FINAL REMEDIAL INVESTIGATION/ALTERNATIVES ANALYSIS (RI/AA) REPORT

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

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1.0 INTRODUCTION

1.1 Purpose

The Village of Youngstown (the Village) entered into a State Assistance Contract with the New York State Department of Environmental Conservation (NYSDEC) to complete a Remedial Investigation/Alternatives Analysis (RI/AA) program at the Youngstown Cold Storage site located at 701 Third Street Extension (Nancy Price Drive), Niagara County, Village of Youngstown, New York (project site). The location of the project site is shown on Figure 1 and the layout of the project site is shown on Figure 2. The RI was completed pursuant to the Environmental Restoration, or Brownfield, Program, component of Title 5 of the Clean Water/Clean Air Bond Act of 1996, which is administered by the NYSDEC. The purpose of the RI/AA program described herein was 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.

TVGA Consultants (TVGA) has prepared this report on behalf of the Village to provide a detailed description of the RI/AA program implemented at the Youngstown Cold Storage site. In addition to summarizing and documenting the methods used to investigate the project site, this RI/AA Report describes the physical characteristics of the site; defines the nature, magnitude and extent of contamination encountered; assesses the contamination with respect to fate, transport and exposure; and identifies appropriate remedial action objectives (RAOs). Also discussed in this report are the screening and detailed analysis of remedial alternatives, and the identification of the most suitable remedy available to satisfy the RAOs.

1.2 Site Background

1.2.1 Site Description

The project site consists of approximately 2.4 acres located within the Village of Youngstown limits, as shown on Figure 1. Figure 2 shows the layout of the project site, including the on-site structures. The location and configuration of the tax parcel (SBL 59.06-3-6) that comprises the project site is depicted on Figure 3. The project site is occupied by three structures that 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 residence 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 apples were reportedly washed prior to storage within facility buildings. 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.

1.2.2 Site 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 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.

1.2.3 Previous Environmental Investigations

The Village notified the United States Environmental Protection Agency (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 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 that 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.

1.2.4 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 (Figure 4) 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.

2.0 METHODS OF INVESTIGATION

The scope of the Remedial Investigation program was generally consistent with that outlined in the NYSDEC-approved January 2006 Remedial Investigation/Alternatives Analysis Work Plan (Work Plan), and the Extra Work Authorization submitted on March 6, 2006. Modifications made to the Work Plan during the completion of the RI were approved by NYSDEC and the Village and are discussed within this report.

The purpose of the Remedial Investigation program was to determine the nature and extent of contamination associated with the areas of environmental concern discussed in Section 1.2.4. To accomplish these goals, the following tasks were completed during the field investigation:

- Completion of 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 surveying work also included locating the test pits, soil probes, micro-wells, surface soil sampling points and determining the micro-well riser elevations;
- Collection and analysis of off-site background surface soil samples to create a database of background concentrations with which the on-site analytical testing results can be compared;
- Collection and analysis of on-site surface soil/fill samples to classify and characterize the surface soil/fill;
- Completion of test pits and soil probes to enable the classification, screening, sampling and chemical characterization of subsurface soil/fill;
- Installation, development and sampling of micro-wells to enable the determination of groundwater flow direction and gradient, as well as the collection and chemical analysis of groundwater samples;
- The investigation of building surfaces and components included the collection of samples from the following areas for characterizations purposes:
    - Sediment from two stormwater sewers, which by visual identification appeared to be hydraulically connected to the project site;
    - Sediment and standing water from a valve pit connected to the warehouse building;
    - Standing water in the two elevator shafts;
    - PCB wipe samples from stained floor and equipment surfaces in the warehouse building compressor room;
    - Wood flooring from the warehouse building; and
    - Soil/fill from below the concrete floor of the warehouse building.
- Completion of an asbestos-containing material (ACM) pre-demolition survey to evaluate the potential presence of ACMs on and within on-site structures;
- Evaluation of the resulting data and preparation of a report to:

    - Summarize and document the activities performed during the RI;
    - Describe the physical characteristics of the project site;
    - Describe the nature, magnitude and extent of contamination;
    - Compare the analytical data to applicable regulatory levels;

- Assess the implications of the conditions encountered; and
- Provide recommendations relative to future work requirements and remedial action objectives.

The following section describes the field tasks in detail.

2.1 Field Investigation

The following subsections describe the scope of field activities associated with the remedial investigation program. This scope reflects minor deviations and/or additions from the initial scope, as some minor modifications were necessary to account for information obtained during the field investigation or were performed at the request of the NYSDEC. The methods employed during the execution of the field tasks were detailed in the Field Sampling Plan (FSP), while the procedures implemented to ensure the quality of the resulting field and laboratory data were in accordance with the Quality Assurance/Quality Control (QA/QC) Plan. Table 1 summarizes the number of samples collected during the investigative tasks, including QA/QC samples, and the corresponding analytical methods. Figures 5 through 9 show the sampling locations.

2.1.1 Site Survey

TVGA performed 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. Additionally, the surveying work also included locating the test pits, soil probes, micro-wells, surface soil sampling points and determining the micro-well riser elevations. Elevations of the micro-wells were reported relative to an assumed site datum of 100.00 feet, established from a benchmark that consisted of the western most flange bolt on the fire hydrant located on the east side of Nancy Price Drive south of Elliott Street.

2.1.2 Background Soil Samples

Five background surface soil samples (BG-01 through BG-05) were collected on February 21 and March 2, 2006 from five separate off-site locations to define local baseline conditions. The samples were collected in accordance with Section 9.2 of the FSP. The locations of these samples, depicted on Figure 5, included two from Veterans Park, two from Falkner Park and one from Lions Park. The samples were collected from zero to two inches below the vegetative layer. The background samples were analyzed for SVOCs, pesticides, herbicides and PCBs appearing on the Target Compound List (TCL) and the metals appearing on Target Analyte List (TAL).

2.1.3 Surface Soil Sampling

Eight surface soil samples (SS01 through SS08) were collected on February 21, 2006, to evaluate the degree of contamination in the surface soil/fill, if any. The surface soil/fill sampling locations are shown on Figure 6. The surface soil samples were collected from zero to two inches below the vegetative layer in accordance with Section 9.2 of the FSP. Grab samples were collected from areas of concern, which include:

- The spray wash area
- Loading docks
- The area adjacent to the transformer substation
- Underneath the fill port for the fuel oil tank located in basement of the warehouse building
- Locations along the western property line

These samples were analyzed for TCL SVOCs, pesticides, herbicides and PCBs and the TAL metals.

2.1.4 Test Pit Excavations

Thirteen test pits were excavated on February 16 and 17, 2006 in accordance with Section 4.0 of the FSP. The test pit locations are shown on Figure 7. The purposes of the test pits were to characterize the near-surface geology across the project site; investigate the potential presence of an underground fuel oil storage tank; and identify and delineate areas of subsurface contamination via the field screening and chemical analysis of soil/fill samples.

The Village of Youngstown Department of Public Works provided a backhoe and operator for the excavation of the test pits, while TVGA personnel provided field oversight. Excavation occurred in one- to two-foot increments until a subsurface feature such as piping was encountered, or until native soils were encountered. Excavated material was staged directly adjacent to the test pit. Visual characterization was performed for all test pits and the soil was screened for total organic vapors (TOVs) using a photoionization detector (PID). Following characterization and sample collection, the excavated soil/fill was returned to the test pit from which it originated. Logs that detail the observations made during the test pit activities are included in Appendix A.

A total of seven soil/fill samples were collected from five test pits for chemical analysis. The samples were collected from the excavated soil/fill with significantly elevated TOV measurements and/or soil/fill that exhibited visual/olfactory evidence of contamination. The test pit samples were analyzed for TCL SVOCs, pesticides, herbicides and PCBs and TAL metals. All samples from the test pits, except for the two collected from TP-9, were also analyzed for TCL VOCs. VOC analyses were not requested for these samples because the samples did not exhibit elevated TOV readings.

2.1.5 Soil Probes

A total of 16 soil probes were advanced on February 20 and 21, 2003 to more broadly characterize near-surface geology across the site and define the extent of subsurface contamination encountered during the test pit activities. The soil probes were advanced at the locations shown on Figure 7 using direct-push soil sampling equipment to collect continuous samples. The soil probe activities were conducted in accordance with Section 5.1 of the FSP. A subcontractor to TVGA, Trec Environmental Inc., provided and operated the direct-push drilling rig. The depths of the soil probes ranged from 8 to 14 feet below grade.

Upon retrieval, each soil sample was field screened with a PID for TOVs and a representative sample was placed in a ziplock bag. Soil samples from each probe were screened with a PID upon retrieval by separating the soil column with a decontaminated stainless steel spoon and placing the PID probe tip near the void. This was recorded as a "direct" TOV reading. In addition, the PID tip was placed into the air headspace above the soil to obtain a "headspace" TOV measurement after the headspace in the ziplock bag was allowed to reach equilibrium. The direct and headspace TOV measurements, as well as soil descriptions, were recorded on Soil Probe Logs, which are included in Appendix A. Following characterization and sample collection, the excess soil/fill was placed back into the probe hole from which it originated.

One soil/fill sample was collected from SP04 for chemical analysis, which included TCL SVOCs, pesticides, herbicides and PCBs and TAL metals. This sample was not analyzed for VOCs because TOVs were absent during screening and headspace measurements.

2.1.6 Micro-Well Installation

Micro-wells were installed in three of the soil probes to facilitate the characterization of groundwater quality and the determination of the groundwater flow direction in the uppermost water-bearing zone. The micro-wells were installed in accordance with Section 5.2 of the FSP. The locations of the micro-wells are shown on Figure 8.

Each of the micro-wells was installed to a depth of 12 feet below grade and was screened in the uppermost water-bearing zone in the soil/fill. The micro-wells were constructed with one-inch diameter polyvinyl chloride (PVC) with clean sand poured into the probehole annulus around the PVC. Table 2 summarizes the Micro-well Construction Details and Appendix A includes the Micro-well Installation Reports. Following installation, each micro-well was developed using a peristaltic pump and dedicated tubing until the indicator parameters (pH, temperature, and conductivity) had stabilized. The Well Development Logs are included in Appendix A.

2.1.7 Groundwater Sampling

Prior to the initiation of groundwater sampling, groundwater levels were measured to determine the groundwater flow direction and gradient using an electronic water level indicator. Groundwater sampling consisted of the evacuation of a minimum of three well volumes from each of the wells using a peristaltic pump and dedicated tubing. Groundwater sampling was performed as soon as practicable after purging had been completed and the wells had recovered sufficiently to sample. The groundwater was pumped directly from the well using the peristaltic pump and dedicated tubing into pre-cleaned bottles provided by the laboratory. Well Purging and Sampling Logs are included in Appendix A.

The three micro-wells were purged and sampled on March 2, 2006 to obtain representative groundwater samples in accordance with Section 9.3 of the FSP. The groundwater samples collected from micro-wells Micro01 and Micro02 were submitted for analysis of TCL VOCs, SVOCs, pesticides, herbicides, PCBs and TAL metals. The groundwater sample collected from micro-well Micro03 was submitted for TCL VOCs and TAL metals only due to insufficient water volume caused by a very slow recharge rate.

2.1.8 Building Surfaces and Associated Components Investigation

A sampling and analysis program was implemented to characterize areas of potential concern identified within the warehouse building as well as exterior drainage features associated with the warehouse building. The locations of the samples associated with the building surfaces and associated component investigations are shown on Figure 9. The locations of the asbestos samples are depicted on the figures associated with the Pre-Demolition Survey for Asbestos Containing Materials report, which is included as Appendix B.

2.1.8.1 Interior Building Surfaces/Components

Three soil/fill samples were collected from below the concrete floor of the warehouse building, including two from below the basement floor slab and one from below the compressor room floor slab. The samples were collected by removing an approximately two-foot square area of the overlying concrete using an electric jackhammer. The concrete floor in the compressor room was approximately 4 inches thick. The concrete floor system in basement of the warehouse building consisted of four separate layers, which included from top to bottom: 2 inches of concrete; 3 inches of cork insulation; 2 inches of concrete and 4 inches of a black cinder/slag material.

The underlying soil was immediately field screened with a PID and a portion of the soil/fill was placed in pre-cleaned sampling containers provided by the laboratory for TCL VOC analysis. A second portion of the soil/fill was homogenized in a decontaminated stainless steel bowl and placed in a laboratory supplied sampling containers. The samples were analyzed for TCL SVOCs, pesticides, herbicides and PCBs and TAL metals. Sample SubSlab01 was also analyzed for TCL VOCs because elevated TOVs were measured at this location. Elevated TOVs were not encountered in samples SubSlab02 and SubSlab03.

The standing water in each of the two elevator shafts located in the southern half of the warehouse building was collected for characterization purposes in accordance with Section 10.3 of the FSP. These water samples were analyzed for TCL VOCs, SVOCs, pesticides, herbicides and PCBs and TAL metals.

Two samples from the wood flooring were collected from the warehouse building to determine if the storage of pesticide-treated apples impacted the flooring. The sampling was completed in accordance with Section 10.4 of the FSP. One sample was collected from a storage area located in the southeast portion of the second floor and one sample was collected on the first floor in the vicinity of the loading docks on the southern side of the warehouse. These samples were analyzed for TCL pesticides and arsenic.

Four wipe samples were collected within the compressor room in accordance with Section 10.2 of the FSP. Three wipe samples were collected from oil-stained floor surfaces and one was collected from an oil-stained piece of equipment. These samples were collected to identify potential PCB contamination associated with the staining. Each of the wipe samples was analyzed for PCBs by EPA Method 8082.

2.1.8.2 Storm Sewer / Sump Sampling

Three sediment samples were collected from two storm sewers connected to the project site and one valve pit located adjacent to the northeast corner of the warehouse building. Additionally, one water sample was collected from the valve pit located on the project site. The samples were collected in accordance with Section 10.5 of the FSP. Each of these samples was analyzed for TCL VOCs, SVOCs, pesticides, herbicides and PCBs and TAL metals.

2.1.8.3 Pre-Demolition Asbestos Survey

A pre-demolition survey for asbestos-containing material (ACM) was completed by Watts Engineering & Architecture, P.C. (Watts) to evaluate the potential presence of ACMs on and within the three structures located on the project site. A New York State Department of Labor (NYSDOL) certified asbestos inspector completed an inspection of accessible portions of the on-site structures to visually identify, quantify and assess the condition of potential ACM, including surface treatments, thermal system insulation, roofing and siding, and other miscellaneous materials (e.g., floor and ceiling tiles, etc.). A total of 59 bulk samples of potential ACMs were collected using standard protocols, and were submitted for asbestos analysis.

Watts provided a report (March 2006), which is included as Appendix B, detailing the findings of the survey. The report includes a description of the samples collected and figures and tables indicating sample locations. The report also describes the location and details the estimated volume of ACMs identified during the survey. The report also includes all laboratory reports/Chain-of-

Custody documents. Additionally, Watts provided a preliminary cost estimate for the abatement of both the friable and non-friable ACM identified during the survey.

2.2 Sample Analysis/Validation

2.2.1 Laboratory Analysis

All chemical analyses were performed by the Mitkem Corporation (Mitkem), which is accredited under the New York State Environmental Laboratory Approval Program (ELAP) Contract Laboratory Program (CLP). All samples were analyzed using the applicable methods prescribed by the NYSDEC Analytical Services Protocol (ASP), June 2000. Category B deliverables were generated for these samples. The target analytes and corresponding analytical methods used for the project are identified and summarized in Table 1.

2.2.2 Quality Assurance/Quality Control Samples

In addition to field samples, Quality Assurance/Quality Control Samples were collected to evaluate the effectiveness of the QA/QC procedures implemented during the field and laboratory activities associated with the project. These QA/QC samples were collected and analyzed in accordance with the January 2006 QA/QC Plan developed for the project site. As reflected by Table 1, QA/QC samples included matrix spike (MS), matrix spike duplicate (MSD) and matrix duplicate (MD) samples, trip blanks, blind field duplicates and rinseate (i.e. equipment) blank samples.

2.2.3 Data Validation

TVGA performed the validation of the laboratory data in accordance with the *NYSDEC Guidance for the Development of Data Usability Summary Reports* (DUSR). The data package was first reviewed for completeness and compliance relative to the criteria specified in the aforementioned NYSDEC document. TVGA then conducted a detailed comparison of the reported data with the raw data submitted as part of the supporting documentation package, and applied protocol-defined procedures for the identification and quantitation of the individual analytes to determine the validity of the data. The DUSR includes a narrative summary discussing all quality issues and their impact on the reported results and presents copies of laboratory case narratives. The DUSR is included in Appendix C.

3.0 PHYSICAL CHARACTERISTICS OF THE STUDY AREA

3.1 Site Structures

The project site includes three separate 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. Each of the structures is in relatively poor condition, and major sections of the roofs of the warehouse and icehouse have collapsed, making the buildings unsafe for trespassers and on-site workers. The small residential structure has remained vacant for some time, and mold odors were obvious during the site reconnaissance. The sources of the mold may include a leaking roof and ponded water in the basement. Each of the three buildings contains ACMs.

The underground storage tank shown on historical maps was not encountered during this investigation. However, contaminated soil was found in the presumed area of the UST, and petroleum odors and staining were observed.

An aboveground storage tank is located in the basement of the warehouse. The tank was likely used for storing heating oil used to heat a portion of the warehouse, and the volume of the tank was estimated at 1,000 gallons. It appeared that this part of the building was underlain by a soil floor rather than a concrete floor. This tank was inaccessible due to the very short ceiling in this portion of the basement as well as the severely deteriorated condition of the floors and roof above this section of the building. Therefore, it is not known if there is contamination associated with this tank.

3.2 Physical Setting

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 Plain, 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.

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 was 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. 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 thick.

The majority of the stormwater on the project site is conveyed either by overland flow off the project site or infiltrates into the subsurface of the project site. The project site is graded such that stormwater flows from the interior portions of the project site toward the property lines where it either enters into stormwater catch basins or flows onto the adjacent roadways then into stormwater catch basins on the opposite sides of the roads.

3.3 Geology

The results of the remedial investigation indicate that soil/fill overlies the native soil across the entire site. The overburden stratigraphy can be divided into three significant units, which are described in descending order.

- Soil/Fill Material
- Reworked Native Material
- Native Material

3.3.1 Soil/Fill Material

A thin layer of soil/fill material that ranges in thickness from less than one inch to 1.5 feet was typically present as the uppermost overburden layer throughout the project site. The soil/fill material primarily consists of three types of material that included topsoil, sandy-gravel and black sand. The topsoil, which ranged in thickness from less than one inch to six inches, consisted of brown silty soil with varying amounts of organic material and was encountered in the grassed areas located in the northwestern and southeastern portions of the project site. In areas not overlain by topsoil, the uppermost soil/fill material consisted of gray, brown and dark brown sandy gravel with trace amounts of silt and clay and wood and brick pieces. This material ranged in thickness from 0.1 to 2 feet, was encountered at locations throughout the project site, and was most prevalent at locations to the south and southeast of the warehouse. Underlying the topsoil and/or sandy gravel material was a thin layer of coal-like black sand and fine gravel that ranged in thickness from less than one inch to six inches. As with the sandy-gravel layer, this material was encountered at locations throughout the project site but was most prevalent at locations to the south and southeast of the warehouse.

In addition to these three common layers of soil/fill material, several other types of soil/fill were encountered. These soil/fill types as well as other observations include:

- An approximately 3-inch thick layer of white sandy-gravel was encountered in TP09 at a depth of 3.2 feet BEGS. This soil/fill material was not encountered anywhere else on the project site.
- A soil/fill material consisting of a gravelly-sand with metal cable, nails and other miscellaneous metal pieces, glass and wood was encountered in TP04 and Micro-01, which were located in the spray wash area. This fill material was present to a depth of four feet below the existing ground surface. According to representatives of the Village of Youngstown DPW, this area of the project site was utilized as a disposal/burn area for waste generated on the project site during its operation as a cold storage facility.
- Black-stained gravel with a noticeable fuel oil odor was encountered in TP15 from 0.5 to 5 feet below grade. This fill material was not encountered anywhere else on the project site.
- In the area of TP02, elevated TOVs were measured in the soil/fill, which was found to be thicker in this area than in other portions of the site. Significant petroleum and staining were also observed in this area.
- The soil/fill from TP04 was found to contain elevated concentrations of TOVs and contained a petroleum odor.

3.3.2 Reworked Native Material

A layer of reworked native material was generally encountered immediately below the soil/fill material in most test pits and soil probes throughout the site. It was determined that this material was native based on comparisons to subsurface soil encountered at greater depths and was determined to be reworked based on chaotic layering and the presence of anthropogenic materials (viz., brick, glass, wood and metal). This material ranges in thickness from 0.2 to 8.4 feet and consists of the two types of native soils that were encountered during the subsurface investigations. These two soil types included a brown to gray and sometimes red clayey-silt and a brown to gray sandy-silt and silty-sand. Each soil type contained varying amounts of wood, brick, metal, and glass.

3.3.3 Native Material

Native soil underlies the reworked native material and consists of glaciolacustrine sediments and glacial tills. The uppermost native material, the glaciolacustrine sediments, primarily consists of very stiff to hard brown silts and clays and brown and gray silts and sands. These layers were found across the project site and were encountered at the majority of the subsurface sampling locations.

3.4 Hydrogeology

Hydrogeologic conditions across the project site were investigated through the installation of three micro-wells (Micro01 through Micro03). The Micro-well Construction Reports, Micro-well Development Logs, and Sampling Logs are included in Appendix A. Each of the wells was screened in the upper-most water-bearing zone in the overburden soil/fill.

Generally, groundwater was present in the native material. Static water levels in the wells were measured on March 1, 2006. Table 3 summarizes the groundwater elevation measurements. These measurements and resulting groundwater contours are shown on Figure 8. The depths to groundwater generally ranged from 5 to 6 feet below the existing ground surface. The groundwater contour map indicates that the groundwater flow direction is generally to the west.

4.0 NATURE AND EXTENT OF CONTAMINATION

Surface and subsurface soil/fill, groundwater, surface water, sediment, and building material and component samples were collected for chemical analysis to determine the magnitude and extent of potential contamination occurring in these media. A summary of the samples collected from these media, including the number and type of QA/QC samples and the corresponding analytical methods are presented in Table 1.

The following sections summarize and discuss the analytical results generated during the RI. For discussion purposes, this data is compared with the Standards Criteria and Guidance values (SCGs) applicable to each medium sampled, and include:

- Soil/fill, sediment and wood flooring: NYSDEC's January 1994 Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels (TAGM HWR-94-4046)
- Groundwater: NYSDEC's June 1998 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations in the Technical and Operational Guidance Series (TOGS) 1.1.1
- PCB Wipe Samples: 40CFR Part 761 Subpart G-PCB Spill Cleanup Policy – 761.125 (c)(4)(i – iv).

A series of summary tables (Tables 4 through 11) comparing the data to the applicable SCGs has been integrated into the following discussions. Table 12 includes the list of qualifiers used in Tables 4 through 11. The analytical laboratory reports are included in Attachment A.

The laboratory analytical packages prepared by Mitkem were reviewed and evaluated internally by TVGA, to assess compliance with the analytical method protocols described in the NYSDEC Analytical Services Protocol (ASP). A Data Usability Summary Report (DUSR) was prepared by TVGA that compares the quality of the performance of the laboratory analyses to that described in the ASP. The DUSR has been included in Appendix C. All analytical results summary tables discussed in this report include only the validated data.

The evaluation of the analytical results for samples collected from the project site indicate that the samples were processed in general compliance with applicable protocols, and most results are usable as reported, or usable with minor edits or qualification as estimated or edits to non-detection. The exceptions include some results that were rejected, including: heptachlor epoxide in one groundwater sample due to poor dual column correlations; dalapon in five samples for percent difference issues; and selenium due to poor Contract Required Detection Limit Recoveries or poor spike recoveries. Generally the samples showed good accuracy and precision.

4.1 Background Soil

Five background soil samples were collected and analyzed for TCL SVOCs, pesticides/PCBs, herbicides and TAL metals to characterize background levels in the vicinity of the project site and facilitate the evaluation of the analytical results generated from on-site sampling. Table 4 summarizes the background soil sampling analytical results.

A comparison of the results from these five samples indicates that they are generally similar. One or more SVOCs, primarily polycyclic aromatic hydrocarbons (PAHs), were detected in each of the background samples. Because PAHs are formed through anthropogenic combustion processes such as the burning of coal, oil and gasoline, they are generally ubiquitous in soils. With the exception of benzo(a)pyrene in BG-02, the SVOC concentrations in the background samples did not exceed the applicable SCGs. PCBs were not detected in the background samples. Pesticides and herbicides were detected in the background samples, but the concentrations were well below the regulatory levels. The site background concentration for each of the metals was generally within or below the published background concentration ranges for each analyte.

4.2 Surface Soil/Fill

Eight surface soil/fill samples were collected from areas of concern, which include:

- The apple wash area
- Loading docks
- The area adjacent to the transformer substation
- Underneath the fill port for the fuel oil tank located in basement of the warehouse building
- Locations along the western property line.

The samples consisted either of topsoil, or a mixture of topsoil and the uppermost soil/fill material described in Section 3.2.1. Each of the surface soil/fill samples collected from the project site was analyzed for TCL SVOCs, pesticides, herbicides and PCBs and TAL metals, and the analytical results are summarized in Table 5. Figure 6 shows the sampling locations.

SVOCs, primarily PAHs, were detected in each of the surface soil/fill samples, and one or more of the compounds in each sample were detected at concentrations above the SCGs. However, the total SVOC concentration in each sample was far below the SCG value for total SVOCs (500,000 ug/kg). The concentrations of SVOCs in these samples are generally similar to those detected in the background samples, with the exception of sample SS04. The SVOC concentrations in SS04 were generally an order of magnitude higher than in the other samples. As this sample was collected adjacent to a former loading dock, the elevated SVOC concentrations are potentially related to leaks and/or spills from trucks on/off-loaded in this area.

Although pesticides, herbicides, and PCBs were detected in two or more of the surface soil/fill samples, the concentrations in the samples were low and were well below the applicable SCGs.

A total of 19 metals were detected at concentrations that exceeded the respective SCG in at least one surface soil sample. However, these concentrations do not pose significant concerns. The concentrations are generally within the Eastern USA Background values presented in TAGM 4046 or in the USGS background ranges shown in Table 5. While there are no listed TAGM 4046 or USGS background ranges for thallium or silver, the detected concentrations were low.

4.3 Subsurface Soil/Fill

Eight subsurface soil/fill samples were collected from test pits and soil probes from across the project site to characterize the subsurface soil/fill material. With a few exceptions, each of the subsurface samples collected from the site was analyzed for TCL VOCs, SVOCs, pesticides, herbicides and PCBs and TAL metals. The two samples collected from TP09 and the sample collected from SP04 were not analyzed for VOCs based on the absence of TOVs at these locations. Because PCBs were not detected in any of the subsurface soil/fill samples, PCBs are not discussed in the following paragraphs. The analytical results for the subsurface soil/fill samples are summarized in Table 6, and the locations of subsurface investigation points are depicted on Figure 7.

Acetone, carbon disulfide, and methylcyclohexane were detected in one or more of the five samples submitted for VOC analysis. None of the samples contained individual VOC parameters at concentrations exceeding the applicable SCG; however, the concentration of total VOCs in TP02-D8 exceeded the SCG value (10,000 ug/kg). Staining and petroleum odors were observed in TP02, and the soil screening revealed elevated concentrations of TOVs. The elevated VOCs detected in this sample are likely related to the historical operation of a fuel oil tank in this portion of the project site. Visual and photoionic evidence obtained from surrounding subsurface investigation points was used to define the extent of VOC contamination in the subsurface soil/fill, which is limited to the immediate vicinity of TP02.

Although SVOCs, primarily PAHs, were detected in each of the subsurface soil/fill samples, only three samples (TP04-D23.5, TP15-D4 and SP04-D11.2) contained SVOCs at concentrations exceeding the applicable SCGs. Petroleum odors and elevated TOVs were also observed in these test pits. The concentration of SVOCs at these locations only slightly exceeded the applicable SCGs, and the concentration of total SVOCs in each of the samples was well below the SCG for total SVOCs.

Pesticides and one herbicide were detected in three of the subsurface soil/fill samples. The concentrations in the samples were very low and well below the applicable SCGs.

The concentrations of metals in the subsurface soil were generally lower than the surface soil/fill results. A total of 17 metals were detected at concentrations exceeding the applicable SCG values in at least one sample. These concentrations were generally within the TAGM 4046 and/or USGS Eastern USA background ranges. While there are no listed TAGM 4046 or USGS background ranges for thallium or silver, the detected concentrations were low. The concentration of arsenic in sample SP09-D3 was 41.3 mg/kg, above the SCG (7.5 mg/kg) and TAGM 4046 Eastern US Background Range (3 to 12 mg/kg). This sample was collected from approximately three feet below grade from a layer of black, cinder-like material that was approximately three inches thick. A sample of similar material collected from SP04 did not contain elevated concentrations of arsenic.

4.4 Groundwater

Groundwater samples were collected from the three newly installed micro-wells. The samples from Micro01 and Micro02 were analyzed for TCL VOCs, SVOCs, pesticides, herbicides and PCBs and TAL metals. Due to poor recharge, sufficient groundwater volume was obtained from Micro03 for the analysis of TCL VOCs and TAL metals.

No VOCs, pesticides, herbicides or PCBs were detected in the groundwater samples. The only SVOC detected was N-nitrosodiphenylamine (1), which was detected in Micro01 at a concentration below the applicable SCG.

Five metals were detected in at least one of the groundwater samples at concentrations above the SCGs. Iron, magnesium, manganese, and sodium are commonly encountered in uncontaminated, natural environments and are associated more with the groundwater aesthetics than toxicity. It is not known if the thallium detected in the samples is indicative of natural groundwater chemistry or if it has an anthropogenic source. Thallium can enter the environment through the burning of coal and was also used as a rat poison until 1972.

4.5 Building Surfaces and Associated Components Investigation

4.5.1 Subslab Soil/Fill Samples

Three soil/fill samples were collected from below the concrete floor of the warehouse building, including two from below the basement floor and one from below the compressor room floor. The locations of these samples are depicted in Figure 9. The samples were analyzed for TCL SVOCs, pesticides, herbicides and PCBs and TAL metals. Because the field screening did not detect the presence of TOVs at any of the sampling locations, VOCs were not analyzed in two of the three samples. SubSlab01 was analyzed for TCL VOCs to confirm the absence of VOCs identified during field screening. The analytical results for these samples are summarized in Table 8.

VOCs were detected in Subslab01, but the concentrations of detected analytes were well below the applicable SCGs. SVOCs were detected in each of the subslab soil/fill samples, but only one analyte (benzo(a)pyrene) was detected in subsalb03 at a concentration that exceeded the applicable SCG. This concentration was only slightly above the SCG, and the SCG for total SVOCs was not contravened in any of the subslab samples.

The PCB Aroclor 1260 was detected in Subslab01, which was collected from the fill material underlying the compressor room floor. However, the concentration was well below the applicable SCG. Pesticides and herbicides were not detected in any of the samples.

The concentrations of metals in the subslab soil/fill samples were similar to the subsurface soil/fill results. A total of 15 metals were detected at concentrations exceeding the applicable SCG values. With the exception of lead in one sample, these concentrations were within the TAGM 4046 and/or USGS background concentration ranges. The concentration of lead in Subslab01 was more than ten times the average site background value. This concentration is almost four times the lead concentration in any of the other soil/fill and sediment samples collected at the site, but appears to be confined to the material underlying the compressor room. It is likely that the elevated lead concentrations are associated with subbase material used during the construction of that portion of the building.

4.5.2 Elevator Shaft Water Samples

The standing water in each of the two elevator shafts located in the southern half of the warehouse building was collected for characterization purposes. These water samples were analyzed for TCL VOCs, SVOCs, pesticides, herbicides and PCBs and TAL metals. No VOCs, SVOCs, pesticides, herbicides and PCBs were detected in either of these samples. While metals were detected in both samples, the concentrations were well below the applicable SCGs.

4.5.3 Wood Floor and Wipe Samples

Two samples from the wood flooring were collected from the warehouse building to determine if the storage of pesticide-treated apples impacted the flooring. These samples were analyzed for TCL pesticides and arsenic. While pesticides and arsenic were detected in both samples, the concentrations were below the applicable SCGs.

Four wipe samples were collected within the compressor room including three from oil-stained floor surfaces and one from an oil-stained compressor. Each of the wipe samples was analyzed for PCBs by EPA Method 8082. PCBs were detected in all four samples. The results for the sample collected from the compressor and from the floor in the center of the room contravened the SCG. The concentrations of PCBs in the other two wipe samples were below the applicable SCG. PCB-containing oil was often used in compressors, and the presence of elevated PCBs on the equipment and floor surfaces in the compressor room is likely related to spills and/or leaks from the compressors.

The analytical results for the wood floor and wipe samples are summarized in Table 10, while the locations of these samples are depicted on Figure 9.

4.5.4 Storm Sewer/Sump Sampling

Sediment samples were collected from two storm sewers connected to the project site and one valve pit located adjacent to the northeast corner of the warehouse building. Additionally, one water sample was collected from the valve pit. Each of these samples was analyzed for TCL VOCs, SVOCs, pesticides, herbicides and PCBs and TAL metals. The analytical results for the sediment samples are summarized in Table 11, while the locations of these samples are depicted on Figure 9. The results for the water sample collected from the valve pit are shown in Table 9.

VOCs consisting of chlorinated solvents (1,1,1-trichloroethane, 1,1-dichloroethane and 1,1-dichloroethene) as well as common laboratory contaminants (acetone and methylene chloride) were detected in one or more of the sediment samples. However, the concentrations of these analytes were below the applicable SCGs.

SVOCs, primarily PAHs, were detected in each of the sump sediment samples, and one or more of the SVOCs were detected at concentrations above the SCGs in each of the samples. However, the SCG for total SVOC concentrations was not exceeded in any of the samples. The presence of SVOCs in the sample collected from the valve pit, which is located adjacent to a former loading dock, may be related to leaks and/or spills from trucks on/off-loaded in this area. The source of elevated SVOCs in samples Sump02 and Sump03, which were collected from storm sewers located within the right-of-way of roads adjoining the project site, is likely runoff from these roads.

Pesticides were detected in each of the sump sediment samples at concentrations below the applicable SCGs. PCBs and herbicides were not detected in any of the samples collected from the sumps.

The concentrations of metals in the sump sediment samples were similar to the surface and subsurface soil/fill results. A total of 17 metals were detected in at least one sample at concentrations exceeding the applicable SCG values. However, these concentrations are generally low and fall within the Eastern USA background ranges.

VOCs, SVOCs, PCBs, herbicides and pesticides were not detected in the aqueous sample collected from the valve pit. Metals were detected in this sample at concentrations below the applicable SCGs.

4.5.5 Pre-Demolition Asbestos Survey

As described in the *Pre-Demolition Survey of Asbestos Containing Materials* report, included in Appendix B, substantial quantities of non-friable (approximately 15,875 square feet) and limited quantities of friable (approximately 575 square feet and 160 linear feet) asbestos containing materials (ACMs) were identified throughout the on-site structures. The majority of the friable ACM that was identified in the warehouse building consisted of gray cement on the copper flashings associated with the roof of the warehouse building. The remainder of the friable ACM within the warehouse consisted of cloth wrap surrounding the cork pipe and tank insulation. Limited quantities of friable ACM consisting of a paper wrap were identified on ductwork within the basement of the house. The majority of the non-friable ACMs consisted of roofing materials on the warehouse and icehouse buildings. The remainder of non-friable ACMs consisted of window glaze in the warehouse and floor tiles in the house.

5.0 CONTAMINATION ASSESSMENT

5.1 Contaminant Fate and Transport

The probable fate and transport of contaminants detected on the project site is a function of the properties of the individual contaminants and available pathways for the contaminants to migrate. The project site is currently an unutilized commercial property, and it is planned that future use of the project site will include residential development. The degree to which, as well as the route by which, contaminants migrate is dependent on the physical characteristics of the site and the type and distribution of contaminants. The following sections discuss the probable fate and transport of contaminants in the different types of media at the Youngstown Cold Storage site.

5.1.1 Surface Soil/Fill

Contaminants of concern detected in the surface soil/fill consist of SVOCs. The SVOCs detected include PAHs, seven of which are known carcinogens. The SVOCs are characterized by low solubilities and high octanol-water partition coefficients, and therefore, have a tendency to adsorb onto soil particles. In addition, the PAHs have relatively low vapor pressures and are expected to remain in a solid or liquid state and undergo degradation via naturally occurring microbes. Due to the low solubility, SVOCs are not expected to impact groundwater quality or migrate substantially into the subsurface. This is supported by the absence of these compounds in the on-site groundwater.

5.1.2 Subsurface Soil/Fill

The analytical results indicate that the contaminants of concern in the subsurface soil/fill consist of arsenic and VOCs, primarily petroleum hydrocarbons. Arsenic has a low solubility and does not readily degrade under natural conditions. Due to the low solubility, arsenic is not expected to impact groundwater quality or migrate substantially in the subsurface. This is supported by the absence of arsenic in the on-site groundwater.

VOCs are moderately to highly soluble in water and have higher vapor pressures, and are therefore relatively mobile in the subsurface. The high vapor pressures result in the nuisance characteristics (olfactory) observed in the soil/fill. These VOCs tend to migrate downward under the influence of gravity and capillary forces towards the top of groundwater. Once in groundwater they are expected to migrate in the dissolved phase with flowing groundwater. These compounds also have a relatively high degree of biodegradability as is evident by the high concentrations of total TICs in the site samples. The extent of VOC contamination in the subsurface appears to be limited to the southeastern portion of the project site and the contamination does not appear to be migrating in the subsurface as is evident by the absence of VOCs in the groundwater and lack of significant VOCs in soil/fill samples collected at locations throughout the project site.

5.1.3 Groundwater

No contaminants of concern were identified in the groundwater. The lack of local reliance on groundwater as a source of potable water minimizes the potential for direct human exposure to groundwater contaminants. In addition, the nearest body of water to which the groundwater at the site will discharge, the Niagara River, is 0.15 miles west of the project site, also limiting the potential for direct human exposure to groundwater contaminants. Residences and businesses surrounding the project site and within the Village of Youngstown are serviced by the municipal water supply system that relies upon water withdrawn from the Niagara River.

5.1.4 Building Materials and Associated Components

Contaminants were identified in the subslab soil/fill samples and stained surfaces of the compressor room within the warehouse building, as well as in the sediments collected from the on-site sump and adjacent storm sewers. Additionally, friable and non-friable ACMs were identified in all three on-site structures. The fate and transport of the contaminants detected in these media are discussed in the following subsections.

5.1.4.1 Subslab Soil/Fill

Contaminants of concern detected in the soil/fill samples collected from underneath the concrete floor of the warehouse building are limited to lead. Lead has a low solubility and is not expected to significantly affect groundwater quality or migrate substantially in the subsurface. This is supported by the low concentration of lead in the groundwater at the project site. Additionally, based on it's location below the concrete floor of the compressor room, mechanical transport of lead via wind and/or water erosion is unlikely.

5.1.4.2 Storm Sewer/Sump Sediments

Contaminants of concern detected in the sediment collected from the on-site valve pit and the off-site storm sewers were limited to PAHs. With the exception of an opening at the top of the structure, the on-site valve pit appears to be an isolated and enclosed structure. Therefore, the PAHs within it are not anticipated to migrate off-site.

Because the source of contaminants in the storm sewer sediments is uban runoff from the roads rather than an on-site source, these storm water sediments will not be addressed during the remediation of the project site.

5.1.4.3 Stained Floor/Equipment Surfaces

PCBs are present on stained equipment and floor surfaces in the compressor room. PCBs are quite resistant to chemical or biological degradation and tend to persist in the environment. However, based on the fact that these surfaces are not exposed to the environment, it is unlikely that mechanical transport via wind and/or water is occurring. Additionally, the results of surface soil/fill sampling did not indicate the presence of significant concentrations of PCBs. Furthermore, PCBs were not detected in groundwater at the site. Therefore, PCBs are not likely to be migrating from their current location.

5.1.4.4 Asbestos

Non-friable ACMs are relatively resistant to weathering and are not expected to migrate from the project site. However, asbestos fibers released as a result of the degradation of friable ACMs are susceptible to dispersion via wind currents and/or transport via stormwater. Based upon the condition of the warehouse building, some of the friable ACMs are exposed directly to the environment and could be subject to wind and water erosion.

5.2 Evaluation of Potential Receptors

The project site is located in an area that is characterized by residential properties. The project site is currently an unutilized commercial property, and residences are located immediately to the north and west of the project site. A public park is located immediately to the east of the project site. Access to exterior portions of the project site is unrestricted. The on-site buildings have been secured in an attempt to restrict public access. However, due to the lack of fencing surrounding the project site and the deteriorating condition of the warehouse building, entry into the warehouse is possible.

Under current conditions, potential human receptors include persons working or trespassing on the project site; persons living and working in the area surrounding the project site; persons utilizing the adjacent park; and persons involved in utility work on and adjacent to the project site. In addition, potential environmental receptors include wildlife living on and migrating through the project site (e.g., rodents, birds, etc.).

The surrounding area is serviced by a municipal water supply system that relies upon water withdrawn from the Niagara River. Considering the absence of contaminants of concern in the groundwater and the lack of reliance on groundwater as a potable water supply source in the immediate vicinity and downgradient of the project site, exposure to on-site contamination via groundwater is not a concern.

The planned future use of the project site is for residential development, and remediation will likely be required prior to redevelopment. During remediation and redevelopment, potential human receptors include site workers as well as persons living in and traveling through the area surrounding the project site. Potential environmental receptors include wildlife living on and migrating through the project site.

No human receptors and/or environmental have been identified in connection with the post-redevelopment period, assuming that the contaminated media has been removed.

5.3 Potential Exposure Pathways

5.3.1 Surface Soil

Under the current use scenario, persons living and working in the vicinity of the project site and/or persons trespassing on the site could be exposed to SVOCs in the surface soil/fill via inhalation of airborne particles, incidental ingestion of, or dermal contact with the contaminated media.

Construction workers, site visitors and persons living, working and traveling through the area near the project site could be exposed to these contaminants in the surface soil/fill during excavation of the contaminated soil/fill in connection with remediation and/or site redevelopment. Potential exposure routes for these receptors include inhalation of contaminated dust, and incidental ingestion of, and/or dermal contact with the contaminated soil/fill. However, the use of appropriate personal protective equipment, dust suppression techniques, and the development and implementation of a Soil/Fill Management Plan would likely minimize the risk of exposure during remediation and/or construction activities.

No complete exposure pathways to the contaminated surface soil/fill have been identified in connection with the post-redevelopment period, assuming that the contaminated surface soil/fill has been removed.

5.3.2 Subsurface Soil/Fill

The presence of elevated concentrations of VOCs and arsenic in subsurface soil/fill is not interpreted to represent a human or environmental exposure risk because no complete exposure pathways were identified under the current use scenario for the project site. This is a function of the subsurface disposition of the contamination and limited areal extent of contaminated subsurface soil/fill, which effectively minimize the potential for the incidental ingestion of, or dermal contact with the contaminated media. These factors also reduce the potential for the emission of vapors and particulates that could pose an exposure risk via inhalation. This applies to persons living, working and traveling through the area surrounding the project site, as well as persons visiting, working or trespassing on the project site.

Environmental receptors, construction workers, site visitors and persons living, working and traveling through the project site could be exposed to the contaminants in the subsurface soil/fill during excavation of the contaminated soil/fill in connection with the remedial and/or site redevelopment activities. Potential exposure routes for these receptors include inhalation of organic vapors and/or contaminated dust and incidental ingestion of and/or dermal contact with the contaminated soil/fill. However, the use of appropriate personal protective equipment, dust suppression techniques, and the development of a Soil/Fill Management Plan would minimize the risk of exposure during the remedial and/or site redevelopment construction activities.

No complete exposure pathways have been identified in connection with the post-redevelopment period, assuming that the subsurface soil/fill has been removed or properly treated.

