FINAL REMEDIAL INVESTIGATION /ALTERNATIVES ANALYSIS REPORT

ONE BRISTOL AVENUE SITE
(NYSDEC No. E932125)
ONE BRISTOL AVENUE
CITY OF LOCKPORT
NIAGARA COUNTY, NEW YORK

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1.0 INTRODUCTION

1.1 Purpose

The City of Lockport (the City) entered into a State Assistance Contract with the New York State Department of Environmental Conservation (NYSDEC) to complete a Remedial Investigation/Alternatives Analysis (RI/AA) program and Interim Remedial Measure (IRM) at the One Bristol Avenue Site in the City of Lockport, New York (project site). The location of the project site is shown on Figure 1. The RI/AA was completed pursuant to the Environmental Restoration, or Brownfield, Program, component of Title 5 of the Clean Water/Clean Air Bond Act of 1996, which is administered by the NYSDEC. The purpose of the RI/AA program described herein was to characterize the nature and extent of contamination occurring on and emanating from the project site, and to develop and evaluate remedial alternatives for the contamination. The purpose of the IRM was to remove the petroleum contaminated soil known to exist at the site.

An IRM approach was recommended by the NYSDEC because past information indicated that significant petroleum contamination existed in the subsurface soil at the site, although a few data gaps remained. The investigative activities described in the RI/AA Work Plan were used to fill the data gaps prior to performing the IRM work. Interim Remedial Measures were implemented at the project site in the spring of 2008 and these activities are detailed in the November 2008 Interim Remedial Measures Report.

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

1.2 Site Background

1.2.1 Site Description

The currently vacant property at One Bristol Avenue consists of approximately one acre of land located to the southwest of Niagara Street and to the north of Park Avenue in Lockport, New York. Figure 1 shows the location of the project site and the property boundaries and site layout is depicted on Figure 2. No aboveground structures, other than utility poles, are currently present on the project site. The site is currently an open field area consisting of weeds, brush and a small wooded area centrally located along the western property line. The site is bound to the east by Bristol Avenue beyond which are residential properties. An active railroad line adjoins the project site to the northwest. Commercial properties adjoin the project site to the south and southwest.

1.2.2 Site History

The project site, which is currently owned by the City of Lockport, was formerly utilized for agricultural retail as a former grain and feed store for more than 80 years. A building was formally located in the northern portion of the property. Associated with these operations were two oil tanks situated along the southern border of the property that were removed prior to 1948. In addition, a gasoline tank was formerly located on-site, but was removed prior to 1969. This tank is believed to be the one located in the northwest portion of the property in the 1964 survey, as shown in Appendix A. The 1964 survey also depicts a retail gas pump located on the northeast corner of the property.

1.2.3 Previous Environmental Investigations

In 1999, Phase I and II Environmental Site Assessments were performed for the property immediately south of the project site and identified petroleum contamination in the soil along that property's common boundary with the project site. In response to the petroleum detected on the adjoining property, the New York State Department of Environmental Conservation (NYSDEC) assigned a spill number (Spill No. 9975170) and utilized a standby contractor for the investigation of the project site.

The investigation was conducted in two phases, and the approach and results of each are summarized in a site sketch and table included in Appendix B. The first investigation occurred in March through June 2000 and the second occurred in May 2001. The initial investigation included the advancement, screening, and sampling of 13 direct-push test probes (EP-1 through EP-13). The results indicated that two areas of contamination existed on the property near the former location of the gasoline tank in the south central portion of the site, and near the former location of two oil tanks in the southeastern portion of the project site.

A supplemental investigation was then conducted to delineate the contamination identified in the initial investigation phase. This work included the advancement, screening, and sampling of 33 additional direct-push test probes (EP-14 through EP-46). The test probe locations are shown on the figure included in Appendix B, and the analytical results are summarized in the table in Appendix B. The approximate sample locations are also included on Figure 3.

Additionally, the City of Lockport implemented remedial activities at the adjacent property to the south (referred to as the Magavern Site) by removing approximately 750 tons of petroleum-contaminated soil in May 2004. These soils were located immediately adjacent to the southeastern portion of the project site, where two oil tanks were formerly located and a former fuel supply or transfer line was uncovered. The table and figure in Appendix C that was prepared by InteGreyted International shows the waste characterization results and excavation extent, respectively.

1.2.4 Areas of Potential Environmental Concern

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

- The previously documented presence of petroleum-impacted subsurface soil
- The potential for contamination migration to and from adjacent properties
- The potential for both on-site and off-site groundwater contamination
- The presence of a three-inch diameter former fuel supply or transfer line located in the southwest corner of the site, which is documented to be in poor condition with a number of holes in it
- The former presence of an aboveground fuel tank in the northwestern portion of the site and the former presence of a retail fuel pump in the northeastern portion of the site

2.0 METHODS OF INVESTIGATION

The scope of the Remedial Investigation program was generally consistent with that outlined in the NYSDEC-approved April 2007 Remedial Investigation/Alternatives Analysis Work Plan (Work Plan), and the Extra Work Authorizations submitted April 11 and September 7, 2007 and August 28, 2008. Modifications made to the Work Plan during the completion of the RI were approved by the NYSDEC and the City are discussed within this report.

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

- Completion of a boundary survey of the project site, developing a base map and locating the sample locations and relevant site features
- Collection and analysis of on-site subsurface soil samples to classify and characterize the subsurface soil
- Installation of soil vapor probes and performance of a tracer gas study
- Evaluation of the resulting data and preparation of a report to:
  - Summarize and document the activities performed during the RI
  - Describe the physical characteristics of the project site
  - Describe the nature, magnitude and extent of contamination
  - Compare the analytical data to applicable regulatory levels
  - Assess the implications of the conditions encountered
  - Provide recommendations relative to future work requirements and the Interim Remedial Measures

The following section describes the field tasks that were performed.

2.1 Field Investigation

The following subsections describe the scope of field activities associated with the remedial investigation program. This scope reflects minor deviations and/or additions from the initial scope, as some minor modifications were necessary to account for information obtained during the field investigation or were performed at the request of the NYSDEC. The methods employed during the execution of the field tasks were detailed in the Field Sampling Plan (FSP), while the procedures implemented to ensure the quality of the resulting field and laboratory data were in accordance with the Quality Assurance/Quality Control (QA/QC) Plan. Table 1 summarizes the number of samples collected during the investigative tasks, the total organic vapor (TOV) readings, sampling interval, refusal depth, field observations and the corresponding analytical methods. Table 1 also includes the sample interval and TOV readings of the sample locations for the previous studies, where available. Figure 3 depicts the site investigation and sampling locations.

2.1.1 Site Survey

TVGA performed a boundary survey of the project site to establish the boundaries of the project site. The surveying work also included developing a base map and locating the horizontal and vertical positions (where appropriate) the sample locations and relevant site features. The survey is included as Figure 2 and the site investigation map is included as Figure 3.

2.1.2 Subsurface Soil Sampling

Twenty soil probes were completed at the project site on May 16 and 17, 2007 to delineate petroleum contamination in the subsurface soil. However, after conducting the title search and performing the survey of the project site, it became apparent that the size and shape of the project site was different than originally thought. Also, a 1964 survey of the project site obtained after completing the May 2007 investigation indicated that a former elevated fuel tank and retail gas pump were located on-site in areas that were not previously evaluated. Therefore, a second sampling event consisting of 18 soil probes was completed on August 16, 2007 to further assess these areas.

The soil probes were advanced at the locations shown on Figure 3 using direct-push soil sampling equipment to collect continuous samples. The soil probe activities were conducted in accordance with Section 9.1 of the FSP. A subcontractor to TVGA, TREC Environmental Inc., provided and operated the direct-push drilling rig. The depth of the soil probes ranged from approximately 7 to 10 feet below existing ground surface.

Upon retrieval, each soil sample was field screened with a photoionization detector (PID) for total organic vapors (TOVs) by separating the soil column with a decontaminated stainless steel spoon and placing the PID probe tip near the void. This was recorded as a "direct" TOV reading. In addition, a portion of the soil was placed in a plastic bag and

the headspace in the bag was allowed to reach equilibrium. Following this, the PID tip was placed into the air headspace above the soil to obtain a "headspace" TOV measurement. The direct and headspace TOV measurements, as well as soil descriptions, were recorded on the Soil Probe Logs which are included in Appendix D. Following characterization and sample collection, the excess soil was placed back into the probe hole from which it originated unless TOV readings were elevated at or above 50 ppm. If soils contained elevated TOV measurements greater than 50 ppm, the soils were placed on a plastic sheeting for future off-site disposal.

Twenty-one subsurface soil samples were collected from the soil probes and analyzed for Spill Technology and Remediation Series (STARS) List of volatile organic compounds (VOCs) and STARS List of semi-volatile organic compounds (SVOCs). Additionally, six subsurface soil samples were collected from the soil probes and analyzed for Target Compound List (TCL) VOCs, SVOCs, pesticides and polychlorinated biphenyls (PCBs) and Target Analyte List (TAL) metals analysis, which will be referred to as Full TCL/TAL in this document. Additionally, samples from SP-21, SP-28, and SP-38 were also analyzed for TCL herbicides. Samples were selected based on TOV readings, as well as the presence or lack of visual and/or olfactory evidence of contamination to determine the areal extents of petroleum contaminated subsurface soil.

2.1.3 Soil Vapor

Three soil vapor probes were installed along the eastern boundary of the project site adjacent to Bristol Avenue to evaluate potential vapor intrusion into residential homes adjacent to the project site. The locations and depths of the soil vapor probes were selected by on-site representatives of the NYSDEC and the New York State Department of Health. The soil vapor probes were installed in accordance with Section 7 of the FSP. The locations of the soil vapor probes are depicted in Figure 3.

Each of the soil vapor probes was installed to a depth of five feet below grade and was screened from four to five feet below grade. Appendix D includes the Soil Vapor Probe Installation Reports. Following installation, the bentonite seal installed above the screened interval, was allowed to hydrate prior to performing the tracer gas study. The results of the tracer gas study are detailed in Section 4.2.

2.1.4 Laboratory Analysis

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

2.1.5 Quality Assurance/Quality Control Samples

In addition to field samples, Quality Assurance/Quality Control Samples were collected to evaluate the effectiveness of the QA/QC procedures implemented during the field and laboratory activities associated with the project. These QA/QC samples were collected and analyzed in accordance with the April 2007 QA/QC Plan developed for the project site. QA/QC samples included matrix spike (MS), matrix spike duplicate (MSD) and matrix duplicate (MD) samples, trip blank and rinsate (i.e., equipment) blank samples.

2.1.6 Data Validation

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

The evaluation of the analytical results for samples collected from the project site indicate that the samples were processed in general compliance with applicable protocols, and the majority of results are usable as reported, or usable with minor edits or qualification as estimated or edits to non-detection. However, heptachlor epoxide in SP-28 and beta-BHC, dieldrin and endrin in SP-38 were rejected due to the difference of reported concentrations and the conformational results. The remaining samples generally showed good accuracy and precision.

3.0 PHYSICAL CHARACTERISTICS OF THE STUDY AREA

3.1 Physical Setting

The topography of the project site is generally flat. The southwestern portion of the property contains brush and large trees as shown on the site survey and the remainder of the site is covered with grass and weeds. The site has an average elevation of approximately 620 feet above mean sea level (AMSL).

3.2 Geology

The results of the remedial investigation and IRM indicate that soil overlies the native soil across the entire site. A thin veneer of soil/fill material with a thickness of 1.5 feet or less was typically present as the uppermost overburden layer throughout the project site. This material primarily consists of sandy-silt and contained some gravel. Underlying the "soil/fill" material was native soil, a plastic and highly mottled red brown silty clay that occurred to an average depth of 8.5 feet below grade. Where petroleum contamination was present, this soil was stained varying degrees of dull gray. Additionally, varying quantities of sand, gravel and gray silty-clay were encountered. The "Lockport Dolostone" formation is known to be present below the unconsolidated (overburden) soil material in this area.

In addition to the soil and native red brown clay, minor amounts of soil/fill were encountered. These soil/fill types as well as other observations include:

- Concrete pieces were encountered in SP-2, SP-11, SP-15, SP-17, SP-28 and SP-30.
- A layer of black sandy silt was encountered at a depth of approximately one to three feet below grade at SP-8, SP-9, SP-12, SP-18 and SP-32.
- A soil material consisting of red brown and some yellow grey to light gray silty clay was encountered in SP-11, SP-15 and SP-22. The yellow gray silty clay was not encountered anywhere else on the project site.
- A thin, yellow brown silty sand lens was encountered at 2.3 feet in SP-14. This lens was not encountered anywhere else on the project site.
- A white, ashy material was observed in SP-27, SP-29, SP-31, SP-35 and SP-38.

After completion of the IRM, the most significantly contaminated subsurface soil was disposed of off-site and backfilled with a red, clayey silt from the LaFarge quarry in Lockport, New York. Additionally, four inches of topsoil was placed across the all areas of the site disturbed by IRM activities.

3.3 Hydrogeology

Hydrogeologic conditions across the project site were evaluated through the advancement of soil probes and through the excavation of contaminated subsurface soil

during the IRM activities. Although saturated conditions were encountered in the soil probes during the remedial investigation near bedrock, the excavation activities performed during the IRM revealed that these conditions were the result of water trapped in former building foundation beds and inactive utility trenches. Based on these observations groundwater does not occur in overburden soils on the project site.

4.0 NATURE AND EXTENT OF CONTAMINATION

Subsurface soil samples were collected for chemical analysis to further delineate petroleum contamination occurring in the subsurface soil. Table 1 summarizes the number of samples collected during the investigative tasks, TOV measurements, sampling interval, refusal depth, field observations and the corresponding analytical methods.

