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Phase II Environmental Site Assessment Report

247-335 Harrison Street, Jamestown, New York

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1.0 INTRODUCTION

TVGA Engineering, Surveying, P.C. (TVGA) was retained by the City of Jamestown, Department of Public Works to perform a Phase II Environmental Site Assessment (ESA) of 247-335 Harrison Street, in Jamestown, New York (see Figure 1). The Harrison Street brownfield site ESA was completed in support of the potential redevelopment of the property. This Phase II ESA was undertaken to investigate potential sources of environmental concern identified during previous Phase I ESAs of the subject property. More specifically, this Phase II ESA was conducted to investigate the potential presence of:

- Contaminated soil and/or groundwater on the subject property;
- Site-derived contamination in sediment in the nearby Chadakoin River.

The scope of this Phase II ESA included the preparation of a site specific Health and Safety Plan (HASP) complying with the requirements of 29 CFR 1910.210; sediment sampling and laboratory analysis of soil from the western bank of the Chadakoin River at up-gradient and down-gradient locations, and; drilling of a series of ten (10) test borings across the site to collect subsurface soil samples for chemical analysis. Additionally, five (5) test borings were completed as groundwater monitoring wells to collect groundwater samples for analytical testing. Nature's Way Environmental Contractors of Alden, New York completed test borings and monitoring well installation, while laboratory services were provided by Paradigm Environmental Services, Inc. of Rochester, New York.

TVGA has prepared this report to detail the methodology used to collect and analyze sediment, soil, and groundwater samples; describe subsurface conditions encountered; evaluate resultant data with respect to the occurrence of contamination and, if present, potential sources and migration pathways; compare contaminant concentrations with applicable regulatory levels; and provide conclusions concerning the extent of contamination based on the data collected.

2.0 SITE DESCRIPTION

2.1 General

The subject property is located along the north side of Harrison Street, in the City of Jamestown, Chautauqua County, New York. The project site consists of three (3) adjacent parcels totaling approximately 3.6 ± acres that are bounded to the south by Harrison Street, to the north by an active railroad line, to the east by a property that contains a warehouse and parking area with semi-trailers, followed by the Chadakoin River, and to the west by an active manufacturing facility occupied by Phoenix Metal, Inc. A site plan of the subject property is presented in Figure 2. The project site is currently vacant, but was once occupied

by a manufacturing complex that underwent phased demolition from 1988-1999. The property formerly contained mostly numerous interconnected buildings, some with loading docks, a brick-paved courtyard area, and open space. The subject property was originally developed as a textile mill between 1867 and 1881 and has been used for a variety of manufacturing operations including: a textile mill; a metal plating company; a chemical company; a dry cleaning facility; metal machining facilities; and, most recently an office furniture manufacturer, the Watson Manufacturing Company.

2.2 Neighboring Properties

A mixture of commercial, industrial and residential uses characterizes land use in the site vicinity. The subject property is bounded to the north by Conrail railroad tracks and the associated right-of-way and a residential area beyond; to the south is Harrison Street, followed by several residential dwellings and commercial properties that include a tavern and a fenced staging area for electrical service wires owned by Alcoa, Inc.; to the west by Phoenix Metal, Inc, which manufactures metal products; and to the east by a property owned by John Evan that contains a warehouse and parking area with semi-trailers for storing second-hand goods.

2.3 Site Topography

A steep slope descends approximately 15-feet from the railroad embankment that extends along the northwestern perimeter of the subject property. From the base of the embankment, the site generally slopes gently to the southeast, towards Harrison Street, at grades ranging from 0-5%. The site has an average elevation of approximately 1,310-feet above mean sea level (AMSL) based upon USGS topographic mapping of the area. A number of level building slabs are present on the northeastern third of the project site, and are remnants of the former Watson Manufacturing facility, while a partial foundation wall from the former International Multi-Services building occurs near the southwestern property boundary.

2.4 Site Geology and Hydrology

Based upon a review of the *Soil Survey of Chautauqua County, New York*, the predominant soil unit occurring on the subject property is designated urban land. This soil unit consists of nearly level to sloping areas in which 85 percent or more of the surface is covered with asphalt, concrete or other impervious materials. It includes parking lots, shopping and business centers, and industrial parks in the cities of Dunkirk and Jamestown. Individual areas generally range from 20 to more than 200 acres in size.

Based upon a review of the *Surficial Geologic Map of New York – Niagara Sheet* (1988), the overburden on-site consists of kame deposits, which include kames, eskers, kame terraces, and kame deltas, and is composed of coarse to fine gravel and/or sand. These deposits are characterized as having lateral variability in sorting, coarseness and thickness, were

deposited adjacent to ice, and have a variable thickness from 10 to 30 meters. The overburden is underlain by bedrock consisting of Ellicott and Dexterville formations of shale and silt-stone belonging to the Conneaut Group according to the *Geologic Map of New York – Niagara Sheet* (1970).

Storm water runoff occurring on the subject property drains via overland flow to on-site catch basins in the courtyard, to the municipal storm sewer along Harrison Street and to the Chadakoin River to the east. A review of the Flood Insurance Rate Map developed for the project vicinity by the Federal Emergency Management Agency, indicated that the subject property is not located within a 100-year flood plain. A floodplain Zone "B" occurs near the eastern property line adjacent to the Chadakoin River. Zone "B" is the area between the limits of the 100-year and 500-year floodplain or an area of 100-year floodplain shallow flooding where depths are less than 1 foot.

Regional groundwater flow direction on the subject property, inferred from topographic mapping of the area, is generally to the south and east toward the discharge area represented by the Chadakoin River. Southeasterly groundwater flow was confirmed during the subsurface investigation of the project site. Residences and businesses in the site vicinity are serviced by the municipal water supply and sanitary sewer system of the City of Jamestown.

3.0 PREVIOUS ENVIRONMENTAL ASSESSMENTS, INVESTIGATIONS AND REMEDIAL ACTIONS

Previously completed environmental assessments of portions of the subject property were consulted to assist in development of an appropriate scope-of-work for this Phase II ESA. The previous environmental studies reviewed include:

- The Phase I ESA completed on the former Watson Manufacturing site (SBL # 415-7-7.1) in June 1999;
- Information contained in the Phase I Environmental Assessment Report concerning the vacant middle parcel (SBL # 415-7-7.2) completed in January 1995; and
- Preliminary Environmental Site Assessment data for the former International Multi-Services site (SBL # 415-7-6) collected by Chautauqua County in 1998.

The information in the above referenced reports indicated the potential for on-site soil, groundwater and surface water sediment contamination in connection with historical property use as a manufacturing facility for over 100 years. The subject property area was occupied by a variety of commercial and manufacturing operations, including a textile mill, plating company, chemical company, dry cleaning facility, and a number of metal working companies. Common contaminants associated with these types of commercial and manufacturing operations include: solvents, degreasers, dry cleaning fluids, volatiles, petroleum products, thinners, metals, cyanide, acids, and bases. Regulatory records indicated that the site was listed as a large quantity hazardous waste

generator in the early 1990's, and inspections by the NYSDEC revealed that the Watson Manufacturing Co. Facility was badly out of compliance with hazardous waste regulations. Particular areas of concern identified as a result of these studies include:

- The potential for past releases of petroleum products, solvents, dry cleaning solutions and other process chemicals and wastes to the ground surface in association with past manufacturing practices and/or poor housekeeping practices;
- The potential for past discharges of process chemicals and wastes to the Chadakoin River via discharges from drain lines leading from the facility to the river, which are depicted on historical site plans;
- The potential for past discharge of process waste water and possibly other chemicals to the subsurface via a suspected dry-well located on-site;
- The potential presence of a 2,000-gallon underground storage tank (UST) used for the storage of petroleum or dry cleaning chemicals on the subject property, the condition of which is not known; and
- Potential impacts to groundwater related to historical leakage of petroleum from a below ground hydraulic lift.

In addition to the previous environmental assessments referenced above, information provided by the City of Jamestown relative to the removal of the on-site below ground hydraulic lift and remediation of petroleum- impacted soil in the vicinity of the lift cavity was also reviewed. The lift was removed in conjunction with the demolition of the former Watson Manufacturing facility, which occurred during the winter of 1999-2000. During the removal of the lift, soil displaying visual evidence of contamination was encountered and was excavated and removed from the site for proper disposal at the Chautauqua County landfill. Following the removal of the visually impacted soil, confirmatory soil samples were collected and submitted to a NYSDOH certified laboratory for chemical analysis. The samples were analyzed for the volatile and semi-volatile organic compounds listed in Table 2 of the NYSDEC *Spill Technology and Remediation Series* (STARS), *Memo No. 1* using EPA Methods 8021 and 8270, respectively. Numerous semi-volatile organic compounds commonly associated with industrial applications involving petroleum-based products were detected in the confirmatory samples (Appendix A). Furthermore, the results indicated that the levels of residual soil contamination remaining in the vicinity of the over-excavated lift cavity exceed the NYSDEC guidance values for petroleum-contaminated soil.

4.0 FIELD INVESTIGATION

4.1 Drilling and Well Installation

Ten (10) test borings, five (5) of which were completed as groundwater monitoring wells, were drilled across the site using a truck-mounted Deitrich D-50 drill rig. The locations of these borings and monitoring wells are depicted on Figure 3. All drilling activities were performed under Level D health and safety specifications, and were supervised and documented by an experienced scientist equipped with an HNu® Model PL-101 photoionization detector (PID), equipped with a 10.2 eV bulb for the monitoring of organic vapors in the breathing zone.

The test borings were advanced through unconsolidated geologic material using hollow stem augers (HSAs) with continuous split-spoon sampling. The boring and well locations were slightly modified based upon field conditions. Test borings that were to be completed with monitoring wells were advanced using 4-1/4-inch I.D. HSAs, while the remaining test borings, with the exception of TB-3 and TB-4, were drilled using 2-1/4-inch I.D. HSAs. TB-3 and TB-4 were advanced using 4-1/4-inch I.D. HSAs in anticipation of well installation, however the non-water bearing nature of the soil material precluded the installation of monitoring wells at these locations. The locations of the test borings and monitoring wells were selected to investigate the numerous areas of potential concern identified on the project site (e.g., process chemical pits, suspected dry-well, etc.), and to provide both up-gradient and down-gradient groundwater monitoring points. The locations of the test borings and monitoring wells are depicted on Figure 3, which also shows the footprint of the former manufacturing complex. Test borings were advanced from a minimum of depth of 10' below ground surface (bgs) to a maximum depth of 24' bgs.

Upon retrieval, each soil sample was field screened with the PID for Total Organic Vapors (TOVs), classified, and a representative sample placed in a driller's jar for headspace analysis. Soil samples from each split spoon with sufficient recovery were screened with a PID upon retrieval by separating the soil column with a stainless steel spoon and placing the probe tip near the void. In addition to direct screening of the soil samples upon retrieval, headspace analysis was also completed on the driller's jars of soil using the PID. The peak TOV concentration for direct screening and headspace screening, in parts per million (ppm) for each sample was recorded on the boring logs. Visual and olfactory evidence of contamination was encountered during drilling and sampling activities at TB-2, TB-5 and MW-3. Boring logs presenting information concerning drilling parameters, lithologic descriptions, and field screening results are provided in Appendix B.

Hollow stem augers were steam cleaned prior to use at each test boring location, and split-spoon samplers were decontaminated with a detergent wash and potable water rinse prior to the collection of each sample. Wash fluids were allowed to infiltrate the ground surface of the site in the vicinity where soil boring and decontamination occurred. With the exception

of the five (5) test borings that were completed with monitoring wells, auger cuttings were returned to the boreholes from which they were removed. Cuttings not returned to the boreholes were spread on the ground in the vicinity of the monitoring wells. Auger cuttings generated during drilling activities were not suspected of being contaminated or hazardous, and therefore were not staged on plastic.

The five (5) monitoring wells were constructed of 2-inch I.D., Schedule 40 PVC screen (10-slot) and riser, fitted with an end cap. The annular space between the well screen and borehole of each well was backfilled with filter sand to a height of approximately 1 foot above the top of the well screen, followed by a bentonite seal, typically measuring approximately 2 feet. The remaining annular space was backfilled with a cement/bentonite grout mixture. The wells were installed to approximate depths ranging from 14 to 23 bgs. Three monitoring wells were completed with aboveground protective casings and the remaining two were flush-mounted protective casings. Illustrated well completion diagrams are presented on monitoring well installation report forms included as Appendix C.

4.2 Sample Collection and Analysis

4.2.1 Sediment

Upon conducting a reconnaissance along the western bank of the Chadakoin River, to the north of Harrison Street Site, the discharge points for the drain pipes from the eastern-most portion of the former Watson Manufacturing Facility, were not positively identified. Therefore, samples were collected from points corresponding approximately to the northern and southern boundaries of the project site, as they extend toward the riverbank. These locations were selected to provided up-gradient and down-gradient sample points. The River flows eastward toward Cassadaga Creek. A total of two (2) sediment samples were collected from the western riverbank material accumulated at areas above the water level of the stream. The sediment samples were collected as grab samples and homogenized in a precleaned stainless steel mixing bowl, using a pre-cleaned stainless steel trowel. The sample was placed in two laboratory pre-cleaned containers, labeled, sealed, placed in a cooler, on ice, and transported under proper chain of custody records to the laboratory for analysis. The sediment samples were analyzed for total metals appearing on the EPA Target Analyte List (TAL) using Method 6010/7471; and the volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) appearing on the EPA Target Compound List (TCL) using EPA Methods 8260 and 8270, respectively.

4.2.2 Subsurface Soil

A total of five (5) subsurface soil samples, from the ten (10) test borings, were selected for laboratory analysis. The test boring and monitoring well locations from which the samples were chosen were TB-1, TB-2, TB-5, MW-3, and MW-5. Samples were selected from these boring/well locations based upon field observations, and to ensure general coverage of the

site. Samples were selected for analysis if they exhibited detectable TOVs above background levels, or, the interval contained visual staining, discoloration, or fill material. In the absence of detectable TOVs, visual contamination, or fill material, then the interval interpreted to be immediately above the water table, was selected for analysis.

The samples were transferred from the driller's jars to laboratory pre-cleaned containers, labeled, placed in a cooler on-ice and transported under proper chain of custody records to the laboratory. All of the soil samples were analyzed for the VOCs and SVOCs appearing on the EPA TCL using EPA Methods 8260 and 8270, respectively. Additionally, the samples were analyzed for total concentrations of the metals appearing on the EPA TAL using EPA Methods 6010 and 7471.

4.2.3 Groundwater

Prior to the collection of groundwater samples from the five (5) on-site monitoring wells, the static water level within each well was measured. Initial water level measurements were determined in order to calculate the volume of standing water within the well casing to ensure appropriate purge volumes to collect representative fresh formation water. Each well was developed and sampled using a dedicated disposable polyethylene bailer. The well development logs and the well sampling logs containing the purge data and sampling information are presented in Appendix D. Well development continued until a minimum of three (3) well volumes and a maximum of five (5) well volumes had been removed, or until dryness. After well development, the water level within each of the wells was allowed to return to a static condition, and the wells were sampled within 24 hours of initiating development, using dedicated polyethylene bailers. The groundwater generated from the development and purging of the wells was discharged to the ground surface in the vicinity of each well.

Collected samples were placed in labeled, laboratory pre-cleaned containers, in a cooler on ice, and transported under proper chain of custody records to Paradigm for laboratory analysis. The groundwater samples were analyzed for the VOCs and SVOCs appearing on the EPA TCL using EPA Methods 8260 and 8270, respectively, and for total concentrations of the metals included on the EPA TAL.

Quality Assurance/Quality Control (QA/QC) measures taken to ensure the reliability of the data generated included the following:

- A trip blank accompanied the sample vessels from the laboratory to the site for the duration of the sampling event and was analyzed for TCL VOCs to document any possible cross contamination during sample shipment.

4.3 Subsurface Conditions

The subsurface conditions at the project site were evaluated during the drilling and continuous split spoon sampling of the ten test borings completed during the course of this Phase II ESA. Native soil consisting of silt with varying amounts of sand, gravel, and some clay, was typically encountered below fill material. Soil borings located near the northeast end of the project site, nearest the Chadakoin River, consisted mostly of fill material underlain by sand and rounded gravel. Grey silt with trace fine sand and clay was identified along the southeast side of the project site near Harrison Street at two boring locations. The grey silt was tightly compacted and non-water bearing in the interval sampled. Soil borings located near the southwest end northwest side of the project site, near the Phoenix Metal building and Railroad tracks, respectively, consisted mostly of fine silty sand underlain by fine gravel.

Soil borings and monitoring wells MW-3, MW-4 and MW-5, located near the northeast end of the project site, were advanced to 19', 20' and 16' bgs, respectively. These boring locations revealed fill material ranging in thickness from 13-15' bgs, and consisting of sands and gravel with brick, foundry sand, and wood debris, some of which was colored bright red. Underlying the fill material at these locations was typically silty sand, with trace clay, with a thickness ranging from 0.5- 2'. Beneath the silty sand and clay, at MW–4 and MW-5, was medium and fine rounded gravel, that was identified at 16' and 13' bgs, respectively. The rounded gravel was not encountered at MW-3. The overburden stratigraphy encountered at TB-4 was similar to that identified at MW-3 through MW-5. Fill material underlain by silty sand and then gravel was encountered at TB-4, which was advanced to a depth of 12' bgs. Fill material consisting of brick and sand extended from the ground surface to 2' bgs, and was underlain by silty sand from 2-6' bgs and fine gravel from 6-12' bgs.

Two boring locations, TB-3 and TB-5, were located near Harrison Street toward the southeast side of the project site. At each of these boring locations, fine silty sand extended to 8 ' bgs, followed by silt with trace fine sand, and trace clay present to 24' bgs. The silt was sufficiently moist to be compacted, but was not saturated. Therefore, monitoring wells were not placed at either of these two boring locations. No interval of gravel was identified in these boring locations, as was in the other soil borings elsewhere on the project site. Evidence of potential contamination was encountered during the drilling of TB-5. A moderately strong petroleum odor was noted in the soil samples obtained from 2-6' bgs. TOV concentrations, as measured with the PID, were as high as 120 ppm while direct screening the soil in the split spoon from the 2-4' bgs interval. A soil sample from this interval was submitted for laboratory analysis.

The southwest area of the site is elevated in comparison to the northeast end of the site, near the river. The elevation difference may explain why less fill material was identified in the southwest area of the site compared to the northeast end. The depth of the fill interval below the ground surface on the southwest end of the project site ranged from 0-4' bgs compared

to a maximum depth of 15' bgs at the northeast end. The composition of the fill material was similar to that encountered on the northeastern side of the site, containing sands, foundry sand, and brick, except no wood debris was identified. Soil borings MW-1 and TB-1, located nearest the southwest end of the project site, were both advanced into fine gravel, through a silty sand and fill material interval. TB-2, located northeast of MW-1 and TB-1, consisted of silty sand underlain by fine gravel identified at 4' bgs. The depth of the fine rounded gravel interval was identified at approximately the same interval as TB-1, indicating a similar substratum. MW-2, located northeast of TB-2, consisted of fill material from 0-2' bgs, followed by fine silty sand to a depth of 16' bgs. This fine silty sand may be underlain by gravel; however, this was not confirmed by further advancement of the soil boring.

Upon an examination of geological research papers, the area topography, the river location in reference to the subject site, and the site stratigraphy defined via the soil borings, a better understanding of the surficial geology of the site is realized. The unconsolidated nature of the silt, clay, and gravel identified in the borings reveals the glacio-fluvial, lacustrine, and alluvial nature of deposits in the valley that occurred post-glacially. The different interconnected deposits is a of sign numerous post-glacial related events, some which occurred concurrently. The initial deposition occurred approximately 12,000 years ago, when the glacial ice, which covered the Jamestown area, melted and began to retreat, exposing valley areas. Large quantities of melt water, carrying rock and soil debris, were deposited as valley train terraces, kames and eskers. Stratified sand and gravel appeared in the valleys as the result of melting, known as outwash or glacio-fluvial deposits. Later, glacial lake lain soil particles formed silts and clays, while the simultaneous "interfingering" of deltaic deposits of coarser sand and gravel occurred from the valley walls. The most recent, non-glacial related deposits, occurred as flood prone streams and rivers deposited silty alluvial sediment in the floodplains.

Static water level measurements were recorded in the on-site monitoring wells on two occasions, once prior to well development and once prior to well sampling, on May 16th and 17th, respectively. During these measuring events, groundwater levels remained fairly consistent, indicating recharge to static conditions. The groundwater levels in the monitoring wells ranged from 3.3' (MW-2) to 16.0' (MW-1) below the top of the well casings (see Table 1). The large difference in depth to water is largely the result of site topography. The elevation of the top of the well casing at each monitoring well location was surveyed relative to a reference elevation of 100 feet. Using the water level measurements and the top of casing elevations shown in Table 1, relative groundwater elevations were calculated for the purpose of determining groundwater flow direction and gradient. Based upon these data, groundwater flow direction in the upper-most water bearing zone is generally to the east toward the area where the Chadakoin River is closest to the subject site.

5.0 ANALYTICAL RESULTS

5.1 Sediment

Two (2) sediment samples collected from the western bank of the Chadakoin River were submitted for chemical analysis. These samples were grab samples collected from the riverbank at an upstream (US-1) and downstream (DS-1) location relative to the subject property. The chain of custody records for these and other samples collected during the course of the ESA are presented as Appendix E, while the complete laboratory report containing the analytical results and QA/QC data from the sediment samples are presented in Appendix F. Additionally, Table 2 provides a summary of the organic compounds and their associated concentrations detected in the sediments samples, while Table 3 summarizes the results of the metals analyses performed on these samples.

No detectable levels of VOCs were identified in either of the river sediment samples US-1 and DS-1. As reflected in Table 2, however, both sediment samples contained detectable concentrations of ten (10) or more SVOCs. The greatest concentration of any individual SVOC detected in US-1 was 2,390 ppb of Fluoranthene, while the cumulative concentration of SVOCs in this sample equaled 13,080 ppb. The greatest concentration of any individual SVOC detected in DS-1 was 4,190 ppb of Fluoranthene, while the cumulative concentration of SVOCs in this sample equaled 22,255 ppb. With the exception of Benzo(g,h,I)perylene, which was not detected in the down-stream sample, the concentration of all of the detected compounds was slightly higher in the down-stream sample (DS-1) than the up-stream sample (US-1).

Table 2 also presents a comparison of the sediment data with the recommended soil cleanup objectives established by the New York State Department of Environmental Conservation (NYSDEC) in *Technical and Administrative Guidance Memorandum (TAGM), Determination of Soil Cleanup Objectives and Cleanup Levels* (HWR-92-4046). This comparison revealed the following:

- Of the eleven (11) SVOCs detected in sample US-1, four (4) were at concentrations that exceed the NYSDEC guidance levels for the individual compounds detected.
- Of the ten (10) SVOCs detected in sample DS-1, five (5) were at concentrations that exceed the NYSDEC guidance levels for the individual compounds detected.
- The total concentration of SVOCs detected in each of the sediment samples is well below the NYSDEC guidance level of 500,000 ppb total SVOCs, and no individual compounds exceeded the related NYSDEC threshold of 50,000 ppb.

A review of the results from the analysis of the sediment samples for the inorganic parameters appearing on the EPA TAL indicated that the inorganic chemistry of the up-stream and down-stream samples are generally similar. Of the 20 parameters detected in one (1) or both of the samples, ten (10) were detected at higher concentrations in the up-

stream sample, and an equal number were detected at higher concentrations in the down-stream sample.

The up-stream sediment sample is interpreted to be representative of background sediment quality in the highly industrialized project vicinity. A comparison of the down-gradient sediment data with the NYSDEC recommended cleanup objectives established in TAGM HWR-92-4046, which are largely determined based upon background levels if they are greater than applicable human health based criteria, is presented in Table 3. This comparison indicated the following:

- The concentrations of the majority of the metals detected in DS-1 were below the NYSDEC recommended cleanup levels; and
- Seven (7) of the 20 inorganic parameters detected in DS-1 slightly exceeded the NYSDEC recommended cleanup levels. These parameters included aluminum, arsenic, beryllium, cadmium, magnesium, manganese, and mercury.

5.2 Subsurface Soil

A total of five (5) subsurface soil samples were submitted for chemical analysis. One (1) sample originated from each of the following borings: TB-1, TB-2, TB-5, MW-3, and MW-5. The complete laboratory report containing the analytical results, QA/QC data, and chain of custody records from the subsurface soil samples is presented in Appendix G. Additionally, Table 4 provides a summary of detected VOCs and SVOCs and their corresponding concentrations, while Table 5 presents the concentrations of all of the inorganic parameters for which the samples were analyzed.

The soil samples were labeled by indicating the boring location followed by a suffix denoting the subsurface interval sampled. The suffix definitions are as follows:

- S1 = from the 0-2' below ground surface (bgs) interval;
- S2 = from the 2'-4' bgs interval;
- S3 = from the 4'-6' bgs interval, and;
- S4 = from the 6'-8' bgs interval.

Fore each of the samples submitted for chemical analysis, the borehole location, followed by the subsurface interval sampled, and the rationale for sample selection is as follows:

- TB-1-S4 was selected to help ensure general coverage of the site by including a soil sample from the southwest end of the project site within the former facility footprint. The S4 interval was selected because it was the interval interpreted to be immediately above the water table.

- TB-2-S3, located near the former "filter house", was selected for general coverage of the site, and because visual evidence of potential contamination was identified in the S3 interval, which was interpreted to be immediately above the water table.
- TB-5-S2, located in the former Watson Manufacturing facility courtyard area, was selected because PID levels of 120 ppm were detected during the direct screening of the split spoon sample, and for coverage of the southeastern portion of the site in the vicinity of the suspected former dry well.
- MW-3-S3, located in the area of the former processing pits associated with the former on-site dye house, was selected for general coverage of the site by including a soil sample from the northeast end of the project site, and because black stained sand was identified on a concrete slab in the soil boring. No PID readings were detected from the split spoon sample.
- MW-5-S3, located within the facility footprint near the former loading dock, was selected for general coverage of the site, and because the material in the spilt spoon sample consisted of fill material, which appeared to be typical of what was found in the other soil boring locations.

With the exception of the sample collected from TB-5, no VOCs or SVOCs were detected in any of the samples submitted for chemical analysis. As reflected by Table 5, sample TB-5-S2 contained detectable concentrations of three (3) VOCs and 15 SVOCs. The greatest concentration of any individual VOC detected in TB-5-S2 was 263 ppb of o-xylene, while the cumulative concentration of VOCs in this sample equated 522 ppb. The greatest concentration of any individual SVOC detected in TB-5 was 7,440 ppb of Phenanthrene, while the cumulative concentration of SVOCs equaled 30,016 ppb.

Table 4 also presents a comparison of the organic compounds detected in TB-5 with the recommended soil cleanup objectives established in the NYSDEC TAGM HWR-92-4046. This comparison revealed the following:

- The concentrations of the three (3) VOCs detected in TB-5 (ethylbenzene, m/p-xylene, and o-xylene) are well below the applicable regulatory guidance values;
- The total concentration of VOCs detected in sample TB-5-S2 (522 ppb) is well below the NYSDEC guidance level of 10,000 ppb total VOCs.
- Twelve (12) of the 15 SVOCs detected in sample TB-5-S2 were present at concentrations well below the recommended cleanup levels;
- Three (3) SVOCs (benzo(a)anthracene, chrysene, and benzo(a) pyrene) were detected in TB-5 at concentrations that exceed the applicable guidance levels; and
- The total concentration of SVOCs detected in sample TB-5-S2 (30,016 ppb) is well below the NYSDEC guidance level of 500,000 ppb total SVOCs, and no individual compounds exceeded the related NYSDEC threshold of 50,000 ppb.

Results from the analysis of the subsurface soil samples for inorganic parameters appearing on the EPA TAL are presented in Table 5. As illustrated by the table, the inorganic chemistry of the samples was generally comparable. Exceptions to this included the concentrations of calcium, chromium and lead in MW-3, which were notably higher than the levels of these parameters in the other four (4) samples. Furthermore, a review of the highest concentrations of each parameter detected on a site-wide basis indicated that the samples from TB-5 and MW-3 had the highest incidence of site-wide maximum parameter concentrations.

Table 5 also presents a comparison of the inorganic results with typical background levels found in the eastern United States, as well as with the NYSDEC recommended cleanup objectives. According to TAGM HWR-92-4046, in the absence of soil background data from near the site, eastern U.S. background values may be utilized to determine soil cleanup objectives. Since no background soil samples were collected as part of this ESA, the regional U.S. values were utilized for this comparison, which indicates:

- The concentrations of seventeen (17) of the 20 inorganic parameters detected were below typical eastern U.S. background levels;
- Arsenic was detected in TB-5 and MW-5 at levels that slightly exceed the typical eastern U.S. background level for this parameter;
- The concentration of chromium in MW-3 exceeded the typical eastern U.S. background level for this parameter;
- Zinc levels in TB-2, TB-5 and MW-3 exceeded the typical eastern U.S. background level for this parameter.

5.3 Groundwater

One (1) groundwater sample was collected from each of the five (5) on-site monitoring wells for chemical analysis. The laboratory report containing the analytical results, and QA/QC data from the groundwater samples is presented in Appendix H. No VOCs or SVOCs were detected in any of the groundwater samples collected from the site. The results from the analysis of the groundwater samples for the metals appearing on the EPA TAL are presented in Table 6.