5.3.3 Building Materials and Associated Components

5.3.3.1 Storm Sewer/Sump Sediments

Under the current use scenario, site workers, persons trespassing on the project site and utility workers involved with the cleaning and/or maintenance of the stormwater sewers as well as interconnected sewers could be exposed to PAHs contained within the valve pit sediments via inhalation of airborne particles, incidental ingestion of, or dermal contact with the contaminated sediments.

Construction workers, site visitors and persons, working and traveling through the project site could be exposed to the PAHs in the sediment during sump cleaning/removal activities performed in connection with remediation and/or site redevelopment. Potential exposure routes for these receptors include inhalation of contaminated dust, and the incidental ingestion of, and/or dermal contact with, the contaminated sediment. However, the use of appropriate personal protective equipment and dust suppression techniques would limit the risk of exposure during site redevelopment.

No complete exposure pathways for on-site sediment contamination have been identified in connection with the post redevelopment period, assuming that the contents of the on-site valve pit have been removed.

5.3.3.2 Stained Floor/Equipment Surfaces

Under the current use scenario, site workers and/or persons trespassing in the warehouse could be exposed to PCBs present on stained equipment and floor surfaces within the compressor room via incidental ingestion of, or dermal contact with the contaminated media.

Construction workers, site visitors and persons, working and traveling through the project site could be exposed to the PCBs on stained surfaces and/or within airborne particles during remedial activities performed in connection with site redevelopment. Potential exposure routes for these receptors include inhalation of contaminated dust, and the incidental ingestion of, and/or dermal contact with stained surfaces. However, the use of appropriate personal protective equipment and dust suppression techniques would limit the risk of exposure during site redevelopment.

No complete exposure pathways for PCB stained surfaces have been identified in connection with the post redevelopment period, assuming that stained surfaces are removed from the project site.

5.3.3.3 Subslab Soil/Fill

The presence of elevated lead concentrations in the soil/fill material below the concrete floor of the compressor room is not interpreted to represent a human or environmental exposure risk because no complete exposure pathways were identified under the current use scenario for the project site. This is a function of the subsurface disposition of the contamination which effectively minimizes the potential for the incidental ingestion of, or dermal contact with the contaminated media.

Environmental receptors, construction workers, site visitors and persons living, working and traveling through the project site could be exposed to the lead-contaminated soil during excavation in connection with the remedial and/or site redevelopment activities. Potential exposure routes for these receptors include inhalation of contaminated dust and incidental ingestion of and/or dermal contact with the contaminated soil/fill. However, the use of appropriate personal protective equipment, dust suppression techniques, and the development of a Soil/Fill Management Plan would minimize the risk of exposure during the remedial and/or site redevelopment construction activities.

No complete exposure pathways to the lead-contaminated soil/fill have been identified in connection with the post-redevelopment period, assuming that the contaminated fill has been removed.

5.3.3.4 Asbestos

Under the current use scenario, persons living and working in the area immediately surrounding the project site have the potential to be exposed to asbestos via the inhalation of asbestos fibers released from damaged, suspect friable ACMs that are exposed to wind currents. The risk of asbestos exposure during building demolition or renovation activities would be minimized through the implementation of proper abatement, control and monitoring procedures as required by applicable state and federal regulations. The risk posed by the ACMs would be eliminated with the removal and proper disposal of the asbestos-containing demolition debris, and, therefore, would not apply to the future use scenario.

6.0 IDENTIFICATION AND DEVELOPMENT OF ALTERNATIVES

6.1 Remedial Action Objectives

The following sections outline the Remedial Action Objectives (RAOs) identified for each of the contaminated media encountered on the project site. These RAOs are based upon the findings of the RI and the anticipated future use of the project site for residential development.

6.1.1 Surface Soil/Fill

Contaminants of concern detected in the surface soil/fill consist of SVOCs. The RAO for this medium is to prevent exposure of human and environmental receptors to these contaminants via dermal contact, incidental ingestion or inhalation of particulates, and to prevent the discharge of contaminated storm water runoff and eroded surface soil/fill to off-site locations or into adjacent storm sewers.

6.1.2 Subsurface Soil/Fill

Contaminants of concern detected in the subsurface soil/fill include VOCs and arsenic. Nuisance characteristics including petroleum odors and staining are also a concern. The RAO for this medium is to prevent the exposure of humans and environmental receptors to contaminated subsurface soil/fill via dermal contact, incidental ingestion or inhalation of particulates or vapors. Preventing the leaching of contaminants into groundwater from the subsurface soil/fill is also an RAO as the VOCs at the project site have high solubilities.

6.1.3 Building Materials and Associated Components

6.1.3.1 Valve Pit Sediments

Contaminants of concern in this medium consist of PAHs. The RAO for this medium is to prevent the exposure of humans and environmental receptors to contaminated sediment via dermal contact, incidental ingestion or inhalation of particulates.

6.1.3.2 Stained Floor/Equipment Surfaces

Contaminants of concern in this medium consist of PCBs. The RAO for this medium is to prevent the exposure of humans and environmental receptors to contaminated floor and equipment surfaces via dermal contact, incidental ingestion or inhalation of particulates.

6.1.3.3 Subslab Soil/Fill

The contaminant of concern in this medium is lead. The RAO for this medium is to prevent the exposure of humans and environmental receptors to contaminated subslab soil/fill via dermal contact, incidental ingestion or inhalation of particulates.

6.1.3.4 Aboveground Storage Tank

Due to its inaccessibility, it is not known if the aboveground storage tank located in the basement of the warehouse has released contaminants to the surface and subsurface soil in its vicinity. If it did, contaminants of concern in this medium would consist of VOCs and/or SVOCs. It is also not known if the tank contains material that could be released in the future. Therefore, the RAO for this medium may include the prevention of exposure of humans and environmental receptors to petroleum contamination via dermal contact, incidental ingestion or inhalation of vapors, as well as to prevent the future release of the tank contents, if any.

It should be noted that the September 2003 USEPA removal action included the removal of 250 gallons of No. 2 fuel oil from a heating tank on the site. However, the February 2005 Administrative Record prepared by the USEPA did not indicate the location of this tank on the subject property. Because a heating oil tank was located within the basement of the residential building as well as in the warehouse, it is not clear from which the oil was removed.

6.1.3.5 Asbestos

Contaminants of concern in this medium consist of friable and non-friable ACMs. The RAO for this medium is to prevent the exposure of humans and environmental receptors to ACMs via incidental ingestion or inhalation of fibers.

6.2 General Response Actions

General response actions for each of the affected media at the project site have been identified and are described in the following subsections. Although these general response actions include no action as a remedial option, the no action response does not address the RAOs identified in the preceding section and is included for comparison purposes only. The general response actions are summarized in Table 13.

6.2.1 Surface Soil/Fill

General response actions available to satisfy the RAO identified for surface soil/fill include:

- No action

- Excavation and off-site disposal of impacted surface soil/fill

Additionally, the construction of a cover over the impacted surface soil/fill was considered. However, it is the Village's intent to redevelop the site for residential uses without requiring restrictions. Therefore, the installation of a cover was dismissed as a potential option.

6.2.2 Subsurface Soil/Fill

General response actions available to address the RAO for subsurface soil/fill include:

- No action
- Excavation and off-site disposal of impacted subsurface soil/fill
- In situ Treatment of VOC-contaminated subsurface soil/fill

6.2.3 Building Materials and Associated Components

6.2.3.1 Valve Pit Sediments

General response actions available to address the RAO for valve pit sediments include:

- No action
- Removal and off-site disposal of impacted sediments

The very small volume of material (less than one cubic yard) limits the necessity to evaluate other potential options to address impacted sediments.

6.2.3.2 Stained Floor/Equipment Surfaces

General response actions available to address the RAO for stained floor/equipment surface include:

- No action
- Removal and off-site disposal of equipment including fluids
- Removal and off-site disposal of impacted concrete

Additionally, the cleaning of the impacted concrete was considered. The concrete is in poor condition, so any cleaning fluids would likely migrate into the subbase material, thus increasing the volume of material that must be remediated. Additionally, the subbase material is contaminated and must be remediated, which would likely include the removal of the concrete floor to access the underlying subbase material. Therefore, this response action is not considered to be viable.

6.2.3.3 Subslab Soil/Fill

General response actions available to address the RAO for subslab soil/fill include:

- No action
- Excavation and off-site disposal of impacted subslab soil/fill

Additionally, the stabilization of the lead-contaminated material was considered. However, it is the Village's intent to redevelop the site for residential uses without requiring restrictions. Therefore, stabilization was dismissed as a response action.

6.2.3.4 Aboveground Storage Tank

General response actions available to address the RAO for AST include:

- No action
- Removal and off-site disposal of the AST and any material contained in the tank
- Excavation and off-site disposal of any impacted underlying soil
- In situ treatment of any impacted underlying soil

6.2.3.5 Asbestos

General response actions available to address the RAO for the ACMs include:

- No action
- Removal and off-site disposal of friable ACMs
- Removal and off-site disposal of non-friable ACMs

6.3 Remediation Areas and Volumes

Remediation areas and volumes have been estimated based on the results of the site investigation. The areal extent of the surface and subsurface remediation areas are presented in Figures 10 and 11 respectively.

6.3.1 Surface Soil/fill Volume

The estimated area of impacted surface soil/fill is 30 feet by 100 feet, based on visual observations of the surface conditions. The depth of the material is assumed to be one foot based on observations made during test pit and soil probe activities. With this thickness over 3,000 square feet, the approximate volume of the impacted surface soil is 3,000 cubic feet, or 111 cubic yards.

6.3.2 Subsurface Soil/Fill Volume

Two areas of VOC-contaminated soil/fill exist at the project site: the area of the former UST and the spray wash area. Based on the analytical results and field observations, it is likely that this material would be disposed off-site as non-hazardous material.

The extent of contaminated material around the former UST has been delineated to the south, east, and west, but was not delineated to the north due to the presence of a portion of the building. The delineation and/or remediation of the contamination to the north will require the demolition of at least that part of the building.

For purposes of this report, we have assumed that the volume of soil contamination under the building is approximately the same as that outside the building footprint. Therefore, the contaminated area is estimated at approximately 50 feet in diameter to a depth of 10 feet, which is approximately 730 cubic yards. Assuming that one cubic yard weighs 1.6 tons, the weight of the contaminated soil is 1,168 tons.

The extent of contaminated soil around the spray wash area is approximately 20 feet by 15 feet to a depth of 9 feet, which is approximately 100 cubic yards and 100 tons.

The area of arsenic contamination in the subsurface soil/fill has not been delineated and post-excavation sampling will be used to confirm that the contaminated material has been addressed. For purposes of this report, we have assumed that the arsenic contaminated material is in a 50-foot by 50-foot area and is present in a three inch layer, resulting in approximately 23 cubic yards and 37 tons of contaminated material. It is also assumed that three feet of clean material above the black, cinder-like material must be removed to access the contaminated material, but that it can be placed back into the excavation. The volume of the clean material to be removed and placed back into the excavation is approximately 278 cubic yards, or 445 tons.

6.3.3 Building Materials and Associated Components

6.3.3.1 Valve Pit Sediments

The valve pit is approximately three feet by three feet, and the sediments in the pit are approximately two feet deep, which is approximately 2/3 of a cubic yard (approximately one ton). Although water is present above the sediments, this water does not contain elevated concentrations of contaminants and could therefore be discharged to the ground surface.

6.3.3.2 Stained Floor/Equipment Surfaces

The compressor room is approximately 25 feet by 25 feet, and the concrete floor is approximately four inches thick, resulting in approximately eight cubic yards of concrete. Although not observed, it should be assumed that footers were installed around the perimeter of the room as well as under the two compressors.

Therefore, we have assumed an additional twelve cubic yards of concrete will be removed, for a total of 20 cubic yards. Assuming a weight of two tons per cubic yard, approximately 40 tons of concrete would be removed from the compressor room.

The remediation of the contaminated concrete floor will require the demolition of the compressor room. As discussed in Section 6.3.2, the building is structurally unsound, so the demolition of one portion of the building will likely require the demolition of the entire building

6.3.3.3 Subslab Soil/Fill

Based on the analytical results and observation made during the test pit and soil probe activities, it is assumed that only the subbase material under the compressor room requires remediation. As discussed in Section 6.3.3.2, this room is approximately 25 feet by 25 feet. The depth of the subbase is approximately six inches, resulting in approximately 12 cubic yards, or 19 tons, of contaminated subbase material.

6.3.3.4 Aboveground Storage Tank

The contents and impacts of the AST are not known. However, it is unlikely that the previous owners of the project site left any significant amount of heating oil on-site. Therefore, it is assumed that 100 gallons of petroleum product and sludge remain in the tank. From a distance, it appeared that the tank and the area around the tank were not significantly stained. Lacking any additional data, it is assumed that five cubic yards of petroleum-contaminated soil must be addressed.

As there is no safe access to this portion of the warehouse, this portion of the building must be demolished prior to implementation of any remedial measures to address the tank.

6.3.3.5 Asbestos

The asbestos survey report identified approximately 15,875 square feet of non-friable ACMs and approximately 575 square feet and 160 linear feet of friable ACMs throughout the on-site structures. The unsafe conditions of the structures will likely require demolition of portions of the structures before the asbestos can be completely removed.

6.4 Development of Alternatives

The general response actions identified in Section 6.2 have been assembled into a series of site-wide remedial action alternatives. These alternatives are summarized in Table 14 and outlined in the following subsections.

6.4.1 Alternative A – No Action

This alternative represents the "No Action Alternative". Under this alternative, the site would remain in its current state and no environmental monitoring, remedial activities, institutional or additional access controls would be implemented. This alternative does not satisfy the RAOs for the current use scenario, nor is it supportive of the continued use of the project site for residential uses. It has, however, been retained for detailed analysis to provide a point of comparison for more intensive alternatives.

6.4.2 Alternative B – Removal with Complete Demolition

This alternative includes the removal of all contaminated materials from the project site and the demolition of all structures on the project site. The details of the program are:

- Excavation and off-site disposal of contaminated surface soil/fill
- Demolition of the spray wash structure
- Excavation and disposal of subsurface soil/fill
- Stockpiling of the clean material above the arsenic contaminated subsurface soil/fill for reuse
- Demolition of the on-site buildings to facilitate remediation
- Removal of sediments in valve pit
- Removal of compressors and other PCB-contaminated equipment
- Removal and off-site disposal of PCB-contaminated concrete
- Removal and off-site disposal of contaminated subslab material from under the compressor room.
- Removal and off-site disposal of AST and contents, if any
- Removal and off-site disposal of impacted soil under the AST, if any
- Removal and off-site disposal of ACMs
- Backfill of excavations and valve pit with clean material
- Backfill of the building basement using uncontaminated concrete and stones from the demolition activities
- Recycling of fieldstones and wood from the building demolition, as appropriate

This alternative would achieve the RAOs for all contaminated media through proper removal and off-site disposal.

6.4.3 Alternative B1 – Removal with Partial Demolition

This alternative includes the removal of all contaminated materials from the project site and the partial demolition of on-site buildings on the project site. The details of the program are:

- Excavation and off-site disposal of contaminated surface soil/fill
- Demolition of the spray wash structure

- Excavation and disposal of subsurface soil/fill
- Stockpiling of the clean material above the arsenic contaminated subsurface soil/fill for reuse
- Partial demolition of the warehouse building (viz., the compressor room and the metal-sided section) to facilitate remediation
- Removal of sediments in valve pit
- Removal of compressors and other PCB-contaminated equipment
- Removal and off-site disposal of PCB-contaminated concrete
- Removal and off-site disposal of contaminated subslab material from under the compressor room.
- Removal and off-site disposal of AST and contents, if any
- Removal and off-site disposal of impacted soil under the AST, if any
- Removal and off-site disposal of ACMs
- Backfill of excavations and valve pit with clean material

This alternative would achieve the RAOs for all contaminated media through proper removal and off-site disposal.

6.4.4 Alternative C – Removal and Treatment

This alternative combines the removal of some of the contaminated materials from the project site with the in situ treatment of the subsurface soil/fill. The details of the program are:

- Excavation and off-site disposal of contaminated surface soil/fill
- Demolition of the spray wash structure
- In situ treatment of VOC-contaminated subsurface soil/fill using a chemical oxidant
- Excavation and disposal of arsenic-contaminated subsurface soil/fill
- Stockpiling of the clean material above the arsenic contaminated subsurface soil/fill for reuse
- Demolition of the on-site buildings to facilitate remediation
- Removal of sediments in valve pit
- Removal of compressors and other PCB-contaminated equipment
- Removal and off-site disposal of PCB-contaminated concrete
- Removal and off-site disposal of contaminated subslab material from under the compressor room.
- Removal and off-site disposal of AST and contents, if any
- In situ treatment of impacted soil under the AST, if any, using a chemical oxidant
- Removal and off-site disposal of ACMs
- Backfill of excavations and valve pit with clean material
- Backfill of the building basement using uncontaminated concrete and stones from the demolition activities
- Recycling of fieldstones and wood from the building demolition, as appropriate

This alternative would achieve the RAOs for all contaminated media through proper removal and off-site disposal.

7.0 DETAILED ANALYSIS OF ALTERNATIVES

7.1 General Discussion

The remedial alternatives outlined in Section 6 were individually and comparatively evaluated with respect to the following six criteria as defined in 6 NYCRR 375:

- Overall Protection of Human Health and the Environment
- Compliance with Standards, Criteria, and Guidance
- Short-Term Effectiveness
- Long-Term Effectiveness
- Reduction of Toxicity, Mobility and Volume
- Feasibility

These criteria are discussed in greater detail below. A seventh criterion, community acceptance, will be evaluated by the NYSDEC at the conclusion of the public comment period.

7.1.1 Overall Protection of Human Health and the Environment

This threshold assessment addresses whether a remedy provides adequate protection, and describes how risks posed through each pathway are eliminated, reduced, or controlled. This evaluation allows for consideration of whether the alternative poses any unacceptable short-term or cross-media impacts.

7.1.2 Compliance with Standards, Criteria, and Guidance

A site's remedial program must be designed so as to conform to standards and criteria that are generally applicable, consistently applied, and officially promulgated, and are either directly applicable, or are not directly applicable but are relevant and appropriate, unless good cause exists why conformity should be dispensed with [6 NYCRR 375-1.10(c)(1)(i)].

7.1.3 Short-Term Effectiveness

The effectiveness of alternatives in protecting human health and the environment during construction and implementation of the remedial action is evaluated under this criterion. Short-term effectiveness is assessed in terms of protection of the community, protection of workers, environmental impacts, and time until protection is achieved.

7.1.4 Long-Term Effectiveness

The evaluation of this criterion focuses on the long-term protection of human health and the environment at the completion of the remedial action. Effectiveness is assessed with respect to the magnitude of residual risks; adequacy of controls, if any, in managing treatment residuals or untreated wastes that remain at the site; reliability of controls against possible failure; and potential to provide continued protection.

7.1.5 Reduction of Toxicity, Mobility and Volume

This evaluation criterion addresses the preference for selecting a remedial action alternative that permanently and significantly reduces the volume, toxicity, and/or mobility of the hazardous wastes and/or constituents. This preference is satisfied when the treatment is used to reduce the principal threats at a site through destruction of toxic contaminants, irreversible reduction in contaminant mobility, or reduction of total volume of contaminated media. The following is the hierarchy of remedial technologies ranked from most preferable to least preferable:

- Destruction
- Separation/treatment
- Solidification/chemical fixation
- Control and isolation

7.1.6 Feasibility

A feasible remedy is one that is appropriate for site conditions, is capable of being successfully carried out with available technology, and considers, at a minimum, implementability and cost-effectiveness.

7.2 Individual Analysis of Alternatives

The evaluations of the six criteria discussed above for each of the remedial alternatives are presented in the following subsections and summarized in Table 17.

7.2.1 Alternative A – No Action

7.2.1.1 Overall Protection of Human Health and the Environment

The No Action Alternative does not satisfy the RAOs because of its inability to eliminate the potential for the exposure of the public and future construction and site residents to on-site contaminants. Therefore, this alternative is not protective of human health with respect to the surrounding community because contamination would remain on-site and would not be effectively contained. In addition, the contents of the AST, if any, could be released into the environment in the future.

7.2.1.2 Compliance with Standards, Criteria, and Guidance

The sediments and surface and subsurface soil/fill containing elevated contaminant concentrations will remain on-site.

7.2.1.3 Short-Term Effectiveness

Under this alternative, the project site would remain in its current state.

7.2.1.4 Long-Term Effectiveness

In the long-term, the Village's proposed re-use of the project site as residential property is not possible without remediation. Although some bioremediation will occur over time, the surface and subsurface soil will still contain elevated concentrations of contaminants. The potential for exposure to PCBs and asbestos will continue to exist for trespassers. As the structures age, the likelihood of a catastrophic failure of the structures will increase, which could increases the potential for an uncontrolled release of asbestos that could expose nearby residents and users of the park.

7.2.1.5 Reduction of Toxicity, Mobility and Volume

This alternative would not reduce the toxicity, mobility or volume of contamination.

7.2.1.6 Feasibility

As this alternative requires no action at the project site, this alternative is considered to be implementable. There is no cost associated with this alternative. However, this alternative does not effectively protect human health and the environment.

7.2.2 Alternative B – Removal with Complete Demolition

7.2.2.1 Overall Protection of Human Health and the Environment

This alternative would achieve the RAOs for all contaminated media.

7.2.2.2 Compliance with Standards, Criteria, and Guidance

Contaminated materials would be removed from the site and properly disposed.

7.2.2.3 Short-Term Effectiveness

Although short-term exposure risks to construction workers and the surrounding community could result from remediation activities at the site, these risks would be effectively minimized through the use of a soil/fill management plan and standard construction and health and safety precautions. This remedial action could be implemented in a relatively short time-frame, likely less than a year.

7.2.2.4 Long-Term Effectiveness

This alternative would address exposure to site contaminants in the long-term, as the contaminated material will be removed from the project site. Long-term operation, maintenance, and monitoring (OM&M) of the remediation would not be necessary.

7.2.2.5 Reduction of Toxicity, Mobility and Volume

This remedial action alternative would effectively reduce the toxicity, mobility and volume of the contaminants through removal and proper off-site disposal.

7.2.2.6 Feasibility

This remedial action alternative is appropriate for current and future site conditions and uses. Materials and equipment for completing remediation as described are readily available. As shown in Table 15, the estimated cost of this alternative is approximately $860,000, which makes this alternative relatively cost-effective.

7.2.3 Alternative B1 – Removal with Partial Demolition

7.2.3.1 Overall Protection of Human Health and the Environment

This alternative would achieve the RAOs for all contaminated media.

7.2.3.2 Compliance with Standards, Criteria, and Guidance

Contaminated materials would be removed from the site and properly disposed.

7.2.3.3 Short-Term Effectiveness

Although short-term exposure risks to construction workers and the surrounding community could result from remediation activities at the site, these risks would be effectively minimized through the use of a soil/fill management plan and standard construction and health and safety precautions. This remedial action could be implemented in a relatively short time-frame, likely less than a year.

7.2.3.4 Long-Term Effectiveness

This alternative would address exposure to site contaminants in the long-term, as the contaminated material will be removed from the project site. Long-term operation, maintenance, and monitoring (OM&M) of the remediation would not be necessary.

7.2.3.5 Reduction of Toxicity, Mobility and Volume

This remedial action alternative would effectively reduce the toxicity, mobility and volume of the contaminants through removal and proper off-site disposal.

7.2.3.6 Feasibility

This remedial action alternative is appropriate for current and future site conditions and uses. Materials and equipment for completing remediation as described are readily available. As shown in Table 16, the estimated cost of this alternative is approximately $350,000, which makes this alternative very cost-effective.

7.2.4 Alternative C – Removal and Treatment

7.2.4.1 Overall Protection of Human Health and the Environment

This alternative would achieve the RAOs for all contaminated media.

7.2.4.2 Compliance with Standards, Criteria, and Guidance

Most of the contaminated materials would be removed from the site and properly disposed, and the remainder would be treated such that the contaminant concentrations would fall to levels below the SCGs.

7.2.4.3 Short-Term Effectiveness

Although short-term exposure risks to construction workers and the surrounding community could result from remediation activities at the site, these risks would be effectively minimized through the use of a soil/fill management plan and standard construction and health and safety precautions. Sampling will be required to ensure that the contaminant concentrations in the treated subsurface soil are below the SCGs. If the concentrations of contaminants are still elevated, a second treatment event would be necessary.

This remedial action could be implemented in a relatively short time-frame, likely less than a year.

7.2.4.4 Long-Term Effectiveness

This alternative would address exposure to site contaminants in the long-term, as most of the contaminated material will be removed from the project site. Long-term operation, maintenance, and monitoring (OM&M) of the remediation would not be necessary.

7.2.4.5 Reduction of Toxicity, Mobility and Volume

This remedial action alternative would effectively reduce the toxicity, mobility and volume of the contaminants through in situ treatment or removal and proper off-site disposal.

7.2.4.6 Feasibility

This remedial action alternative is appropriate for current and future site conditions and uses. Materials and equipment for completing remediation as described are readily available. As shown in Table 17, the estimated cost of this alternative is approximately $875,000, which makes this alternative relatively cost-effective.

7.3 Comparative Analysis and Recommendation

A comparative evaluation of the remedial alternatives is presented in the form of a matrix, shown on Table 18, which includes ratings for each of the criteria discussed above. The comparison of the alternatives is based upon a qualitative system that utilizes relative ratings of *high*, *medium* and *low* to define each alternative's performance with respect to the aforementioned criteria. These ratings are then equated to a numerical scale to produce a relative numerical score for final comparison purposes. The ratings equate to the following conditions and numerical scores:

RATING	DESCRIPTION	NUMERICAL RATING
HIGH	SATISFIES CRITERIA TO A HIGH DEGREE	3
MEDIUM	SATISFIES CRITERIA TO A MODERATE DEGREE	2
LOW	MINIMALLY SATISFIES CRITERIA	1

The aggregate numerical score for each of the alternatives evaluated is shown near the bottom of the matrix. Higher relative scores represent a higher level of effectiveness with respect to the evaluation criteria.

As reflected by Table 18, Alternatives B, B1 and C have been identified as the most effective alternatives. All three alternatives would fully satisfy the RAOs developed for the site, would have a high degree of long-term effectiveness and would render the site suitable for use as a residential property. Alternatives B and B1 received a higher rating than Alternative C for Short-Term Effectiveness because all contaminated media would be removed under Alternatives B and B1, while some material would be treated in situ under Alternative C. This would require additional time and post-treatment sampling to ensure that the contaminants have been properly remediated, and potentially a second treatment event if some of the concentrations remain high. A comparison of the Feasibility of these three alternatives reveals that Alternative B1 received a higher rating than both Alternatives B and C because of substantially lower costs for this alternative. Based upon the higher degree of cost effectiveness as well as the high degree of protection to human health and the environment afforded by this alternative, Alternative B1 is recommended for implementation.

8.0 SUMMARY AND CONCLUSIONS

A Remedial Investigation/Alternatives Analysis (RI/AA) program was implemented at the Youngstown Cold Storage Site on behalf of the Village of Youngstown. The project site is located at 701 Third Street Extension (Nancy Price Drive) in the Village of Youngstown, New York. The project site is occupied by three structures and has been vacant since 1996. The Village received State financial assistance to conduct this program under the Environmental Restoration, or Brownfield, component of Title 5 of the Clean Water/Clean Air Bond Act of 1996. The objective of this program was to characterize the site and determine the nature and extent of contamination in the surface soil, subsurface soil/fill, and groundwater. The resulting data was used to qualitatively evaluate potential risks to human health and the environment associated with current site conditions and potential future use scenarios. Based on these findings, remedial alternatives were identified, evaluated, and compared.

8.1 Site Conditions

The project site consists of approximately 2.4 acres located within the Village of Youngstown limits. 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 site has been vacant following cessation of activities at the project site in 1996.

The project 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 residence that is approximately 875 square feet. The facility utilized a network of piping to chill the stored apples via anhydrous ammonia, and the largest building contains a compressor room from which anhydrous ammonia was pumped throughout the pipe network. The United States Environmental Protection Agency (USEPA) completed a removal action in 2003 at the project site relating to the anhydrous ammonia used at the site. The removal action also included the identification, removal, and disposal of a number of other hazardous substances from the project site.

Based upon the historical use of the project site, 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 the basement of the warehouse building; and
    - The potential presence of a fuel oil tank identified on a 1927 Sanborn Map.

  - 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; and
  - Polychlorinated biphenyls (PCBs) from electrical equipment within the compressor room and from 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.

8.2 Investigation Approach

The Remedial Investigation was conducted in accordance with the NYSDEC-approved January 2006 Remedial Investigation/Alternatives Analysis Work Plan (Work Plan), and the Extra Work Authorization submitted on March 6, 2006. This investigative work included the following activities:

- Site Survey
- Test Pit Excavations
- Background Soil Sampling
- Surface Soil Sampling
- Soil Probe Advancement
- Subsurface Soil/Fill Sampling
- Micro-Well Installation
- Groundwater Elevation Monitoring
- Groundwater Sampling
- Sediment Sampling
- Sump Sampling
- PCB Wipe Sampling
- Wood Chip Sampling
- Asbestos Survey
- Data Validation
- Data Evaluation

8.3 Site Structures

The project site includes three separate structures, which include: a deteriorating three-story stone building (warehouse); a single-story brick building (ice house); and a residence. Each of the structures is in relatively poor condition, and major sections of the roofs of the warehouse and icehouse have collapsed, making the buildings unsafe for trespassers and on-site workers. Each of the three buildings contains ACMs.

The underground storage tank shown on historical maps was not encountered during this investigation. However, contaminated soil was found in the presumed area of the UST, and petroleum odors and staining were observed. The aboveground storage tank is located in the basement of the warehouse was inaccessible, so it is not known if there is contamination associated with this tank.

8.4 Physical Setting

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. 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.

The results of the remedial investigation indicate that soil/fill overlies the native soil across the entire site. The overburden stratigraphy can be divided into three significant units, which are listed in descending order.

- Soil/Fill
- Reworked Native Material
- Native Material

Bedrock was not encountered during this investigation.

Generally, groundwater was present in the native material. The depths to groundwater generally ranged from approximately 5 to 6 feet below the existing ground surface, and groundwater flows generally to the west.

8.5 Nature and Extent of Contamination

8.5.1 Surface Soil/Fill

Throughout the majority of the site, the surface soil/fill at the project site does not contain contaminants at elevated concentrations. However, elevated concentrations of SVOCs, primarily PAHs, were detected in one sample collected adjacent to a former loading dock. The elevated SVOC concentrations are potentially related to leaks and/or spills from trucks on/off-loaded in this area.

8.5.2 Subsurface Soil/Fill Material

Contaminants of concern detected in the subsurface soil/fill include VOCs and arsenic. Nuisance characteristics including petroleum odors and staining are also a concern. VOC-contaminated subsurface soil/fill was encountered in the area of the former storage tank near the southeastern portion of the warehouse and in the spray wash area. A thin layer of arsenic-contaminated subsurface soil/fill was encountered in the western portion of the project site.

8.5.3 Groundwater

Groundwater at the project site was encountered at relatively shallow depths, within the native material. Elevated concentrations of contaminants were not detected in the groundwater samples collected at the project site.

8.5.4 Building Materials and Associated Components

8.5.4.1 Sump Sediments

Contaminants of concern in the sump sediments consist of PAHs, which were detected in the valve pit located immediately north of the warehouse as well as in the two storm sewer catch basins. It is likely that the source of PAHs in the storm sewer sediments is urban runoff from the surrounding area rather than some on-site source. The water in the valve pit did not contain elevated concentrations of contaminants.

8.5.4.2 Stained Floor/Equipment Surfaces

PCBs were found at elevated concentrations in the wipe samples collected from an oil-stained area on the floor of the compressor room and on one of the compressors.

8.5.4.3 Subslab Soil/Fill

Elevated concentrations of lead were detected in a subslab sample collected from under the floor of the compressor room. The impacted material appears to be limited to the subbase used during the construction of the compressor room.

8.5.4.4 Aboveground Storage Tank

The aboveground storage tank located in the basement of the warehouse appears to have been used for the storage of heating fuel. However, the tank is not accessible due to its placement in a crawl space and the poor structural integrity of the building. Therefore, it is not known if this tank is empty or if it has released contaminants to the surface and subsurface soil in its vicinity.

8.5.4.5 Asbestos

Friable and non-friable asbestos was found in each of the on-site buildings. These structures are generally secure, which limits the potential for exposure, although trespassers could gain access if they are persistent. As the structures age, the likelihood of a catastrophic failure of the structures will increase, which could increases the potential for an uncontrolled release of asbestos that could expose nearby residents and users of the park.

8.6 Contamination Assessment

8.6.1 Potential Receptors

Under current (vacant) and planned future use (residential uses) conditions, potential human receptors for on-site contaminants include:

- Persons using the adjacent public park for recreational activities;
- Persons living and working in the area surrounding the project site;
- Persons trespassing on the site and entering on-site structures;
- Remediation and construction contractors working on the project site;
- Persons living and working on the project site (future use); and
- Persons involved in utility work on and adjacent to the project site.

Potential environmental receptors include wildlife utilizing the project site (e.g., rodents, birds, etc.).

If remedial activities were implemented at the project site, potential human receptors during construction would include site workers involved in excavation activities, and persons living in and traveling through the area surrounding the project site. The potential for exposure would be reduced through the implementation of a soil/fill management plan and standard construction techniques.

8.6.2 Exposure Pathways

Under current conditions, human and environmental receptors could be exposed to on-site contaminants via:

- Inhalation of airborne fibers, particles or vapors
- Incidental ingestion of, or dermal contact, with the contaminated media

Trespassers could also be exposed to PCBs and asbestos within the buildings. As the structures age, the likelihood of a catastrophic failure of the structures will increase, which could increases the potential for an uncontrolled release of asbestos that could expose nearby residents and users of the park. Additionally, the condition of the AST in the basement of the warehouse could degrade and its contents, if any, could be released into the environment.

During remediation activities, receptors at and near the project site could be exposed to the on-site contaminants via the inhalation of asbestos fibers and/or contaminated dust and vapors, and incidental ingestion of, and/or dermal contact with the contaminated soil/fill. However, the use of appropriate personal protective equipment, dust suppression techniques, and the development and implementation of a Soil/Fill Management Plan would minimize the risk of exposure during the remedial activities.

No complete exposure pathways to the contaminants at the project site have been identified in connection with the post-remediation period, assuming that the on-site contaminants have been properly removed or treated.

8.7 Remedial Action Objectives

Remedial Action Objectives (RAOs) were identified for each of the contaminated media encountered on the project site. These RAOs are based upon the findings of the RI and the anticipated future use of the project site as a residential property, and include:

- Surface Soil - Prevent exposure via dermal contact, incidental ingestion or inhalation of particulates, and to prevent the discharge of contaminated storm water runoff and eroded surface soil/fill to off-site locations or into adjacent storm sewers.
- Subsurface Soil/Fill - Prevent the exposure via dermal contact, incidental ingestion or inhalation of particulates or vapors, and prevent the leaching of contaminants into groundwater.
- Building Materials and Associated Components
    - Valve Pit Sediments - Prevent exposure via dermal contact, incidental ingestion or inhalation of particulates.
    - Stained Floor/Equipment Surfaces – Prevent exposure to via dermal contact, incidental ingestion or inhalation of particulates.
    - Subslab Soil/Fill - Prevent exposure to contaminated subslab soil/fill via dermal contact, incidental ingestion or inhalation of particulates.
    - Aboveground Storage Tank - Prevent exposure via dermal contact, incidental ingestion or inhalation of vapors, as well as the future release of tank contents, if any.
    - Asbestos – Prevent exposure to ACMs via incidental ingestion or inhalation of particulates

8.8 Remedial Alternatives

8.8.1 Alternative A – No Action

Under this alternative, the site would remain in its current state and no environmental monitoring, remedial activities, institutional or additional access controls would be implemented.

8.8.2 Alternative B – Removal with Complete Demolition

This alternative includes the removal of all contaminated materials from the project site and the complete demolition of all three on-site buildings and the spray-wash area.

8.8.3 Alternative B1 – Removal with Partial Demolition

This alternative includes the removal of all contaminated materials from the project site and the demolition of two portions of the warehouse building and the spray-wash area.

8.8.4 Alternative C – Removal and Treatment

This alternative combines the removal of some of the contaminated materials from the project site with the in situ treatment of the subsurface soil/fill.

8.9 Recommended Alternative

Based upon the high degree of protection to human health and the environment afforded by this alternative as well as its high degree of implementability and cost-effectiveness, Alternative B1 is recommended for implementation.

TABLES

Table 1
Youngstown Cold Storage Site RI/AA
Sampling/Analysis Summary

Sample Identifier	Source	Interval Sampled/Screened (ft - bgs)	Analysis								Date Sampled	Comments
			ASP00 - TCL VOCs	ASP00 - TCL SVOCs	ASP00 - TCL Pest/PCBs	ASP00 - TCL Pesticides	ASP00 - TCL Herbicides	ASP00 - TAL Metals	PCBs	ASP00 - Arsenic		
Subsurface Soil/Fill												
YCS-TP02-D8-S-O	Test Pit No. 2	8	X	X	X		X	X			02/15/06	Gray-brown silty-sand, trace clay w/ strong gasoline odor and staining. PID = 1,875 ppm
YCS-TP04-D23.5-S-O	Test Pit No. 4	2 - 3.5	X	X	X		X	X			02/15/06	Dark-brown-red gravelly-sand fill, w/ metal cable, nails and various fragments, glass, wood. PID = 0 ppm
YCS-TP04-D6-S-O	Test Pit No. 4	6	X	X	X		X	X			02/15/06	Brown-gray sandy-silt, trace clay, w/ gray mottling, w/ noticeable petroleum odor. PID = 45 ppm
YCS-TP09-D3-S-O	Test Pit No. 9	3		X	X		X	X			02/16/06	Black sand and gravel (coal like). PID = 0 ppm
YCS-TP09-D3.2-S-O	Test Pit No. 9	3.2		X	X		X	X			02/16/06	White sand and gravel. PID = 0 ppm
YCS-TP13-D3-S-O	Test Pit No. 13	3	X	X	X		X	X			02/16/06	Brown-gray-tan clayey-silt, w/ metal and brick pieces. PID = 0 ppm
YCS-TP13-D3-S-MS/MSD/MD			X	X	X		X	X				
YCS-TP15-D4-S-O	Test Pit No. 15	4	X	X	X		X	X			02/16/06	Black gravel w/ fuel oil smell. PID = 0 ppm
YCS-SP04-D11.2-S-O	Soil Probe No. 4	1 - 1.2		X	X		X	X			02/20/06	Black sand and fine gravel. PID = 0 ppm
YCS-RB01-RB	Rinse Blank through acetate liner and sampling shoe of the Soil Probe equipment	-		X	X		X	X			02/21/06	This sample was collected with analyte free water provided by the analytical laboratory.
Groundwater												
YCS-Micro01-GW-O	Micro Well No. 1	2 - 12	X	X	X		X	X			03/02/06	-
YCS-Micro02-GW-O	Micro Well No. 2	2 - 12	X	X	X		X	X			03/02/06	While sufficient water volume was available for the required analysis, only the minimum required volumes for SVOCs, PCB/Pesticides and Herbicides was collected due to the slow recharge rate of this well.
YCS-Micro03-GW-O	Micro Well No. 3	2 - 12	X					X			03/02/06	Due to a very slow recharge rate there was an insufficient water volume available to analyze for the full list of analysis.
YCS-TB03-TB	Trip Blank	-	X								03/02/06	Included in the cooler with the VOC samples
Surface Soil/Fill												
YCS-SS01-S-O	Surface Soil Sample No.1	0 - 0.16		X	X		X	X			02/21/06	Collected directly below the vegetative layer.
YCS-SS02-S-O	Surface Soil Sample No.2	0 - 0.16		X	X		X	X			02/21/06	Collected directly below the vegetative layer.
YCS-SS02-S-MS/MSD/MD	Surface Soil Sample No.2			X	X		X	X				
YCS-SS03-S-O	Surface Soil Sample No.3	0 - 0.16		X	X		X	X			02/21/06	Collected directly below the vegetative layer.
YCS-SS04-S-O	Surface Soil Sample No.4	0 - 0.16		X	X		X	X			02/21/06	No vegetation collected from the first inch of soil/fill.
YCS-SS05-S-O	Surface Soil Sample No.5	0 - 0.16		X	X		X	X			02/21/06	No vegetation collected from the first inch of soil/fill.
YCS-SS06-S-O	Surface Soil Sample No.6	0 - 0.16		X	X		X	X			02/21/06	Collected directly below the vegetative layer.
YCS-SS07-S-O	Surface Soil Sample No.7	0 - 0.16		X	X		X	X			02/21/06	Collected directly below the vegetative layer.
YCS-SS08-S-O	Surface Soil Sample No.8	0 - 0.16		X	X		X	X			02/21/06	No vegetation collected from the first inch of soil/fill.
Background Soil Samples												
YCS-BG01-S-O	Background Sample No. 1	0 - 0.16		X	X		X	X			02/21/06	Collected from the southeast corner of Veterans Park directly below the vegetative layer.
YCS-BG02-S-O	Background Sample No. 2	0 - 0.16		X	X		X	X			02/21/06	Collected from the northeast corner pavilion at Veterans Park directly below the vegetative layer.
YCS-BG03-S-O	Background Sample No. 3	0 - 0.16		X	X		X	X			03/02/06	Collected from the center of Lions Park directly below the vegetative layer.
YCS-BG04-S-O	Background Sample No. 4	0 - 0.16		X	X		X	X			03/02/06	Collected from the northeast corner of Falkner Park directly below the vegetative layer.
YCS-BG05-S-O	Background Sample No. 5	0 - 0.16		X	X		X	X			03/02/06	Collected from the southwest corner of Falkner Park directly below the vegetative layer.
Storm Sewer / Sump Samples												
YCS-Sump01-SED-O	Valve pit outside the northeast corner of the Warehouse Building	-	X	X	X		X	X			03/02/06	Dark-brown silty material w/ slight sheen.
YCS-Sump01-SW-O		-	X	X	X		X	X			03/02/06	Collected from the standing water directly above the sediment.
YCS-Sump02-SED-O	Stormwater DI located in the northwest corner of the site	-	X	X	X		X	X			03/02/06	Dark-brown silt and organic material w/ slight sheen.
YCS-Sump03-SED-O	Stormwater DI located off-site on the Volunteer Fire Company property in the southeast corner	-	X	X	X		X	X			03/02/06	Dark-brown sandy-gravel.
YCS-RB02-RB	Rinse Blank poured over the stainless steel sampling bowel and spoons	-	X	X	X		X	X			03/02/06	This sample was collected with analyte free water provided by the analytical laboratory.

