should be inspected before the start of work to identify unsafe conditions or operations that the subcontractor may not be aware of.

- TVGA personnel monitoring the drilling activity and inspecting the environmental samples will attend the contractor's daily safety briefing.

- Before the mast is raised, check for overhead obstructions.

- During freezing weather, do not touch any metal parts of the drill rig with exposed flesh. Freezing of moist skin to metal can occur almost instantaneously.

- Remind drill rig personnel of their responsibility to safely fill or cover any open borehole or excavation left unattended for any period of time.

- Personnel shall wear steel-toed shoes, safety glasses, hearing protection and hard hats during drilling operations.

- The area shall be roped off, marked or posted, to keep the area clear of pedestrian traffic or spectators.

- All personnel should be instructed in the use of the emergency kill switch on the drill rig.

Heavy Equipment Operations

Working around heavy equipment can be dangerous because of the size and power of the equipment, the limited field of vision of the operator and the noise levels that can be produced by the equipment. Heavy equipment to be utilized at the site may include drill rigs, trucks and backhoes.

To ensure the safety of TVGA personnel in the work area, the following safety procedures regarding heavy equipment must be reviewed prior to and followed during work activities:

- Personnel should never approach a piece of heavy equipment without the operators' acknowledgment and stoppage of work or yielding to the employee.

- Never walk under the load of a bucket or stand beside an opening truck bed.

- Maintain visual contact with the operator when in close proximity to the heavy equipment.

- Wear hearing protection while on or around heavy equipment, when normal conversation cannot be heard above work operations.

Steel-toed shoes, safety glasses, and a hard hat shall be worn for all work conducted near heavy equipment.

4.2 Chemical Hazards

Known and suspected sources of contamination include past spills and releases of chemicals and wastes used, generated and/or stored on-site; past discharges and spills of untreated process wastewater; leaking underground piping; past discharges and spills of fuel oil; PCB containing electrical equipment; and asbestos-containing building materials. Potential chemical hazards, which could be encountered during the site investigation, include, but are not limited to:

- Waste Petroleum
- Fuel Oil
- PCBs

- Pesticides
- Herbicides
- Metals
- Friable and Non-friable Asbestos
- Lead-Based Paint

4.3 Exposure Limits

Recommended Exposure Limits (RELs), and OSHA Permissible Exposure Limits (PELs) for several of the above chemical hazards are listed below. A complete list of the compounds detected on-site will be available upon completion of sampling and laboratory analysis. The RELs and PELs for the compounds listed below can be found in the NIOSH Guide to Chemical Hazards.

CHEMICAL	REL [1]	PEL [2]
Naphthalene	10 ppm	10 ppm
Benzene (CA)	0.1 ppm	1 ppm
Ethylbenzene	100 ppm	100 ppm
Toluene	100 ppm	200 ppm
Xylenes	100 ppm	100 ppm
Ammonia	25 ppm	50 ppm
Dieldrin	0.25 mg/m^3	0.25 mg/m^3
Polyaromatic Hydrocarbons (used oil and fuel oil)	0.2 mg/m^3	0.2 mg/m^3
Lead	0.1 mg/m^3	0.05 mg/m^3
Arsenic (CA)	0.002 mg/m^3 (15 minutes)	0.01 mg/m^3
Mercury	0.05 mg/m^3	0.1 mg/m^3
PCB (Aroclor 1254) [3]	0.001 mg/m^3	0.5 mg/m^3
Asbestos	0.1 $fiber/cm^2$	0.1 $fiber/cm^2$

1 REL = NIOSH recommended exposure limits, up to 10 hour work day exposure limit, 40 hours/week. REL in mg/m^3 = (REL in ppm x molecular weight) / 24.45.

2 PEL = OSHA permissible exposure limit, 8 hour exposure limit, 40 hours/week, OSHA 29 CFR 1910.1000. REL in mg/m^3 = (REL in ppm x molecular weight) / 24.45.

3 The NIOSH REL for Aroclor 1254 also applies to other PCBs, including Aroclor 1260, which was identified on-site.

OSHA = Occupational Safety and Health Agency

NIOSH = National Institute for Occupational Safety and Health

N.A. = no applicable value available

CA = NIOSH recommends the substance be treated as a potential human carcinogen

4.4 Dispersion Pathways

Potential exposure mechanisms that can transport particulate and organic compounds from the areas of investigation to other areas of the site as well as beyond the boundaries of the site are:

- Dust and asbestos fibers projected by wind
- Volatilization and wind transport of organic compounds
- Surface water runoff from contaminated areas
- Storm water flowing within the storm sewer system
- Groundwater flowing beneath the site
- Surface water flowing in Eighteenmile Creek

4.5 Potential IDLH and Other Dangerous Conditions

The Immediately Dangerous to Life and Health (IDLH) levels for chemicals potentially on-site and their IDLH level are listed below.

CHEMICAL	IDLH Level
Naphthalene	250 ppm
Benzene (CA)	500 ppm
Ethylbenzene	800 ppm
Toluene	500 ppm
Xylenes	900 ppm
Ammonia	300 ppm
Dieldrin	50 mg/m^3 (Ca)
Polyaromatic Hydrocarbons (used oil and fuel oil)	N.A.
Lead	100 mg/m^3
Arsenic (Ca)	5 mg/m^3
Mercury	10 mg/m^3
PCB (Aroclor 1254) [3]	5 mg/m^3
Asbestos	CA

N.A. = No IDLH assigned
CA = NIOSH recommends the substance be treated as a potential human carcinogen
N.D. = indicated IDLH has not yet been determined

The IDLH level is defined only for the purpose of respirator selection. The IDLH level represents a maximum concentration from which, in the event of respirator failure, one could escape within 30 minutes without experiencing any escape-impairing or irreversible health effects.

Visible indicators of potential IDLH conditions as well as other dangerous conditions are listed below.

- Confined spaces
- Unstable overhead structures
- Unusually colored solid or liquid wastes
- Containers or accumulation structures (e.g., drums, pits, sumps, etc.), the contents of which are unknown
- Potentially explosive or flammable situations indicated by bulging drums, gas generation, effervescence, or instrument readings
- Extremely hazardous materials such as cyanide, phosgene
- Visible vapor clouds
- Biological indicators such as dead animals, stressed vegetation

5.0 MONITORING AND ACTION LEVELS

5.1 Air Monitoring

The following environmental monitoring instruments and methods shall be used on site at the specified intervals.

Photoionization Detector (PID)

A PID shall be used continuously at the downwind perimeter of the work area, during sampling of soils and sediments and the installation of the test borings, and advancement of soil probes to monitor for volatile organic compounds. The PID shall be calibrated daily following manufacturers' recommendations (see Section 12.0 of the Field Sampling Plan). Readings and calibration data shall be recorded in daily logs by the SSO.

Temperature

Ambient temperature should be monitored throughout the work day for potential heat or cold stress conditions.

Dust

A personal dust monitor (MIE pDR-1000 or equal) will be used to monitor the upwind and downwind perimeters of the exclusion zone (work zone) for airborne particulate levels during excavation and subsurface drilling activities. The particulate meter shall be calibrated daily following the manufacturers' recommendations. Readings and calibration data shall be recorded in daily logs by the SSO.

5.2 Action Levels

Should action levels be encountered, work operations shall cease until further evaluation is performed and safe levels are prevalent. If through engineering controls and monitoring, safe levels (below action levels) cannot be achieved, an upgrade in personal protection equipment shall be mandated by the SSO, or operations shall cease in that portion of the site. The action levels for this project are as follows:

- Volatile organic compounds (PID monitor): consistent readings of greater than 5 ppm above background levels in the breathing zone.
- Temperature: ambient air temperature below 36°F for cold stress, and above 90°F for heat stress
- Dust: refer to the "New York State Department of Health Generic Community Air Monitoring Plan" (Attachment D).