Considering the easterly direction of groundwater flow across the site toward the Chadakoin River, which was determined based upon water levels observed in the on-site monitoring wells, the sample from MW-1 could be expected to represent groundwater quality at the up-gradient limits of the subject property. However, the sample from MW-1 contained the greatest number of detected inorganic compounds, the majority of which were detected at markedly higher levels than the average concentration of these parameters detected in the four (4) remaining on-site wells. This may be attributable to the relatively higher turbidity of the sample collected from MW-1. Since no reliable background water quality data was

generated during the course of this project, the evaluation of these results focuses on water quality trends across the site and comparisons with applicable regulatory standards.

With the exception of the sample from MW-1, the concentrations of the inorganic parameters analyzed were relatively uniform across the site and were generally below the groundwater standards. As reflected by Table 6, the number, type and concentration of inorganic parameters detected in wells MW-2 through MW-5 was relatively consistent.

Table 6 also presents a comparison of the inorganic groundwater data with the applicable ambient water quality standards (WQS) and guidance values established in the NYSDEC Division of Water *Technical and Operational Guidance Series* (TOGS) 1.1.1 (1998). This comparison revealed the following:

- Of the nineteen (19) inorganic target analytes for which water quality standards have been established, only four (iron, lead, manganese and sodium) were detected in wells MW-2 through MW-5 at concentrations that exceeded the applicable WQS;
- The concentrations of iron and sodium in almost all of the wells exceeded the applicable regulatory standards;
- Eleven (11) of the 19 inorganic parameters detected in MW-1 were present at levels that exceeded the applicable WQS.

Analytical results from the trip blank indicate that no VOCs were detected in this QA/QC sample. Therefore, there were no indications that any cross contamination due to sample handling, storage or shipping procedures occurred during the course of the project.

6.0 CONTAMINATION ASSESSMENT

6.1 Sediment

Concentrations of a number of semi-volatile organic compounds (SVOCs) that exceeded the NYSDEC recommended cleanup objectives were detected in sediment samples collected both up-stream and down-stream of the subject property. The type and concentration of the SVOCs detected in the samples was very similar, although the parameter concentrations were slightly higher down-gradient of the project site.

The SVOCs encountered in the sediments are categorized as polycyclic aromatic hydrocarbons (PAHs), which are commonly associated with industrial applications involving petroleum-based products, and are found in heavy fractions of petroleum distillation, asphalt, coal tar, and creosote. They also form from the incomplete combustion of fossil fuels. The presence of PAHs in the river sediment is likely a byproduct of surface water runoff and discharges from the heavily industrialized corridor that it dissects. Although historical industrial operations on the subject property may have contributed to the sediment contamination, the levels detected down-stream of the site were not significantly higher than

the up-stream levels. Therefore, the data is not conclusive with respect to the degree of contribution, if any, from the project site.

Despite the detection of individual SVOCs at concentrations that exceeded the applicable regulatory levels, the total concentration of SVOCs detected in each of the sediment samples was well below the NYSDEC guidance level of 500,000 ppb total SVOCs, and no individual compounds exceeded the related NYSDEC threshold of 50,000 ppb. Based upon this, the apparent source and distribution of the contaminants in the river corridor, and the very low solubilities of the contaminants, it does not appear that further investigation and/or remediation of the river sediments in the vicinity of the project site is warranted.

The results of the metals analyses indicated that the inorganic chemistry of the up-gradient and down-gradient sediment samples is generally similar. Although inorganic parameters were detected at concentrations that exceed the NYSDEC recommended cleanup objectives in the river sediment sample collected down-stream of the subject property, metals contamination from the project site is not suspected. Instead, the levels identified likely reflect the historical industrial character of the river corridor. This is supported by information presented in *Ground-Water Resources of the Jamestown Area* (Crain, 1966), which documented metals contamination in the Chadakoin River originating from process and waste water discharges from various industries along the river corridor.

6.2 Subsurface Soil

Volatile and semi-volatile organic compounds were detected in only one of the five (5) subsurface soil samples submitted for chemical analysis. The sample in which these contaminants were detected originated from the test boring installed in the courtyard area of the former Watson Manufacturing facility, and consisted of fill collected from a depth of 2-4' bgs. This courtyard contained a suspected dry well, as well as a loading dock and several above ground storage tanks (ASTs) during the facility's operating period.

None of the three (3) VOCs detected, which consist of aromatic hydrocarbons commonly associated with petroleum products, were present at concentrations that exceed the recommended cleanup objectives established by the NYSDEC. The SVOCs encountered in this sample are PAHs, which, as previously noted, are commonly associated with industrial applications involving petroleum-based products. Only three (3) of 15 PAHs detected were present at concentrations that exceeded the compound-specific NYSDEC recommended cleanup objectives. Furthermore, the cumulative VOC and SVOC concentrations in this sample were well below the NYSDEC guidance values for total VOCs and SVOCs.

Potential mechanisms for the release of these petroleum contaminants include past discharges to the former suspected dry well, poor housekeeping practices, and/or past releases in association with historic manufacturing practices. However, no existing or former confirmed point sources of contamination (e.g., leaking storage tanks, drums, process

discharges, etc.) were identified during the course of this ESA. While the VOCs detected are relatively more soluble in water and are characterized as having moderate to low mobility in the subsurface, the relatively low concentrations at which these compounds were detected does not appear to present a significant threat to groundwater quality. The presence of the PAH contamination in the subsurface soil is not anticipated to influence groundwater quality at the levels detected because the compounds are characterized by low solubilities in water, and are relatively immobile in the subsurface. These interpretations are supported by the fact that no organic compounds were detected in groundwater samples collected down-gradient from the area of soil contamination. It should be noted however, that the full extent of the soil contamination in the vicinity of TB-5 has not been delineated.

In general, the concentration of inorganic parameters detected in the soil samples were within background levels commonly encountered in the eastern United States, and are considered to be comparable to levels typically found in similar industrial areas. Although concentrations of three (3) parameters that were markedly higher than site-wide averages were detected in MW-3, which was installed in the vicinity of the processing pits within the former dye house, only one (1) of these parameters marginally exceeded typical regional U.S. background levels.

6.3 Groundwater

No organic contaminants were detected in any of the groundwater samples collected from the site. The absence of organic compounds in wells MW-3 and MW-5, which are down-gradient of the former hydraulic lift cavity and courtyard, indicates that groundwater quality in the upper-most water-bearing zone has not been impacted by the petroleum-contaminated soil detected in these areas.

With the exception of the most up-gradient sample (MW-1), the concentrations of the inorganic parameters analyzed were found to be relatively uniform across the site and generally below the groundwater standards. A number of inorganic parameters were detected at concentrations above the applicable water quality standards at the up-gradient location. The fact that the inorganic chemistry of the up-gradient sample differs significantly from that of the other four samples collected from across the site tends to indicate that the elevated metals are the result of the relatively high turbidity of the up-gradient sample. Meanwhile, the four (4) parameters that were detected in the interior and down-gradient monitoring wells at levels that exceeded the regulatory standards appear to be representative of regional groundwater geochemistry. This is supported by information presented in *Ground-Water Resources of the Jamestown Area* (1966), which indicates that metals contamination from facilities in the Jamestown area has affected shallow groundwater resources along the Chadakoin River.

7.0 SUMMARY AND CONCLUSIONS

A Phase II Environmental Site Assessment (ESA) was completed at 247-335 Harrison Street, in Jamestown, New York. The objective of this Phase II ESA was to investigate potential sediment, soil and groundwater contamination identified as a result of previous Phase I ESAs completed for the subject property. The scope of the field investigation performed in association with this Phase II ESA included the following major tasks:

- Sediment sampling and laboratory analysis of sediment from the western bank of the Chadakoin River at up-gradient and down-gradient locations relative to the subject property;
- Drilling of ten(10) test borings across the site in areas of potential concern to collect, screen, and classify overburden deposits;
- Installation of five (5) groundwater monitoring wells to determine groundwater flow direction and facilitate the collection of representative groundwater samples; and
- Chemical analysis of sediment, soil and groundwater samples.

Field observations and subsurface samples collected during the performance of the drilling program at the subject property indicated the presence of a layer of fill containing sand, brick, foundry sand, and wood debris extending from the ground surface to approximate depths ranging from 1-14' bgs. The fill material overlies a mixture of fine-grained glacio-lacustrine deposits, more permeable glacio-fluvial deposits, and/or more recent alluvial deposits. Bedrock is located at depths of greater than 24' bgs, and consists of shale and silt-stone according to available mapping. Groundwater flow direction across the site was determined to be to the east, toward the discharge area represented by The Chadakoin River.

With the exception of the industrial fill material, evidence of potential contamination was noted during the drilling of only three (3) of the ten (10) test borings. Black stained sand was identified on top of a concrete pad, approximately 4' bgs at MW-3, however, no detectable TOV concentrations were detected with the PID. The same was true for black stained soil noted in the sample obtained from 4-6' bgs at TB-2. Lastly, elevated TOV concentrations (up to 120 ppm) and a moderately strong petroleum odor were identified in TB-5 from approximately 2' to 8' bgs. TB-5 was drilled in the former courtyard area of the Watson Manufacturing facility, which contained a suspected dry well, a loading dock, and several above ground storage tanks during the operational period of the facility.

Analytical data resulting from this investigation confirmed the presence of subsurface soil contamination in one (1) area of the site, but indicated the absence of site-derived contamination in on-site groundwater and off-site sediment collected from the nearby Chadakoin River. Petroleum-impacted soil was detected in the above referenced courtyard area. No other areas of soil contamination by organic compounds were identified during the course of this Phase II ESA. It should be noted, however, that petroleum impacted soil was also confirmed in the vicinity of the former hydraulic lift during the demolition of the former Watson Manufacturing facility, and that the extent of soil contamination in the both the courtyard and hydraulic lift cavity areas has not been fully delineated.

The petroleum contamination detected in the courtyard area consisted primarily of polycyclic aromatic hydrocarbons (PAHs). The suspected source of this contamination is past discharges to the former suspected dry well, past releases to the ground surface in association with past manufacturing practices, and/or poor housekeeping practices. Of the 15 PAHs detected in the sample from this area, only three (3) were present at concentrations that exceeded the applicable regulatory guidance levels, and the cumulative concentration of PAHs was well within the regulatory guidance threshold for total SVOCs. Based upon the concentration and chemical characteristics of the PAHs, and the absence of any organic compounds in the monitoring wells situated down-gradient from the courtyard area, the soil contamination does not appear to have, and is not expected to, migrate significantly in soil, nor is the soil contamination expected to significantly impact groundwater quality.

Although the levels of several inorganic parameters detected in soil samples from several locations across the site were above background levels typically found in the eastern United States, these concentrations are considered to be within the levels typically encountered at industrial sites in the area.

As indicated above, no organic compounds were detected in groundwater samples collected from the site, and the concentration of inorganic parameters in the samples were relatively uniform across the site and generally below the groundwater standards. An exception to this was the detection of elevated concentrations of numerous metals in the monitoring well installed near the up-gradient property boundary (MW-1), which is likely the result of high sample turbidity. Only four (4) inorganic parameters were present in the other four (4) on-site wells at levels that exceed the regulatory standards, and are thought to reflect local groundwater geochemistry and/or the industrial nature of the area. No indications of groundwater contamination resulting from past site usage were identified as a result of this ESA.

Lastly, the results from the analysis of sediment samples from the western bank of the nearby Chadakoin River did not confirm the presence of contamination attributable to past industrial discharges from the subject property. Although, both organic and inorganic parameters were detected in the sediment samples at levels that exceeded applicable regulatory levels, the levels of the up-stream and down-stream samples were comparable and appear to reflect the industrial character of the river corridor.

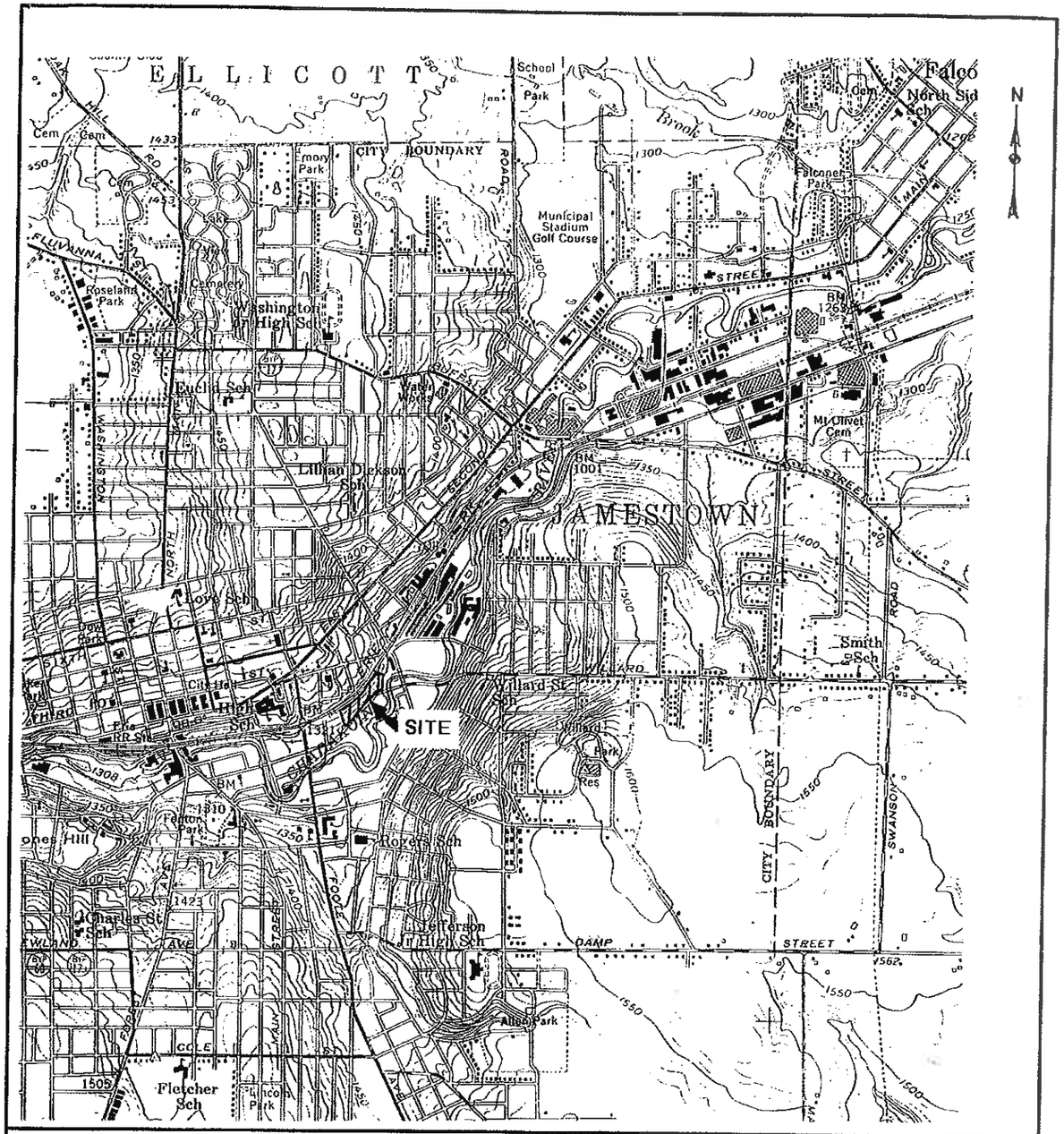
In summary, the data collected during the course of this Phase II ESA indicate that groundwater occurring beneath the site and sediment occurring down-stream of the site in the nearby Chadakoin River have not been adversely affected by the historical industrial use of the subject property. However, these data did confirm the presence of petroleum contamination in subsurface soil in the vicinity of the former Watson Manufacturing courtyard area. This soil contamination is in addition to the petroleum-impacted soil encountered in the vicinity of the former below ground hydraulic lift during the demolition of the Watson Manufacturing facility. A review of the soil data from both of these areas indicated that the type and magnitude of contamination is similar, and that the contaminants of concern are not likely to migrate significantly in soil or groundwater.

Regulatory implications with respect to NYSDEC requirements for further investigation and/or remedial action at the site cannot be ascertained without the Department's involvement through a site-specific evaluation of site conditions. However, should redevelopment of the site for a non-industrial purpose be planned, some level of remediation and/or monitoring may be required. If industrial redevelopment is planned, an acceptable mitigation plan could potentially consist of the installation of an asphalt cap (e.g., parking lot) or concrete building slab over the area of residual soil contamination.

8.0 LIMITATIONS

This report is based upon the application of scientific principles and professional judgement to certain facts with resultant subjective interpretations. Professional judgements expressed herein are based upon the facts currently available within the limits of the existing data, scope of services, budget and schedule. To the extent that more definitive conclusions are desired by the Client than are warranted by the current available facts, it is specifically TVGA's intent that the conclusions and recommendations stated herein will be intended as guidance and not necessarily a firm course of action except where explicitly stated as such. TVGA makes no warranties, expressed or implied including without limitation, warranties as to merchantability or fitness of a particular purpose. Furthermore, the information provided in this report is not to be construed as legal advice. This Phase II ESA and related report have been conducted and prepared on behalf of and for the exclusive use of the City of Jamestown, and authorized parties thereof.

FIGURES



USGS TOPOGRAPHIC MAP

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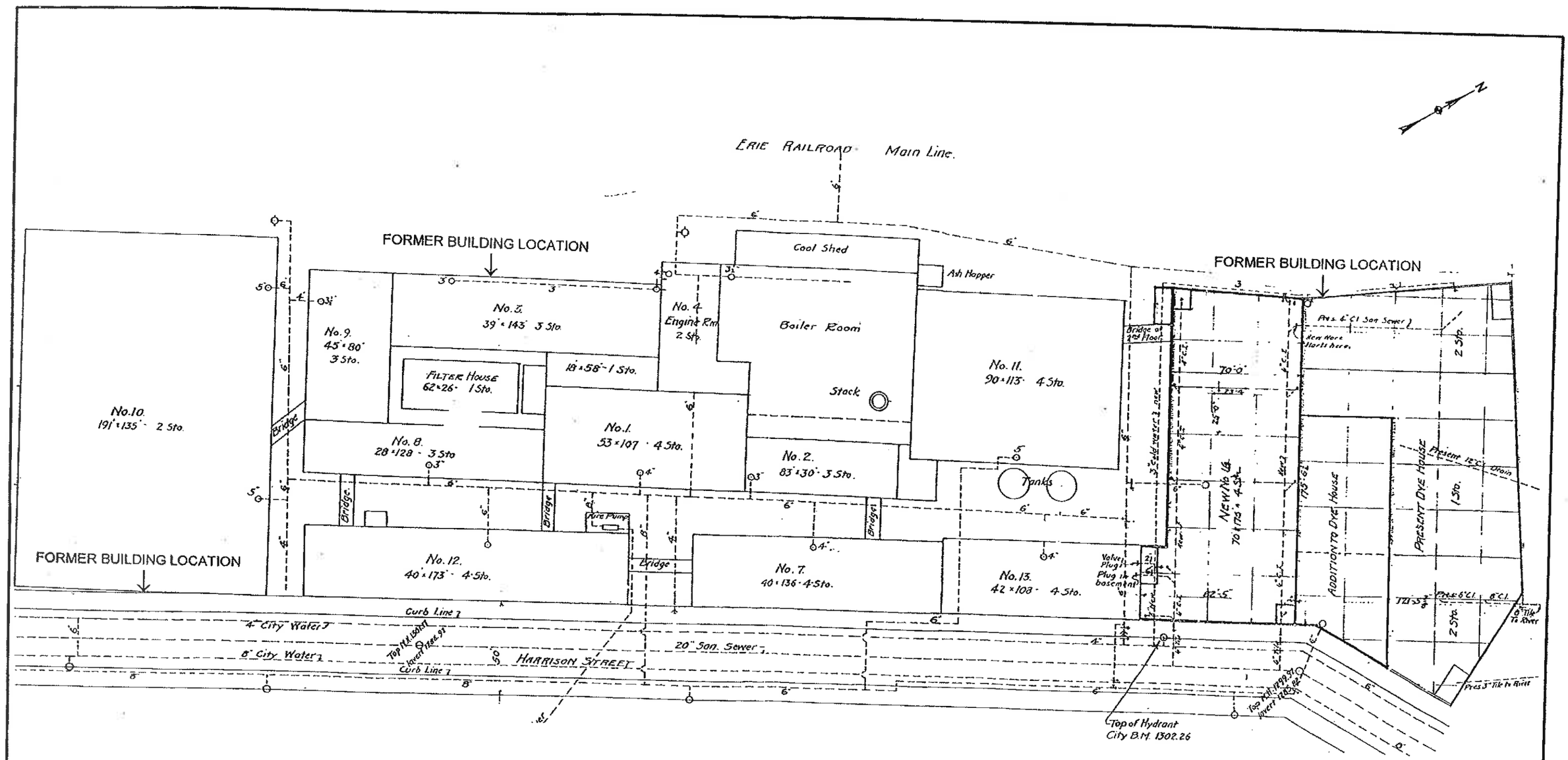
HARRISON STREET BROWNFIELD

247–335 HARRISON STREET
JAMESTOWN, NEW YORK

PROJECT NO.	SCALE	DATE	FIGURE NO.
103301	SCALE: NOT TO SCALE	DATE: 6/16/00	FIGURE NO. 1



PRE DEMOLITION SITE PLAN

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PROJECT NO.	SCALE	DATE	FIGURE NO.
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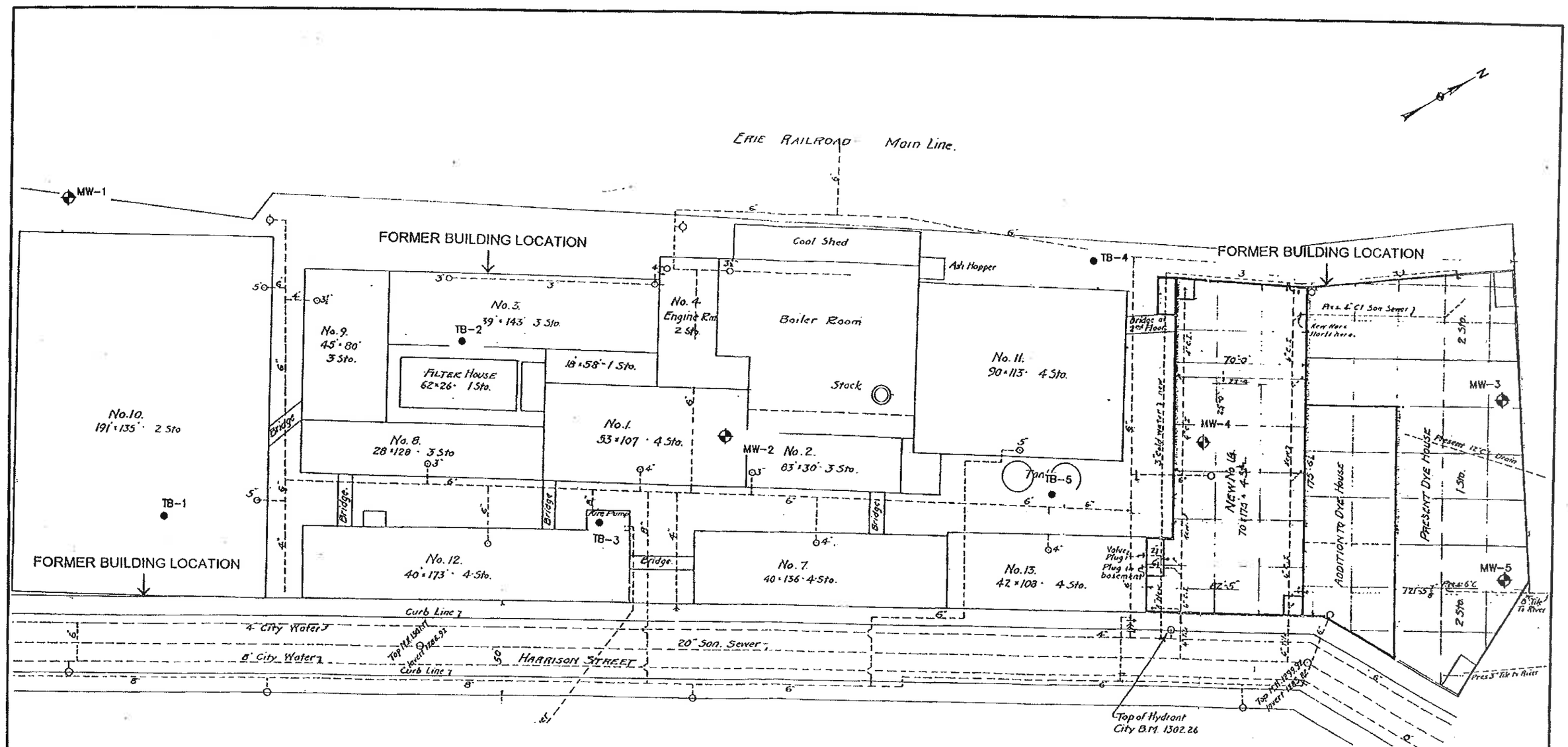

MONITORING WELL

TEST BORING LOCATION

SAMPLING LOCATION PLAN

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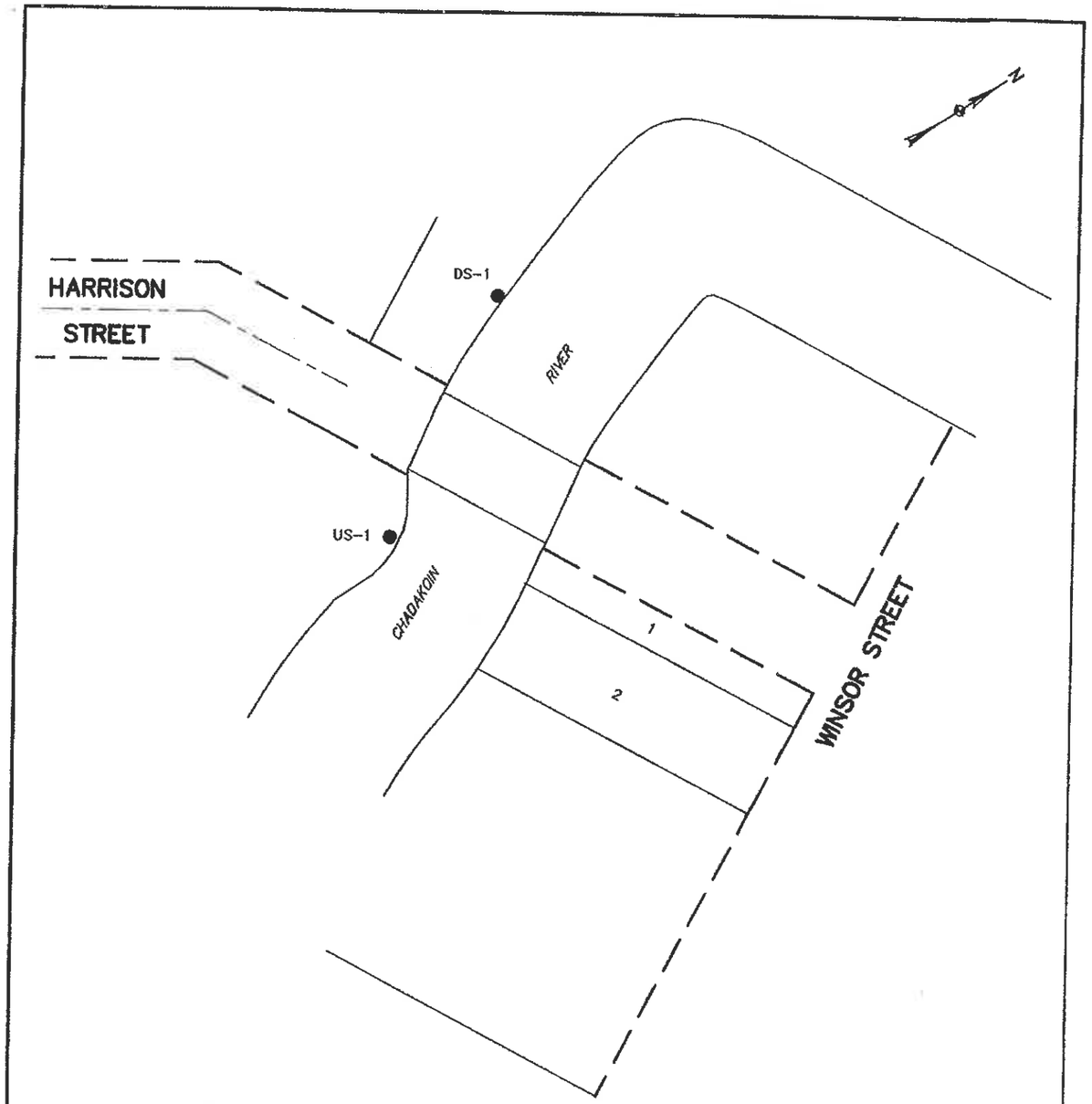
PROJECT NO.	SCALE	DATE	FIGURE NO.
103301	NOT TO SCALE	6/16/00	FIGURE NO. 3



SEDIMENT SAMPLING PLAN

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247-335 HARRISON STREET
JAMESTOWN, NEW YORK

PROJECT NO.	SCALE: NOT TO SCALE	DATE: 6/16/00	FIGURE NO. 4
103301			

TABLES

Table 1

Monitoring Well Gauging Data

Well No.	Top of Casing (TOC) Elevation (ft)	Depth to Water from TOC (ft.) (5/16/00)	Corrected Groundwater Elevation (5/16/00)	Depth to Water from TOC (ft.) (5/17/00)	Corrected Groundwater Elevation (5/17/00)
MW-1	112.32	15.92	96.40	16.29	96.03
MW-2	99.68	3.3	96.38	3.54	96.14
MW-3	92.79	6.12	86.67	5.84	86.95
MW-4	92.90	4.12	88.78	4.59	88.31
MW-5	95.90	8.21	87.69	8.24	87.66