Table 1
Youngstown Cold Storage Site RI/AA
Sampling/Analysis Summary

Sample Identifier	Source	Interval Sampled/Screened (ft - bgs)	Analysis								Date Sampled	Comments
			ASP00 - TCL VOCs	ASP00 - TCL SVOCs	ASP00 - TCL Pest/PCBs	ASP00 - TCL Pesticides	ASP00 - TCL Herbicides	ASP00 - TAL Metals	PCBs	ASP00 - Arsenic		
Building Samples												
YCS-WoodFloor01-O	Wood floor of the Warehouse Building	Collected from the upper 1/2 inch of the wood floor.				X				X	03/01/06	Collected from the southeast corner of the second floor.
YCS-WoodFloor02-O	Wood floor of the Warehouse Building	Collected from the upper 1/2 inch of the wood floor.				X				X	03/01/06	Collected from the southwest corner of the first floor near the loading docks.
YCS-ES01-SW-0	Elevator shaft in the Warehouse Building	-	X	X	X		X	X			03/01/06	This sample was collected from the standing water in the elevator located in the southeast portion of the warehouse building.
YCS-ES01-SW-MS/MSD/MD			X	X	X		X	X				
YCS-ES02-SW-0	Elevator shaft in the Warehouse Building	-	X	X	X		X	X			03/01/06	This sample was collected from the standing water in the elevator located in the southwest portion of the warehouse building.
YCS-ESXX-SW-FD	Blind Field Duplicate	-	X	X	X		X	X			03/01/06	This sample was a blind field duplicate collected from the same location as YCS-ES02-SW.
YCS-Wipe01-O	Warehouse Building Compressor Room	Floor surface							X		03/01/06	Collected from the stained concrete floor surface in the southwest portion of this room.
YCS-Wipe02-O	Warehouse Building Compressor Room	Floor surface							X		03/01/06	Collected from the stained concrete floor surface in the north central portion of this room.
YCS-Wipe03-O	Warehouse Building Compressor Room	Equipment surface							X		03/01/06	Collected from a stained piece of equipment (labeled FRICK) in the center of this room.
YCS-Wipe04-O	Warehouse Building Compressor Room	Floor surface							X		03/01/06	Collected from the stained concrete floor surface in the northeast portion of this room.
YCS-SubSlab01-S-0	Warehouse Building Compressor Room	Below the concrete floor.	X	X	X		X	X			03/16/06	Collected directly below the 4-inch concrete floor. Sample consisted of a brown-tan silt and fine to coarse sand. PID = 0 ppm
YCS-SubSlab01-S-MS/MSD/MD			X	X	X		X	X				
YCS-SubSlab02-S-0	Southeast corner of Warehouse Building basement	Below the concrete floor.		X	X		X	X			03/16/06	Collected directly below the subbase of the secondary concrete floor. Sample consisted of a brown-tan silty clay, wet. PID = 0 ppm
YCS-SubSlab03-S-0	Northwest corner of Warehouse Building basement	Below the concrete floor.		X	X		X	X			03/16/06	Collected directly from the subbase of the secondary concrete floor. Sample consisted of a black fine to coarse sand and gravel. PID = 0.3 ppm
YCS-TB02-TB	Trip Blank	-	X								03/02/06	Included in the cooler with the VOC samples

Table 2
Youngstown Cold Storage Site RI/AA
Micro-Well Construction Summary

	Sandpack Interval (ft-bgs)	Well Screen Interval (ft-bgs)	Screened Material
Micro-01	1 to 12	2 to 12	Sandy-gravel (coal like); Sandy-silt, little clay, trace wood pieces; Clayey-silt w/ gray mottling, little fine gravel; Sandy-silt, w/ orange and gray mottling; Silty-sand and gravel; Silt w/ gray mottling, trace fine gravel.
Micro-02	1 to 12	2 to 12	Clayey-silt and sand, some gravel, little brick, coal; Clayey-silt w/ gray mottling; Sandy-silt and gravel, trace clay w/ gray mottling, trace red sandstone fragments.
Micro-03	1 to 12	2 to 12	Clayey-silt w/ gray mottling, trace fine gravel; Dense silt, trace red sandstone fragments.

Notes:

1. All measurements are in feet.
2. bgs = Below Ground Surface

Table 3
Youngstown Cold Storage Site RI/AA
Groundwater Elevation Summary

	Ground Surface Elevation	Top of PVC Casing (TOC) Elevation	March 1, 2006	
			Depth to Groundwater from TOC	Groundwater Elevation
Micro-01	98.86	101.76	7.91	93.85
Micro-02	98.96	102.12	8.79	93.33
Micro-03	99.30	102.29	9.17	93.12

Notes:

1. All measurements and elevations are in feet.
2. TOC = Top of PVC casing.
3. Elevations are based on a site-specific assumed elevation of 100 feet.

Table 4
Youngstown Cold Storage Site RI/AA

Summary of Analytical Results
Background Samples

	YCS-BG01-S-O		YCS-BG02-S-O		YCS-BG03-S-O		YCS-BG04-S-O		YCS-BG05-S-O		TAGM REC. SOIL CLEANUP OBJECTIVE	AVERAGE SITE BACKGROUND VALUE
Date Collected:	2/21/2006		2/21/2006		3/2/2006		3/2/2006		3/2/2006			
Semi-Volatile Organic Compounds (ug/Kg)												
Benzaldehyde							68	J	57	J	-	-
Benzo(a)anthracene			130						49		224	-
Benzo(a)pyrene			130								61	-
Benzo(b)fluoranthene			180						77		1,100	-
Benzo(g,h,i)perylene			87								50,000	-
Benzo(k)fluoranthene			73								1,100	-
bis(2-Ethylhexyl)phthalate	920	U	490	U	420	U	590	U	690	U	50,000	-
Chrysene			150	J					54		400	-
Fluoranthene			370		57				89		50,000	-
Indeno(1,2,3-cd)pyrene			84								3,200	-
Phenanthrene			180								50,000	-
Pyrene			300		45				74		50,000	-
Total TICs	**5,343**		**5,280**		**5,797**		**4,120**		**23,632**		-	-
Total SVOCs	**6,263**		**7,454**		**6,319**		**4,778**		**24,722**		**500,000**	-
Pesticides (ug/Kg)												
4,4-DDD					23						2,900	-
4,4-DDE	6.4				1,200		24		68		2,100	-
4,4-DDT	2.1				550		11		11		2,100	-
Total Pesticides	**8.5**				**1,750**		**35**		**79**		**10,000**	-
Herbicides (ug/Kg)												
Dalapon	~~25~~	R	~~26~~	R							-	-
TAL - Metals (mg/Kg)												
Aluminum	8,290		7,730		10,100		10,800		7,290		SB	8,842
Arsenic	3.6	J	3.1	J	19		6.8		4.3		7.5 or SB	7.4
Barium	54.1		52.8		85.7		113		74.2		300 or SB	76
Beryllium	0.32		0.34		0.43		0.49		0.33		0.16 or SB	0.38
Calcium	1,730		2,540		20,100	*	25,500	*	5,390	*	SB	11,052
Chromium	10.8		11.3		14.8		17.2		12.1		10 or SB	13.2
Cobalt	3.8		4.4		7.7	JE	8.2	JE	6.1	JE	30 or SB	6
Copper	17.1		16.6		29.6		25.6		22		25 or SB	22.2
Iron	11,900	J*	12,400	J*	17,800		21,500		13,200		2,000 or SB	15,360
Lead	14.1	J*	16.8	J*	323		40.2		41.3		SB	87
Magnesium	2,150		2,470		5,580		6,410		3,090		SB	3,940
Manganese	204		248		700	J*	758	J*	508	J*	SB	484
Mercury	0.062		0.14	U	0.053	U	0.064		0.18		0.1	0.1
Nickel	12.2		11.4		19.2		19.1		16.5		13 or SB	16
Potassium	827	JE	803	JE	885		1,370		1,440		SB	1,065
Silver	0.17		0.18	E	0.084	U	0.095	U	0.093	U	SB	0.18
Sodium	98.2		104	E	88.6		107		80		SB	95.6
Thallium	0.95		0.71	E	1.8		2		1.1		SB	1.31
Vanadium	16.7		16.3		20.3		25.1		15.4		150 or SB	18.8
Zinc	44.8	JE	47.5	JE	56.6	JE	62.5	JE	60.8	JE	20 or SB	54.4

Notes:

1. PCBs were not detected in any of the subsurface soil/fill samples.
2. TAGM Recommended Soil Cleanup Objective source is NYSDEC Technical and Administrative Guidance Memorandum (TAGM) Determination of Soil Cleanup Objectives and Cleanup Levels (HWR-92-4046) revised January 24, 1994.
3. Shaded boxes represent exceedances of the regulatory value.
4. ug/Kg = micrograms per Kilogram [equivalent to parts per billion (ppb)].
5. mg/Kg = milligrams per Kilogram [equivalent to parts per million (ppm)].
6. Average site background values for inorganic analytes were determined by averaging the results from the five background samples.
7. ND=Not Detected above test method detection level.
8. Only compounds with one or more detections are shown.
9. Blank spaces indicate that the analyte was not detected.
10. Definitions of data qualifiers are presented in Table 12.

Table 5
Youngstown Cold Storage Site RI/AA

Summary of Analytical Results
Surface Soil/Fill Samples

	TAGM REC. SOIL CLEANUP OBJECTIVE	SITE BACKGROUND VALUE	REGULATORY VALUE	EASTERN USA BACKGROUND VALUES	USGS BACKGROUND VALUES	YCS-SS01-S-O	YCS-SS02-S-O	YCS-SS03-S-O	YCS-SS04-S-O	YCS-SS05-S-O	YCS-SS06-S-O	YCS-SS07-S-O	YCS-SS08-S-O
Date Collected:						2/21/2006	2/21/2006	2/21/2006	2/21/2006	2/21/2006	2/21/2006	2/21/2006	2/21/2006
Semi-Volatile Organic Compounds (ug/Kg)													
1,1-Biphenyl	-	-	-	-	-				150				
2,4-Dimethylphenol	-	-	-	-	-				64 J				
2-Methylnaphthalene	36,400	-	36,400	-	-				650				
4-Methylphenol	900	-	900	-	-				73				
Acenaphthene	50,000	-	50,000	-	-				1,100				
Acenaphthylene	41,000	-	41,000	-	-				140	68 J			
Acetophenone	-	-	-	-	-							56	
Anthracene	50,000	-	50,000	-	-				2,100	130 J			92
Benzo(a)anthracene	224	-	224	-	-	60		42	4,700 D	300 J		180	310
Benzo(a)pyrene	61	-	61	-	-	77		41	4,000 JD	300 J		180	250
Benzo(b)fluoranthene	1,100	-	1,100	-	-	130		64	5,600 JD	580 J		300	370
Benzo(g,h,i)perylene	50,000	-	50,000	-	-				1,100 J	150 J		140	150
Benzo(k)fluoranthene	1,100	-	1,100	-	-	59			2,600 J	200 J		79	120
Butylbenzylphthalate	50,000	-	50,000	-	-					530 J			
Carbazole	-	-	-	-	-				1,800	71 J			60
Chrysene	400	-	400	-	-	92		45 J	5,100 D	450 J		200 J	280 J
Dibenzo(a,h)anthracene	14	-	14	-	-				450 J	52 J			49
Dibenzofuran	6,200	-	6,200	-	-				990				
Di-n-butylphthalate	8,100	-	8,100	-	-							58	
Fluoranthene	50,000	-	50,000	-	-	130		94	11,000 D	590 J	48	350	640
Fluorene	50,000	-	50,000	-	-				1,200				
Hexachlorobutadiene	-	-	-	-	-					89 J			
Indeno(1,2,3-cd)pyrene	3,200	-	3,200	-	-				1,300 J	130		130	150
Naphthalene	13,000	-	13,000	-	-				1,400				
N-Nitrosodiphenylamine(1)	-	-	-	-	-						63	1,200	
Phenanthrene	50,000	-	50,000	-	-				9,800 D	320 J		130	380
Pyrene	50,000	-	50,000	-	-	110		74	9,600 D	740 J		300	480
Total TICs	-	-	-	-	-	**13,660**	**99**	**690**	**9,800**	**17,759**	**130**	**9,656**	**2,010**
Total SVOCs	**500,000**	-	**500,000**	-	-	**14,318**	**99**	**1,050**	**74,717**	**22,459**	**241**	**12,959**	**5,341**
Pesticides (ug/Kg)													
4,4-DDD	2,900	-	2,900	-	-				3 JP	13 JP			
4,4-DDE	2,100	-	2,100	-	-	5.4			47 J	74 D		4.3 JP	3.2 NJP
4,4-DDT	2,100	-	2,100	-	-	9			44 J	300 D		5 JP	15
beta-BHC	200	-	200	-	-		2.3	1 NJP					
delta-BHC	300	-	300	-	-				1.1 NJP				
Endosulfan sulfate	1,000	-	1,000	-	-					3 JP			
Endrin	100	-	100	-	-					11			
Endrin ketone	-	-	-	-	-				4.5 JP				
gamma-Chlordane	540	-	540	-	-					6.1			
Total Pesticides	**10,000**	-	**10,000**	-	-	**14.4**	**2.3**	**1**				**9.3**	**18.2**
PCBs (ug/Kg)													
Aroclor-1248	1,000	-	1,000	-	-					93 JP			
Aroclor-1260	1,000	-	1,000	-	-				110				
Total PCBs	**1,000**	-	**1,000**	-	-				**110**	**93**			
Herbicides (ug/Kg)													
Dalapon	-	-	-	-	-		~~23~~ R	~~21~~ R				20 NJ	
TAL - Metals (mg/Kg)													
Aluminum	SB	8,842	8,842	33,000	-	9,690	12,700	12,000	9,580	5,990	8,240	1,680	11,600
Antimony	SB	ND	ND	-	<1 - 8.8		0.5 N			0.38 N		1.6 N	
Arsenic	7.5 or SB	7.4	7.5	3 - 12	<0.1 - 73	6.1 J	5.3 J	4.3 J	7.4 J	16.6 J	5.9 J	3.6 J	5.5
Barium	300 or SB	76	300	15 - 600	10 - 1,500	83.8	102	104	285	208	68.5	33.4	73
Beryllium	0.16 or SB	0.38	0.38	0 - 1.75	<1 - 7	0.47	0.57	0.51	0.96	1	0.34	0.094	0.57
Cadmium	1 or SB	ND	1	0.1 - 1	-				0.26 JN	1.1 JN		0.93 JN	
Calcium	SB	11,052	11,052	130 - 35,000	-	3,680	57,200	73,700	41,300	17,000	49,200	60,500	18,600
Chromium	10 or SB	13.2	13.2	1.5 - 40	1 - 1,000	16.2	21.2	23.8	11.7	12.9	15	9.6	17
Cobalt	30 or SB	6	30	2.5 - 60	<0.3 - 70	8.5	9.9	9.3	6.5	3.9	7.7	1.7	11.9
Copper	25 or SB	22.2	25.0	1 - 50	<1 - 700	32.3	29.4	25.5	28.2	36.1	28.3	22.4	25.3
Iron	2,000 or SB	15,360	15,360	2,000 - 550,000	-	19,700 J*	22,500 J*	21,000 J*	16,500 J*	17,100 J*	16,600 J*	7,530 J*	21,300 J*
Lead	SB	87.1	87.1	200 - 500	<10 - 300	57.8 J*	19.6 J*	19.1 J*	216 J*	154 J*	28.8 J*	81.6 J*	38.5 J*
Magnesium	SB	3,940	3,940	100 - 5,000	-	3,630	11,600	12,200	12,500	2,490	13,800	30,300	5,920
Manganese	SB	484	484	50 - 5,000	<2 - 7,000	821	607	529	697	207	628	394	694
Mercury	0.1	0.1	0.1	0.001 - 0.2	0.01 - 3.4	0.074		0.13	0.082	0.25		0.24	
Nickel	13 or SB	15.7	15.7	0.5 - 25	<5 - 700	20.5	26.5	24.4	27.6	12	20	6.1	20.1
Potassium	SB	1,065	1,065	8,500 - 43,000	-	1,160 JE	2,000 JE	2,000 JE	1,110 JE	598 JE	1,580 JE	439 JE	1,450 JE
Silver	SB	0.18	0.18	-	-	0.17	0.93	0.7	0.7	1.2	0.8	0.85	0.38
Sodium	SB	96	96	6,000 - 8,000	-	78 J	141	150	165	178	133	92.8	2,020
Thallium	SB	1.3	1.3	-	-	1.3	1.3	1.5	1.3	0.88	1.2	0.76	1.4
Vanadium	150 or SB	18.8	150	1 - 300	<7 - 300	21.7	25.3	23.4	15.1	20.5	17.3	4.7	24.1
Zinc	20 or SB	54.4	54.4	9 - 50	<5 - 2,900	100 JE	72.9 JE	63.4 JE	167 JE	256 JE	97.1 JE	295 JE	77.8 JE

Notes:
1. TAGM Recommended Soil Cleanup Objective source is NYSDEC Technical and Administrative Guidance Memorandum (TAGM): Determination of Soil Cleanup Objectives and Cleanup Levels (HWR-92-4046) revised January 24, 1994.
2. SB stands for "Site Background" under the TAGM soil cleanup objectives column.
3. Average Site Background from calculated from five surface soil samples collected from off-site.
4. The regulatory values for inorganic analytes were determined by using the higher of the TAGM and average site background values.
5. Eastern USA Background values were obtained from TAGM 4046.
6. USGS Background values obtained from Table 1 in "Elemental Concentrations in Soils & Other Surficial Materials of the Conterminous
7. Shaded boxes represent exceedances of the regulatory value and/or highest listed background range.
8. (-) = No regulatory value is associated with this analyte.
9. mg/Kg = milligrams per Kilogram (equivalent to parts per million (ppm)).
10. ug/Kg = micrograms per Kilogram [equivalent to parts per billion (ppb)].
11. Only compounds with one or more detections are shown.
12. Blank spaces indicate that the analyte was not detected.
13. TICs = Tentatively Identified Compounds.
14. Definitions of data qualifiers are presented in Table 12.

Table 6
Youngstown Cold Storage Site RI/AA

Summary of Analytical Results
Subsurface Soil/Fill Samples

	TAGM REC. SOIL CLEANUP OBJECTIVE	SITE BACKGROUND VALUE	REGULATORY VALUE	EASTERN USA BACKGROUND VALUES	YCS-TP02-D8-S-O	YCS-TP04-D23.5-S-O	YCS-TP04-D6-S-O	YCS-TP09-D3-S-O	YCS-TP09-D3.2-S-O	YCS-TP13-D3-S-O	YCS-TP15-D4-S-O	YCS-SP04-D11.2-S-O
Interval Sampled (feet bgs):					8	2 - 3.5	6	3	3.2	3	4	1 - 1.2
Date Collected:					2/15/2006	2/15/2006	2/15/2006	2/16/2006	2/16/2006	2/16/2006	2/16/2006	2/20/2006
Volatile Organic Compounds (ug/Kg)												
Acetone	200	-	200	-	32 J		28	NA	NA	9	15	NA
Carbon Disulfide	2,700	-	2,700	-	4 J	3		NA	NA		2	NA
Methylcyclohexane	-	-	-	-	140 D			NA	NA			NA
Total TICs	-	-	-	-	**12,360**	**0**	**1,939**			**0**	**1,173**	
Total VOCs	**10,000**	-	**10,000**	-	**12,536**	**3**	**1,967**			**9**	**1,190**	
Semi-Volatile Organic Compounds (ug/Kg)												
1,1-Biphenyl	-	-	-	-				63			75	
2-Methylnaphthalene	36,400	-	36,400	-		93		440	130		190	330
Acenaphthene	50,000	-	50,000	-							150	
Acetophenone	-	-	-	-				63				
Anthracene	50,000	-	50,000	-		44					280	
Benzo(a)anthracene	224	-	224	-		140				43		
Benzo(a)pyrene	61	-	61	-		110					360 J	130 J
Benzo(b)fluoranthene	1,100	-	1,100	-		200				52		
Benzo(g,h,i)perylene	50,000	-	50,000	-								57 J
Benzo(k)fluoranthene	1,100	-	1,100	-		64						
bis(2-Ethylhexyl)phthalate	50,000	-	50,000	-	380 U	400 U	400 U	480 U	450 U	390 U	560 U	
Caprolactam	-	-	-	-								71
Carbazole	-	-	-	-							290	
Chrysene	400	-	400	-		180		94		47		
Dibenzofuran	6,200	-	6,200	-				100			200	110
Fluoranthene	50,000	-	50,000	-		260		50		74	990	100
Fluorene	50,000	-	50,000	-							240	
Indeno(1,2,3-cd)pyrene	3,200	-	3,200	-							160 J	53 J
Naphthalene	13,000	-	13,000	-		69		230	64		260	220
N-Nitrosodiphenylamine(1)	-	-	-	-		700	210					
Phenanthrene	50,000	-	50,000	-		240		250	83		1,300	270
Pyrene	50,000	-	50,000	-		250		57		58	3,700 J	390 J
Total TICs	-	-	-	-	**658**	**1,386**	**1,460**	**4,670**	**351**	**1,040**	**29,718**	**15,313**
Total SVOCs	**500,000**	-	**500,000**	-	**1,038**	**4,136**	**2,070**	**6,497**	**1,078**	**1,704**	**38,473**	**17,044**
Pesticides (ug/Kg)												
4,4-DDD	2,900	-	2,900	-								2.5 NJP
4,4-DDE	2,100	-	2,100	-					2.9			2.3 NJP
4,4-DDT	2,100	-	2,100	-					4.1			3.3 NJP
Total Pesticides	**10,000**	-	**10,000**	-					**7**			**8.1**
Herbicides (ug/Kg)												
Dalapon	-	-	-	-		12 NJ			~~19~~ R			
TAL - Metals (mg/Kg)												
Aluminum	SB	8,842	8,842	33,000	10,800	7,680	8,230	5,100	2,790	12,500	4,940	14,600
Antimony	SB	ND	ND	-		0.42 N					1.4 N	
Arsenic	7.5 or SB	7.4	7.5	3 - 12	4.5 J	17.1 J	2.6 J	41.3 J	8.7 J	8.9 J	12.5 J	7.8 J
Barium	300 or SB	76	300	15 - 600	75.1	96.7	50.6	80.3	36.1	106	46.2	69.9
Beryllium	0.16 or SB	0.38	0.38	0 - 1.75	0.47	0.71	0.34	1.4	0.36	0.56	0.44	1.2
Cadmium	1 or SB	ND	1	0.1 - 1		0.33 JN			0.12 JN		0.098 JN	0.16 JN
Calcium	SB	11,052	11,052	130 - 35,000	3,860	8,600	50,300	7,780	3,930	25,000	6,590	1,790
Chromium	10 or SB	13.2	13.2	1.5 - 40	16.6	22.4	12.5	10.7	10.3	19.1	15.4	11.2
Cobalt	30 or SB	6	30	2.5 - 60	9.4	7.3	8.8	5.8	3.8	8.1	5.6	28.3
Copper	25 or SB	22.2	25.0	1 - 50	32.7	50	20.7	29.4	25.5	41.6	67.8	79.6
Iron	2,000 or SB	15,360	15,360	2,000 - 550,000	19,100 J*	34,700 J*	15,600 J*	12,800 J*	6,240 J*	20,800 J*	38,700 J*	16,900 J*
Lead	SB	87.1	87.1	200 - 500	7.7 J*	99.6 J*	7 J*	12 J*	22.6 J*	44.8 J*	65.8 J*	86.7 J*
Magnesium	SB	3,940	3,940	100 - 5,000	4,230	2,850	10,200	1,370	1,570	8,410	4,210	2,560
Manganese	SB	484	484	50 - 5,000	628	370	871	118	92.5	688	113	1,080
Mercury	0.1	0.1	0.1	0.001 - 0.2		0.09				0.056	0.081	
Nickel	13 or SB	15.7	15.7	0.5 - 25	22	23.1	18.7	14.3	12.3	20.8	22.4	47.7
Potassium	SB	1,065	1,065	8,500 - 43,000	1,050 JE	738 JE	945 JE	661 JE	398 JE	1,180 JE	487 JE	666 JE
Selenium	2 or SB	ND	2	0.1 - 3.9								
Silver	SB	0.18	0.18	-	0.22	0.38	0.44	0.21	0.17	0.21	0.72	
Sodium	SB	96	96	6,000 - 8,000	150	151	157	157	114	108	202	276
Thallium	SB	1.3	1.3	-	1.9	1.4	1.7	0.96		1.4	0.81	2
Vanadium	150 or SB	18.8	150	1 - 300	21.8	25.4	16.9	26.7	15.9	24.7	10.3	14
Zinc	20 or SB	54.4	54.4	9 - 50	55.8 JE	246 JE	42.7 JE	44 JE	79.3 JE	85.1 JE	126 JE	559 JE

Notes:
1. PCBs were not detected in any of the subsurface soil/fill samples.
2. TAGM Recommended Soil Cleanup Objective source is NYSDEC Technical and Administrative Guidance Memorandum (TAGM): Determination of Soil Cleanup Objectives and Cleanup Levels (HWR-92-4046) revised January 24, 1994.
3. SB stands for "Site Background" under the TAGM soil cleanup objectives column.
4. Average Site Background from calculated from five surface soil samples collected from off-site.
5. The regulatory values for inorganic analytes were determined by using the higher of the TAGM and average site background values.
6. Eastern USA Background values were obtained from TAGM 4046.
7. Shaded boxes represent exceedances of the regulatory value and/or highest listed background range.
8. NA = parameter not analyzed.
9. (-) = No regulatory value is associated with this analyte.
10. mg/Kg = milligrams per Kilogram (equivalent to parts per million (ppm)).
11. ug/Kg = micrograms per Kilogram [equivalent to parts per billion (ppb)].
12. Only compounds with one or more detections are shown.
13. Blank spaces indicate that the analyte was not detected.
14. TICs = Tentatively Identified Compounds.
15. Definitions of data qualifiers are presented In Table 12.

Table 7
Youngstown Cold Storage Site RI/AA

Summary of Analytical Results
Groundwater Samples

	REGULATORY VALUE	YCS-MICRO 01-GW-O	YCS-MICRO 02-GW-O	YCS-MICRO 03-GW-O
Date Collected:		3/2/2006	3/2/2006	3/2/2006
Semi-Volatile Organic Compounds (ug/L)				
N-Nitrosodiphenylamine(1)	50	25		NA
TAL - Metals (ug/L)				
Aluminum	-	2,090	1,230	16,700
Arsenic	25			4.9
Barium	1,000	119	79.8	222
Beryllium	3			0.69
Calcium	-	122,000	123,000	232,000
Chromium	50	3.6	2.6	23.5
Cobalt	-	3.1	2.3	13
Copper	200	14.9 JE	9.7 JE	43 JE
Iron	300	3,410	1,920	24,100
Lead	25	7.2		14.7
Magnesium	35,000	30,000	29,900	44,100
Manganese	300	5,100	1,070	1,360
Nickel	100	16.1	6.2	30.8
Potassium	-	2,120	1,870	6,780
Silver	50	0.94	0.74	0.83
Sodium	20,000	24,700	54,200	58,700
Thallium	0.5	9.2	3.4	5.1
Vanadium	-	4.3	2.5	31.8
Zinc	2,000	58.2 JE	25.2 JE	98.7 JE

Notes:

1. VOCs, pesticides, herbicides and PCBs were not detected in any of the groundwater samples.
2. Regulatory values are derived from NYS Ambient Water Quality Standards TOGS 1.1.1 (Source of Drinking Water, groundwater).
3. Guidance value was used when standard was not available.
4. (-) = No regulatory value is associated with this compound.
5. Shaded values represent exceedances of the regulatory value.
6. ug/L = micrograms per Liter (equivalent to parts per billion (ppb)).
7. mg/L = milligrams per Liter (equivalent to parts per million (ppm)).
8. NA = compound was not analyzed.
9. Only compounds with one or more detections are shown.
10. Blank spaces indicate that the analyte was not detected.
11. Definitions of data qualifiers are presented in Table 12.

Table 8
Youngstown Cold Storage Site RI/AA

Summary of Analytical Results
Building Samples - Subslab Soil/Fill

	TAGM REC. SOIL CLEANUP OBJECTIVE	SITE BACKGROUND VALUE	REGULATORY VALUE	YCS-SUBSLAB01-S-O		YCS-SUBSLAB02-S-O		YCS-SUBSLAB03-S-O	
Date Collected:				3/16/2006		3/16/2006		3/16/2006	
Volatile Organic Compounds (ug/Kg)									
1,1,1-Trichloroethane	800	-	800	27		NA		NA	
Total TICs	-	-	-	113	J	NA		NA	
Total VOCs	**10,000**	-	**10,000**	**140**		NA		NA	
Semi-Volatile Organic Compounds (ug/Kg)									
1,1-Biphenyl	-	-	-					71	
2-Methylnaphthalene	36,400	-	36,400					580	
Benzo(a)anthracene	224	-	224	47				100	J
Benzo(a)pyrene	61	-	61	52				83	
Benzo(b)fluoranthene	1,100	-	1,100	62				72	
Benzo(g,h,i)perylene	50,000	-	50,000					75	
Benzo(k)fluoranthene	1,100	-	1,100					26	
Chrysene	400	-	400	63				190	J
Dibenzofuran	6,200	-	6,200					170	
Di-n-octylphthalate	50,000	-	50,000	96				420	U
Fluoranthene	50,000	-	50,000	62				75	
Naphthalene	13,000	-	13,000					300	
Phenanthrene	50,000	-	50,000	48				430	
Pyrene	50,000	-	50,000	110				120	J
Total TICs	-	-	-	**5,769**		**600**		**18,230**	
Total SVOCs	**500,000**	-	**500,000**	**6,309**		**600**		**20,942**	
PCBs (ug/Kg)									
Aroclor-1260	10,000	-	10,000	75					
Total PCBs	**10,000**	-	**10,000**	**75**					
TAL - Metals (mg/Kg)									
Aluminum	SB	8,842	8,842	5,820		11,900		4,720	
Antimony	SB	ND	ND	2.2	JN*E		J		J
Arsenic	7.5 or SB	7.4	7.5	2.3				8.3	
Barium	300 or SB	76	300	236	J*E	137	J*E	47.7	J*E
Beryllium	0.16 or SB	0.38	0.38	0.3	J	0.68	J	0.43	J
Calcium	SB	11,052	11,052	98,700	JE	66,000	JE	63,300	JE
Chromium	10 or SB	13.2	13.2	9	JE	18.2	JE	8.5	JE
Cobalt	30 or SB	6	30	3.5	JE	10.1	JE	2.7	JE
Copper	25 or SB	22.2	25.0	51.7		23.1		15.1	
Iron	2,000 or SB	15,360	15,360	20,800	J*E	20,800	J*E	13,300	J*E
Lead	SB	87.1	87.1	1,830	J*E	13.9	J*E	7	J*E
Magnesium	SB	3,940	3,940	13,000	J*E	8,030	J*E	4,490	J*E
Manganese	SB	484	484	595	JE	687	JE	202	JE
Mercury	0.1	0.1	0.1	0.062					
Nickel	13 or SB	15.7	15.7	11.9	JE	25.4	JE	8.1	JE
Potassium	SB	1,065	1,065	1,560		1,600		715	
Selenium	2 or SB	ND	2	2		2.1		2.2	
Sodium	SB	96	96	692		153		207	
Thallium	SB	1.3	1.3	1.2		1.2			
Vanadium	150 or SB	18.8	150	6.6	JE	18.9	JE	7.5	JE
Zinc	20 or SB	54.4	54.4	139	JN*E	60.1	JN*E	32.1	JN*E

Notes:

1. Pesticides and herbicides were not detected in any of the subslab soil/fill samples.
2. Regulatory values are derived from TAGM Recommended Soil Cleanup Objective source is NYSDEC Technical and Administrative Guidance Memorandum (TAGM): Determination of Soil Cleanup Objectives and Cleanup Levels (HWR-92-4046) revised January 24, 1994
3. (-) = No regulatory value is associated with this compound.
4. SB stands for "Site Background" under the TAGM soil cleanup objectives column.
5. Average Site Background from calculated from five surface soil samples collected from off-site.
6. The regulatory values for inorganic analytes were determined by using the higher of the TAGM and average site background values.
7. Shaded values represent exceedances of the regulatory value.
8. ug/Kg = micrograms per Kilogram (equivalent to parts per billion (ppb)).
9. mg/Kg = milligrams per Kilogram (equivalent to parts per million (ppm)).
10. Only compounds with one or more detections are shown.
11. NA = compound was not analyzed.
12. Blank spaces indicate that the analyte was not detected.
13. TICs = Tentatively Identified Compounds
14. Definitions of data qualifiers are presented in Table 12.

Table 9
Youngstown Cold Storage Site RI/AA

Summary of Analytical Results
Building Samples - Standing Water

	REGULATORY VALUE	YCS-ES01-SW-O	YCS-ES02-SW-O	YCS-ESXX-SW-FD	YCS-SUMP01-SW-O
Sample Location:		Eastern Elevator Shaft	Western Elevator Shaft	Western Elevator Shaft (Duplicate)	Valve Pit
Date Collected:		3/1/2006	3/1/2006	3/1/2006	3/2/2006
TAL - Metals (ug/L)					
Aluminum	-	39.7			89.6
Arsenic	50				6.1
Barium	1,000	51.5	57.8	59.8	9.4
Cadmium	5	0.46	0.89	0.89	
Calcium	-	84,900	92,800	93,600	8,890
Chromium	50	8	2.9	2.7	1.5
Cobalt	5	1.2	1.1	1.3	0.75
Copper	200	38.4 JE	32 JE	34.7 JE	9.4 JE
Iron	300	121	70	72.9	87.1
Lead	50	10.6			
Magnesium	35,000	14,700	13,100	13,200	1,130
Manganese	300	16.1	13.6	13.2	10.3
Nickel	100	4.3	5.2	5.6	1.6
Potassium	-	7,830	37,900	38,000	685
Sodium	-	20,300	41,900	42,700	1,800
Vanadium	14	0.76	1.5	1.6	0.74
Zinc	2,000	268 JE	43.3 JE	51.6 JE	60.7 JE

Notes:

1. VOCs, SVOCs, pesticides, PCBs and herbicides were not detected in any of the standing water samples.
2. Regulatory values for surface water are derived from NYS Ambient Water Quality Standards TOGS 1.1.1 (Source of Drinking Water, surface water).
3. Guidance value was used when standard was not available.
4. (-) = No regulatory value is associated with this compound.
5. Shaded values represent exceedances of the regulatory value.
6. ug/L = micrograms per Liter (equivalent to parts per billion (ppb)).
7. Only compounds with one or more detections are shown.
8. Blank spaces indicate that the analyte was not detected.
9. Definitions of data qualifiers are presented in Table 12.

Table 10
Youngstown Cold Storage Site RI/AA

Summary of Analytical Results
Building Samples - Wood Floor and Wipe Samples

	Regulatory Value	YCS-WIPE01-O	YCS-WIPE02-O	YCS-WIPE03-O	YCS-WIPE04-O	YCS-WOODFLOOR01-O	YCS-WOODFLOOR02-O
Date Collected:		3/1/2006	3/1/2006	3/1/2006	3/1/2006	3/1/2006	3/1/2006
PCBs (mg/100 cm^2) wipe samples only							
Aroclor-1254	10	1.8	4.9		9.9	NA	NA
Aroclor-1260	10	1.4 P	2.8 P	15	4.5 P	NA	NA
Total PCBs	10	**3.2**	**7.7**	**15**	**14.4**	NA	NA
Pesticides (ug/Kg)							
4,4-DDD	2,900	NA	NA	NA	NA	93 P	13 P
4,4-DDE	2,100	NA	NA	NA	NA	120	30
4,4-DDT	2,100	NA	NA	NA	NA	1,200 D	73 D
alpha-Chlordane	540	NA	NA	NA	NA		1.2
Endosulfan I	900	NA	NA	NA	NA		2
Endosulfan sulfate	1,000	NA	NA	NA	NA		2.5 P
Endrin aldehyde	-	NA	NA	NA	NA		2.8 P
Endrin ketone	-	NA	NA	NA	NA	22 P	5.4 P
gamma-Chlordane	540	NA	NA	NA	NA		1.1 P
Heptachlor epoxide	20	NA	NA	NA	NA		2 P
Total Pesticides	**10,000**	NA	NA	NA	NA	**1,435**	**133**
TAL - Metals (mg/Kg)							
Arsenic	7.5 or SB	NA	NA	NA	NA	3.1	1.2 B

Notes:

1. Regulatory value is from 40CFR Part 761 Subpart G-PCB Spill Cleanup Policy – 761.125 (c)(4)(i – iv).
2. Regulatory values for wood floor samples are derived from TAGM Recommended Soil Cleanup Objective source is NYSDEC Technical and Administrative Guidance Memorandum (TAGM): Determination of Soil Cleanup Objectives and Cleanup Levels (HWR-92-4046) revised January 24, 1994.
3. Wipe samples were collected from a 100 cm2 area.
4. Shaded values represent exceedances of the regulatory value.
5. (-) = No regulatory value is associated with this compound.
6. NA = parameter not analyzed.
7. SB stands for "Site Background" under the TAGM soil cleanup objectives column.
8. Average Site Background from calculated from five surface soil samples collected from off-site.
9. The regulatory values for arsenic was determined by using the higher of the TAGM and average site background values.
10. Shaded values represent exceedances of the regulatory value.
11. ug/Kg = micrograms per Kilogram (equivalent to parts per billion (ppb)).
12. mg/Kg = milligrams per Kilogram (equivalent to parts per million (ppm)).
13. Only compounds with one or more detections are shown.
14. Blank spaces indicate that the analyte was not detected.
14. Definitions of data qualifiers are presented in Table 12.

Table 11
Youngstown Cold Storage Site RI/AA

Summary of Analytical Results
Sump and Storm Sewer Sediment Samples

	TAGM REC. SOIL CLEANUP OBJECTIVE	SITE BACKGROUND VALUE	REGULATORY VALUE	YCS-SUMP01-SED-O		YCS-SUMP02-SED-O		YCS-SUMP03-SED-O	
Sample Location:				Valve Pit		Eastern Storm Sewer		Western Storm Sewer	
Date Collected:				3/2/2006		3/2/2006		3/2/2006	
Volatile Organic Compounds (ug/Kg)									
1,1,1-Trichloroethane	800	-	800	250	D	97		570	D
1,1-Dichloroethane	200	-	200	25				39	
1,1-Dichloroethene	400	-	400	10		3		23	
Acetone	200	-	200	32				36	
Methylene Chloride	100	-	100	2		1			
Total TICs	-	-		**0**		**0**		**0**	
Total VOCs	**1,000**	-		**319**		**101**		**668**	
Semi-Volatile Organic Compounds (ug/Kg)									
Acenaphthene	50,000	-	50,000			260		180	
Acenaphthylene	41,000	-	41,000	200		110		120	
Anthracene	50,000	-	50,000	250		630		400	
Benzaldehyde	-	-	-	110				220	
Benzo(a)anthracene	224	-	224	1,200		2,200	J	2,100	J
Benzo(a)pyrene	61	-	61	1,200		2,100	J	2,200	J
Benzo(b)fluoranthene	1,100	-	1,100	2,200		3,500	JD	3,900	J
Benzo(g,h,i)perylene	50,000	-	50,000	250		1,100	J	1,100	J
Benzo(k)fluoranthene	1,100	-	1,100	910		1,200	J	1,400	J
Carbazole	-	-	-	200		620		460	
Chrysene	400	-	400	1,400		2,400	J	2,700	J
Dibenzo(a,h)anthracene	14	-	14	140		390	J	400	J
Dibenzofuran	6,200	-	6,200			150		120	
Fluoranthene	50,000	-	50,000	2,800		6,700	D	4,500	
Fluorene	50,000	-	50,000	80		300		230	
Indeno(1,2,3-cd)pyrene	3,200	-	3,200	390		1,400	J	1,300	J
Naphthalene	13,000	-	13,000			46		87	
N-Nitrosodiphenylamine(1)	-	-	-	100				110	
Phenanthrene	50,000	-	50,000	1,300		4,600	D	3,200	
Pyrene	50,000	-	50,000	2,200		5,800	D	4,300	D
Total TICs	-	-	-	**27,440**		**10,434**		**66,410**	
Total SVOCs	**500,000**	-	**500,000**	**42,370**		**43,940**		**95,437**	
Pesticides (ug/Kg)									
4,4-DDD	2,900	-	2,900	17				10	
4,4-DDE	2,100	-	2,100	74		3.4	NJP	12	JP
4,4-DDT	2,100	-	2,100	45				5	JP
beta-BHC	200	-	200			12	J	11	
Endosulfan sulfate	1,000	-	1,000	7.2	NJP	5.9	NJP	8.4	NJP
Total Pesticides	**10,000**	-	**10,000**						
TAL - Metals (mg/Kg)									
Aluminum	SB	8,842	8,842	10,100	J	1,790		4,330	J
Arsenic	7.5 or SB	7.4	7.5	11.4	J	1.4		3.5	J
Barium	300 or SB	76	300	81	J	13.3		37.5	J
Beryllium	0.16 or SB	0.38	0.38	0.38	J	0.083		0.19	J
Cadmium	1 or SB	ND	1	1.5	J	0.15		0.59	J
Calcium	SB	11,052	11,052	10,700	J*	100,000	J*	87,100	J*
Chromium	10 or SB	13.2	13.2	26.3		8.3		50.1	J
Cobalt	30 or SB	6	30	8.8	JE	1.8	E	4.3	JE
Copper	25 or SB	22.2	25.0	142	J	17.8		31.7	J
Iron	2,000 or SB	15,360	15,360	19,200	J	6,150		12,000	J
Lead	SB	87.1	87.1	479	J	24.7		57.9	J
Magnesium	SB	3,940	3,940	8,090	J	46,200		41,000	J
Manganese	SB	484	484	316	J*	522	J*	547	J*
Mercury	0.1	0.1	0.1	0.12	J				J
Nickel	13 or SB	15.7	15.7	26	J	5.6		12.5	J
Potassium	SB	1,065	1,065	1,120	J	350		702	J
Silver	SB	0.18	0.18		J	0.69		0.47	J
Sodium	SB	96	96	141	J	686		1,440	J
Thallium	SB	1.3	1.3	1.6	J	1.3		1.1	J
Vanadium	150 or SB	18.8	150	22.9	J	5.6		12.2	J
Zinc	20 or SB	54.4	54.4	1,210	JE	195	JE	438	JE

Notes:
1. PCBs were not detected in any of the sump samples.
2. Regulatory values for the sediment samples are derived from TAGM Recommended Soil Cleanup Objective source is NYSDEC Technical and Administrative Guidance Memorandum (TAGM): Determination of Soil Cleanup Objectives and Cleanup Levels (HWR-92-4046) revised January 24, 1994.
3. Regulatory values for water are derived from NYS Ambient Water Quality Standards TOGS 1.1.1 (Source of Drinking Water, surface water).
4. Guidance value was used when standard was not available.
5. (-) = No regulatory value is associated with this compound.
6. Shaded values represent exceedances of the regulatory value.
7. Regulatory value for PCBs in water applies to the sum of all detected PCBs
8. ug/L = micrograms per Liter (equivalent to parts per billion (ppb)).
9. mg/L = milligrams per Liter (equivalent to parts per million (ppm)).
10. ug/Kg = micrograms per Kilogram (equivalent to parts per billion (ppb)).
11. mg/Kg = milligrams per Kilogram (equivalent to parts per million (ppm)).
12. NA = compound was not analyzed.
13. Only compounds with one or more detections are shown.
14. Blank spaces indicate that the analyte was not detected.
15. Definitions of data qualifiers are presented in Table 12.

Table 12
Youngstown Cold Storage Site RI/AA

Definitions of Data Qualifiers

DATA QUALIFIER	DEFINITION
Organics	
U	Not Detected. This compound was analyzed-for but not detected. For Organics analysis the reporting limit (lowest standard concentration) is the value listed. For Inorganics analysis, the value listed is the detection limit. For Inorganics analyzed using SW-846 methods, the detection limit is the Method Detection Limit, for Inorganics analyzed using EPA CLP and NY ASP CLP methods, the detection limit is the Instrument Detection Limit.
J	For both organics and inorganic analysis, this flag indicates an estimated value and the associated numerical value is an approximate concentration of the analyte in the sample.
B	For Organic analyses, this flag indicates the compound was also detected in the associated Method Blank.
D	For Organics analysis, this flag indicates the compound concentration was obtained from a diluted analysis.
E	For Organics analysis, this flag indicates the compound concentration exceeded the Calibration Range. The E flag has an alternative meaning for Inorganics analyses, indicating an estimated concentration due to the presence of interferences, as determined by the serial dilution analysis.
P	This flag is used for Pesticides/PCB/Herbicide compound when there is a greater than 40% difference for detected concentration between the two GC columns used for Primary and Confirmation analyses. This difference typically indicates an interference, causing one value to be unusually high. The lower of the two values is reported in the Analysis Report.
N	For Organics this flag indicates the presence of an analyte for which there is presumptive evidence to make a tentative identification. For Inorganics analysis the N flag indicates the matrix spike recovery falls outside of the control limit.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting the QC criteria. The analyte may or may not be present in the sample.
*	For Inorganics analysis the * flag indicates Relative Percent Difference for duplicate analyses is outside of the control limit.