Vapor Emission Response Plan

If the organic vapor level decreases below 5 ppm above background, work activities can resume. If the organic vapor levels are greater than 5 ppm over background but less than 25 ppm over background at the perimeter of the work area, activities can resume (while using the appropriate PPE) provided the organic vapor level 200 feet downwind of the work area or half the distance to the nearest residential or commercial structure, whichever is less, is below 5 ppm over background.

If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown. When work shutdown occurs, downwind air monitoring as directed by the SSO will be implemented to ensure that vapor emission does not impact the nearest residential or commercial structure at levels exceeding those specified in the Major Vapor Emission section.

Major Vapor Emission

If any organic levels greater than 5 ppm over background are identified 200 feet downwind from the work area or half the distance to the nearest residential or commercial property, whichever is less, all work activities must be halted.

If, following the cessation of the work activities, or as the result of an emergency, organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest residential or commercial property from the work area, then the air quality must be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20-Foot Zone).

If efforts to abate the emission source are unsuccessful and if levels greater than 5 ppm above background persist for more than 30 minutes in the 20-Foot Zone, then the Major Vapor Emission Response Plan shall automatically be placed into effect. The Major

Vapor Emission Response Plan shall be immediately placed into effect if organic vapor levels in the 20-Foot Zone are greater than 10 ppm above background.

Major Vapor Emission Response Plan

Upon activation, the following activities will be undertaken:

- All Emergency Response Contacts as listed in the HASP be contacted.
- The local police authorities will be immediately contacted by the SSO and advised of the situation.
- Frequent air monitoring will be conducted at 30 minute intervals within the 20-Foot Zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the Site Safety Officer.

6.0 SITE CONTROL MEASURES

Maintaining specific work zones both on-site and off-site, along with other precautionary measures outlined throughout this HASP will help control site access.

6.1 On-Site Control Measures

Temporary fencing or caution tape around the perimeter of the work areas will provide a suitable measure to control access to the work areas and to prevent unauthorized access to on-site work zones. During asbestos sampling by personal from asbestos survey subcontractor, no other persons are to be present in the vicinity of the sampling.

The SSO will establish and clearly mark the following areas with consultation of the PTL:

Exclusion Zone (EZ)

This will be the actual work area where potential contamination may exist. An outer boundary will be established and clearly marked. The area of the EZ will be established based on site work conditions, exposure monitoring, etc. In general, the EZ will incorporate the area being probed or drilled and a 50-foot radius around the area.

- Access to the EZ will be limited to employees and visitors who have a minimum 24-Hour Hazardous Site Worker training, protective equipment and responsibilities for work in the EZ. The entry of unauthorized personnel into the EZ will be prohibited.

- The Exclusion Zone will be in areas of intrusive activities such as drilling, installation of monitoring wells, excavating and sampling. The limits of the zone will change, as necessary, depending on the SSO's judgment regarding work conditions, air sampling, etc.

- Drilling or excavation activities inside the EZ will commence at Level D. Air monitoring will be performed while drilling or excavating proceeds using a photoionization detector (PID).

Contamination Reduction Zone (CRZ)

An area between the actual work site (EZ) and Support Zone (SZ) will be established to facilitate employee and equipment decontamination, protective equipment storage and supply, and employee rest areas.

- The location of the CRZ will be established in an area offering minimal contamination and will be subject to change based on the SSO's judgments considering work conditions, air monitoring, etc.

- The CRZ will contain a boot wash with brushes and soap, a source of wash water for washing equipment and hands, and plastic garbage bags to contain disposable protective equipment.

Support Zone (SZ)

An area free from contamination will be identified and clearly marked where administrative or other support functions (not requiring entrance to the EZ or CRZ) can be performed. The actual siting of the SZ will be established by the PTL and SSO by considering distance from the EZ, visibility, accessibility, air monitoring data, etc.

All personnel working in the study area will enter their names in a site log, which will be maintained in the SZ. Personnel will only enter an EZ after proceeding through a designated entry / checkpoint at the CRZ. Before engaging in any site work, all personnel involved in such work will be briefed on the following:

- Identity of PTL/SSO;
- Boundaries, exit and entry point locations of the Exclusion Zone;
- Decontamination procedures when required;
- Chemical, radiological and physical hazards suspected of being in the EZ and their signs and symptoms of exposure;
- Location of first aid equipment and qualified personnel;
- Procedures to be used in contacting emergency personnel, including potential site evacuation procedures in case of emergencies;
- Location of emergency equipment;
- Location of emergency meeting point;
- Contractor staff person in charge;
- Activities taking place that day;
- Location of emergency eyewash station;
- Heat or cold stress symptoms. All personnel will be advised to watch for signs of stress in staff working in EZ. Symptoms are defined in Attachment E;
- Personnel protective equipment requirements and limitations.

6.2 Restricted Access Areas

In addition to the on-site control measures described above, areas in the warehouse building in which the floor is sagging and/or the overlying floor has collapsed will be restricted. The majority of these areas were observed on the eastern halves of the second and third floors of the warehouse building.

6.3 Off-Site Control Measures

Although the majority of the site investigation activities will be conducted within the interior area of the project site, background surface soil samples will be collected from separate off-site locations. Residential properties and public roads may be adjacent to a few of the proposed sample locations. Accordingly, the following control measures will be instituted to protect the public from physical and chemical hazards associated with this off-site sampling:

- A localized contaminant reduction zone (CRZ) shall be established at the periphery of the EZ toward the site interior, if possible, to regulate flow of personnel and equipment into and out of the zone;
- Only properly trained and certified project personnel will be permitted to enter the CRZ and EZ; and
- The SSO or other member of the WPP will be present throughout the duration of sampling activities to monitor the work zone and prevent unauthorized parties from entry.

7.0 HAZARD COMMUNICATION

In compliance with 29 CFR 1910.1200, any hazardous materials brought on site by any personnel (TVGA or contractors) shall be accompanied with the material's MSDS. The SSO shall be responsible for maintaining the MSDS' on site, reviewing them for hazards that working personnel may be exposed to, and evaluating their use on site with respect to compatibility with other materials including personal protective equipment, and their hazards. Should the SSO deem the material too hazardous for use on site, the party responsible for bringing the material on site shall remove it from the site. No other hazardous materials are expected to be used during the environmental investigation at the site.

8.0 CONFINED SPACE ENTRY

No confined space entry by TVGA personnel is anticipated during the completion of this project. Should a potential confined space hazard exist, all proper confined space entry procedures, techniques, and equipment shall be consistent with OSHA regulations in 29 CFR 1910.146.

9.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

Based on evaluation of the potential hazards for the site, the initial levels of PPE have been designated as modified Level D for all site activities with the exception of asbestos sampling, which is addressed below. This consists of regular tyvek coveralls, hard hat, safety glasses, hearing protection, and chemical resistant gloves. No changes to the specified levels of PPE shall be made without the approval of the SSO and the PTL. If action levels are reached, work shall cease and further evaluations shall be performed by the SSO and advisors.

Modified Level D Protection

- Safety glasses with side shields;
- Chemical resistant gloves;
- Steel-toe and shank boots; and
- Hard hat;
- Tyvek coverall
- Neoprene or butyl rubber outer boots;

For the protection of site personnel, organic gas/vapor emissions will be continuously monitored during drilling operations, and the required level of protection upgraded if action levels warrant. If an upgrade in PPE is warranted, Level C Protection including full face air-purifying respirators with appropriate cartridges will be implemented. All asbestos sampling activities conducted by EPA and NYSDOL Certified Persons will be conducted under Level C Protection.