The following sections summarize and discuss the analytical results generated during the RI. For discussion purposes, the analytical results area compared with the Standards, Criteria and Guidance values (SCGs) applicable to soil, which are:

- Soil: NYSDEC's 6NYCRR Part 375 Environmental Remediation Programs: Part 375-6.8(a): Unrestricted Use Soil Cleanup Objectives (SCOs).

Summary Tables 2 and 3 compare the analytical data from the soil samples to the applicable SCOs and have been integrated into the following discussions. The results were also compared to the Residential Use SCOs on the summary tables; however none of the soil samples exceeded Residential Use SCOs. Table 4 includes the list of qualifiers used in these tables. The analytical laboratory reports are included in Attachment A.

4.1 Subsurface Soil

Twenty-seven subsurface soil samples were collected from the soil probes advanced across the project site during the May and August 2007 sampling events to characterize the subsurface soil material and delineate areas of petroleum contamination. Twenty-one of the samples were analyzed for STARS VOCs and SVOCs and the remaining six samples were analyzed for the Full TCL/TAL. Additionally, SP-21, SP-28, and SP-38 were also analyzed for TCL herbicides. No PCBs or herbicides were detected in the samples and are therefore not discussed in the following sections.

The analytical results for the subsurface soil samples analyzed for STARS VOCs and SVOCs are summarized in Table 2 and the results of the Full TCL/TAL analysis are summarized in Table 3. Locations of these probes as well as the estimated locations of previous soil probes are depicted on Figure 3.

Based on field observations and TOV readings, the most significantly contaminated soils were located just above the overburden/bedrock interface.

Twenty-two of the samples contained detectable concentrations of one or more VOCs; however, only six samples contained concentrations above the SCGs. Detected VOCs consisted primarily of petroleum hydrocarbons, which are likely related to a historic fuel line and the existence of petroleum tanks on and near the project site. The highest concentrations of detected VOCs were from samples collected from SP-3 and SP-20; both of these locations are located in the southeast portion of the property.

Although SVOCs were detected in fourteen of the samples, only the concentration of indeno(1,2-3cd)pyrene in SP-38 exceeded the SCGs.

Nuisance characteristics including stained soils and petroleum odors along with high TOV measurements were identified in a number of subsurface soil investigation locations throughout the project site. The native red clay subsurface soils were typically discolored to a dull gray or brown at the locations where SCGs were exceeded.

Pesticides were detected in SP-21 and SP-38; however, only dieldrin in SP-21 and 4,4-DDE and 4,4-DDT in SP-38 were detected at concentrations exceeding SCGs. Additionally, these concentrations only minimally exceeded Unrestricted Use SCOs. The remaining detected pesticide concentrations were well below the Unrestricted Use SCOs. The presence of pesticides is potentially related to the historical use of the site for agricultural retail purposes.

The concentrations of metals were below the applicable SCGs.

4.2 Soil Vapor

A soil vapor study was proposed in the Work Plan after the completion of the IRMs. Three soil vapor probes were installed along the eastern boundary of the project site adjacent to Bristol Avenue in order to evaluate potential vapor intrusion into residential homes adjacent to the project site. The locations of the soil vapor probes are depicted in Figure 3.

After allowing to the bentonite seal to hydrate for two hours a tracer gas study was performed on each of the soil vapor probes to verify the integrity of the soil vapor probe seal and verify that a soil vapor sample has not been diluted by outdoor air. The tracer gas study was performed in accordance with the procedures listed in Section 7 of the FSP utilizing the field screening method via a gas detection meter to detect for the presence of the tracer gas. For this project, helium was used as the tracer gas.

The results of the tracer gas study revealed the presence of helium in each of the soil vapor probes. Therefore, the bentonite seal was allowed to cure overnight to allow the bentonite seal additional time to expand and hydrate to eliminate potential voids within the seal. A second tracer gas study was then performed on each of the soil vapor probes. The results of the second tracer gas study revealed the presence of helium in each of the soil vapor probes.

The tracer gas study revealed the presence of helium in each of the soil vapor probes. The detection of this tracer gas in the soil vapor probes indicates the potential for ambient air intrusion into the soil vapor probes during sampling, likely due to the nature of the very fine-grained soils at the site. These soils severely limit the flow of soil gas into the soil vapor probe and likely caused intrusion of ambient air from above during evacuation of the probe. The porous nature of the sandy gravel in the upper foot of soil surrounding the

probes may have contributed to this ambient air intrusion when the underlying fine-grained soils contributed little to no soil gas during purging.

Based on results of the tracer gas study, sampling of the vapor probes was not performed. However, based on IRM activities and the results of the 2007 investigation, soil vapor sampling is unnecessary. The following information supports this determination.

- The IRM activities were successful in removing the significantly impacted material from the site. The only contaminants of concern for the site are petroleum-related VOCs. The post-excavation soil sampling performed during the IRMs indicated that the soil remaining on the site contains only very low concentrations, if detectable, of these analytes. In fact, all remaining concentrations are below the Residential Use SCOs and most are below even the Unrestricted Use SCOs. Therefore, the source of potential soil vapors has been eliminated.
- Significant migration of soil vapors from the site appears to be unlikely based on the dense nature of the on-site soils. The subsurface soils generally consist of a red-brown, very dense native silty-clay that extends to bedrock, which was encountered at depths of eight to ten feet below grade. The bedrock encountered during the IRM activities was observed to be very competent with no fractures visible. The potential for the migration of soil vapors through the dense and relatively impermeable soil and bedrock appears to be very unlikely.
- If present, the movement of groundwater through soils remaining after the IRM could provide a migration pathway for contaminants and therefore soil vapor. However, groundwater was not encountered during IRM activities, which eliminates this potential migration pathway.
- Bristol Avenue separates the project site from the nearest residential property. Although the migration of soil vapors from the site is unlikely for the reasons described above, utilities exist within the Bristol Avenue right-of-way and these utilities would intercept any vapors before they reach the residence. Migration beyond the utilities toward the residence is therefore unlikely.

5.0 CONTAMINATION ASSESSMENT

5.1 Contaminant Fate and Transport

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

5.1.1 Subsurface Soil

The investigation results indicate that the contaminants of concern in the subsurface soil consist of petroleum hydrocarbon VOCs. VOCs are moderately to highly soluble in water and have high vapor pressures, and are therefore generally mobile in the subsurface. The high vapor pressures result in the nuisance characteristics (olfactory) observed in the subsurface soil. These VOCs tend to migrate downward under the influence of gravity and capillary forces towards the top of groundwater. Once in groundwater they are expected to migrate in the dissolved phase with flowing groundwater. However, based on the absence of groundwater in the subsurface, the dense nature of overburden soils and the competent nature of bedrock, VOCs are not likely migrating substantially in the subsurface. The subsurface deposition of the contaminants eliminates the potential for windborne transport and surface water runoff. It is expected that the petroleum and associated nuisance characteristics will continue to naturally degrade.

5.2 Evaluation of Potential Receptors

The project site is located in an area that is characterized by residential, commercial and light industrial properties. The project site is currently an unutilized commercial property with residences to the east, commercial properties to the west and south, and a railroad track and yard to the northwest. Access to the project site is unrestricted.

Under current conditions, potential human receptors include persons:

- Working or trespassing on the project site
- Living and working in the area surrounding the project site

Potential environmental receptors include wildlife living on and migrating through the project site (e.g., rodents, birds, etc.).

The planned future use of the project site is for commercial or light industrial development, and soil remediation was completed during the spring 2008 Interim

Remediation Measure program. Appropriate personal protective equipment, dust suppression techniques, and the community air monitoring program were implemented during the IRM activities to eliminate impacts of contaminated subsurface soil on human and environmental receptors.

No human and/or environmental receptors have been identified in connection with the post-redevelopment period, based on the results of the IRM activities that were completed at the site.

5.3 Potential Exposure Pathways

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

Appropriate personal protective equipment, dust suppression techniques, and the community air monitoring program were implemented during the IRM activities to eliminate the exposure pathways of contaminated subsurface soil on human and environmental receptors.

The IRM activities were successful in removing the significantly impacted material from the site. The only contaminants of concern for the site are petroleum-related VOCs. The post-excavation soil sampling performed during the IRMs indicated that the soil remaining on the site contains low concentrations, if detectable, of these analytes. In fact, all remaining concentrations are below the Residential Use SCOs and most are below the Unrestricted Use SCOs. Therefore, no complete exposure pathways have been identified in connection with the post-redevelopment period.

As described in Section 4.2, the migration of soil vapor to nearby homes does not represent a complete exposure pathway, as the soil vapor would not migrate through the dense soil and bedrock. Additionally, soil vapor would be intercepted by utilities and cannot migrate with groundwater because groundwater is not present. Furthermore, the results of the IRMs indicate that the removal activities achieved removal of all significantly impacted material, so the source of soil vapors has been eliminated.

The surrounding area is serviced by a municipal water supply system in Tonawanda, New York that relies upon water withdrawn from Niagara River. Considering the absence of groundwater on the project site and the lack of reliance on groundwater as a potable

water supply source in the immediate vicinity and downgradient of the project site, the exposure of potential receptors to on-site contamination via groundwater is not a concern.

6.0 IDENTIFICATION AND DEVELOPMENT OF ALTERNATIVES

6.1 Remedial Action Objectives

The following section outlines the Remedial Action Objectives (RAOs) identified for the contaminated media encountered on the project site. These RAOs are based upon the findings of the RI and the anticipated future use of the project site for commercial or light industrial use development.

Contaminants of concern were detected in the subsurface soil include petroleum hydrocarbon VOCs. Nuisance characteristics including petroleum odors and staining are also a concern. The RAOs for this project site necessitate the implementation of remedial measures not only to protect human health and the environment, but also to mitigate potential short term impacts to construction workers and the surrounding community during the redevelopment period.

The RAO is to prevent the exposure of people working and trespassing on the site and those living and working near the site and environmental receptors to petroleum hydrocarbons via dermal contact, incidental ingestion, or inhalation of organic vapors and/or particulates.

6.2 General Response Actions

General response actions for each of the affected media at the project site have been identified and are described in the following subsections. Although these general response actions include no action as a remedial option, the no action response does not address the RAO identified in the preceding section and is included for comparison purposes only. The general response actions are summarized in Table 5.

General response actions available to satisfy the RAO identified for the site include:

- No action
- Excavation and off-site disposal of the most significantly impacted soil
- Excavation and off-site disposal of all on-site soil/fill

6.3 Remediation Areas and Volumes

Remediation areas and volumes have been based on the results of the site investigation as well as actual areas and soil volumes remediated during the IRM. The areal extent of the contaminated subsurface soil removed during the IRM is presented in Figure 4.

6.3.1 Subsurface Soil Removed During the IRM

Based on the remedial investigation, an IRM program was initiated to excavate and dispose of off-site the significantly impacted subsurface soil from the project site. During

the IRM activities, a total of 1,508 cubic yards (2,251 tons) of contaminated soil was excavated and was disposed of off-site.

6.3.2 Complete Removal of Soil Volume

Although IRMs achieved the removal of vast majority of the most significantly impacted soil, soil with nuisance characteristics but concentrations below Residential Use SCOs remains on-site. Also, one sample contained a pesticide at a concentration slightly above the Unrestricted Use SCO. Therefore, in order for the site to meet Unrestricted Use SCOs the complete removal of on-site soil would be required. The complete removal of soil to bedrock equates to a volume of approximately 13,040 cubic yards (20,864 tons).

6.4 Development of Alternatives

The general response actions identified in Section 6.2 have been assembled into a series of site-wide remedial action alternatives. These alternatives are summarized in Table 5 and outlined in the following subsections.

6.4.1 Alternative A – No Action

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

6.4.2 Alternative B – IRM Implementation

This alternative represents the actual remedial activities performed during the IRM program that involved the excavation and removal of the most significantly impacted soil. Following the excavation and off-site disposal of contaminated soil material, clean fill was brought on-site and used for backfilling the excavation. The IRM Report describes these activities, which include:

- Removal of the non-impacted soil/fill overlying the contaminated soil for use as backfill
- Removal of contaminated soil for off-site disposal
- Removal and off-site disposal of the USTs in the northeast portion of the site
- Backfill of excavations with non-impacted soil/fill as well as imported backfill materials
- Placement of four inches of clean topsoil across all disturbed areas
- Hydro-seed topsoil areas

This alternative would achieve the RAO for the site through the off-site disposal of the most significantly impacted soil. The areal extents of the excavations areas that were subject to IRM activities are depicted on Figure 4.

6.4.3 Alternative C – Complete Removal of All Soil/Fill

This alternative would include the excavation and removal of all soil/fill on the project site. The details of the program are:

- Clear trees and brush from the site and dispose off-site
- Removal of all soil/fill for off-site disposal
- Removal and off-site disposal of the USTs in the northeast portion of the site
- Backfill excavations with imported backfill materials
- Placement of four inches of clean topsoil across the entire site
- Hydro-seed entire site

This alternative would achieve the RAO for the site through the off-site disposal of all soil/fill.

7.0 DETAILED ANALYSIS OF ALTERNATIVES

7.1 General Discussion

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

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

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

7.1.1 Overall Protection of Human Health and the Environment

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

7.1.2 Compliance with Standards, Criteria, and Guidance

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

7.1.3 Short-Term Effectiveness

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

7.1.4 Long-Term Effectiveness

The evaluation of this criterion focuses on the long-term protection of human health and the environment at the completion of the remedial action. Effectiveness is assessed with respect to the magnitude of residual risks; adequacy of controls, if any, in managing

treatment residuals or untreated wastes that remain at the site; reliability of controls against possible failure; and potential to provide continued protection.