Notes: Casing elevations are surveyed against a reference elevation of 100'
[Corrected GW Elev.] = [TOC Elev.] – [Depth to water from TOC]

Table 2

Sediment Analysis Summary – SVOCs (Detected Compounds Only)

(Collected May 17, 2000)

Compound	DS-1 (ppb)	US-1 (ppb)	NYSDEC Recommended Soil Cleanup Objectives [1] (ppb)
Detected SVOCs Only			
Fluoranthene	4,190	2,390	50,000
Anthracene	574	378	50,000
Phenanthrene	2,540	1,590	50,000
Benzo(a)anthracene	1,930	1,050	220 or MDL
Chrysene	2,280	1,260	400
Pyrene	3,850	2,360	50,000
Benzo(b)fluoranthene	2720	1570	1,100
Benzo(k)fluoranthene	1400	552	1,100
Benzo(g,h,i)perylene	ND<530	465	50,000
Benzo(a)pyrene	1,980	1,010	61 or MDL
Indeno(1,2,3-cd)pyrene	791	455	3,200

[1] - Source is NYSDEC Technical and Administrative Guidance Memorandum (TAGM): Determination of Soil Cleanup Objectives and Cleanup Levels (HWR-92-4046).
MDL = Method Detection Level
ND = Not Detected
Shaded values exceed the applicable regulatory level

Table 3

Sediment Analysis Summary – Inorganic Parameters

(Collected May 17, 2000)

Parameters	DS-1 (ppm)	US-1 (ppm)	NYSDEC Recommended Soil Cleanup Objectives [1] (ppm)
All TAL Inorganic Parameters Reported			
Aluminum	6,940	5,980	30 or SB
Antimony	ND	ND	30 or SB
Arsenic	13.3	12.2	7.5 or SB
Barium	98.6	67.1	300 or SB
Beryllium	1.90	ND	0.14
Cadmium	2.55	1.41	1 or SB
Calcium	6,530	9,740	SB
Chromium	34.9	47.2	10 or SB
Cobalt	6.90	7.41	30 or SB
Copper	80.3	139	25 or SB
Iron	29,400	39,800	2,000 or SB
Lead	107	156	30 or SB
Magnesium	3,490	3,240	SB
Manganese	752	520	SB
Mercury	0.154	ND	0.1
Nickel	24.6	29.3	13 or SB
Potassium	1,200	897	4,000 or SB
Selenium	1.04	0.624	2 or SB
Silver	2.08	2.50	200
Sodium	ND	ND	3,000 or SB
Thallium	ND	ND	20 or SB
Vanadium	17.6	21.0	150 or SB
Zinc	178	204	20 or SB

[1] - Source is NYSDEC Technical and Administrative Guidance Memorandum (TAGM): Determination of Soil Cleanup Objectives and Cleanup Levels (HWR-92-4046).
[2] – New York State Guidance Value used where no Groundwater Standard available.
SB = Site Background
ND = Not Detected
Shaded values exceed the up-stream levels and regulatory guidance levels

Table 4

Soil Analysis Summary – VOCs and SVOCs (Detected Compounds Only)

(Collected May 11, 2000)

Compound	TB-5-S2 (ppb)	NYSDEC Recommended Soil Cleanup Objectives [1] (ppb)
Detected SVOCs Only		
2-Methylnaphthalene	2,820	36,400
Naphthalene	2,330	13,000
Acenaphthene	759	50,000
Acenapthylene	966	41,000
Fluorene	1,970	50,000
Fluoranthene	1,710	50,000
Anthracene	1,690	50,000
Phenanthrene	7,440	50,000
Benzo(a)anthracene	1,180	224 or MDL
Chrysene	1,130	400
Pyrene	4,960	50,000
Benzo(b)fluoranthene	601	1,100
Benzo(g,h,i)perylene	559	50,000
Benzo(a)pyrene	1110	61 or MDL
Indeno(1,2,3-cd)pyrene	791	3,200
Detected VOCs Only		
Ethylbenzene	100	5,500
m/p-xylene	159	1,200
o-xylene	263	1,200

[1] - Source is NYSDEC Technical and Administrative Guidance Memorandum (TAGM): Determination of Soil Cleanup Objectives and Cleanup Levels (HWR-92-4046).
MDL = Method Detection Level
ND = Not Detected
Shaded values exceed regulatory guidance values

Table 5

Soil Analysis Summary – TAL Inorganic Parameters

(Collected May 11, 2000)

Parameters	TB-1-S4 (ppm)	TB-2-S3 (ppm)	TB-5-S2 (ppm)	MW-3-S3 (ppm)	MW-5-S3 (ppm)	Eastern USA Back-ground (ppm)	NYSDEC Recommended Soil Cleanup Objectives [1] (ppm)
All TAL Inorganic Parameters Reported							
Aluminum	8,740	9,000	15,000	11,500	6,070	33,000	30 or SB
Antimony	ND	ND	ND	ND	2.5	NA	30 or SB
Arsenic	11.8	7.21	14.3	10.1	13.2	3-12	7.5 or SB
Barium	126	54.4	62.0	100	51.4	15-600	300 or SB
Beryllium	ND	ND	ND	ND	ND	0-1.75	0.14
Cadmium	0.459	ND	0.528	ND	ND	0.1-1	1 or SB
Calcium	1,810	3,270	678	22,200	4,370	130-35,000	SB
Chromium	10.1	12.6	16.8	60.2	12.9	1.5-40	10 or SB
Cobalt	6.36	6.54	10.8	6.94	ND	2.5-60	30 or SB
Copper	14.8	17.9	16.5	26.5	29.0	1-50	25 or SB
Iron	19,900	24,400	30,100	20,800	13,600	2,000-550,000	2,000 or SB
Lead	13.8	12.9	12.7	39.3	11.3	4-61	30 or SB
Magnesium	2,530	3,840	4,190	3,640	314	100-5,000	SB
Manganese	333	179	335	386	89.6	50-5,000	SB
Mercury	ND	ND	ND	ND	ND	0.001-0.2	0.1
Nickel	17.1	19.3	23.1	18.3	16.8	0.5-25	13 or SB
Potassium	1,690	1,890	2,840	1,860	469	8,500-43,000	4,000 or SB
Selenium	ND	ND	ND	ND	2.08	0.1-3.9	2 or SB
Silver	0.994	1.25	1.51	ND	3.69	NA	200
Sodium	ND	ND	ND	ND	ND	6,000-8,000	3,000 or SB
Thallium	ND	ND	ND	ND	0.556	NA	20 or SB
Vanadium	13.5	16.6	21.3	17.4	20.8	1-300	150 or SB
Zinc	47.7	51.1	51.4	73.7	12.9	9-50	20 or SB

[1] - Source is NYSDEC Technical and Administrative Guidance Memorandum (TAGM): Determination of Soil Cleanup Objectives and Cleanup Levels (HWR-92-4046).
[2] – New York State Guidance Value used where no Groundwater Standard available.
SB = Site Background
NA = Not Available
ND = Not Detected
Shaded values exceed typical eastern United States background concentrations

Table 6

Groundwater Analysis Summary – TAL Inorganic Parameters

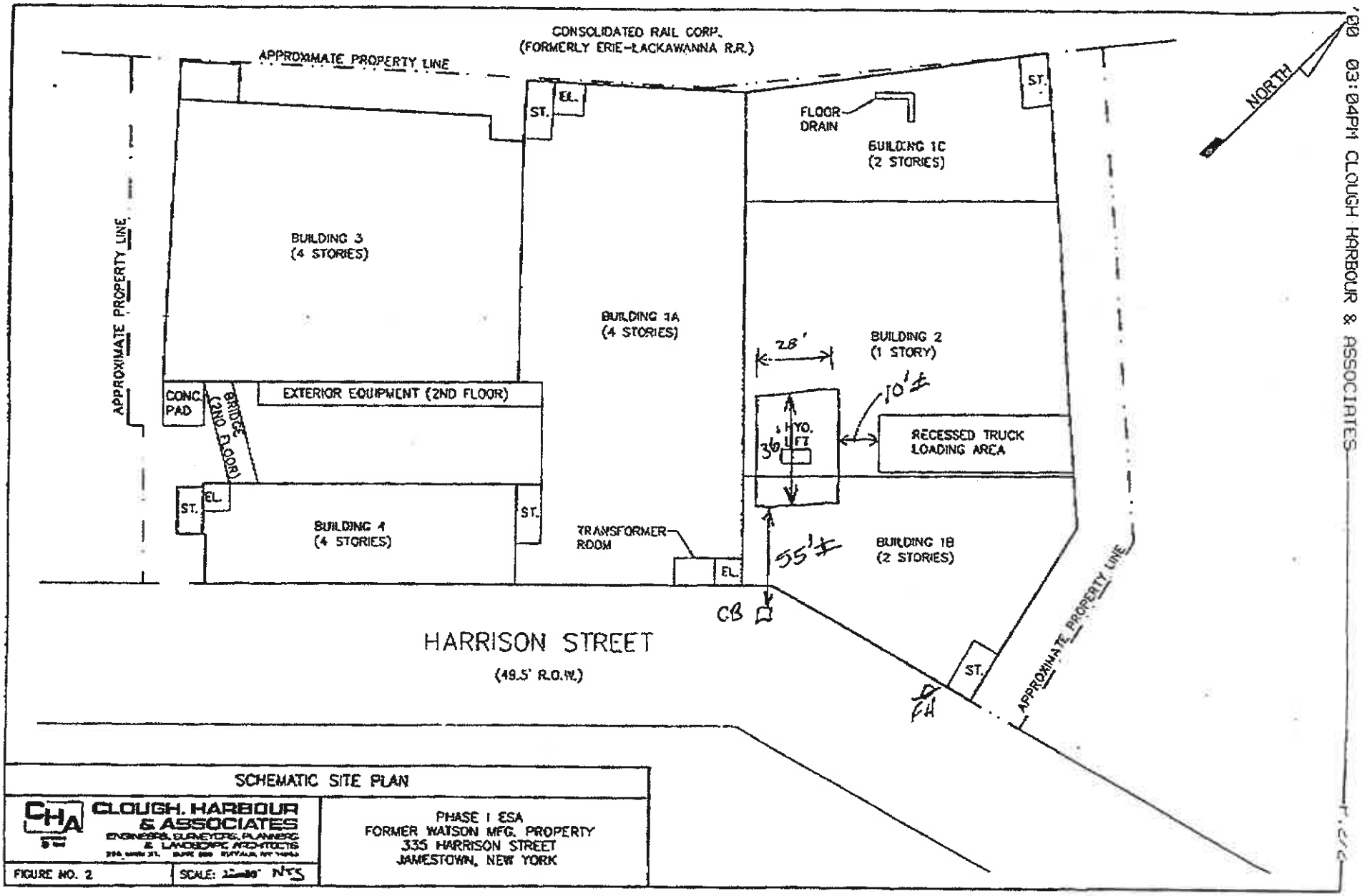
(Collected May 17, 2000)

Parameters	MW-1 (ppm)	MW-2 (ppm)	MW-3 (ppm)	MW-4 (ppm)	MW-5 (ppm)	NYS Ambient Water Quality Standards [1] (ppm)
All TAL Inorganic Parameters Reported						
Aluminum	205	0.723	ND	9.58	0.802	NA
Antimony	ND	ND	ND	ND	ND	0.003
Arsenic	0.626	0.008	0.006	0.013	ND	0.025
Barium	3.72	0.082	0.122	0.201	0.264	1.0
Beryllium	ND	ND	ND	ND	ND	0.003[2]
Cadmium	0.021	ND	ND	ND	ND	0.005
Calcium	465	136	55.9	122	128	NA
Chromium	0.234	ND	ND	0.012	ND	0.050
Cobalt	0.237	ND	ND	ND	ND	NA
Copper	0.634	ND	ND	0.027	ND	0.200
Iron	556	1.00	0.141	10.9	1.79	0.300
Lead	0.385	ND	ND	0.030	0.007	0.025
Magnesium	144	32.3	15.7	26.2	26.1	35.0[2]
Manganese	22.6	0.286	0.023	0.339	1.20	0.300
Mercury	ND	ND	ND	ND	ND	0.0007
Nickel	0.385	ND	ND	ND	ND	0.100
Potassium	51.2	15.9	9.78	19.1	10.1	NA
Selenium	0.007	ND	0.008	ND	ND	0.010
Silver	0.035	ND	ND	ND	ND	0.050
Sodium	76.7	47.0	91.8	44.3	93.1	20.0
Thallium	ND	ND	ND	ND	ND	0.0005[2]
Vanadium	0.326	ND	ND	ND	ND	NA
Zinc	1.07	ND	ND	0.050	ND	2.0[2]

[1] - Source is New York State Ambient Water Quality Standards and Guidance Values (June 1998)
[2] – New York State Guidance Value used where no Groundwater Standard available.
NA = Not Available
ND = Not Detected
Shaded values exceed the regulatory standard

APPENDIX A

CONFIRMATION SOIL RESULTS FROM HYDRAULIC LIFT CAVITY



SCHEMATIC SITE PLAN

CLOUGH, HARBOUR & ASSOCIATES
ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS

PHASE I ESA
FORMER WATSON MFG. PROPERTY
335 HARRISON STREET
JAMESTOWN, NEW YORK

FIGURE NO. 2 | SCALE: 1"=30' NTS

FLI
FRIEND LABORATORY I · N · C

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 17-APR-2000

LAB SAMPLE ID L47926-4

Jamestown DPW
Mark Schlemmer
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Jamestown, NY 14701

RECEIVED
APR 21 2000
D.P.W.

SAMPLE SOURCE	JAMESTOWN DPW
ORIGIN	WATSON 1
DESCRIPTION	GRAB
SAMPLED ON	30-MAR-00 13:50 by FLI/FC
DATE RECEIVED	31-MAR-00 14:30
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
Total Solids	92.5	%		03-APR-00 00:00	CLP 3.0	00-010-45
EPA 8021						
Benzene	U	ug/kg	9	05-APR-00 00:11	EPA 8021	00-021-175
Toluene	U	ug/kg	13	05-APR-00 00:11	EPA 8021	00-021-175
Ethylbenzene	U	ug/kg	13	05-APR-00 00:11	EPA 8021	00-021-175
p-Xylene/m-Xylene	U	ug/kg	13	05-APR-00 00:11	EPA 8021	00-021-175
o-Xylene	U	ug/kg	13	05-APR-00 00:11	EPA 8021	00-021-175
Isopropylbenzene	U	ug/kg	13	05-APR-00 00:11	EPA 8021	00-021-175
n-Propylbenzene	U	ug/kg	13	05-APR-00 00:11	EPA 8021	00-021-175
1,3,5-Trimethylbenzene	U	ug/kg	13	05-APR-00 00:11	EPA 8021	00-021-175
tert-Butylbenzene	U	ug/kg	13	05-APR-00 00:11	EPA 8021	00-021-175
1,2,4-Trimethylbenzene	U	ug/kg	13	05-APR-00 00:11	EPA 8021	00-021-175
sec-Butylbenzene	U	ug/kg	13	05-APR-00 00:11	EPA 8021	00-021-175
4-Isopropyltoluene	U	ug/kg	13	05-APR-00 00:11	EPA 8021	00-021-175
n-Butylbenzene	U	ug/kg	13	05-APR-00 00:11	EPA 8021	00-021-175
Naphthalene	U	ug/kg	13	05-APR-00 00:11	EPA 8021	00-021-175
Methyl-tert-butyl-ether (MTBE)	U	ug/kg	67	05-APR-00 00:11	EPA 8021	00-021-175
Surrogate Recovery:						
PID - Chlorofluorobenzene	80	%				00-021-175
Analysis Comment:Results Calculated on a dry weight basis.						
EPA 8270						
Naphthalene	57 J	ug/kg	270	11-APR-00 06:19	EPA 8270	97-186-14
Acenaphthylene	U	ug/kg	270	11-APR-00 06:19	EPA 8270	97-186-14
Acenaphthene	U	ug/kg	270	11-APR-00 06:19	EPA 8270	97-186-14
Fluorene	U	ug/kg	270	11-APR-00 06:19	EPA 8270	97-186-14
Phenanthrene	2400	ug/kg	270	11-APR-00 06:19	EPA 8270	97-186-14
Anthracene	340	ug/kg	270	11-APR-00 06:19	EPA 8270	97-186-14
Fluoranthene	2500	ug/kg	270	11-APR-00 06:19	EPA 8270	97-186-14
Pyrene	1900	ug/kg	270	11-APR-00 06:19	EPA 8270	97-186-14
Benzo(a)anthracene	830	ug/kg	270	11-APR-00 06:19	EPA 8270	97-186-14
Chrysene	710	ug/kg	270	11-APR-00 06:19	EPA 8270	97-186-14
Benzo(b)fluoranthene	1200	ug/kg	270	11-APR-00 06:19	EPA 8270	97-186-14
Benzo(k)fluoranthene	320	ug/kg	270	11-APR-00 06:19	EPA 8270	97-186-14
Benzo(a)pyrene	510	ug/kg	270	11-APR-00 06:19	EPA 8270	97-186-14
Indeno(1,2,3-cd)pyrene	390	ug/kg	270	11-APR-00 06:19	EPA 8270	97-186-14
Dibenzo(a,h)anthracene	U	ug/kg	270	11-APR-00 06:19	EPA 8270	97-186-14
Benzo(g,h,i)perylene	330	ug/kg	270	11-APR-00 06:19	EPA 8270	97-186-14

QC NY 10252 NJ 73168 PA 68180 EPA NY 00033

Approved by: Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per millic
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

FLI
FRIEND LABORATORY INC

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 17-APR-2000

LAB SAMPLE ID L47926-4

Jamestown DPW
Mark Schlemmer
Riverview Bldg.
145 Steele Street
Jamestown, NY 14701

SAMPLE SOURCE	JAMESTOWN DPW
ORIGIN	WATSON 1
DESCRIPTION	GRAB
SAMPLED ON	30-MAR-00 13:50 by FLI/FC
DATE RECEIVED	31-MAR-00 14:30
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
Surrogate Recovery:						
Nitrobenzene-d5	96	%				97-186-1409C
2-Fluorobiphenyl	86	%				97-186-1409C
Terphenyl-d14	100	%				97-186-1409C

Analysis Comment:Results Calculated on a dry weight basis.

QC NY 10252 NJ 73168 PA 68180 EPA NY 00033

Approved by: Lab Director

KEY: ND or U = None Detected < = less than
mg/L = milligrams per liter (equivalent to parts per million)
B = analyte was detected in the method or trip blank
ug/L = micrograms per liter (equivalent to parts per billion)
mg/kg = milligrams per kilogram (equivalent to parts per million)
J = result estimated below the quantitation limit

APPENDIX B

MONITORING WELL/TEST BORING LOGS

TEST BORING LOG

HOLE NO. MW-1

Project: Harrison Street Brown Field Phase II ESA
Client: City of Jamestown Department of Public Works
Contractor: Natures Way

Project No. 103301
GS Elev 110.06
WS Ref Elev 100
N-S Coord
E-W Coord
Start Date 5/10/00
Finish Date 5/10/00
Driller S. Gingrich
Geologist W. Czelusta

Groundwater Data (feet)			
Date	Time	Depth	Elev
5/10/00	12:30	~17	
5/16/00	9:35	15.92	96.40
5/17/00	10:30	16.29	96.03

Equipment Data			
	Casing	Sampler	Core
Type	HSA	SS	
Diameter	7.25"	2.0"	
Weight		140 #	
Fall		30"	

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct Screen	Remarks PID Reading (ppm) Head Space
		S1	10 13 / 12 9	15		Fill	0-3" Dark black ash fill, fine sand and silt, little fine gravel, compact, damp.	1.0	0.0
		S2	7 17 / 15 14	12		SM	Yellow brown fine silty sand, compact, damp.	1.0	0.5
	5	S3	5 7 / 7 8	16			Light brown fine silty sand, medium compact, damp.	1.0	0.5
		S4	3 5 / 8 11	18			As above, moist.	1.0	0.5
	10	S5	4 4 / 4 3	9			As above.	1.0	0.5
		S6	4 5 / 7 6	10			As above.	1.0	0.5
		S7	3 4 / 6 6	14			As above.	0.5	0.5
	15	S8	3 4 / 6 7	18			As above, wet.	0.5	0.5
		S9	2 2 / 2 3	16			▼ As above, very loose, saturated.	0.5	0.5
		S10	5 7 / 8 12	18			As above, medium compact, saturated. Last 1" is medium and fine gravel.	0.5	0.5
	20	S11	5 7 / 9 5	11		GM	Light brown fine silty sand and fine gravel, little medium rounded gravel, medium compact, saturated.	1.0	0.5
		S12	- 1 / 1 2	25			Light brown and orangish medium and fine sands, very loose, saturated.	1.0	0.5
	25						End of Boring at 24.0 feet below ground surface.		
	30						Monitoring well consists of 10' of 2.0" No. 10 slotted screen from 13-23' bgs. Sand pack is from 11-23' and bentonite seal is from 9-11' bgs. Ground surface to 9' bgs is cement grout. Well was finished with a steel constructed protective riser.		

TEST BORING LOG

HOLE NO. MW-2

Project: Harrison Street Brown Field Phase II ESA
Client: City of Jamestown Department of Public Works
Contractor: Natures Way

Project No. 103301
GS Elev 97.26
WS Ref Elev 100
N-S Coord
E-W Coord
Start Date 5/10/00
Finish Date 5/10/00
Driller S. Gingrich
Geologist W. Czelusta

Groundwater Data (feet)			
Date	Time	Depth	Elev
5/11/00	14:30	~10	
5/16/00	10:10	3.30	96.38
5/17/00	10:05	3.54	96.14

Equipment Data			
	Casing	Sampler	Core
Type	HSA	SS	
Diameter	7.25"	2.0"	
Weight		140 #	
Fall		30"	

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct Screen	Remarks PID Reading (ppm) Head Space
		S1	4 11 18 14	13		Fill	Fill material, brown and black medium sand, brick, wood, concrete dust, compact, damp.	1.0	1.0
		S2	7 19 19 22	17		SM	Grey fine silty sand, compact, damp.	1.0	1.0
	5	S3	4 7 10 11	18			As above.	1.0	1.0
		S4	3 4 8 6	20			As above, moist.	1.0	1.0
		S5	2 5 6 7	16			As above, wet. ▼	1.0	1.0
	10	S6	3 4 4 4	14			As above, loose, saturated.	1.0	1.0
		S7	1 3 5 7	14			As above.	1.0	1.0
	15	S8	2 4 4 5	18			As above.	1.0	1.0
							End of Boring at 16.0 feet below ground surface.		
	20								
	25								
	30						Monitoring well consists of 10' of 2.0" No. 10 slotted screen from 5.5-15.5' bgs. Sand pack is from 4.5-16' and bentonite seal is from 2.5-4.5' bgs. Ground surface to 2.5' bgs is cement grout. Well was finished with a steel constructed protective riser.		

TEST BORING LOG

HOLE NO. MW-3

Project: Harrison Street Brown Field Phase II ESA
Client: City of Jamestown Department of Public Works
Contractor: Natures Way

Project No. 103301
GS Elev 93.15
WS Ref Elev 100
N-S Coord
E-W Coord
Start Date 5/12/00
Finish Date 5/12/00
Driller S. Gingrich
Geologist W. Czelusta

Groundwater Data (feet)			
Date	Time	Depth	Elev
5/12/00	14:30	~10	
5/16/00	15:40	6.12	86.67
5/17/00	10:25	5.84	86.95

Equipment Data			
	Casing	Sampler	Core
Type	HSA	SS	
Diameter	7.25"	2.0"	
Weight		140 #	
Fall		30"	

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct Screen	Remarks PID Reading (ppm) Head Space
		S1	- 6 3 5	4		conc. Fill	6" Concrete, Fill material, brown fine silty sand, brick, loose, damp.	1.0	1.0
		S2	3 1 2 22	8		SM	Brown fine silty sand, trace fine gravel, very loose, damp.	1.0	1.0
	5	S3	50 50	4		conc.	6" Concrete slab with black stained sand on top.	1.0	1.0
		S4	7 4 3 9	12		Fill	Fill material, dark Grey fine silty sand, little fine gravel, chunky wood debris some bright red, loose, damp.	1.0	6.0
		S5	7 5 4 7	16			Fill material, dark Grey fine gravel and fine silty sand, black murky streaks, loose, moist.	1.0	1.0
	10	S6	2 3 2 1	0			Fill material, no recovery.	1.0	1.0
		S7	5 4 2 2	19			Fill material, chunky wood debris, little brown fine silty sand, loose, moist. ▼	1.0	1.0
	15	S8	- - - -	8			As above, saturated. (Weight of rod advances split spoon)	1.0	2.0
		S9	2 3 1 2	8		SW	Grey, fine and medium sands, little fine rounded gravel, loose, saturated.	1.0	1.0
		S10	2 3 4 7	17		SC	6 " as above. 11" Light Grey fine silty sand, little clay, loose, saturated.	1.0	1.0
	20						End of Boring at 19.0 feet below ground surface.		
	25						Monitoring well consists of 10' of 2.0" No. 10 slotted screen from 13-23' bgs. Sand pack is from 11-23' and bentonite seal is from 9-11' bgs. Ground surface to 9' bgs is cement grout. Well was finished with a flush mount steel protective cover.		
	30								

TEST BORING LOG

HOLE NO. MW-4

Project: Harrison Street Brown Field Phase II ESA
Client: City of Jamestown Department of Public Works
Contractor: Natures Way

Project No. 103301
GS Elev 93.40
WS Ref Elev 100
N-S Coord
E-W Coord
Start Date 5/12/00
Finish Date 5/12/00
Driller S. Gingrich
Geologist W. Czelusta

Groundwater Data (feet)			
Date	Time	Depth	Elev
5/12/00	14:30	~10	
5/16/00	15:50	4.12	88.78
5/17/00	10:55	4.59	88.31

Equipment Data			
	Casing	Sampler	Core
Type	HSA	SS	
Diameter	7.25"	2.0"	
Weight		140 #	
Fall		30"	

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct Screen	Head Space
		S1	- - / 1 2	4		conc. / Fill	6" Concrete, Fill material, black fine and medium sand, brick, cinders, very loose, dry.	1.0	1.0
		S2	7 7 / 2 5	0			Very loose fill material, no recovery.	1.0	1.0
	5	S3	3 3 / 2 2	4			Fill Material, black medium sand and fine gravel, brick, chuncky wood debris, loose, saturated.	1.0	1.0
		S4	3 5 / 8 4	11			As above, murky, medium compact, saturated.	1.0	1.0
		S5	4 4 / 4 3	6			As above, loose, little fine rounded gravel, saturated.	1.0	1.0
	10	S6	5 7 / 13 5	8			Fill Material, black medium sand, chunky wood debris, and bright red wood debris, medium compact, saturated.	1.0	1.0
		S7	10 2 / 5 5	2			As above, brick, loose, saturated.	1.0	1.0
	15	S8	3 2 / 2 2	16		SM	Dark brown silty sand, platy organic material, loose, saturated.	1.0	1.0
		S9	5 7 / 8 5	12		GM	Grey, medium sand and fine rounded gravel, medium compact, saturated.	1.0	1.0
	20	S10	9 11 / 12 4	9			As above, wood debris.	1.0	1.0
							End of Boring at 20.0 feet below ground surface.		
	25								
	30						Monitoring well consists of 10' of 2.0" No. 10 slotted screen from 4-14' bgs. Annulus was backfilled with auger spoils and sealed with 1' of bentonite at bottom. Sand pack is from 3-15' and bentonite seal is from 1.5-3' bgs. Ground surface to 1.5' bgs is cement grout. Well was finished with a flush mount steel constructed protective cover.		