Level C Protection

Level C Protection, the maximum level likely to be needed at this site, includes the following;

- Full-face air purifying respirators with NIOSH/MSHA - approved high efficiency (HEPA) canisters for acid mists/organic vapors (half-face respirators may be substituted for certain tasks, by approval of the SSO);
- Chemical-resistant (Poly-Tyvek) clothing, one piece, long sleeved;
- Outer and inner gloves. Inner gloves to be tight-fitting latex or vinyl. Outer gloves of neoprene or nitrile;
- Steel-toe and shank boots (chemical resistant);
- Disposable Tyvek "booties";
- Neoprene or butyl rubber outer boots;
- Gloves and boots taped; and
- Hard hat

For all personnel that may be required to wear full-face respirators (all persons working near a borehole, for example, or collecting asbestos samples), only NIOSH/MSHA - approved respirators will be used. These will contain cartridges approved for removal of organic vapors/acid mists and particulate. All team members will be fit-tested for respirators. Due to possible difficulties in achieving a proper seal between face and mask, persons with facial hair will not be fitted for respirators, nor will they be allowed to work in areas requiring respiratory protection. Unless the SSO directs otherwise, when respirators are used, the cartridges should be replaced after eight hours of use, or at the end of each shift, or when any indication of breakthrough or excess resistance to breathing is detected.

Donning PPE

The following procedures should be followed when donning protective equipment.

- Inspect all equipment to ensure it is in good condition;
- Don protective suit and gather suit around waste;
- Put on outer boots over feet of the suit and tape at boot/suit junction;
- Don inner gloves;
- Don top half of protective suit and seal (as necessary);
- Don respirator protection (if necessary);
- Don outer gloves and tape at glove/suit junction (as necessary); and
- Have assistant check all closures and observe wearer to ensure fit and durability of protective gear.

10.0 DECONTAMINATION

Level C or higher PPE utilized during site operations warrants the institution of decontamination procedures. All asbestos sampling activities will be conducted in Level C protection.

Contaminated material must be either decontaminated or isolated immediately. All materials brought into the Exclusion Zone are presumed contaminated. Alconox and water shall be used as the decontamination solution. Decontamination equipment consisting of large wash tubs, scrub brushes, plastic sheeting, distilled water, plastic garbage bags, trash barrel, and respirator wipes will be used.

Protective clothing, especially reusable boots and gloves, will be decontaminated before leaving the Exclusion Zone by a thorough soap-and-water wash on the decontamination pad. Washing and rinsing solutions will be disposed on site in areas where test probes were excavated unless elevated levels are detected with a PID. If elevated levels are detected, it may be necessary to dispose of decon solutions in a drum or an approved containment tank. Solid waste materials (disposable gloves and garments, tape, plastic drop cloths, etc.) will be containerized for proper disposal. Personnel will be advised that all clothing worn under protective clothing (underwear, shirts, socks, trousers) on-site should be laundered separately from street clothing before redressing. If protective clothing is breached and personal clothing becomes contaminated, the personal clothing will be disposed.

Use of disposable sampling equipment will limit decontamination requirements. The need for widespread vehicle decontamination will be limited by keeping to a minimum the number of vehicles entering the Exclusion Zone. Vehicles leaving the Exclusion Zone must be decontaminated by high pressure and temperature water

Personal Decontamination

The following steps must be taken to decontaminate personnel leaving a Level B or C work area.

- Place equipment and sample containers that must be decontaminated on a plastic drop cloth;
- Place disposable supplies and equipment in a labeled drum;
- Scrub non-disposable gloves and outer boots (if used) with a brush in a detergent water, then rinse in clean water;
- Remove outer gloves and boot covers;
- Remove protective garments, safety boots and hard hat;
- Wash inner gloves;
- Remove and wash respiratory protection (if worn);
- Remove inner clothing (as necessary for Draft decontamination at end of shift);
- Thoroughly wash face, hands and body; and
- Redress.

Equipment Decontamination

Personnel must take the following steps to decontaminate equipment and sample containers leaving Level A, B, or C work areas:

- Don protective equipment at Modified Level D;
- Wash reusable equipment in detergent solution and/or an appropriate solvent, or steam clean;
- Dry sample containers, etc., with paper towels (if necessary) and place on a clean drop cloth;
- Remove and discard used respirator cartridges. Wash respirators in fresh detergent water, rinse in clean water, and disinfectant. Store in a closed plastic bag, away from sources of contamination; and
- Launder clothing before reuse (or place in appropriate labeled impervious containers for transport to laundry).

Organic vapor/HEPA cartridges are the appropriate canisters for use with the involved substances. All respirators used shall be NIOSH and/or MSHA approved and their use shall be consistent with OSHA regulations in 29 CFR 1910.134. All on-site personnel wearing a respirator shall have respirator clearance from a qualified occupational health physician. In addition, the respirator wearers on site shall perform qualitative fit tests to ensure proper fit of the face seal of the respirator. Filter cartridges used shall be of the same manufacturer as the respirator and shall be changed on a daily basis at a minimum and/or if breathing becomes difficult.

11.0 EMERGENCY PROCEDURES

Prior to entering the site, all personal will complete the attached emergency data sheet. On-site personnel will abide by the following emergency procedures.

- The SSO shall be notified of any on-site emergencies and be responsible for ensuring that the appropriate measures are followed.
- Non-emergencies will be treated on site, documented and the injured party will be directed to seek further medical attention.
- All occupational injuries and illnesses will be reported, recorded, and investigated.

11.1 Communication

The SSO will have a cellular-type telephone on-site at all times for direct outside communications with emergency response organizations. The SSO will also maintain communication with each WPP performing work inside the building through the use of two-way radios. All personnel involved in inspection or sampling activities within the building will be equipped with two-way radios and shall comply with buddy system requirements.

11.2 Personnel Injury

Upon notification of personnel injury the SSO will assess the nature of the injury. The appropriate first aid shall be initiated and, if necessary, contact shall be made for an ambulance and with the designated medical facility. If the injury increases the risk to others, activities on site will stop until the added risk is removed or minimized.

11.3 Fire/Explosion

Upon notification of fire or explosion, the designated emergency signal shall be sounded and all site personnel shall assemble at a safe distance upwind of the involved area. The SSO shall alert the appropriate fire department through the 911 emergency reporting system.

11.4 PPE Failure

If any site worker experiences a failure or alteration of PPE that affects the protection factor, that person and his or her buddy shall immediately exit the work area. Reentry and resuming work activities shall not be permitted until the equipment has been repaired or replaced.

11.5 Other Equipment Failure

If any equipment on site fails to operate properly, the Field Team Leader and the SSO shall be notified and will determine the effect of this failure on continuing operations on site. If the failure affects the safety of personnel or prevents completion of the remediation tasks, all personnel shall leave the work zone until the situation is evaluated and appropriate actions taken.

11.6 Spill Containment

Should a release of a chemical material occur on site, the SSO shall contain the spill to the extent immediately possible by the use of absorbent booms, pigs, pads, etc. The SSO shall contact appropriate spill response public departments (local or state) and a hazardous materials response contractor for further containment (refer to Section 12.0).

12.0 EMERGENCY MEDICAL CARE

12.1 Hospital

Name: Mount St Mary's Hospital
Address: 5300 Military Rd, Lewiston
Emergency Room #: (716) 297-4800
Directions from site: Head North on 3rd Street and proceed miles and turn right on to Lockport Street. Continue east on Lockport Street until the Robert Moses State Parkway interchange and enter the Parkway heading southbound. Continue heading southbound on the Parkway for approximately 5.5 miles and take the RT-104 W exit toward I-190 W / Buffalo. Turn slight right onto Lewiston Road / NY-104 and turn left onto NY-265 / Military Road, the hospital will be on the right. Estimated drive time is 12 minutes.