Table 13
General Response Actions

Youngstown Cold Storage Site

General Response Actions						
Surface Soil/Fill	**Subsurface Soil/Fill**	**Sump Sediments**	**Stained Floor/Equipment Surfaces**	**Subslab Soil/Fill**	**Aboveground Storage Tank**	**Asbestos**
No action	No action	No action	No action	No action	No action	No action
Excavation and off-site disposal	Excavation and off-site disposal	Excavation and off-site disposal	Removal and off-site disposal	Removal and off-site disposal	Removal and off-site disposal of tank and contents	Removal and off-site disposal
	In situ treatment				Excavation and off-site disposal of underlying soil (if necessary)	
					In situ treatment of underlying soil (if necessary)	

Table 14
Site-Wide Alternatives

Youngstown Cold Storage Site

Alternative Identifier	Name	Description	Areas of Concern						
			Surface Soil	Subsurface Soil/Fill	Sump Sediments	Stained Floor/ Equipment Surfaces	Subslab Soil/Fill	Aboveground Storage Tank	Asbestos
A	"No Action"	Project site remains in current condition	No action	No action	No action	No action	No action	No action.	No action
B	"Removal with Complete Demolition"	Removal of all contaminated media with complete demolition of all on-site buildings	Removal and off-site disposal	Removal and off-site disposal	Removal and off-site disposal	Removal and off-site disposal	Removal and off-site disposal	Removal and off-site disposal of tank, contents, and underlying soil	Removal and off-site disposal
B1	"Removal with Partial Demolition"	Removal of all contaminated media with partial demolition of on-site buildings	Removal and off-site disposal	Removal and off-site disposal	Removal and off-site disposal	Removal and off-site disposal	Removal and off-site disposal	Removal and off-site disposal of tank, contents, and underlying soil	Removal and off-site disposal
C	"Removal and Treatment"	Removal of some contaminated media and treatment of subsurface soil	Removal and off-site disposal	In situ treatment	Removal and off-site disposal	Removal and off-site disposal	Removal and off-site disposal	Removal and off-site disposal of tank and contents, and In situ treatment of underlying soil	Removal and off-site disposal

Table 15
Youngstown Cold Storage Site
Cost Estimate - Alternative B
Removal with Complete Demolition

Item	Note	Unit	Quantity	Cost/Unit	Cost
Excavation of Contaminated Surface Soil/Fill					
Non-Hazardous Fill Excavation	Track mounted excavator, 1.5 cy	day	1	$ 1,843.70	$1,844
Non-Hazardous Soil/Fill	Transportation/disposal	ton	180	$ 25.00	$4,500
Post Excavation Sampling	Confirmatory Samples	sample	5	$ 165.00	$825
Disposal Profiling	TCLP VOCs/RCRA Analysis	sample	1	$ 755.00	$755
Excavation of Contaminated Subsurface Soil/Fill - Former UST Area					
Non-Hazardous Fill Excavation	Track mounted excavator, 1.5 cy	day	5	$ 1,843.70	$9,219
Non-Hazardous Soil/Fill	Transportation/disposal	ton	1,168	$ 25.00	$29,200
Post Excavation Sampling	Confirmatory Samples	sample	5	$ 80.00	$400
Disposal Profiling	TCLP VOCs/RCRA Analysis	sample	4	$ 755.00	$3,020
Excavation of Contaminated Subsurface Soil/Fill - Spray Wash Area					
Non-Hazardous Fill Excavation	Track mounted excavator, 1.5 cy	day	2	$ 1,843.70	$3,687
Non-Hazardous Soil/Fill	Transportation/disposal	ton	160	$ 25.00	$4,000
Post Excavation Sampling	Confirmatory Samples	sample	5	$ 80.00	$400
Disposal Profiling	TCLP VOCs/RCRA Analysis	sample	1	$ 755.00	$755
Excavation of Contaminated Subsurface Soil/Fill - Arsenic Contaminated Soil/Fill					
Non-Hazardous Fill Excavation	Track mounted excavator, 1.5 cy	day	2	$ 1,843.70	$3,687
Non-Hazardous Soil/Fill	Transportation/disposal	ton	23	$ 25.00	$575
Post Excavation Sampling	Confirmatory Samples	sample	5	$ 75.00	$375
Disposal Profiling	TCLP VOCs/RCRA Analysis	sample	1	$ 755.00	$755
Sediment Removal - Valve Pit					
Valve Pit Cleaning/Close-in-place	Three man crew (2 Laborers and a Forman)	day	1	$ 1,370.00	$1,370
Non-Hazardous Soil/Fill	Transportation/disposal	ton	1	$ 25.00	$25
Excavation of Contaminated Subslab Soil/Fill					
Non-Hazardous Fill Excavation	Track mounted excavator, 1.5 cy	day	1	$ 1,843.70	$1,844
Non-Hazardous Soil/Fill	Transportation/disposal	ton	180	$ 25.00	$4,500
Post Excavation Sampling	Confirmatory Samples	sample	5	$ 50.00	$250
Disposal Profiling	TCLP VOCs/RCRA Analysis	sample	1	$ 755.00	$755
Backfill of Remediated Areas					
Clean Fill	Unclassified fill, 6" lifts	cy	965	$ 13.23	$12,770

Table 15
Youngstown Cold Storage Site
Cost Estimate - Alternative B
Removal with Complete Demolition

Item	Note	Unit	Quantity	Cost/Unit	Cost
AST Removal and Off-site Disposal					
AST Excavation, Cleaning and Off-Site Disposal	Three man crew (2 Laborers and a Forman)	ls	1	$ 2,400.00	$2,400
AST Contents Transportation/Disposal (~ 100 gallons)	Transportation to and disposal at Hazardous Waste Facility	ls	1	$ 1,275.00	$1,275
Underlying Contaminated Non-Hazardous Soil/Fill	Transportation/disposal	ton	8	$ 25.00	$200
Removal and Off-Site Disposal of Asbestos Containing Building Materials					
Friable and Non-Friable Asbestos	Abatement	ls	1	$ 60,500.00	$60,500
Project/Air Monitoring	Air monitoring and project oversight	ls	1	$ 3,000.00	$3,000
PCB Removal and Off-Site Disposal					
Demolition and off-site disposal	PCB contaminated concrete floor and equipment in compressor room	ls	1	$ 17,000.00	$17,000
Demolition/Removal of the Buildings, Structures, Slabs, Foundations and Footers					
Demolition and Complete Removal	Assumptions included below	ls	1	$ 491,500.00	$491,500
Subtotal					$661,386
Additional Capital Costs					
Mob/Demob/Decon	5% of Subtotal				$33,069
Contingencies	15% of Subtotal				$99,208
Engineering/Oversight	10% of Subtotal				$66,139
Subtotal					$198,416
Total Project Cost					**$859,802**

Notes:

Sources include:

2005 RS Means Environmental Remediation Cost Data-Assemblies and Unit Price 11th Edition (unit prices include a 33% markup for overhead, profit and inflation).

2005 RS Means Heavy Construction Cost Data 19th Edition (unit prices include a 3% markup for inflation).

Engineer's Estimate.

Building Demolition Assumptions:

1. Building materials will not require special disposal.
2. Includes complete removal of all buildings, structures, slabs, foundations and footers.
3. Includes 15,000 tons of imported fill material.
4. 8,000 tons of clean hard fill will be removed from the site.
5. No site restoration services are included with the exception of backfill.

ls = lump sum
cy = cubic yard
ton = 2,000 pounds

Table 16
Youngstown Cold Storage Site
Cost Estimate - Alternative B1
Removal with Partial Demolition

Item	Note	Unit	Quantity	Cost/Unit	Cost
Excavation of Contaminated Surface Soil/Fill					
Non-Hazardous Fill Excavation	Track mounted excavator, 1.5 cy	day	1	$ 1,843.70	$1,844
Non-Hazardous Soil/Fill	Transportation/disposal	ton	180	$ 25.00	$4,500
Post Excavation Sampling	Confirmatory Samples	sample	5	$ 165.00	$825
Disposal Profiling	TCLP VOCs/RCRA Analysis	sample	1	$ 755.00	$755
Excavation of Contaminated Subsurface Soil/Fill - Former UST Area					
Non-Hazardous Fill Excavation	Track mounted excavator, 1.5 cy	day	5	$ 1,843.70	$9,219
Non-Hazardous Soil/Fill	Transportation/disposal	ton	1,168	$ 25.00	$29,200
Post Excavation Sampling	Confirmatory Samples	sample	5	$ 80.00	$400
Disposal Profiling	TCLP VOCs/RCRA Analysis	sample	4	$ 755.00	$3,020
Excavation of Contaminated Subsurface Soil/Fill - Spray Wash Area					
Non-Hazardous Fill Excavation	Track mounted excavator, 1.5 cy	day	2	$ 1,843.70	$3,687
Non-Hazardous Soil/Fill	Transportation/disposal	ton	160	$ 25.00	$4,000
Post Excavation Sampling	Confirmatory Samples	sample	5	$ 80.00	$400
Disposal Profiling	TCLP VOCs/RCRA Analysis	sample	1	$ 755.00	$755
Excavation of Contaminated Subsurface Soil/Fill - Arsenic Contaminated Soil/Fill					
Non-Hazardous Fill Excavation	Track mounted excavator, 1.5 cy	day	2	$ 1,843.70	$3,687
Non-Hazardous Soil/Fill	Transportation/disposal	ton	23	$ 25.00	$575
Post Excavation Sampling	Confirmatory Samples	sample	5	$ 75.00	$375
Disposal Profiling	TCLP VOCs/RCRA Analysis	sample	1	$ 755.00	$755
Sediment Removal - Valve Pit					
Valve Pit Cleaning/Close-in-place	Three man crew (2 Laborers and a Forman)	day	1	$ 1,370.00	$1,370
Non-Hazardous Soil/Fill	Transportation/disposal	ton	1	$ 25.00	$25
Excavation of Contaminated Subslab Soil/Fill					
Non-Hazardous Fill Excavation	Track mounted excavator, 1.5 cy	day	1	$ 1,843.70	$1,844
Non-Hazardous Soil/Fill	Transportation/disposal	ton	180	$ 25.00	$4,500
Post Excavation Sampling	Confirmatory Samples	sample	5	$ 50.00	$250
Disposal Profiling	TCLP VOCs/RCRA Analysis	sample	1	$ 755.00	$755
Backfill of Remediated Areas					
Clean Fill	Unclassified fill, 6" lifts	cy	965	$ 13.23	$12,770

Table 16
Youngstown Cold Storage Site
Cost Estimate - Alternative B1
Removal with Partial Demolition

Item	Note	Unit	Quantity	Cost/Unit	Cost
AST Removal and Off-site Disposal					
AST Excavation, Cleaning and Off-Site Disposal	Three man crew (2 Laborers and a Forman)	ls	1	$ 2,400.00	$2,400
AST Contents Transportation/Disposal (~ 100 gallons)	Transportation to and disposal at Hazardous Waste Facility	ls	1	$ 1,275.00	$1,275
Underlying Contaminated Non-Hazardous Soil/Fill	Transportation/disposal	ton	8	$ 25.00	$200
Removal and Off-Site Disposal of Asbestos Containing Building Materials					
Friable and Non-Friable Asbestos	Abatement	ls	1	$ 60,500.00	$60,500
Project/Air Monitoring	Air monitoring and project oversight	ls	1	$ 3,000.00	$3,000
PCB Removal and Off-Site Disposal					
Demolition and off-site disposal	PCB contaminated concrete floor and equipment in compressor room	ls	1	$ 17,000.00	$17,000
Partial Building Demolition					
Demolition and Removal	Compressor room, newer warehouse addition and spray wash structure	ls	1	$ 98,000.00	$98,000
Subtotal					$267,886
Additional Capital Costs					
Mob/Demob/Decon	5% of Subtotal				$13,394
Contingencies	15% of Subtotal				$40,183
Engineering/Oversight	10% of Subtotal				$26,789
Subtotal					$80,366
Total Project Cost					**$348,252**

Notes:

Sources include:

2005 RS Means Environmental Remediation Cost Data-Assemblies and Unit Price 11th Edition (unit prices include a 33% markup for overhead, profit and inflation).

2005 RS Means Heavy Construction Cost Data 19th Edition (unit prices include a 3% markup for inflation).

Engineer's Estimate.

Building Demolition Assumptions:

1. Includes complete removal of compressor room building and newer constructed that adjoins the eastern portion of the warehouse.

ls = lump sum
cy = cubic yard
ton = 2,000 pounds

Table 17
Youngstown Cold Storage Site
Cost Estimate - Alternative C
Removal and Treatment

Item	Note	Unit	Quantity	Cost/Unit	Cost
Excavation of Contaminated Surface Soil/Fill					
Non-Hazardous Fill Excavation	Track mounted excavator, 1.5 cy	day	1	$ 1,843.70	$1,844
Non-Hazardous Soil/Fill	Transportation/disposal	ton	180	$ 25.00	$4,500
Post Excavation Sampling	Confirmatory Samples	sample	5	$ 165.00	$825
Disposal Profiling	TCLP VOCs/RCRA Analysis	sample	1	$ 755.00	$755
AST Removal and Off-site Disposal					
AST Excavation, Cleaning and Off-Site Disposal	Three man crew (2 Laborers and a Forman)	ls	1	$ 2,400.00	$2,400
AST Contents Transportation/Disposal (~ 100 gallons)	Transportation to and disposal at Hazardous Waste Facility	ls	1	$ 1,275.00	$1,275
In-situ Treatment Contaminated Subsurface Soil/Fill - Former UST Area, Spray Wash Area & AST Area					
Chemical Oxidant	RegenOx cost per event	event	3	$ 5,200.00	$15,600
Injection of Chemical Oxidant	Intallation of Geoprobe injection points and injection labor	event	3	$ 9,900.00	$29,700
Confirmatory Soil Sampling	Collection, analysis and data review	event	3	$ 5,800.00	$17,400
Excavation of Contaminated Subsurface Soil/Fill - Arsenic Contaminated Soil/Fill					
Non-Hazardous Fill Excavation	Track mounted excavator, 1.5 cy	day	2	$ 1,843.70	$3,687
Non-Hazardous Soil/Fill	Transportation/disposal	ton	23	$ 25.00	$575
Post Excavation Sampling	Confirmatory Samples	sample	5	$ 75.00	$375
Disposal Profiling	TCLP VOCs/RCRA Analysis	sample	1	$ 755.00	$755
Sediment Removal - Valve Pit					
Valve Pit Cleaning/Close-in-place	Three man crew (2 Laborers and a Forman)	day	1	$ 1,370.00	$1,370
Non-Hazardous Soil/Fill	Transportation/disposal	ton	1	$ 25.00	$25
Excavation of Contaminated Subslab Soil/Fill					
Non-Hazardous Fill Excavation	Track mounted excavator, 1.5 cy	day	1	$ 1,843.70	$1,844
Non-Hazardous Soil/Fill	Transportation/disposal	ton	180	$ 25.00	$4,500
Post Excavation Sampling	Confirmatory Samples	sample	5	$ 50.00	$250
Disposal Profiling	TCLP VOCs/RCRA Analysis	sample	1	$ 755.00	$755
Backfill of Remediated Areas					
Clean Fill	Unclassified fill, 6" lifts	cy	965	$ 13.23	$12,770
Removal and Off-Site Disposal of Asbestos Containing Building Materials					
Friable and Non-Friable Asbestos	Abatement	ls	1	$ 60,500.00	$60,500
Project/Air Monitoring	Air monitoring and project oversight	ls	1	$ 3,000.00	$3,000

Table 17
Youngstown Cold Storage Site
Cost Estimate - Alternative C
Removal and Treatment

Item	Note	Unit	Quantity	Cost/Unit	Cost
PCB Removal and Off-Site Disposal					
Demolition and off-site disposal	PCB contaminated concrete floor and equipment in compressor room	ls	1	$ 17,000.00	$17,000
Demolition/Removal of the Buildings, Structures, Slabs, Foundations and Footers					
Demolition and Complete Removal	Assumptions included below	ls	1	$ 491,500.00	$491,500
Subtotal					$673,205
Additional Capital Costs					
Mob/Demob/Decon	5% of Subtotal				$33,660
Contingencies	15% of Subtotal				$100,981
Engineering/Oversight	10% of Subtotal				$67,321
Subtotal					$201,962
Total Project Cost					**$875,167**

Notes:

Sources include:

2005 RS Means Environmental Remediation Cost Data-Assemblies and Unit Price 11th Edition (unit prices include a 33% markup for overhead, profit and inflation).

2005 RS Means Heavy Construction Cost Data 19th Edition (unit prices include a 3% markup for inflation).

Engineer's Estimate.

Building Demolition Assumptions:

1. Building materials will not require special disposal.
2. Includes complete removal of all buildings, structures, slabs, foundations and footers.
3. Includes 15,000 tons of imported fill material.
4. 8,000 tons of clean hard fill will be removed from the site.
5. No site restoration services are included with the exception of backfill.

ls = lump sum
cy = cubic yard
ton = 2,000 pounds

Table 18
Comparison of Site-Wide Alternatives

Youngstown Cold Storage Site

Criteria	Site-Wide Remedial Alternatives							
	A "No Action"		B "Removal with Complete Demolition"		B1 "Removal with Partial Demolition"		D "Removal and Treatment"	
	Rating/Score							
Overall Protection Of Human Health And The Environment	Low	1	High	3	High	3	High	3
Compliance With SCGs	Low	1	High	3	High	3	High	3
Short-Term Effectiveness	Low	1	High	3	High	3	Medium-High	2.5
Long-Term Effectiveness	Low	1	High	3	High	3	High	3
Reduction Of Toxicity, Mobility And Volume	Low	1	High	3	High	3	High	3
Feasibility	Low	1	Medium	2	High	3	Medium	2
Aggregate Score		6		17		18		16.5

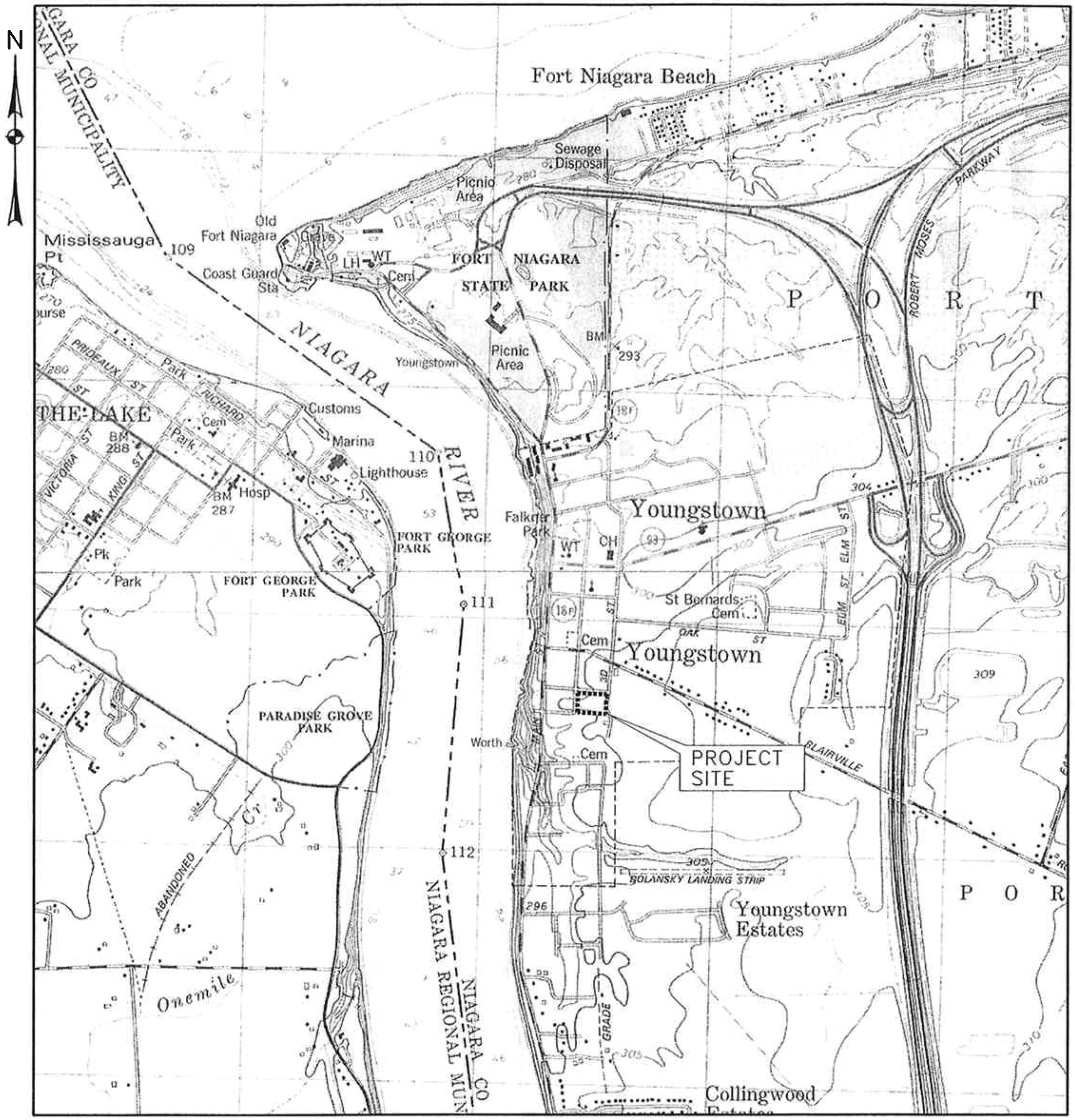
Notes:

1) If the Site-Wide Remedial Alternative satisfies the criteria to a high degree it is assigned a score of 3.

2) If the Site-Wide Remedial Alternative satisfies the criteria to a moderate degree it is assigned a score of 2.

3) If the Site-Wide Remedial Alternative minimally satisfies the criteria it is assigned a score of 1.

FIGURES



U.S.G.S LEWISTON QUADRANGLE

PROJECT SITE LOCATION MAP

TVGA
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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" = 2000'	DATE: APRIL 2006	FIGURE NO. 1

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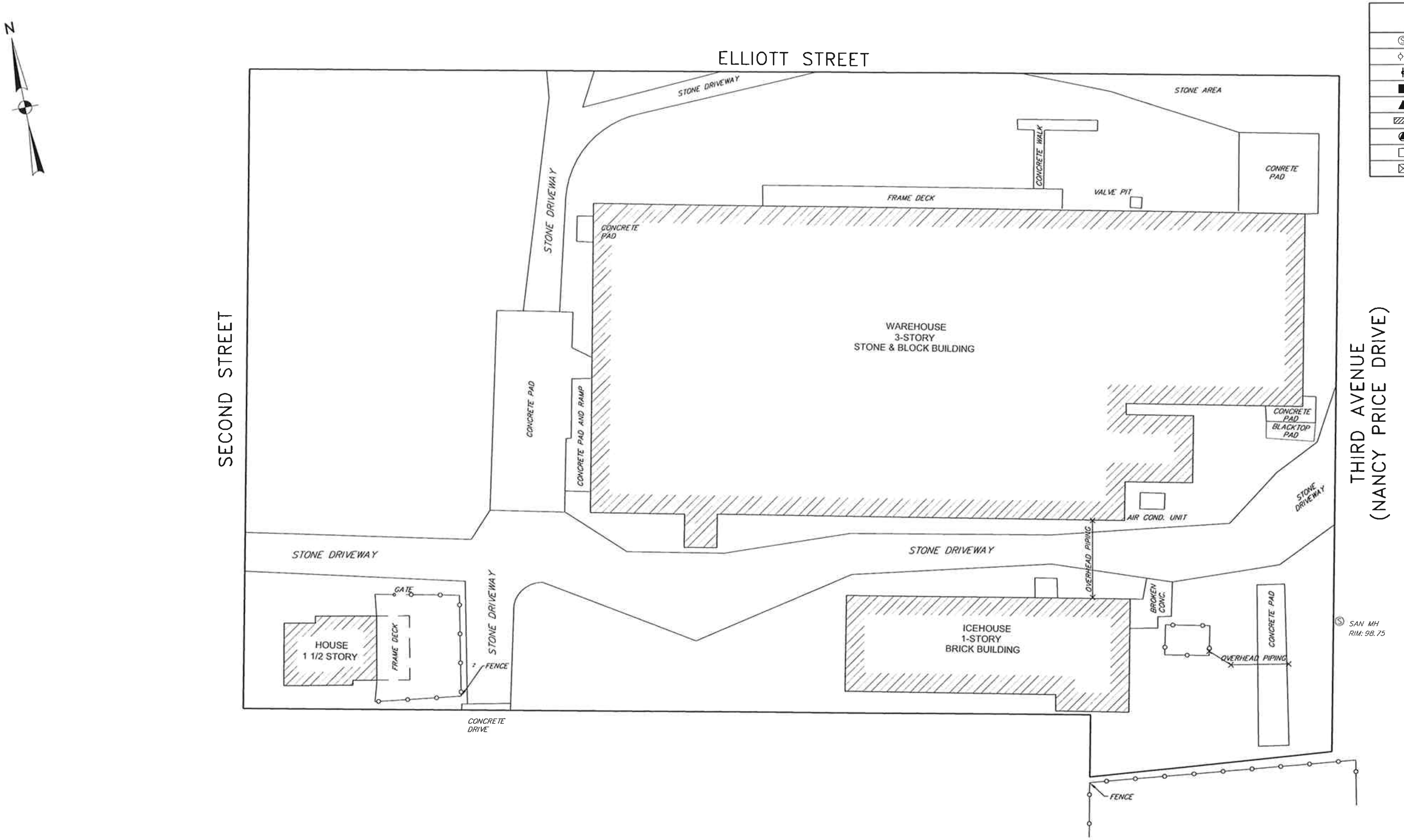
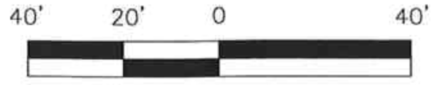


LEGEND

Ⓢ	SANITARY MANHOLE
◇-	UTILITY POLE
⍿	GAS MARKER
■	SURFACE SOIL (SS) LOCATION
▲	SOIL PROBE (SP) LOCATION
▨	TEST PIT (TP) LOCATION
◉	MICRO WELL LOCATION
□	SURFACE WATER/ SEDIMENT
☒	BUILDING COMPONENT SAMPLE LOCATION



SCALE: 1"=40'-0"

SITE PLAN

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

PROJECT NO. 2004.0279.03	SCALE: 1" = 40'	DATE: JUNE 2006	**FIGURE NO. 2**

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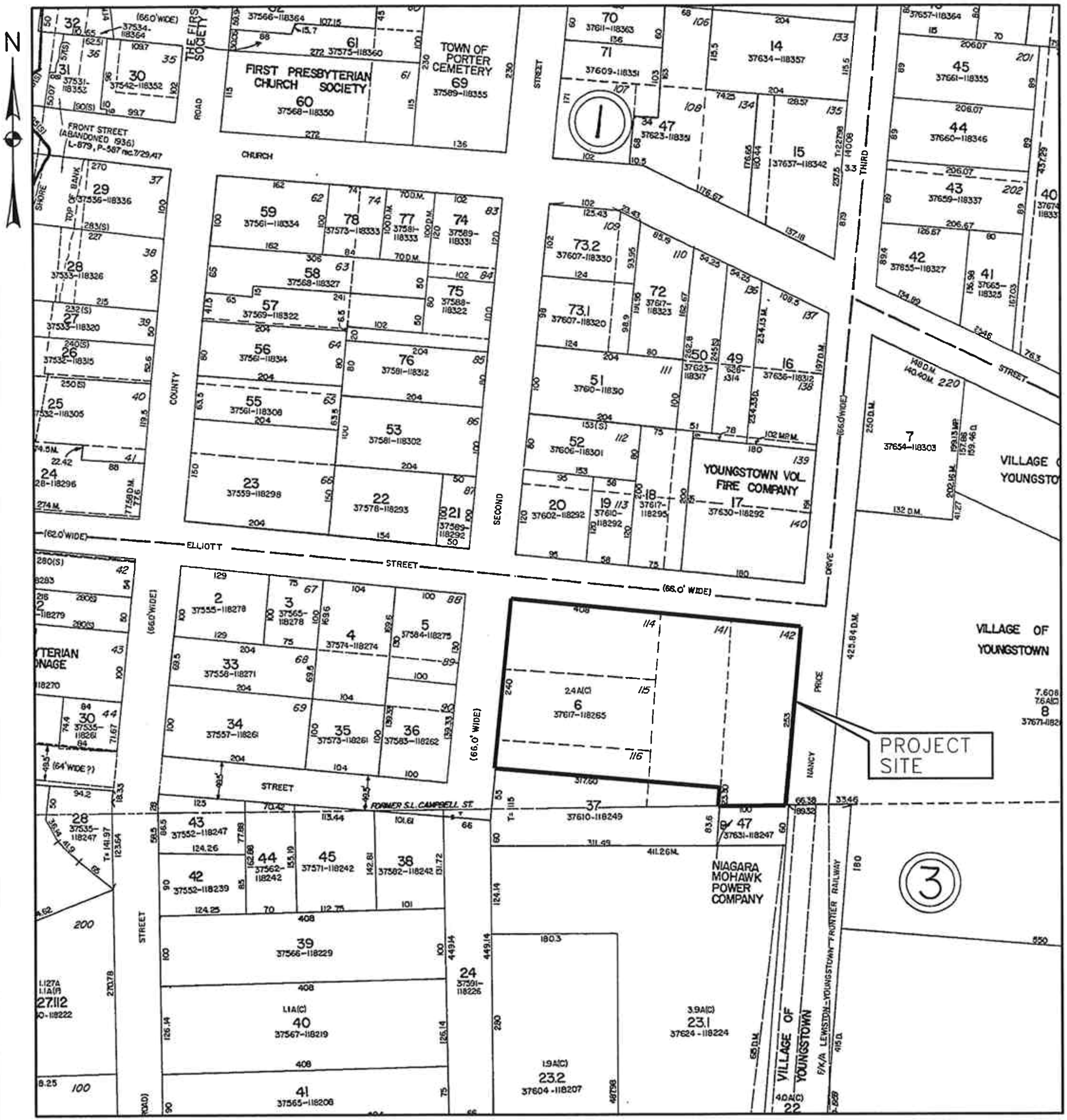

S.B.L. 59.06-3-6

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: APRIL 2006

FIGURE NO. 3

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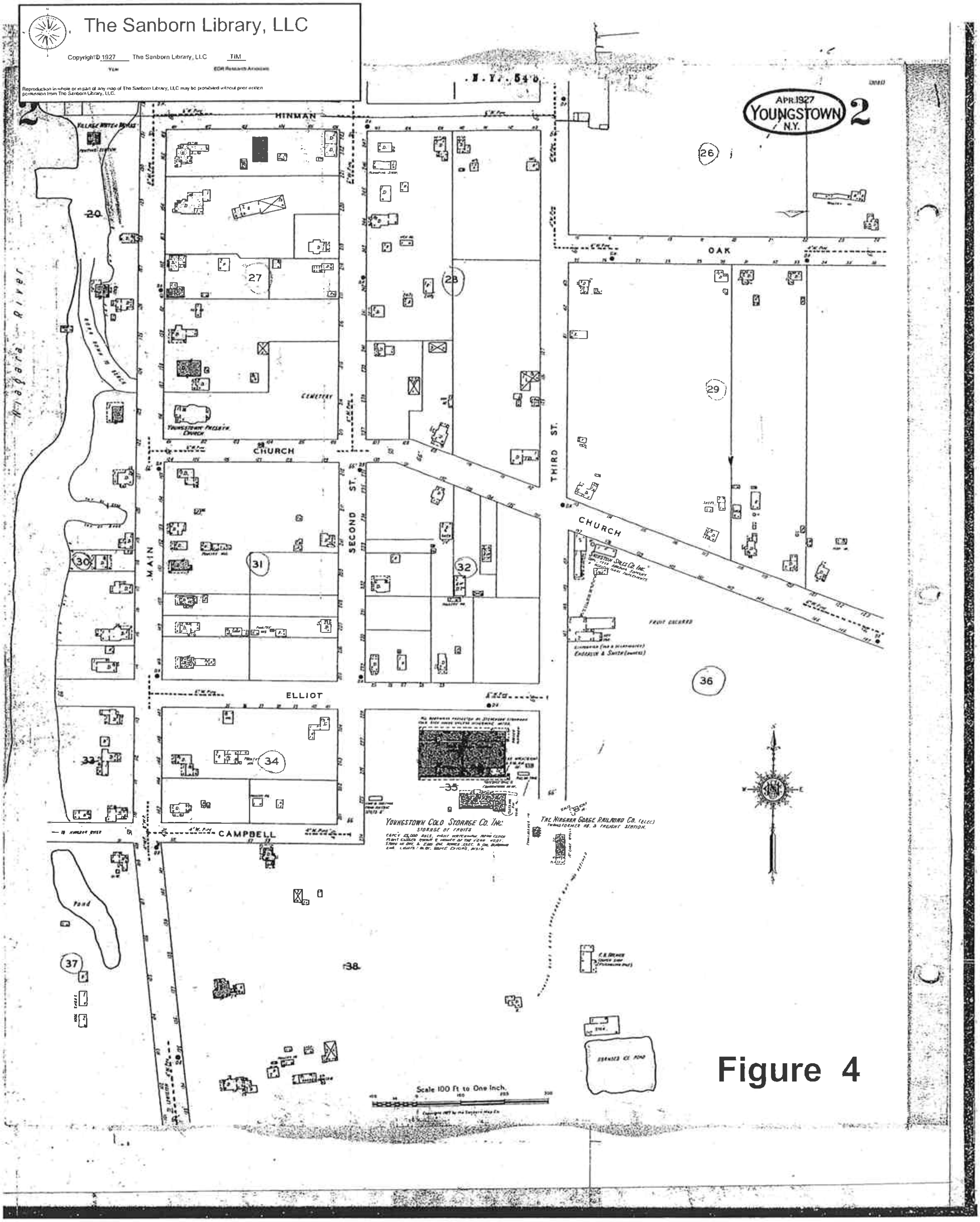
APR.1927
YOUNGSTOWN
N.Y.
2
N.Y. 540
HINMAN
CHURCH
ELLIOT
CAMPBELL
OAK
MAIN
SECOND ST.
THIRD ST.
Niagara River
VILLAGE WATER WORKS
PUMPING STATION
YOUNGSTOWN PRESBYN. CHURCH
CEMETERY
FRUIT ORCHARD
EMERSON & SMITH (OWNERS)
YOUNGSTOWN COLD STORAGE CO. INC.
STORAGE OF FRUITS
THE NIAGARA GORGE RAILROAD CO. (ELEC)
TRANSFORMER HO. & FREIGHT STATION.
Pond
ABANDND ICE POND
20
26
27
28
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30
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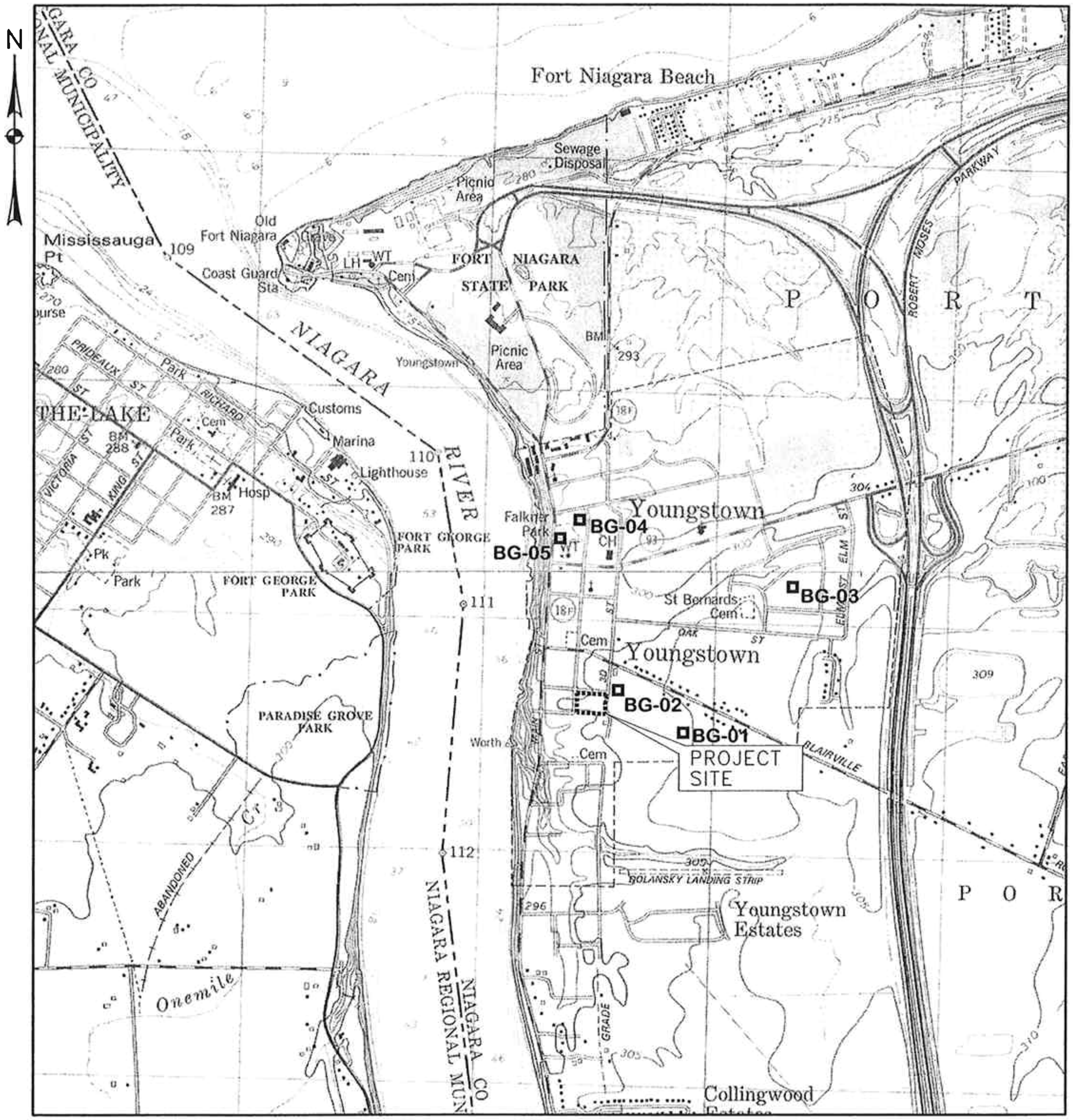
38
Scale 100 Ft. to One Inch.

Figure 4



U.S.G.S LEWISTON QUADRANGLE

BACKGROUND SOIL SAMPLE LOCATION MAP

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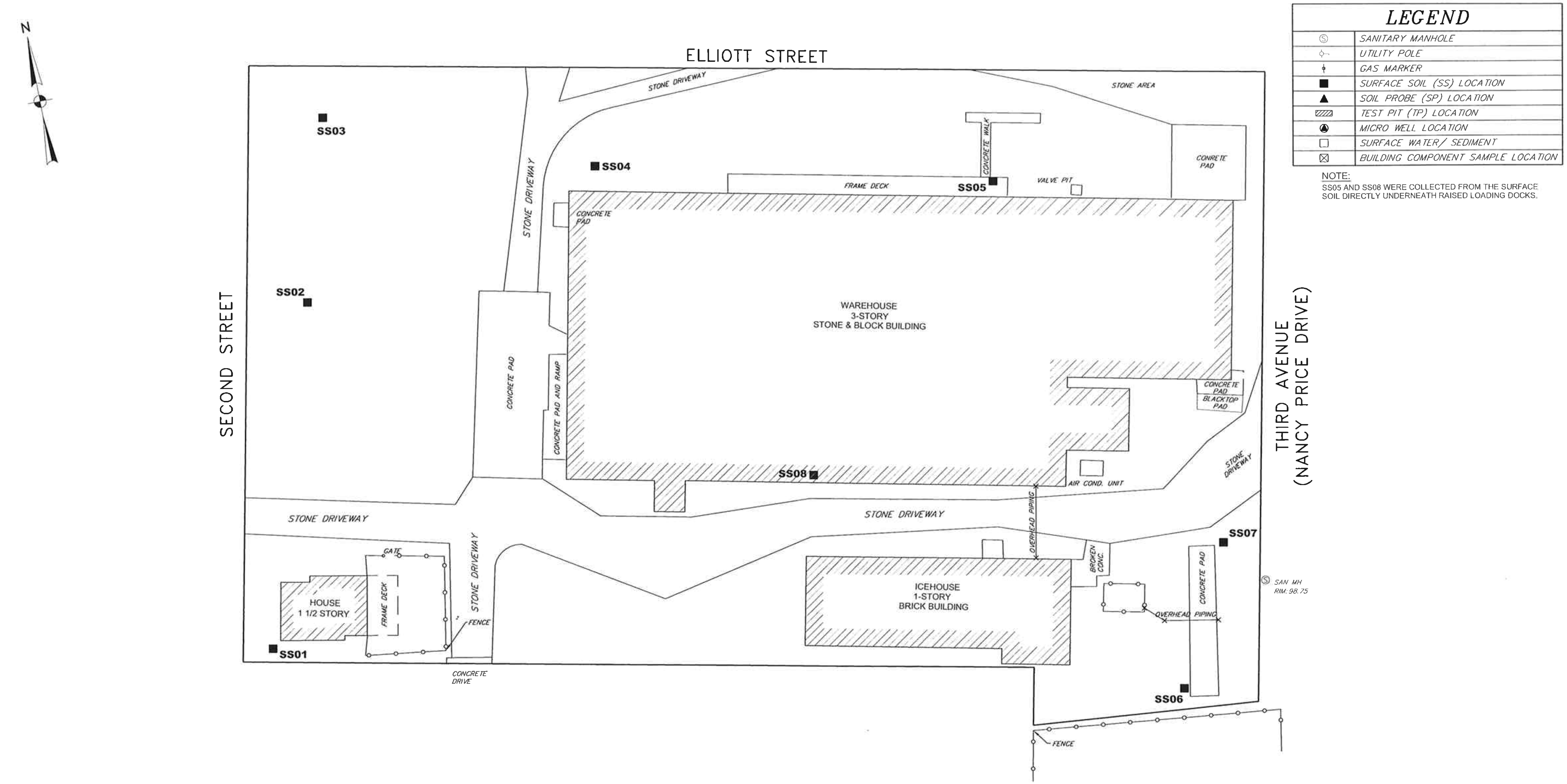
NIAGARA COUNTY

PROJECT NO. 2004.0279.03	SCALE: 1" = 2000'	DATE: APRIL 2006	FIGURE NO. 5

N:\2004.0279.03-Youngstown Cold Storage\CAD\100.dwg 10/12/2005 3:16:13 PM EDT



NOTE:
SS05 AND SS08 WERE COLLECTED FROM THE SURFACE SOIL DIRECTLY UNDERNEATH RAISED LOADING DOCKS.