TEST BORING LOG

HOLE NO. MW-5

Project: Harrison Street Brown Field Phase II ESA
Client: City of Jamestown Department of Public Works
Contractor: Natures Way

Project No. 103301
GS Elev 93.36
WS Ref Elev 100
N-S Coord
E-W Coord
Start Date 5/12/00
Finish Date 5/12/00
Driller S. Gingrich
Geologist W. Czelusta

Groundwater Data (feet)			
Date	Time	Depth	Elev
5/12/00	14:30	~10	
5/16/00	9:25	8.21	87.69
5/17/00	11:25	8.24	87.66

Equipment Data			
	Casing	Sampler	Core
Type	HSA	SS	
Diameter	7.25"	2.0"	
Weight		140 #	
Fall		30"	

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct Screen	Remarks PID Reading (ppm) Head Space
		S1	7 35 / 25 14	16		Fill	8" Brown fine and medium sands, little fine gravel, dry. 2" Black foundry sand, dry. 6" concrete.	1.0	1.0
		S2	8 16 / 10 6	13			Fill Material, black fine and medium sand, brick, little gravel, medium compact, damp.	1.0	1.0
	5	S3	3 9 / 7 5	13			As above, moist.	1.0	1.0
		S4	3 4 / 8 6	20			As above, moist.	1.0	1.0
		S5	2 3 / 1 4	9		SM	Grey fine silty sand with some black staining, no odor, loose, wet	1.0	1.0
	10	S6	3 1 / 2 2	15		Fill	Fill Material, black fine and medium sand, trace silt, brick, chunky wood debris, musty odor, very loose, saturated. ▼	1.0	1.0
		S7	3 1 / 1 2	15		GM	10" as above, 5" dark brown silt, trace clay, very loose, saturated.	1.0	1.0
	15	S8	6 6 / 3 3	10			Fine gravel, little silt, platy organic material, loose saturated,	1.0	1.0
							End of Boring at 16.0 feet below ground surface.		
	20								
	25						Monitoring well consists of 10' of 2.0" No. 10 slotted screen from 5.5-15.5' bgs. Sand pack is from 4.5-16' and bentonite seal is from 2.5-4.5' bgs. Ground surface to 2.5' bgs is cement grout. Well was finished with a steel constructed protective riser.		
	30								

TEST BORING LOG

HOLE NO. TB-1

Project: Harrison Street Brown Field Phase II ESA
Client: City of Jamestown Department of Public Works
Contractor: Natures Way

Project No. 103301
GS Elev 93.92
WS Ref Elev 100
N-S Coord
E-W Coord
Start Date 5/10/00
Finish Date 5/10/00
Driller S. Gingrich
Geologist W. Czelusta

Groundwater Data (feet)			
Date	Time	Depth	Elev
5/10/00	12:30	~10	

Equipment Data			
	Casing	Sampler	Core
Type	HSA	Split Sp	
Diameter	2.25"	2.0"	
Weight		140 #	
Fall		30"	

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct Screen	Remarks PID Reading (ppm) Head Space
		S1	10 6 / 6 14	8		Fill	Black medium sand fill, medium gravel, medium compact, damp.	1.0	1.0
		S2	8 11 / 9 12	4			As above.	1.0	1.0
	5	S3	7 9 / 10 10	14		GM	Brown fine sand and fine rounded gravel, trace silt, medium compact, damp.	1.0	1.0
		S4	4 4 / 4 4	10			Brown fine sand and fine gravel, trace medium gravel, trace silt, loose, moist.	1.0	1.0
	10	S5	2 4 / 5 12	10			As above, saturated. ▼	1.0	1.0
		S6	6 8 / 9 9	6			As above.	1.0	1.0
	15						End of Boring at 12.0 feet below ground surface.		
	20								
	25								
	30								

TEST BORING LOG

HOLE NO. TB-2

Project: Harrison Street Brown Field Phase II ESA
Client: City of Jamestown Department of Public Works
Contractor: Natures Way

Project No. 103301
GS Elev 98.36
WS Ref Elev 100
N-S Coord
E-W Coord
Start Date 5/10/00
Finish Date 5/10/00
Driller S. Gingrich
Geologist W. Czelusta

Groundwater Data (feet)			
Date	Time	Depth	Elev
5/10/00	12:30	~7	

Equipment Data			
	Casing	Sampler	Core
Type	HSA	Split Sp	
Diameter	2.25"	2.0"	
Weight		140 #	
Fall		30"	

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct Screen	Remarks PID Reading (ppm) Head Space
		S1	4 13 9 15	14		peat SM	0-6" grass, peat. Grey silt, trace fine sand, medium compact, damp.	1.0	1.0
		S2	5 4 7 7	11			Grey silt, trace fine sand, medium compact, moist.	1.0	1.0
	5	S3	3 4 4 5	10		GM	Grey fine sand and fine gravel, little medium gravel with murky streaks, loose, wet.	1.0	1.0
		S4	23 8 7 8	10			1" Gravel Cobble. Brown/Grey fine rounded gravel and medium sand, medium compact, saturated. ▼	1.0	1.0
	10	S5	5 3 5 6	8			As above, loose.	1.0	1.0
							End of Boring at 10.0 feet below ground surface.		
	15								
	20								
	25								
	30								

TEST BORING LOG

HOLE NO. TB-3

Project: Harrison Street Brown Field Phase II ESA
Client: City of Jamestown Department of Public Works
Contractor: Natures Way

Project No. 103301
GS Elev 94.91
WS Ref Elev 100
N-S Coord
E-W Coord
Start Date 5/11/00
Finish Date 5/11/00
Driller S. Gingrich
Geologist W. Czelusta

Groundwater Data (feet)			
Date	Time	Depth	Elev
5/11/00	NA	NA	NA

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

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct Screen	Head Space
		S1	5 5 / 6 7	7		peat / SM	0-2" grass, peat. Brown Medium sand, little fine sand, trace fine rounded gravel, medium compact, damp.	2.0	1.0
		S2	3 6 / 13 14	13			Brown fine silty sand, little medium gravel, medium compact, damp.	2.0	1.0
	5	S3	3 7 / 7 7	18			Light brown/Grey fine silty sand, trace clay, medium compact, moist.	2.0	1.0
		S4	2 3 / 8 10	18			As above.	1.0	0.5
		S5	4 5 / 6 9	20		ML	Grey silt, trace fine sand, trace clay, medium compact, moist.	1.0	0.5
	10	S6	2 4 / 6 9	22			As above.	1.0	0.5
		S7	2 3 / 4 6	22			As above, loose.	1.0	0.5
	15	S8	3 4 / 7 7	21			As above, medium compact,	1.0	0.5
		S9	2 5 / 5 5	21			As above.	1.0	0.5
		S10	2 2 / 3 6	22			As above, loose.	1.0	0.5
	20	S11	2 4 / 4 6	24			As above.	1.0	0.5
		S12	2 2 / 3 5	22			As above.	1.0	0.5
	25						End of Boring at 24.0 feet below ground surface.		
	30								

TEST BORING LOG

HOLE NO. TB-4

Project: Harrison Street Brown Field Phase II ESA
Client: City of Jamestown Department of Public Works
Contractor: Natures Way

Project No. 103301
GS Elev 99.04
WS Ref Elev 100
N-S Coord
E-W Coord
Start Date 5/11/00
Finish Date 5/11/00
Driller S. Gingrich
Geologist W. Czelusta

Groundwater Data (feet)			
Date	Time	Depth	Elev
5/11/00	12:30	~10	

Equipment Data			
	Casing	Sampler	Core
Type	HSA	Split Sp	
Diameter	2.25"	2.0"	
Weight		140 #	
Fall		30"	

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct Screen	Remarks PID Reading (ppm) Head Space
		S1	45 15 15 16	4		Fill	Black medium sand fill, brick, compact, damp.	1.0	1.0
		S2	10 6 10 9	13		SM	Brown fine sand and silt, little fine gravel, loose, moist.	1.0	1.0
	5	S3	3 5 3 7	13			Brown fine silty sand, little fine gravel, loose, moist.	1.0	1.0
		S4	3 4 4 4	17		GM	Brown fine gravel and fine silty sand, loose, wet. ▼	1.0	1.0
	10	S5	1 2 4 6	14			12" As above, saturated, then 2" Grey fine silty sand, trace fine gravel, loose, saturated.	1.0	1.0
		S6	3 4 4 7	19			Grey fine silty sand, loose, saturated.	1.0	1.0
							End of Boring at 12.0 feet below ground surface.		
	15								
	20								
	25								
	30								

TEST BORING LOG

HOLE NO. TB-5

Project: Harrison Street Brown Field Phase II ESA
Client: City of Jamestown Department of Public Works
Contractor: Natures Way

Project No. 103301
GS Elev 94.45
WS Ref Elev 100
N-S Coord
E-W Coord
Start Date 5/11/00
Finish Date 5/11/00
Driller S. Gingrich
Geologist W. Czelusta

Groundwater Data (feet)			
Date	Time	Depth	Elev
5/11/00	NA	NA	NA

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

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description	Remarks PID Reading (ppm) Direct Screen	Remarks PID Reading (ppm) Head Space
		S1	6 4 7 8	14		Fill	Fill material, brown and black medium sand, brick, cinders, medium compact, damp.	1.0	1.0
		S2	9 9 6 8	13		SM	Light brown/Grey fine silty sand, with black stains and fuel oil odor, medium compact, damp.	120.0	50.0
	5	S3	1 3 4 5	18			Light brown/Grey fine silty sand, damp.	15.0	8.0
		S4	3 4 7 9	23			As above, moist.	3.0	2.0
		S5	4 3 6 7	22		ML	Grey silt, trace fine sand, trace clay, loose, moist.	1.0	1.0
	10	S6	4 4 6 8	15			Grey silt, trace fine sand, trace clay, trace fine gravel, loose, moist.	1.0	2.0
		S7	2 2 3 7	20			Grey silt, trace fine sand, trace clay, loose, moist.	1.0	1.0
	15	S8	4 3 5 6	24			As above.	1.0	1.0
		S9	4 4 4 4	24			As above.	1.0	1.0
	20	S10	1 3 4 2	24			As above.	1.0	1.0
		S11	1 1 4 4	22			As above.	1.0	1.0
		S12	1 4 6 7	24			As above.	1.0	1.0
	25						End of Boring at 24.0 feet below ground surface.		
	30								

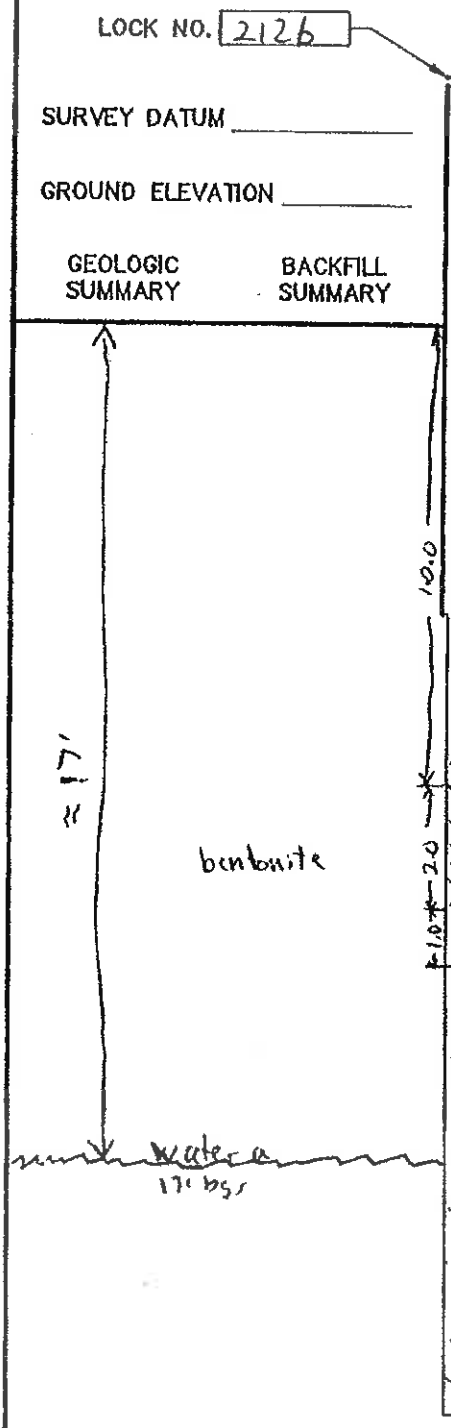
APPENDIX C

WELL INSTALLATION FIELD REPORTS

MONITORING WELL INSTALLATION REPORT

PROJECT Harrison St
FILE NO. 100301
CONTRACTOR Natures Way
DATE OF INSTALLATION 5-10-00
LOCATION West side of site

GEOLOGIST Wm. Czelusta
DRILLER B. Bartel / S. Bingrich
WELL NO. MW-1
BORING NO. ' '
SHEET 1 OF 1



ELEVATION/STICK UP ABOVE/BELOW GROUND SURFACE OF CASING	2.9' above
ELEVATION/STICK UP ABOVE/BELOW GROUND SURFACE OF RISER PIPE	2.75' above sur.
THICKNESS OF SURFACE SEAL	10.0'
TYPE OF SURFACE SEAL	grout
TYPE OF PROTECTIVE CASING	steel
INSIDE DIAMETER OF PROTECTIVE CASING	4.25'
ELEVATION/DEPTH OF BOTTOM OF PROTECTIVE CASING	2.9'
INSIDE DIAMETER OF RISER PIPE	2.0"
TYPE OF BACKFILL AROUND RISER	bentonite
DIAMETER OF BORE HOLE WITHIN TEST SECTION	8"
TYPE OF COUPLING	thread w/ ring
ELEVATION/DEPTH OF TOP OF SCREEN	13.0'
TYPE OF WELL SCREEN	no. 10 slot
SCREEN SLOT SIZE	0.010"
DIAMETER OF WELL SCREEN	2.0"
TYPE OF BACKFILL AROUND WELL SCREEN	global no. 6
ELEVATION/DEPTH OF BOTTOM OF WELL SCREEN	23.0
ELEVATION/DEPTH OF BOTTOM OF BOREHOLE	29.0

(FIGURES REFER TO ELEVATION____ DEPTH____)

MONITORING WELL INSTALLATION REPORT

PROJECT 103301
FILE NO. _____
CONTRACTOR _____
DATE OF INSTALLATION _____
LOCATION _____

GEOLOGIST Wm. Czekstar, Jr.
DRILLER Natures Way
WELL NO. MW-2
BORING NO. MW-2
SHEET 1 OF 1

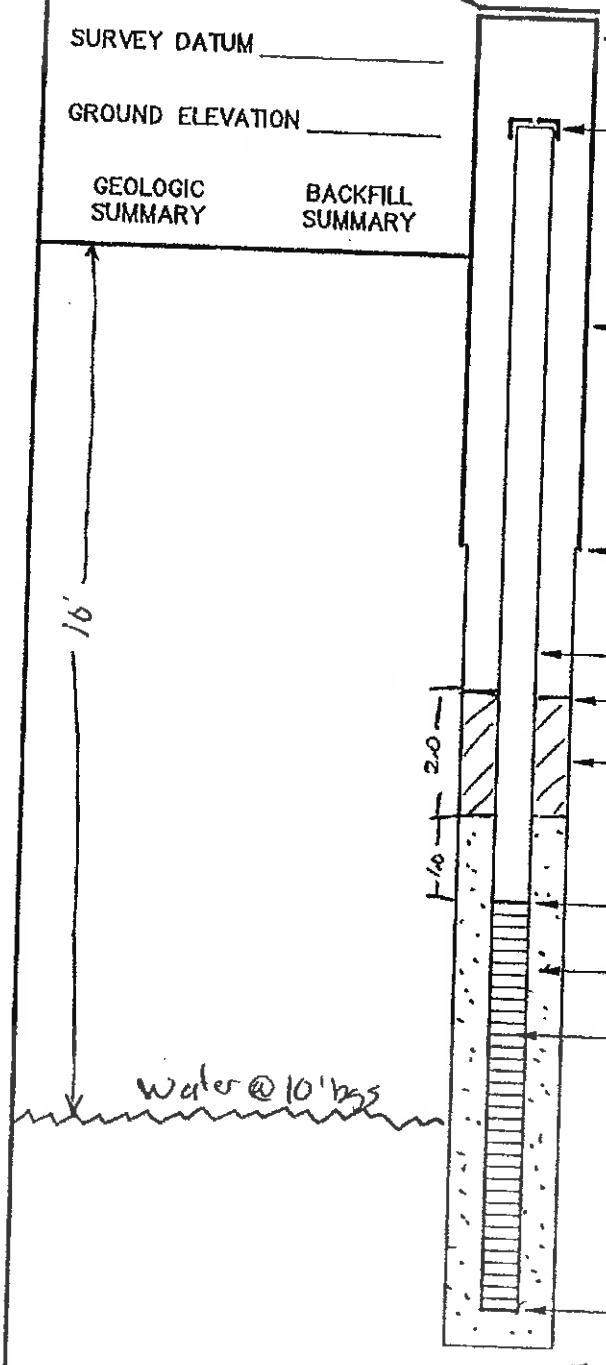
LOCK NO. 2126

SURVEY DATUM _____

GROUND ELEVATION _____

GEOLOGIC SUMMARY

BACKFILL SUMMARY



ELEVATION/STICK UP ABOVE/BELOW GROUND SURFACE OF CASING	2.45'
ELEVATION/STICK UP ABOVE/BELOW GROUND SURFACE OF RISER PIPE	2.47'
THICKNESS OF SURFACE SEAL	2.50'
TYPE OF SURFACE SEAL	grout
TYPE OF PROTECTIVE CASING	steel
INSIDE DIAMETER OF PROTECTIVE CASING	4.25"
ELEVATION/DEPTH OF BOTTOM OF PROTECTIVE CASING	2.25'
INSIDE DIAMETER OF RISER PIPE	2.0"
TYPE OF BACKFILL AROUND RISER	bentonite
DIAMETER OF BORE HOLE WITHIN TEST SECTION	8"
TYPE OF COUPLING	thread w/o ring
ELEVATION/DEPTH OF TOP OF SCREEN	5.5'
TYPE OF WELL SCREEN	no. 10 slot
SCREEN SLOT SIZE	0.010"
DIAMETER OF WELL SCREEN	2.0"
TYPE OF BACKFILL AROUND WELL SCREEN	global no. 6
ELEVATION/DEPTH OF BOTTOM OF WELL SCREEN	15.5
ELEVATION/DEPTH OF BOTTOM OF BOREHOLE	16.0

(FIGURES REFER TO ELEVATION____DEPTH____)

MONITORING WELL INSTALLATION REPORT

PROJECT Harrison St. Brownfield
FILE NO. 103301
CONTRACTOR Natures Way
DATE OF INSTALLATION 5-12-00
LOCATION N. End of Site

GEOLOGIST Wm. Czekusta
DRILLER S. Gingrich
WELL NO. MW-3
BORING NO. MW-3
SHEET 1 OF 1

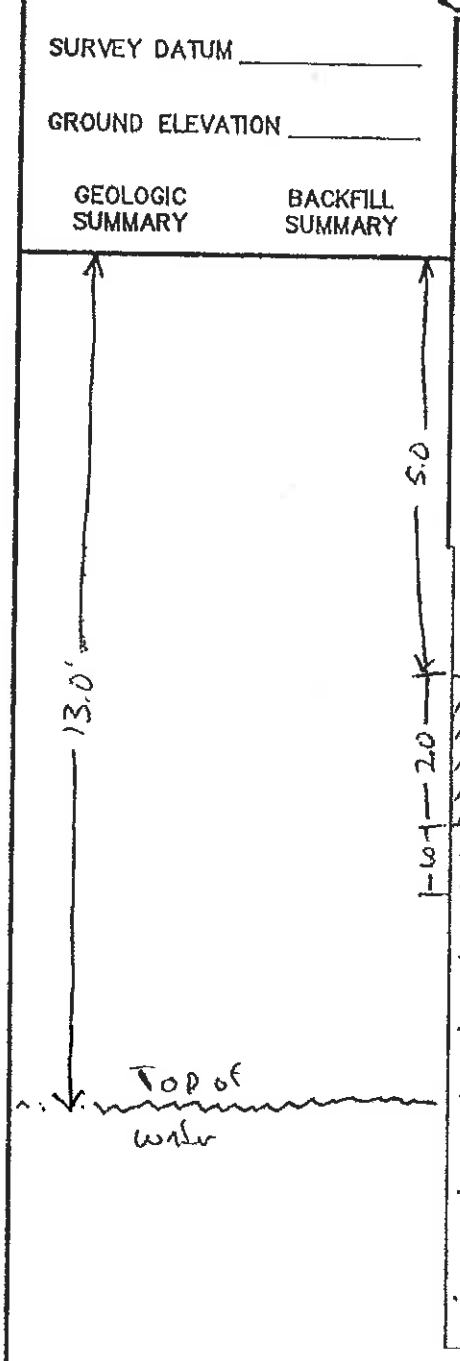
LOCK NO. 2126

SURVEY DATUM _____

GROUND ELEVATION _____

GEOLOGIC SUMMARY

BACKFILL SUMMARY



ELEVATION/STICK UP ABOVE/(BELOW) GROUND SURFACE OF CASING	0.65
ELEVATION/STICK UP ABOVE/(BELOW) GROUND SURFACE OF RISER PIPE	0.38
THICKNESS OF SURFACE SEAL	5.0'
TYPE OF SURFACE SEAL	grout
TYPE OF PROTECTIVE CASING	steel flush
INSIDE DIAMETER OF PROTECTIVE CASING	0.25"
ELEVATION/DEPTH OF BOTTOM OF PROTECTIVE CASING	0.60'
INSIDE DIAMETER OF RISER PIPE	2.6"
TYPE OF BACKFILL AROUND RISER	bentonite
DIAMETER OF BORE HOLE WITHIN TEST SECTION	8"
TYPE OF COUPLING	threaded o-ring
ELEVATION/DEPTH OF TOP OF SCREEN	8.0
TYPE OF WELL SCREEN	no. 10 slot
SCREEN SLOT SIZE	0.010"
DIAMETER OF WELL SCREEN	2.0"
TYPE OF BACKFILL AROUND WELL SCREEN	global no. 6
ELEVATION/DEPTH OF BOTTOM OF WELL SCREEN	18.0
ELEVATION/DEPTH OF BOTTOM OF BOREHOLE	19.0

(FIGURES REFER TO ELEVATION____DEPTH____)

MONITORING WELL INSTALLATION REPORT

PROJECT Harrison St. Brownfield
FILE NO. 103301
CONTRACTOR Natures Way
DATE OF INSTALLATION 5.12.00
LOCATION

GEOLOGIST Wm. Cedarstaff, Jr.
DRILLER S. Gingerich
WELL NO. MW-1
BORING NO. MW-1
SHEET 1 OF 1

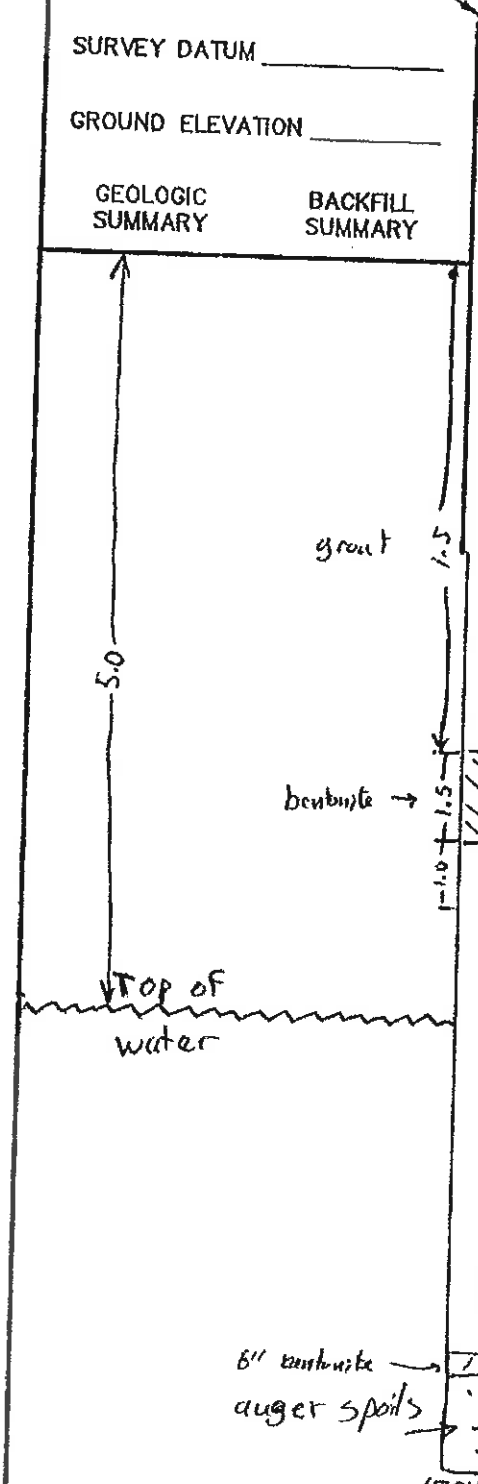
LOCK NO. 2126

SURVEY DATUM

GROUND ELEVATION

GEOLOGIC SUMMARY

BACKFILL SUMMARY



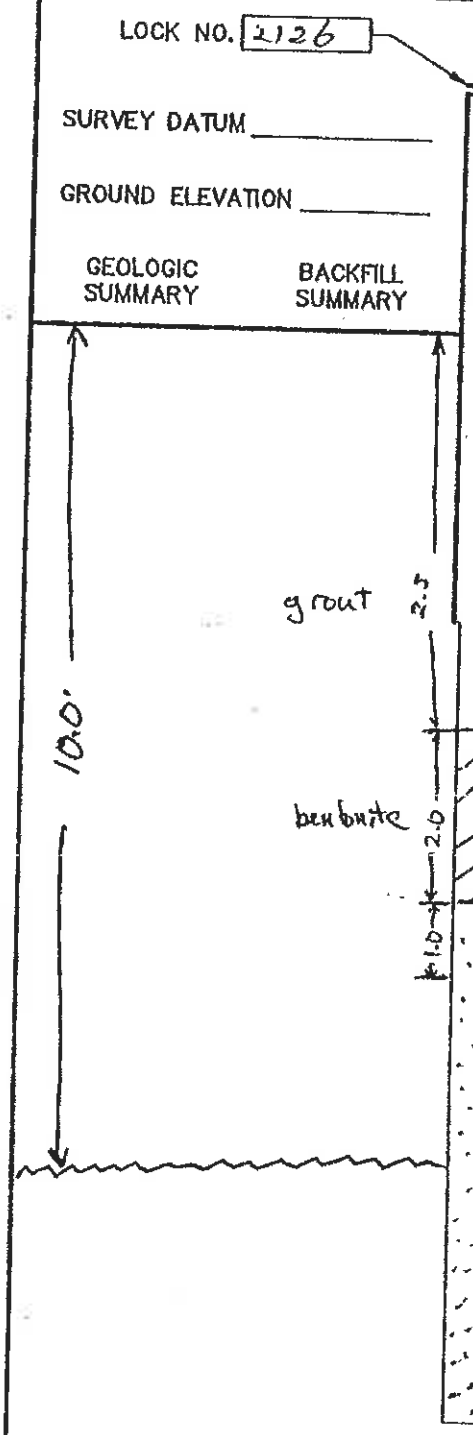
ELEVATION/STICK UP ABOVE/BELOW GROUND SURFACE OF CASING	0.62
ELEVATION/STICK UP ABOVE/BELOW GROUND SURFACE OF RISER PIPE	0.49
THICKNESS OF SURFACE SEAL	1.5'
TYPE OF SURFACE SEAL	grout
TYPE OF PROTECTIVE CASING	flushmount steel
INSIDE DIAMETER OF PROTECTIVE CASING	0.75'
ELEVATION/DEPTH OF BOTTOM OF PROTECTIVE CASING	0.60'
INSIDE DIAMETER OF RISER PIPE	2.0"
TYPE OF BACKFILL AROUND RISER	bentonite
DIAMETER OF BORE HOLE WITHIN TEST SECTION	8"
TYPE OF COUPLING	threaded O-ring
ELEVATION/DEPTH OF TOP OF SCREEN	4.0'
TYPE OF WELL SCREEN	no. 10 slot
SCREEN SLOT SIZE	0.010"
DIAMETER OF WELL SCREEN	2.0"
TYPE OF BACKFILL AROUND WELL SCREEN	global No. 6 sand
ELEVATION/DEPTH OF BOTTOM OF WELL SCREEN	14.0'
ELEVATION/DEPTH OF BOTTOM OF BOREHOLE	15.0'
depth of auger advance	18.0'

(FIGURES REFER TO ELEVATION____DEPTH____)

MONITORING WELL INSTALLATION REPORT

PROJECT Harrison St. Brownfield
FILE NO. 103301
CONTRACTOR Natures Way
DATE OF INSTALLATION 5-12-00
LOCATION N. End near Harrison St.