7.1.5 Reduction of Toxicity, Mobility and Volume

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

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

7.1.6 Feasibility

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

7.2 Individual Analysis of Alternatives

The evaluations of the six criteria discussed above for each of the remedial alternatives are presented in the following subsections and summarized in Table 7.

7.2.1 Alternative A – No Action

7.2.1.1 Overall Protection of Human Health and the Environment

The No Action Alternative does not satisfy the RAO because of its inability to eliminate the potential for the exposure of the public and future construction and site residents to on-site contaminants. Therefore, this alternative is not protective of human health with respect to the surrounding community because contamination would remain on-site and would not be effectively contained.

7.2.1.2 Compliance with Standards, Criteria, and Guidance

The subsurface soil containing elevated contaminant concentrations will remain on-site; therefore, the No Action Alternative would not meet the SCGs.

7.2.1.3 Short-Term Effectiveness

Under this alternative, the project site would remain in its current state, in which soil with elevated concentrations of contaminants would remain on the project site.

7.2.1.4 Long-Term Effectiveness

Without remediation the future use of the project site would be limited. Although natural attenuation will eventually address the petroleum contamination, the contamination is elevated to an extent that natural attenuation would take a considerable time and the site would be unavailable for redevelopment during this time.

7.2.1.5 Reduction of Toxicity, Mobility and Volume

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

7.2.1.6 Feasibility

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

7.2.2 Alternative B – IRM Implementation

7.2.2.1 Overall Protection of Human Health and the Environment

This alternative would achieve the RAO for contaminated soil at the site.

7.2.2.2 Compliance with Standards, Criteria, and Guidance

The most significantly impacted materials would be removed from the site and properly disposed of. While the underlying material may contain some VOCs at concentrations above the Unrestricted Use SCOs, these concentrations are generally low and are below the Residential Use SCOs.

7.2.2.3 Short-Term Effectiveness

Although short-term exposure risks to construction workers and the surrounding community could result from remediation activities at the site, these risks would be effectively minimized through the use of standard construction and health and

safety precautions. This remedial action could be implemented in a relatively short time-frame, likely less than three months.

7.2.2.4 Long-Term Effectiveness

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

7.2.2.5 Reduction of Toxicity, Mobility and Volume

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

7.2.2.6 Feasibility

This remedial action alternative is appropriate for current and future site conditions and uses. Materials and equipment for completing remediation as described are readily available. As shown in Table 7, the estimated cost of this alternative is approximately $221,750, which makes this alternative very cost-effective.

7.2.3 Alternative C – Complete Removal of All Soil/Fill

7.2.3.1 Overall Protection of Human Health and the Environment

This alternative would achieve the RAOs for all contaminated media.

7.2.3.2 Compliance with Standards, Criteria, and Guidance

All contaminated materials would be removed from the site and properly disposed.

7.2.3.3 Short-Term Effectiveness

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

7.2.3.4 Long-Term Effectiveness

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

7.2.3.5 Reduction of Toxicity, Mobility and Volume

This remedial action alternative would effectively eliminate the toxicity, mobility and volume of the contaminants through removal and off-site disposal of all contaminated soil/fill.

7.2.3.6 Feasibility

This remedial action alternative is appropriate for current and future site conditions and uses. Materials and equipment for completing remediation as described are readily available. As shown in Table 8, the estimated cost of this alternative is approximately $1,177,743, which makes this alternative impractical.

7.3 Comparative Analysis and Recommendation

A comparative evaluation of the remedial alternatives is presented in the form of a matrix, shown on Table 6, which includes ratings for each of the criteria discussed above. The comparison of the alternatives is based upon a qualitative system that utilizes relative ratings of *high*, *medium* and *low* to define each alternative's performance with respect to the aforementioned criteria. These ratings are then equated to a numerical scale to produce a relative numerical score for final comparison purposes. The ratings equate to the following conditions and numerical scores:

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

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

As reflected by Table 6, Alternative B and C have been identified as effective alternatives. Both alternatives would fully satisfy the RAOs developed for the site for its intended light industrial or commercial future use. Alternative B would render the site suitable for use as a residential property and while no restrictions would be placed on the

future use of the site following the implementation of Alternative C. Alternative C received a slightly higher rating than Alternative B for protection of human health and the environment and long-term effectiveness because all contaminated media would be removed under Alternative C. Contaminated soil exceeding the Unrestricted Use SCOs but below the Residential Use SCOs would remain on-site utilizing Alternative B. Alternative C does not confer any significant protections to human health and the environment when compared to alternative B. Based upon the cost effectiveness and feasibility as well the level of protection to human health and the environment, Alternative B is recommended for implementation.

8.0 SUMMARY AND CONCLUSIONS

A Remedial Investigation/Alternatives Analysis (RI/AA) program and Interim Remedial Measure (IRM) program were implemented at the One Bristol Avenue site on behalf of the City of Lockport. The project site is located at One Bristol Avenue on the southwest corner of Niagara Street in the City of Lockport, New York. The City has identified the project site as a prime candidate for restoration and redevelopment. The City received State financial assistance to conduct this program under the Environmental Restoration, or Brownfield, Program, component of Title 5 of the Clean Water/Clean Air Bond Act of 1996, which is administered by the NYSDEC. The objective of this program was to characterize the nature and extent of contamination occurring on, and emanating from, the project site, to delineate petroleum contamination in the subsurface soil and groundwater. Based on these findings, an IRM program was implemented to remove the most significantly impacted material from the project site.

8.1 Site Conditions

The currently vacant property at One Bristol Avenue consists of approximately one acre of land located in Lockport, New York. No aboveground structures, other than power poles, are currently present on the project site. A railroad track adjoins the project site on the northwest corner. Two buildings exist on the adjoining properties, one on the property directly south and one on the property to the southwest. The project site was formerly utilized for agricultural retail as a former grain and feed store for more than 80 years. A building was formally located in the northern portion of the site. Associated with these operations were two oil tanks situated along the southern border of the property that were removed prior to 1948. In addition, a gasoline tank was formerly located on-site, but was removed prior to 1969.

A Phase I and II ESA was completed on the adjacent property to the south and removed a significant amount of contaminated soil and uncovered an abandoned fuel line leading onto One Bristol Avenue. An investigation was then completed on the project site and additional sampling was deemed necessary.

Based upon the historical use of the project site, the following potential environmental concerns were identified in connection with the project site:

- The previously documented presence of petroleum-impacted subsurface soil
- The potential for contamination migration to and from adjacent properties
- The potential for both on-site and off-site groundwater contamination
- The presence of a 3-inch diameter former fuel supply or transfer line located in the southwest corner of the site which is documented to be in poor condition with a number of holes in it
- The former presence of an aboveground fuel tank in the northwestern portion of the site and the former presence of a retail fuel pump in the northeastern portion of the site

8.2 Investigation Approach

The Remedial Investigation was conducted in accordance with the NYSDEC-approved April 2007 Remedial Investigation/Alternatives Analysis Work Plan (Work Plan) as well as the approved Extra Work Authorizations. This investigative work included the following activities:

- Boundary and Site Survey
- Subsurface Soil Sampling
- Soil Vapor Probe Installation and tracer gas study
- Data Validation
- Data Evaluation

8.3 Physical Setting

The topography of the project site is generally flat and the project site has an elevation of approximately 621 feet above mean sea level based on the site survey. The site is bound to the northeast by Niagara Street, northwest by a railroad, to the east by Bristol Avenue and to the south and west by adjoining businesses.

The results of the remedial investigation indicate that soil/fill and native red clay material overlie bedrock across the entire site. The bedrock was encountered at approximately eight feet below grade across the site.

8.4 Nature and Extent of Contamination

The investigation results indicate that the contaminants of concern in the subsurface soil consist of petroleum hydrocarbon VOCs and were identified by the nuisance characteristics odor and staining. Although nuisance characteristics were identified in a number of subsurface soil investigation locations, detected VOCs in the remedial investigation and the IRM activities were below Residential Use SCOs and most were below the Unrestricted Use SCOs.

8.5 Contamination Assessment

8.5.1 Potential Receptors

Under current (vacant) and planned future use (commercial or light industrial uses) conditions, potential human receptors for on-site contaminants include persons:

- Working or trespassing on the project site
- Living and working in the area surrounding the project site

Potential environmental receptors include wildlife living on and migrating through the project site (e.g., rodents, birds, etc.).

No human and/or environmental receptors have been identified in connection with the post-redevelopment period, based on IRM activities that were completed at the site and the subsurface deposition of remaining contaminated soil (i.e. a limited quantity of soil/fill with contamination above the Unrestricted Use SCOs was left on-site).

8.5.2 Exposure Pathways

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

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

During remediation activities, receptors at and near the project site could be exposed to the on-site contaminants via the inhalation of contaminated dust and vapors, and incidental ingestion of, and/or dermal contact with the contaminated soil/fill. However, the use of appropriate personal protective equipment, dust suppression techniques, and the development and the use of standard construction and health and safety precautions would minimize the risk of exposure during the remedial activities.

The IRM activities were successful in removing the significantly impacted material from the site. The only contaminants of concern for the site are petroleum-related VOCs. The post-excavation soil sampling performed during the IRMs indicated that the soil remaining on the site contains only very low concentrations, if detectable, of these analytes. In fact, all remaining concentrations are below the Residential Use SCOs and most are below the Unrestricted Use SCOs. Therefore, no complete exposure pathways have been identified in connection with the post-redevelopment period.

A soil vapor study was not completed at the project site; however, an IRM was completed and the most significantly impacted material was removed and disposed of off-site. Remaining contaminant concentrations are below the Residential Use SCOs and most are below the Unrestricted Use SCOs. Therefore, the source of soil vapors has been removed from the site. Additionally, due to the dense nature of the overburden soil, the lack of fracturing in the underlying bedrock and the lack of groundwater the migration of soil vapor is not an exposure pathway.

8.6 Remedial Action Objectives

Remedial Action Objectives (RAOs) were identified for each of the contaminated media encountered on the project site. These RAOs are based upon the findings of the RI and the anticipated future use of the project site as for commercial or light industrial purposes,

and include the prevention and exposure via dermal contact or incidental ingestion of particulates and the inhalation of particulates or vapors.

8.7 Remedial Alternatives

8.7.1 Alternative A – No Action

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

8.7.2 Alternative B – IRM Implementation

This alternative includes the removal and off-site disposal of the most significantly impacted soil from the project site. However, soil remaining on-site may exhibit petroleum nuisance characteristics.

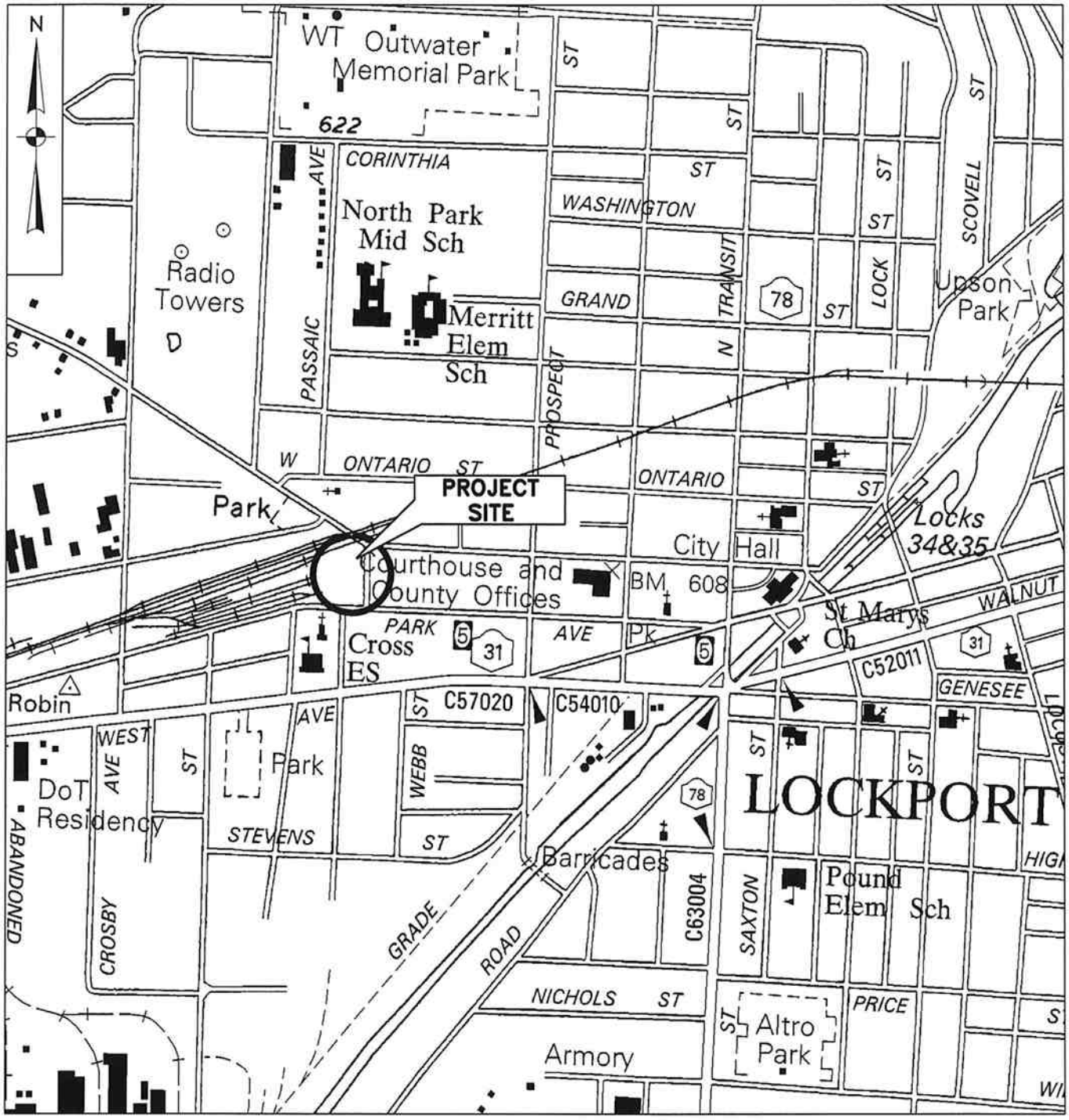
8.7.3 Alternative C – Complete Removal of All Soil/Fill

This alternative includes the removal of all soil/fill from the project site. This alternative would not require a long term monitoring plan or a soil/fill management plan.