40' 20' 0 40'

SCALE: 1"=40'-0"

SURFACE SOIL/FILL SAMPLE LOCATION MAP

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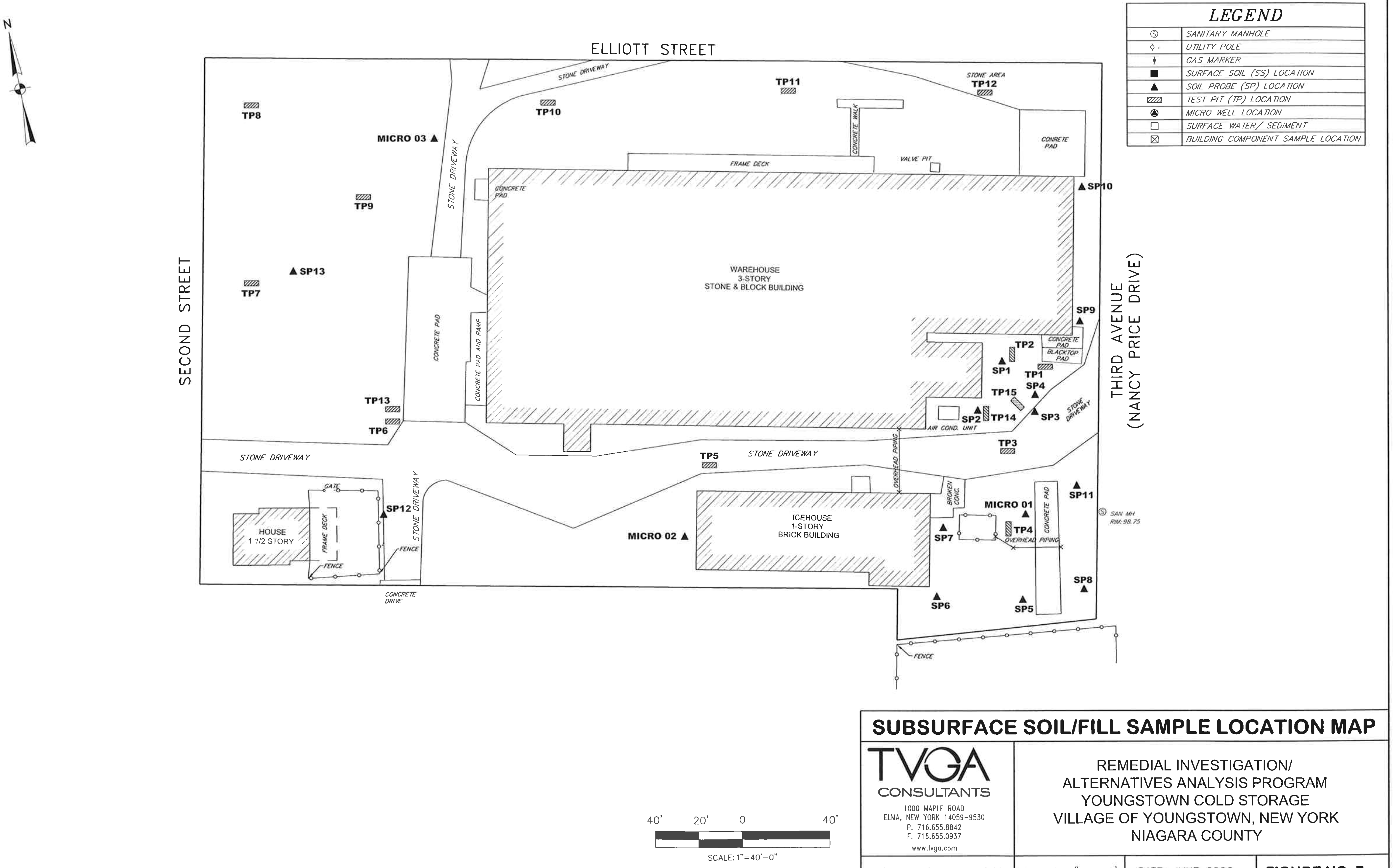
PROJECT NO. 2004.0279.03	SCALE: 1" = 40'	DATE: JUNE 2006	**FIGURE NO. 6**

N:\2004.0279.03-Youngstown Cold Storage\CAD\FIGURE 6.dwg 8/8/2006 9:41:27 AM EDT



SUBSURFACE SOIL/FILL SAMPLE LOCATION MAP

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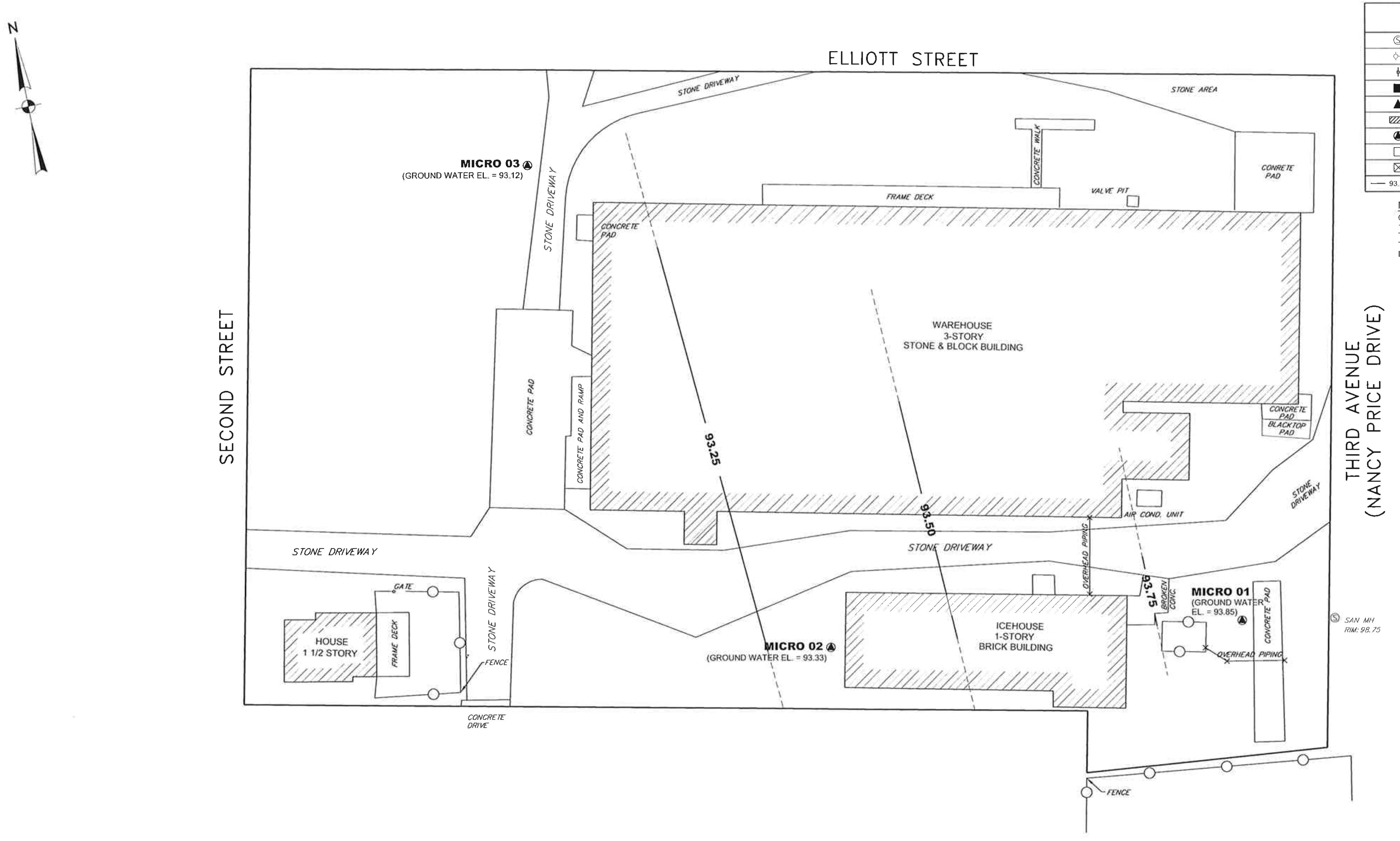
PROJECT NO. 2004.0279.03	SCALE: 1" = 40'	DATE: JUNE 2006	**FIGURE NO. 7**

N:\2004.0279.03-Youngstown Cold Storage\CAD\FIGURE 7.dwg 8/8/2006 9:43:02 AM EDT



LEGEND

Ⓢ	SANITARY MANHOLE
○-	UTILITY POLE
ɸ	GAS MARKER
■	SURFACE SOIL (SS) LOCATION
▲	SOIL PROBE (SP) LOCATION
▨	TEST PIT (TP) LOCATION
◉	MICRO-WELL LOCATION
☐	SURFACE WATER/ SEDIMENT
☒	BUILDING COMPONENT SAMPLE LOCATION
— 93.50 —	GROUNDWATER CONTOUR LINE

NOTE:
GROUNDWATER ELEVATIONS ARE BASED ON AN ASSUMED 100' ELEVATION ESTABLISHED FROM A LOCAL BENCHMARK. THE GROUNDWATER ELEVATIONS ARE MEASURED FROM THE TOP OF THE PVC RISER PIPE BY SUBTRACTING THE DEPTH TO GROUNDWATER.

40' 20' 0 40'

SCALE: 1"=40'-0"

MICRO-WELL LOCATION/GROUND WATER CONTOUR MAP

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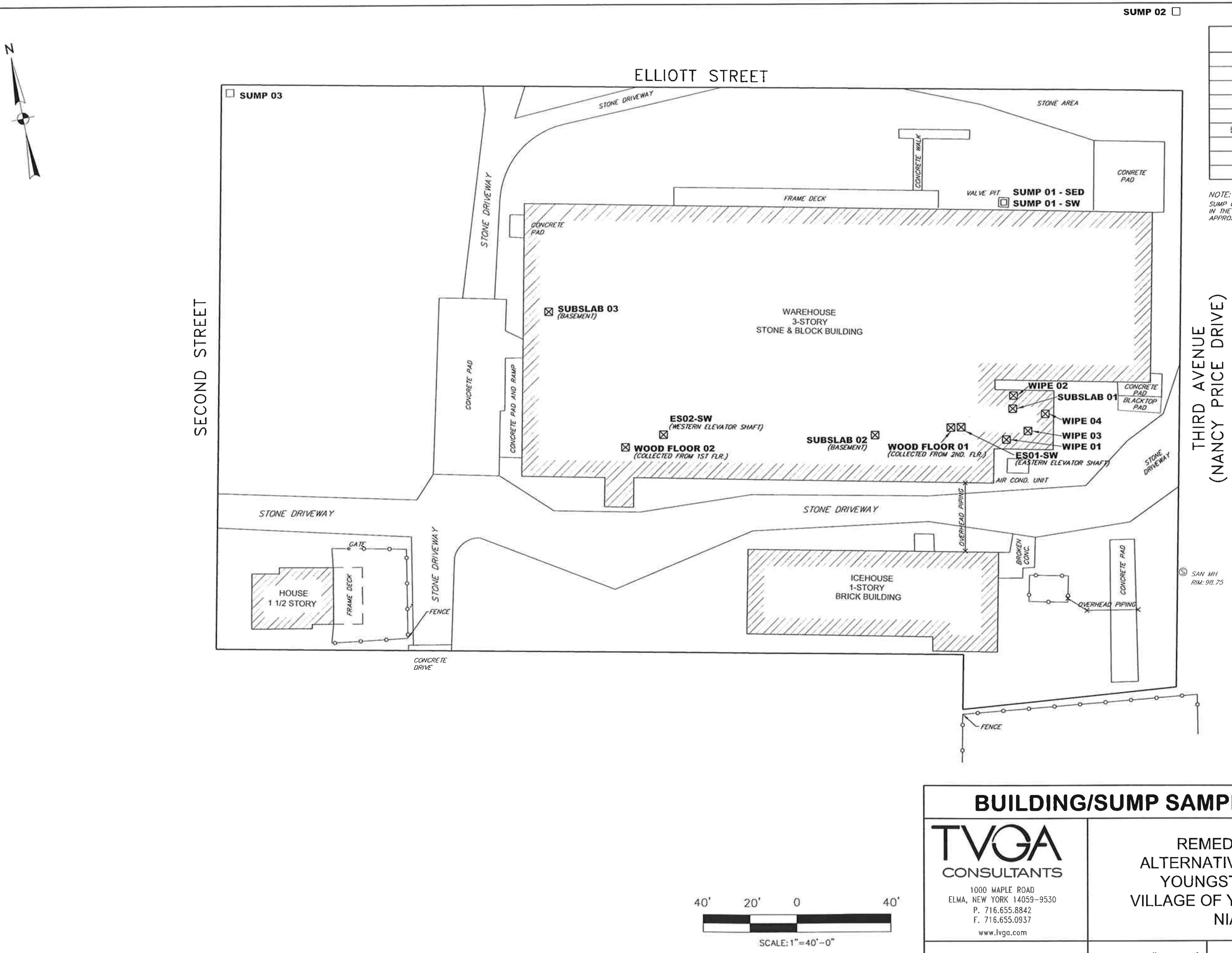
PROJECT NO. 2004.0279.03 | SCALE: 1" = 40' | DATE: JUNE 2006 | **FIGURE NO. 8**

N:\2004.0279.03-Youngstown Cold Storage\CAD\FIGURE 8.dwg 8/8/2006 9:53:33 AM EDT



LEGEND

Ⓢ	SANITARY MANHOLE
-◇-	UTILITY POLE
♦	GAS MARKER
■	SURFACE SOIL (SS) LOCATION
▲	SOIL PROBE (SP) LOCATION
▨	TEST PIT (TP) LOCATION
●	MICRO WELL LOCATION
□	SURFACE WATER/ SEDIMENT
☒	BUILDING COMPONENT SAMPLE LOCATION

NOTE:
SUMP 02 WAS COLLECTED FROM A STORMWATER DI LOCATED IN THE SOUTH EAST CORNER OF THE FIRE COMPANY PROPERTY APPROXIMATELY 70 FEET NORTH OF THE PROJECT SITE.

BUILDING/SUMP SAMPLE LOCATION MAP

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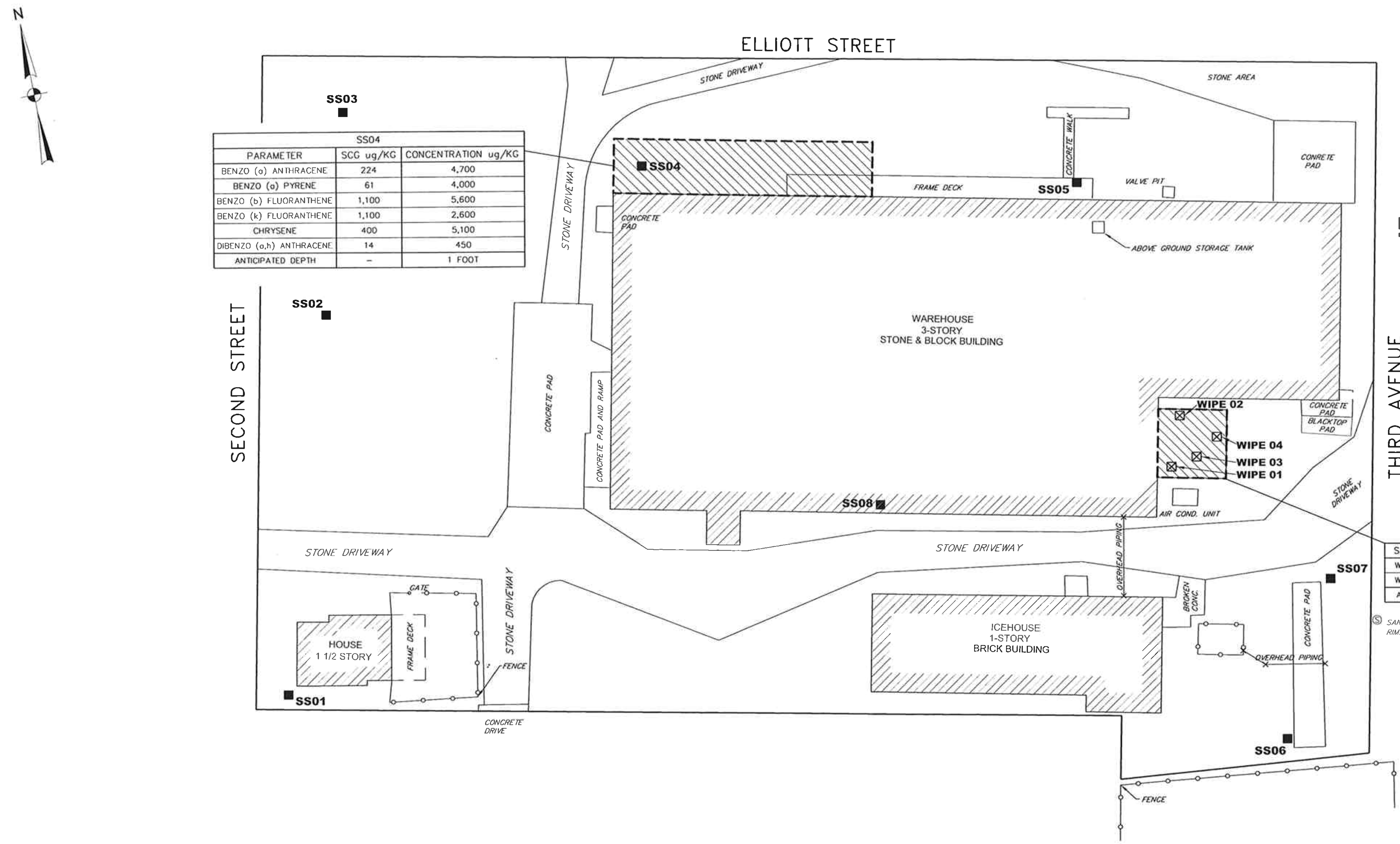
PROJECT NO. 2004.0279.03 | SCALE: 1" = 40' | DATE: JUNE 2006 | **FIGURE NO. 9**

N:\2004.0279.03-Youngstown Cold Storage\CAD\FIGURE 9.dwg 8/8/2006 9:55:00 AM EDT



SS04		
PARAMETER	SCG ug/KG	CONCENTRATION ug/KG
BENZO (a) ANTHRACENE	224	4,700
BENZO (a) PYRENE	61	4,000
BENZO (b) FLUORANTHENE	1,100	5,600
BENZO (k) FLUORANTHENE	1,100	2,600
CHRYSENE	400	5,100
DIBENZO (a,h) ANTHRACENE	14	450
ANTICIPATED DEPTH	–	1 FOOT

SAMPLE	PARAMETER	SCG $mg/100cm^2$	CONCENTRATION $mg/100cm^2$
WIPE 03	TOTAL PCBs	10	15.0
WIPE 04	TOTAL PCBs	10	14.4
ANTICIPATED THICKNESS		–	4 INCHES

LEGEND

Ⓢ	SANITARY MANHOLE
-○-	UTILITY POLE
⫯	GAS MARKER
■	SURFACE SOIL (SS) LOCATION
▲	SOIL PROBE (SP) LOCATION
▨	TEST PIT (TP) LOCATION
●	MICRO WELL LOCATION
☐	SURFACE WATER/ SEDIMENT
☒	BUILDING COMPONENT SAMPLE LOCATION

NOTES:

SS05 AND SS08 WERE COLLECTED FROM THE SURFACE SOIL DIRECTLY UNDERNEATH RAISED LOADING DOCKS.

▨ FULL HATCHED AREAS REPRESENT AREAL EXTENT OF SUSPECTED CONTAMINATION

40' 20' 0 40'

SCALE: 1"=40'-0"

SURFACE SOIL/FILL AREAL EXTENT OF CONTAMINATION

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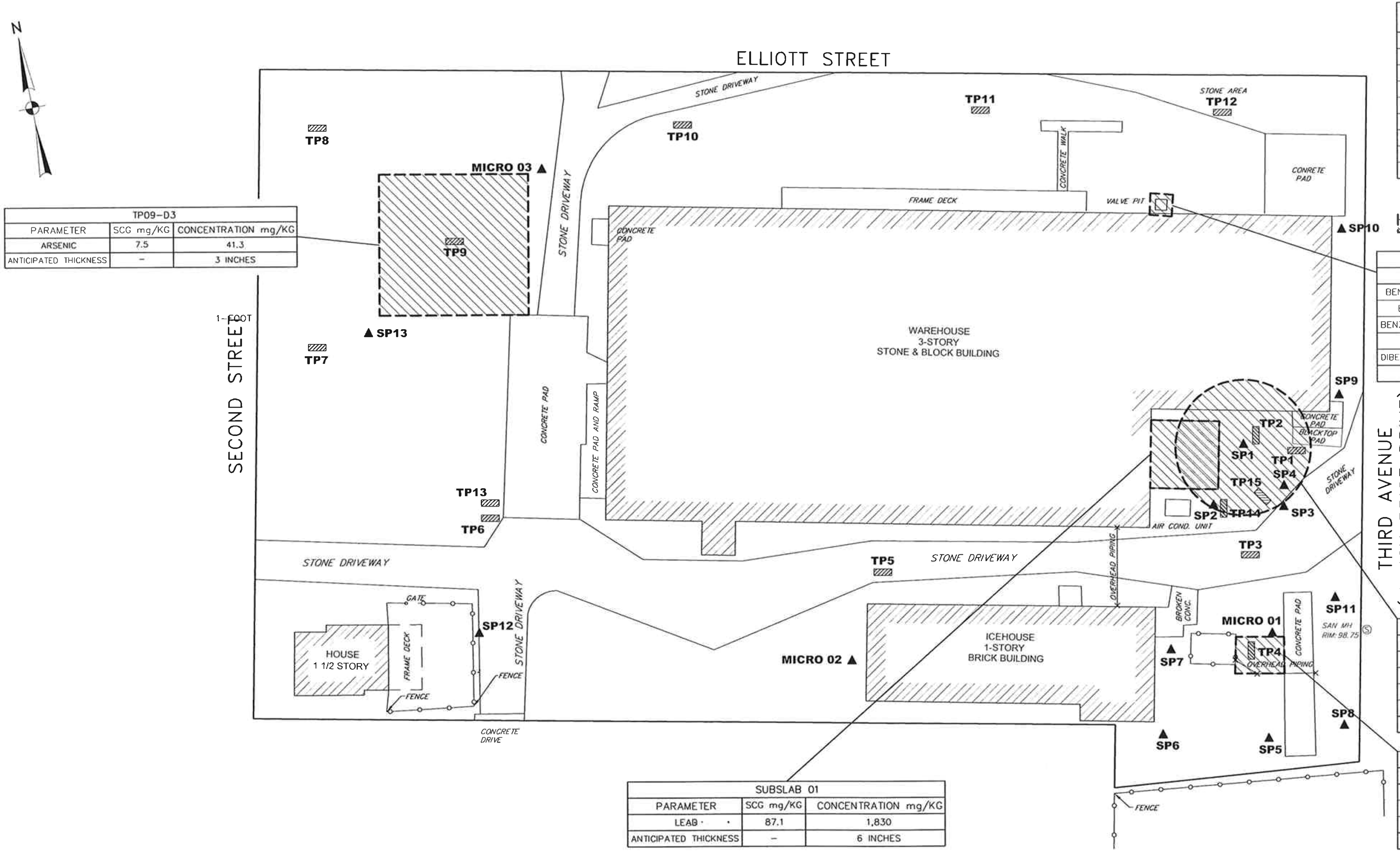
PROJECT NO. 2004.0279.03 | SCALE: 1" = 40' | DATE: JUNE 2006 | **FIGURE NO. 10**

N:\2004.0279.03-Youngstown Cold Storage\CAD\FIGURE 10.dwg 8/8/2006 9:32:34 AM EDT



TP09–D3		
PARAMETER	SCG mg/KG	CONCENTRATION mg/KG
ARSENIC	7.5	41.3
ANTICIPATED THICKNESS	–	3 INCHES

SUBSLAB 01		
PARAMETER	SCG mg/KG	CONCENTRATION mg/KG
LEAB · ·	87.1	1,830
ANTICIPATED THICKNESS	–	6 INCHES

LEGEND

Ⓢ	SANITARY MANHOLE
-○-	UTILITY POLE
♦	GAS MARKER
■	SURFACE SOIL (SS) LOCATION
▲	SOIL PROBE (SP) LOCATION
▨	TEST PIT (TP) LOCATION
●	MICRO WELL LOCATION
□	SURFACE WATER/ SEDIMENT
☒	BUILDING COMPONENT SAMPLE LOCATION

NOTES:

SCG - STANDARDS, CRITERIA, AND GUIDANCE

▨ FULL HATCHED AREAS REPRESENT AREAL EXTENT OF SUSPECTED CONTAMINATION

SUMP01–SED		
PARAMETER	SCG ug/KG	CONCENTRATION ug/KG
BENZO (a) ANTHRACENE	224	1,200
BENZO (a) PYRENE	61	1,200
BENZO (b) FLUORANTHENE	1,100	2,200
CHRYSENE	400	1,400
DIBENZO (a,h) ANTHRACENE	14	140
ESTIMATED VOLUME	–	2/3 CUBIC YARD

TP02–D8		
PARAMETER	SCG ug/KG	CONCENTRATION ug/KG
TOTAL VOCS	10,000	12,536
MAX. PID	–	1,875 ppm @ 8' bgs
VISUAL	NO STAINING	STAINING
OLFACTORY	NO ODOR	PETROLEUM ODOR
ANTICIPATED DEPTH	–	10 FEET

TP04–D235 AND TP04–D6		
PARAMETER	SCG ug/KG	CONCENTRATION ug/KG
MAX. PID	–	45 ppm @ 6' bgs
VISUAL	NO STAINING	SLIGHT STAINING
OLFACTORY	NO ODOR	PETROLEUM ODOR
ANTICIPATED DEPTH	–	9 FEET

40' 20' 0 40'

SCALE: 1"=40'-0"

SUB-SURFACE SOIL/FILL AREAL EXTENT OF CONTAMINATION

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PROJECT NO. 2004.0279.03 | SCALE: 1" = 40' | DATE: JUNE 2006 | **FIGURE NO. 11**

N:\2004.0279.03-Youngstown Cold Storage\CAD\FIGURE 11.dwg 8/8/2006 9:57:22 AM EDT

APPENDIX A

FIELD LOGS

PIT NO: 1

TEST PIT LOG

TVGA CONSULTANTS

Project Name: Youngstown Cold Storage Site RI/AA

Project No: 2004.0279.03

Project Location: Village of Youngstown, New York

Date: 2-15-06

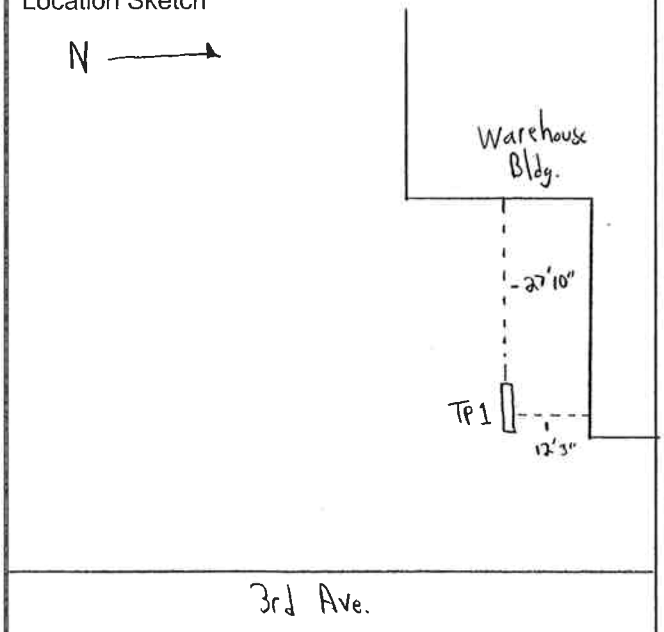
Description: 2.5' wide x 12' long

Depth: 10.5'

0	Surface: Deteriorating asphalt pad ≈ 1" thick
	Brown-Gray, sandy-gravel
1	Black, sand and fine gravel (≈2" thick), damp. Brown-gray, clayey-silt, w/ musty odor, damp.
2	
3	
4	Brown, clayey-silt, w/ gray mottling, little fine grave, trace red shale, moist
5	
6	As above.

Comments: PID readings < 0.0 ppm

Location Sketch



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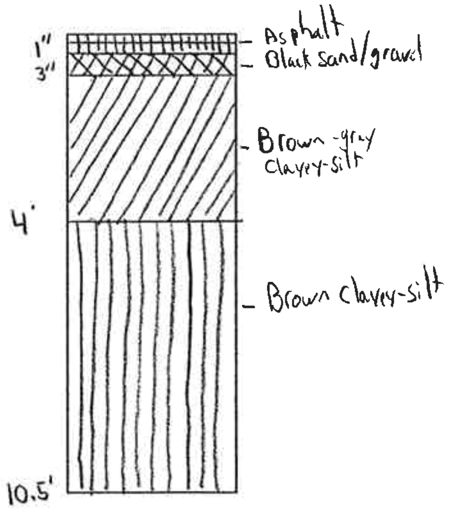


Geologist: J. Manzella

Operator: Todd Muller

N:\2004.0279.03-Youngstown Cold Storage\10Deliverables\RIAA Work Plan\FSP\Test Pit Log 1.doc

Sheet 1 of 2

PIT NO: 1

TEST PIT LOG

TVGA CONSULTANTS

Project Name: Youngstown Cold Storage Site RI/AA

Project No: 2004.0279.03

Project Location: Village of Youngstown, New York

Date: 2-15-06

Description: See page 1

Depth: See page 1

6	See page 1
7	
8	As above.
9	
10	As above, wet.
11	
12	

Comments: Water seeped into test pit @ 10' bgs.

Location Sketch: See page 1

Cross Section: See page 1

Geologist: J. Manzella

Operator: Todd Muller

PIT NO: 2

TEST PIT LOG

TVGA CONSULTANTS

Project Name: Youngstown Cold Storage Site RI/AA

Project No: 2004.0279.03

Project Location: Village of Youngstown, New York

Date: 2-15-06

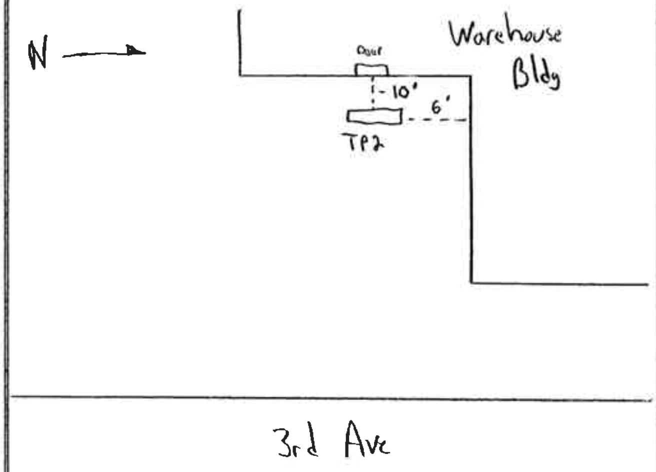
Description: 2.5' wide x 11' long

Depth: 9'

0	Surface: Gray, sandy-gravel, damp.
1	Black, sand and fine gravel (≈ 2" thick), damp, asphalt like material Brown, clayey-silt, trace metal, rubber pieces, damp, looks like reworked native material. (BG)
2	
3	
4	Gray-Brown, silty-sand, trace clay, moist. (6.2 ppm)
5	As above, with petroleum odor (gasoline) and staining (9 ppm)
6	As above. (105 ppm)

Comments: PID Background = 0.0 ppm

Location Sketch



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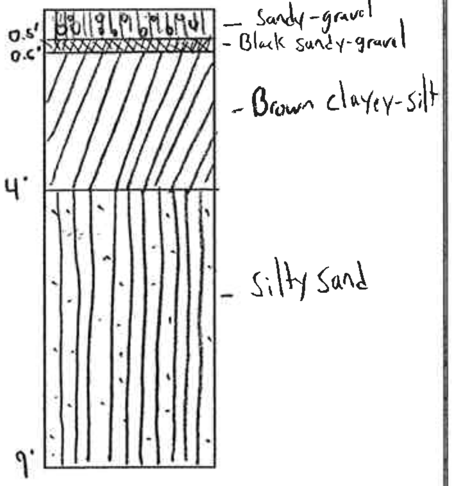


Geologist: J. Manzella

Operator: Todd Muller

PIT NO: 2

TEST PIT LOG

TVGA CONSULTANTS

Project Name: Youngstown Cold Storage Site RI/AA

Project No: 2004.0279.03

Project Location: Village of Youngstown, New York

Date: 2-15-06

Description: See page 1

Depth: See page 1

6	See page 1
7	As above, stronger petroleum odor + more visible staining (875ppm)
☆ 8	As above (1,875 ppm)
9	As above (135ppm)
10	
11	
12	

Comments: ☆ Collected a sample (YCS-TP02-D8-S-0) from this depth

Location Sketch: See page 1

Cross Section: See page 1

Geologist: J. Manzella

Operator: Todd Muller

PIT NO: 3

TEST PIT LOG

TVGA CONSULTANTS

Project Name: Youngstown Cold Storage Site RI/AA

Project No: 2004.0279.03

Project Location: Village of Youngstown, New York

Date: 2-15-06

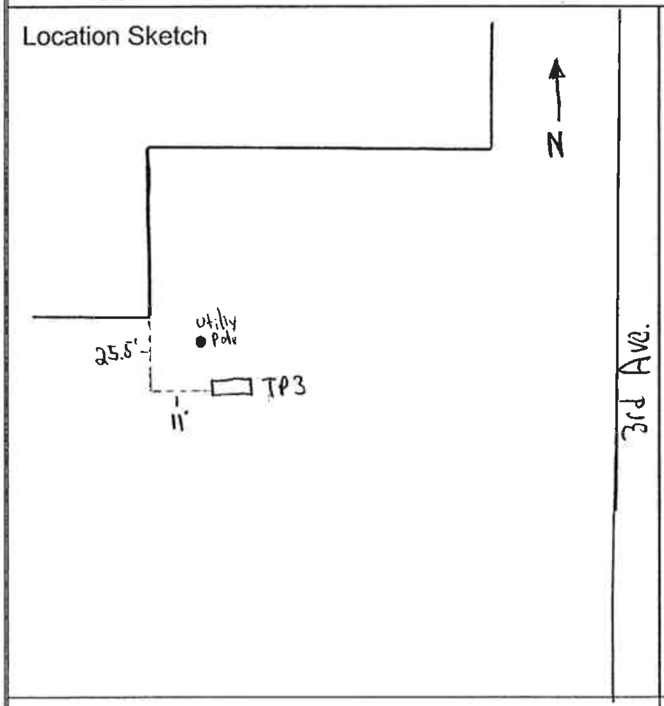
Description: 2.5' wide × 10' long. In gravel roadway

Depth: 7'

0	Surface: Gray - sandy-gravel.
	Black, sand and fine gravel, (0 ppm)
1	Red-Brown, silty-sand and Zourse gravel and cobbles, trace metal peices (nails) damp. (0ppm)
2	Gray, clay + silt w/orange mottling, moist (21ppm) no odor or visible staining.
3	
4	Brown clayey-silt, w/ gray mottling, little fine gravel, moist. (0ppm).
5	
6	As above (0ppm)

Comments:

Location Sketch



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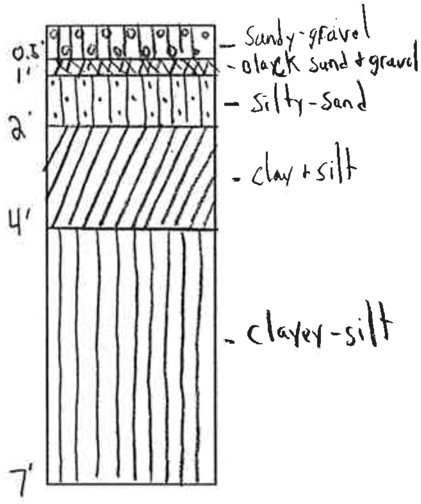


Geologist: J. Manzella

Operator: Todd Muller

PIT NO: 3

TEST PIT LOG

TVGA CONSULTANTS

Project Name: Youngstown Cold Storage Site RI/AA

Project No: 2004.0279.03

Project Location: Village of Youngstown, New York

Date: 2-15-06

Description: See page 1

Depth: See page 1

6	See page 1
7	As above (0 ppm)
8	
9	
10	
11	
12	

Comments:

Location Sketch: See page 1

Cross Section: See page 1

Geologist: J. Manzella

Operator: Todd Muller

PIT NO: 4

TEST PIT LOG

TVGA CONSULTANTS

Project Name: Youngstown Cold Storage Site RI/AA

Project No: 2004.0279.03

Project Location: Village of Youngstown, New York

Date: 2-15-06

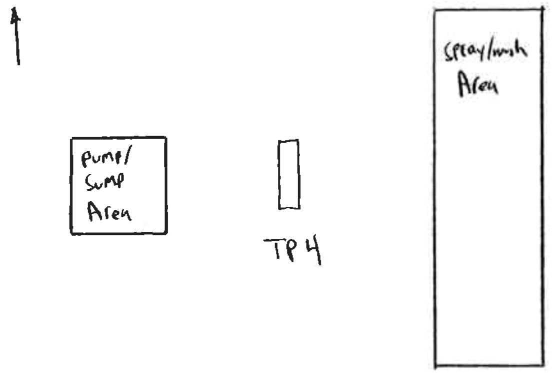
Description: 2.5' wide x 10' long. Directly between the Spray/wash area + the sump/pump area in SE corner of the site

Depth: 8.5'

0	Surface: Brown, silty-sand and gravel, damp. (0 ppm)
	Encountered two 4" diameter transite pipes. Conecting the Spray/wash area to the sump/pump area.
1	
☆ 2	Dark Brown and red, gravelly-sand fill, w/ some metal cable, nails + other mics. pieces, glass, wood
	damp. (0 ppm)
3	
	Gray, clayey-silt, w/ orange mottling, slight petroleum odor, no staining, moist (3.5 ppm).
4	As above (12 ppm)
5	As above, w/ noticable gasoline odor. (40 ppm)
☆ 6	Brown-Gray, sandy-silt, trace clay, noticable gasoline odor + slight staining, moist (45 ppm)

☆ **Comments:** Collected samples from 2'-3.5 bgs (YCS-TP04-023.5-S-0) + from 6' bgs (YCS-TP04-06-S-0).

Location Sketch



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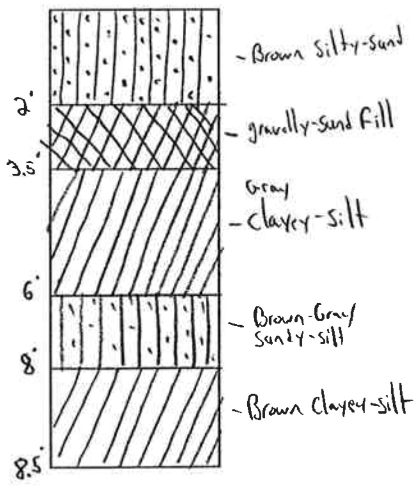


Geologist: J. Manzella

Operator: Todd Muller

PIT NO: 4

TEST PIT LOG

TVGA CONSULTANTS

Project Name: Youngstown Cold Storage Site RI/AA

Project No: 2004.0279.03

Project Location: Village of Youngstown, New York

Date: 2-15-06

Description: See page 1

Depth: See page 1

6	See page 1
7	As above (36 ppm)
8	Brown, clayey-silt, w/ gray mottling, faint gasoline odor (5ppm)
	As above (1.5 ppm).
9	
10	
11	
12	

Comments:

Location Sketch: See page 1

Cross Section: See page 1

Geologist: J. Manzella

Operator: Todd Muller

PIT NO: 5

TEST PIT LOG

TVGA CONSULTANTS

Project Name: Youngstown Cold Storage Site RI/AA

Project No: 2004.0279.03

Project Location: Village of Youngstown, New York

Date: 2-15-06

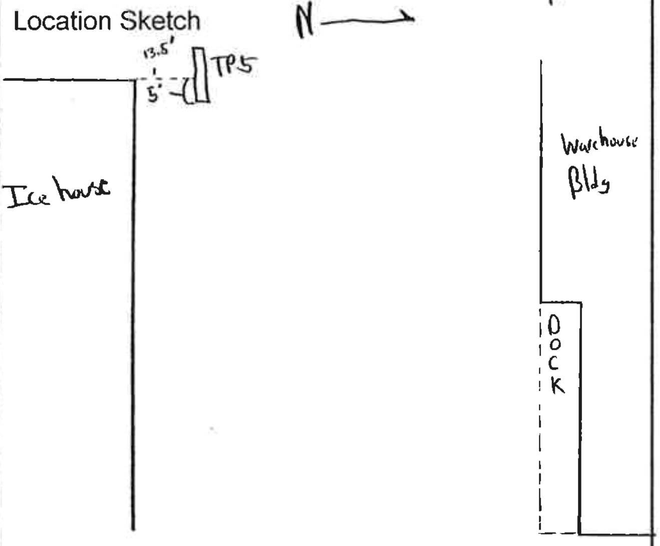
Description: 2.5' wide x 10' long In gravel roadway

Depth: 6.5'

0	Surface: Gray, sandy-gravel
	Brown – Gray, sandy - gravel, little brick pieces Black, sand + Fine gravel (≈1" thick)
1	
	Gray- Brown, clay + silt w/ orange mottling, moist.
2	
3	
4	
5	Brown, clayey-silt, w/ gray mottling, little fine gravel, moist
6	

Comments: PID reading < 0.0 ppm

Location Sketch



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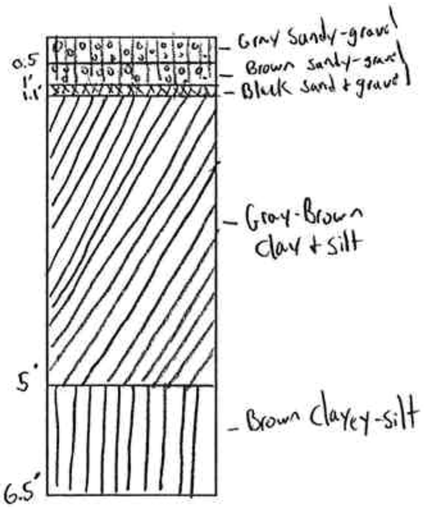


Geologist: J. Manzella

Operator: Todd Muller

PIT NO: 6

TEST PIT LOG

TVGA CONSULTANTS

Project Name: Youngstown Cold Storage Site RI/AA

Project No: 2004.0279.03

Project Location: Village of Youngstown, New York

Date: 2-15-06

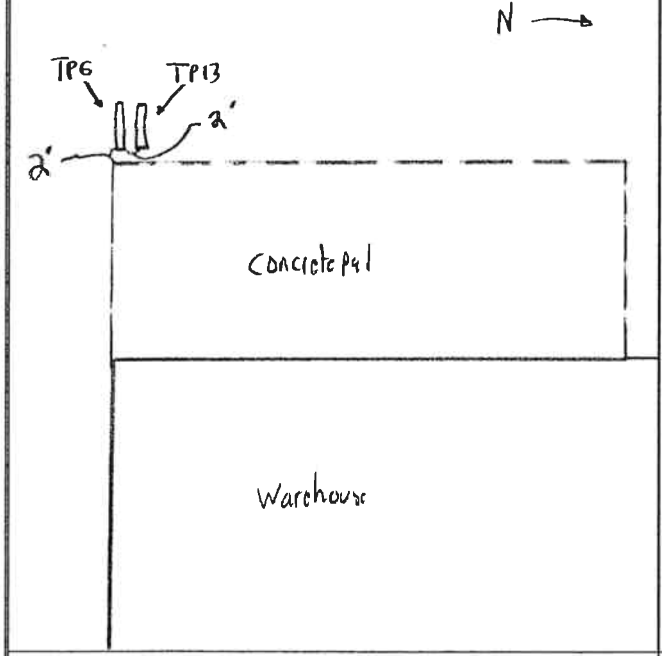
Description: Located in the grass area ≈ 40' west of the Southwest corner of the warehouse bldg.

Depth: 7'

0	Surface: < 1" of brown topsoil - underlain by Gray sandy gravel, moist.
1	Brown-gray-tan, clayey-silt, little metal pieces, brick pieces, moist.
2	
3	
4	
5	
	Brown-red, clayey-silt, w/ orange mottling, little sand, moist
6	

Comments: PID readings < 0.0 ppm

Location Sketch



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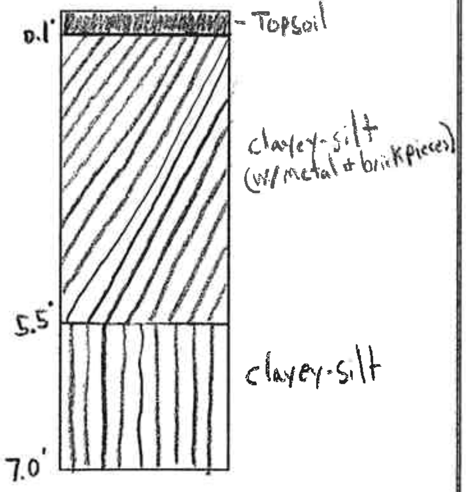


Geologist: J. Manzella

Operator: Todd Muller

PIT NO: 7

TEST PIT LOG

TVGA CONSULTANTS

Project Name: Youngstown Cold Storage Site RI/AA

Project No: 2004.0279.03

Project Location: Village of Youngstown, New York

Date: 2-15-06

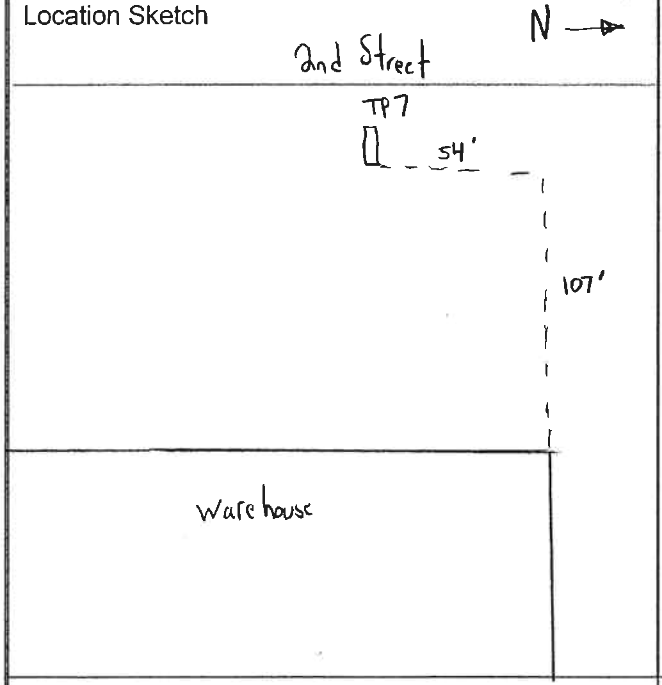
Description: Centrally located in the grass area on the west side of the project site.