GEOLOGIST Wm Leelasta
DRILLER S. Gingrich
WELL NO. MW-5
BORING NO. MW-5
SHEET 1 OF 1



ELEVATION/STICK UP ABOVE/BELOW GROUND SURFACE OF CASING	2.85'
ELEVATION/STICK UP ABOVE/BELOW GROUND SURFACE OF RISER PIPE	2.75'
THICKNESS OF SURFACE SEAL	2.5'
TYPE OF SURFACE SEAL	grout
TYPE OF PROTECTIVE CASING	steel riser
INSIDE DIAMETER OF PROTECTIVE CASING	1.25"
ELEVATION/DEPTH OF BOTTOM OF PROTECTIVE CASING	1.75'
INSIDE DIAMETER OF RISER PIPE	2.0"
TYPE OF BACKFILL AROUND RISER	bentonite
DIAMETER OF BORE HOLE WITHIN TEST SECTION	8"
TYPE OF COUPLING	threaded w/ O-ring
ELEVATION/DEPTH OF TOP OF SCREEN	5.5'
TYPE OF WELL SCREEN	no. 10 slot
SCREEN SLOT SIZE	0.010"
DIAMETER OF WELL SCREEN	2.0"
TYPE OF BACKFILL AROUND WELL SCREEN	global no. 6
ELEVATION/DEPTH OF BOTTOM OF WELL SCREEN	15.5
ELEVATION/DEPTH OF BOTTOM OF BOREHOLE	16.0

(FIGURES REFER TO ELEVATION____DEPTH____)

APPENDIX D

WELL DEVELOPMENT/SAMPLING LOGS

TVGA Engineering, Surveying, P.C.
Well Development Log

MW Designation: MW-1

Project Name: Harrison St Brownfield Phase II ESA
Project Location: 247-335 Harrison St. Saratoga, NY

Project No: 103301
Date: 05-16-08
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 23.66 (from TOC)

(2) Depth to Water: 15.92 ft (from TOC)

(3) Column of Water: 7.74 (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.26 gal

Method of Purging: WaTerra/Bailer/Submersible/Other: disposable bailer

Volume Conversion:

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

Field Analysis:

Vol Purged (gal)	–	5l	5l	5l	5l	5l		
Time	1345	1357	13:55	1402	1406	1412		
ORP/EH (MV)	–							
pH	–							
Cond. (MS/CM)	–							
Turb. (NTU)	–							
D.O. (mg/l)	–							
Salinity (%)	–							
Temp. (°C)	–							

Total Volume Purged: 25l (6.6) gal Total Purge Time: 21 minutes

Development Info:

Development Method: bailer

Comments: 5.25 volumes removed. No sheen, odor or phase seperation noted

Logged By: WJC

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TVGA Engineering, Surveying, P.C.
Well Sampling Log

Sample Designation: MW-1

Project Name: Harrison St Brownfield Phase II ESA
Project Location: 247-335 Harrison St. Jamestown NY

Project No: 103301
Date: 05-17-00
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 22.16 (from TOC)

(2) Depth to Water: 16.29 ft (from TOC)

(3) Column of Water: 5.87 (#1 - #2)

(4) Casing Diameter: 2.0 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 0.96 gal

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

Volume Conversion:

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

Field Analysis:

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

Total Volume Purged: 0 gal Total Purge Time: 0

Sampling Info:

Sample Method: bailer

Sample Time: 0935 No. of Bottles (2) VOAs (1) 1Lamber (1) HDPE

Sample Analyses: TCL (VOCs+SVOC's) TAL (Metals)

Comments: Little fines in sample volume, removed 2L, no sheen or odor present

Logged By: WJC

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TVGA Engineering, Surveying, P.C.
Well Development Log

MW Designation: MW-2

Project Name: Accident St Bowfield Phase II ESA
Project Location: 247-335 Harrison St, Jamestown, NY

Project No: 103301
Date: 5-16-20
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 17.86 (from TOC)

(2) Depth to Water: 3.30 ft (from TOC)

(3) Column of Water: 14.56 (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 2.37 gal

Method of Purging: WaTerra/Bailer/Submersible/Other: disposable bailer

Volume Conversion:

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

Field Analysis:

Vol Purged (gal)	—	9L	9L	9L	9L	2L		
Time	1010	1017	1023	1028	1037	1042		
ORP/EH (MV)	—							
pH	—							
Cond. (MS/CM)	—							
Turb. (NTU)	—							
D.O. (mg/l)	—							
Salinity (%)	—							
Temp. (°C)	—							

Total Volume Purged: 38L or 10 gal Total Purge Time: 32 min

Development Info:

Development Method: disposable bailer

Comments: purge to dryness after 4 volumes, 1st volume clear, then cloudy, no odor. (9.25 volumes purged)

Logged By:

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Sheet 1 of 1

TVGA Engineering, Surveying, P.C.
Well Sampling Log

Sample Designation: MW-2

Project Name: Harrison St. Brownfield Place II-ESA
Project Location: 247-335 Harrison St. Johnstown, NY

Project No: 103301
Date: 05-17-00
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 17.83 (from TOC)

(2) Depth to Water: 3.54 ft (from TOC)

(3) Column of Water: 14.29 (#1 - #2)

(4) Casing Diameter: 2.0 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 2.33 gal

Method of Purging: WaTerra/Bailer/Submersible/Other: none

Volume Conversion:

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

Field Analysis:

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

Total Volume Purged: 0 gal Total Purge Time: 0

Sampling Info:

Sample Method: bailer

Sample Time: 1005

No. of Bottles (2) VOAs (1) 1L amber (1) HDPE

Sample Analyses: TCL VOCs, TCL SVOCs, TAL Metals

Comments: Sample is clear, no odor.

Logged By: WSC

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Sheet ___ of ___

TVGA Engineering, Surveying, P.C. Well Development Log	MW Designation: MW-3
Project Name: Harrison St Brownfield Phase II-ESA Project Location: 247-335 Harrison St, Jamestown, NY	Project No: 103301 Date: 5-16-08 Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 17.42 (from TOC)

(2) Depth to Water: 6.12 ft (from TOC)

(3) Column of Water: 11.3 (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.84 gal

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

Volume Conversion:

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

Field Analysis:

Vol Purged (gal)	–	7	7	7	7	7		
Time	1540	1545	1550	1555	1605	1615		
ORP/EH (MV)	–							
pH	–							
Cond. (MS/CM)	–							
Turb. (NTU)	–							
D.O. (mg/l)	–							
Salinity (%)	–							
Temp. (°C)	–							

Total Volume Purged: 35 l or 9.25 gal Total Purge Time: 35 minutes

Development Info:

Development Method: bailer

Comments: 5 vol purged, or 35 l or 9.25 gal. Water is clear, no odor.

Logged By: WJC

TVGA Engineering, Surveying, P.C.
Well Sampling Log

Sample Designation: MW-3

Project Name: Harrison St Brownfield Pkg II-BSA
Project Location: 247-335 Harrison St Jamestown, NY

Project No: 103301
Date: 5-17-00
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 17.41 (from TOC)

(2) Depth to Water: 5.84 ft (from TOC)

(3) Column of Water: 11.57 (#1 - #2)

(4) Casing Diameter: 2.0 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.89 gal

Method of Purging: WaTerra/Bailer/Submersible/Other: bailer - NA

Volume Conversion:

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

Field Analysis:

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

Total Volume Purged: 6 gal Total Purge Time: 0

Sampling Info:

Sample Method: bailer

Sample Time: 1025

No. of Bottles (2) VOA's (1) 1 amber (1) HDPE

Sample Analyses: TCL VOCs, TCL SVOCs, TAL Metals

Comments: clear, little silt, sulfur odor

Logged By:

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Sheet ___ of ___

TVGA Engineering, Surveying, P.C.
Well Development Log

MW Designation: MW-4

Project Name: Harrison Brownfield Phase II - ESA
Project Location: 217-335 Harrison St, Syracuse, NY

Project No: 103301
Date: 5-16-00
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 12.77 (from TOC)

(2) Depth to Water: 4.12 (from TOC) ft

(3) Column of Water: 8.65 (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.4 gal

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

Volume Conversion:

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

Field Analysis:

Vol Purged (gal)	–	6l	6l	6l	6l	6l		
Time	–	6l	ll					
ORP/EH (MV)	–	340	345	340	325	330		
pH	–	–						
Cond. (MS/CM)	–	–						
Turb. (NTU)	–	–						
D.O. (mg/l)	–	–						
Salinity (%)	–	–						
Temp. (°C)	–	–						

Total Volume Purged: 30l or 7.9 gal Total Purge Time: 20 minutes

Development Info:

Development Method: bailer

Comments: murky, no odor . 5.6 volumes purged

Logged By: WJC

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Sheet 1 of 1

TVGA Engineering, Surveying, P.C.
Well Sampling Log

Sample Designation: MW-4

Project Name: Harrison St Brownfield, Phase II ESA
Project Location: 217-33 x Harrison St, Syracuse

Project No: 163301
Date: 5-17-00
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 12.76 (from TOC)

(2) Depth to Water: 4.59 ft (from TOC)

(3) Column of Water: 8.17 (#1 - #2)

(4) Casing Diameter: 2.0 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.33 gal

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

Volume Conversion:

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

Field Analysis:

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

Total Volume Purged: 0 gal Total Purge Time: 0

Sampling Info:

Sample Method: bailer

Sample Time: 1055 No. of Bottles: (2)VOAs, (1)Lambda, (1)HDPE

Sample Analyses: TCL-VOCs, TCL-SVOCs, TAL-total metals

Comments: clear, odor and sheen-free

Logged By: WJC

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Sheet 1 of 1

TVGA Engineering, Surveying, P.C. Well Development Log	MW Designation: MW-5
Project Name: Harrison St Bayfield Phase II Project Location: 247-335 Harrison St Jamestown, NY	Project No: 103301 Date: 5-16-00 Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 18.05 (from TOC)

(2) Depth to Water: 8.21 (from TOC) ft

(3) Column of Water: 9.84 (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.60 gal

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

Volume Conversion:

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

Field Analysis:

Vol Purged (gal)	5l	6l	6l	6l	6l			
Time	09:25	0935	0940	0945	0950	0955		
ORP/EH (MV)	—							
pH	—							
Cond. (MS/CM)	—							
Turb. (NTU)	—							
D.O. (mg/l)	—							
Salinity (%)	—							
Temp. (°C)	—							

Total Volume Purged: 30l (7.9 gal) Total Purge Time: 30 minutes

Development Info:

Development Method: dedicated Bailer

Comments: murky/wet a sulfur odor, 5 volumes purged

Logged By: WJC

TVGA Engineering, Surveying, P.C.
Well Sampling Log

Sample Designation: MW-5

Project Name: Harrison St. Bamfield Phase II - ESA
Project Location: 247-335 Harrison St., Jamestown, NY

Project No: 10330'
Date: 5-17-00
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 17.99 (from TOC)

(2) Depth to Water: 8.24 ft (from TOC)

(3) Column of Water: 9.75 (#1 - #2)

(4) Casing Diameter: 20 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.58 gal

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

Volume Conversion:

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

Field Analysis:

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

Total Volume Purged: _____ gal Total Purge Time: _____

Sampling Info:

Sample Method: bailer

Sample Time: 1125

No. of Bottles: (2) VOA's (1) 1L amber (1) HDPE

Sample Analyses: TCL VOCs, TCL SVOCs, TAL metals

Comments:

Logged By: WJC

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APPENDIX E

CHAIN OF CUSTODY

PARADIGM ENVIRONMENTAL SERVICES, INC.

179 Lake Avenue

Rochester, NY 14608

(716) 647-2530 * (800) 724-1997

CHAIN OF CUSTODY

REPORT TO:

COMPANY: TVGA Engineering

ADDRESS: 1000 Maple Rd - POBox H

CITY: Elma STATE: NY ZIP: 14059

PHONE: 7166558842 FAX: 0937

ATTN: Rob Napieralski / Bill Czelusta

COMMENTS:

INVOICE TO:

COMPANY: Same

ADDRESS:

CITY: STATE: ZIP:

PHONE: FAX:

ATTN:

LAB PROJECT #: 00-1021

CLIENT PROJECT #: 103301

PROJECT NAME/SITE NAME: [illegible] St. Brownfield Jamestown, NY

TURNAROUND TIME: (WORKING DAYS) 10 DAY

STD [1] [2] [3] [5] OTHER

REQUESTED ANALYSIS

	DATE	TIME	COMPOSITE	GRAB	SAMPLE LOCATION/FIELD ID	MATRIX	NUMBER OF CONTAINERS	TCL-VOCs 8240	TCL-SVOCs 8270	TAL-Metals (6010/7471)	REMARKS	PARADIGM LAB SAMPLE NUMBER
1	5-17-00	0935		X	MW-1	L	4	X	X	X		3 9 5 8
2	5-17-00	1005		X	MW-2	L	4	X	X	X		3 9 5 9
3	5-17-00	1025		X	MW-3	L	4	X	X	X		3 9 6 0
4	5-17-00	1055		X	MW-4	L	4	X	X	X		3 9 6 1
5	5-17-00	1125		X	MW-5	L	4	X	X	X		3 9 6 2
6	5-17-00				Trip blank	L	1	X	X	X		3 9 6 3
7	5-17-00	1145	X		DS-1	S	2	X	X	X	only need 1 for VOA's	3 9 6 3
8	5-17-00	1155	X		US-1	S	2	X	X	X		3 9 6 4
9												3 9 6 5
10												
						Total = 25						

LAB USE ONLY

SAMPLE CONDITION: Check box if acceptable or note deviation: CONTAINER TYPE: PRESERVATIONS: HOLDING TIME: TEMPERATURE:

Sampled By: [signature] Date/Time: 5/17/00 1700

Relinquished By: Date/Time:

Relinquished By: Date/Time:

Received By: Kevin Zielinski Date/Time: 5/17/00 5:05pm

Received By: Date/Time:

Received @ Lab By: [signature] Date/Time: 5/19/2000

Total Cost:

P.I.F.

PARADIGM ENVIRONMENTAL SERVICES, INC.

179 Lake Avenue
Rochester, NY 14608
(716) 647-2530 * (800) 724-1997

CHAIN OF CUSTODY

REPORT TO

COMPANY: TVGA Engineering
ADDRESS: 1000 Maple Rd. Box 44
CITY: Elma STATE: NY ZIP: 14059
PHONE: 716 655 8842 FAX:
ATTN: Rob Neberoski
COMMENTS:

INVOICE TO

COMPANY: Same
ADDRESS:
CITY: STATE: ZIP:
PHONE: FAX:
ATTN:

LAB PROJECT #: 00-04910
CLIENT PROJECT #: 103301

TURNAROUND TIME: (WORKING DAYS)
STD 1 2 3 5 OTHER 10

PROJECT NAME/SITE NAME: Harrison St. Bamfield 247-335 Harrison St. Jamestown, NY

REQUESTED ANALYSIS

	DATE	TIME	COMPOSITE	GRAB	SAMPLE LOCATION/FIELD ID	MATRIX	NUMBER OF CONTAINERS	TCL-VOCs 8260	TCL-SVOCs 8270	TAL-metals 6010/7471	REMARKS	PARADIGM LAB SAMPLE NUMBER
1	5-10-00	1320		X	TB-1-S4	Soil	2	X	X	X		37806
2	5-10-00	1530		X	TB-2-S3	Soil	2	X	X	X		37811
3	5-11-00	1500		X	TB-5-S2	Soil	2	X	X	X		37816
4	5-11-00	1340		X	MW-3-S3	Soil	2	X	X	X		37823
5	5-12-00	1545		X	MW-5-S3	Soil	2	X	X	X		37834
6						Soil	10					
7												
8												
9												
10												

LAB USE ONLY

SAMPLE CONDITION: Check box if acceptable or note deviation: CONTAINER TYPE: PRESERVATIONS: HOLDING TIME: TEMPERATURE:

Sampled By: [signature] Date/Time: 5/12/00 1800

Relinquished By: Date/Time:

Relinquished By: Date/Time:

Received By: Kevin Kuhlmeier 5/12/00 Date/Time: 6:35pm

Received By: Date/Time:

Received @ Lab By: [signature] Date/Time: 5/15/00 0955

Total Cost:

P.I.F.

APPENDIX F

ANALYTICAL LABORATORY RESULTS – SEDIMENT

PARADIGM
ENVIRONMENTAL
SERVICES, INC.

179 Lake Avenue Rochester, New York 14608 716-647-2530 FAX 716-647-3311

Volatile Organic Compound Laboratory Analysis Report For Soil/Sludge

Client:	TVGA Engineering	**Lab Project No:**	00-1021
		Lab Sample No:	3865
Client Job Site:	Harrison St. Brownfield Jamestown, NY	**Sample Type:**	Soil
Client Job No:	103301		
		Date Sampled:	05/17/00
Field Location:	US-1	**Date Received:**	05/18/00
Field ID No:	N/A	**Date Analyzed:**	05/22/00

VOLATILE HALOCARBONS	RESULTS (ug/Kg)
Bromodichloromethane	ND< 9.29
Bromomethane	ND< 9.29
Bromoform	ND< 9.29
Carbon tetrachloride	ND< 9.29
Chloroethane	ND< 9.29
Chloromethane	ND< 9.29
2-Chloroethyl vinyl ether	ND< 9.29
Chloroform	ND< 9.29
Dibromochloromethane	ND< 9.29
1,1-Dichloroethane	ND< 9.29
1,2-Dichloroethane	ND< 9.29
1,1-Dichloroethene	ND< 9.29
trans-1,2-Dichloroethene	ND< 9.29
1,2-Dichloropropane	ND< 9.29
cis-1,3-Dichloropropene	ND< 9.29
trans-1,3-Dichloropropene	ND< 9.29
Methylene chloride	ND< 23.2
1,1,2,2-Tetrachloroethane	ND< 9.29
Tetrachloroethene	ND< 9.29
1,1,1-Trichloroethane	ND< 9.29
1,1,2-Trichloroethane	ND< 9.29
Trichloroethene	ND< 9.29
Vinyl Chloride	ND< 9.29

VOLATILE AROMATICS	RESULTS (ug/Kg)
Benzene	ND< 9.29
Chlorobenzene	ND< 9.29
Ethylbenzene	ND< 9.29
Toluene	ND< 9.29
m,p - Xylene	ND< 9.29
o - Xylene	ND< 9.29
Styrene	ND< 9.29
Ketones & Misc.	
Acetone	ND< 46.5
Vinyl acetate	ND< 23.2
2-Butanone	ND< 23.2
4-Methyl-2-pentanone	ND< 23.2
2-Hexanone	ND< 23.2
Carbon disulfide	ND< 23.2

Analytical Method: EPA 8260 ELAP ID No: 10958

Comments: ND denotes Not Detected

Approved By _____
Laboratory Director

001021V8.XLS

PARADIGM
ENVIRONMENTAL SERVICES, INC.
179 Lake Avenue, Rochester, New York 14608 (716) 647-2530 FAX (716) 647-3311

SEMI-VOLATILES LABORATORY REPORT FOR SOIL/SOLIDS

Client:	TVGA Engineering	**Lab Project No.:**	00-1021
Client Job Site:	Harrison St. Brownfield Jamestown, NY	**Lab Sample No.:**	3865
		Sample Type:	Soil
Client Job No.:	103301	**Sample Date:**	05/17/2000
Field Location:	US-1	**Date Received:**	05/18/2000
Field ID No.:	N/A	**Date Analyzed:**	05/25/2000

COMPOUND	RESULT (ug/Kg)	COMPOUND	RESULT (ug/Kg)
Benzyl alcohol	ND< 834	2,4-Dinitrophenol	ND< 334
Bis (2-chloroethyl) ether	ND< 334	2,4-Dinitrotoluene	ND< 334
Bis (2-chloroisopropyl) ether	ND< 334	2,6-Dinitrotoluene	ND< 334
2-Chlorophenol	ND< 334	Fluorene	ND< 334
1,3-Dichlorobenzene	ND< 334	Hexachlorocyclopentadiene	ND< 334
1,4-Dichlorobenzene	ND< 334	2-Nitroaniline	ND< 834
1,2-Dichlorobenzene	ND< 334	3-Nitroaniline	ND< 834
Hexachloroethane	ND< 334	4-Nitroaniline	ND< 834
2-Methylphenol	ND< 334	4-Nitrophenol	ND< 834
4-Methylphenol	ND< 334	2,4,6-Trichlorophenol	ND< 334
N-Nitrosodimethylamine	ND< 334	2,4,5-Trichlorophenol	ND< 834
N-Nitroso-di-n-propylamine	ND< 334	4-Bromophenyl phenyl ether	ND< 334
Phenol	ND< 334	Di-n-butyl phthalate	ND< 334
Benzoic acid	ND< 834	4,6-Dinitro-2-methylphenol	ND< 834
Bis (2-chloroethoxy) methane	ND< 334	Fluoranthene	2,390
4-Chloroaniline	ND< 334	Hexachlorobenzene	ND< 334
4-Chloro-3-methylphenol	ND< 334	N-Nitrosodiphenylamine	ND< 334
2,4-Dichlorophenol	ND< 334	Pentachlorophenol	ND< 834
2,6-Dichlorophenol	ND< 334	Anthracene	378
2,4-Dimethylphenol	ND< 334	Phenanthrene	1,590
Hexachlorobutadiene	ND< 334	Benzidine	ND< 834
Isophorone	ND< 334	Benzo (a) anthracene	1,050
2-Methylnapthalene	ND< 334	Bis (2-ethylhexyl) phthalate	ND< 334
Naphthalene	ND< 334	Butylbenzylphthalate	ND< 334
Nitrobenzene	ND< 334	Chrysene	1,260
2-Nitrophenol	ND< 334	3,3'-Dichlorobenzidine	ND< 334
1,2,4-Trichlorobenzene	ND< 334	Pyrene	2,360
2-Chloronaphthalene	ND< 334	Benzo (b) fluoranthene	1,570
Acenaphthene	ND< 334	Benzo (k) fluoranthene	552
Acenapthylene	ND< 334	Benzo (g,h,i) perylene	465
4-Chlorophenyl phenyl ether	ND< 334	Benzo (a) pyrene	1,010
Dibenzofuran	ND< 334	Dibenz (a,h) anthracene	ND< 334
Diethyl phthalate	ND< 334	Di-n-octylphthalate	ND< 334
Dimethyl phthalate	ND< 834	Indeno (1,2,3-cd) pyrene	455

Analytical Method: EPA 8270

ELAP ID No: 10958

Comments: ND denotes Not Detected

Approved By: _____
Laboratory Director

PARADIGM
Environmental Services, Inc. 179 Lake Avenue Rochester, New York 14608 716-647-2530 FAX 716- 647-3311

Client: TVGA Engineers

Client Job Site: Harrison Street
Jamestown NY

Client Job No.: 103301

Field Location: US-1
Field ID No.: N/A

Lab Project No. 00-1021
Lab Sample No. 3865

Sample Type: Soil

Date Sampled: 05/17/2000
Date Received: 05/18/2000

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	05/24/00	SW846 6010	5980
Antimony	05/23/00	SW846 6010	<4.68
Arsenic	05/23/00	SW846 6010	12.2
Barium	05/23/00	SW846 6010	67.1
Beryllium	05/23/00	SW846 6010	<0.390
Cadmium	05/23/00	SW846 6010	1.41
Calcium	05/24/00	SW846 6010	9740
Chromium	05/23/00	SW846 6010	47.2
Cobalt	05/23/00	SW846 6010	7.41
Copper	05/23/00	SW846 6010	139
Iron	05/24/00	SW846 6010	39800
Lead	05/24/00	SW846 6010	156
Magnesium	05/24/00	SW846 6010	3240
Manganese	05/23/00	SW846 6010	520
Mercury	05/25/00	SW846 7471	<0.065
Nickel	05/23/00	SW846 6010	29.3
Potassium	05/22/00	SW846 6010	897
Selenium	05/23/00	SW846 6010	0.624
Silver	05/23/00	SW846 6010	2.50
Sodium	05/23/00	SW846 6010	<77.9
Thallium	05/24/00	SW846 6010	<0.569
Vanadium	05/23/00	SW846 6010	21.0
Zinc	05/24/00	SW846 6010	204

ELAP ID No.:10958

Comments:

Approved By: _____
Laboratory Director

File ID: 001021p7

PARADIGM
ENVIRONMENTAL
SERVICES, INC.

179 Lake Avenue Rochester, New York 14608 716-647-2630 FAX 716-647-3311

Volatile Organic Compound Laboratory Analysis Report For Soil/Sludge

Client:	TVGA Engineering	**Lab Project No:**	00-1021
		Lab Sample No:	3864
Client Job Site:	Harrison St. Brownfield Jamestown, NY	**Sample Type:**	Soil
Client Job No:	103301	**Date Sampled:**	05/17/00
Field Location:	DS-1	**Date Received:**	05/18/00
Field ID No:	N/A	**Date Analyzed:**	05/22/00

VOLATILE HALOCARBONS	RESULTS (ug/Kg)	VOLATILE AROMATICS	RESULTS (ug/Kg)
Bromodichloromethane	ND< 15.3	Benzene	ND< 15.3
Bromomethane	ND< 15.3	Chlorobenzene	ND< 15.3
Bromoform	ND< 15.3	Ethylbenzene	ND< 15.3
Carbon tetrachloride	ND< 15.3	Toluene	ND< 15.3
Chloroethane	ND< 15.3	m,p - Xylene	ND< 15.3
Chloromethane	ND< 15.3	o - Xylene	ND< 15.3
2-Chloroethyl vinyl ether	ND< 15.3	Styrene	ND< 15.3
Chloroform	ND< 15.3		
Dibromochloromethane	ND< 15.3		
1,1-Dichloroethane	ND< 15.3		
1,2-Dichloroethane	ND< 15.3		
1,1-Dichloroethene	ND< 15.3		
trans-1,2-Dichloroethene	ND< 15.3	Ketones & Misc.	
1,2-Dichloropropane	ND< 15.3	Acetone	ND< 76.5
cis-1,3-Dichloropropene	ND< 15.3	Vinyl acetate	ND< 38.3
trans-1,3-Dichloropropene	ND< 15.3	2-Butanone	ND< 38.3
Methylene chloride	ND< 38.3	4-Methyl-2-pentanone	ND< 38.3
1,1,2,2-Tetrachloroethane	ND< 15.3	2-Hexanone	ND< 38.3
Tetrachloroethene	ND< 15.3	Carbon disulfide	ND< 38.3
1,1,1-Trichloroethane	ND< 15.3		
1,1,2-Trichloroethane	ND< 15.3		
Trichloroethene	ND< 15.3		
Vinyl Chloride	ND< 15.3		

Analytical Method: EPA 8260 ELAP ID No: 10958

Comments: ND denotes Not Detected

Approved By _____
Laboratory Director

PARADIGM

ENVIRONMENTAL SERVICES, INC.

179 Lake Avenue, Rochester, New York 14608 (716) 647-2530 FAX (716) 647-3311

SEMI-VOLATILES LABORATORY REPORT FOR SOIL/SOLIDS

Client:	**TVGA Engineering**	**Lab Project No.:**	00-1021
Client Job Site:	Harrison St. Brownfield Jamestown, NY	**Lab Sample No.:**	3864
		Sample Type:	Soil
Client Job No.:	103301	**Sample Date:**	05/17/2000
Field Location:	DS-1	**Date Received:**	05/18/2000
Field ID No.:	N/A	**Date Analyzed:**	05/25/2000

COMPOUND	RESULT (ug/Kg)	COMPOUND	RESULT (ug/Kg)
Benzyl alcohol	ND< 1,330	2,4-Dinitrophenol	ND< 530
Bis (2-chloroethyl) ether	ND< 530	2,4-Dinitrotoluene	ND< 530
Bis (2-chloroisopropyl) ether	ND< 530	2,6-Dinitrotoluene	ND< 530
2-Chlorophenol	ND< 530	Fluorene	ND< 530
1,3-Dichlorobenzene	ND< 530	Hexachlorocyclopentadiene	ND< 530
1,4-Dichlorobenzene	ND< 530	2-Nitroaniline	ND< 1,330
1,2-Dichlorobenzene	ND< 530	3-Nitroaniline	ND< 1,330
Hexachloroethane	ND< 530	4-Nitroaniline	ND< 1,330
2-Methylphenol	ND< 530	4-Nitrophenol	ND< 1,330
4-Methylphenol	ND< 530	2,4,6-Trichlorophenol	ND< 530
N-Nitrosodimethylamine	ND< 530	2,4,5-Trichlorophenol	ND< 1,330
N-Nitroso-di-n-propylamine	ND< 530	4-Bromophenyl phenyl ether	ND< 530
Phenol	ND< 530	Di-n-butyl phthalate	ND< 530
Benzoic acid	ND< 1,330	4,6-Dinitro-2-methylphenol	ND< 1,330
Bis (2-chloroethoxy) methane	ND< 530	Fluoranthene	4,190
4-Chloroaniline	ND< 530	Hexachlorobenzene	ND< 530
4-Chloro-3-methylphenol	ND< 530	N-Nitrosodiphenylamine	ND< 530
2,4-Dichlorophenol	ND< 530	Pentachlorophenol	ND< 1,330
2,6-Dichlorophenol	ND< 530	Anthracene	574
2,4-Dimethylphenol	ND< 530	Phenanthrene	2,540
Hexachlorobutadiene	ND< 530	Benzidine	ND< 1,330
Isophorone	ND< 530	Benzo (a) anthracene	1,930
2-Methylnapthalene	ND< 530	Bis (2-ethylhexyl) phthalate	ND< 530
Naphthalene	ND< 530	Butylbenzylphthalate	ND< 530
Nitrobenzene	ND< 530	Chrysene	2,280
2-Nitrophenol	ND< 530	3,3'-Dichlorobenzidine	ND< 530
1,2,4-Trichlorobenzene	ND< 530	Pyrene	3,850
2-Chloronaphthalene	ND< 530	Benzo (b) fluoranthene	2,720
Acenaphthene	ND< 530	Benzo (k) fluoranthene	1,400
Acenapthylene	ND< 530	Benzo (g,h,I) perylene	ND< 530
4-Chlorophenyl phenyl ether	ND< 530	Benzo (a) pyrene	1,980
Dibenzofuran	ND< 530	Dibenz (a,h) anthracene	ND< 530
Diethyl phthalate	ND< 530	Di-n-octylphthalate	ND< 530
Dimethyl phthalate	ND< 1,330	Indeno (1,2,3-cd) pyrene	791

Analytical Method: EPA 8270

ELAP ID No: 10958

Comments: ND denotes Not Detected

Approved By: _____

Laboratory Director

PARADIGM
Environmental Services, Inc. 179 Lake Avenue Rochester, New York 14608 716-647-2530 FAX 716- 647-3311

Client: TVGA Engineers

Client Job Site: Harrison Street
Jamestown NY

Client Job No.: 103301

Field Location: DS-1
Field ID No.: N/A

Lab Project No. 00-1021
Lab Sample No. 3864

Sample Type: Soil

Date Sampled: 05/17/2000
Date Received: 05/18/2000

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	05/24/00	SW846 6010	6940
Antimony	05/23/00	SW846 6010	<5.69
Arsenic	05/23/00	SW846 6010	13.3
Barium	05/23/00	SW846 6010	98.6
Beryllium	05/23/00	SW846 6010	1.90
Cadmium	05/23/00	SW846 6010	2.55
Calcium	05/24/00	SW846 6010	6530
Chromium	05/23/00	SW846 6010	34.9
Cobalt	05/23/00	SW846 6010	6.90
Copper	05/23/00	SW846 6010	80.3
Iron	05/24/00	SW846 6010	29400
Lead	05/24/00	SW846 6010	107
Magnesium	05/24/00	SW846 6010	3490
Manganese	05/23/00	SW846 6010	752
Mercury	05/25/00	SW846 7471	0.154
Nickel	05/23/00	SW846 6010	24.6
Potassium	05/22/00	SW846 6010	1200
Selenium	05/23/00	SW846 6010	1.04
Silver	05/23/00	SW846 6010	2.08
Sodium	05/23/00	SW846 6010	<94.7
Thallium	05/24/00	SW846 6010	<0.569
Vanadium	05/23/00	SW846 6010	17.6
Zinc	05/24/00	SW846 6010	178

ELAP ID No.:10958

Comments:

Approved By: _____
Laboratory Director

File ID: 001021p6

APPENDIX G

ANALYTICAL LABORATORY RESULTS – SUBSURFACE SOIL

PARADIGM ENVIRONMENTAL SERVICES, INC.