12.2 Emergency Notification Numbers

Fire Department: 911
Police Department: 911
Department of Emergency Services: 911

Niagara County Health Department, Environmental Division:
5467 Upper Mountain Rd., Suite 100, Lockport, NY14094
Environmental Health
439-7453

Niagara County Emergency Services:
5526 Niagara St. Ext., Box 496, Lockport, NY 14095-0496
438-3471
911 (24-Hour Emergency Number)

NYSDEC Spill Response Unit: (716) 851-7220
NYSDEC Spill Hotline: 800-457-7362
NYSDOH Division of Environmental Health Assessment: (716) 847-4502

13.0 STANDARD OPERATING PROCEDURES

- Restricted areas are not to be accessed
- Avoid unrestricted areas that seem questionable or unsafe
- Minimize contact with hazardous substances.
- Use remote sampling, handling, and/or container-opening techniques whenever possible.
- Protect monitoring and sampling instruments by bagging, if necessary.
- Wear disposable outer garments and use disposable equipment where appropriate.
- All PPE and skin surfaces should be checked for cuts and/or punctures.
- Do not eat, smoke, or drink within the exclusion or contamination reduction zones.
- Due to the potential for the absorption, inhalation, or ingestion of toxic substances, those personnel required to take prescription drugs should not enter this site until their medication program is reviewed and approved for site access by a qualified physician.
- All personnel must be familiar with Client's operating safety procedures.
- The buddy system must always be used and enforced.
- No workers with beards or heavy sideburns are allowed to wear respirators.
- Use of contact lenses is prohibited on site.
- All heavy equipment involved should be equipped with available back-up signals.
- Eating, drinking, chewing gum or tobacco, smoking, or any similar practice is prohibited
- Hands and face must be thoroughly washed upon leaving the Exclusion Zone
- Whenever decontamination procedures for outer garments are in effect, it is recommended that the entire body should be thoroughly washed, as soon as possible, after the protective garment is removed. Thorough showers are required of all personnel at the completion of the workday.
- No excessive facial hair, which interferes with a satisfactory fit of the mask-to-face seal, is allowed for personnel required to wear respiratory protective equipment.
- Medicine and alcohol can exaggerate the effects from exposure to toxic chemicals.
- Fluids will be provided to staff to replace perspiration and will be sealed in containers. All fluids for ingestion will be kept in the Support Zone.
- Due to the effects of protective outer wear decreasing body ventilation, there exists an increase in the potential for heat casualties.
- All field personnel should check for any personal habit, which may allow contaminated soil or water onto or into the body. Jewelry, including watches, shall not be worn within the Exclusion Zone.
- All first aid treatments will be reported to the SSO, who will record each incident.

14.0 COMMUNITY HEALTH AND SAFETY PLAN

14.1 Potential Impacts

Potential hazards to the general public and surrounding community posed by this site investigation plan relate primarily to fugitive dust (particulate) emissions, asbestos fiber release, organic contaminants and physical hazards associated with the operation of heavy equipment, open excavations and deteriorating buildings. Potential exposure mechanisms that can transport particulates, both contaminated and non-contaminated, asbestos fibers and volatile organic compounds beyond the site boundary include:

- Dust projected by wind erosion;
- Asbestos projected by wind;
- Contaminated dust projected by wind erosion; and
- Volatile organic compounds transmitted by wind currents.

The site is located in an area that consists mainly of residential and public space properties. Residential properties are primarily located east and north of the site, and are of a sufficient separation distance that it is unlikely that they will be adversely impacted by the site investigation activities.

Limiting potential exposure mechanisms that can transport contaminants beyond the site boundary will be completed by implementation of an air monitoring plan, maintaining site control, the use of engineering controls and following emergency procedures.

14.2 Monitoring Plan

The drilling, probing and excavation activities are not expected to produce measurable fugitive dust. The hollow stem auger drilling will produce limited auger spoils, which will likely be damp, therefore limiting the amount of dust produced. The limited surface area being disturbed during excavation is not likely to produce measurable dust. The air monitoring program will measure VOC and particulate levels at the sampling locations on a continuous basis.

Should action levels be encountered, work operations shall cease until further evaluation is performed and safe levels are prevalent. If through engineering controls and monitoring, safe levels (below action levels) cannot be achieved, an upgrade in personal protection equipment shall be mandated by the SSO, or operations shall cease in that portion of the site. The action levels for this project and the response measures to be implemented to protect the community in the event that these action levels are exceeded are presented in Section 5.2.

14.3 Site Control

During the implementation of the investigation, TVGA will block the access into the site to the extent practicable using posts, cones rope and/or caution tape. Access to the working area will be restricted via the site control measures detailed in Section 6.0.

14.4 Engineering Controls

In the event measurable dust levels are detected during the excavation of test pits, drilling of test borings or soil probes, then standard dust suppression techniques may be utilized, including the following:

- Wetting excavation faces, auger cuttings and equipment during excavation or drilling.
- Restricting vehicle speeds to 10 mph.
- Postponing excavation activities during severe winds.
- Covering excavated areas and material after excavation activity ceases.
- Decreasing the number and size of excavations.

If the dust suppression techniques being utilized do not reduce airborne particulate then investigation activities will be suspended, until a review of the engineering controls can be completed.

In the event visible dust levels are identified during the sampling of building materials for asbestos, then sampling protocol will be amended to limit dust levels. Sampling techniques that minimize the potential for fiber releases will be employed, including the following:

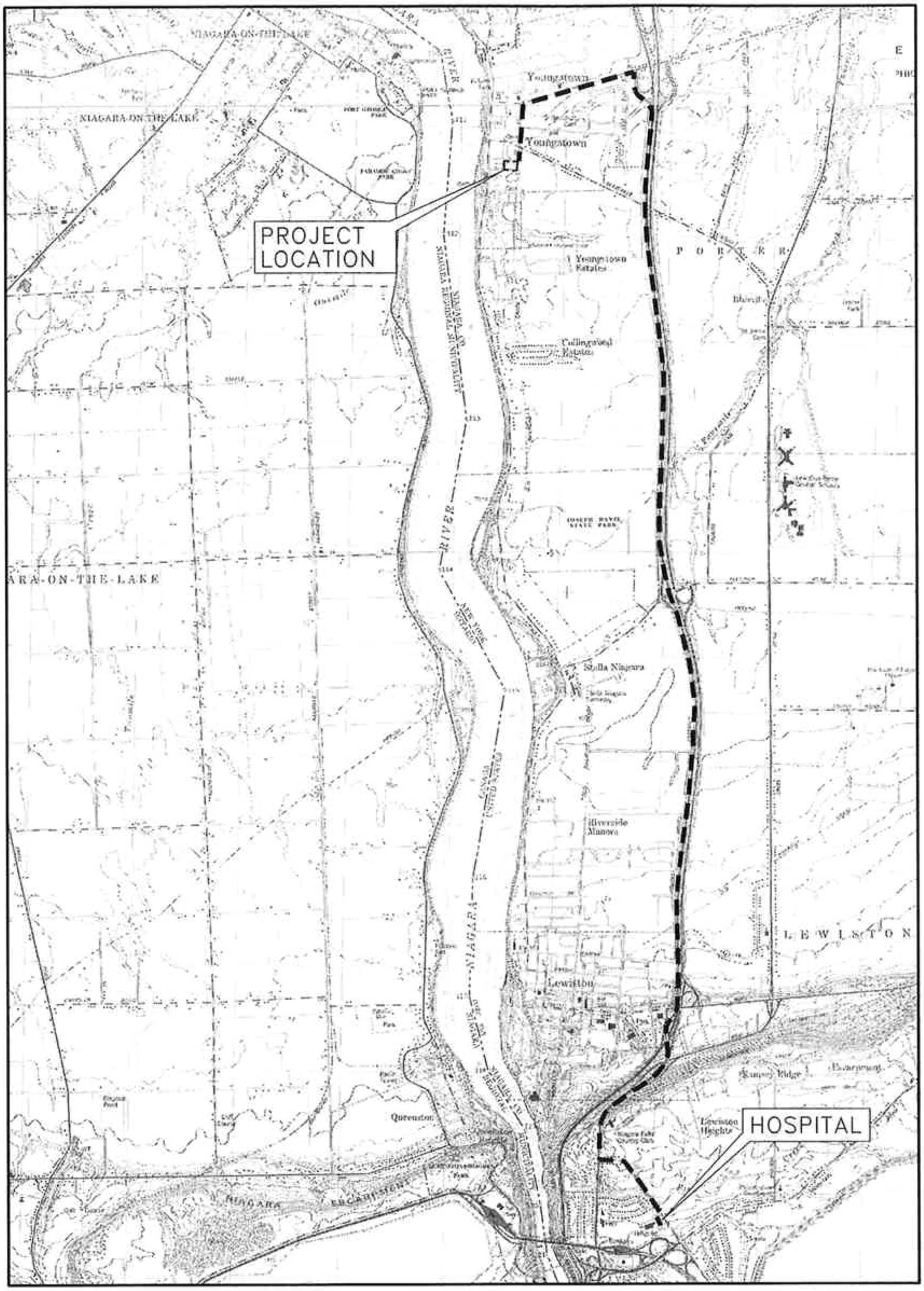
- Collect samples in a manner to cause the least amount of dust.
- Do not make unnecessary cuts while sampling.
- Use sufficient water to wet sampling areas.
- Take only a small amount of material for samples (1 to 2 grams).
- Make sure sample containers are tightly sealed.
- Use sufficient material to encapsulate areas where samples were collected.