8.8 Recommended Alternative

Based upon the high degree of implementability, cost-effectiveness, compliance with SCGs for the project site's intended future use, and high degree of protection to human health and the environment, Alternative B is recommended for implementation.

FIGURES



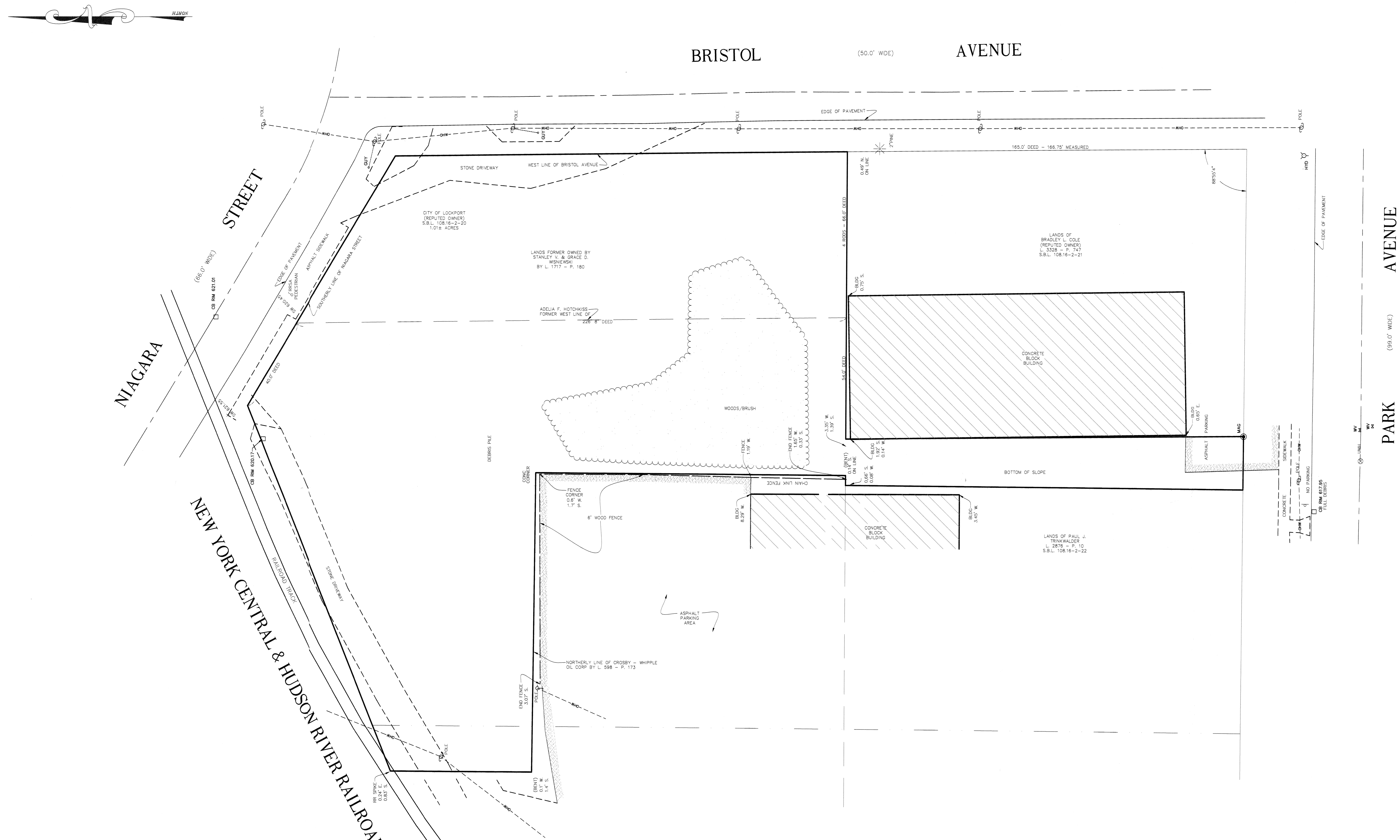
U.S.G.S LOCKPORT QUADRANGLE

SITE LOCATION MAP

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

REMEDIAL INVESTIGATION / ALTERNATIVES ANALYSIS REPORT
ONE BRISTOL AVENUE
LOCKPORT, NEW YORK 14094

PROJECT NO. 2007.0015.00	SCALE: 1" = 1,000	DATE: OCTOBER 2008	FIGURE NO. 1



GENERAL NOTES

1. THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED THOUGH THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. THE CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF EXCAVATION.

2. CONTROL: COORDINATES SHOWN HEREON ARE EXPRESSED IN U.S. SURVEY FEET AND REFERENCED TO THE NORTH AMERICAN DATUM OF 1983/ 1996 (NAD83/ 96) - NEW YORK STATE PLANE GRID, ZONE WEST.

3. ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 AND WERE OBTAINED BY GPS OBSERVATIONS.

REV	DESCRIPTION	DATE	BY

Designed by: DT	Date: October 14, 2008
Drawn by: CAM	Job No. 2007.0015.00
Checked by: JCM	Drawing File No.
Dwg Scale: Horiz: 1" = 20' Vert:	File Name: 59639_2D

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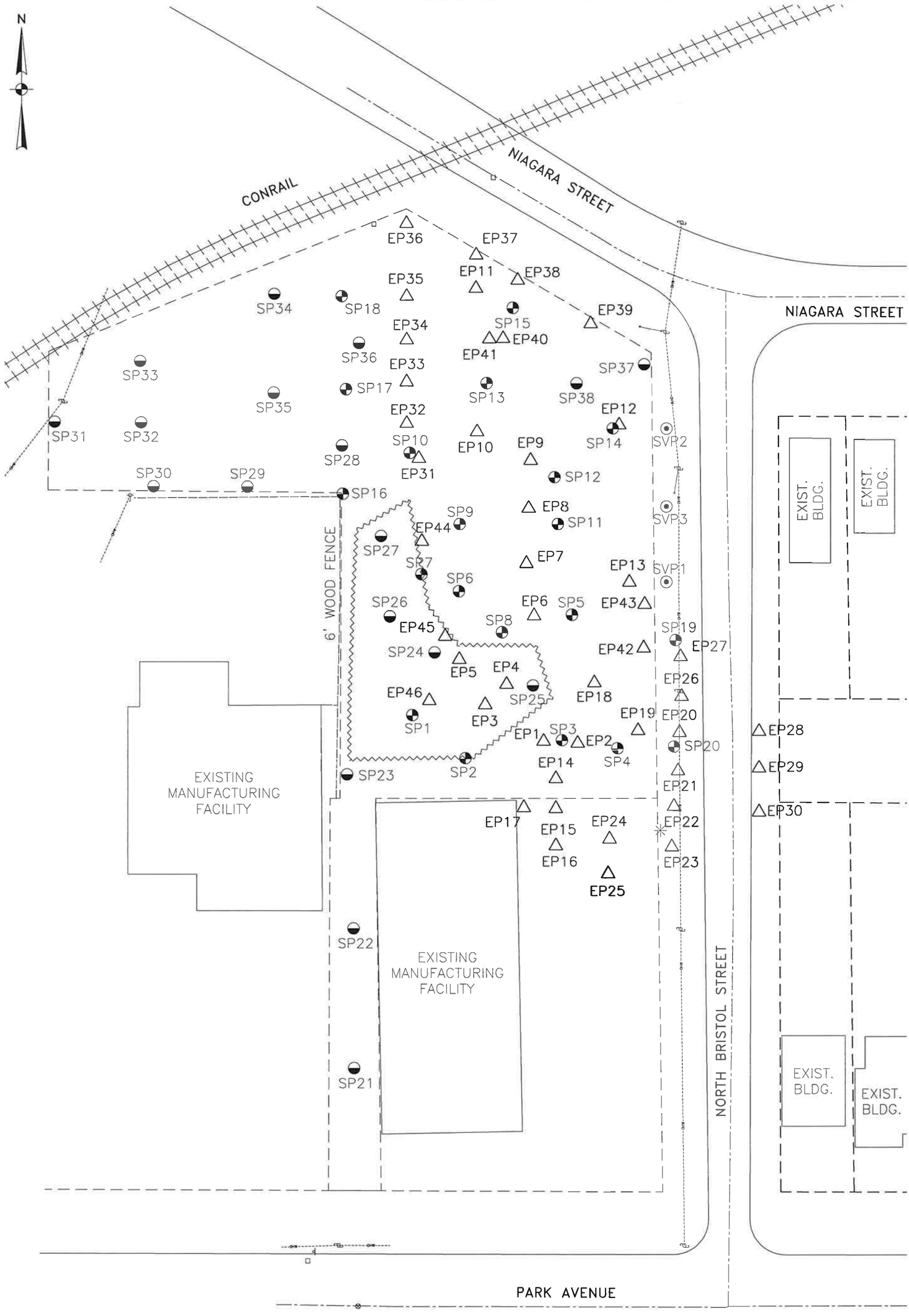
BOUNDARY SURVEY AND SITE LAYOUT
REMEDIAL INVESTIGATION / ALTERNATIVE ANALYSIS REPORT

ONE BRISTOL AVENUE
LOCKPORT, NEW YORK 14094

FIGURE 2



LEGEND

- 2007 SOIL PROBE LOCATION
- 2007 APPROXIMATE SOIL PROBE LOCATION
- SOIL VAPOR PROBE LOCATION
- EP1 2001 APPROXIMATE SOIL PROBE LOCATION
- WOODED AREA LIMITS

SITE INVESTIGATION MAP

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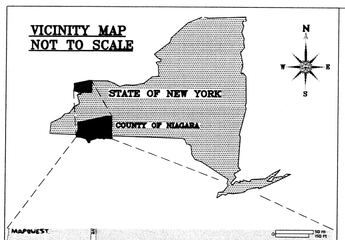
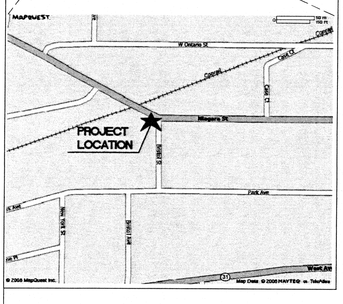
REMEDIAL INVESTIGATION/ ALTERNATIVES ANALYSIS REPORT
ONE BRISTOL AVENUE
LOCKPORT, NEW YORK 14094

PROJECT NO. 2007.0015.00	SCALE: 1" = 40'-0"	DATE: OCTOBER 2008	FIGURE NO. 3

VICINITY MAP
NOT TO SCALE





PROJECT LOCATION MAP
CITY OF LOCKPORT

MAPS PREPARED FOR:
CAMBRIA CONTRACTING INC.
5105 LOCKPORT ROAD
LOCKPORT, NY 14094

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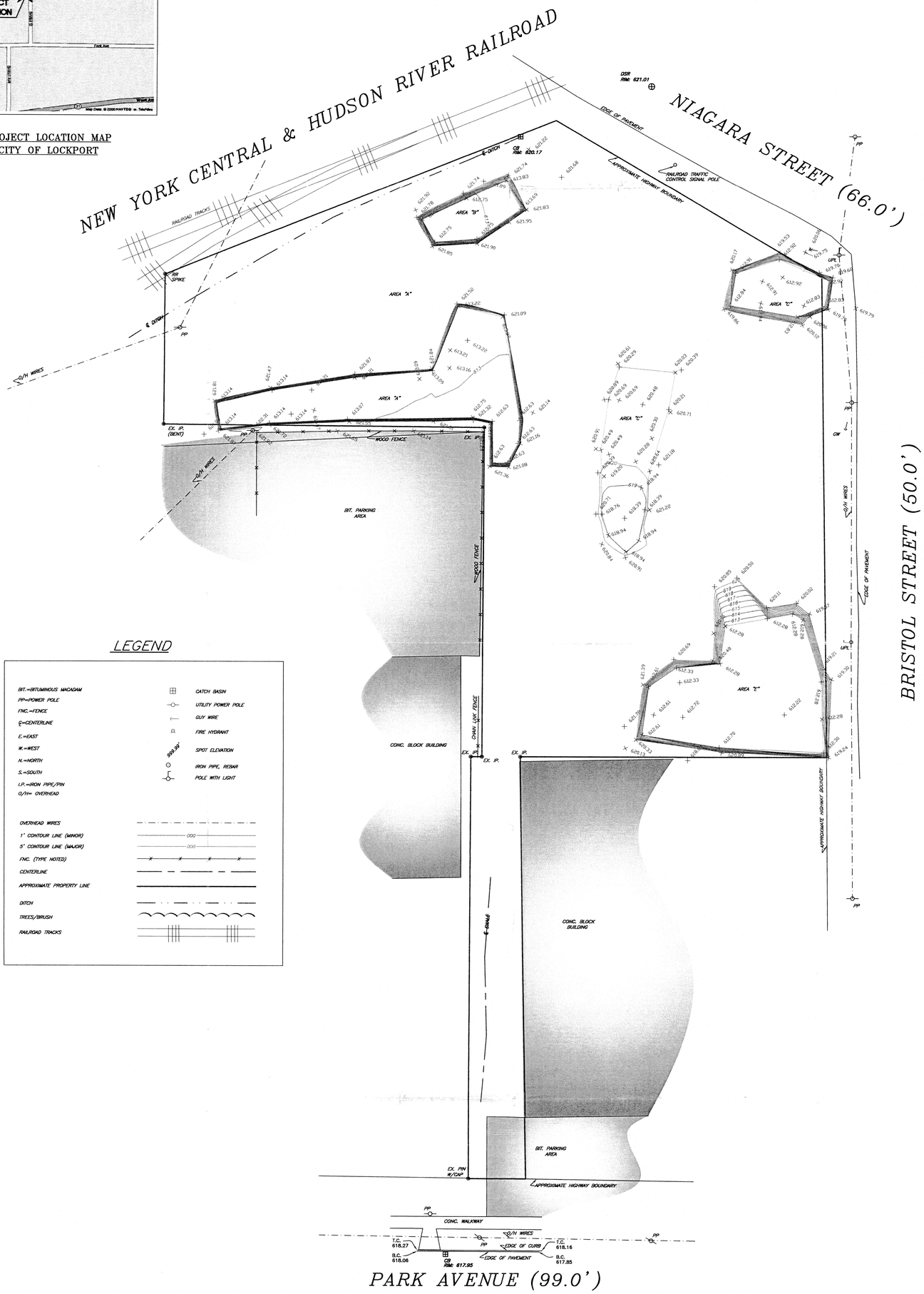