179 Lake Avenue Rochester, New York 14608 716-647-2630 FAX 716-647-3311

Volatile Organic Compound Laboratory Analysis Report For Soil/Sludge

Client:	TVGA Engineering	**Lab Project No:**	00-0990
Client Job Site:	247-335 Harrison St. Brownfield Jamestown, NY	**Lab Sample No:**	3780
Client Job No:	103301	**Sample Type:**	Soil
Field Location:	TB-1-S4	**Date Sampled:**	05/10/00
Field ID No:	N/A	**Date Received:**	05/15/00
		Date Analyzed:	05/17/00

VOLATILE HALOCARBONS	RESULTS (ug/Kg)	VOLATILE AROMATICS	RESULTS (ug/Kg)
Bromodichloromethane	ND< 8.72	Benzene	ND< 8.72
Bromomethane	ND< 8.72	Chlorobenzene	ND< 8.72
Bromoform	ND< 8.72	Ethylbenzene	ND< 8.72
Carbon tetrachloride	ND< 8.72	Toluene	ND< 8.72
Chloroethane	ND< 8.72	m,p - Xylene	ND< 8.72
Chloromethane	ND< 8.72	o - Xylene	ND< 8.72
2-Chloroethyl vinyl ether	ND< 8.72	Styrene	ND< 8.72
Chloroform	ND< 8.72		
Dibromochloromethane	ND< 8.72		
1,1-Dichloroethane	ND< 8.72		
1,2-Dichloroethane	ND< 8.72		
1,1-Dichloroethene	ND< 8.72		
trans-1,2-Dichloroethene	ND< 8.72	Ketones & Misc.	
1,2-Dichloropropane	ND< 8.72	Acetone	ND< 43.6
cis-1,3-Dichloropropene	ND< 8.72	Vinyl acetate	ND< 21.8
trans-1,3-Dichloropropene	ND< 8.72	2-Butanone	ND< 21.8
Methylene chloride	ND< 21.8	4-Methyl-2-pentanone	ND< 21.8
1,1,2,2-Tetrachloroethane	ND< 8.72	2-Hexanone	ND< 21.8
Tetrachloroethene	ND< 8.72	Carbon disulfide	ND< 21.8
1,1,1-Trichloroethane	ND< 8.72		
1,1,2-Trichloroethane	ND< 8.72		
Trichloroethene	ND< 8.72		
Vinyl Chloride	ND< 8.72		

Analytical Method: EPA 8260

ELAP ID No: 10958

Comments: ND denotes Not Detected

Approved By _____
Laboratory Director

000990V1.XLS

PARADIGM

ENVIRONMENTAL SERVICES, INC.

179 Lake Avenue, Rochester, New York 14608 (716) 647-2530 FAX (716) 647-3311

SEMI-VOLATILES LABORATORY REPORT FOR SOIL/SOLIDS

Client:	TVGA Engineering	**Lab Project No.:**	00-0990
Client Job Site:	247-335 Harrison St Brownfield Jamestown, NY	**Lab Sample No.:**	3780
		Sample Type:	Soil
Client Job No.:	103301	**Sample Date:**	05/10/2000
Field Location:	TB-1-S4	**Date Received:**	05/15/2000
Field ID No.:	N/A	**Date Analyzed:**	05/24/2000

COMPOUND	RESULT (ug/Kg)	COMPOUND	RESULT (ug/Kg)
Benzyl alcohol	ND< 882	2,4-Dinitrophenol	ND< 353
Bis (2-chloroethyl) ether	ND< 353	2,4-Dinitrotoluene	ND< 353
Bis (2-chloroisopropyl) ether	ND< 353	2,6-Dinitrotoluene	ND< 353
2-Chlorophenol	ND< 353	Fluorene	ND< 353
1,3-Dichlorobenzene	ND< 353	Hexachlorocyclopentadiene	ND< 353
1,4-Dichlorobenzene	ND< 353	2-Nitroaniline	ND< 882
1,2-Dichlorobenzene	ND< 353	3-Nitroaniline	ND< 882
Hexachloroethane	ND< 353	4-Nitroaniline	ND< 882
2-Methylphenol	ND< 353	4-Nitrophenol	ND< 882
4-Methylphenol	ND< 353	2,4,6-Trichlorophenol	ND< 353
N-Nitrosodimethylamine	ND< 353	2,4,5-Trichlorophenol	ND< 882
N-Nitroso-di-n-propylamine	ND< 353	4-Bromophenyl phenyl ether	ND< 353
Phenol	ND< 353	Di-n-butyl phthalate	ND< 353
Benzoic acid	ND< 882	4,6-Dinitro-2-methylphenol	ND< 882
Bis (2-chloroethoxy) methane	ND< 353	Fluoranthene	ND< 353
4-Chloroaniline	ND< 353	Hexachlorobenzene	ND< 353
4-Chloro-3-methylphenol	ND< 353	N-Nitrosodiphenylamine	ND< 353
2,4-Dichlorophenol	ND< 353	Pentachlorophenol	ND< 882
2,6-Dichlorophenol	ND< 353	Anthracene	ND< 353
2,4-Dimethylphenol	ND< 353	Phenanthrene	ND< 353
Hexachlorobutadiene	ND< 353	Benzidine	ND< 882
Isophorone	ND< 353	Benzo (a) anthracene	ND< 353
2-Methylnapthalene	ND< 353	Bis (2-ethylhexyl) phthalate	ND< 353
Naphthalene	ND< 353	Butylbenzylphthalate	ND< 353
Nitrobenzene	ND< 353	Chrysene	ND< 353
2-Nitrophenol	ND< 353	3,3'-Dichlorobenzidine	ND< 353
1,2,4-Trichlorobenzene	ND< 353	Pyrene	ND< 353
2-Chloronaphthalene	ND< 353	Benzo (b) fluoranthene	ND< 353
Acenaphthene	ND< 353	Benzo (k) fluoranthene	ND< 353
Acenapthylene	ND< 353	Benzo (g,h,i) perylene	ND< 353
4-Chlorophenyl phenyl ether	ND< 353	Benzo (a) pyrene	ND< 353
Dibenzofuran	ND< 353	Dibenz (a,h) anthracene	ND< 353
Diethyl phthalate	ND< 353	Di-n-octylphthalate	ND< 353
Dimethyl phthalate	ND< 882	Indeno (1,2,3-cd) pyrene	ND< 353

Analytical Method: EPA 8270

ELAP ID No: 10958

Comments: ND denotes Not Detected

Approved By: _____
Laboratory Director

PARADIGM
Environmental Services, Inc. 179 Lake Avenue Rochester, New York 14608 716-647-2530 FAX 716- 647-3311

Client: TVGA Engineering

Client Job Site: 247-335 Harrison St. Jamestown NY

Client Job No.: 10/28/2182

Field Location: TB-1-S4

Field ID No.: N/A

Lab Project No. 00-0990
Lab Sample No. 3780

Sample Type: Soil

Date Sampled: 05/10/2000
Date Received: 05/15/2000

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	05/18/00	SW846 6010	8740
Antimony	05/18/00	SW846 6010	<4.59
Arsenic	05/18/00	SW846 6010	11.8
Barium	05/18/00	SW846 6010	126
Beryllium	05/18/00	SW846 6010	<0.382
Cadmium	05/18/00	SW846 6010	0.459
Calcium	05/18/00	SW846 6010	1810
Chromium	05/18/00	SW846 6010	10.1
Cobalt	05/18/00	SW846 6010	6.36
Copper	05/18/00	SW846 6010	14.8
Iron	05/24/00	SW846 6010	19900
Lead	05/18/00	SW846 6010	13.8
Magnesium	05/18/00	SW846 6010	2530
Manganese	05/18/00	SW846 6010	333
Mercury	05/25/00	SW846 7471	<0.070
Nickel	05/18/00	SW846 6010	17.1
Potassium	05/22/00	SW846 6010	1690
Selenium	05/18/00	SW846 6010	<0.382
Silver	05/18/00	SW846 6010	0.994
Sodium	05/18/00	SW846 6010	<76.5
Thallium	05/24/00	SW846 6010	<0.459
Vanadium	05/18/00	SW846 6010	13.5
Zinc	05/25/00	SW846 6010	47.7

ELAP ID No.:10958

Comments:

Approved By: _____
Laboratory Director

File ID: 000990p1

PARADIGM
ENVIRONMENTAL
SERVICES, INC.

179 Lake Avenue Rochester, New York 14608 716-647-2530 FAX 716-647-3311

Volatile Organic Compound Laboratory Analysis Report For Soil/Sludge

Client:	TVGA Engineering	**Lab Project No:**	00-0990
Client Job Site:	247-335 Harrison St. Brownfield Jamestown, NY	**Lab Sample No:**	3781
Client Job No:	103301	**Sample Type:**	Soil
Field Location:	TB-2-S3	**Date Sampled:**	05/10/00
Field ID No:	N/A	**Date Received:**	05/15/00
		Date Analyzed:	05/17/00

VOLATILE HALOCARBONS	RESULTS (ug/Kg)	VOLATILE AROMATICS	RESULTS (ug/Kg)
Bromodichloromethane	ND< 9.00	Benzene	ND< 9.00
Bromomethane	ND< 9.00	Chlorobenzene	ND< 9.00
Bromoform	ND< 9.00	Ethylbenzene	ND< 9.00
Carbon tetrachloride	ND< 9.00	Toluene	ND< 9.00
Chloroethane	ND< 9.00	m,p - Xylene	ND< 9.00
Chloromethane	ND< 9.00	o - Xylene	ND< 9.00
2-Chloroethyl vinyl ether	ND< 9.00	Styrene	ND< 9.00
Chloroform	ND< 9.00		
Dibromochloromethane	ND< 9.00		
1,1-Dichloroethane	ND< 9.00		
1,2-Dichloroethane	ND< 9.00		
1,1-Dichloroethene	ND< 9.00		
trans-1,2-Dichloroethene	ND< 9.00	Ketones & Misc.	
1,2-Dichloropropane	ND< 9.00	Acetone	ND< 45.0
cis-1,3-Dichloropropene	ND< 9.00	Vinyl acetate	ND< 22.5
trans-1,3-Dichloropropene	ND< 9.00	2-Butanone	ND< 22.5
Methylene chloride	ND< 22.5	4-Methyl-2-pentanone	ND< 22.5
1,1,2,2-Tetrachloroethane	ND< 9.00	2-Hexanone	ND< 22.5
Tetrachloroethene	ND< 9.00	Carbon disulfide	ND< 22.5
1,1,1-Trichloroethane	ND< 9.00		
1,1,2-Trichloroethane	ND< 9.00		
Trichloroethene	ND< 9.00		
Vinyl Chloride	ND< 9.00		

Analytical Method: EPA 8260 ELAP ID No: 10958

Comments: ND denotes Not Detected

Approved By _____
Laboratory Director

PARADIGM

ENVIRONMENTAL SERVICES, INC.

179 Lake Avenue, Rochester, New York 14608 (716) 647-2530 FAX (716) 647-3311

SEMI-VOLATILES LABORATORY REPORT FOR SOIL/SOLIDS

Client:	**TVGA Engineering**	**Lab Project No.:**	00-0990
Client Job Site:	247-335 Harrison St Brownfield Jamestown, NY	**Lab Sample No.:**	3781
		Sample Type:	Soil
Client Job No.:	103301	**Sample Date:**	05/10/2000
Field Location:	TB-2-S3	**Date Received:**	05/15/2000
Field ID No.:	N/A	**Date Analyzed:**	05/24/2000

COMPOUND	RESULT (ug/Kg)	COMPOUND	RESULT (ug/Kg)
Benzyl alcohol	ND< 857	2,4-Dinitrophenol	ND< 343
Bis (2-chloroethyl) ether	ND< 343	2,4-Dinitrotoluene	ND< 343
Bis (2-chloroisopropyl) ether	ND< 343	2,6-Dinitrotoluene	ND< 343
2-Chlorophenol	ND< 343	Fluorene	ND< 343
1,3-Dichlorobenzene	ND< 343	Hexachlorocyclopentadiene	ND< 343
1,4-Dichlorobenzene	ND< 343	2-Nitroaniline	ND< 857
1,2-Dichlorobenzene	ND< 343	3-Nitroaniline	ND< 857
Hexachloroethane	ND< 343	4-Nitroaniline	ND< 857
2-Methylphenol	ND< 343	4-Nitrophenol	ND< 857
4-Methylphenol	ND< 343	2,4,6-Trichlorophenol	ND< 343
N-Nitrosodimethylamine	ND< 343	2,4,5-Trichlorophenol	ND< 857
N-Nitroso-di-n-propylamine	ND< 343	4-Bromophenyl phenyl ether	ND< 343
Phenol	ND< 343	Di-n-butyl phthalate	ND< 343
Benzoic acid	ND< 857	4,6-Dinitro-2-methylphenol	ND< 857
Bis (2-chloroethoxy) methane	ND< 343	Fluoranthene	ND< 343
4-Chloroaniline	ND< 343	Hexachlorobenzene	ND< 343
4-Chloro-3-methylphenol	ND< 343	N-Nitrosodiphenylamine	ND< 343
2,4-Dichlorophenol	ND< 343	Pentachlorophenol	ND< 857
2,6-Dichlorophenol	ND< 343	Anthracene	ND< 343
2,4-Dimethylphenol	ND< 343	Phenanthrene	ND< 343
Hexachlorobutadiene	ND< 343	Benzidine	ND< 857
Isophorone	ND< 343	Benzo (a) anthracene	ND< 343
2-Methylnapthalene	ND< 343	Bis (2-ethylhexyl) phthalate	ND< 343
Naphthalene	ND< 343	Butylbenzylphthalate	ND< 343
Nitrobenzene	ND< 343	Chrysene	ND< 343
2-Nitrophenol	ND< 343	3,3'-Dichlorobenzidine	ND< 343
1,2,4-Trichlorobenzene	ND< 343	Pyrene	ND< 343
2-Chloronaphthalene	ND< 343	Benzo (b) fluoranthene	ND< 343
Acenaphthene	ND< 343	Benzo (k) fluoranthene	ND< 343
Acenapthylene	ND< 343	Benzo (g,h,i) perylene	ND< 343
4-Chlorophenyl phenyl ether	ND< 343	Benzo (a) pyrene	ND< 343
Dibenzofuran	ND< 343	Dibenz (a,h) anthracene	ND< 343
Diethyl phthalate	ND< 343	Di-n-octylphthalate	ND< 343
Dimethyl phthalate	ND< 857	Indeno (1,2,3-cd) pyrene	ND< 343

Analytical Method: EPA 8270

ELAP ID No: 10958

Comments: ND denotes Not Detected

Approved By: _____
Laboratory Director

PARADIGM
Environmental Services, Inc. 179 Lake Avenue Rochester, New York 14608 716-647-2530 FAX 716- 647-3311

Client: TVGA Engineering

Client Job Site: 247-335 Harrison St. Jamestown NY

Client Job No.: 10/28/2182

Field Location: TB-2-S3

Field ID No.: N/A

Lab Project No. 00-0990
Lab Sample No. 3781

Sample Type: Soil

Date Sampled: 05/10/2000
Date Received: 05/15/2000

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	05/18/00	SW846 6010	9000
Antimony	05/18/00	SW846 6010	<5.77
Arsenic	05/18/00	SW846 6010	7.21
Barium	05/18/00	SW846 6010	54.4
Beryllium	05/18/00	SW846 6010	<0.480
Cadmium	05/18/00	SW846 6010	<0.480
Calcium	05/18/00	SW846 6010	3270
Chromium	05/18/00	SW846 6010	12.6
Cobalt	05/18/00	SW846 6010	6.54
Copper	05/18/00	SW846 6010	17.9
Iron	05/24/00	SW846 6010	24400
Lead	05/18/00	SW846 6010	12.9
Magnesium	05/18/00	SW846 6010	3840
Manganese	05/18/00	SW846 6010	179
Mercury	05/25/00	SW846 7471	<0.080
Nickel	05/18/00	SW846 6010	19.3
Potassium	05/22/00	SW846 6010	1890
Selenium	05/18/00	SW846 6010	<0.480
Silver	05/18/00	SW846 6010	1.25
Sodium	05/18/00	SW846 6010	<96.2
Thallium	05/24/00	SW846 6010	<0.577
Vanadium	05/18/00	SW846 6010	16.6
Zinc	05/25/00	SW846 6010	51.1

ELAP ID No.:10958

Comments:

Approved By: _____
Laboratory Director

File ID: 000990p2

PARADIGM
ENVIRONMENTAL
SERVICES, INC.

179 Lake Avenue Rochester, New York 14608 716-647-2630 FAX 716-647-3311

Volatile Organic Compound Laboratory Analysis Report For Soil/Sludge

Client:	TVGA Engineering	**Lab Project No:**	00-0990
Client Job Site:	247-335 Harrison St. Brownfield Jamestown, NY	**Lab Sample No:**	3782
Client Job No:	103301	**Sample Type:**	Soil
Field Location:	TB-5-S2	**Date Sampled:**	05/11/00
Field ID No:	N/A	**Date Received:**	05/15/00
		Date Analyzed:	05/18/00

VOLATILE HALOCARBONS	RESULTS (ug/Kg)	VOLATILE AROMATICS	RESULTS (ug/Kg)
Bromodichloromethane	ND< 12.0	Benzene	ND< 12.0
Bromomethane	ND< 12.0	Chlorobenzene	ND< 12.0
Bromoform	ND< 12.0	Ethylbenzene	100.0
Carbon tetrachloride	ND< 12.0	Toluene	ND< 12.0
Chloroethane	ND< 12.0	m,p - Xylene	159
Chloromethane	ND< 12.0	o - Xylene	263
2-Chloroethyl vinyl ether	ND< 12.0	Styrene	ND< 12.0
Chloroform	ND< 12.0		
Dibromochloromethane	ND< 12.0		
1,1-Dichloroethane	ND< 12.0		
1,2-Dichloroethane	ND< 12.0		
1,1-Dichloroethene	ND< 12.0		
trans-1,2-Dichloroethene	ND< 12.0	**Ketones & Misc.**	
1,2-Dichloropropane	ND< 12.0	Acetone	ND< 59.9
cis-1,3-Dichloropropene	ND< 12.0	Vinyl acetate	ND< 30.0
trans-1,3-Dichloropropene	ND< 12.0	2-Butanone	ND< 30.0
Methylene chloride	ND< 30.0	4-Methyl-2-pentanone	ND< 30.0
1,1,2,2-Tetrachloroethane	ND< 12.0	2-Hexanone	ND< 30.0
Tetrachloroethene	ND< 12.0	Carbon disulfide	ND< 30.0
1,1,1-Trichloroethane	ND< 12.0		
1,1,2-Trichloroethane	ND< 12.0		
Trichloroethene	ND< 12.0		
Vinyl Chloride	ND< 12.0		

Analytical Method: EPA 8260

ELAP ID No: 10958

Comments: ND denotes Not Detected

Approved By _____
Laboratory Director

000990V3.XLS

PARADIGM

ENVIRONMENTAL SERVICES, INC.

179 Lake Avenue, Rochester, New York 14608 (716) 647-2530 FAX (716) 647-3311

SEMI-VOLATILES LABORATORY REPORT FOR SOIL/SOLIDS

Client:	**TVGA Engineering**	**Lab Project No.:**	00-0990
Client Job Site:	247-335 Harrison St Brownfield Jamestown, NY	**Lab Sample No.:**	3782
		Sample Type:	Soil
Client Job No.:	103301	**Sample Date:**	05/11/2000
Field Location:	TB-5-S2	**Date Received:**	05/15/2000
Field ID No.:	N/A	**Date Analyzed:**	05/24/2000

COMPOUND	RESULT (ug/Kg)	COMPOUND	RESULT (ug/Kg)
Benzyl alcohol	ND< 980	2,4-Dinitrophenol	ND< 392
Bis (2-chloroethyl) ether	ND< 392	2,4-Dinitrotoluene	ND< 392
Bis (2-chloroisopropyl) ether	ND< 392	2,6-Dinitrotoluene	ND< 392
2-Chlorophenol	ND< 392	Fluorene	1,970
1,3-Dichlorobenzene	ND< 392	Hexachlorocyclopentadiene	ND< 392
1,4-Dichlorobenzene	ND< 392	2-Nitroanitine	ND< 980
1,2-Dichlorobenzene	ND< 392	3-Nitroaniline	ND< 980
Hexachloroethane	ND< 392	4-Nitroaniline	ND< 980
2-Methylphenol	ND< 392	4-Nitrophenol	ND< 980
4-Methylphenol	ND< 392	2,4,6-Trichlorophenol	ND< 392
N-Nitrosodimethylamine	ND< 392	2,4,5-Trichlorophenol	ND< 980
N-Nitroso-di-n-propylamine	ND< 392	4-Bromophenyl phenyl ether	ND< 392
Phenol	ND< 392	Di-n-butyl phthalate	ND< 392
Benzoic acid	ND< 980	4,6-Dinitro-2-methylphenol	ND< 980
Bis (2-chloroethoxy) methane	ND< 392	Fluoranthene	1,710
4-Chloroaniline	ND< 392	Hexachlorobenzene	ND< 392
4-Chloro-3-methylphenol	ND< 392	N-Nitrosodiphenylamine	ND< 392
2,4-Dichlorophenol	ND< 392	Pentachlorophenol	ND< 980
2,6-Dichlorophenol	ND< 392	Anthracene	1,690
2,4-Dimethylphenol	ND< 392	Phenanthrene	7,440
Hexachlorobutadiene	ND< 392	Benzidine	ND< 980
Isophorone	ND< 392	Benzo (a) anthracene	1,180
2-Methylnapthalene	2,820	Bis (2-ethylhexyl) phthalate	ND< 392
Naphthalene	2,330	Butylbenzylphthalate	ND< 392
Nitrobenzene	ND< 392	Chrysene	1,130
2-Nitrophenol	ND< 392	3,3'-Dichlorobenzidine	ND< 392
1,2,4-Trichlorobenzene	ND< 392	Pyrene	4,960
2-Chloronaphthalene	ND< 392	Benzo (b) fluoranthene	601
Acenaphthene	759	Benzo (k) fluoranthene	ND< 392
Acenapthylene	966	Benzo (g,h,i) perylene	559
4-Chlorophenyl phenyl ether	ND< 392	Benzo (a) pyrene	1,110
Dibenzofuran	ND< 392	Dibenz (a,h) anthracene	ND< 392
Diethyl phthalate	ND< 392	Di-n-octylphthalate	ND< 392
Dimethyl phthalate	ND< 980	Indeno (1,2,3-cd) pyrene	ND< 392

Analytical Method: EPA 8270 **ELAP ID No:** 10958

Comments: ND denotes Not Detected

Approved By: _____
Laboratory Director

PARADIGM
Environmental Services, Inc. 179 Lake Avenue Rochester, New York 14608 716-647-2530 FAX 716- 647-3311

Client: TVGA Engineering

Client Job Site: 247-335 Harrison St. Jamestown NY

Client Job No.: 10/28/2182

Field Location: TB-5-S2

Field ID No.: N/A

Lab Project No. 00-0990
Lab Sample No. 3782

Sample Type: Soil

Date Sampled: 05/10/2000
Date Received: 05/15/2000

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	05/18/00	SW846 6010	15000
Antimony	05/18/00	SW846 6010	<4.53
Arsenic	05/18/00	SW846 6010	14.3
Barium	05/18/00	SW846 6010	62.0
Beryllium	05/18/00	SW846 6010	<0.378
Cadmium	05/18/00	SW846 6010	0.529
Calcium	05/18/00	SW846 6010	678
Chromium	05/18/00	SW846 6010	16.8
Cobalt	05/18/00	SW846 6010	10.8
Copper	05/18/00	SW846 6010	16.5
Iron	05/24/00	SW846 6010	30100
Lead	05/18/00	SW846 6010	12.7
Magnesium	05/18/00	SW846 6010	4190
Manganese	05/18/00	SW846 6010	335
Mercury	05/25/00	SW846 7471	<0.113
Nickel	05/18/00	SW846 6010	23.1
Potassium	05/22/00	SW846 6010	2840
Selenium	05/18/00	SW846 6010	<0.378
Silver	05/18/00	SW846 6010	1.51
Sodium	05/18/00	SW846 6010	<75.6
Thallium	05/24/00	SW846 6010	<0.454
Vanadium	05/18/00	SW846 6010	21.3
Zinc	05/25/00	SW846 6010	51.4

ELAP ID No.:10958

Comments:

Approved By: _____
Laboratory Director

File ID: 000990p3

PARADIGM
ENVIRONMENTAL
SERVICES, INC.

179 Lake Avenue Rochester, New York 14608 716-647-2530 FAX 716-647-3311

Volatile Organic Compound Laboratory Analysis Report For Soil/Sludge

Client:	TVGA Engineering	**Lab Project No:**	00-0990
		Lab Sample No:	3783
Client Job Site:	247-335 Harrison St. Brownfield Jamestown, NY	**Sample Type:**	Soil
Client Job No:	103301	**Date Sampled:**	05/12/00
Field Location:	MW-3-S3	**Date Received:**	05/15/00
Field ID No:	N/A	**Date Analyzed:**	05/17/00

VOLATILE HALOCARBONS	RESULTS (ug/Kg)	VOLATILE AROMATICS	RESULTS (ug/Kg)
Bromodichloromethane	ND< 11.6	Benzene	ND< 11.6
Bromomethane	ND< 11.6	Chlorobenzene	ND< 11.6
Bromoform	ND< 11.6	Ethylbenzene	ND< 11.6
Carbon tetrachloride	ND< 11.6	Toluene	ND< 11.6
Chloroethane	ND< 11.6	m,p - Xylene	ND< 11.6
Chloromethane	ND< 11.6	o - Xylene	ND< 11.6
2-Chloroethyl vinyl ether	ND< 11.6	Styrene	ND< 11.6
Chloroform	ND< 11.6		
Dibromochloromethane	ND< 11.6		
1,1-Dichloroethane	ND< 11.6		
1,2-Dichloroethane	ND< 11.6		
1,1-Dichloroethene	ND< 11.6		
trans-1,2-Dichloroethene	ND< 11.6	Ketones & Misc.	
1,2-Dichloropropane	ND< 11.6	Acetone	ND< 57.9
cis-1,3-Dichloropropene	ND< 11.6	Vinyl acetate	ND< 28.9
trans-1,3-Dichloropropene	ND< 11.6	2-Butanone	ND< 28.9
Methylene chloride	ND< 28.9	4-Methyl-2-pentanone	ND< 28.9
1,1,2,2-Tetrachloroethane	ND< 11.6	2-Hexanone	ND< 28.9
Tetrachloroethene	ND< 11.6	Carbon disulfide	ND< 28.9
1,1,1-Trichloroethane	ND< 11.6		
1,1,2-Trichloroethane	ND< 11.6		
Trichloroethene	ND< 11.6		
Vinyl Chloride	ND< 11.6		

Analytical Method: EPA 8260 ELAP ID No: 10958

Comments: ND denotes Not Detected

Approved By _____
Laboratory Director

PARADIGM

ENVIRONMENTAL SERVICES, INC.