If the sampling techniques do not minimize particulate emissions, then asbestos sampling activities will be suspended until a review of the engineering controls can be completed.

14.5 Emergency Notification

This HASP has been developed to include details on emergency coordination and notification procedures to be implemented during an incident. The procedures for specific emergencies are outlined in Section 11.0 and the contact information for local emergency personnel is included in Section 12.0. In the event community health and safety is in question, dialing 911 will summon Fire and Police personnel which can take appropriate actions as necessary.

FIGURES



U.S.G.S LEWISTON QUADRANGLE

MAP TO HOSPITAL

TVGA CONSULTANTS
1000 MAPLE ROAD
ELMA, NEW YORK 14059-9530
P. 716.655.8842
F. 716.655.0937
www.tvga.com

REMEDIAL INVESTIGATION/
ALTERNATIVES ANALYSIS PROGRAM
YOUNGSTOWN COLD STORAGE
VILLAGE OF YOUNGSTOWN, NEW YORK
NIAGARA COUNTY

PROJECT NO. 2004.0279.03	SCALE: 1" = 5000'	DATE: 10/26/05	FIGURE NO. 1

N:\2004.0279.03-Youngstown Cold Storage\CAD\105.dwg 10/26/2005 9:57:29 AM EDT

ATTACHMENT A

CERTIFICATION

TVGA
CONSULTANTS

RI/AA OF YOUNGSTOWN COLD STORAGE SITE

CERTIFICATION

PROJECT LOCATION: 701 3rd STREET, YOUNGSTOWN, NY
PROJECT NO. 2004.0297.03

Senior Level Management shall sign this form after she/he has conducted a pre-entry briefing.

Each employee conducting field work shall sign this form after the pre-entry briefing is completed and prior to commencing work on site. A copy of this signed form shall be kept at the site, and the original sent to the PTL, for inclusion into the project file.

Site Personnel Sign-off

☐ I have received a copy of the Site-Specific Health and Safety Plan.

☐ I have read the Plan and will comply with the provisions contained therein.

☐ I have attended a pre-entry briefing outlining the specific health and safety provisions on this site.

Name: ______________________________ Date: ____________
______________________________ Date: ____________
______________________________ Date: ____________
______________________________ Date: ____________
______________________________ Date: ____________
______________________________ Date: ____________

TVGA Project Team Leader

☐ A pre-entry briefing has been conducted by myself on ______________________.

☐ I deferred the pre-entry briefing responsibility to the Site Health and Site Safety Officer (SSO).

Name: ______________________________ Date: ______________________.

ATTACHMENT B

MEDICAL DATA SHEET

TVGA
CONSULTANTS

MEDICAL DATA SHEET

This brief Medical Data Sheet will be completed by all personnel potentially working on-site and will be kept in the Support Zone during the performance of site operations. This data sheet will accompany any personnel when medical assistance is needed or if transport to the hospital facilities is required:

Site: ____

Name: ______________________________ Home Telephone ______________

Address: ____

____

Age: __________ Height: __________ Weight: __________

Person to Contact in Case of Emergency:

______________________________________ Phone No. ____________

Drug or other Allergies: _____________________________________

____

Particular Sensitivities: _____________________________________

Do You Wear Contacts? YES NO

Provide a Checklist of Previous Illnesses or Exposures to Hazardous Chemicals:

____

____

____

What Medications are you presently using? _________________________

____

Do you have any Medical Restriction? ____________________________

____

____

Name, Address, and Phone Number of Personal Physician:_______________

____

____

ATTACHMENT C

DIRECT READING AIR MONITORING FORM

TVGA CONSULTANTS

DIRECT READING AIR MONITORING FORM

DATE: ______________________

PROJECT: ______________________

PROJECT #: ______________________

WEATHER CONDITIONS: ______________________

WIND DIRECT/SPEED: ______________________

USER: ______________________

CALIBRATION: ______________________

CALIBRATED BY: ______________________

COMMENTS: ______________________

ACTIVITY	INSTRUMENT	WORKING RANGE	TIME	READING	COMMENTS

ATTACHMENT D

NYSDOH GENERIC COMMUNITY AIR MONITORING PLAN

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 ground intrusive 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/m3) 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/m3 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/m3 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/m3 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.

ATTACHMENT E

HEAT AND COLD STRESS SYMPTOMS

Hazard Alert

Heat Stress in Construction

Heat is a serious hazard in construction. Your body builds up heat when you work and sweats to get rid of extra heat. But sometimes your body may not cool off fast enough. This can happen, say, if you are up on a roof pouring hot asphalt or you are lifting heavy loads.

Too much heat can make you tired, hurt your job performance, and increase your chance of injury. You can get skin rash. You can also get:

- **Dehydration.** When your body loses water, you can't cool off fast enough. You feel thirsty and weak.
- **Cramps.** You can get muscle cramps from the heat even after you leave work.
- **Heat exhaustion.** You feel tired, nauseous, headachy, and giddy (dizzy and silly). Your skin is damp and looks muddy or flushed. You may faint.
- **Heat stroke.** You may have hot dry skin and a high temperature, Or you may feel confused. You may have convulsions or become unconscious. **Heat stroke can kill you** unless you get emergency medical help.

The Risk of Heat Stress

Your risk of heat stress depends on many things. These include:

- Your physical condition
- The weather (temperature, humidity)
- How much clothing you have on
- How fast you must move or how much weight you must lift
- If you are near a fan or there is a breeze
- If you are in the sun.

If there is an industrial hygienist on your work site, ask the hygienist about the Wet-Bulb Globe Temperature Index. It is a more precise way to estimate the risk of heat stress.

Protect Yourself

Try to do these things:

- **Drink a lot of cool water all day — before you feel thirsty.** Every 15 minutes, you may need a cup of water (5 to 7 ounces).

(Please turn the page.)