LEGEND

BIT.=BITUMINOUS MACADAM	CATCH BASIN
PP=POWER POLE	UTILITY POWER POLE
FNC.=FENCE	GUY WIRE
℄=CENTERLINE	FIRE HYDRANT
E.=EAST	SPOT ELEVATION
W.=WEST	IRON PIPE, REBAR
N.=NORTH	POLE WITH LIGHT
S.=SOUTH	
I.P.=IRON PIPE/PIN	
O/H= OVERHEAD	
OVERHEAD WIRES	
1' CONTOUR LINE (MINOR)	
5' CONTOUR LINE (MAJOR)	
FNC. (TYPE NOTED)	
CENTERLINE	
APPROXIMATE PROPERTY LINE	
DITCH	
TREES/BRUSH	
RAILROAD TRACKS	

NOTES:

1. THIS MAP REPRESENTS SITE CONDITIONS AS SURVEYED BY WENDEL DUCHSCHERER IN APRIL 2008.
2. VERTICAL DATUM: CONTOURS & ELEVATIONS SHOWN ARE REFERENCED TO FEATURES LOCATED BY WENDEL DUCHSCHERER AS SHOWN ON DRAWING PREPARED BY TVGA CONSULTANTS ENTITLED: "PROPOSED IRM EXCAVATION AREAS", SHEET NUMBER PL-1, JOB NUMBER 2007.0015.00, DATED OCTOBER, 2007
3. PROPERTY LINES SHOWN ON THIS MAP ARE APPROXIMATE AND WERE SHOWN FROM A DRAWING PREPARED BY TVGA CONSULTANTS ENTITLED "REMEDIAL INVESTIGATION SITE MAP, ONE BRISTOL AVENUE" NO. PL-1 DATED OCTOBER 2007.

RECORD DOCUMENT

STATE OF NEW YORK
MARSHALL D. WILSON
No. 050192
LICENSED LAND SURVEYOR

EXCAVATION AREAS
SITE REMEDIATION
1 BRISTOL AVENUE
CITY OF LOCKPORT, COUNTY OF NIAGARA
STATE OF NEW YORK

WENDEL DUCHSCHERER
Towne Square · 6417 Dysinger Road · Lockport, New York 14094
PHONE: 716-433-5993 · FAX: 716-433-1604
WEBSITE: www.wd-ae.com

PROJ. NO.	4373-01
DATE	05/2008
SCALE	1"=20'
CREW	MJM, JMP
DWN.	ELS
CHK.	BNS
SHEET NO.	2 OF 3

NOTE:
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NOTE:
ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MAP MARKED WITH THE SIGNATURE AND AN ORIGINAL OF THE LAND SURVEYOR'S SEAL SHALL BE CONSIDERED TO BE VALID TRUE COPIES.

NO.	DATE	REVISION	BY	APPD.

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TABLES

Table 1
One Bristol Avenue
Sampling / Analysis Summary

May and August 2007 Investigation Summary						
Soil Probe	Sample Depth (feet)	High TOV / saturated (ppm)*	TOV at refusal	Refusal Depth (Feet)	Analysis	Field Observations
SP 1	3-3.8	0	0	10.2	N/A	clean
SP 2	4-4.5	0	0	10.1	N/A	clean
SP 3	6.0-7.0	1235	38	9.1	STARS VOCs STARS SVOCs	staining and odor
SP 4	6.0-7.0	1760	10.7	8.4	N/A	staining and odor
SP 5	7.0-8.0	0	0	8.8	STARS VOCs STARS SVOCs	clean
SP 6	5.5-6.5	27.2 / 300	300	9.2	N/A	odor and staining
SP 7	5.5-6	137 / 216	4	8.4	N/A	staining
SP 8	5-6.0	44	8.2	8.7	N/A	light odor- staining
SP 9	7-7.7	634 / 1120	145	8.4	N/A	odor and staining
SP 10	7-7.5	17.7 / 23.7	23.7	8.3	N/A	odor and staining
SP 11	7-8.0	0	0	9.3	STARS VOCs STARS SVOCs	clean
SP 12	6-6.5	0.5	0.5	8.4	STARS VOCs STARS SVOCs	clean
SP 13	5-6.0	102/502	502	7.8	STARS VOCs STARS SVOCs	odor and staining
SP 14	6-7.0	0/0.3	0	8.2	N/A	clean
SP 15	6-7.0	0	0	8.2	STARS VOCs STARS SVOCs	clean
SP 16	7.8-8.4	404 / 996	996	8.4	STARS VOCs STARS SVOCs	strong odor and staining
SP 17	8.2-8.7	40.8	40.8	8.7	N/A	light odor
SP 18	6.5-7.5	1228	452	8.4	STARS VOCs STARS SVOCs	odor and staining
SP 19	5.5-6.5	0.8	0.8	7.6	STARS VOCs STARS SVOCs	light odor
SP 20	5-6.0	1952	421	7.1	STARS VOCs STARS SVOCs	staining
SP 21	4.5-6	0	0	7.5	FULL TCL/TAL	contains a pesticide, no odor/staining
SP 22	3-4	0	0	5.6	STARS VOCs STARS SVOCs	clean
SP 23	7.1-7.7	0.7/292	292	7.9	STARS VOCs STARS SVOCs	staining and diesel odor
SP 24	6.8-7.7	131/243	243	8.7	FULL TCL/TAL (No Herbs)	staining
SP 25	5.9-6.1	2.1	0.6	8.8	STARS VOCs STARS SVOCs	staining and mild odor
SP 26	6.7-7.2	847	60.1	7.9	STARS VOCs STARS SVOCs	staining
SP 27	NA	0	0	6.8	none	clean
SP 28	6.8-7.7	40.1/2254	2254	7.7	FULL TCL/TAL and Herbs	staining and strong odor
SP 29	6-6.5	1486/1720	1720	9.3	STARS VOCs STARS SVOCs	staining and strong odor
SP 30	7-7.5	357	357	7.7	STARS VOCs STARS SVOCs	staining and odor
SP 31	6-6.5	153	87	7.6	STARS VOCs STARS SVOCs	minor odor and staining
SP 32	6-6.8	5.1	5.1	6.8	STARS VOCs STARS SVOCs	clean
SP 33	5.8-7	720	720	7.5	FULL TCL/TAL No Herbs	staining
SP 34	5.5-6.7	465	20	8.1	FULL TCL/TAL No Herbs	gray staining and strong odor
SP 35	6.2-6.7	120	20	7.2	STARS VOCs STARS SVOCs	staining and odor
SP 36	6.5-7	235	235	7.8	STARS VOCs STARS SVOCs	gray staining
SP 37	3.8-7	1782	489	7	STARS VOCs STARS SVOCs	gray staining
SP 38	0.2-2.3	0	0	6.8	FULL TCL/TAL and Herbs	no petro staining/odor (exceeds unrestricted DDT

Previous Investigation TOV Summary		
Location	Sample Depth (feet)	PID
EP 1	4-8.2'	U
EP 2	4-6'	U
EP 3, 5, 9		U
EP 10	4-6'	U
EP 4,11-13	4-6'	U
EP 14		879
EP 15	4-6.8'	162
EP 16	4-6.6'	16
EP 17		61
EP 18	4-8'	494
EP 19	4-8'	1650
EP 20		784
EP 21	4-7.2'	889
EP 22		132
EP 23	4-6.3'	1.2
EP 24	4-6.6'	319
EP 25		0
EP 26		607
EP 27		0
EP 28	4-7.5'	0
EP 29		0
EP 30		0
EP 31		0
EP 32	4-8.5'	0
EP 33		0
EP 34		0
EP 35	4-8'	0
EP 36		0
EP 37		0
EP 38	4-8'	0
EP 39		0
EP 40		0
EP 41		0
EP 42	8-8.4'	40
EP 43		1.8
EP 44	4-8'	6
EP 45		6
EP 46	4-8'	0

* The highest TOV reading was recorded unless the highest TOV was in the saturated zone. When the highest TOV reading was in the saturated zone the highest reading for both the saturated zone and unsaturated zone are listed
U - TOV readings at these locations are not available at this time and may be included when the information becomes available
N/A- Sample was not analyzed
Shaded represents exceedences over the Unrestricted Use Cleanup Objectives at the sample depth
Shaded represents visual and olfactory contamination at refusal depth

Table 2
One Bristol Avenue Site
STARS Samples
Subsurface Soil/Fill Samples

	SOIL CLEANUP OBJECTIVE RESIDENTIAL USE	SOIL CLEANUP OBJECTIVE UNRESTRICTED USE	Sample ID									
			OBA-SP3	OBA-SP5	OBA-SP11	OBA-SP12	OBA-SP13	OBA-SP15	OBA-SP16	OBA-SP18	OBA-SP19	OBA-SP20
Date Collected		-	5/16/2007	5/16/2007	5/16/2007	5/16/2007	5/16/2007	5/16/2007	5/17/2007	5/17/2007	5/17/2007	5/17/2007
Depth		-	6-7	7-8	7-8	6-6.5	5-6	6-7	7.8-8.4	6.5-7.5	5.5-6.5	5-6
Volatile Organic Compounds (ug/Kg)												
Benzene	2,900	60								36 J		180 J
Ethylbenzene	30,000	1,000	6,400 J				1 J		46 J	3,200 DJ		7,500 J
Isopropylbenzene	100,000*	100,000*	2,300				4 J		120 J	1,700 DJ		2,400 J
1,2,4-Trimethylbenzene	47,000	3,600	35,000 J				6 J		130	17,000 DJ		28,000 DJ
1,3,5-Trimethylbenzene	47,000	8,400										13,000 J
Naphthalene	100,000	12,000	7,200 J	50 J	35 J	25 J	25 J	20 J	24 J	4,600 DJ	58 J	6,300 J
n-Butylbenzene	100,000*	12,000										
n-Propylbenzene	100,000	3,900	3,400 J				6 J			3,000 DJ		3,500 J
sec-Butylbenzene	100,000	11,000	970 J				3 J		170	130 J		720 J
Toluene	100,000	700	300 J	3 J	2 J	1 J	1 J	2 J		16 J	2 J	
4-Isopropyltoluene	100,000*	100,000*	2,300 J				2 J		160	210 J		1,800 J
m,p-Xylene	100,000*	260**	42,000 J	2 J	1 J		2 J	2 J		4,100 DJ	2 J	40,000 DJ
o-Xylene	100,000*	260**	800 J		6 J					73 J		920 J
Xylene (Total)	100,000	260	42,000 J	2 J	1 J		2 J	2 J	41 J	4,200 DJ	2 J	35,000 J
Total VOCS	-	-	**142,670**	**57**	**45**	**26**	**52**	**26**	**691**	**38,265**	**64**	**139,320**
Semi-Volatile Organic Compounds (ug/Kg)												
Benzo(b)fluoranthene	1,000	1,000										62
Chrysene	1,000	1,000										52
Fluoranthene	100,000	100,000										100
Naphthalene	100,000	12,000	2,900							2,000		2,500
Phenanthrene	100,000	100,000	61									68
Pyrene	100,000	100,000										90
Total SVOCs	-	-	**2,961**	**0**	**0**	**0**	**0**	**0**	**0**	**2,000**	**0**	**2,872**

1. Source for Soil Cleanup Objectives for Commercial Use is 6NYCRR Part 375 Environmental Remediation Programs December 2006 Edition
2. ug/Kg = micrograms per Kilogram (equivalent to parts per billion or ppb)
3. Blank space indicates parameter not detected
4. A Summary of Data Qualifiers are listed in Table 4
5. Only parameters with detected concentrations in one or more location are shown

* Cleanup Objective not specified therefore maximum individual VOC concentration is utilized. 100,000ppb for unrestricted use and restricted residential use

**The SCO for Total Xylenes is 260ppb and this value is also shown for the compounds in this family.

Shaded represents exceedences over the Residential and Unrestricted Cleanup Objectives