179 Lake Avenue, Rochester, New York 14608 (716) 647-2530 FAX (716) 647-3311

SEMI-VOLATILES LABORATORY REPORT FOR SOIL/SOLIDS

Client:	TVGA Engineering	**Lab Project No.:**	00-0990
Client Job Site:	247-335 Harrison St Brownfield Jamestown, NY	**Lab Sample No.:**	3783
		Sample Type:	Soil
Client Job No.:	103301	**Sample Date:**	05/12/2000
Field Location:	MW-3-S3	**Date Received:**	05/15/2000
Field ID No.:	N/A	**Date Analyzed:**	05/24/2000

COMPOUND	RESULT (ug/Kg)	COMPOUND	RESULT (ug/Kg)
Benzyl alcohol	ND< 931	2,4-Dinitrophenol	ND< 373
Bis (2-chloroethyl) ether	ND< 373	2,4-Dinitrotoluene	ND< 373
Bis (2-chloroisopropyl) ether	ND< 373	2,6-Dinitrotoluene	ND< 373
2-Chlorophenol	ND< 373	Fluorene	ND< 373
1,3-Dichlorobenzene	ND< 373	Hexachlorocyclopentadiene	ND< 373
1,4-Dichlorobenzene	ND< 373	2-Nitroaniline	ND< 931
1,2-Dichlorobenzene	ND< 373	3-Nitroaniline	ND< 931
Hexachloroethane	ND< 373	4-Nitroaniline	ND< 931
2-Methylphenol	ND< 373	4-Nitrophenol	ND< 931
4-Methylphenol	ND< 373	2,4,6-Trichlorophenol	ND< 373
N-Nitrosodimethylamine	ND< 373	2,4,5-Trichlorophenol	ND< 931
N-Nitroso-di-n-propylamine	ND< 373	4-Bromophenyl phenyl ether	ND< 373
Phenol	ND< 373	Di-n-butyl phthalate	ND< 373
Benzoic acid	ND< 931	4,6-Dinitro-2-methylphenol	ND< 931
Bis (2-chloroethoxy) methane	ND< 373	Fluoranthene	ND< 373
4-Chloroaniline	ND< 373	Hexachlorobenzene	ND< 373
4-Chloro-3-methylphenol	ND< 373	N-Nitrosodiphenylamine	ND< 373
2,4-Dichlorophenol	ND< 373	Pentachlorophenol	ND< 931
2,6-Dichlorophenol	ND< 373	Anthracene	ND< 373
2,4-Dimethylphenol	ND< 373	Phenanthrene	ND< 373
Hexachlorobutadiene	ND< 373	Benzidine	ND< 931
Isophorone	ND< 373	Benzo (a) anthracene	ND< 373
2-Methylnapthalene	ND< 373	Bis (2-ethylhexyl) phthalate	ND< 373
Naphthalene	ND< 373	Butylbenzylphthalate	ND< 373
Nitrobenzene	ND< 373	Chrysene	ND< 373
2-Nitrophenol	ND< 373	3,3'-Dichlorobenzidine	ND< 373
1,2,4-Trichlorobenzene	ND< 373	Pyrene	ND< 373
2-Chloronaphthalene	ND< 373	Benzo (b) fluoranthene	ND< 373
Acenaphthene	ND< 373	Benzo (k) fluoranthene	ND< 373
Acenapthylene	ND< 373	Benzo (g,h,i) perylene	ND< 373
4-Chlorophenyl phenyl ether	ND< 373	Benzo (a) pyrene	ND< 373
Dibenzofuran	ND< 373	Dibenz (a,h) anthracene	ND< 373
Diethyl phthalate	ND< 373	Di-n-octylphthalate	ND< 373
Dimethyl phthalate	ND< 931	Indeno (1,2,3-cd) pyrene	ND< 373

Analytical Method: EPA 8270

ELAP ID No: 10958

Comments: ND denotes Not Detected

Approved By: _____
Laboratory Director

PARADIGM
Environmental Services, Inc. 179 Lake Avenue Rochester, New York 14608 716-647-2530 FAX 716- 647-3311

Client: TVGA Engineering

Client Job Site: 247-335 Harrison St. Jamestown NY

Client Job No.: 10/28/2182

Field Location: MW-3-S3

Field ID No.: N/A

Lab Project No. 00-0990
Lab Sample No. 3783

Sample Type: Soil

Date Sampled: 05/10/2000
Date Received: 05/15/2000

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	05/18/00	SW846 6010	11500
Antimony	05/18/00	SW846 6010	<6.83
Arsenic	05/18/00	SW846 6010	10.1
Barium	05/18/00	SW846 6010	100
Beryllium	05/18/00	SW846 6010	<0.568
Cadmium	05/18/00	SW846 6010	<0.568
Calcium	05/18/00	SW846 6010	22200
Chromium	05/18/00	SW846 6010	60.2
Cobalt	05/18/00	SW846 6010	6.94
Copper	05/18/00	SW846 6010	26.5
Iron	05/24/00	SW846 6010	20800
Lead	05/18/00	SW846 6010	39.3
Magnesium	05/18/00	SW846 6010	3640
Manganese	05/18/00	SW846 6010	386
Mercury	05/25/00	SW846 7471	<0.080
Nickel	05/18/00	SW846 6010	18.3
Potassium	05/22/00	SW846 6010	1860
Selenium	05/18/00	SW846 6010	<0.568
Silver	05/18/00	SW846 6010	<1.14
Sodium	05/18/00	SW846 6010	<114
Thallium	05/24/00	SW846 6010	<0.683
Vanadium	05/18/00	SW846 6010	17.4
Zinc	05/25/00	SW846 6010	73.7

ELAP ID No.:10958

Comments:

Approved By: _____
Laboratory Director

File ID: 000990p4

PARADIGM
ENVIRONMENTAL
SERVICES, INC.

179 Lake Avenue Rochester, New York 14608 716-647-2530 FAX 716-647-3311

Volatile Organic Compound Laboratory Analysis Report For Soil/Sludge

Client:	TVGA Engineering	**Lab Project No:**	00-0990
		Lab Sample No:	3784
Client Job Site:	247-335 Harrison St. Brownfield Jamestown, NY	**Sample Type:**	Soil
Client Job No:	103301	**Date Sampled:**	05/12/00
Field Location:	MW-5-S3	**Date Received:**	05/15/00
Field ID No:	N/A	**Date Analyzed:**	05/17/00

VOLATILE HALOCARBONS	RESULTS (ug/Kg)	VOLATILE AROMATICS	RESULTS (ug/Kg)
Bromodichloromethane	ND< 8.23	Benzene	ND< 8.23
Bromomethane	ND< 8.23	Chlorobenzene	ND< 8.23
Bromoform	ND< 8.23	Ethylbenzene	ND< 8.23
Carbon tetrachloride	ND< 8.23	Toluene	ND< 8.23
Chloroethane	ND< 8.23	m,p - Xylene	ND< 8.23
Chloromethane	ND< 8.23	o - Xylene	ND< 8.23
2-Chloroethyl vinyl ether	ND< 8.23	Styrene	ND< 8.23
Chloroform	ND< 8.23		
Dibromochloromethane	ND< 8.23		
1,1-Dichloroethane	ND< 8.23		
1,2-Dichloroethane	ND< 8.23		
1,1-Dichloroethene	ND< 8.23		
trans-1,2-Dichloroethene	ND< 8.23	**Ketones & Misc.**	
1,2-Dichloropropane	ND< 8.23	Acetone	ND< 41.1
cis-1,3-Dichloropropene	ND< 8.23	Vinyl acetate	ND< 20.6
trans-1,3-Dichloropropene	ND< 8.23	2-Butanone	ND< 20.6
Methylene chloride	ND< 20.6	4-Methyl-2-pentanone	ND< 20.6
1,1,2,2-Tetrachloroethane	ND< 8.23	2-Hexanone	ND< 20.6
Tetrachloroethene	ND< 8.23	Carbon disulfide	ND< 20.6
1,1,1-Trichloroethane	ND< 8.23		
1,1,2-Trichloroethane	ND< 8.23		
Trichloroethene	ND< 8.23		
Vinyl Chloride	ND< 8.23		

Analytical Method: EPA 8260 ELAP ID No: 10958

Comments: ND denotes Not Detected

Approved By _____
Laboratory Director

PARADIGM

ENVIRONMENTAL SERVICES, INC.

179 Lake Avenue, Rochester, New York 14608 (716) 647-2530 FAX (716) 647-3311

SEMI-VOLATILES LABORATORY REPORT FOR SOIL/SOLIDS

Client:	TVGA Engineering	**Lab Project No.:**	00-0990
Client Job Site:	247-335 Harrison St Brownfield Jamestown, NY	**Lab Sample No.:**	3783
		Sample Type:	Soil
Client Job No.:	103301	**Sample Date:**	05/12/2000
Field Location:	MW-5-S3	**Date Received:**	05/15/2000
Field ID No.:	N/A	**Date Analyzed:**	05/24/2000

COMPOUND	RESULT (ug/Kg)	COMPOUND	RESULT (ug/Kg)
Benzyl alcohol	ND< 951	2,4-Dinitrophenol	ND< 380
Bis (2-chloroethyl) ether	ND< 380	2,4-Dinitrotoluene	ND< 380
Bis (2-chloroisopropyl) ether	ND< 380	2,6-Dinitrotoluene	ND< 380
2-Chlorophenol	ND< 380	Fluorene	ND< 380
1,3-Dichlorobenzene	ND< 380	Hexachlorocyclopentadiene	ND< 380
1,4-Dichlorobenzene	ND< 380	2-Nitroaniline	ND< 951
1,2-Dichlorobenzene	ND< 380	3-Nitroaniline	ND< 951
Hexachloroethane	ND< 380	4-Nitroaniline	ND< 951
2-Methylphenol	ND< 380	4-Nitrophenol	ND< 951
4-Methylphenol	ND< 380	2,4,6-Trichlorophenol	ND< 380
N-Nitrosodimethylamine	ND< 380	2,4,5-Trichlorophenol	ND< 951
N-Nitroso-di-n-propylamine	ND< 380	4-Bromophenyl phenyl ether	ND< 380
Phenol	ND< 380	Di-n-butyl phthalate	ND< 380
Benzoic acid	ND< 951	4,6-Dinitro-2-methylphenol	ND< 951
Bis (2-chloroethoxy) methane	ND< 380	Fluoranthene	ND< 380
4-Chloroaniline	ND< 380	Hexachlorobenzene	ND< 380
4-Chloro-3-methylphenol	ND< 380	N-Nitrosodiphenylamine	ND< 380
2,4-Dichlorophenol	ND< 380	Pentachlorophenol	ND< 951
2,6-Dichlorophenol	ND< 380	Anthracene	ND< 380
2,4-Dimethylphenol	ND< 380	Phenanthrene	ND< 380
Hexachlorobutadiene	ND< 380	Benzidine	ND< 951
Isophorone	ND< 380	Benzo (a) anthracene	ND< 380
2-Methylnapthalene	ND< 380	Bis (2-ethylhexyl) phthalate	ND< 380
Naphthalene	ND< 380	Butylbenzylphthalate	ND< 380
Nitrobenzene	ND< 380	Chrysene	ND< 380
2-Nitrophenol	ND< 380	3,3'-Dichlorobenzidine	ND< 380
1,2,4-Trichlorobenzene	ND< 380	Pyrene	ND< 380
2-Chloronaphthalene	ND< 380	Benzo (b) fluoranthene	ND< 380
Acenaphthene	ND< 380	Benzo (k) fluoranthene	ND< 380
Acenapthylene	ND< 380	Benzo (g,h,i) perylene	ND< 380
4-Chlorophenyl phenyl ether	ND< 380	Benzo (a) pyrene	ND< 380
Dibenzofuran	ND< 380	Dibenz (a,h) anthracene	ND< 380
Diethyl phthalate	ND< 380	Di-n-octylphthalate	ND< 380
Dimethyl phthalate	ND< 951	Indeno (1,2,3-cd) pyrene	ND< 380

Analytical Method: EPA 8270 **ELAP ID No: 10958**

Comments: ND denotes Not Detected

Approved By: _____
Laboratory Director

PARADIGM
Environmental Services, Inc. 179 Lake Avenue Rochester, New York 14608 716-647-2530 FAX 716- 647-3311

Client: TVGA Engineering

Client Job Site: 247-335 Harrison St. Jamestown NY

Client Job No.: 10/28/2182

Field Location: MW-5-S3

Field ID No.: N/A

Lab Project No. 00-0990
Lab Sample No. 3784

Sample Type: Soil

Date Sampled: 05/10/2000
Date Received: 05/15/2000

Parameter	Date Analyzed	Analytical Method	Result (mg/kg)
Aluminum	05/18/00	SW846 6010	6070
Antimony	05/18/00	SW846 6010	2.50
Arsenic	05/18/00	SW846 6010	13.2
Barium	05/18/00	SW846 6010	51.4
Beryllium	05/18/00	SW846 6010	<0.347
Cadmium	05/18/00	SW846 6010	<0.347
Calcium	05/18/00	SW846 6010	4730
Chromium	05/18/00	SW846 6010	12.9
Cobalt	05/18/00	SW846 6010	<8.55
Copper	05/18/00	SW846 6010	29.0
Iron	05/24/00	SW846 6010	13600
Lead	05/18/00	SW846 6010	11.3
Magnesium	05/18/00	SW846 6010	314
Manganese	05/18/00	SW846 6010	89.6
Mercury	05/25/00	SW846 7471	<0.073
Nickel	05/18/00	SW846 6010	16.8
Potassium	05/22/00	SW846 6010	469
Selenium	05/18/00	SW846 6010	2.08
Silver	05/18/00	SW846 6010	3.69
Sodium	05/18/00	SW846 6010	<71.9
Thallium	05/24/00	SW846 6010	0.556
Vanadium	05/18/00	SW846 6010	20.8
Zinc	05/25/00	SW846 6010	12.9

ELAP ID No.:10958

Comments:

Approved By: _____
Laboratory Director

File ID: 000990p5

APPENDIX H

ANALYTICAL LABORATORY RESULTS - GROUNDWATER

PARADIGM
ENVIRONMENTAL
SERVICES, INC.

179 Lake Avenue Rochester, New York 14608 716-647-2530 FAX 716-647-3311

Volatile Laboratory Analysis Report For Non-Potable Water

Client:	TVGA Engineering	**Lab Project No.:**	00-1021
Client Job Site:	Harrison St. Brownfield Jamestown, NY	**Lab Sample No.:**	3858
Client Job No.:	103301	**Sample Type:**	Water
Field Location:	MW-1	**Date Sampled:**	05/17/00
		Date Received:	05/18/00
Field ID No.:	N/A	**Date Analyzed:**	05/19/00

VOLATILE HALOCARBONS	RESULTS (ug/L)
Bromodichloromethane	ND< 2.00
Bromomethane	ND< 2.00
Bromoform	ND< 2.00
Carbon tetrachloride	ND< 2.00
Chloroethane	ND< 2.00
Chloromethane	ND< 2.00
2-Chloroethyl vinyl ether	ND< 2.00
Chloroform	ND< 2.00
Dibromochloromethane	ND< 2.00
1,1-Dichloroethane	ND< 2.00
1,2-Dichloroethane	ND< 2.00
1,1-Dichloroethene	ND< 2.00
trans-1,2-Dichloroethene	ND< 2.00
1,2-Dichloropropane	ND< 2.00
cis-1,3-Dichloropropene	ND< 2.00
trans-1,3-Dichloropropen	ND< 2.00
Methylene chloride	ND< 5.00
1,1,2,2-Tetrachloroethar	ND< 2.00
Tetrachloroethene	ND< 2.00
1,1,1-Trichloroethane	ND< 2.00
1,1,2-Trichloroethane	ND< 2.00
Trichloroethene	ND< 2.00
Vinyl Chloride	ND< 2.00

VOLATILE AROMATICS	RESULTS (ug/L)
Benzene	ND< 2.00
Chlorobenzene	ND< 2.00
Ethylbenzene	ND< 2.00
Toluene	ND< 2.00
m,p - Xylene	ND< 2.00
o - Xylene	ND< 2.00
Styrene	ND< 2.00
Ketones & Misc.	
Acetone	ND< 10.0
Vinyl acetate	ND< 5.00
2-Butanone	ND< 5.00
4-Methyl-2-pentanone	ND< 5.00
2-Hexanone	ND< 5.00
Carbon disulfide	ND< 5.00

Analytical Method: EPA 8260 ELAP ID No.: 10958

Comments: ND denotes Not Detected

Approved By _____
Laboratory Director

PARADIGM

ENVIRONMENTAL SERVICES, INC.

179 Lake Avenue, Rochester, New York 14608 (716) 647-2530 FAX (716) 647-3311

SEMI-VOLATILES LABORATORY REPORT FOR WATERS

Client:	TVGA Engineering	**Lab Project No.:**	00-1021
Client Job Site:	Harrison St. Brownfield Jamestown, NY	**Lab Sample No.:**	3858
		Sample Type:	Water
Client Job No.:	103301		
		Sample Date:	05/17/00
Field Location:	MW-1	**Date Received:**	05/18/00
Field ID No.:	N/A	**Date Analyzed:**	05/24/00

COMPOUND	RESULT (ug/l)	COMPOUND	RESULT (ug/l)
Benzyl alcohol	ND< 25.0	2,4-Dinitrophenol	ND< 10.0
Bis (2-chloroethyl) ether	ND< 10.0	2,4-Dinitrotoluene	ND< 10.0
Bis (2-chloroisopropyl) ether	ND< 10.0	2,6-Dinitrotoluene	ND< 10.0
2-Chlorophenol	ND< 10.0	Fluorene	ND< 10.0
1,3-Dichlorobenzene	ND< 10.0	Hexachlorocyclopentadiene	ND< 10.0
1,4-Dichlorobenzene	ND< 10.0	2-Nitroaniline	ND< 25.0
1,2-Dichlorobenzene	ND< 10.0	3-Nitroaniline	ND< 25.0
Hexachloroethane	ND< 10.0	4-Nitroaniline	ND< 25.0
2-Methylphenol	ND< 10.0	4-Nitrophenol	ND< 25.0
4-Methylphenol	ND< 10.0	2,4,6-Trichlorophenol	ND< 10.0
N-Nitrosodimethylamine	ND< 10.0	2,4,5-Trichlorophenol	ND< 25.0
N-Nitroso-di-n-propylamine	ND< 10.0	4-Bromophenyl phenyl ether	ND< 10.0
Phenol	ND< 10.0	Di-n-butyl phthalate	ND< 10.0
Benzoic acid	ND< 25.0	4,6-Dinitro-2-methylphenol	ND< 25.0
Bis (2-chloroethoxy) methane	ND< 10.0	Fluoranthene	ND< 10.0
4-Chloroaniline	ND< 10.0	Hexachlorobenzene	ND< 10.0
4-Chloro-3-methylphenol	ND< 10.0	N-Nitrosodiphenylamine	ND< 10.0
2,4-Dichlorophenol	ND< 10.0	Pentachlorophenol	ND< 25.0
2,6-Dichlorophenol	ND< 10.0	Anthracene	ND< 10.0
2,4-Dimethylphenol	ND< 10.0	Phenanthrene	ND< 10.0
Hexachlorobutadiene	ND< 10.0	Benzidine	ND< 25.0
Isophorone	ND< 10.0	Benzo (a) anthracene	ND< 10.0
2-Methylnapthalene	ND< 10.0	Bis (2-ethylhexyl) phthalate	ND< 10.0
Naphthalene	ND< 10.0	Butylbenzylphthalate	ND< 10.0
Nitrobenzene	ND< 10.0	Chrysene	ND< 10.0
2-Nitrophenol	ND< 10.0	3,3'-Dichlorobenzidine	ND< 10.0
1,2,4-Trichlorobenzene	ND< 10.0	Pyrene	ND< 10.0
2-Chloronaphthalene	ND< 10.0	Benzo (b) fluoranthene	ND< 10.0
Acenaphthene	ND< 10.0	Benzo (k) fluoranthene	ND< 10.0
Acenapthylene	ND< 10.0	Benzo (g,h,i) perylene	ND< 10.0
4-Chlorophenyl phenyl ether	ND< 10.0	Benzo (a) pyrene	ND< 10.0
Dibenzofuran	ND< 10.0	Dibenz (a,h) anthracene	ND< 10.0
Diethyl phthalate	ND< 10.0	Di-n-octylphthalate	ND< 10.0
Dimethyl phthalate	ND< 25.0	Indeno (1,2,3-cd) pyrene	ND< 10.0

Analytical Method: EPA 8270

ELAP ID No: 10958

Comments: ND denotes Not Detected

Approved By: _____
Laboratory Director

PARADIGM
Environmental Services, Inc. 179 Lake Avenue Rochester, New York 14608 716-647-2530 FAX 716- 647-3311

Client: TVGA Engineers

Client Job Site: Harrison Street
Jamestown NY

Client Job No.: 103301

Field Location: MW-1
Field ID No.: N/A

Lab Project No. 00-1021
Lab Sample No. 3858

Sample Type: Water

Date Sampled: 05/17/2000
Date Received: 05/18/2000

Parameter	Date Analyzed	Analytical Method	Result (mg/L)
Aluminum	06/01/2000	SW846 6010	205
Antimony	05/23/2000	SW846 6010	<0.060
Arsenic	05/19/2000	SW846 6010	0.626
Barium	05/19/2000	SW846 6010	3.72
Beryllium	05/19/2000	SW846 6010	<0.005
Cadmium	05/19/2000	SW846 6010	0.021
Calcium	05/23/2000	SW846 6010	465
Chromium	05/19/2000	SW846 6010	0.234
Cobalt	05/19/2000	SW846 6010	0.237
Copper	05/19/2000	SW846 6010	0.634
Iron	06/01/2000	SW846 6010	556
Lead	05/19/2000	SW846 6010	0.385
Magnesium	05/19/2000	SW846 6010	144
Manganese	05/23/2000	SW846 6010	22.6
Mercury	05/25/2000	SW846 7471	<0.0002
Nickel	05/19/2000	SW846 6010	0.385
Potassium	05/22/2000	SW846 6010	51.2
Selenium	05/19/2000	SW846 6010	0.007
Silver	05/19/2000	SW846 6010	0.035
Sodium	05/19/2000	SW846 6010	76.7
Thallium	05/19/2000	SW846 6010	<0.060
Vanadium	05/19/2000	SW846 6010	0.326
Zinc	05/19/2000	SW846 6010	1.07

ELAP ID No.:10958

Comments:

Approved By: _____
Laboratory Director

File ID: 001021p1

PARADIGM
ENVIRONMENTAL
SERVICES, INC.

179 Lake Avenue Rochester, New York 14608 716-647-2530 FAX 716-647-3311

Volatile Laboratory Analysis Report For Non-Potable Water

Client:	**TVGA Engineering**	**Lab Project No.:**	00-1021
Client Job Site:	Harrison St. Brownfield Jamestown, NY	**Lab Sample No.:**	3859
Client Job No.:	103301	**Sample Type:**	Water
Field Location:	MW-2	**Date Sampled:**	05/17/00
Field ID No.:	N/A	**Date Received:**	05/18/00
		Date Analyzed:	05/19/00

VOLATILE HALOCARBONS	RESULTS (ug/L)
Bromodichloromethane	ND< 2.00
Bromomethane	ND< 2.00
Bromoform	ND< 2.00
Carbon tetrachloride	ND< 2.00
Chloroethane	ND< 2.00
Chloromethane	ND< 2.00
2-Chloroethyl vinyl ether	ND< 2.00
Chloroform	ND< 2.00
Dibromochloromethane	ND< 2.00
1,1-Dichloroethane	ND< 2.00
1,2-Dichloroethane	ND< 2.00
1,1-Dichloroethene	ND< 2.00
trans-1,2-Dichloroethene	ND< 2.00
1,2-Dichloropropane	ND< 2.00
cis-1,3-Dichloropropene	ND< 2.00
trans-1,3-Dichloroproper	ND< 2.00
Methylene chloride	ND< 5.00
1,1,2,2-Tetrachloroethar	ND< 2.00
Tetrachloroethene	ND< 2.00
1,1,1-Trichloroethane	ND< 2.00
1,1,2-Trichloroethane	ND< 2.00
Trichloroethene	ND< 2.00
Vinyl Chloride	ND< 2.00

VOLATILE AROMATICS	RESULTS (ug/L)
Benzene	ND< 2.00
Chlorobenzene	ND< 2.00
Ethylbenzene	ND< 2.00
Toluene	ND< 2.00
m,p - Xylene	ND< 2.00
o - Xylene	ND< 2.00
Styrene	ND< 2.00
Ketones & Misc.	
Acetone	ND< 10.0
Vinyl acetate	ND< 5.00
2-Butanone	ND< 5.00
4-Methyl-2-pentanone	ND< 5.00
2-Hexanone	ND< 5.00
Carbon disulfide	ND< 5.00

Analytical Method: EPA 8260

ELAP ID No.: 10958

Comments: ND denotes Not Detected

Approved By _____
Laboratory Director

001021V2.XLS

PARADIGM

ENVIRONMENTAL SERVICES, INC.

179 Lake Avenue, Rochester, New York 14608 (716) 647-2530 FAX (716) 647-3311

SEMI-VOLATILES LABORATORY REPORT FOR WATERS

Client:	**TVGA Engineering**	**Lab Project No.:**	00-1021
Client Job Site:	Harrison St. Brownfield Jamestown, NY	**Lab Sample No.:**	3859
		Sample Type:	Water
Client Job No.:	103301		
		Sample Date:	05/17/00
Field Location:	MW-2	**Date Received:**	05/18/00
Field ID No.:	N/A	**Date Analyzed:**	05/24/00

COMPOUND	RESULT (ug/l)	COMPOUND	RESULT (ug/l)
Benzyl alcohol	ND< 25.0	2,4-Dinitrophenol	ND< 10.0
Bis (2-chloroethyl) ether	ND< 10.0	2,4-Dinitrotoluene	ND< 10.0
Bis (2-chloroisopropyl) ether	ND< 10.0	2,6-Dinitrotoluene	ND< 10.0
2-Chlorophenol	ND< 10.0	Fluorene	ND< 10.0
1,3-Dichlorobenzene	ND< 10.0	Hexachlorocyclopentadiene	ND< 10.0
1,4-Dichlorobenzene	ND< 10.0	2-Nitroaniline	ND< 25.0
1,2-Dichlorobenzene	ND< 10.0	3-Nitroaniline	ND< 25.0
Hexachloroethane	ND< 10.0	4-Nitroaniline	ND< 25.0
2-Methylphenol	ND< 10.0	4-Nitrophenol	ND< 25.0
4-Methylphenol	ND< 10.0	2,4,6-Trichlorophenol	ND< 10.0
N-Nitrosodimethylamine	ND< 10.0	2,4,5-Trichlorophenol	ND< 25.0
N-Nitroso-di-n-propylamine	ND< 10.0	4-Bromophenyl phenyl ether	ND< 10.0
Phenol	ND< 10.0	Di-n-butyl phthalate	ND< 10.0
Benzoic acid	ND< 25.0	4,6-Dinitro-2-methylphenol	ND< 25.0
Bis (2-chloroethoxy) methane	ND< 10.0	Fluoranthene	ND< 10.0
4-Chloroaniline	ND< 10.0	Hexachlorobenzene	ND< 10.0
4-Chloro-3-methylphenol	ND< 10.0	N-Nitrosodiphenylamine	ND< 10.0
2,4-Dichlorophenol	ND< 10.0	Pentachlorophenol	ND< 25.0
2,6-Dichlorophenol	ND< 10.0	Anthracene	ND< 10.0
2,4-Dimethylphenol	ND< 10.0	Phenanthrene	ND< 10.0
Hexachlorobutadiene	ND< 10.0	Benzidine	ND< 25.0
Isophorone	ND< 10.0	Benzo (a) anthracene	ND< 10.0
2-Methylnapthalene	ND< 10.0	Bis (2-ethylhexyl) phthalate	ND< 10.0
Naphthalene	ND< 10.0	Butylbenzylphthalate	ND< 10.0
Nitrobenzene	ND< 10.0	Chrysene	ND< 10.0
2-Nitrophenol	ND< 10.0	3,3'-Dichlorobenzidine	ND< 10.0
1,2,4-Trichlorobenzene	ND< 10.0	Pyrene	ND< 10.0
2-Chloronaphthalene	ND< 10.0	Benzo (b) fluoranthene	ND< 10.0
Acenaphthene	ND< 10.0	Benzo (k) fluoranthene	ND< 10.0
Acenapthylene	ND< 10.0	Benzo (g,h,i) perylene	ND< 10.0
4-Chlorophenyl phenyl ether	ND< 10.0	Benzo (a) pyrene	ND< 10.0
Dibenzofuran	ND< 10.0	Dibenz (a,h) anthracene	ND< 10.0
Diethyl phthalate	ND< 10.0	Di-n-octylphthalate	ND< 10.0
Dimethyl phthalate	ND< 25.0	Indeno (1,2,3-cd) pyrene	ND< 10.0

Analytical Method: EPA 8270

ELAP ID No: 10958

Comments: ND denotes Not Detected

Approved By: _____
Laboratory Director

001021S2.XLS

PARADIGM
Environmental Services, Inc. 179 Lake Avenue Rochester, New York 14608 716-647-2530 FAX 716- 647-3311

Client: TVGA Engineers

Client Job Site: Harrison Street
Jamestown NY

Client Job No.: 103301

Field Location: MW-2
Field ID No.: N/A

Lab Project No. 00-1021
Lab Sample No. 3859

Sample Type: Water

Date Sampled: 05/17/2000
Date Received: 05/18/2000

Parameter	Date Analyzed	Analytical Method	Result (mg/L)
Aluminum	05/19/2000	SW846 6010	0.723
Antimony	05/23/2000	SW846 6010	<0.060
Arsenic	05/19/2000	SW846 6010	0.008
Barium	05/19/2000	SW846 6010	0.082
Beryllium	05/19/2000	SW846 6010	<0.005
Cadmium	05/19/2000	SW846 6010	<0.005
Calcium	05/19/2000	SW846 6010	136
Chromium	05/19/2000	SW846 6010	<0.010
Cobalt	05/19/2000	SW846 6010	<0.010
Copper	05/19/2000	SW846 6010	<0.010
Iron	05/19/2000	SW846 6010	1.00
Lead	05/19/2000	SW846 6010	<0.005
Magnesium	05/19/2000	SW846 6010	32.3
Manganese	05/19/2000	SW846 6010	0.286
Mercury	05/25/2000	SW846 7471	<0.0002
Nickel	05/19/2000	SW846 6010	<0.040
Potassium	05/22/2000	SW846 6010	15.9
Selenium	05/19/2000	SW846 6010	<0.005
Silver	05/19/2000	SW846 6010	<0.005
Sodium	05/19/2000	SW846 6010	47.0
Thallium	05/19/2000	SW846 6010	<0.060
Vanadium	05/19/2000	SW846 6010	<0.020
Zinc	05/19/2000	SW846 6010	<0.020

ELAP ID No.:10958

Comments:

Approved By: _____
Laboratory Director

File ID: 001021p2

PARADIGM
ENVIRONMENTAL
SERVICES, INC.