• **Keep taking rest breaks**. Rest in a cool, shady spot. Use fans.
• **Wear light-colored clothing,** made of cotton.
• **Do the heaviest work in the coolest time of the day**.
• **Work in the shade**.
• **For heavy work in hot areas,** take turns with other workers, so some can rest.
• **If you travel to a warm area for a new job,** you need time for your body to get used to the heat. Be extra careful the first 2 weeks on the job.
• **If you work in protective clothing,** you need more rest breaks. You may also need to check your temperature and heart rate. On a Superfund site where the temperature is 70 degrees or more, the U.S. Environmental Protection Agency (EPA) says a health professional should monitor your body weight, temperature, and heart rate.
• **If you think someone has heat stroke, call emergency services (or 911).** Immediately move the victim to the shade. Loosen his/her clothes. Wipe or spray his/her skin with cool water and fan him/her. You can use a piece of cardboard or other material as a fan.

OSHA does not have a special rule for heat. But because heat stress is known as a serious hazard, workers are protected under the **General Duty Clause** of the Occupational Safety and Health Act. The clause says employers must provide "employment free from recognized hazards causing or likely to cause physical harm."

For more information, call your local union, the Center to Protect Workers' Rights (CPWR) (301-578-8500 or www.cpwr.com), the National Institute for Occupational Safety and Health (1-800-35-NIOSH or www.cdc.gov/niosh), or OSHA (1-800-321-OSHA or www.osha.gov). Or check the website www.elcosh.org

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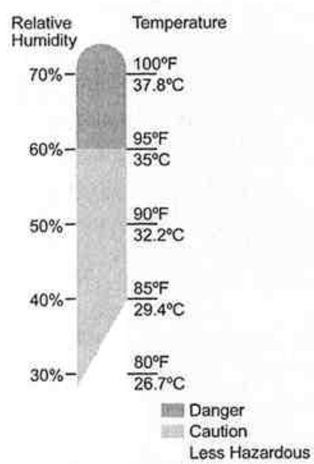
The Center to Protect Workers' Rights is the research and development institute of the Building and Construction Trades Dept., AFL-CIO: CPWR, Suite 1000, 8484 Georgia Ave., Silver Spring, MD 20910. (Edward C. Sullivan is president of the Building and Construction Trades Department and CPWR.) Production of this flyer was supported by grants UO2/310982 and UO2/312014 from the National Institute for Occupational Safety and Health (NIOSH). The contents are solely the responsibility of the authors and do not necessarily represent the official views of NIOSH.

Heat stress - April 9, 2001

The Heat Equation

HIGH TEMPERATURE + HIGH HUMIDITY + PHYSICAL WORK = HEAT ILLNESS

When the body is unable to cool itself through sweating, **serious** heat illnesses may occur. The most severe heat-induced illnesses are heat exhaustion and heat stroke. If left untreated, **heat exhaustion** could progress to **heat stroke** and possible **death**.



U.S. Department of Labor
Occupational Safety and Health Administration
OSHA 3154
2002

Heat Exhaustion

What are the symptoms?

HEADACHES; DIZZINESS OR LIGHTHEADEDNESS; WEAKNESS; MOOD CHANGES SUCH AS IRRITABILITY, CONFUSION, OR THE INABILITY TO THINK STRAIGHT; UPSET STOMACH; VOMITING; DECREASED OR DARK-COLORED URINE; FAINTING OR PASSING OUT; AND PALE, CLAMMY SKIN

What should you do?

- Act immediately. If not treated, heat exhaustion may advance to heat stroke or death.
- Move the victim to a cool, shaded area to rest. Don't leave the person alone. If symptoms include dizziness or lightheadedness, lay the victim on his or her back and raise the legs 6 to 8 inches. If symptoms include nausea or upset stomach, lay the victim on his or her side.
- Loosen and remove any heavy clothing.
- Have the person drink cool water (about a cup every 15 minutes) unless sick to the stomach.
- Cool the person's body by fanning and spraying with a cool mist of water or applying a wet cloth to the person's skin.
- Call 911 for emergency help if the person does not feel better in a few minutes.

Heat Stroke–A Medical Emergency

What are the symptoms?

DRY, PALE SKIN WITH NO SWEATING; HOT, RED SKIN THAT LOOKS SUNBURNED; MOOD CHANGES SUCH AS IRRITABILITY, CONFUSION, OR THE INABILITY TO THINK STRAIGHT; SEIZURES OR FITS; AND UNCONCIOUSNESS WITH NO RESPONSE

What should you do?

- Call 911 for emergency help immediately.
- Move the victim to a cool, shaded area. Don't leave the person alone. Lay the victim on his or her back. Move any nearby objects away from the person if symptoms include seizures or fits. If symptoms include nausea or upset stomach, lay the victim on his or her side.
- Loosen and remove any heavy clothing.
- Have the person drink cool water (about a cup every 15 minutes) if alert enough to drink something, unless sick to the stomach.
- Cool the person's body by fanning and spraying with a cool mist of water or wiping the victim with a wet cloth or covering him or her with a wet sheet.
- Place ice packs under the armpits and groin area.

How can you protect yourself and your coworkers?

- Learn the signs and symptoms of heat-induced illnesses and how to respond.
- Train your workforce about heat-induced illnesses.
- Perform the heaviest work during the coolest part of the day.
- Build up tolerance to the heat and the work activity slowly. This usually takes about 2 weeks.
- Use the buddy system, with people working in pairs.
- Drink plenty of cool water, about a cup every 15 to 20 minutes.
- Wear light, loose-fitting, breathable clothing, such as cotton.
- Take frequent, short breaks in cool, shaded areas to allow the body to cool down.
- Avoid eating large meals before working in hot environments.
- Avoid alcohol or beverages with caffeine. These make the body lose water and increase the risk for heat illnesses.

What factors put you at increased risk?

- Taking certain medications. Check with your health-care provider or pharmacist to see if any medicines you are taking affect you when working in hot environments.
- Having a previous heat-induced illness.
- Wearing personal protective equipment such as a respirator or protective suit.

Surviving the Cold Weather

Prolonged exposure to low temperatures, wind and/or moisture can result in cold-related injury from frostbite and hypothermia. Here are some suggestions on how to keep warm and avoid frostbite and hypothermia.

Dress properly

Wear several layers of loose-fitting clothing to insulate your body by trapping warm, dry air inside. Loosely woven cotton and wool clothes best trap air and resist dampness.

The head and neck lose heat faster than any other part of the body. Your cheeks, ears and nose are the most prone to frostbite. Wear a hat, scarf and turtleneck sweater to protect these areas.

Frostbite: What to look for

The extent of frostbite is difficult to judge until hours after thawing. There are two classifications of frostbite:

- Superficial frostbite is characterized by white, waxy or grayish-yellow patches on the affected areas. The skin feels cold and numb. The skin surface feels stiff and underlying tissue feels soft when depressed.
- Deep frostbite is characterized by waxy and pale skin. The affected parts feel cold, hard, and solid and cannot be depressed. Large blisters may appear after rewarming.

What to do

1. Get the victim out of the cold and to a warm place immediately.
2. Remove any constrictive clothing items that could impair circulation.
3. If you notice signs of frostbite, seek medical attention immediately.
4. Place dry, sterile gauze between toes and fingers to absorb moisture and to keep them from sticking together.
5. Slightly elevate the affected part to reduce pain and swelling.
6. If you are more than one hour from a medical facility and you have warm water, place the frostbitten part in the water (102 to 106 degrees Fahrenheit). If you do not have a thermometer, test the water first to see if it is warm, not hot. Rewarming usually takes 20 to 40 minutes or until tissues soften.

What not to do

1. Do not use water hotter than 106 degrees Fahrenheit.
2. Do not use water colder than 100 degrees Fahrenheit since it will not thaw frostbite quickly enough.
3. Do not rub or massage the frostbite area.
4. Do not rub with ice or snow.