Shaded represents soil samples exceedenced the Unrestricted Cleanup Objectives

Table 2
One Bristol Avenue Site
STARS Samples
Subsurface Soil/Fill Samples

	SOIL CLEANUP OBJECTIVE RESIDENTIAL USE	SOIL CLEANUP OBJECTIVE UNRESTRICTED USE	Sample ID										
			OBA-SP22	OBA-SP23	OBA-SP25	OBA-SP26	OBA-SP29	OBA-SP30	OBA-SP31	OBA-SP32	OBA-SP35	OBA-SP36	OBA-SP37
Interval Sampled (feet bgs):			3-4'	7.1-7.7'	5.9-6.1'	6.7-7.2'	6-6.5'	7-7.5'	6-6.5'	6-6.8'	6.2-6.7'	6.5-7'	3.8-7'
Date Collected:			08-16-07	08-16-07	08-16-07	08-16-07	08-16-07	08-16-07	08-16-07	08-16-07	08-16-07	08-16-07	08-16-07
Volatile Organic Compounds (ug/Kg)													
Benzene	2,900	60											200
Ethylbenzene	30,000	1,000					660	450 J					1,700 DJ
Isopropylbenzene	100,000*	100,000*		4		50	280	240 J					240
1,2,4-Trimethylbenzene	47,000	3,600				910 DJ	3,400 DJ	4,400 DJ	7	21			6,800 DJ
1,3,5-Trimethylbenzene	47,000	8,400				460 DJ	860	800 J		38			2,400 DJ
Methyl tert-butyl ether	62,000	930											
Naphthalene	100,000	12,000				32	990	1000 J	14	460			1,100
n-Butylbenzene	100,000*	12,000											
n-Propylbenzene	100,000	3,900		8		86	390	350 J					780
sec-Butylbenzene	100,000	11,000		6		46	150	130 J				13	54
Toluene	100,000	700					30	14					390
4-Isopropyltoluene	100000*	100,000*				69	290	260 J					
m,p-Xylene	100,000*	260**				73	1,000	740 J					7,800 DJ
o-Xylene	100,000*	260**					38	34 J					310
Xylene (Total)	100,000	260				73	1,100	770 J					8,000 DJ
Total VOCS	-	-	**0**	**18**	**0**	**1,799**	**9,188**	**9,188**	**21**	**519**	**0**	**13**	**29,774**
Semi-Volatile Organic Compounds (ug/Kg)													
Acenaphthene	100,000	20,000								77			
Benzo(a)pyrene	1,000	1,000			310					48			
Benzo(b)fluoranthene	1,000	1,000			340					64			
Benzo(k)fluoranthene	1,000	800			150								
Chrysene	1,000	1,000			200					55			
Fluoranthene	100,000	100,000			270					100			
Fluorene	100,000	30,000								50			
Naphthalene	100,000	12,000					2,600	340 J		1,200			62
Phenanthrene	100,000	100,000			170					100			
Pyrene	100,000	100,000			280					100			
Total SVOCs	-	-	**0**	**0**	**1,720**	**0**	**2,600**	**340**	**0**	**1,794**	**0**	**0**	**62**

1. Source for Soil Cleanup Objectives for Commercial Use is 6NYCRR Part 375 Environmental Remediation Programs December 2006 Edition
2. ug/Kg = micrograms per Kilogram (equivalent to parts per billion or ppb)
3. Blank space indicates parameter not detected
4. Only parameters with detected concentrations in one or more location are shown
5. A Summary of Data Qualifiers are listed in Table 4

* Cleanup Objective not specified therefore maximum individual VOC concentration is utilized. 100,000 for residential and unrestricted use
**the SCO for Total Xylenes is 260ppb and this value is also shown for the compounds in this family.
Shaded represents exceedences over the Residential and Unrestricted Cleanup Objectives
Shaded represents soil samples exceedenced the Unrestricted Cleanup Objectives

Table 3
One Bristol Avenue Site
TCL/TAL Samples
Subsurface Soil/Fill Samples

	SOIL CLEANUP OBJECTIVE RESTRICTED RESIDENTIAL USE	SOIL CLEANUP OBJECTIVE UNRESTRICTED USE	Sample ID					
Interval Sampled (feet bgs):			4.5-6	6.8-7.7	6.8-7.7	5.8-7	5.5-6.7	0.2-2.3
Date Collected:			8/16/2007	8/16/2007	8/16/2007	8/16/2007	8/16/2007	8/16/2007
Volatile Organic Compounds (ug/Kg)								
Acetone	100,000	50			26	12	24	
Cyclohexane	100,000*	100,000*				24		
Methylcyclohexane	100,000*	100,000*				83	88	
Ethylbenzene	41,000	1,000			64		3	
Isopropylbenzene	100,000*	100,000*			46	25	26	
TICs	-	-		2,310	5,790	5,069	2,988	
Total VOCS	-	-		**2,310**	**5,926**	**5,213**	**3,129**	
Semi-Volatile Organic Compounds (ug/Kg)								
2,4-Dimethylphenol	100,000*	100,000*			160			
2-Methylnaphthalene	100,000*	100,000*			180	1300	520	
Acenaphthylene	100,000	100,000						92
Anthracene	100,000	100,000						100
Benzo(a)anthracene	1,000	1,000						670
Benzo(a)pyrene	1,000	1,000						710
Benzo(b)fluoranthene	1,000	1,000						1,000
Benzo(g,h,i)perylene	100,000	100,000						630
Benzo(k)fluoranthene	3,900	800						440
Carbazole	100,000*	100,000*						150
Chrysene	3,900	1,000						880
Dibenzofuran	100,000*	100,000*						47
Fluoranthene	100,000	100,000	78					1,900
Fluorene	100,000	30,000				310	77	
Indeno(1,2,3-cd)pyrene	500	500						580
Naphthalene	100,000	12,000			310			49
Phenanthrene	100,000	100,000				370	210	1,100
Pyrene	100,000	100,000	65					1,800
TICs	-	-	620	6,015	5,556	9,669	10,070	5,275
Total VOCS	-	-	**763**	**6,015**	**6,206**	**11,649**	**10,877**	**10,148**
Pesticides (ug/Kg)								
beta-BHC	72	36						~~4.4~~
Heptachlor epoxide	100,000*	100,000*			~~1.6~~			
Dieldrin	39	5	6.4 J					~~2.5~~
4,4-DDE	1,800	3						4.4
Endrin	2,200	14						~~5.1~~
4,4-DDT	1,700	3						5.7 JN
Endrin ketone	100,000*	100,000*						3.7 J
gamma-Chlordane	100,000*	100,000*						12 J

	SOIL CLEANUP OBJECTIVE COMMERCIAL USE	SOIL CLEANUP OBJECTIVE UNRESTRICTED USE	Sample ID					
Interval Sampled (feet bgs):			4.5-6	6.8-7.7	6.8-7.7	5.8-7	5.5-6.7	0.2-2.3
Date Collected:			8/16/2007	8/16/2007	8/16/2007	8/16/2007	8/16/2007	8/16/2007
TAL - Metals (mg/Kg)								
Aluminum			8160	6,960	7,840	9,530	9,120	6,250
Antimony			1.2 BJ	1.6 BJ	1.7 BJ	2.2 BJ	2.3 BJ	2.3 BJ
Arsenic	16	13	2	1.4	2.3	4.2	1.9	5.7
Barium	400	350	75	69.9	88.2	93.1	129	287
Beryllium	590	7.2	0.44	0.38	0.4	0.51	0.49	0.38
Cadmium	9.3	2.5	0.1	0.12	0.091	0.1	0.13	0.33
Calcium			62400	63,900	59,600	70,600	73,500	55,600
Chromium	1,500	30	11.7	10.8	11.2	13.6	13.4	7.6
Cobalt			10.6	9.4	9.5	11.6	10.4	7.1
Copper	270	50	17.9	18.4	17.4	21.1	16.8	25.3
Iron			15200 J	14,100 J	15,000 J	18,300 J	15,700 J	12,000 J
Lead	1,000	63	4.4 J	4.1	4.6	5.3	5.6	107
Magnesium			9770 J	10,200 J	9,990 J	9,670 J	8,810 J	21,400 J
Manganese	10,000	1600	531	491	445	593	459	767
Mercury	2.8	0.18						0.092 J
Nickel	310	30	17.8	14.4	15.3	19.6	17.7	12.3
Potassium			1250	1,100	1,320	1,050	1,040	934
Selenium	1,500	3.9	0.26 J	1.6 J	2.1 J	1.5 J	0.72 J	1.9 J
Silver	1,500	2	1	1.5	0.9	0.91	1.8	1.6
Sodium			172	186	205	179	129	287
Thallium			3.5	2.6	2.9	3.8	3.3	3
Vanadium			16.9	16.9	17.7	20.9	16.2	13.9
Zinc	10,000	109	39.6 J	34.4 J	36.4 J	38 J	37 J	123 J
Cyanide	27	27	0.1 J	0.17 J		0.11 J	0.36 J	0.21 J

1. Source for Soil Cleanup Objectives for Commercial Use is 6NYCRR Part 375 Environmental Remediation Programs December 2006 Edition
2. ug/Kg = micrograms per Kilogram (equivalent to parts per billion or ppb)
3. mg/Kg = milligrams per Kilogram (equivalent to parts per million or ppm)
4. Blank space indicates parameter not detected
5. A Summary of Data Qualifiers are listed in Table 4
6. Only parameters with detected concentrations in one or more location are shown
7. PCBs and herbicides were not detected and therefore are not listed in the table

* Cleanup Objective not specified therefore maximum individual VOC, SVOC and Pesticide concentration is utilized. 100,000 ppb for unrestricted use and residential use
** The SCO for Total Xylenes is 260ppb and this value is also shown for the individual compounds in this family.

Shaded represents exceedences over the Residential and Unrestricted Use Cleanup Objectives
Shaded represents soil samples exceedenced the Unrestricted Use Cleanup Objectives
Value rejected by Validator

Table 4

Definitions of Data Qualifiers
One Bristol Avenue Site

DATA QUALIFIER	DEFINITION
Organics	
J	For both organics and inorganic analysis, this flag indicates an estimated value and the associated numerical value is an approximate concentration of the analyte in the sample.
B	This flag is used when the analyte is found in the associated blank, as well as in the sample.
D	For Organics analysis, this flag indicates the compound concentration was obtained from a diluted analysis.
E	For Organics analysis, this flag indicates the compound concentration exceeded the Calibration Range. The E flag has an alternative meaning for Inorganics analyses, indicating an estimated concentration due to the presence of interferences, as determined by the serial dilution analysis.
N	For Organics analysis, this flag indicates the presence of an analyte for which there is presumptive evidence to make a tentative identification. For Inorganics analysis, the N flag indicates the matrix spike recovery falls outside of the control limit.
*	For Inorganics analysis the * flag indicates Relative Percent Difference for duplicate analyses is outside of the control limit.

Table 5
General Response Actions and
Site-Wide Alternatives

One Bristol Avenue Site

General Response Actions
Soil/Fill
No Action
Excavation and off-site disposal of the most significantly impacted soil/fill
Excavation and complete removal of all On-site Soil/Fill

Site-Wide Alternatives			
Alternative Identifier	**Name**	**Description**	**Areas of Concern**
			Soil/Fill
A	"No Action"	Project Site Remains in Current Condition	No action
B	"IRM Implementation"	Removal of Most Significantly Impacted Soil/Fill	Subsurface Soil/Fill
C	"Complete Removal of All Soil/Fill"	Removal of all Soil/Fill	All On-site Soil/Fill

Table 6
Comparison of Site-Wide Alternatives

One Bristol Avenue Site

Criteria	Site-Wide Remedial Alternatives					
	A "No Action"		B "IRM Implementation"		C "Complete Removal of All Soil/Fill"	
	Rating/Score					
Overall Protection Of Human Health And The Environment	Low	1	Medium-High	2.5	High	3
Compliance With SCGs	Low	1	High	3	High	3
Short-Term Effectiveness	Low	1	Medium-High	2.5	Medium-High	2.5
Long-Term Effectiveness	Low	1	Medium-High	2.5	High	3
Reduction Of Toxicity, Mobility And Volume	Low	1	Medium-High	2.5	High	3
Feasibility	Low	1	High	3	Low	1
Aggregate Score		6		16		15.5

Notes:

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

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

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

Table 7
One Bristol Avenue Site
Cost Estimate - Alternative B
IRM Implementation

Item	Note	Unit	Quantity	Cost/Unit	Cost
Project Start Up					
Health and Saftey Plan	For all personal on-site	ls	1	$ 15,900.00	$15,900
Mobilization/demob/decon		ls	1	$ 10,100.00	$10,100
Excavation					
Soil/Fill Excavation	Excavation of soil/fill	cy	2,370	$ 4.00	$9,480
Subsurface Soil/Fill Disposal	Transportation and off-site disposal	tons	2,251	$ 34.00	$76,534
Verification Sampling	STARS and TCL VOCs, SVOCs	sample	23	$ 313.00	$7,199
Backfilling					
Imported Clean Fill	Unclassified fill, 12-18" lifts	cy	1,508	$ 18.00	$27,144
On-site fill	Soil from 0-4' bgs from excavated areas with TOV readings below 1000ppm	cy	862	$ 4.50	$3,879
Site restoration	4" Topsoil and hydroseeding	ls	1	$ 20,800.00	$20,800
Additional Work					
UST removal and disposal	Cost for removal, analysis and disposal two USTs	ls	1	$ 4,227.73	$4,228
Excavate Area C	Excavate and Dispose of Area C	ls	1	$ 2,488.22	$2,488
Additional Costs					
TVGA Field Engineers Cost	IRM Field Engineer's Cost	ls	1	$ 44,000.00	$44,000
Total Project Cost					**$221,752**