Depth: 5'

0	Surface: < 1" of Brown, topsoil, damp.
	Brown-gray clayey-silt w/ trace brick pieces, moist.
1	
2	
	Brown-red, clayey-silt w/ orange mottling, moist
3	
4	
	As above, wet.
5	
6	

Comments: PID readings < 0.0 ppm

Location Sketch



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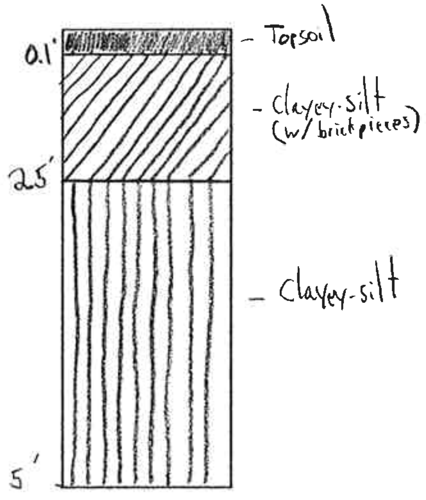


Geologist: J. Manzella

Operator: Todd Muller

PIT NO: 8

TEST PIT LOG

TVGA CONSULTANTS

Project Name: Youngstown Cold Storage Site RI/AA

Project No: 2004.0279.03

Project Location: Village of Youngstown, New York

Date: 2-16-06

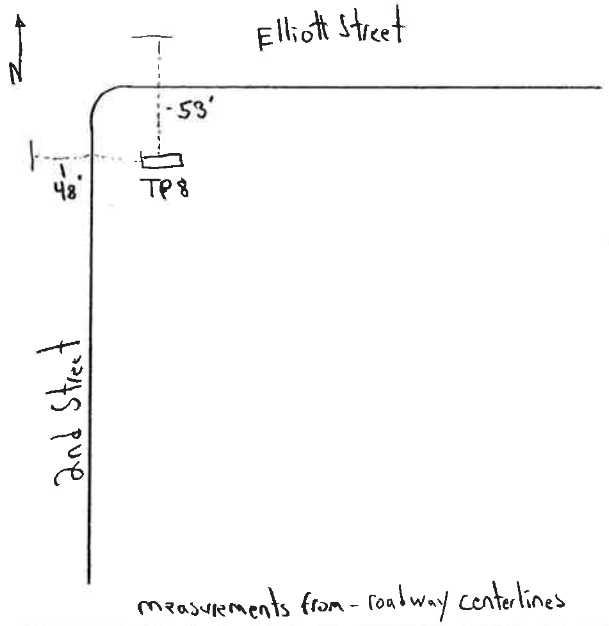
Description: Located in the northwest corner of the project site

Depth: 9'

0	Surface: Grass and < 1" of brown topsoil.
	Brown silty-clay, little fine-coarse gravel, trace cobbles, tree roots, trace metal pieces,
1	glass pieces, brick pieces, moist.
2	
3	
4	Brown, clayey-silt, moist.
5	Brown, silt, moist.
6	

Comments: PID readings < 0.0ppm

Location Sketch



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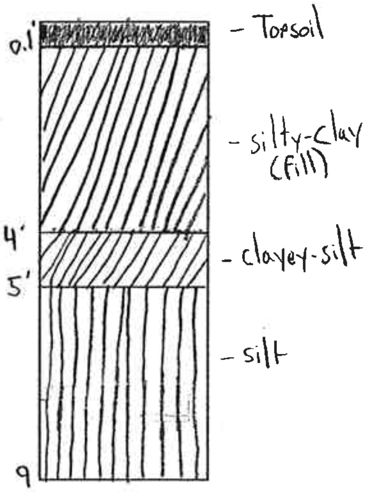


Geologist: J. Manzella

Operator: Todd Muller

PIT NO: 9

TEST PIT LOG

TVGA CONSULTANTS

Project Name: Youngstown Cold Storage Site RI/AA

Project No: 2004.0279.03

Project Location: Village of Youngstown, New York

Date: 2-16-06

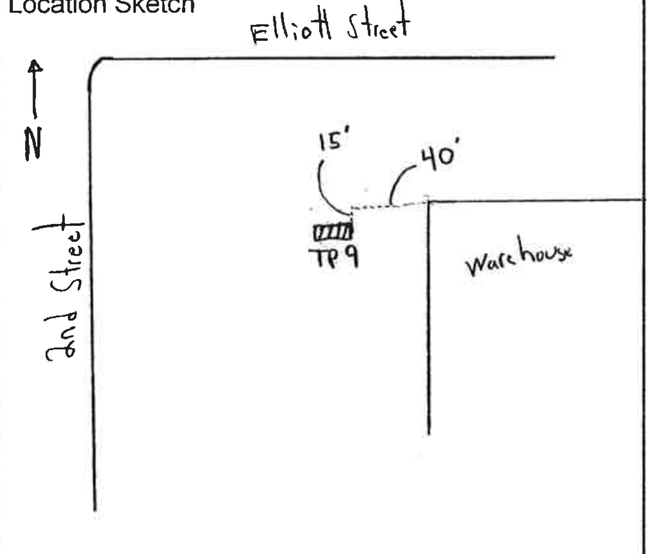
Description:

Depth: 7'

	0	Surface: Grass and < 1" of brown topsoil.
		Brown, silty-clay w/ trace to little concrete, brick pieces, trase cobbles, moist
	1	
	2	
☆	3	Black sand/gravel, (looks like coal) ≈ 3" thick, moist
☆		White sandy-gravel ≈ 3" thick, moist
	4	Brown, clayey-silt, moist.
	5	
	6	

Comments: PID reading < 0.0ppm. ★ Collected samples (YCS-TP09-D3-S-0 + YCS-TP09-D3.2-S-0) From these depths.

Location Sketch



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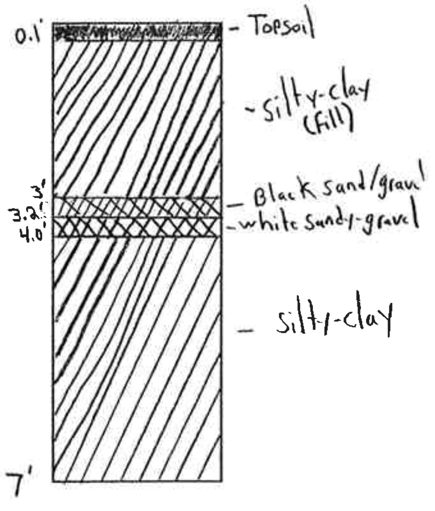


Geologist: J. Manzella

Operator: Todd Muller

Sheet 1 of 1

PIT NO: 10

TEST PIT LOG

TVGA CONSULTANTS

Project Name: Youngstown Cold Storage Site RI/AA

Project No: 2004.0279.03

Project Location: Village of Youngstown, New York

Date: 2-16-06

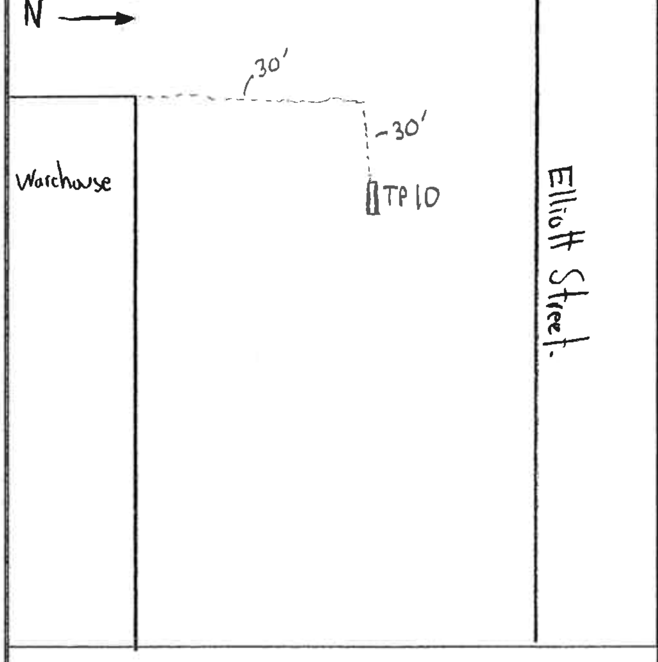
Description:

Depth: 8'

0	Surface: Gray-brown silty-sand and gravel
1	Brown, silty-clay, trace brick pieces, moist.
2	
3	
☆ 4	Brown, clayey-silt, moist. – Encountered storm water down spout drain from the warehouse building at this depth (4'bgs) it was a metal 4" diameter pipe, perpendicular to Elliott St.
5	Brown, silt, moist
6	

Comments: No PID > 0.0ppm ☆ pipe was 32' east of warehouse bldg NW Corner

Location Sketch



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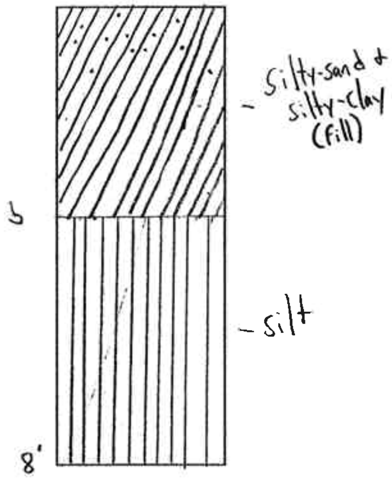


Geologist: J. Manzella

Operator: Todd Muller

PIT NO: 10

TEST PIT LOG

TVGA CONSULTANTS

Project Name: Youngstown Cold Storage Site RI/AA

Project No: 2004.0279.03

Project Location: Village of Youngstown, New York

Date: 2-16-06

Description: See page 1

Depth: See page 1

6	See page 1
7	As above
☆ 8	As above, Encounterd a ≈ 4" diameter ceramic pipe at this depth, located ≈ 35' east of warehouse bldg NW corner. When hit water (clear w/no odors) came out of pipe and into the test pit from the warehouse side. After ≈ 3" of H_2O came into the test pit it stopped. & test pit was back filled.
9	
10	
11	
12	

Comments: ☆ This pipe was perpendicular to Elliott Street

Location Sketch: See page 1

Cross Section: See page 1

Geologist: J. Manzella

Operator: Todd Muller

PIT NO: 11

TEST PIT LOG

TVGA CONSULTANTS

Project Name: Youngstown Cold Storage Site RI/AA

Project No: 2004.0279.03

Project Location: Village of Youngstown, New York

Date: 2-16-06

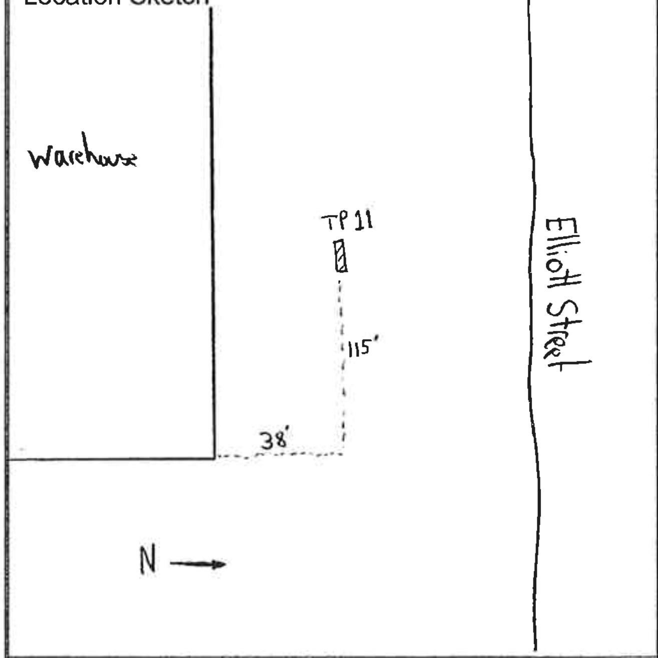
Description:

Depth: 6'

0	Surface: Brown- sandy-gravel.
	Black, gravelly asphalt like layer ≈ 1" thick.
1	Brown, silty-clay, w/ trace brick pieces, moist
2	
3	As above, dark brown
4	
	Brown, clayey-silt, moist
5	
6	

Comments: No PID > 0.0ppm

Location Sketch



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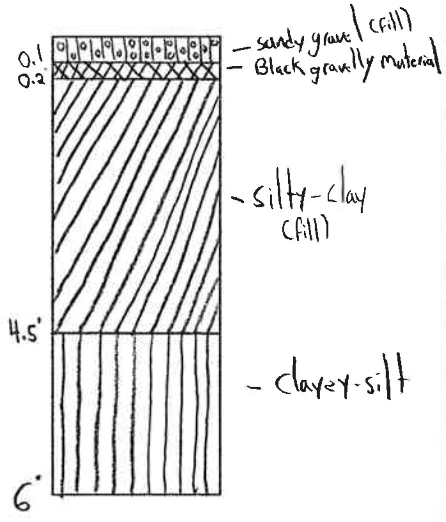


Geologist: J. Manzella

Operator: Todd Muller

PIT NO: 12

TEST PIT LOG

TVGA CONSULTANTS

Project Name: Youngstown Cold Storage Site RI/AA

Project No: 2004.0279.03

Project Location: Village of Youngstown, New York

Date: 2-16-06

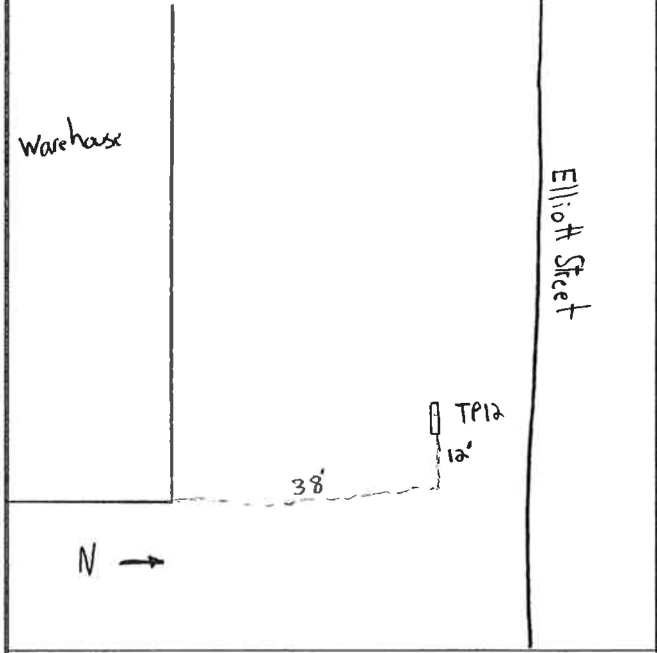
Description:

Depth: 6'

0	Surface: Brown, Sandy-gravel
	Dark brown-brown, silty-clay, little coarse gravel.
1	
2	
3	Brown silt, w/ cobbles, moist.
4	
5	
6	

Comments: No PID > 0.0ppm

Location Sketch



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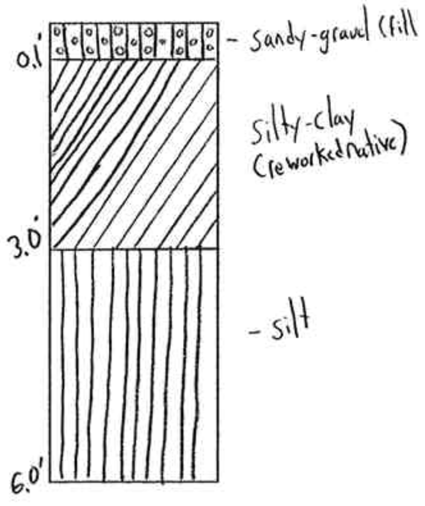


Geologist: J. Manzella

Operator: Todd Muller

PIT NO: 13

TEST PIT LOG

TVGA CONSULTANTS

Project Name: Youngstown Cold Storage Site RI/AA

Project No: 2004.0279.03

Project Location: Village of Youngstown, New York

Date: 2-16-06

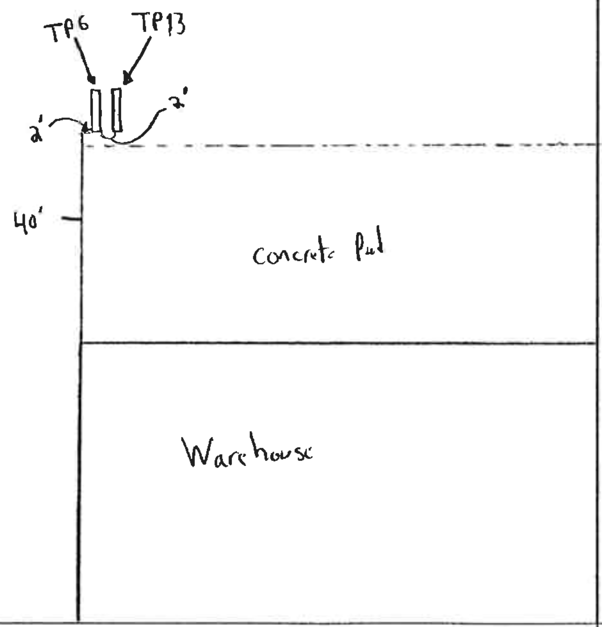
Description: Located 2' North of Test Pit No. 6

Depth: 3.5

0	Surface: < 1" of Brown topsoil
	Gray, sandy gravel, moist
1	Brown, Gray + Tan, clayey-silt, w/ little metal pieces, brick pieces, moist.
2	
✩ 3	As above, moist.
4	
5	
6	

Comments: PID reading < 0.0ppm, ✩ Collected Sample @ 3' bgs (YCS-TP13-D3-S-0) + MS/MSD/MD

Location Sketch



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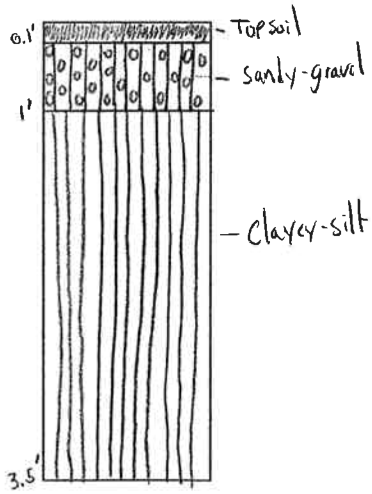


Geologist: J. Manzella

Operator: Todd Muller

PIT NO: 14

TEST PIT LOG

TVGA CONSULTANTS

Project Name: Youngstown Cold Storage Site RI/AA

Project No: 2004.0279.03

Project Location: Village of Youngstown, New York

Date: 2-16-06

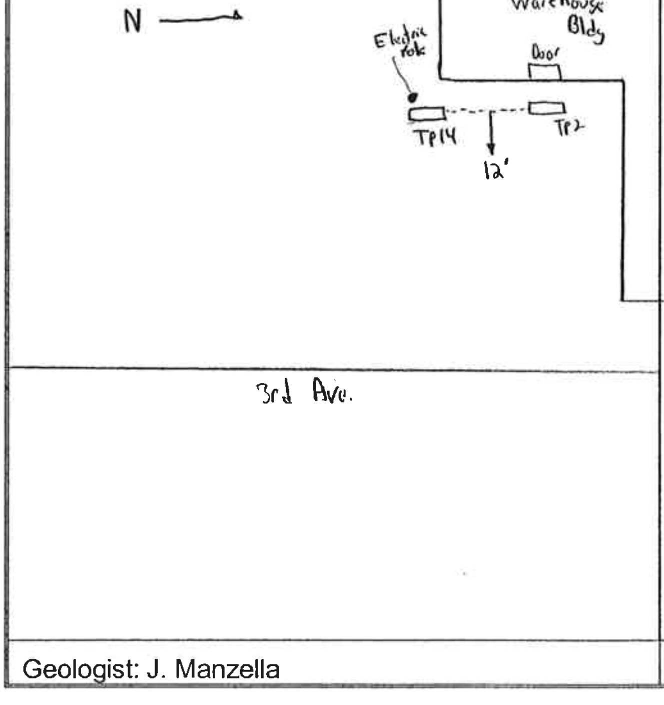
Description:

Depth: 5'

0	Surface: Gray - Sandy - gravel (≈1"), damp.
	Dark Brown - Brown, Sandy - silt + gravel Fill, w/brick, glass, and metal pieces (see Profile)
1	Brown, clayey - silt moist
2	
3	
4	
5	As above, petroleum odor and staining on north side of test pit (1.1ppm)
6	

Comments: As depicted in the profile the Fill sloped to the North of the pit

Location Sketch



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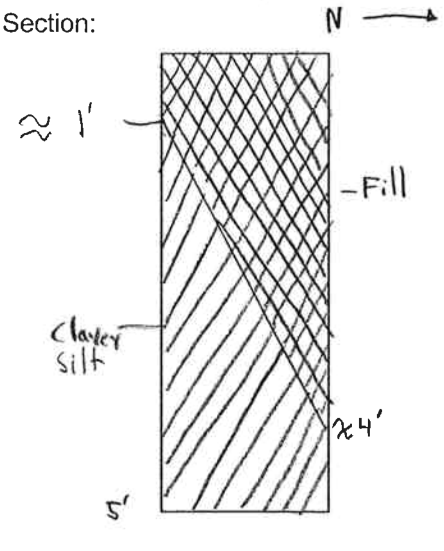


Geologist: J. Manzella

Operator: Todd Muller

PIT NO: 15

TEST PIT LOG

TVGA CONSULTANTS

Project Name: Youngstown Cold Storage Site RI/AA

Project No: 2004.0279.03

Project Location: Village of Youngstown, New York

Date: 2-16-06

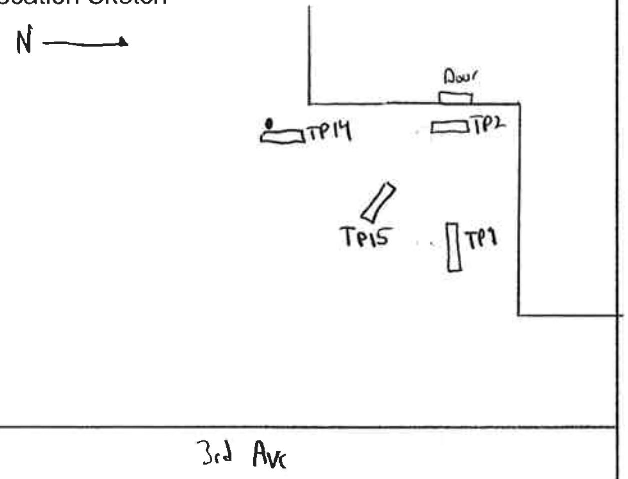
Description: Located at a 45° angle between Test pit Nos. 1 & 2

Depth: 5'

0	Surface: Brown-Gray, sandy gravel, moist
	Black, stained gravel, little sand, fuel oil smell, & when placed in water produced a sheen
1	(PID = 0.0 ppm)
2	
3	
☆ 4	As above, hit a 4" diameter wood abandone water line. (0.0 ppm)
5	As above.
6	

Comments: Collected a sample @ 4' bgs (YCS-TP15-04-S-0).

Location Sketch



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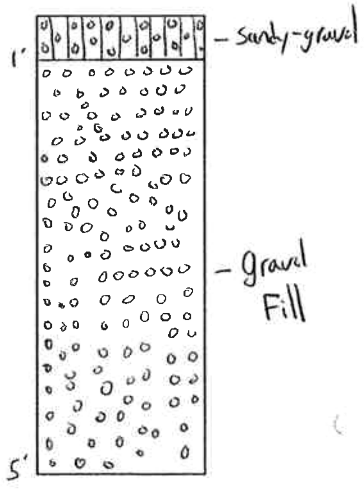

Geologist: J. Manzella

Operator: Todd Muller

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. 1

Project: Youngstown Cold Storage Site RI/AA
Client: Village of Youngstown
Contractor: Trec Environmental Inc.

Project No. 2004.0279.03
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 2/20/2006
Finish Date 2/20/2006
Driller P. Willie
Geologist J. Manzella

Groundwater Data (feet)			
Date	Time	Depth	Elev
2/20/2006		~10' bgs	

Equipment Data	Casing	Sampler	Core
Type	Acetate	Macro Core	
Diameter	1.75"	2.0"	
Weight			
Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct	Head
							Gray-brown, sandy, gravel, damp.		
							Brown, silty-sand, damp	0	
							Black, sand, damp		
							Brown, clayey-silt, w/petroleum staining and odor @ 3' bgs, moist		–
								17.4	
	5						As above	24.0	
							Brown-gray, silty-sand, moist	440	
							As above.	990	–
								24.0	
	10						Brown, clayey-silt, w/ gray mottling, trace red clay, faint odor, moist.	2.1	–
							As above, wet.	0	
							Brown, silty-sand, saturated.	4.0	
	15						Refusal @ 14' bgs		
	20								
	25								
	30								

SOIL PROBE LOG

PROBE NO. 2

Project:	Youngstown Cold Storage Site RI/AA	Project No.	2004.0279.03
Client:	Village of Youngstown	GS Elev	
Contractor:	Trec Environmental Inc.	WS Ref Elev	
		N-S Coord	
		E-W Coord	
		Start Date	2/20/2006
		Finish Date	2/20/2006
		Driller	P. Willie
		Geologist	J. Manzella

Groundwater Data (feet)

Date	Time	Depth	Elev
2/20/2006		~8' bgs	

Equipment Data

	Casing	Sampler	Core
Type	Acetate	Macro Core	
Diameter	1.75"	2.0"	
Weight			
Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct	Head
							Dark brown, Sandy-silt + gravel, trace brick, moist		
							Black, sand and gravel, moist.		
							Dark brown, clayey-silt + gravel, Moist		
							Brown, clayey-silt, (fill) w/ musty odor, moist.	0	–
							Gray, silty-sand, trace black staining, no odor, moist.		
							Gray, clayey-silt, w/ orange Mottling, damp		
	5						Brown, clayey-silt w/ gray mottling, damp		
							Gray, silty-Sand, little clay, wet As above, saturated	0	–
	10						Brown, silty-sand, some fine gravel, little clay w/ gray Mottling saturated. As above, and gravel w/ some of it rounded	0	–
							Refusal @ 12' bgs		
	15								
	20								
	25								
	30								

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SOIL PROBE LOG

PROBE NO. 3

Project:	Youngstown Cold Storage Site RI/AA
Client:	Village of Youngstown
Contractor:	Trec Environmental Inc.
Project No.	2004.0279.03
GS Elev	
WS Ref Elev	
N-S Coord	
E-W Coord	
Start Date	2/20/2006
Finish Date	2/20/2006
Driller	P. Willie
Geologist	J. Manzella

Groundwater Data (feet)

Date	Time	Depth	Elev
2/20/2006		≈3' bgs	

Equipment Data

	Casing	Sampler	Core
Type	Acetate	Macro Core	
Diameter	1.75"	2.0"	
Weight			
Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct	Head
							Brown, sandy-gravel, damp		
							Black, sand + gravel, moist.		
							Dark-brown, gray & white, silty-sand + fine gravel, wet	0	-
							Brown, silty-sand w/orange mottling, trace fine gravel, saturated.		
	5						Brown, clayey-silt w/ gray mottling, damp.	0	-
							Brown, silty-sand, w/gray mottling, little clay, wet.		
	10						Brown, clayey-silt, little fine sand, trace red clay, trace fine gravel, saturated.	0	-
							Refusal @ 12' bgs		
	15								
	20								
	25								
	30								

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. 4

Project: Youngstown Cold Storage Site RI/AA
Client: Village of Youngstown
Contractor: Trec Environmental Inc.

Project No. 2004.0279.03
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 2/20/2006
Finish Date 2/20/2006
Driller P. Willie
Geologist J. Manzella

Groundwater Data (feet)			
Date	Time	Depth	Elev
2/20/2006		< 8' bgs	

Equipment Data	Casing	Sampler	Core
Type	Acetate	Macro Core	
Diameter	1.75"	2.0"	
Weight			
Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct	Remarks PID Reading (ppm) Head
							Brown-gray, sandy-gravel, damp		
						☆	Black, sand + fine gravel, damp.		
							Dark brown, clayey-silt, little sand, trace glass, brick, Moist	0	-
	5						Brown, clayey-silt w/gray mottling, little fine gravel, trace red clay, Moist.	0	-
							Concluded probe @ 8' bgs		
	10								
	15						☆ Collected YCS-SP04-011.2-S-0 @ this depth		
	20								
	25								
	30								

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. 5

Project: Youngstown Cold Storage Site RI/AA
Client: Village of Youngstown
Contractor: Trec Environmental Inc.

Project No. 2004.0279.03
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 2/20/2006
Finish Date 2/20/2006
Driller P. Willie
Geologist J. Manzella

Groundwater Data (feet)			
Date	Time	Depth	Elev
2/20/2006		< 8' bgs	

Equipment Data	Casing	Sampler	Core
Type	Acetate	Macro Core	
Diameter	1.75"	2.0"	
Weight			
Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct	Remarks PID Reading (ppm) Head
							Dark-brown, topsoil, damp.		
							Dark-brown-gray, sandy-gravel, moist.		
							Dark-brown, sandy-silt, some gravel, trace metal, brick, moist	0	–
	5						Brown, silty-sand, gray mottling, little clay, moist As above, wet.	0	–
							concluded probe @ 8' bgs		
	10								
	15								
	20								
	25								
	30								

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. 6

Project: Youngstown Cold Storage Site RI/AA
Client: Village of Youngstown
Contractor: Trec Environmental Inc.

Project No. 2004.0279.03
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 2/20/2006
Finish Date 2/20/2006
Driller P. Willie
Geologist J. Manzella

Groundwater Data (feet)			
Date	Time	Depth	Elev
2/20/2006		< 8' bgs	

Equipment Data	Casing	Sampler	Core
Type	Acetate	Macro Core	
Diameter	1.75"	2.0"	
Weight			
Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct	Head
							Dark-brown-brown, silty-sand and gravel, traceclay, little wood Pieces, Moist.	0	-
	5						Brown, clayey -silt w/ gray Mottling. Moist		
							Brown, silty-sand, trace clay, wet.		
							Brown, clayey-silt w/ little sand, gray mottling, little fine gravel Moist.	0	-
							Concluded Probe @ 8' bgs		
	10								
	15								
	20								
	25								
	30								

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. 7

Project: Youngstown Cold Storage Site RI/AA
Client: Village of Youngstown
Contractor: Trec Environmental Inc.

Project No. 2004.0279.03
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 2/20/2006
Finish Date 2/20/2006
Driller P. Willie
Geologist J. Manzella

Groundwater Data (feet)			
Date	Time	Depth	Elev
2/20/2006		7 4' bgs	

Equipment Data	Casing	Sampler	Core
Type	Acetate	Macro Core	
Diameter	1.75"	2.0"	
Weight			
Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct	Remarks PID Reading (ppm) Head
							Dark-brown, sandy-gravel + silt, damp.		
							Black, sand and fine gravel, damp.		
							Dark-brown clayey-silt and sand, w/little brick + coal pieces, moist. As above wet w/ 2" sand lens + some rusty colored soil As above, saturated	0	-
	5						Brown, clayey-silt w/gray mottling, moist.	0	-
							Gray, sandy-silt w/orange mottling, wet.		
	10						concluded probe @ 8' bgs		
	15								
	20								
	25								
	30								

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. 8

Project: Youngstown Cold Storage Site RI/AA
Client: Village of Youngstown
Contractor: Trec Environmental Inc.

Project No. 2004.0279.03
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 2/20/2006
Finish Date 2/20/2006
Driller P. Willie
Geologist J. Manzella

Groundwater Data (feet)

Date	Time	Depth	Elev
2/20/2006		< 8' bgs	

Equipment Data

	Casing	Sampler	Core
Type	Acetate	Macro Core	
Diameter	1.75"	2.0"	
Weight			
Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct	Head
							Dark brown, sandy-silt, trace clay, trace brick, coal, glass, little gravel, moist.	0	-
	5						Brown, clayey-silt w/gray mottling, little fine gravel, moist.		
							Brown, silty-sand, wet. As above, moist	0	-
	10						Concluded probe @ 8' bgs		
	15								
	20								
	25								
	30								

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. 9

Project: Youngstown Cold Storage Site RI/AA
Client: Village of Youngstown
Contractor: Trec Environmental Inc.

Project No. 2004.0279.03
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 2/20/2006
Finish Date 2/20/2006
Driller P. Willie
Geologist J. Manzella

Groundwater Data (feet)			
Date	Time	Depth	Elev
2/20/2006		< 8' bgs	

Equipment Data	Casing	Sampler	Core
Type	Acetate	Macro Core	
Diameter	1.75"	2.0"	
Weight			
Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct	Head
							Dark-brown - gray, sandy-gravel, little Silt, moist		
							Black sand & fine gravel, wet	0	-
							Gray, clayey-silt, damp.		
							Brown, clayey-silt w/ gray/orange Mottling, litte fine gravel, Moist.		
	5								
							As above, w/ trace red clay/sandstone.	0	-
							Concluded probe @ 8' bgs		
	10								
	15								
	20								
	25								
	30								

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SOIL PROBE LOG

PROBE NO. 10

Project:	Youngstown Cold Storage Site RI/AA
Client:	Village of Youngstown
Contractor:	Trec Environmental Inc.

Project No.	2004.0279.03
GS Elev	
WS Ref Elev	
N-S Coord	
E-W Coord	
Start Date	2/20/2006
Finish Date	2/20/2006
Driller	P. Willie
Geologist	J. Manzella

Groundwater Data (feet)

Date	Time	Depth	Elev
2/20/2006		< 8' bgs	

Equipment Data

	Casing	Sampler	Core
Type	Acetate	Macro Core	
Diameter	1.75"	2.0"	
Weight			
Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct	Head
							Brown, sandy-gravel, moist		
							Blk, sand + fine gravel, wet		
							Dark brown + gray clayey-silt, some gravel, trace metal pieces Moist.	0	-
	5						Brown, clayey-silt w/gray mottling, trace fine gravel + red clay/sandstone, damp.	0	-
	10						Concluded Probe @ 8' bgs		
	15								
	20								
	25								
	30								

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. 11

Project: Youngstown Cold Storage Site RI/AA
Client: Village of Youngstown
Contractor: Trec Environmental Inc.

Project No. 2004.0279.03
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 2/20/2006
Finish Date 2/20/2006
Driller P. Willie
Geologist J. Manzella

Groundwater Data (feet)

Date	Time	Depth	Elev
2/20/2006			

Equipment Data

	Casing	Sampler	Core
Type	Acetate	Macro Core	
Diameter	1.75"	2.0"	
Weight			
Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct	Head
							Dark-brown-gray, sandy-gravel, damp.		
							Black, sand + gravel damp.		
							Brown, clayey-silt little fine gravel, trace red sandstone, damp (reworked material)	0	-
	5						Brown, clayey-silt, w/gray mottling, moist.		
							Brown, silty-sand + med-fine gravel, wet.	0	-
							Brown, clayey-silt, w/gray mottling, trace red sandstone, Moist very dense		
							Refusal @ 8' bgs		
	10								
	15								
	20								
	25								
	30								

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. 12

Project: Youngstown Cold Storage Site RI/AA
Client: Village of Youngstown
Contractor: Trec Environmental Inc.

Project No. 2004.0279.03
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 2/20/2006
Finish Date 2/20/2006
Driller P. Willie
Geologist J. Manzella

Groundwater Data (feet)

Date	Time	Depth	Elev
2/20/2006		<8' bgs	

Equipment Data

	Casing	Sampler	Core
Type	Acetate	Macro Core	
Diameter	1.75"	2.0"	
Weight			
Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct	Head
							Gray, Sandy-gravel, damp.		
							Brown sand, some gravel, damp.		
							Dark brown-brown, clayey-silt w/ gray + orange mottling moist.	0	-
	5						Brown, sandy-silt, moist.	0	-
							Concluded probe @ 8' bgs		
	10								
	15								
	20								
	25								
	30								

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SOIL PROBE LOG

PROBE NO. 13

Project: Youngstown Cold Storage Site RI/AA
Client: Village of Youngstown
Contractor: Trec Environmental Inc.

Project No. 2004.0279.03
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 2/20/2006
Finish Date 2/20/2006
Driller P. Willie
Geologist J. Manzella

Groundwater Data (feet)			
Date	Time	Depth	Elev
2/20/2006		< 8' bgs	

Equipment Data	Casing	Sampler	Core
Type	Acetate	Macro Core	
Diameter	1.75"	2.0"	
Weight			
Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct	Remarks PID Reading (ppm) Head
							Brown, clayey-silt, moist. (reworked material).	0	–
							Gray, sandy-gravel, trace silt, moist.		
	5						Brown, clayey-silt, w/orange+gray mottling, little fine gravel, moist.		
							Brown, clay+silt, some fine sand, wet.	0	–
							As above moist.		
	10						Concluded @ 8' bgs.		
	15								
	20								
	25								
	30								

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SOIL PROBE LOG

PROBE NO. **Micro - 01**

Project: Youngstown Cold Storage Site RI/AA
Client: Village of Youngstown
Contractor: Trec Environmental Inc.

Project No. 2004.0279.03
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 2/20/2006
Finish Date 2/20/2006
Driller P. Willie
Geologist J. Manzella

Groundwater Data (feet)

Date	Time	Depth	Elev
2/20/2006			

Equipment Data

	Casing	Sampler	Core
Type	Acetate	Macro Core	
Diameter	1.75"	2.0"	
Weight			
Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct	Remarks PID Reading (ppm) Head
							< 1" of brown topsoil.		
							Brown, clayey-silt + gravel.		
							Gray + black, sand + gravel, coal pieces, wet.	0	-
							Dark brown, sandy-silt, little-trace clay, w/ wood pieces, moist.		
	5						Brown, clayey-silt, w/ gray mottling + little fine gravel, moist.	0	-
							Gray, sandy-silt, w/ orange + gray mottling, moist.		
							Brown silty-sand + gravel, wet.		
	10						Brown, silt w/ gray mottling, trace fine gravel, wet, very dense.	0	-
							Refusal @ 12' bgs.		
	15								
	20								
	25								
	30								

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SOIL PROBE LOG

PROBE NO. Micro - 02

Project: Youngstown Cold Storage Site RI/AA
Client: Village of Youngstown
Contractor: Trec Environmental Inc.

Project No. 2004.0279.03
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 2/20/2006
Finish Date 2/20/2006
Driller P. Willie
Geologist J. Manzella

Groundwater Data (feet)

Date	Time	Depth	Elev
2/20/2006		≈ 8' bgs	

Equipment Data

	Casing	Sampler	Core
Type	Acetate	Macro Core	
Diameter	1.75"	2.0"	
Weight			
Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm)	
								Direct	Head
							Dark, brown, clayey-silt + gravel, moist.		
							Brown, clayey-silt + sand, some gravel, little brick, coal, moist.	0	–
	5						Brown, clayey-silt, w/gray mottling, moist.	0	–
							Brown, sandy-silt, trace clay, gray mottling, wet.		
							As above, + gravel, saturated, w/red sandstone.		
	10							0	–
							As above, trace fine sand, moist.		
							Refusal @ 12' bgs		
	15								
	20								
	25								
	30								

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SOIL PROBE LOG

PROBE NO. **Micro - 03**

Project: Youngstown Cold Storage Site RI/AA
Client: Village of Youngstown
Contractor: Trec Environmental Inc.