Hypothermia

Hypothermia occurs when the body loses more heat than it produces. Symptoms include change in mental status, uncontrollable shivering, cool abdomen and a low core body temperature.

Severe hypothermia may cause rigid muscles, dark and puffy skin, irregular heartbeat and respiration, and unconsciousness.
Treat hypothermia by protecting the victim from further heat loss and seeking immediate medical attention. Get the victim out of the cold. Add insulation such as blankets, pillows, towels or newspapers beneath and around the victim. Be sure to cover the victim's head. Replace wet clothing with dry clothing. Handle the victim gently because rough handling can cause cardiac arrest. Keep the victim in a horizontal (flat) position.
Finally, the best way to avoid frostbite and hypothermia is to stay out of the cold. Read a book, clean house or watch TV. Be patient and wait out the dangerous cold weather.

How to Prevent Frostbite and Hypothermia

Prolonged exposure to low temperatures, wind or moisture - whether it be on a ski slope or in a stranded car - can result in cold-related illnesses such as frostbite and hypothermia. The National Safety Council offers these tips to help you spot and put a halt to these winter hazards.

How to detect and treat cold-related illnesses

Frostbite is the most common injury resulting from exposure to severe cold. Superficial frostbite is characterized by white, waxy, or grayish-yellow patches on the affected areas. The skin feels cold and numb. The skin surface feels stiff but underlying tissue feels soft and pliable when depressed. Treat superficial frostbite by taking the victim inside immediately. Remove any constrictive clothing items that could impair circulation. If you notice signs of frostbite, immediately seek medical attention. Place dry, sterile gauze between toes and fingers to absorb moisture and to keep them from sticking together. Slightly elevate the affected part to reduce pain and swelling. If you are more than one hour from a medical facility and you have warm water, place the frostbitten part in the water (102 to 106 degrees Fahrenheit). If you do not have a thermometer, test the water first to see if it is warm, not hot. Rewarming usually takes 20 to 40 minutes or until tissues soften.

Deep frostbite usually affects the feet or hands and is characterized by waxy, pale, solid skin. Blisters may appear. Treat deep frostbite by moving the victim indoors and immediately seek medical attention.

Hypothermia occurs when the body's temperature drops below 95 degrees Fahrenheit. Symptoms of this condition include change in mental status, uncontrollable shivering, cool abdomen and a low core body temperature. Severe hypothermia may produce rigid muscles, dark and puffy skin, irregular heart and respiratory rates, and unconsciousness.

Treat hypothermia by protecting the victim from further heat loss and calling for immediate medical attention. Get the victim out of the cold. Add insulation such as blankets, pillows, towels or newspapers beneath and around the victim. Be sure to cover the victim's head. Replace wet clothing with dry clothing. Handle the victim gently because rough handling can cause cardiac arrest. Keep the victim in a horizontal (flat) position. Give artificial respiration or CPR (if you are trained) as necessary.

How to prevent cold-related illnesses

Avoid frostbite and hypothermia when you are exposed to cold temperatures by wearing layered clothing, eating a well-balanced diet, and drinking warm, non-alcoholic, caffeine-free liquids to maintain fluid levels.
Avoid becoming wet, as wet clothing loses 90 percent of its insulating value.

12/22/1998 - Protecting Workers in Cold Environments

Fact Sheets (Program Highlights) - Table of Contents

U.S. Department of Labor
Occupational Safety and Health Administration

Fact Sheet No. OSHA 98-55

Protecting Workers in Cold Environments

December 1998

As the weather becomes "frightful" during winter months, workers who must brave the outdoor conditions face the occupational hazard of exposure to the cold. Prolonged exposure to freezing temperatures can result in health problems as serious as trench foot, frostbite, and hypothermia. Workers in such industries as construction, commercial fishing and agriculture need to be especially mindful of the weather, its effects on the body, proper prevention techniques, and treatment of cold-related disorders.

The Cold Environment

An individual gains body heat from food and muscular activity and loses it through convection, conduction, radiation and sweating to maintain a constant body temperature. When body temperature drops even a few degrees below its normal temperature of 98.6°F (37°C), the blood vessels constrict, decreasing peripheral blood flow to reduce heat loss from the surface of the skin. Shivering generates heat by increasing the body's metabolic rate.

The four environmental conditions that cause cold-related stress are low temperatures, high/cool winds, dampness and cold water. Wind chill, a combination of temperature and velocity, is a crucial factor to evaluate when working outside. For example, when the actual air temperature of the wind is 40°F (4°C) and its velocity is 35 mph, the exposed skin receives conditions equivalent to the still-air temperature being 11°F (-11°C)! A dangerous situation of rapid heat loss may arise for any individual exposed to high winds and cold temperatures.

Major Risk Factors for Cold-Related Stresses

- Wearing inadequate or wet clothing increases the effects of cold on the body.
- Taking certain drugs or medications such as alcohol, nicotine, caffeine, and medication that inhibits the body's response to the cold or impairs judgment.
- Having a cold or certain diseases, such as diabetes, heart, vascular, and thyroid problems, may make a person more susceptible to the winter elements.

- Being a male increases a person's risk to cold-related stresses. Sad, but true, men experience far greater death rates due to cold exposure than women, perhaps due to inherent risk-taking activities, body-fat composition or other physiological differences.
- Becoming exhausted or immobilized, especially due to injury or entrapment, may speed up the effects of cold weather.
- Aging -- the elderly are more vulnerable to the effects of harsh winter weather.

Harmful Effects of Cold

Trench Foot is caused by long, continuous exposure to a wet, cold environment, or actual immersion in water. Commercial fisherman, who experience these types of cold, wet environments daily, need to be especially cautious.

Symptoms:

Symptoms include a tingling and/or itching sensation, burning, pain, and swelling, sometimes forming blisters in more extreme cases.

Treatment:

Move individuals with trench foot to a warm, dry area, where the affected tissue can be treated with careful washing and drying, rewarming and slight elevation. Seek medical assistance as soon as possible.

Frostbite occurs when the skin tissue actually freezes, causing ice crystals to form between cells and draw water from them, which leads to cellular dehydration. Although this typically occurs at temperatures below 30°F (-1°C), wind chill effects can cause frostbite at above-freezing temperatures.

Symptoms:

Initial effects of frostbite include uncomfortable sensations of coldness; tingling, stinging or aching feeling of the exposed area followed by numbness. Ears, fingers, toes, cheeks, and noses are primarily affected. Frostbitten areas appear white and cold to the touch. The appearance of frostbite varies depending on whether rewarming has occurred.

Deeper frostbite involves freezing of deeper tissues (muscles, tendons, etc.) causing exposed areas to become numb, painless, hard to the touch.

Treatment:

If you suspect frostbite, you should seek medical assistance immediately. Any existing hypothermia should be treated first (See **Hypothermia** below). Frostbitten parts should be covered with dry, sterile gauze or soft, clean cloth bandages. Do not massage frostbitten tissue because this sometimes causes greater injury. Severe cases may require hospitalization and even amputation of affected tissue. Take measures to prevent further cold injury. If formal medical treatment will be delayed, consult with a licensed health care professional for training on rewarming techniques.

General Hypothermia occurs when body temperature falls to a level where normal muscular and cerebral functions are impaired. While hypothermia is generally associated with freezing temperatures, it may occur in any climate where a person's body temperature falls below normal. For instance, hypothermia is common among the elderly who live in cold houses.