Notes:

Sources include:

The Unit Bid Tabulation is from the Removal and Disposal of Contaminated soil at 1 Bristol Avenue. January 2008

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

Table 8
One Bristol Avenue Site
Cost Estimate - Alternative C
Complete Removal of All Soil/Fill

Item	Note	Unit	Quantity	Cost/Unit	Cost
Project Start Up					
Health and Saftey Plan	For all personal on-site	ls	1	$ 15,900.00	$15,900
Mobilization/demob/decon		ls	1	$ 10,100.00	$10,100
Excavation					
Soil/Fill Excavation	Excavation of soil/fill	cy	13,040	$ 4.00	$52,160
Soil/Fill Excavation and Disposal	Transportation and off-site disposal	tons	20,864	$ 34.00	$709,376
Verification Sampling	STARS VOCs, SVOCs	sample	43	$ 313.00	$13,459
Backfilling					
Imported Clean Fill	Unclassified fill, 12-18" lifts	cy	13,040	$ 18.00	$234,720
Site restoration	4" Topsoil and hydroseeding	ls	1	$ 20,800.00	$20,800
Additional Work					
UST removal and disposal	Cost for removal, analysis and disposal two USTs	ls	1	$ 4,227.73	$4,228
Additional Costs					
TVGA Field Engineers Cost	Field Engineer's Cost	ls	1	$ 117,000.00	$117,000
Total Project Cost					**$1,177,743**

Notes:

Sources include:

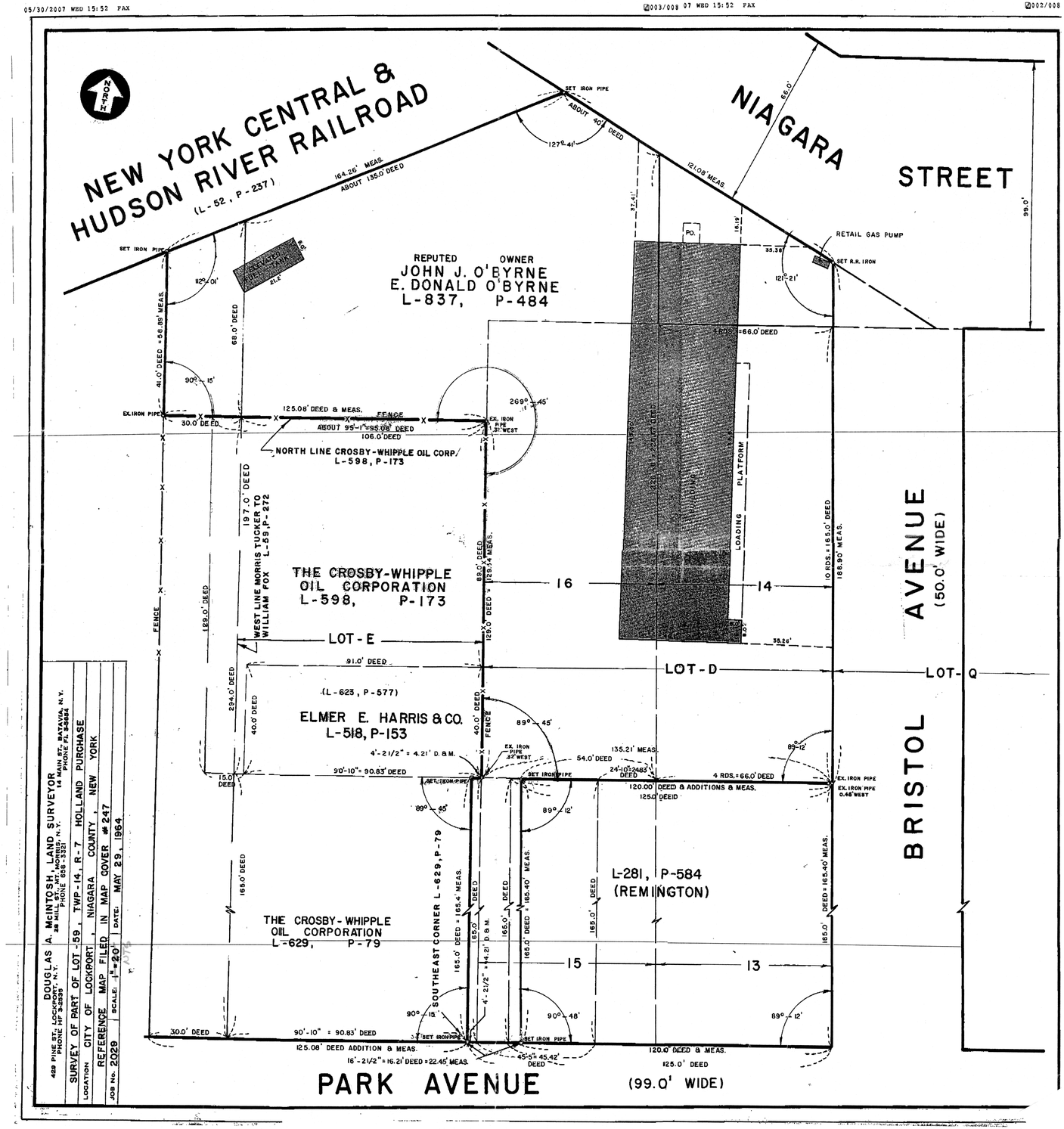
The Unit Bid and cost Tabulation is from the Removal and Disposal of Contaminated soil at 1 Bristol Avenue. January 2008