Project No. 2004.0279.03
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 2/20/2006
Finish Date 2/20/2006
Driller P. Willie
Geologist J. Manzella

Groundwater Data (feet)			
Date	Time	Depth	Elev
2/20/2006			

Equipment Data	Casing	Sampler	Core
Type	Acetate	Macro Core	
Diameter	1.75"	2.0"	
Weight			
Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct	Head
							Dark-brown, sandy-silt + gravel, trace brick, damp.	0	–
							Brown, clayey-silt, trace fine gravel, damp.		
	5						As above, denser, w/gray mottling, moist.	0	–
	10						Brown, silt, w/red sandstone, moist, very dense.	0	–
	15						Refusal @ ≈ 12' bgs		
	20								
	25								
	30								

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CONSULTANTS

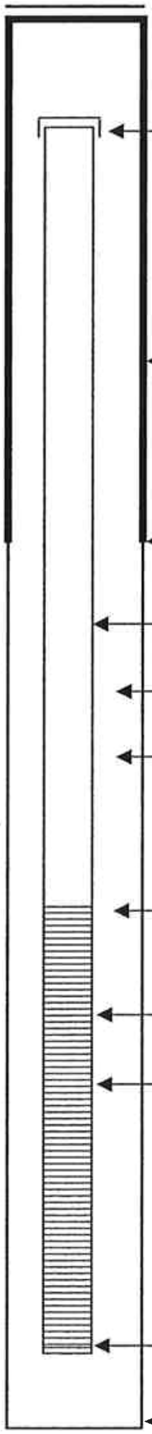
WELL INSTALLATION REPORT

Project Name Youngstown Cold storage Site
Project Number 2004.0279.03
Contractor Trec Environmental
Date of Installation 2-20-06
Project Location Youngstown, NY

Geologist JCM
Driller P. Willie
Well No. Micro-01
Boring No. Micro-01
Sheet 1 of 1

Lock No. ______
Survey Datum Site Specific
Ground Elevation –

0' Top of Seal
1.0' Top of Sand



Elevation/Stick up Above/Below Ground Surface of Casing N/A
Elevation/Stick up Above/Below Ground Surface of Riser Pipe 2' 10"
Thickness of Surface Seal 1.0'
Type of Surface Seal Bentonite Chips
Type of Protective Casing none
Inside Diameter of Protective Casing N/A
Elevation/Depth of Bottom of Protective Casing N/A
Inside Diameter of Riser Pipe 1"
Type of Backfill Around Riser Bentonite chips
Diameter of Bore Hole Within Test Section 2.1"
Type of Coupling threaded
Elevation/Depth of Top of Screen 2'
Type of Well Screen PVC
Screen Slot Size No. 10 slot
Diameter of Well Screen 1"
Type of Backfill Around Well Screen No. 00 sand
Elevation/Depth of Bottom of Well Screen 12'
Elevation/Depth of Bottom of Bore Hole 12'

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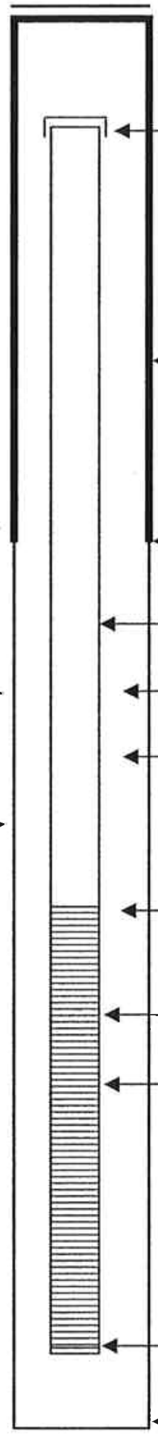
CONSULTANTS

WELL INSTALLATION REPORT

Project Name Youngstown Cold Storage Site
Project Number 2004.027A.03
Contractor Trec. Environmental
Date of Installation 2-21-06
Project Location Youngstown, NY

Geologist JCM
Driller P. Willie
Well No. Micro-02
Boring No. Micro-02
Sheet 1 of 1

Lock No. ______
Survey Datum Site Specific
Ground Elevation -



0' Top of Seal

1.0' Top of Sand

Elevation/Stick up Above/Below Ground Surface of Casing	N/A
Elevation/Stick up Above/Below Ground Surface of Riser Pipe	3' 11"
Thickness of Surface Seal	1.0'
Type of Surface Seal	Bentonite chips
Type of Protective Casing	none
Inside Diameter of Protective Casing	N/A
Elevation/Depth of Bottom of Protective Casing	N/A
Inside Diameter of Riser Pipe	1"
Type of Backfill Around Riser	Bentonite chips
Diameter of Bore Hole Within Test Section	2.1"
Type of Coupling	Threaded
Elevation/Depth of Top of Screen	2'
Type of Well Screen	PVC
Screen Slot Size	No. 10 slot
Diameter of Well Screen	1"
Type of Backfill Around Well Screen	No. 00 sand
Elevation/Depth of Bottom of Well Screen	12'
Elevation/Depth of Bottom of Bore Hole	12'

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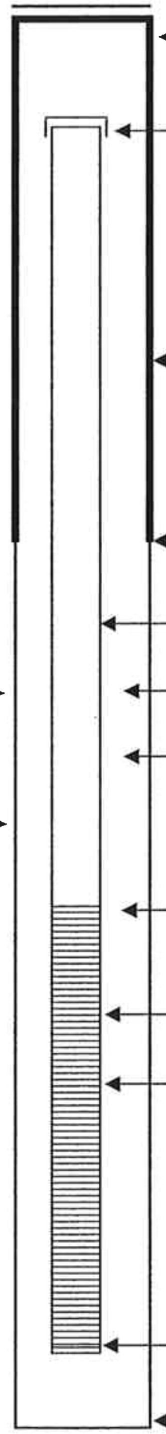
WELL INSTALLATION REPORT

Project Name Youngstown Cold Storage Site
Project Number 2004.0279.03
Contractor Trec Environmental
Date of Installation 2-21-06
Project Location Youngstown, NY

Geologist JCM
Driller P. Willie
Well No. Micro-03
Boring No. Micro-03
Sheet 1 of 1

Lock No. ______
Survey Datum Site Specific
Ground Elevation –

0' Top of Seal
1.0' Top of Sand



Elevation/Stick up Above/Below Ground Surface of Casing N/A
Elevation/Stick up Above/Below Ground Surface of Riser Pipe 3' 1"
Thickness of Surface Seal 1'
Type of Surface Seal Bentonite chips
Type of Protective Casing none
Inside Diameter of Protective Casing N/A
Elevation/Depth of Bottom of Protective Casing N/A
Inside Diameter of Riser Pipe 1"
Type of Backfill Around Riser Bentonite chips
Diameter of Bore Hole Within Test Section 2.1"
Type of Coupling Threaded
Elevation/Depth of Top of Screen 2'
Type of Well Screen PVC
Screen Slot Size No. 10 slot
Diameter of Well Screen 1"
Type of Backfill Around Well Screen No. 00 Sand
Elevation/Depth of Bottom of Well Screen 12'
Elevation/Depth of Bottom of Bore Hole 12'

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WELL DEVELOPMENT LOG

HOLE NO: Micro-01

Project Name: Youngstown Cold Storage Site RI/AA
Project Location: Village of Youngstown, New York

Project No: 2004.0279.03
Date: 3-1-06
Screen Length: ____

Purge Information: All meas in Feet

(1) Depth to Bottom of Well: 14.44
(from TOC)

(2) Depth to Water: 7.91 ft
(from TOC)

(3) Column of Water: 6.53
(#1 - #2)

(4) Casing Diameter: 1.0 in

(5) Volume Conversion: ____ gal/ft

(6) 1 Vol. of Well: 0.27 [5wv = 1.35] gal

Method of Purging: WaTerra/Bailer/Submersible/Other: Peristaltic Pump w/dedicated Pump/Down-hole Tubing

Volume Conversion:

1" = 0.041 2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

					0.25/1	1.0/4 (7.4 wv total)	
Vol Purged (gal)/wv	Initial/0.0	0.25/1.0	0.5/2.0	0.35 ~~1.5/3.0~~	~~1.0/4.0~~	~~1.35/5.0~~	1.25/5 (8.3 wv total)
Time	1010		1018	Initial 1405	1410	1413	1427
ORP/EH (MV)	N/A						
pH	6.88		7.35	7.57	7.46	7.28	7.21
Cond. (MS/CM)	0.848		0.862	0.826	0.806	0.818	0.805
Turb. (NTU)	>999		>999	>999*	495	~~*~~64	65
D.O. (mg/l)	N/A						
Salinity (%)	N/A						
Temp. (°C)	6.7		6.5	5.8	7.1	7.4	7.3

Total Volume Purged: ____ gal Total Purge Time: 3 - 1 minute Intervals

Development Info:

Development Method: Develop complete @ 1031.

Comments: (BOW Hard) Initial - Ext. Turbid (opaque), Dk Brn, Spotty Sheen, Slight Petro-like Odor; Dry @ 0.20 gal.; 0.5 gal: Somewhat less Turbid but Same w/no sheen; ~~1.0~~ then Dry; ~1.0 gal: Turbid, Brn Color Dry ~0.9 gal.; 1405 - Purge Again WL = 7.91'; * Purge Directly from BOW; ~~* Erroneous Reading~~

Logged By: J. Manzella

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WELL DEVELOPMENT LOG

HOLE NO: Micro - 02

Project Name: Youngstown Cold Storage Site RI/AA
Project Location: Village of Youngstown, New York

Project No: 2004.0279.03
Date: 3 1-06
Screen Length: ______

Purge Information:

(1) Depth to Bottom of Well: 14.92
(from TOC)

(2) Depth to Water: 8.79 ft
(from TOC)

(3) Column of Water: 6.13
(#1 - #2)

(4) Casing Diameter: 1.0 in

(5) Volume Conversion: ______ gal/ft

(6) 1 Vol. of Well: 0.26 (5wv=1.30) gal

Method of Purging: WaTerra/Bailer/Submersible/Other: Peristaltic Pump w/ dedicated Pump/Down-Hole Tubing

Volume Conversion:

1" = 0.041   2" = 0.163   4" = 0.653   6" = 1.469   8" = 2.611   10" = 4.08

Field Analysis:

|| Second Purge

Vol Purged (gal)	Initial/0	0.25/1.0	Initial	0.35				
Time	1135	1140	1441	1443				
ORP/EH (MV)	N/A							
pH	7.41	7.25	7.63					
Cond. (MS/CM)	1.070	1.110	.894	DRY				
Turb. (NTU)	67	>999	>999					
D.O. (mg/l)	N/A							
Salinity (%)								
Temp. (°C)	4.3	6.0	6.2					

Total Volume Purged: ______ gal   Total Purge Time: ______

Development Info:

Development Method: ______

Comments: (BOW - Soft) Initial: Br color, Ext. Turbid (opaque) Note: Turbidity measurement appears incorrect; 0.25: ~~Dry~~, Same; Let Recovery; Dry @ 0.45 gal.; Recovery is Slow ~0.4'/15 minutes); WL = 9.24'; Dry @ 0.35 gal; ~3.1 WV Total Evacuated

Logged By: J. Manzella, Jeff Carter

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WELL DEVELOPMENT LOG

HOLE NO: Micro-03

Project Name: Youngstown Cold Storage Site RI/AA
Project Location: Village of Youngstown, New York

Project No: 2004.0279.03
Date: 3-1-06
Screen Length:

Purge Information:

(1) Depth to Bottom of Well: 14.93 (from TOC)

(2) Depth to Water: 9.17 ft (from TOC)

(3) Column of Water: 5.76 (#1 - #2)

(4) Casing Diameter: in

(5) Volume Conversion: gal/ft

(6) 1 Vol. of Well: 0.24 [5wv = 1.20] gal

Method of Purging: WaTerra/Bailer/Submersible/Other: Peristaltic Pump w/ Dedicated Pump/Downhole Tubing.

Volume Conversion:

[✓ 1" = 0.041] 2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis: 2nd Purge

Vol Purged (gal)	Initial/0	Initial	0.10					
Time	1054	1501						
ORP/EH (MV)	N/A							
pH	7.31	7.42						
Cond. (MS/CM)	0.930	1.140	DRY					
Turb. (NTU)	>999	>999						
D.O. (mg/l)	N/A							
Salinity (%)								
Temp. (°C)	5.3	6.5						

Total Volume Purged: gal Total Purge Time:

Development Info:

Development Method:

Comments: (30W - Mod. Hard) 0.1 gal; Dry - Ext. Turbid (opaque); Recovery: 0.5'/10 minutes; Move to Micro-02, Let 03 Recovery; WL = 12.21; Dry @ 0.10 gal 1 W Removed

Logged By: J. Manzella-;

Sheet 1 of 1

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WELL SAMPLING LOG

HOLE NO: M100-01

Project Name: Youngstown Cold Storage Site RI/AA
Project Location: Village of Youngstown, New York

Project No: 2004.0279.03
Date: 3-2-06
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:

1" = 0.041   2" = 0.163   4" = 0.653   6" = 1.469   8" = 2.611   10" = 4.08

Field Analysis: 3-2-06

Vol Purged (gal)								
Time								
ORP/EH (MV)	N/A							
pH	6.84							
Cond. (MS/CM)	0.873							
Turb. (NTU)	10.0							
Salinity (%)	N/A							
D.O. (mg/l)								
Temp. (°C)	4.7							

Total Volume Purged: ________ gal   Total Purge Time: ________

Sampling Info: WL = 6.77 Ft.

Sample Method: VOCs - Bailer; Rem - P

Sample Time: 1015

No. of Bottles: 9

Sample Analyses: ________

Comments: VOCs/Metals - Clear; TCL Pesticide (1)/TCL SVOCs (1) - Mod Turbid - Turbid, Brn Tint; Let Recover for Remaining Sample Containers.

Logged By: J. Manzella

Sheet 1 of 1

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WELL SAMPLING LOG

HOLE NO: Micro-02

Project Name: Youngstown Cold Storage Site RI/AA
Project Location: Village of Youngstown, New York

Project No: 2004.0279.03
Date: 3-2-06
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:

1" = 0.041 2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis: 3-2-06

Vol Purged (gal)								
Time								
ORP/EH (MV)	N/A							
pH	6.84							
Cond. (MS/CM)	0.926							
Turb. (NTU)	23							
Salinity (%)	N/A							
D.O. (mg/l)								
Temp. (°C)	5.6							

Total Volume Purged: ____ gal Total Purge Time: ____

Sampling Info: WL = 9.04 Ft // 1320 - WL = 9.21 Ft

Sample Method: VOCs - Bailer; Rem - Bailer

Sample Time: 0945

No. of Bottles: 6

Sample Analyses: ____

Comments: VOCs/metals: clear (<7 NTU's); TCL Pest - Ext. Turbid (opaque), Brn Color; 1320 - Clear then Very Turbid - Ext. Turbid (opaque)

Logged By: J. Manzella

Sheet __ of __

TVGA CONSULTANTS

WELL SAMPLING LOG

HOLE NO: Micro-03

Project Name: Youngstown Cold Storage Site RI/AA
Project Location: Village of Youngstown, New York

Project No: 2004.0279.03
Date: 3-2-06
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:

1" = 0.041 2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis: 3-2-06 // 1313 WL = 14.08'

Vol Purged (gal)								
Time								
ORP/EH (MV)	N/A							
pH	6.83							
Cond. (MS/CM)	1.23							
Turb. (NTU)	291							
Salinity (%)	N/A							
D.O. (mg/l)								
Temp. (°C)	6.9							

Total Volume Purged: ______ gal

Total Purge Time: ______

Sampling Info: WL = 12,21' // WL = 14.08

Sample Method: ~~VOCs = Bailer; Rem Peristaltic w/dedicated Tubing~~ All - Bailer

No. of Bottles: 3

Sample Time: 0855

Sample Analyses: ______

Comments: 2 - VOAs - Clear; 3/4 metals - Very Turbid Then Well Dry; Let Recovery; 1313 - only ~80mL of water Mod Turbid Water Filled Metals

Logged By: J. Manzella

Sheet 1 of 1

APPENDIX B

ASBESTOS SURVEY REPORT

PRE-DEMOLITION SURVEY

FOR

ASBESTOS-CONTAINING MATERIALS

AT

YOUNGSTOWN COLD STORAGE
YOUNGSTOWN, NEW YORK

MARCH 2006

Prepared For:

TVGA CONSULTANTS
ONE THOUSAND MAPLE ROAD
ELMA, NEW YORK

For Submission To:

VILLAGE OF YOUNGSTOWN

Prepared By:

WATTS ENGINEERING & ARCHITECTURE, P.C.
3826 MAIN STREET
BUFFALO, NEW YORK

TABLE OF CONTENTS

1.0 - EXECUTIVE SUMMARY

1.0 EXECUTIVE SUMMARY

Watts Engineering & Architecture, P.C. (Watts) was retained by TVGA Consultants to perform a pre-demolition survey for asbestos-containing materials (ACM) at the Youngstown Cold Storage Site in Youngstown, New York. The purpose of the survey was to determine the presence, location and quantity of ACM that could be disturbed during the demolition. The site consists of three structures including: icehouse, main warehouse, and a house adjacent to the property. This report has been prepared primarily on the basis of the results of visual site observations, laboratory analysis of suspect materials, and a general survey of the proposed areas of renovation. The field survey was conducted on February 15 and March 1, 2006, and included the following:

- A visual site inspection to identify suspect ACM.
- Collection and laboratory analysis of samples from each suspect material.
- Documentation of sample locations on drawings and chain-of-custody forms.

The inspection included the collection of fifty-nine (59) bulk samples accounting for eight (8) homogenous materials in the icehouse, twelve (12) homogenous materials in the house and twenty two (22) homogeneous materials in the main warehouse. ACM is defined as any material containing more than one percent (1%) of asbestos. If one sample of a homogenous group was found to be asbestos-containing material, all samples are assumed to be ACM and the remaining samples were not analyzed. The following ACM were identified:

ASBESTOS-CONTAINING MATERIALS

Icehouse:

- Bottom layer black roof material on sloped roof sections (Approximately 3,200 square feet).

Main Warehouse:

- Cloth wrap on cork pipe and tank insulation (Approximately 160 linear feet).
- Glazing compound on metal windows in mechanical room (Approximately 3 windows)
- Gray Cement on all Copper Flashings (Approximately 550 square feet).
- Four layers of roofing material on southeast flat roof (Approximately 650 square feet).
- Two layers of roofing materials on all sloped roofs except highest main roof (Approximately 12,000 square feet).

House:

- Paper wrap on ductwork in basement (Approximately 24 square feet).

- 12" x 12" White floor tile under the bath tub (Approximately 13 square feet) The associated mastic was found not to be ACM.
- Green Spotted flooring under one kitchen cabinet (Approximately 10 square feet).

NON-ACM MATERIALS

The following materials were determined to be NON-ACM:

Icehouse:

- Top and middle layers of gray shingles on the sloped roofs
- Roof material on Flat roof
- Cement on Copper Flashing on sloped roof
- Window Glazing Compound
- Tar on Cork Insulation
- Wire Insulation

Main Warehouse:

- Black Tar on Cork Insulation
- Plaster over Cork Insulation throughout
- Glazing Compound on Wood Windows
- Roofing Material on Highest roof
- Wire Insulation
- Top Exposed shingles on Upper East and lower roofs

House:

- All roof materials
- Window Glazing Compound
- Drywall and associated Joint Compound
- Blown in Attic Insulation
- 12" x 12" Ceiling Tiles
- 12" x 12" Green and Tan self adhesive Floor Tiles in Kitchen and Bath
- Tan Flooring beneath the underlayment in the kitchen and bathroom

Chain-of-custody forms, laboratory results, laboratory accreditation, and consultant's certifications and license have also been included in this report.

The samples collected and the building conditions noted reflect the areas that Watts personnel observed. It is our belief that all existing suspect asbestos-containing materials have been sampled in association with the domestic water piping replacement project. In the event other suspect materials are identified during the demolition period, Watts recommends these materials be sampled and analyzed for asbestos content.

2.0 - SUMMARY OF FINDINGS

2.0 SUMMARY OF FINDINGS

This section includes the Homogeneous Materials Lists. The Homogeneous Materials Lists includes the homogeneous materials identified, their corresponding sample numbers and whether or not they are ACM.

HOMOGENEOUS MATERIALS LISTS

YOUNGSTOWN COLD STORAGE
ICEHOUSE
YOUNGSTOWN, NEW YORK

HM #	Material Description	Sample Location	Type	Sample Number	Results (% Asbestos)		ACM
					PLM	TEM	Y/N
1	Gray Shingle Roof Top Layer	Sloped Roof	M	Y6022-01	NA	NAD	N
2	Gray Shingle Roof Middle Layer	Sloped Roof	M	Y6022-02	NA	NAD	N
3	**Black Roof Material Bottom Layer**	**Sloped Roof**	**M**	**Y6022-03**	**NA**	**4.5% Chrysotile**	**Y**
4	Membrane/Cement Roof Material	Flat Roof	M	Y6022-04	NA	NAD	N
5	Cement on Copper Flashing	Flat Roof	M	Y6022-05	NA	NAD	N
6	Window Glazing Compound	East Windows	M	Y6022-06	NA	NON-ACM	N
7	Tar on Cork Insulation	West Storeroom	M	Y6022-07	NA	NAD	N
8	Wire Insulation	Electrical Wiring	M	Y6022-08	NA	NAD	N

Results	Type	ACM
NA - Not Analyzed	M - Miscellaneous	Y - Yes
NAD - No Asbestos Detected	T – Thermal System Insulation	N - No
ND – None Detected	S - Surfacing	

NON-ACM Final Residue <1% of original subsample under gravimetric reduction

YOUNGSTOWN COLD STORAGE
MAIN WAREHOUSE
YOUNGSTOWN, NEW YORK

HM #	Material Description	Sample Location	Type	Sample Number	Results (% Asbestos)		ACM
					PLM	TEM	Y/N
1	**Wrap on Cork Insulation**	**Mechanical Room**	**M**	**Y6022-27**	**67% Chrysotile**	**NA**	**Y**
2	Black Tar on Cork Pipe Insulation	Mechanical Room	M	Y6022-28	NA	NAD	N
3	**Glazing Compound on Metal Windows**	**Mechanical Room**	**M**	**Y6022-29**	**NA**	**2.9% Chrysotile**	**Y**
4	Glazing Compound on Wood Windows	2nd Floor 3rd Floor	M	Y6022-30 Y6022-38	NA	<1% Chrysotile <1% Chrysotile	N
5	**Gray Cement on Copper Flashing**	**South Flat Roof**	**M**	**Y6022-31**	**25% Chrysotile**	**NA**	**Y**
6	Black Membrane/Cement Roof Material	South Flat Roof	M	Y6022-32	NA	<1% Chrysotile	N
7	Green Gray Shingle	South Loading Dock Roof	M	Y6022-33	NA	NAD	N
8	Roof Felt Paper	South Loading Dock Roof	M	Y6022-34	NA	NAD	N
9	Top Layer Roof Material	Main Highest Roof	M	Y6022-35	NA	<1% Chrysotile	N
10	Bottom Layer Roof Material	Main Highest Roof	M	Y6022-36	NA	NON-ACM	N
11	Black Tar on Cork Insulation	3rd Floor 1st Floor	M	Y6022-37 Y6022-47	NA	NON-ACM NON-ACM	N
12	Plaster over Cork Insulation	Basement 1st Floor West 1st Floor East 2nd Floor Southwest 2nd Floor North 3rd Floor North 3rd Floor South	S	Y6022-39 Y6022-40 Y6022-41 Y6022-42 Y6022-43 Y6022-44 Y6022-45	ND ND ND ND ND ND ND	NA NA NA NA NA NA NA	N
13	Wire Insulation	3rd Floor Electrical	M	Y6022-46	NA	NAD	N
14	**Membrane Roof/Cement Top Layer**	**Southeast Flat Roof**	**M**	**Y6022-48**	**NA**	**2.0% Chrysotile**	**Y**
15	**2nd Layer Membrane Roof**	**Southeast Flat Roof**	**M**	**Y6022-49**	**NA**	**32.6% Chrysotile**	**Y**
16	**3rd Layer membrane Roof with silver coating**	**Southeast Flat Roof**	**M**	**Y6022-50**	**NA**	**5.5% Chrysotile**	**Y**

YOUNGSTOWN COLD STORAGE
MAIN WAREHOUSE
YOUNGSTOWN, NEW YORK

HM #	Material Description	Sample Location	Type	Sample Number	Results (% Asbestos)		ACM
					PLM	TEM	Y/N
17	**Bottom Layer Membrane Roof**	**Southeast Flat Roof**	**M**	**Y6022-51**	**NA**	**4.5% Chrysotile**	**Y**
18	**Roof Cement on Copper Flashing**	**Southeast Flat Roof**	**M**	**Y6022-52**	**NA**	**11.5% Chrysotile**	**Y**
19	Top Layer Roof Shingle	Upper Main Roof East Lower North Roof	M	Y6022-53 Y6022-54	NA NA	NAD NAD	N
20	**2nd Layer Roof Shingle**	**Upper Main Roof East Lower North Roof**	**M**	**Y6022-55 Y6022-56**	**NA NA**	**7.9% Chrysotile 2.9% Chrysotile**	**Y**
21	**Black Roof Material Bottom Layer**	**Upper Main Roof East Lower North Roof**	**M**	**Y6022-57 Y6022-58**	**NA NA**	**3.6% Chrysotile 5.3% Chrysotile**	**Y**
22	**Cement on Copper Flashing**	**Lower North Roof**	**M**	**Y6022-59**	**NA**	**4.1% Chrysotile**	**Y**

Results	Type	ACM
NA - Not Analyzed	M - Miscellaneous	Y - Yes
NAD - No Asbestos Detected	T – Thermal System Insulation	N - No
ND – None Detected	S – Surfacing	

NON-ACM Final Residue <1% of original subsample under gravimetric reduction

YOUNGSTOWN COLD STORAGE HOUSE
YOUNGSTOWN, NEW YORK

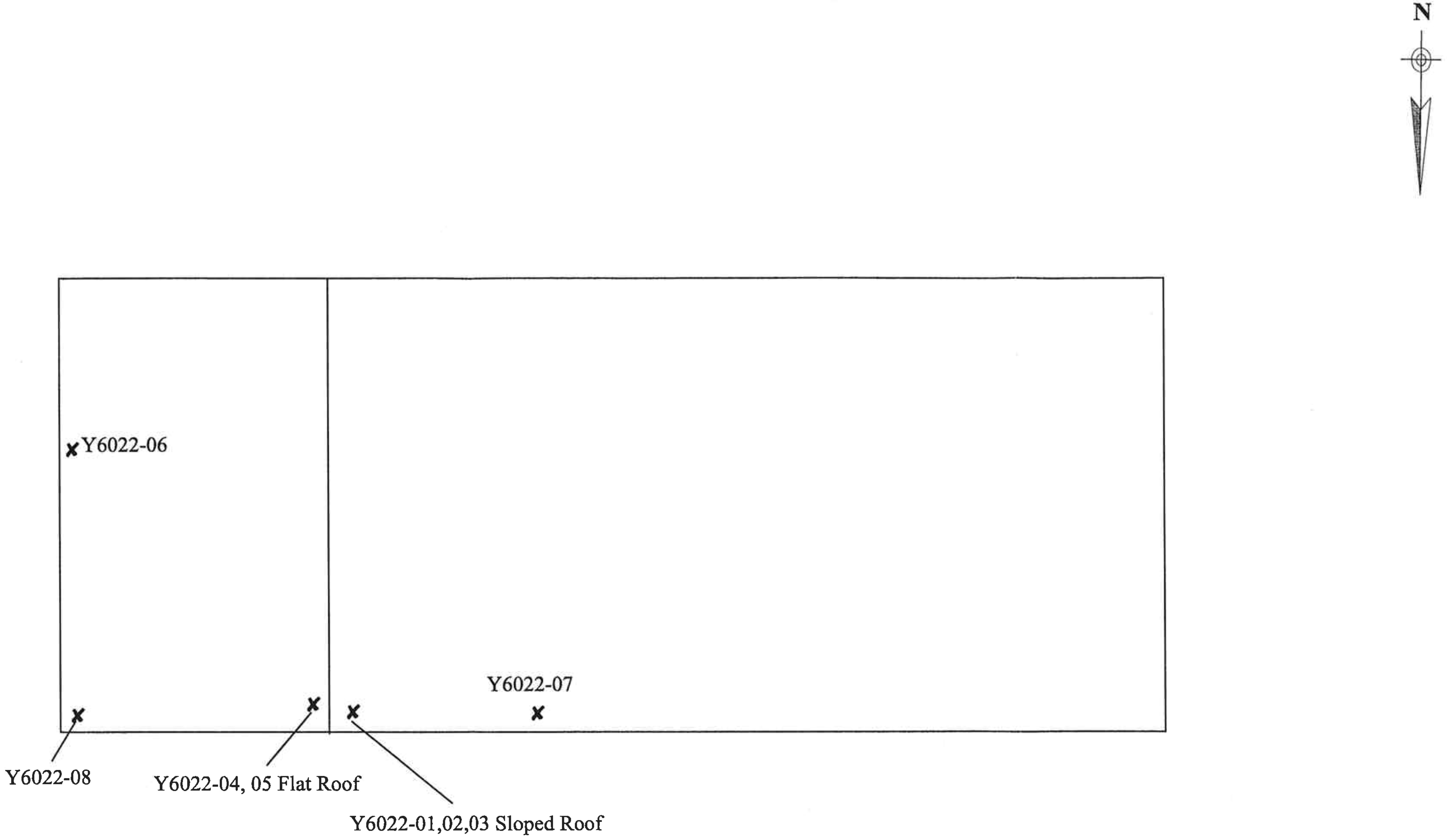
HM #	Material Description	Sample Location	Type	Sample Number	Results (% Asbestos)		ACM
					PLM	TEM	Y/N
1	Roof Shingle	Roof		Y6022-09	NA	NAD	N
2	Roof Felt Paper	Roof		Y6022-10	NA	NAD	N
3	Window Glazing Compound	Wood Windows		Y6022-11	NA	NAD	N
4	**Paper on Ducts in Basement**	**Ducts at registers for first floor**	**M**	**Y6022-12**	**50% Chrysotile**	**NA**	**Y**
5	12"x12" Ceiling Tiles (nailed up)	Living Room	M	Y6022-13	ND	NA	N
6	12"x12" Green/Black Self adhesive Floor Tile	Kitchen	M	Y6022-14	NA	NAD	N
7	12"x12" Tan self adhesive Floor Tile	Bathroom	M	Y6022-15	NA	NAD	N
8	**12"x12" White Floor Tile under bath tub**	**Bathroom**	**M**	**Y6022-16**	**NA**	**15.2% Chrysotile**	**Y**
9	Black Mastic	On top of underlayment in kitchen and bath	M	Y6022-17	NA	NAD	N
10	Tan Flooring	Beneath underlayment in kitchen and bath	M	Y6022-18	NA	NAD	N
11	Blown in attic Insulation	Attic	T	Y6022-19	ND	NA	N
				Y6022-20	ND	NA	
				Y6022-21	ND	NA	
12	Drywall	1st Floor	M	Y6022-22	ND/ND	NA	N
		2nd Floor		Y6022-24	ND/ND	NA	
13	Drywall Joint Compound	1st Floor	M	Y6022-23	ND	NA	N
		2nd Floor		Y6022-25	ND	NA	
14	**Green spotted Floor Tile**	**Kitchen under cabinet**	**M**	**Y6022-26**	**NA**	**14.2% Chrysotile**	**Y**

Results
NA - Not Analyzed
NAD - No Asbestos Detected
ND – None Detected

Type
M - Miscellaneous
T – Thermal System Insulation
S - Surfacing

ACM
Y - Yes
N - No

NON-ACM Final Residue <1% of original subsample under gravimetric reduction



✘ Indicates approximate bulk sample locations.

Bulk samples were collected on February 15, 2006.

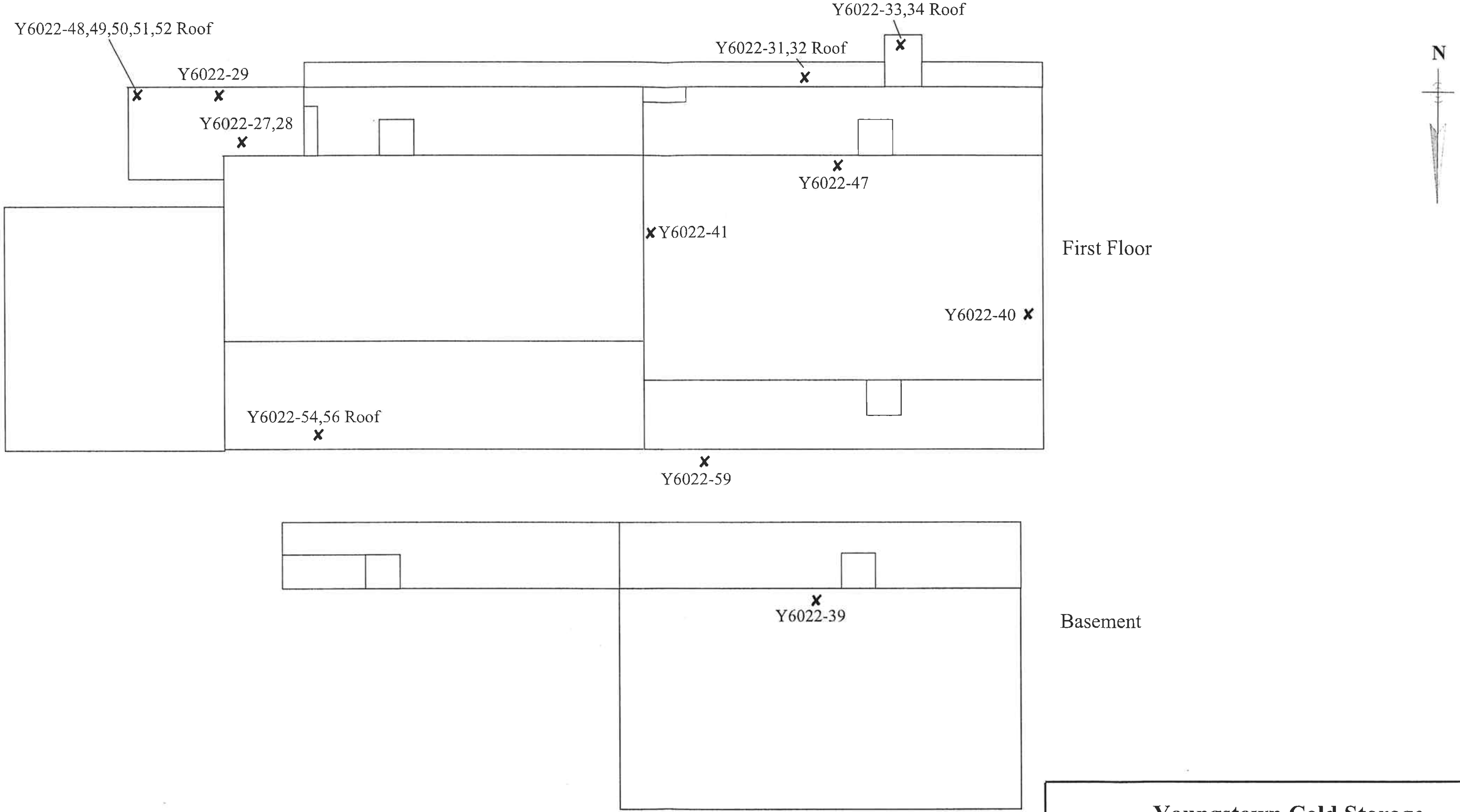
WATTS ENGINEERS
3826 MAIN STREET
BUFFALO, NEW YORK 14226

Youngstown Cold Storage
Ice House
Youngstown, New York

Bulk Sample Locations
Main Floor

Not to Scale

February 2006



Youngstown Cold Storage
Main Warehouse
Youngstown, New York

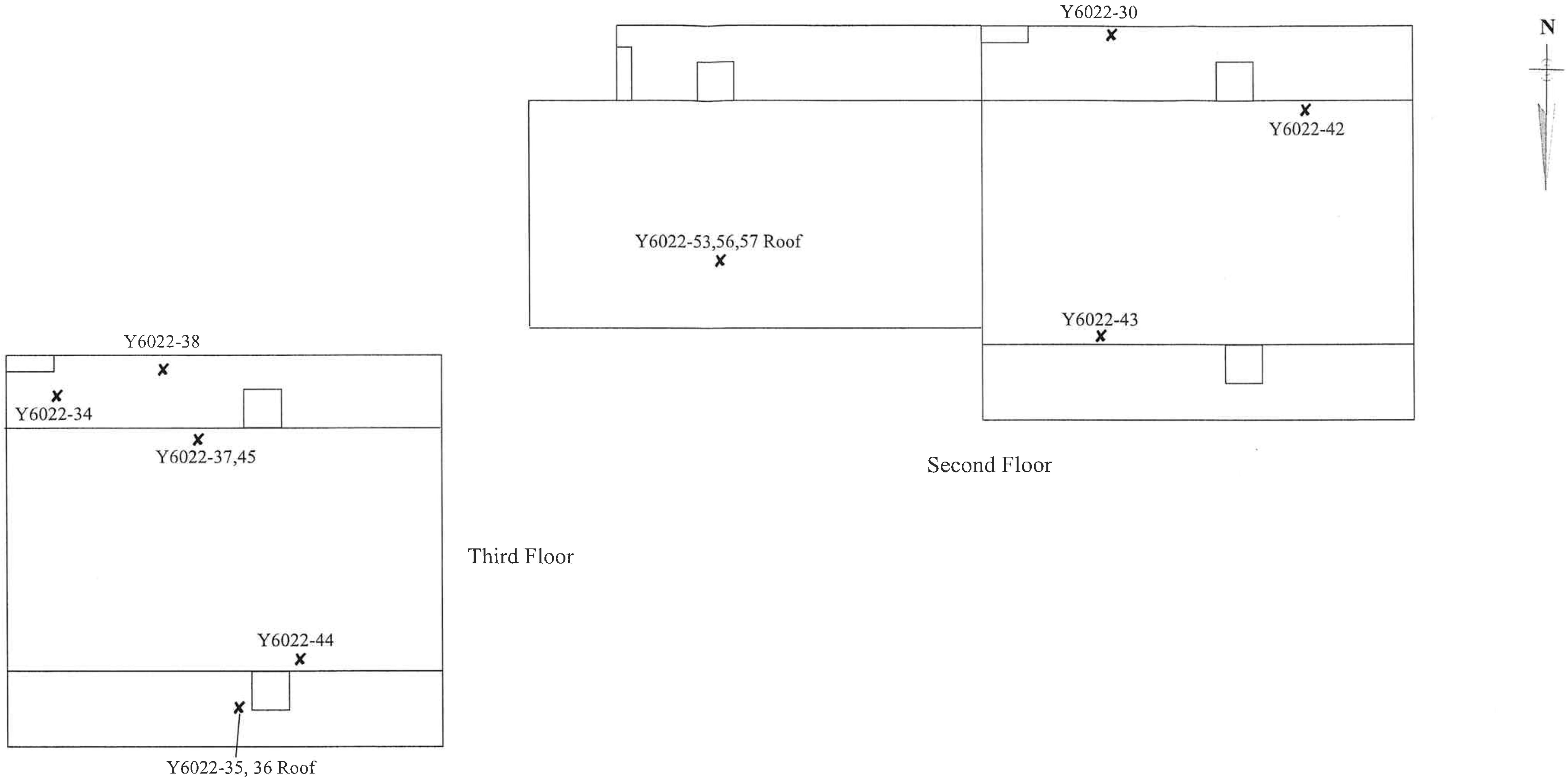
Bulk Sample Locations
Basement and First Floor

Not to Scale	**February 2006**

✘ Indicates approximate bulk sample locations.

Bulk samples were collected on February 15, 2006.

WATTS ENGINEERS
3826 MAIN STREET
BUFFALO, NEW YORK 14226



✗ Indicates approximate bulk sample locations.

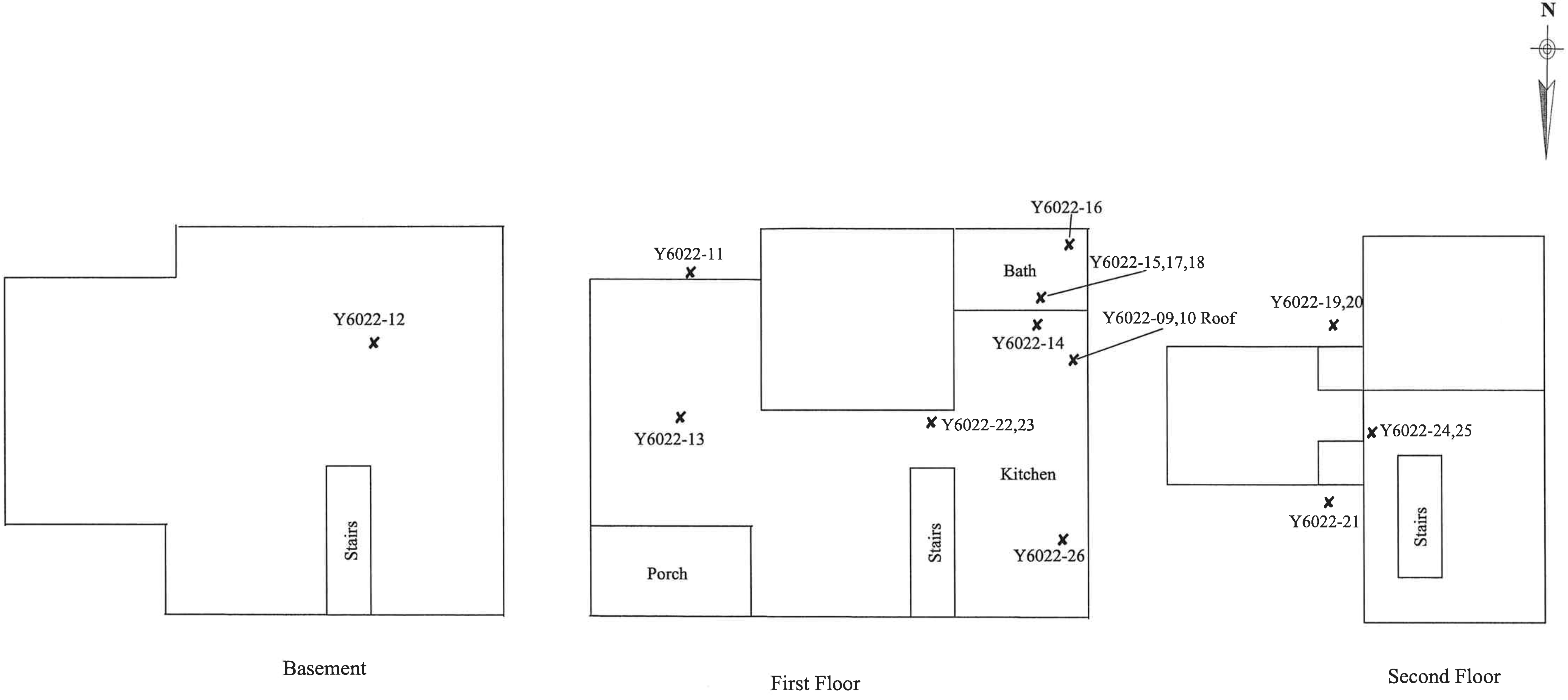
Bulk samples were collected on February 15, 2006.

Youngstown Cold Storage
Main Warehouse
Youngstown, New York

Bulk Sample Locations
Second and Third Floors

Not to Scale	**February 2006**

WATTS ENGINEERS
3826 MAIN STREET
BUFFALO, NEW YORK 14226



✘ Indicates approximate bulk sample locations.

Bulk samples were collected on February 15, 2006.

WATTS ENGINEERS
3826 MAIN STREET
BUFFALO, NEW YORK 14226

Youngstown Cold Storage
House
Youngstown, New York

Bulk Sample Locations
Basement, First and Second Floors

Not to Scale	**February 2006**

3.0 - LABORATORY REPORTS

3.1 POLARIZED LIGHT MICROSCOPY (PLM)

EMSL Analytical, Inc.
490 Rowley Road, Depew, NY 14043
Phone: (716) 651-0030 Fax: (716) 651-0394 Email: buffalolab@emsl.com

Attn: **Eric McNabb**
Watts Engineering & Architecture, P.C.
3826 Main Street
Buffalo, NY 14226

Fax: (716) 836-2402 Phone: (716) 836-1540
Project: **Y6022 / Youngstown Cold Storage, 701 Third Street Extension, Youngstown, NY**

Customer ID: WATT50
Customer PO:
Received: 02/15/06 12:50 PM
EMSL Order: 140600468

EMSL Proj:
Analysis Date: 2/23/2006
Report Date: 2/23/2006

Asbestos Analysis of Bulk Materials by PLM via the NY State ELAP 198.1 Method

			Non-Asbestos		Asbestos
ample	Location	Appearance	% Fibrous	% Non-Fibrous	% Type
Y6022-12 140600468-0001	basement ductwork, house 5, paper on ducts	Gray Fibrous Homogeneous	25.00% Cellulose	25.00% Matrix	**50.00% Chrysotile**
6022-13 140600468-0002	house living room, 12x12 CT	Brown Fibrous Homogeneous	95.00% Cellulose	5.00% Matrix	**None Detected**
6022-19 140600468-0003	house, attic, blown-in insulation	Gray Fibrous Homogeneous	98.00% Min. Wool	2.00% Matrix	**None Detected**
6022-20 40600468-0004	house, attic, blown-in insulation	Gray Fibrous Homogeneous	98.00% Min. Wool	2.00% Matrix	**None Detected**
Y6022-21 40600468-0005	house, attic, blown-in insulation	Gray Fibrous Homogeneous	98.00% Min. Wool	2.00% Matrix	**None Detected**
Y6022-22 40600468-0006	house, 1st floor, drywall	Gray Fibrous Layer # 1	5.00% Cellulose	95.00% Matrix	**None Detected**
Y6022-22 140600468-0060	paper	Brown Fibrous Layer # 2	90.00% Cellulose	10.00% Matrix	**None Detected**
6022-23 140600468-0007	house, 1st floor, drywall joint compound	Brown/White Fibrous Heterogeneous	10.00% Cellulose	90.00% Matrix	**None Detected**
6022-24 40600468-0008	house, 2nd floor, drywall	Gray Non-Fibrous Layer # 1		100.00% Matrix	**None Detected**
6022-24 40600468-0061	paper	Brown Fibrous Layer # 2	90.00% Cellulose	10.00% Matrix	**None Detected**

Analyst(s)

Tom Hanes (20)

Kenneth Najuch
or other approved signatory

PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Negative PLM results cannot be guaranteed. Samples reported as <1% or none detected should be tested with TEM. The above test report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. The above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government.