Symptoms:

The first symptoms of hypothermia, shivering, an inability to do complex motor functions, lethargy, and mild confusion, occur as the core body temperature

decreases to around 95°F (35°C).
As body temperature continue to fall, hypothermia becomes more severe. The individual falls into a state of dazed consciousness, failing to complete even simple motor functions. The victim's speech becomes slurred and his or her behavior may become irrational.
The most severe state of hypothermia occurs when body temperature falls below 90°F (32°C). As a result, the body moves into a state of hibernation, slowing the heart rate, blood flow, and breathing. Unconsciousness and full heart failure can occur in the severely hypothermic state.

Treatment:

Treatment of hypothermia involves conserving the victim's remaining body heat and providing additional heat sources. Specific measures will vary depending upon the severity and setting (field or hospital). Handle hypothermic people very carefully because of the increased irritability of the cold heart. Seek medical assistance for persons suspected of being moderately or severely hypothermic.
If the person is unresponsive and not shivering, assume he or she is suffering from severe hypothermia. Reduction of heat loss can be accomplished by various means: obtaining shelter, removal of wet clothing, adding layers of dry clothing, blankets, or using a pre-warmed sleeping bag.
For mildly hypothermic cases or those more severe cases where medical treatment will be significantly delayed, external rewarming techniques may be applied. This includes body-to-body contact (e.g., placing the person in a prewarmed sleeping bag with a person of normal body temperature), chemical heat packs, or insulated hot water bottles. Good areas to place these packs are the armpits, neck, chest, and groin. It is best to have the person lying down when applying external rewarming. You also may give mildly hypothermic people warm fluids orally, but avoid beverages containing alcohol or caffeine.

Preventing Cold-Related Disorders

Personal Protective Clothing is perhaps the most important step in fighting the elements is providing adequate layers of insulation from them. Wear at least three layers of clothing:
-- An outer layer to break the wind and allow some ventilation (like Gore-Tex® or nylon);
-- A middle layer of wool or synthetic fabric (Qualofil or Pile) to absorb sweat and retain insulation in a damp environment. Down is a useful lightweight insulator; however, it is ineffective once it becomes wet.
-- An inner layer of cotton or synthetic weave to allow ventilation.
Pay special attention to protecting feet, hands, face and head. Up to 40 percent of body heat can be lost when the head is exposed. Footgear should be insulated to protect against cold and dampness. Keep a change of clothing available in case work garments become wet.
Engineering Controls in the workplace through a variety of practices help reduce the risk of cold-related injuries.

- Use an on-site source of heat, such as air jets, radiant heaters, or contact warm plates.
- Shield work areas from drafty or windy conditions.

- Provide a heated shelter for employees who experience prolonged exposure to equivalent wind-chill temperatures of 20°F (-6°C) or less.
- Use thermal insulating material on equipment handles when temperatures drop below 30°F (-1°C).

Safe Work Practices, such as changes in work schedules and practices, are necessary to combat the effects of exceedingly cold weather.

- Allow a period of adjustment to the cold before embarking on a full work schedule.
- Always permit employees to set their own pace and take extra work breaks when needed.
- Reduce, as much as possible, the number of activities performed outdoors. When employees must brave the cold, select the warmest hours of the day and minimize activities that reduce circulation.
- Ensure that employees remain hydrated.
- Establish a buddy system for working outdoors.
- Educate employees to the symptoms of cold-related stresses -- heavy shivering, uncomfortable coldness, severe fatigue, drowsiness, or euphoria.

The quiet symptoms of potentially deadly cold-related ailments often go undetected until the victim's health is endangered. Knowing the facts on cold exposure and following a few simple guidelines can ensure that this season is a safe and healthy one.

APPENDIX D

CITIZEN PARTICIPATION PLAN

REMEDIAL INVESTIGATION/ALTERNATIVES ANALYSIS (RI/AA) OF THE YOUNGSTOWN COLD STORAGE SITE (NYSDEC SITE NO. E932122) 701 THIRD STREET EXTENSION (NANCY PRICE DRIVE) VILLAGE OF YOUNGSTOWN NIAGARA COUNTY, NEW YORK

CITIZEN PARTICIPATION PLAN

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2004.0279.03

JANUARY 2006

RI/AA OF THE YOUNGSTOWN COLD STORAGE SITE
(NYSDEC SITE NO. E932122)
701 THIRD STREET EXTENSION (NANCY PRICE DRIVE)
VILLAGE OF YOUNGSTOWN
NIAGARA COUNTY, NEW YORK

CITIZEN PARTICIPATION PLAN

TABLE OF CONTENTS

1.0 INTRODUCTION

The site-specific Citizen Participation Plan (CPP) described herein follows guidelines set forth by the New York State Department of Environmental Conservation (NYSDEC) in their Citizen Participation in New York's Hazardous Waste Site Remediation Program, and has been tailored to the particular needs of the Youngstown Cold Storage Site (project site). The CPP establishes a framework of activities to provide a context in which two-way communication between the Village of Youngstown (Village) and the community can be attained. The CPP will be proactive, early and ongoing throughout the duration of the investigation.

2.0 PROJECT MAILING LIST

For the purpose of informing the public of all relevant project activities, a mailing list will be compiled by the Village and regularly maintained. For these purposes, the term "public" shall include area residents, government officials, media, business interests, environmental and civic groups, and other interested parties. A list of adjacent property owners will be compiled utilizing Section Block Lot (SBL) numbers and their corresponding tax payer information housed at the local municipal building. This portion of the list will be maintained in confidence and will not be included as part of the CPP available at the document repository (as described below). The NYSDEC will review the project mailing list for completeness.

Appropriate media outlets including local newspapers, radio and television stations will be identified and added to the project mailing list. In addition, existing mailing lists comprised of local elected officials, business and other civic and environmental groups will be identified, compiled and supplemented as needed. Enhanced outreach will be conducted to ensure that all parties, including the project staff, with information about the project site are included on the master list.

3.0 IDENTIFICATION OF A LOCAL DOCUMENT REPOSITORY

The local repository will be the Youngstown Free Library at 240 Lockport St, Youngstown, NY because it is situated in a geographic location suitable to the project site and surrounding area, will provide for handicapped accessibility, and will be open to the public outside normal business hours. The repository will help ensure that pertinent documents and other project information are readily available to the public. Through fact sheets and/or meetings described below, the public will be made aware of the repository location.

4.0 FACT SHEETS

A series of fact sheets will be produced and distributed at major milestones within the project. It is anticipated that three fact sheets will be prepared, which will be made available through direct mail to all individuals and organizations included on the mailing list. These major milestones within the project include:

- Prior to initiation of the Remedial Investigation/Alternatives Analysis program;
- Completion of the Remedial Investigation/Alternatives Analysis Report; and
- Upon announcement of the public comment period for the Proposed Remedial Action Plan.

Additional fact sheets may also be issued throughout the project's duration if necessary, especially if there is significant community interest in the project. Fact Sheets will be one-color, double-sided 8.5 by eleven inch documents with text and graphics.

5.0 MEETINGS

Given the size and nature of the Youngstown Cold Storage site investigation, one public meeting may be conducted by the Village. The meeting will likely coincide with the issuance of the Proposed Remedial Action Plan (PRAP) and will occur at the beginning of or during the public comment period relative to the PRAP. Meeting dates, times and locations will be announced via press releases to local media outlets, and notices will be sent to all individuals included on the project mailing list.

6.0 RECEIVE AND CONSOLIDATE PUBLIC COMMENTS

All citizen inquiries and comments received shall be maintained as part of the project database. All citizen inquiries be acknowledged and responded to. This feedback loop is a particularly important piece of any public involvement program in that it helps to build and maintain trust, which later becomes critical to public buy-in. This individual attention is seen as a minimal investment in terms of the return the NYSDEC will gain by understanding wide-spread concerns and issues, long before a Record of Decision is reached. In addition to the above-referenced meeting, another public meeting may be scheduled if there is significant public interest in the project.

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