179 Lake Avenue Rochester, New York 14608 716-647-2630 FAX 716-647-3311

Volatile Laboratory Analysis Report For Non-Potable Water

Client:	**TVGA Engineering**	**Lab Project No.:**	00-1021
Client Job Site:	Harrison St. Brownfield Jamestown, NY	**Lab Sample No.:**	3860
Client Job No.:	103301	**Sample Type:**	Water
Field Location:	MW-3	**Date Sampled:**	05/17/00
Field ID No.:	N/A	**Date Received:**	05/18/00
		Date Analyzed:	05/19/00

VOLATILE HALOCARBONS	RESULTS (ug/L)
Bromodichloromethane	ND< 2.00
Bromomethane	ND< 2.00
Bromoform	ND< 2.00
Carbon tetrachloride	ND< 2.00
Chloroethane	ND< 2.00
Chloromethane	ND< 2.00
2-Chloroethyl vinyl ether	ND< 2.00
Chloroform	ND< 2.00
Dibromochloromethane	ND< 2.00
1,1-Dichloroethane	ND< 2.00
1,2-Dichloroethane	ND< 2.00
1,1-Dichloroethene	ND< 2.00
trans-1,2-Dichloroethene	ND< 2.00
1,2-Dichloropropane	ND< 2.00
cis-1,3-Dichloropropene	ND< 2.00
trans-1,3-Dichloroproper	ND< 2.00
Methylene chloride	ND< 5.00
1,1,2,2-Tetrachloroethar	ND< 2.00
Tetrachloroethene	ND< 2.00
1,1,1-Trichloroethane	ND< 2.00
1,1,2-Trichloroethane	ND< 2.00
Trichloroethene	ND< 2.00
Vinyl Chloride	ND< 2.00

VOLATILE AROMATICS	RESULTS (ug/L)
Benzene	ND< 2.00
Chlorobenzene	ND< 2.00
Ethylbenzene	ND< 2.00
Toluene	ND< 2.00
m,p - Xylene	ND< 2.00
o - Xylene	ND< 2.00
Styrene	ND< 2.00
Ketones & Misc.	
Acetone	ND< 10.0
Vinyl acetate	ND< 5.00
2-Butanone	ND< 5.00
4-Methyl-2-pentanone	ND< 5.00
2-Hexanone	ND< 5.00
Carbon disulfide	ND< 5.00

Analytical Method: EPA 8260

ELAP ID No.: 10958

Comments: ND denotes Not Detected

Approved By _____
Laboratory Director

001021V3.XLS

PARADIGM

ENVIRONMENTAL SERVICES, INC.

179 Lake Avenue, Rochester, New York 14608 (716) 647-2530 FAX (716) 647-3311

SEMI-VOLATILES LABORATORY REPORT FOR WATERS

Client:	TVGA Engineering	**Lab Project No.:**	00-1021
Client Job Site:	Harrison St. Brownfield Jamestown, NY	**Lab Sample No.:**	3860
		Sample Type:	Water
Client Job No.:	103301		
		Sample Date:	05/17/00
Field Location:	MW-3	**Date Received:**	05/18/00
Field ID No.:	N/A	**Date Analyzed:**	05/24/00

COMPOUND	RESULT (ug/l)	COMPOUND	RESULT (ug/l)
Benzyl alcohol	ND< 25.0	2,4-Dinitrophenol	ND< 10.0
Bis (2-chloroethyl) ether	ND< 10.0	2,4-Dinitrotoluene	ND< 10.0
Bis (2-chloroisopropyl) ether	ND< 10.0	2,6-Dinitrotoluene	ND< 10.0
2-Chlorophenol	ND< 10.0	Fluorene	ND< 10.0
1,3-Dichlorobenzene	ND< 10.0	Hexachlorocyclopentadiene	ND< 10.0
1,4-Dichlorobenzene	ND< 10.0	2-Nitroaniline	ND< 25.0
1,2-Dichlorobenzene	ND< 10.0	3-Nitroaniline	ND< 25.0
Hexachloroethane	ND< 10.0	4-Nitroaniline	ND< 25.0
2-Methylphenol	ND< 10.0	4-Nitrophenol	ND< 25.0
4-Methylphenol	ND< 10.0	2,4,6-Trichlorophenol	ND< 10.0
N-Nitrosodimethylamine	ND< 10.0	2,4,5-Trichlorophenol	ND< 25.0
N-Nitroso-di-n-propylamine	ND< 10.0	4-Bromophenyl phenyl ether	ND< 10.0
Phenol	ND< 10.0	Di-n-butyl phthalate	ND< 10.0
Benzoic acid	ND< 25.0	4,6-Dinitro-2-methylphenol	ND< 25.0
Bis (2-chloroethoxy) methane	ND< 10.0	Fluoranthene	ND< 10.0
4-Chloroaniline	ND< 10.0	Hexachlorobenzene	ND< 10.0
4-Chloro-3-methylphenol	ND< 10.0	N-Nitrosodiphenylamine	ND< 10.0
2,4-Dichlorophenol	ND< 10.0	Pentachlorophenol	ND< 25.0
2,6-Dichlorophenol	ND< 10.0	Anthracene	ND< 10.0
2,4-Dimethylphenol	ND< 10.0	Phenanthrene	ND< 10.0
Hexachlorobutadiene	ND< 10.0	Benzidine	ND< 25.0
Isophorone	ND< 10.0	Benzo (a) anthracene	ND< 10.0
2-Methylnapthalene	ND< 10.0	Bis (2-ethylhexyl) phthalate	ND< 10.0
Naphthalene	ND< 10.0	Butylbenzylphthalate	ND< 10.0
Nitrobenzene	ND< 10.0	Chrysene	ND< 10.0
2-Nitrophenol	ND< 10.0	3,3'-Dichlorobenzidine	ND< 10.0
1,2,4-Trichlorobenzene	ND< 10.0	Pyrene	ND< 10.0
2-Chloronaphthalene	ND< 10.0	Benzo (b) fluoranthene	ND< 10.0
Acenaphthene	ND< 10.0	Benzo (k) fluoranthene	ND< 10.0
Acenapthylene	ND< 10.0	Benzo (g,h,i) perylene	ND< 10.0
4-Chlorophenyl phenyl ether	ND< 10.0	Benzo (a) pyrene	ND< 10.0
Dibenzofuran	ND< 10.0	Dibenz (a,h) anthracene	ND< 10.0
Diethyl phthalate	ND< 10.0	Di-n-octylphthalate	ND< 10.0
Dimethyl phthalate	ND< 25.0	Indeno (1,2,3-cd) pyrene	ND< 10.0

Analytical Method: EPA 8270

ELAP ID No: 10958

Comments: ND denotes Not Detected

Approved By: _____
Laboratory Director

PARADIGM
Environmental Services, Inc. 179 Lake Avenue Rochester, New York 14608 716-647-2530 FAX 716- 647-3311

Client: TVGA Engineers

Client Job Site: Harrison Street
Jamestown NY

Client Job No.: 103301

Field Location: MW-3
Field ID No.: N/A

Lab Project No. 00-1021
Lab Sample No. 3860

Sample Type: Water

Date Sampled: 05/17/2000
Date Received: 05/18/2000

Parameter	Date Analyzed	Analytical Method	Result (mg/L)
Aluminum	05/23/2000	SW846 6010	<0.200
Antimony	05/23/2000	SW846 6010	<0.060
Arsenic	05/23/2000	SW846 6010	0.006
Barium	05/23/2000	SW846 6010	0.122
Beryllium	05/23/2000	SW846 6010	<0.005
Cadmium	05/23/2000	SW846 6010	<0.005
Calcium	05/24/2000	SW846 6010	55.9
Chromium	05/23/2000	SW846 6010	<0.010
Cobalt	05/23/2000	SW846 6010	<0.010
Copper	05/23/2000	SW846 6010	<0.010
Iron	05/24/2000	SW846 6010	0.141
Lead	05/24/2000	SW846 6010	<0.005
Magnesium	05/24/2000	SW846 6010	15.7
Manganese	05/23/2000	SW846 6010	0.023
Mercury	05/25/2000	SW846 7471	<0.0002
Nickel	05/23/2000	SW846 6010	<0.040
Potassium	05/22/2000	SW846 6010	9.78
Selenium	05/23/2000	SW846 6010	0.008
Silver	05/23/2000	SW846 6010	<0.010
Sodium	05/23/2000	SW846 6010	91.8
Thallium	05/24/2000	SW846 6010	<0.006
Vanadium	05/23/2000	SW846 6010	<0.010
Zinc	05/24/2000	SW846 6010	<0.020

ELAP ID No.:10958

Comments:

Approved By: _____
Laboratory Director

File ID: 001021p3

PARADIGM
ENVIRONMENTAL
SERVICES, INC.

179 Lake Avenue Rochester, New York 14608 716-647-2530 FAX 716-647-3311

Volatile Laboratory Analysis Report For Non-Potable Water

Client:	TVGA Engineering	**Lab Project No.:**	00-1021
Client Job Site:	Harrison St. Brownfield Jamestown, NY	**Lab Sample No.:**	3861
Client Job No.:	103301	**Sample Type:**	Water
Field Location:	MW-4	**Date Sampled:**	05/17/00
		Date Received:	05/18/00
Field ID No.:	N/A	**Date Analyzed:**	05/19/00

VOLATILE HALOCARBONS	RESULTS (ug/L)	VOLATILE AROMATICS	RESULTS (ug/L)
Bromodichloromethane	ND< 2.00	Benzene	ND< 2.00
Bromomethane	ND< 2.00	Chlorobenzene	ND< 2.00
Bromoform	ND< 2.00	Ethylbenzene	ND< 2.00
Carbon tetrachloride	ND< 2.00	Toluene	ND< 2.00
Chloroethane	ND< 2.00	m,p - Xylene	ND< 2.00
Chloromethane	ND< 2.00	o - Xylene	ND< 2.00
2-Chloroethyl vinyl ether	ND< 2.00	Styrene	ND< 2.00
Chloroform	ND< 2.00		
Dibromochloromethane	ND< 2.00		
1,1-Dichloroethane	ND< 2.00		
1,2-Dichloroethane	ND< 2.00		
1,1-Dichloroethene	ND< 2.00	Ketones & Misc.	
trans-1,2-Dichloroethene	ND< 2.00	Acetone	ND< 10.0
1,2-Dichloropropane	ND< 2.00	Vinyl acetate	ND< 5.00
cis-1,3-Dichloropropene	ND< 2.00	2-Butanone	ND< 5.00
trans-1,3-Dichloroproper	ND< 2.00	4-Methyl-2-pentanone	ND< 5.00
Methylene chloride	ND< 5.00	2-Hexanone	ND< 5.00
1,1,2,2-Tetrachloroethar	ND< 2.00	Carbon disulfide	ND< 5.00
Tetrachloroethene	ND< 2.00		
1,1,1-Trichloroethane	ND< 2.00		
1,1,2-Trichloroethane	ND< 2.00		
Trichloroethene	ND< 2.00		
Vinyl Chloride	ND< 2.00		

Analytical Method: EPA 8260 ELAP ID No.: 10958

Comments: ND denotes Not Detected

Approved By _____
Laboratory Director

001021V4.XLS

PARADIGM
ENVIRONMENTAL
SERVICES, INC.

179 Lake Avenue Rochester, New York 14608 716-647-2530 FAX 716-647-3311

Volatile Laboratory Analysis Report For Non-Potable Water

Client:	TVGA Engineering	**Lab Project No.:**	00-1021
Client Job Site:	Harrison St. Brownfield Jamestown, NY	**Lab Sample No.:**	3861
Client Job No.:	103301	**Sample Type:**	Water
Field Location:	MW-4	**Date Sampled:**	05/17/00
Field ID No.:	N/A	**Date Received:**	05/18/00
		Date Analyzed:	05/19/00

VOLATILE HALOCARBONS	RESULTS (ug/L)
Bromodichloromethane	ND< 2.00
Bromomethane	ND< 2.00
Bromoform	ND< 2.00
Carbon tetrachloride	ND< 2.00
Chloroethane	ND< 2.00
Chloromethane	ND< 2.00
2-Chloroethyl vinyl ether	ND< 2.00
Chloroform	ND< 2.00
Dibromochloromethane	ND< 2.00
1,1-Dichloroethane	ND< 2.00
1,2-Dichloroethane	ND< 2.00
1,1-Dichloroethene	ND< 2.00
trans-1,2-Dichloroethene	ND< 2.00
1,2-Dichloropropane	ND< 2.00
cis-1,3-Dichloropropene	ND< 2.00
trans-1,3-Dichloroproper	ND< 2.00
Methylene chloride	ND< 5.00
1,1,2,2-Tetrachloroethar	ND< 2.00
Tetrachloroethene	ND< 2.00
1,1,1-Trichloroethane	ND< 2.00
1,1,2-Trichloroethane	ND< 2.00
Trichloroethene	ND< 2.00
Vinyl Chloride	ND< 2.00

VOLATILE AROMATICS	RESULTS (ug/L)
Benzene	ND< 2.00
Chlorobenzene	ND< 2.00
Ethylbenzene	ND< 2.00
Toluene	ND< 2.00
m,p - Xylene	ND< 2.00
o - Xylene	ND< 2.00
Styrene	ND< 2.00
Ketones & Misc.	
Acetone	ND< 10.0
Vinyl acetate	ND< 5.00
2-Butanone	ND< 5.00
4-Methyl-2-pentanone	ND< 5.00
2-Hexanone	ND< 5.00
Carbon disulfide	ND< 5.00

Analytical Method: EPA 8260

ELAP ID No.: 10958

Comments: ND denotes Not Detected

Approved By _____
Laboratory Director

001021V4.XLS

PARADIGM

ENVIRONMENTAL SERVICES, INC.

179 Lake Avenue, Rochester, New York 14608 (716) 647-2530 FAX (716) 647-3311

SEMI-VOLATILES LABORATORY REPORT FOR WATERS

Client:	TVGA Engineering	**Lab Project No.:**	00-1021
Client Job Site:	Harrison St. Brownfield Jamestown, NY	**Lab Sample No.:**	3861
		Sample Type:	Water
Client Job No.:	103301	**Sample Date:**	05/17/00
Field Location:	MW-4	**Date Received:**	05/18/00
Field ID No.:	N/A	**Date Analyzed:**	05/24/00

COMPOUND	RESULT (ug/l)	COMPOUND	RESULT (ug/l)
Benzyl alcohol	ND< 25.0	2,4-Dinitrophenol	ND< 10.0
Bis (2-chloroethyl) ether	ND< 10.0	2,4-Dinitrotoluene	ND< 10.0
Bis (2-chloroisopropyl) ether	ND< 10.0	2,6-Dinitrotoluene	ND< 10.0
2-Chlorophenol	ND< 10.0	Fluorene	ND< 10.0
1,3-Dichlorobenzene	ND< 10.0	Hexachlorocyclopentadiene	ND< 10.0
1,4-Dichlorobenzene	ND< 10.0	2-Nitroaniline	ND< 25.0
1,2-Dichlorobenzene	ND< 10.0	3-Nitroaniline	ND< 25.0
Hexachloroethane	ND< 10.0	4-Nitroaniline	ND< 25.0
2-Methylphenol	ND< 10.0	4-Nitrophenol	ND< 25.0
4-Methylphenol	ND< 10.0	2,4,6-Trichlorophenol	ND< 10.0
N-Nitrosodimethylamine	ND< 10.0	2,4,5-Trichlorophenol	ND< 25.0
N-Nitroso-di-n-propylamine	ND< 10.0	4-Bromophenyl phenyl ether	ND< 10.0
Phenol	ND< 10.0	Di-n-butyl phthalate	ND< 10.0
Benzoic acid	ND< 25.0	4,6-Dinitro-2-methylphenol	ND< 25.0
Bis (2-chloroethoxy) methane	ND< 10.0	Fluoranthene	ND< 10.0
4-Chloroaniline	ND< 10.0	Hexachlorobenzene	ND< 10.0
4-Chloro-3-methylphenol	ND< 10.0	N-Nitrosodiphenylamine	ND< 10.0
2,4-Dichlorophenol	ND< 10.0	Pentachlorophenol	ND< 25.0
2,6-Dichlorophenol	ND< 10.0	Anthracene	ND< 10.0
2,4-Dimethylphenol	ND< 10.0	Phenanthrene	ND< 10.0
Hexachlorobutadiene	ND< 10.0	Benzidine	ND< 25.0
Isophorone	ND< 10.0	Benzo (a) anthracene	ND< 10.0
2-Methylnapthalene	ND< 10.0	Bis (2-ethylhexyl) phthalate	ND< 10.0
Naphthalene	ND< 10.0	Butylbenzylphthalate	ND< 10.0
Nitrobenzene	ND< 10.0	Chrysene	ND< 10.0
2-Nitrophenol	ND< 10.0	3,3'-Dichlorobenzidine	ND< 10.0
1,2,4-Trichlorobenzene	ND< 10.0	Pyrene	ND< 10.0
2-Chloronaphthalene	ND< 10.0	Benzo (b) fluoranthene	ND< 10.0
Acenaphthene	ND< 10.0	Benzo (k) fluoranthene	ND< 10.0
Acenapthylene	ND< 10.0	Benzo (g,h,i) perylene	ND< 10.0
4-Chlorophenyl phenyl ether	ND< 10.0	Benzo (a) pyrene	ND< 10.0
Dibenzofuran	ND< 10.0	Dibenz (a,h) anthracene	ND< 10.0
Diethyl phthalate	ND< 10.0	Di-n-octylphthalate	ND< 10.0
Dimethyl phthalate	ND< 25.0	Indeno (1,2,3-cd) pyrene	ND< 10.0

Analytical Method: EPA 8270

ELAP ID No: 10958

Comments: ND denotes Not Detected
Low Acid ~~Surrogate recovery~~. Possible matrix interference.

Approved By: _____
Laboratory Director

PARADIGM
Environmental Services, Inc. 179 Lake Avenue Rochester, New York 14608 716-647-2530 FAX 716- 647-3311

Client: TVGA Engineers

Client Job Site: Harrison Street
Jamestown NY

Client Job No.: 103301

Field Location: MW-4
Field ID No.: N/A

Lab Project No. 00-1021
Lab Sample No. 3861

Sample Type: Water

Date Sampled: 05/17/2000
Date Received: 05/18/2000

Parameter	Date Analyzed	Analytical Method	Result (mg/L)
Aluminum	05/19/2000	SW846 6010	9.58
Antimony	05/23/2000	SW846 6010	<0.060
Arsenic	05/19/2000	SW846 6010	0.013
Barium	05/19/2000	SW846 6010	0.201
Beryllium	05/19/2000	SW846 6010	<0.005
Cadmium	05/19/2000	SW846 6010	<0.005
Calcium	05/19/2000	SW846 6010	122
Chromium	05/19/2000	SW846 6010	0.012
Cobalt	05/19/2000	SW846 6010	<0.010
Copper	05/19/2000	SW846 6010	0.027
Iron	05/19/2000	SW846 6010	10.9
Lead	05/19/2000	SW846 6010	0.030
Magnesium	05/19/2000	SW846 6010	26.2
Manganese	05/19/2000	SW846 6010	0.339
Mercury	05/25/2000	SW846 7471	<0.0002
Nickel	05/19/2000	SW846 6010	<0.040
Potassium	05/22/2000	SW846 6010	19.1
Selenium	05/19/2000	SW846 6010	<0.005
Silver	05/19/2000	SW846 6010	<0.010
Sodium	05/19/2000	SW846 6010	44.3
Thallium	05/19/2000	SW846 6010	<0.060
Vanadium	05/19/2000	SW846 6010	<0.020
Zinc	05/19/2000	SW846 6010	0.050

ELAP ID No.:10958

Comments:

Approved By: _____
Laboratory Director

File ID: 001021p4

PARADIGM
ENVIRONMENTAL
SERVICES, INC.

179 Lake Avenue Rochester, New York 14608 716-647-2630 FAX 716-647-3311

Volatile Laboratory Analysis Report For Non-Potable Water

Client:	TVGA Engineering	**Lab Project No.:**	00-1021
Client Job Site:	Harrison St. Brownfield Jamestown, NY	**Lab Sample No.:**	3862
Client Job No.:	103301	**Sample Type:**	Water
Field Location:	MW-5	**Date Sampled:**	05/17/00
		Date Received:	05/18/00
Field ID No.:	N/A	**Date Analyzed:**	05/22/00

VOLATILE HALOCARBONS	RESULTS (ug/L)	VOLATILE AROMATICS	RESULTS (ug/L)
Bromodichloromethane	ND< 2.00	Benzene	ND< 2.00
Bromomethane	ND< 2.00	Chlorobenzene	ND< 2.00
Bromoform	ND< 2.00	Ethylbenzene	ND< 2.00
Carbon tetrachloride	ND< 2.00	Toluene	ND< 2.00
Chloroethane	ND< 2.00	m,p - Xylene	ND< 2.00
Chloromethane	ND< 2.00	o - Xylene	ND< 2.00
2-Chloroethyl vinyl ether	ND< 2.00	Styrene	ND< 2.00
Chloroform	ND< 2.00		
Dibromochloromethane	ND< 2.00		
1,1-Dichloroethane	ND< 2.00		
1,2-Dichloroethane	ND< 2.00		
1,1-Dichloroethene	ND< 2.00	Ketones & Misc.	
trans-1,2-Dichloroethene	ND< 2.00	Acetone	ND< 10.0
1,2-Dichloropropane	ND< 2.00	Vinyl acetate	ND< 5.00
cis-1,3-Dichloropropene	ND< 2.00	2-Butanone	ND< 5.00
trans-1,3-Dichloroproper	ND< 2.00	4-Methyl-2-pentanone	ND< 5.00
Methylene chloride	ND< 5.00	2-Hexanone	ND< 5.00
1,1,2,2-Tetrachloroethar	ND< 2.00	Carbon disulfide	ND< 5.00
Tetrachloroethene	ND< 2.00		
1,1,1-Trichloroethane	ND< 2.00		
1,1,2-Trichloroethane	ND< 2.00		
Trichloroethene	ND< 2.00		
Vinyl Chloride	ND< 2.00		

Analytical Method: EPA 8260 ELAP ID No.: 10958

Comments: ND denotes Not Detected

Approved By _____
Laboratory Director

PARADIGM

ENVIRONMENTAL SERVICES, INC.

179 Lake Avenue, Rochester, New York 14608 (716) 647-2530 FAX (716) 647-3311

SEMI-VOLATILES LABORATORY REPORT FOR WATERS

Client:	TVGA Engineering	**Lab Project No.:**	00-1021
Client Job Site:	Harrison St. Brownfield Jamestown, NY	**Lab Sample No.:**	3862
		Sample Type:	Water
Client Job No.:	103301		
		Sample Date:	05/17/00
Field Location:	MW-5	**Date Received:**	05/18/00
Field ID No.:	N/A	**Date Analyzed:**	05/24/00

COMPOUND	RESULT (ug/l)	COMPOUND	RESULT (ug/l)
Benzyl alcohol	ND< 25.0	2,4-Dinitrophenol	ND< 10.0
Bis (2-chloroethyl) ether	ND< 10.0	2,4-Dinitrotoluene	ND< 10.0
Bis (2-chloroisopropyl) ether	ND< 10.0	2,6-Dinitrotoluene	ND< 10.0
2-Chlorophenol	ND< 10.0	Fluorene	ND< 10.0
1,3-Dichlorobenzene	ND< 10.0	Hexachlorocyclopentadiene	ND< 10.0
1,4-Dichlorobenzene	ND< 10.0	2-Nitroaniline	ND< 25.0
1,2-Dichlorobenzene	ND< 10.0	3-Nitroaniline	ND< 25.0
Hexachloroethane	ND< 10.0	4-Nitroaniline	ND< 25.0
2-Methylphenol	ND< 10.0	4-Nitrophenol	ND< 25.0
4-Methylphenol	ND< 10.0	2,4,6-Trichlorophenol	ND< 10.0
N-Nitrosodimethylamine	ND< 10.0	2,4,5-Trichlorophenol	ND< 25.0
N-Nitroso-di-n-propylamine	ND< 10.0	4-Bromophenyl phenyl ether	ND< 10.0
Phenol	ND< 10.0	Di-n-butyl phthalate	ND< 10.0
Benzoic acid	ND< 25.0	4,6-Dinitro-2-methylphenol	ND< 25.0
Bis (2-chloroethoxy) methane	ND< 10.0	Fluoranthene	ND< 10.0
4-Chloroaniline	ND< 10.0	Hexachlorobenzene	ND< 10.0
4-Chloro-3-methylphenol	ND< 10.0	N-Nitrosodiphenylamine	ND< 10.0
2,4-Dichlorophenol	ND< 10.0	Pentachlorophenol	ND< 25.0
2,6-Dichlorophenol	ND< 10.0	Anthracene	ND< 10.0
2,4-Dimethylphenol	ND< 10.0	Phenanthrene	ND< 10.0
Hexachlorobutadiene	ND< 10.0	Benzidine	ND< 25.0
Isophorone	ND< 10.0	Benzo (a) anthracene	ND< 10.0
2-Methylnapthalene	ND< 10.0	Bis (2-ethylhexyl) phthalate	ND< 10.0
Naphthalene	ND< 10.0	Butylbenzylphthalate	ND< 10.0
Nitrobenzene	ND< 10.0	Chrysene	ND< 10.0
2-Nitrophenol	ND< 10.0	3,3'-Dichlorobenzidine	ND< 10.0
1,2,4-Trichlorobenzene	ND< 10.0	Pyrene	ND< 10.0
2-Chloronaphthalene	ND< 10.0	Benzo (b) fluoranthene	ND< 10.0
Acenaphthene	ND< 10.0	Benzo (k) fluoranthene	ND< 10.0
Acenapthylene	ND< 10.0	Benzo (g,h,i) perylene	ND< 10.0
4-Chlorophenyl phenyl ether	ND< 10.0	Benzo (a) pyrene	ND< 10.0
Dibenzofuran	ND< 10.0	Dibenz (a,h) anthracene	ND< 10.0
Diethyl phthalate	ND< 10.0	Di-n-octylphthalate	ND< 10.0
Dimethyl phthalate	ND< 25.0	Indeno (1,2,3-cd) pyrene	ND< 10.0

Analytical Method: EPA 8270 **ELAP ID No: 10958**

Comments: ND denotes Not Detected
Low Acid Surrogate recovery. Possible matrix interference.

Approved By: _____
Laboratory Director

PARADIGM
Environmental Services, Inc. 179 Lake Avenue Rochester, New York 14608 716-647-2530 FAX 716- 647-3311

Client: TVGA Engineers

Client Job Site: Harrison Street
Jamestown NY

Client Job No.: 103301

Field Location: MW-5
Field ID No.: N/A

Lab Project No. 00-1021
Lab Sample No. 3862

Sample Type: Water

Date Sampled: 05/17/2000
Date Received: 05/18/2000

Parameter	Date Analyzed	Analytical Method	Result (mg/L)
Aluminum	05/19/2000	SW846 6010	0.802
Antimony	05/19/2000	SW846 6010	<0.060
Arsenic	05/19/2000	SW846 6010	<0.005
Barium	05/19/2000	SW846 6010	0.264
Beryllium	05/19/2000	SW846 6010	<0.005
Cadmium	05/19/2000	SW846 6010	<0.005
Calcium	05/19/2000	SW846 6010	128
Chromium	05/19/2000	SW846 6010	<0.010
Cobalt	05/19/2000	SW846 6010	<0.010
Copper	05/19/2000	SW846 6010	<0.010
Iron	05/19/2000	SW846 6010	1.79
Lead	05/19/2000	SW846 6010	0.007
Magnesium	05/19/2000	SW846 6010	26.1
Manganese	05/19/2000	SW846 6010	1.20
Mercury	05/25/2000	SW846 7471	<0.0002
Nickel	05/19/2000	SW846 6010	<0.040
Potassium	05/22/2000	SW846 6010	10.1
Selenium	05/19/2000	SW846 6010	<0.005
Silver	05/19/2000	SW846 6010	<0.010
Sodium	05/19/2000	SW846 6010	93.1
Thallium	05/19/2000	SW846 6010	<0.060
Vanadium	05/19/2000	SW846 6010	<0.020
Zinc	05/19/2000	SW846 6010	<0.020

ELAP ID No.:10958

Comments:

Approved By: _____
Laboratory Director

File ID: 001021p5

PARADIGM
ENVIRONMENTAL
SERVICES, INC.

179 Lake Avenue Rochester, New York 14608 716-647-2530 FAX 716-647-3311

Volatile Laboratory Analysis Report For Non-Potable Water

Client:	TVGA Engineering	**Lab Project No.:**	00-1021
Client Job Site:	Harrison St. Brownfield Jamestown, NY	**Lab Sample No.:**	3863
Client Job No.:	103301	**Sample Type:**	Water
Field Location:	Trip Blank	**Date Sampled:**	05/17/00
		Date Received:	05/18/00
Field ID No.:	N/A	**Date Analyzed:**	05/22/00

VOLATILE HALOCARBONS	RESULTS (ug/L)
Bromodichloromethane	ND< 2.00
Bromomethane	ND< 2.00
Bromoform	ND< 2.00
Carbon tetrachloride	ND< 2.00
Chloroethane	ND< 2.00
Chloromethane	ND< 2.00
2-Chloroethyl vinyl ether	ND< 2.00
Chloroform	ND< 2.00
Dibromochloromethane	ND< 2.00
1,1-Dichloroethane	ND< 2.00
1,2-Dichloroethane	ND< 2.00
1,1-Dichloroethene	ND< 2.00
trans-1,2-Dichloroethene	ND< 2.00
1,2-Dichloropropane	ND< 2.00
cis-1,3-Dichloropropene	ND< 2.00
trans-1,3-Dichloroproper	ND< 2.00
Methylene chloride	ND< 5.00
1,1,2,2-Tetrachloroethar	ND< 2.00
Tetrachloroethene	ND< 2.00
1,1,1-Trichloroethane	ND< 2.00
1,1,2-Trichloroethane	ND< 2.00
Trichloroethene	ND< 2.00
Vinyl Chloride	ND< 2.00

VOLATILE AROMATICS	RESULTS (ug/L)
Benzene	ND< 2.00
Chlorobenzene	ND< 2.00
Ethylbenzene	ND< 2.00
Toluene	ND< 2.00
m,p - Xylene	ND< 2.00
o - Xylene	ND< 2.00
Styrene	ND< 2.00
Ketones & Misc.	
Acetone	ND< 10.0
Vinyl acetate	ND< 5.00
2-Butanone	ND< 5.00
4-Methyl-2-pentanone	ND< 5.00
2-Hexanone	ND< 5.00
Carbon disulfide	ND< 5.00

Analytical Method: EPA 8260

ELAP ID No.: 10958

Comments: ND denotes Not Detected

Approved By _____
Laboratory Director