Analysis performed by EMSL Buffalo (NVLAP #200056-0), NY ELAP #11606

EMSL Analytical, Inc.
490 Rowley Road, Depew, NY 14043
Phone: (716) 651-0030 Fax: (716) 651-0394 Email: buffalolab@emsl.com

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Report Date: 2/23/2006

Asbestos Analysis of Bulk Materials by PLM via the NY State ELAP 198.1 Method

			Non-Asbestos		Asbestos
Sample	Location	Appearance	% Fibrous	% Non-Fibrous	% Type
Y6022-25 *140600468-0009*	house, 2nd floor, drywall joint compound	White Non-Fibrous Homogeneous		100.00% Matrix	**None Detected**
Y6022-27 *140600468-0010*	MW, mechanical rm, wrap on cork	Gray/Silver Fibrous Heterogeneous		33.00% Matrix	**67.00% Chrysotile**
Y6022-31 *140600468-0011*	MW, South flat roof, gray cement	Gray Fibrous Homogeneous		75.00% Matrix	**25.00% Chrysotile**
Y6022-39 *140600468-0012*	MW, basement, wall plaster over cork	Gray Non-Fibrous Homogeneous		100.00% Matrix	**None Detected**
Y6022-40 *140600468-0013*	MW, 1st floor West, wall plaster over cork	Gray Non-Fibrous Homogeneous		100.00% Matrix	**None Detected**
Y6022-41 *140600468-0014*	MW, 1st floor East, wall plaster over cork	Brown Non-Fibrous Homogeneous		100.00% Matrix	**None Detected**
Y6022-42 *140600468-0015*	MW, 2nd floor SW, wall plaster over cork	Brown Non-Fibrous Homogeneous		100.00% Matrix	**None Detected**
Y6022-43 *140600468-0016*	MW, 2nd floor North, wall plaster over cork	Brown Non-Fibrous Homogeneous		100.00% Matrix	**None Detected**
Y6022-44 *140600468-0017*	MW, 3rd floor North, wall plaster over cork	Brown Non-Fibrous Homogeneous		100.00% Matrix	**None Detected**
Y6022-45 *140600468-0018*	MW, 3rd floor South, wall plaster over cork	Brown Non-Fibrous Homogeneous		100.00% Matrix	**None Detected**

Analyst(s)
Tom Hanes (20)

Kenneth Najuch
or other approved signatory

THIS IS THE LAST PAGE OF THE REPORT.

3.2 TRANSMISSION ELECTRON MICROSCOPY (TEM)

EMSL Analytical, Inc.
490 Rowley Road, Depew, NY 14043
Phone: (716) 651-0030 Fax: (716) 651-0394 Email: buffalolab@emsl.com

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EMSL Proj:
Analysis Date: 2/24/2006
Report Date: 2/27/2006

Asbestos Analysis of Non-Friable Organically Bound materials by Transmission Electron Microscopy via NYS ELAP Method 198.4

SAMPLE ID	DESCRIPTION	APPEARANCE	% MATRIX MATERIAL	% NON-ASBESTOS FIBERS	ASBESTOS TYPES	% TOTAL ASBESTOS
Y6022-01 *140600468-0019*	gray shingle roof, top layer, ice house	Gray/Black	100.0	None	No Asbestos Detected	
Y6022-02 *140600468-0020*	gray shingle roof, middle layer, ice house	Black/Gray	100.0	None	No Asbestos Detected	
Y6022-03 *140600468-0021*	black roofing, bottom layer, ice house	Black	95.5	None	4.5 Chrysotile	4.5
Y6022-04 *140600468-0022*	membrane/cement roof, ice house	Black	100.0	None	No Asbestos Detected	
Y6022-05 *140600468-0023*	cement on top of flashing, ice house	Black	100.0	None	No Asbestos Detected	
Y6022-06 *140600468-0024*	window glazing compound,W end	Gray				
Insufficient Residue Final Residue <1% of original subsample - Non-ACM						
Y6022-07 *140600468-0025*	tar on cork insulation, W storeroom	Brown	100.0	None	No Asbestos Detected	
Y6022-08 *140600468-0026*	wire insulation, ice house	Brown	100.0	None	No Asbestos Detected	
Y6022-09 *140600468-0027*	roof shingles, house	Black	100.0	None	No Asbestos Detected	

Analyst(s)
Rhonda McGee (41)

Kenneth Najuch
or other approved signatory

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Watts Engineering & Architecture, P.C.
3826 Main Street
Buffalo, NY 14226

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Project: **Y6022 / Youngstown Cold Storage, 701 Third Street Extension, Youngstown, NY**

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EMSL Proj:
Analysis Date: 2/24/2006
Report Date: 2/27/2006

Asbestos Analysis of Non-Friable Organically Bound materials by Transmission Electron Microscopy via NYS ELAP Method 198.4

SAMPLE ID	DESCRIPTION	APPEARANCE	% MATRIX MATERIAL	% NON-ASBESTOS FIBERS	ASBESTOS TYPES		% TOTAL ASBESTOS
Y6022-10 *140600468-0028*	roof felt paper, house	Black	100.0	None		No Asbestos Detected	
Y6022-11 *140600468-0029*	window glazing compound, house	White/Cream	100.0	None		No Asbestos Detected	
Y6022-14 *140600468-0030*	12x12 green/black self-adh FT kitchen	Gray/Black	100.0	None		No Asbestos Detected	
Y6022-15 *140600468-0031*	12x12 tan self adh FT bathroom	White	100.0	None		No Asbestos Detected	
Y6022-16 *140600468-0032*	white 12x12 FT, under tub	Tan	84.8	None	15.2	Chrysotile	15.2
Y6022-17 *140600468-0033*	black mastic on top of underlayment, bath/kitchen	Black	100.0	None		No Asbestos Detected	
Y6022-18 *140600468-0034*	tan flooring beneath underlayment, bath/kitchen	Tan	100.0	None		No Asbestos Detected	
Y6022-26 *140600468-0035*	green dotted tile, kitchen	Gray/Tan	85.8	None	14.2	Chrysotile	14.2
Y6022-28 *140600468-0036*	black tar on cork pipe ins, MW	Black	100.0	None		No Asbestos Detected	

Analyst(s)
Rhonda McGee (41)

Kenneth Najuch
or other approved signatory

ACCREDITATIONS: NVLAP #200056-0 and NY STATE ELAP #11606

Attn: **Eric McNabb**
Watts Engineering & Architecture, P.C.
3826 Main Street
Buffalo, NY 14226

Fax: (716) 836-2402 Phone: (716) 836-1540
Project: **Y6022 / Youngstown Cold Storage, 701 Third Street Extension, Youngstown, NY**

Customer ID: WATT50
Customer PO:
Received: 02/15/06 12:50 PM
EMSL Order: 140600468

EMSL Proj:
Analysis Date: 2/24/2006
Report Date: 2/27/2006

Asbestos Analysis of Non-Friable Organically Bound materials by Transmission Electron Microscopy via NYS ELAP Method 198.4

SAMPLE ID	DESCRIPTION	APPEARANCE	% MATRIX MATERIAL	% NON-ASBESTOS FIBERS	ASBESTOS TYPES		% TOTAL ASBESTOS
Y6022-29 *140600468-0037*	glazing compound on metal windows, MW	Beige	97.1	None	2.9	Chrysotile	2.9
Y6022-30 *140600468-0038*	window glazing compound wood widows, MW	Gray/White	100.0	None	<1	Chrysotile	<1
Y6022-32 *140600468-0039*	black membrane/cement roof, MW	Black	99.9	None	<1	Chrysotile	<1
Y6022-33 *140600468-0040*	green gray shingle, MW	Green/Gray	100.0	None		No Asbestos Detected	
Y6022-34 *140600468-0041*	felt paper, MW	Black	100.0	None		No Asbestos Detected	
Y6022-35 *140600468-0042*	top layer roof material, MW	Black	100.0	None	<1	Chrysotile	<1
Y6022-36 *140600468-0043*	bottom , MW roof	Black					
Insufficient Residue Final Residue <1% of original subsample - Non-ACM							
Y6022-37 *140600468-0044*	black tar on cork ins, MW	Black					
Insufficient Residue Final Residue <1% of original subsample - Non-ACM							

Analyst(s)
Rhonda McGee (41)

Kenneth Najuch
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Asbestos Analysis of Non-Friable Organically Bound materials by Transmission Electron Microscopy via NYS ELAP Method 198.4

SAMPLE ID	DESCRIPTION	APPEARANCE	% MATRIX MATERIAL	% NON-ASBESTOS FIBERS	ASBESTOS TYPES		% TOTAL ASBESTOS
Y6022-38 *140600468-0045*	window glazing compound, MW	Gray/White	99.8	None	<1	Chrysotile	<1
Y6022-46 *140600468-0046*	wire insulation, MW	Brown	100.0	None	No Asbestos Detected		
Y6022-47 *140600468-0047*	black tar on cork ins, MW	Black					
Insufficient Residue Final Residue <1% of original subsample - Non-ACM							
Y6022-48 *140600468-0048*	top layer membrane/cement roof, MW	Black	98.0	None	2.0	Chrysotile	2.0
Y6022-49 *140600468-0049*	2nd layer membrane, MW	Black	67.4	None	32.6	Chrysotile	32.6
Y6022-50 *140600468-0050*	3rd layer membrane , MW	Black/Silver	94.5	None	5.5	Chrysotile	5.5
Y6022-51 *140600468-0051*	bottom layer membrane, MW	Black	95.5	None	4.5	Chrysotile	4.5
Y6022-52 *140600468-0052*	roof cement on copper flashing, MW	Black	88.5	None	11.5	Chrysotile	11.5
Y6022-53 *140600468-0053*	top layer shingle, MW	Brown/Black	100.0	None	No Asbestos Detected		

Analyst(s)
Rhonda McGee (41)

Kenneth Najuch
or other approved signatory

ACCREDITATIONS: NVLAP #200056-0 and NY STATE ELAP #11606

Attn: **Eric McNabb**
Watts Engineering & Architecture, P.C.
3826 Main Street
Buffalo, NY 14226

Fax: (716) 836-2402 Phone: (716) 836-1540
Project: **Y6022 / Youngstown Cold Storage, 701 Third Street Extension, Youngstown, NY**

Customer ID: WATT50
Customer PO:
Received: 02/15/06 12:50 PM
EMSL Order: 140600468

EMSL Proj:
Analysis Date: 2/24/2006
Report Date: 2/27/2006

Asbestos Analysis of Non-Friable Organically Bound materials by Transmission Electron Microscopy via NYS ELAP Method 198.4

SAMPLE ID	DESCRIPTION	APPEARANCE	% MATRIX MATERIAL	% NON-ASBESTOS FIBERS	ASBESTOS TYPES		% TOTAL ASBESTOS
Y6022-54 *140600468-0054*	top layer shingle roof, MW	Brown/Black	100.0	None		No Asbestos Detected	
Y6022-55 *140600468-0055*	2nd layer shingle roof, MW	Black/Brown	92.1	None	7.9	Chrysotile	7.9
Y6022-56 *140600468-0056*	2nd layer shingle roof, MW	Black/Brown	97.1	None	2.9	Chrysotile	2.9
Y6022-57 *140600468-0057*	black roof material, MW	Black	96.4	None	3.6	Chrysotile	3.6
Y6022-58 *140600468-0058*	black roof material, MW	Black	94.7	None	5.3	Chrysotile	5.3
Y6022-59 *140600468-0059*	cement on copper flashing, MW	Black	95.9	None	4.1	Chrysotile	4.1

Analyst(s)
Rhonda McGee (41)

Kenneth Najuch
or other approved signatory

THIS IS THE LAST PAGE OF THE REPORT.

3.3 CHAIN-OF-CUSTODY FORMS

BULK SAMPLE CHAIN-OF-CUSTODY FORM

The purpose of the chain-of-custody form is to reduce the possibility of misidentifying individual samples, to help trace any samples that may be lost, and to provide a record certifying that the samples were delivered to and received by the analytical laboratory.

An important feature of this form is the signature section at the bottom, identifying all persons who handled the samples.

140600468 Page: 1 of 5

WATTS ENGINEERS
ASBESTOS BULK SAMPLE CHAIN-OF-CUSTODY

Date: 2 / 15 / 06

Watts Project No.: Y6022

Client: TVGA Consultants
Project: Youngstown Cold Storage
Building / Location: 701 Third Street Extension, Youngstown, NY
Contact: Eric McNabb at (716) 836-1540
Fax Preliminary Results to: (716) 836-2402
Mail Report & Invoice to: Watts Engineering & Architecture, P.C.
3826 Main Street, Buffalo, NY 14226

Turnaround Requested:
____ 3 Hr. ~~X~~ 48 Hr.
____ 6 Hr. ____ 72 Hr.
____ 12 Hr. ~~X~~ 5 Day
____ 24 Hr. X 6-10 Day

Analysis Requested:
PLM X TEM X
SEE NOTE

Sample Number	Material Description	Sample Location	Laboratory Results	
			PLM	TEM
Y6022-01	gray shingle roof top layer	icehouse sloped roof		
Y6022-02	" " " middle layer	iceHouse sloped Roof		
Y6022-03	black roofing bottom layer	iceHouse sloped roof		
Y6022-04	membrane/cement roof	ice house flat roof		
Y6022-05	cement on top of flashing	ice house flat roof		
Y6022-06	window glazing compound	W end windows -		
Y6022-07	tar on cork insulation	W storeroom		
Y6022-08	wire insulation	Ice house electrical		
Y6022-09	roof shingles	House		
Y6022-10	roof felt paper	House		
Y6022-11	window glazing compound	House		
Y6022-12	paper on ducts	Basement Ductwork - House (5')		

Sampled By: Date: 2/15/05 **Received By:** dropoff Date: 2/15/06 12:50 pm
Relinquished By: Date: 2/15/05 **Received By:** Date: __/__/__

Comments: Analyze NOBS directly By TEM.

WATTS ENGINEERS
ASBESTOS BULK SAMPLE CHAIN-OF-CUSTODY

140600468

Page: 2 of 5

Date: 2/15/06

Watts Project No.: Y6022

Client: TVGA Consultants
Project: Youngstown Cold Storage
Building / Location: 701 Third Street Extension, Youngstown, NY
Contact: Eric McNabb at (716) 836-1540
Fax Preliminary Results to: (716) 836-2402
Mail Report & Invoice to: Watts Engineering & Architecture, P.C.
3826 Main Street, Buffalo, NY 14226

Turnaround Requested:
Analysis Requested:
PLM X TEM X
SEE NOTE

___ 3 Hr. X 48 Hr.
___ 6 Hr. ___ 72 Hr.
___ 12 Hr. ~~X~~ 5 Day
___ 24 Hr. X 6-10 Day

Sample Number	Material Description	Sample Location	Laboratory Results	
			PLM	TEM
Y6022-13	12x12 Ceiling tiles (Nailed up)	House - Living Room		
Y6022-14	12x12 Green/Black Soft Adhesive FT	House - Kitchen		
Y6022-15	12x12 Tan Soft Adhesive FT	House - Bathroom		
Y6022-16	white 12x12 FT - under Tub	House - Bathroom		
Y6022-17	Black mastic on top of Underlayment	House - Bath and Kitchen		
Y6022-18	Tan Flooring beneath underlayment	House Bathroom Kitchen		
Y6022-19	blown-in insulation	House - Attic		
Y6022-20	blown-in insulation	House - Attic		
Y6022-21	Blown in insulation	House - Attic		
Y6022-22	drywall	House 1st Floor		
Y6022-23	drywall Joint compound	House 1st Floor		
Y6022-24	drywall	House - 2nd Floor		

Sampled By: Date: 2/15/05 Received By: drop off Date: 2/15/06 12:50pm

Relinquished By: Date: 2/15/05 Received By: Date: / /

Comments:

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2/13/2006

WATTS ENGINEERS
ASBESTOS BULK SAMPLE CHAIN-OF-CUSTODY

140600468

Page: 3 of 5

Date: 2/15/06

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Turnaround Requested: ___ 3 Hr. ~~X~~ 48 Hr.
Analysis Requested: ___ 6 Hr. ___ 72 Hr.
PLM X TEM X ___ 12 Hr. ~~X~~ 5 Day
SEE NOTE ___ 24 Hr. X 6-10 Day

Sample Number	Material Description	Sample Location	Laboratory Results	
			PLM	TEM
Y6022-25	Drywall joint compound	House - 2nd Floor		
Y6022-26	Green dotted tile	House - Kitchen under cabinet		
Y6022-27	wrap on cork insulation	MW - mechanical Room		
Y6022-28	Black tar on cork pipe insulation	MW - mechanical Room		
Y6022-29	glazing compound on metal windows	MW - mechanical Room		
Y6022-30	Window glazing compound wood windows	MW - Second Floor		
Y6022-31	gray cement on copper flashing	MW - South flat Roof		
Y6022-32	black membrane/Cement Roof	MW - South flat Roof		
Y6022-33	Green gray shingle	MW - South loading dock Roof		
Y6022-34	felt paper	MW - South loading dock roof		
Y6022-35	top layer roof material	MW - high roof		
Y6022-36	bottom layer roof material	MW - high roof		

Sampled By: Date: 2/15/05 **Received By:** drop off Date: 2/15/06 12:50pm

Relinquished By: Date: 2/15/05 **Received By:** Date: / /

Comments:

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2/13/2006

WATTS ENGINEERS
ASBESTOS BULK SAMPLE CHAIN-OF-CUSTODY

140600468

Page: 4 of 5

Date: 2/15/06

Watts Project No.: Y6022

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3826 Main Street, Buffalo, NY 14226

Turnaround Requested:
Analysis Requested:
PLM X TEM X
SEE NOTE

___ 3 Hr.	~~X~~ 48 Hr.		
___ 6 Hr.	___ 72 Hr.		
___ 12 Hr.	~~X~~ 5 Day		
___ 24 Hr.	X 6-10 Day		

Sample Number	Material Description	Sample Location	Laboratory Results	
			PLM	TEM
Y6022-37	Black tar on cork insulation inside wall cavity	MW - 3rd Floor		
Y6022-38	window glazing compound	MW - 3rd Floor		
Y6022-39	Wall Plaster over cork	MW - basement		
Y6022-40	wall Plaster over cork	MW - 1st Floor-West		
Y6022-41	wall Plaster over cork	MW 1st Floor - East		
Y6022-42	wall Plaster over cork	MW 2nd floor - SW		
Y6022-43	wall Plaster over cork	MW 2nd Floor - North		
Y6022-44	Wall Plaster over Cork	MW 3rd Floor - North		
Y6022-45	Wall Plaster over cork	MW 3rd floor - South		
Y6022-46	wire insulation	MW 3rd		
Y6022-47	Black tar on cork insulation inside wall cavity	MW - 1st Floor		
Y6022-48	top layer membrane / Cement roof	MW - SE Plat Roof		

Sampled By: Date: 2/15/05 Received By: drop off Date: 2/15/06 12:30pm
Relinquished By: Date: 2/15/05 Received By: Date: / /

Comments:

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2/13/2006

WATTS ENGINEERS
ASBESTOS BULK SAMPLE CHAIN-OF-CUSTODY

140600468

Page: 5 of 5

Date: 2/15/06

Watts Project No.: Y6022

Client: TVGA Consultants
Project: Youngstown Cold Storage
Building / Location: 701 Third Street Extension, Youngstown, NY
Contact: Eric McNabb at (716) 836-1540
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3826 Main Street, Buffalo, NY 14226

Turnaround Requested:
Analysis Requested:
PLM X **TEM** X
SEE NOTE

___ 3 Hr.	~~X~~ 48 Hr.	___ 6 Hr.	___ 72 Hr.
___ 12 Hr.	~~X~~ 5 Day	___ 24 Hr.	X 6-10 Day

Sample Number	Material Description	Sample Location	Laboratory Results PLM	Laboratory Results TEM
Y6022-49	2nd Layer membrane ~~[illegible]~~	MW - SE flat roof		
Y6022-50	3rd Layer membrane w/silver coating	MW - SE flat roof		
Y6022-51	Bottom Layer membrane	MW - SE flat Roof		
Y6022-52	Roof cement on copper flashing	MW - SE flat roof		
Y6022-53	Top layer Shingle	MW - upper main Roof		
Y6022 54	Top layer - shingle roof	MW - lower north roof		
Y6022-55	Second layer - Shingle roof	MW - upper main roof		
Y6022-56	Second layer shingle roof	MW - lower North roof		
Y6022-57	Black roof material	MW - Upper main Roof		
Y6022 58	Black Roof material	MW - Lower North Roof		
Y6022-59	cement on copper flashing	MW - North roof		

Sampled By: ______ Date: 2/15/06 Received By: [illegible] drop off Date: 2/15/06 12:50pm

Relinquished By: ______ Date: 2/15/06 Received By: ______ Date: __/__/__

Comments: ______

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2/13/2006

4.0 - LABORATORY ACCREDITATIONS

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

EMSL ANALYTICAL, INC.
DEPEW, NY

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

June 30, 2006
Effective through

For the National Institute of Standards and Technology
NVLAP Lab Code: 200056-0

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER
Antonia C. Novello, M.D., M.P.H., Dr.P.H.

Expires 12:01 AM April 01, 2006
Issued April 01, 2005

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. KENNETH NAJUCH
EMSL ANALYTICAL INC - BUFFALO
490 ROWLEY ROAD
DEPEW NY 14043 UNITED STATES

NY Lab Id No: 11606
EPA Lab Code: NY01278

is hereby APPROVED as an Environmental Laboratory for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved subcategories and/or analytes are listed below:

Miscellaneous

Asbestos in Friable Material	EPA 600/M4/82/020
Asbestos in Non-Friable Material	ITEM 198.4 OF MANUAL

Serial No.: 26201

Property of the New York State Department of Health. Valid only at the address shown. Must be conspicuously posted. Valid certificates have a raised seal. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify laboratory's accreditation status.

National Institute
of Standards and Technology

NVLAP®

National Voluntary
Laboratory Accreditation Program

DEPARTMENT OF COMMERCE · UNITED STATES OF AMERICA

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

Page: 1 of 1

BULK ASBESTOS FIBER ANALYSIS

NVLAP LAB CODE 200056-0

EMSL ANALYTICAL, INC.
490 Rowley Road
Depew, NY 14043
Mr. Kenneth J. Najuch
Phone: 716-651-0030 Fax: 716-651-0394
E-Mail: knajuch@emsl.com
URL: http://www.emsl.com/

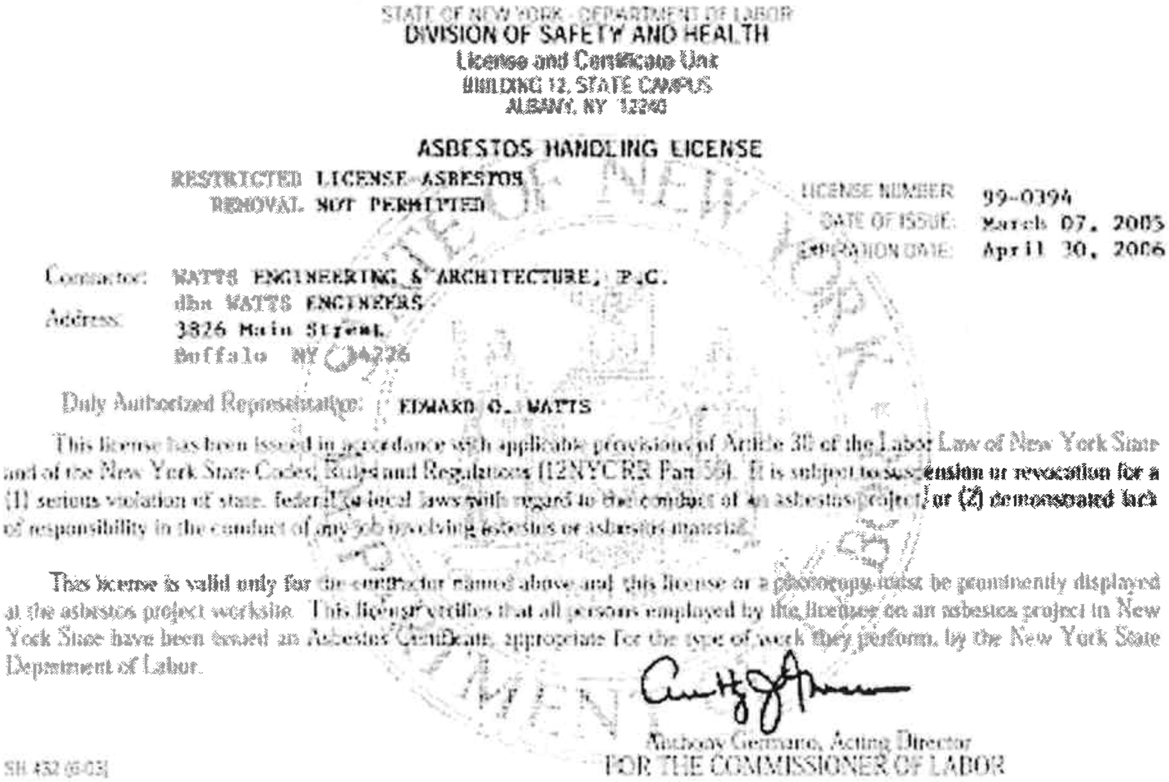
NVLAP Code	*Designation*
18/A01	EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples

June 30, 2006
Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

5.0 - CONSULTANT'S LICENSE AND CERTIFICATION



STATE OF NEW YORK - DEPARTMENT OF LABOR
DIVISION OF SAFETY AND HEALTH
License and Certificate Unit
BUILDING 12, STATE CAMPUS
ALBANY, NY 12240

ASBESTOS HANDLING LICENSE

RESTRICTED LICENSE-ASBESTOS
REMOVAL NOT PERMITTED

LICENSE NUMBER: 99-0394
DATE OF ISSUE: March 07, 2005
EXPIRATION DATE: April 30, 2006

Contractor: WATTS ENGINEERING & ARCHITECTURE, P.C.
dba WATTS ENGINEERS
Address: 3826 Main Street
Buffalo NY 14226

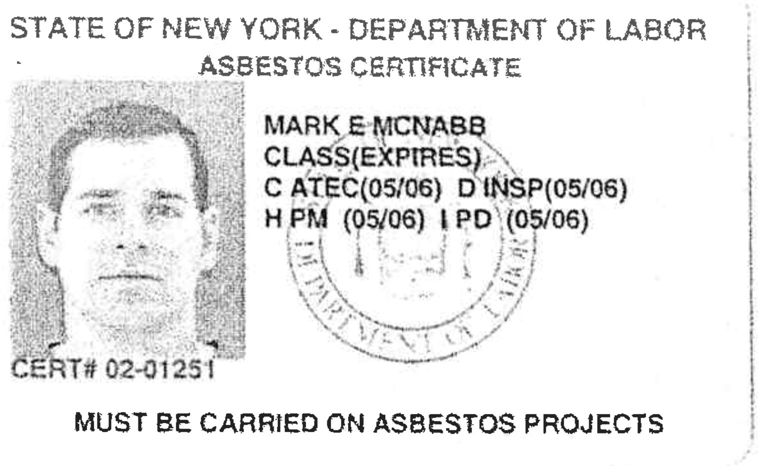
Duly Authorized Representative: EDWARD O. WATTS

This license has been issued in accordance with applicable provisions of Article 30 of the Labor Law of New York State and of the New York State Codes, Rules and Regulations (12NYCRR Part 56). It is subject to suspension or revocation for a (1) serious violation of state, federal or local laws with regard to the conduct of an asbestos project, or (2) demonstrated lack of responsibility in the conduct of any job involving asbestos or asbestos material.

This license is valid only for the contractor named above and this license or a photocopy must be prominently displayed at the asbestos project worksite. This license verifies that all persons employed by the licensee on an asbestos project in New York State have been issued an Asbestos Certificate, appropriate for the type of work they perform, by the New York State Department of Labor.

Anthony Germano, Acting Director
FOR THE COMMISSIONER OF LABOR

SH 432 (6-03)

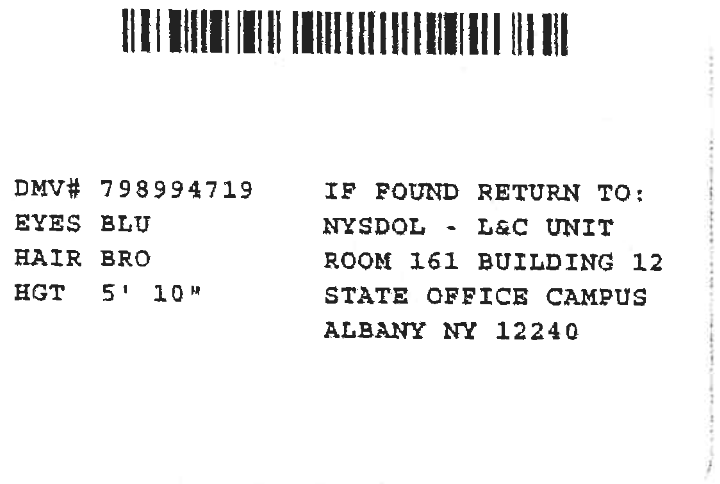


STATE OF NEW YORK - DEPARTMENT OF LABOR
ASBESTOS CERTIFICATE

MARK E MCNABB
CLASS(EXPIRES)
C ATEC(05/06) D INSP(05/06)
H PM (05/06) I PD (05/06)

CERT# 02-01251

MUST BE CARRIED ON ASBESTOS PROJECTS



DMV# 798994719
EYES BLU
HAIR BRO
HGT 5' 10"

IF FOUND RETURN TO:
NYSDOL - L&C UNIT
ROOM 161 BUILDING 12
STATE OFFICE CAMPUS
ALBANY NY 12240

M. ERIC McNABB

C- Air Sampling Technician
D – Inspector
H – Project Monitor
I – Project Designer

APPENDIX A – ACM PHOTOGRAPHS

ASBESTOS CONTAINING MATERIALS PHOTOGRAPHS
YOUNGSTOWN COLD STORAGE
YOUNGSTOWN, NEW YORK


Ice House - ACM Roofing Material


Main Warehouse – ACM Cloth Wrap on Cork Insulation


Main Warehouse – ACM Window Glazing Compound


Main Warehouse – Roof Cement on Flashing


Main Warehouse – Four Layers of ACM Roof Material


Main Warehouse – Two layers of Roof Material on Roofs

ASBESTOS CONTAINING MATERIALS PHOTOGRAPHS
YOUNGSTOWN COLD STORAGE
YOUNGSTOWN, NEW YORK

House- Cloth Wrap on Ductwork in Basement

House – 12" x 12" White Floor Tile under Bathtub

House – Green Flooring under cabinet in kitchen

APPENDIX C

DATA VALIDATION REPORT

Data Usability and Summary Report (DUSR)
Prepared for the
Youngstown Cold Storage Site RI/AA

The following Data Usability and Summary Report (DUSR) has been prepared for the analytical data packages prepared by the Mitkem Corporation (Mitkem), which were submitted as part of the Remedial Investigation (RI) at the Youngstown Cold Storage site (project site) located in the Village of Youngstown, New York.

This DUSR was completed for the soil, sediment and water samples included in the Sample Delivery Group (SDG) package Nos. EO175, EO223, EO229 and EO308. A review of analytical data package SDG No. EO224 was not performed as part of this DUSR because the samples included in this SDG, which included the PCB wipe and the wood floor samples, will be utilized for waste characterization purposes and therefore would not require the same level of scrutiny as samples submitted for the RI.

The analyses for the SDGs included in this review were performed and reported in accordance with NYSDEC ASP 2000 requirements for Category B deliverables. While the data packages submitted were complete for a full validation, this DUSR was prepared by reviewing the summary forms contained in these packages as well as by reviewing the raw sample data and performing a limited review of the associated QC raw data. Therefore, a full validation was not performed. The reported summary forms were reviewed in order to apply the appropriate data qualifiers to the sample results in accordance with USEPA Region 2 validation SOPs and the USEPA National Functional Guidelines for Data Review. The following items were reviewed:

- Laboratory case narratives for each of the reviewed SDGs;
- Chain-of-custody documentation;
- Holding times;
- Calibration/CRI/CRA Standards;
- Method/preparation/calibration blanks;
- Surrogate and internal standard recoveries;
- Matrix spike recoveries and duplicate correlations;
- Field duplicate correlations;
- Laboratory control samples and their spike recoveries;
- Instrument tunes and Instrument Detection Limits (IDLs);
- ICP interference check standards;
- ICP serial dilution correlations; and
- Sample result verification.

Any QA/QC issues that were identified during the review of these items have been documented in this DUSR and the appropriate data qualifiers were applied to the sample data summarized in the tables contained in the RI report.

In summary, the samples within these SDGs were processed in general compliance with established protocols and the results are usable as reported or usable with minor edits or qualifications as estimated or edited to non-detect. The exceptions include the following, which were rejected based on the analytical performance:

- Heptachlor epoxide in Micro01;
- TIC results flagged with a "B" by the laboratory;
- Dalapon in TP09-D32; SS02, SS03, BG01 and BG02; and
- Selenium in SDG Nos. EO175, EO229 and EO223.

General/Data Completeness

The following general issues that have applicability to more than one of the reviewed SDGs were identified during this DUSR.

- The results for organic analytes initially reported with an "E" flag by the laboratory are to be derived from the dilution analysis, results not flagged with an "E" should be derived from the initial analysis of those samples; and

- The chain of custody (COC) submitted 2-16-06 had samples that were mistakenly listed as being collected on 12-15-06 and 12-16-06; however, this error was identified and corrected by the laboratory and is reflected on the appropriate summary pages.

TCL Volatiles by ASP

- Some of the tentatively identified compounds (TICs) detected in Subslab01 may be due to painting in the office adjacent to the laboratory at the time this sample was analyzed. Therefore, all TICs in this sample have been qualified as estimated;

- The rinse blank RB01-RB was not analyzed for volatile organic compounds as is indicated on the 2-21-06 COC, based on the fact that none of the associated samples submitted with this blank was analyzed for VOCs. This change was submitted to Mitkem via email and is included in SDG EO175;

- Results for methylene chloride in Subslab01 were edited to nondetect at the CRDL based on the presence of this compound in the method blank associated with this sample;

- Based on the high concentrations of target analytes, the following samples were re-analyzed at dilution: TP02-D8 (10x); Sump01-SED (2x) and Sump03-SED (3x);

- TP02-D8 exhibited elevated recoveries for one or more surrogate standards and, as a result, detected compounds in this sample were qualified as estimated ("J");

- All calibration standards showed responses within validation guidelines with the following exceptions, results for which are qualified as estimated in the associated samples:
  - **Acetone** in Micro01-GW; Micro02-GW; Micro03-GW; Sump01-SW; TP15-D4; TP02-D8 (the diluted analysis) and Subslab01;
  - **Bromomethane** in Sump01-SED; Sump02-SED and Sump03-SED;
  - **1,2,4-Trichlorobezene** in ES01-SW; ES02-SW; ESXX-SW; Sump01-SED; Sump02-SED and Sump03-SED;
  - **Methylene Chloride** in Subslab01; TP15-D4 and TP02-D8 (dilution);
  - **Dichlorodifluoromethane** in Subslab01; ES01-SW; ES02-SW and ESXX-SW;
  - **4-methyl-2-pentanone** in Subslab01;
  - **Bromoform** in ES01-SW; ES02-SW and ESXX-SW;
  - **1,2-dibromo-3-chloropropane** in ES01-SW; ES02-SW; ESXX-SW; Micro01-GW; Micro02-GW; Micro03-GW; Sump01-SW;
  - **2-hexanone** in Subslab01; TP15-D4 and TP02-D8 (dilution); and
  - **2-butanone** in Subslab01; TP15-D4 and TP02-D8 (dilution).

TCL SVOCs by ASP

- Micro02 was incorrectly identified as Micro03 within the SVOC portion of SDG EO223; however, this error has no impact on the associated data;

- Based on the high concentration of target analytes in the following samples, each was re-analyzed at dilution: SS04 (4x); Sump02-SED (4x) and Sump03-SED (2x);

- Results for ES02-SW and ESXX-SW are qualified as estimated due to a two-day holding time excedance;

- The base/neutral results for SS05; SS05 (reanalysis); TP15-D4 (reanalysis) and SP04-S112 (reanalysis) were qualified as estimated due to elevated surrogate recoveries;

- The detection of bis(2-ethylhexyl)phthalate and TICs that are flagged with a “B” in the reviewed samples are considered external contamination (as evidenced by the presence in associated method blanks). The results for bis(2-ethylhexyl)phthalate were edited to nondetect at the CRDL or qualified as estimated and the TIC results are rejected;

- The calibration standards showed responses within the validation guidelines with the following exceptions, results for which are qualified as estimated in the associated samples:
  - **Benzaldehyde** in each of the samples reported in SDG No. EO175; in each of the water samples reported in SDG No. EO223; and in BG03; BG04; BG05; Sump02-SED and Sump03-SED;

  - **2,4-dimethylphenol** in each of the samples reported in SDG No. EO175;
  - **Caprolactum** and **4,6-dinitro-2-methylphenol** in SP04-D112; TP09-D3; TP13-D3; TP02-D8; TP04-D235; TP04-D6; TP09-D32; TP15-D4; SS01; SS04; SS05; SP04-D112 (reanalysis); TP15-D4 (reanalysis); SS05 (reanalysis) and SS04 (dilution);
  - **Hexachlorocyclopentadiene** in each of the soil samples reported in SDG No. EO175; in each of the samples reported in SDG No. EO308; in Sump01-SED; Sump02-SED (dilution) and Sump03-SED (dilution);
  - **2,4-dinitrophenol** in SP04-D112; TP09-D3; TP13-D3; TP02-D8; TP04-D235; TP04-D6; TP09-D32; TP15-D4; SS01; SS04; SS05; SP04-D112 (reanalysis); TP15-D4 (reanalysis); SS05 (reanalysis); SS04 (dilution); RB01-RB; in Micro01; Micro02; Sump01-SW; RB02-RB; and in each of the samples reported in SDG No. 229;
  - **3-nitroaniline** and **Chrysene** in BG01; BG02; SS02; SS03; SS06; SS07 and SS08;
  - **4-nitroaniline** in BG01; BG02; SS02; SS03; SS06; SS07; SS08; RB01-RB; in each of the water samples reported in SDG No. EO223; and in BG03; BG04; BG05; Sump02-SED and Sump03-SED;
  - **4-chloroaniline** in Subslab02; Subslab03; ES01-SW; ES02-SW; ESXX-SW; and in Sump01-SED; Sump02-SED (dilution) and Sump03-SED (dilution).
  - **4-nitrophenol** in Subslab01; Subslab02; and Subslab03;
  - **3,3'-dichlorobenzidine** in each of the samples reported in SDG No. EO308.
  - **Hexachloroethane** in Subslab01;
  - **2,2'-oxybis(1-chloropropane)** in Micro01; Micro02; Sump01-SW; RB02-RB; and in each of the samples reported in SDG No. 229;
  - **N-nitroso-di-n-propylamine** in each of the water samples reported in SDG No. EO223; and in BG03; BG04; BG05; Sump02-SED and Sump03-SED;
  - **Hexachlorobenzene** in each of the water samples reported in SDG No. EO223; and in each of the samples reported in SDG No. 229;
  - **Benzo(g,h,i)perylene** in each of the water samples reported in SDG No. EO223; and in BG03; BG04; BG05; Sump02-SED and Sump03-SED;and
  - **Phentachlorophenol** in ES01-SW; ES02-SW and ESXX-SW.

- The internal standards perylene-d12 and chrysene-d12 produced recoveries outside QC limits for Subslab03 (reanalysis); Sump02-SED; Sumo03-SED; TP15-D4; TP15-D4 (reanalysis); SP04-D112; and SP04-D112 (reanalysis). Results for the 13 associated analytes were qualified as estimated ("J" & "UJ") in these samples. Also the internal standard chrysene-d12 produced recoveries outside QC limits for Subslab03; therefore results for the six associated analytes were qualified as estimated. Lastly the internal standard perylene-d12 produced recoveries outside QC limits for SS04; SS04 (dilution); SS05; SS05 (reanalysis) and Sump02-SED and Sump02-SED (dilution); therefore, the results in the seven associated analytes are qualified as estimated in these samples.

TCL Pesticides/PCBs by ASP

- Based on the high concentration of target analytes in SS05 and BG03, these samples were re-analyzed at 10x and 100x dilution, respectively;

- The surrogate recoveries of decachlorobiphenyl were outside the QC limits for SS04 and Sump02-SED; therefore, all positive pesticide results were qualified as estimated. Additionally, the surrogate recovery of tetrachloro-m-xylene in BG02 was outside QC limits; therefore, all positive pesticide results were qualified as estimated;

- Multiple samples in SDG Nos. EO175 and EO223 demonstrated poor dual column quantitative correlation (possibly from matrix interference) for one or more pesticides; therefore, the results for these pesticides were qualified as estimated. Additionally, as a result of very poor dual column quantitative correlation (RPD = 999%), the results for heptachlor epoxide in Micro01 have been rejected.

TCL Herbicides by ASP

- The %RSD of MCPP and MCCA was outside the QC limits in both GC columns during the initial calibration in the samples analyzed in SDG Nos. EO308, EO229 and EO175. Additionally, the %RSD for the MCPP was outside the QC limits in both GC columns during the initial calibration in the samples analyzed in SDG No. EO223. Based on these performances the herbicide results in these SDGs have been qualified as estimated.

- The results of the continuing calibration showed responses within the validation guidelines with the following exception, results for which are qualified as estimated:

    - **MCPP** in SDG Nos. EO308 and EO229 and in TP15-D4, SP04D112, SS01, SS02, SS03, SS04, SS05, SS06, SS07, SS08, BG01 and BG02;
    - **MCPA** in SDG No. EO229 and in TP15-D4, SP04D112, SS01, SS02, SS03, SS04, SS05;
    - **Dinoseb** in TP15-D4, SP04D112, SS01, SS02, SS03, SS04, SS05, SS06, SS07, SS08, BG01, BG02 and RB01-RB;
    - **Dichlorprop** in TP15-D4, SP04D112, SS01, SS02, SS03, SS04, SS05, SS06, SS07, SS08, BG01 and BG02; and
    - **2,4,5-T** in TP15-D4, SP04D112, SS01, SS02, SS03, SS04, SS05, SS06, SS07, SS08, BG01, BG02 and RB01-RB.

- Because the %D for dalapon between the two GC columns was greater than 100% for TP09-D32; SS02, SS03, BG01 and BG02 the results for this analyte in these samples have been <u>rejected</u>. Additionally, the results for dalapon in TP04-D235 and SS07 have been qualified as estimated based on the %D between the two CG columns.

TAL Metals by ASP

- The predigestion spike analyzed with SDG No. EO308 produced recoveries outside the acceptable range for antimony, zinc and lead. The results for antimony, and zinc have been qualified as estimated and the results for lead have been left unqualified since the sample concentration was greater than four times the spike added;

- The ICP serial dilutions for following metals were outside the QC ranges for the listed samples and therefore qualified as estimated:

    - **Barium, beryllium, calcium, chromium, cobalt, iron, lead, magnesium, manganese, nickel vanadium** and **zinc** in each of the samples reported in SDG No. EO308;
    - **Potassium** and **zinc** in SS02;
    - **Zinc** in TP13-D4; and
    - **Copper** and **zinc** in SDG No. EO223.

- The sample results for calcium in Subslab01 and Sump02-SED were outside the ICP linear range; therefore, the results for calcium in these samples have been qualified as estimated;

- The rinse blank RB01-RB was selected for matrix spiking for the aqueous sample in SDG No. E0175. Thallium and selenium were both recovered outside the QC limits and therefore, the results for these metals in this sample have been qualified as estimated;

- The soil samples SS02 and TP13-D4 in SDG EO175 were selected for matrix spiking. The results for antimony and cadmium were outside the QC limits and therefore, the results for these metals in SDG No. EO175 have been qualified as estimated. The spike recoveries for selenium were reported at 0% in the predigestion spikes of SS02 and TP13-D4 and in the postdigestion spike of SS02; therefore, the results for selenium in SDG No. EO175 have been rejected. Additionally, the soil sample BG05 in SDG EO229 was selected for matrix spiking. The results for antimony were outside the QC limits and therefore, the results for antimony in SDG No. EO229 have been qualified as estimated. The spike recoveries for selenium were reported at 0% in the predigestion and postdigestion spikes therefore, the results for selenium in SDG No. EO229 have been rejected;

- A laboratory split duplicate was performed for SS02. A comparison of the sample values to the duplicate values produce a %RPD outside the acceptable QC range for lead and iron; therefore, the results for these metals in this sample have been qualified as estimated;

- The CRDL results reported by the laboratory produced unacceptable recoveries of antimony, manganese, selenium and zinc in the samples reported in SDG No, EO229.

As a result of these recoveries, the results for antimony, manganese, and zinc have been qualified as estimated and the selenium results have been rejected in this SDG. Additionally, the CRDL recoveries for selenium and zinc in SDG No. EO223 were unacceptable and as a result the zinc results were qualified as estimated and the selenium results have been rejected in this SDG; and

- As a result of the moisture content (>50%) in the sediment samples collected from Sump01-SED and Sump03-SED, the metals results for these samples have been qualified as estimated.

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