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

APPENDIX A

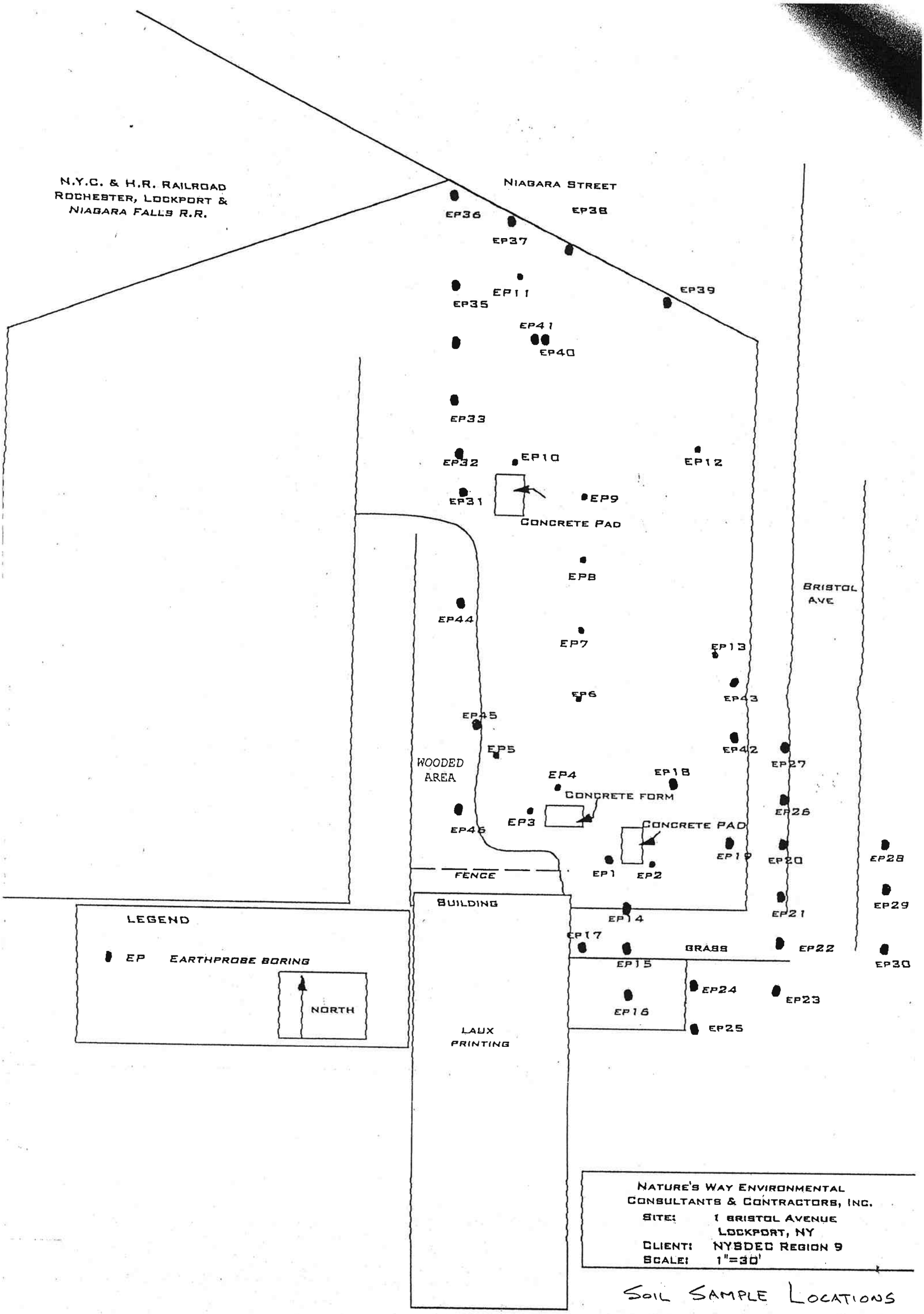
1964 HISTORICAL SURVEY

003/008 07 WED 15:52 FAX 003/008



APPENDIX B

NWEC&C SOIL SAMPLE LOCATIONS AND ANALYTICAL RESULTS



Soil Sample Locations

1 Bristol
Lockport, NY
NYSDEC Spill #9975170

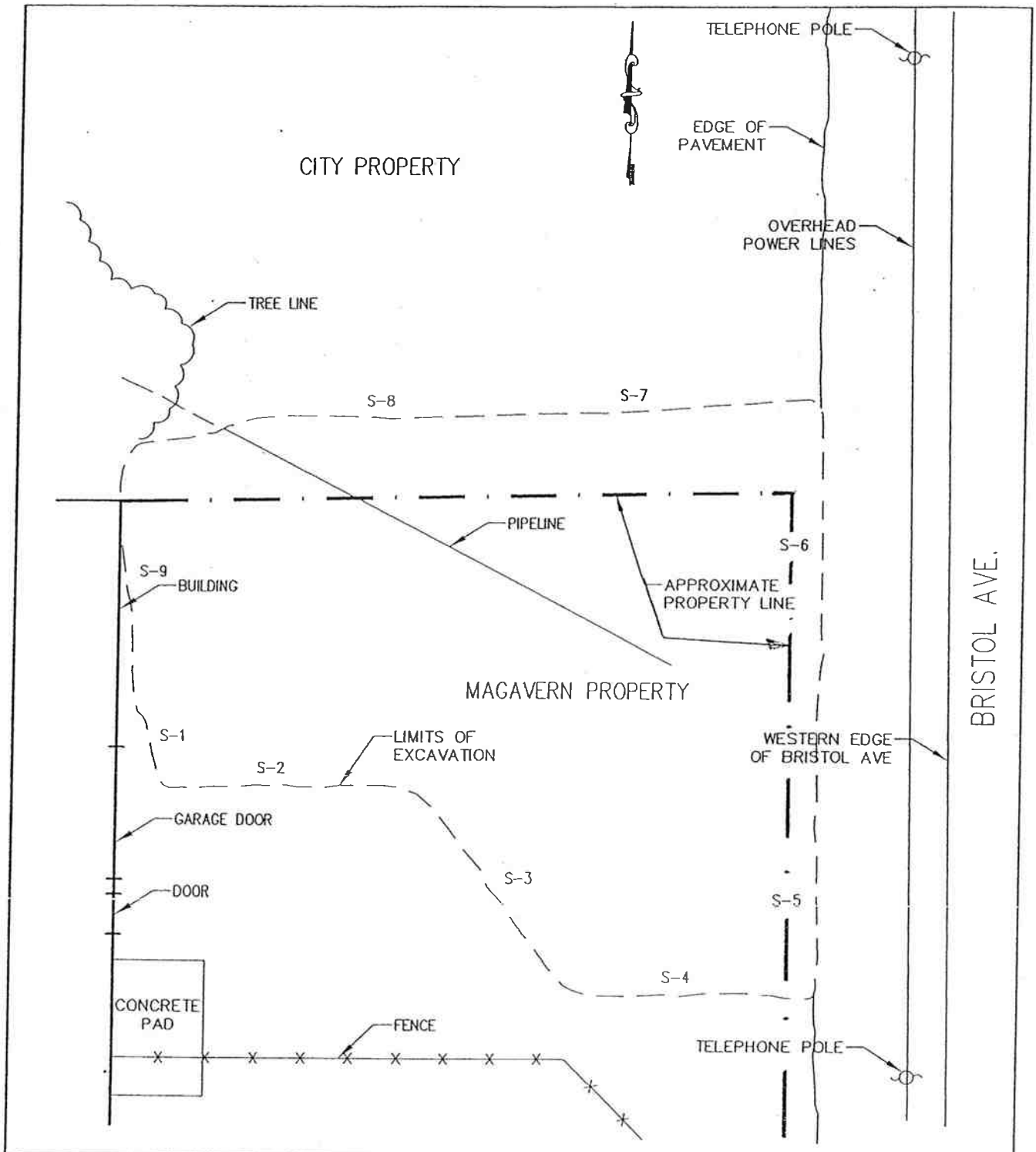
8021 STARS Soil Analytical ug / kg ppb

	MATRIX 1999 Former Laux Printing				NWEC&C INVESTIGATION 2000 City of Lockport Property										NWEC&C INVESTIGATION 2001 City of Lockport Property															
Parameter	SB2 6'-7'	SB 7 4'-6'	SB 8 4'-6'	SB 9 6'-8'	EP 1 4'-8.2'	EP 2 4'-6'	EP 4 4'-6'	EP 6 6'-8'	EP 7 6'-8'	EP 8 8'-10'	EP 10 4'-6'	EP 11 4'-6'	EP 12 4'-6'	EP 13 4'-6'	EP 15 4'-6.8'	EP 16 4'-6.6'	EP 18 4'-8'	EP 19* 4'-8'	EP 21 4'-7.2'	EP 23 4'-6.3'	EP 24 4'-6.6'	EP 28 4'-7.5'	EP 32 4'-8.5'	EP 35 4'-8'	EP 38 4'-8'	EP 42 8'-8.4'	EP 44 4'-8'	EP 46 4'-8'	TAGM	STARS
MTBE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	57.1	1649.2E	-	-	-	33.9	-	-	-	-	-	-	-	-	21.5	-	-	-	-	-	-	-	-	-	170.0	1000
Toluene	-	-	-	-	13.8	-	-	9.2	4.9	17.9	189.7	6.6	1.2	4.6	-	-	-	-	22.8	-	-	-	-	-	-	-	-	-	60.0	14.0
Ethylbenzene	-	15400	-	3420	-	1214.2	-	-	19.8	122.1	1462.0	36.3	1.4	11.6	-	-	30.9	103.9	198.6	-	-	-	-	-	-	-	-	-	1500.0	100.0
m&p-Xylene	-	28400	-	13200	86.4	-	6.0	74.5	70.1	71.8	-	107.2	3.8	36.5	-	-	318.6	698.5	900.1	-	-	-	-	-	-	-	-	-	5500.0	100.0
o-Xylene	-	2860	-	508	-	126.1	-	-	-	15.5	172.5	-	2.2	-	-	-	-	-	29.0	-	-	-	-	-	-	-	-	-	1200.0	100
Isopropylbenzene	-	-	-	800	-	354.9	-	-	-	65.6	682.1	66.8	-	-	-	-	51.7	-	49.2	-	-	-	-	-	-	-	-	-	1200.0	100
-Propylbenzene	-	14800	-	3360	34.2	386.7	5.2	48.6	45.3	53.3	879.7	26.9	-	7.1	-	-	82.0	36.8	77.8	-	27.4	-	-	-	-	-	-	-	5000.0	100
1,3,5-Trimethylbenzene	-	22200	-	9600	-	735.9	-	80.0	102.9	125.0	-	177.0	1.1	31.1	-	-	344.9	198.1	261.6	-	35.3	-	-	-	-	-	-	-	14000.0	100
tert-Butylbenzene	-	-	-	-	34.6	88.9	5.1	56.1	52.9	27.1	597.2	46.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3310.0	100
1,2,4-Trimethylbenzene	-	18200	-	17400	-	1387.9E	5.8	164.9	80.6	121.0	-	-	4.4	53.0	-	-	550.8	382.2	511.5	-	43.9	-	-	-	-	-	-	-	-	100
sec-Butylbenzene	-	-	-	-	-	327.9	-	-	-	-	1428.3	-	-	-	-	-	32.4	-	-	-	19.3	-	-	-	-	-	-	-	13000.0	100
1,3 Dichlorobenzene					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25000.0	100
4-Isopropyltoluene					27.3	172.7	10.5	99.7	124.9	96.9	684.3	196.4	1.5	14.0	-	-	57.6	-	26.1	-	42.6	-	-	-	-	-	-	-	1600.0	100
n-Butylbenzene	-	45000	-	24600	-	222.9	-	-	49.5	69.7	679.8	-	-	10.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10570.0	100
Naphthalene	3.2	21400	-	15900	60.8	504.1	-	-	70.5	71.9	874.4	48.2	3.1	19.0	-	-	-	107.6	91.7	-	-	-	-	-	-	-	-	-	18000.0	100
Total 8021 STARS	3.2	168260	0.0	88788	314.2	7171.4	32.6	533	621.4	891.7	7650	711.8	18.7	187	0.0	0.0	1468.9	1527.1	2189.9	0.0	168.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13000.0	200.0

- = Below Laboratory Detection Limits
Sampled By: Various
Method: 8021 STARS GC/MS
* - EP 19 Sample was also submitted for Laboratory Analysis Via EPA Method 8270 STARS - results were below laboratory detection limits for all tested compounds

APPENDIX C

MAGAVERN SITE- EXCAVATION/SAMPLE LOCATION MAP AND ANALYTICAL RESULTS



InteGreyted International
104 JAMESVILLE ROAD
SYRACUSE, NY 13214
PHONE: (315) 445-0224
FAX: (315) 445-0793

DRAWN BY	MTG
PROJECT NO.	0403023P
DATE	06/24/04
SCALE	NONE

EXCAVATION AND SAMPLE LOCATION MAP

LOCKPORT-MAGAVERN SITE
LOCKPORT, NY

PREPARED FOR: CITY OF LOCKPORT

FIGURE: 1

TABLE 1
Soil Sample Analytical Results
237 Park Avenue, Lockport, NY

PARAMETER	TAGM 4046 Soil Cleanup Objectives (ppb)	SAMPLE ID								
		S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	S-9
Volatile Organic Compounds (ppb)										
Benzene	60	ND	ND	ND	ND	ND	**300**	ND	**1,500**	ND
n-Butylbenzene	10,000	ND	ND	ND	ND	800	6,300	9,800	**16,000**	ND
sec-Butylbenzene	10,000	3,400	ND	ND	ND	570	ND	2,700	9,400	2,100
tert-Butylbenzene	10,000	2,900	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	5,500	ND	ND	ND	ND	ND	3,300	3,700	**8,000**	ND
Isopropylbenzene	2,300	ND	7.7	ND	ND	ND	**2,500**	**3,700**	ND	ND
p-Cymene	NS	ND	3.2	ND	ND	570	1,400	2,100	11,000	1,800
n-Propylbenzene	3,700	ND	ND	ND	ND	190	1,400	2,000	3,100	370
Toluene	1,500	ND	ND	ND	ND	88	1,400	ND	ND	130
1,3,5-Trimethylbenzene	3,300	1,200	2.2	ND	ND	280	**5,700**	**7,600**	**13,000**	840
Total Xylenes	1,200	ND	6.6	ND	ND	ND	**18,000**	**17,000**	**34,000**	1,200
Naphthalene	13,000	ND	ND	ND	ND	780	1,400	6,600	**17,000**	6,900
Total VOCs	10,000	7,500	20	0	0	3,278	**41,700**	**55,200**	**113,000**	**13,340**
Semi Volatile Organic Compounds (ppb)										
Acenaphthene	50,000	ND	ND	ND	ND	ND	ND	140	ND	230
Anthracene	50,000	ND	ND	ND	ND	ND	ND	160	ND	750
Benzo(a)anthracene	224 or MDL	ND	ND	ND	ND	ND	ND	200	ND	**1,600**
Benzo(b)fluoranthene	1,100	ND	ND	ND	ND	ND	ND	180	180	**1,200**
Benzo(k)fluoranthene	1,100	ND	ND	ND	ND	ND	ND	ND	ND	760
Benzo(g,h,i)perylene	50,000	ND	ND	ND	ND	ND	ND	ND	ND	750
Benzo(a)pyrene	61 or MDL	ND	ND	ND	ND	ND	ND	**160**	**150**	**1,200**
Chrysene	400	ND	ND	ND	ND	ND	ND	260	200	**1,400**
Dibenzo(a,h)anthracene	14 or MDL	ND	ND	ND	ND	ND	ND	ND	ND	**380**
Fluoranthene	50,000	ND	ND	ND	ND	ND	ND	500	250	3,100
Fluorene	50,000	ND	ND	ND	ND	ND	ND	210	ND	340
Indeno(1,2,3-cd)pyrene	3,200	ND	ND	ND	ND	ND	ND	ND	ND	740
Phenanthrene	50,000	ND	ND	ND	ND	ND	ND	790	210	3,000
Pyrene	50,000	ND	ND	ND	ND	ND	ND	510	240	2,800
Total SVOCs	500,000	0	0	0	0	0	0	3,110	1,230	18,250

Notes:
NS: No Standard
ND: Not Detected
1,200 Analyte detected at concentration in excess of NYSDEC TAGM 4046 soil cleanup objective

APPENDIX D

FIELD LOGS

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 1

Project: One Bristol Avenue Site RI/AA
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 5/16/2007
Finish Date
Driller J. Agar
Geologist J. Kaminski & JCM

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - course "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
							0-1 brown topsoil, moist	0	
							1-3.8 dark brown Sandy silt some grey, trace brick, coal fragments, moist		
							3.8-4 red brown SILTY CLAY, moist. Highly mottled, small grey fissures		not taken
							4-7.5 red brown, CLAYEY SILT, highly mottled moist		
							7.5-7.8 light brown and grey CLAYEY SILT lense		
							7.8-8.0 red brown, CLAYEY SILT, highly mottled		
							8.0-10.2 red brown CLAYEY SILT, grey fissures little amount of angular gravel	0	
							* depth intervals in feet are written before charateristics		
							Refusal Depth 10.2 feet		
							Sample Time: 10:00		
							Sample Collection Depth (feet) D 3-3.8		
							Sample Analyzed? No		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 2

Project: One Bristol Avenue Site RI/AA
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 5/16/2007
Finish Date
Driller J. Agar
Geologist J. Kaminski & JCM

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - course "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
							0-1 dark brown SANDY SILT topsoil/fill, moist		
							some fine sand		
				13"			2-4 Red brown CLAYEY SILT, highly mottled		
							little amount of rounded gravel		
							4-4.5 light grey Silty SAND lense some angular		
							gravel, moist		
				5"			4.5-5 red brown CLAYEY SILT with light grey/	0	not taken
							brown fissures		
							5-8 red brown CLAYEY SILT , moist		
							a little amount of angular gravel		
				12"			8-10.1 red brown CLAYEY SILT		
							trace tan fine sand, saturated		
							* depth intervals in feet are written		
							before charateristics		
							Refusal Depth 10.1 feet		
							Sample Time: 10:30		
							Sample Collection Depth (feet) 4-4.5 D		
							Sample Analyzed? No		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 3

Project: One Bristol Avenue Site RI/AA
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 5/16/2007
Finish Date
Driller J. Agar
Geologist J. Kaminski & JCM

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - course "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
							0-1.5 medium to dark brown Sandy SILT, topsoil/ fill with some yellow firebrick, little angular gravel up to 1/2 in diameter, moist		
							1.5-2 dark brown/black SILTY CLAY, moist		
							2-4 dark brown black/brown SILTY CLAY, moist very firm, strong fuel oil odor, small grey fissures	504	
							4-6 red brown SILTY CLAY, very firm, moist	1042	301
							6-7.5 Grey with a little red brown SILTY CLAY strong fuel odor, moist	1235	
							7.5-8 almost all grey trace red brown SILTY CLAY moist	831	
							8-8.5 grey SILTY SAND, saturated. Light petroleum odor	32	
							8.5-9.1 red brown some grey SILTY CLAY saturated	38	
							* depth intervals in feet are written before charateristics		
							Refusal Depth 9.1		
							Sample Time: 10:45		
							Sample Collection Depth (feet) D6-7		
							Sample Analyzed for STARS? Yes		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 4

Project: One Bristol Avenue Site RI/AA
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 5/16/2007
Finish Date
Driller J. Agar
Geologist J. Kaminski

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - coarse "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
							0-0.5 dark brown topsoil SANDY SILT with		
							some medium tan SAND, moist	0	
							0.5-1.6 dark brown to black soils with little		
							light colored firebrick, SANDY SOIL, damp		
							1..6-4 red brown with some grey SILTY CLAY		
							very firm, moist, light fuel odor		
							4-7 grey and red brown SILTY CLAY, moist to wet,	110	680
							trace angular gravel. Strong petroleum odor	1760	
							7-8.4 grey and red brown SILTY CLAY, saturated		
							strong petroleum odor	10.7	
							Grey and red brown Silty CLAY, strong fuel oil odor, moist, firm with trace amounts of anngular gravel		
							* depth intervals in feet are written before charateristics		
							Refusal Depth 8.4 feet		
							Sample Time: 11:20 AM		
							Sample Collection Depth (feet) D 6-7		
							Sample Analyzed? No		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 5

Project: One Bristol Avenue Site RI/AA
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 5/16/2007
Finish Date
Driller J. Agar
Geologist J. Kaminski

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - course "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
							0-1.5 dark brown, moist SANDY SILT topsoil/fill	0	
							with some fine sand, little angular gravel		
							1-4 red brown SILTY CLAY no odor, moist	0	
							4-6 red brown SANDY SILT to SILTY CLAY		
							moist with some tan sand		1.1
							6-8 red brown SILTY SAND some tan SANDY SILT		
							trace angular gravel		
							8-8.8 red brown SILTY CLAY vertical grey fissures	0	
							saturated		
							* depth intervals in feet are written		
							before charateristics		
							Refusal Depth 8.8 feet		
							Sample Time: 11:50		
							Sample Collection Depth (feet) D 7-8		
							Sample Analyzed for STARS? Yes		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 6

Project: One Bristol Avenue Site RI/AA
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 5/16/2007
Finish Date
Driller J. Agar
Geologist J. Kaminski

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - course "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
				6"			0-1.5 dark brown, moist SANDY SILT topsoil/fill with some fine sand	0	
							1-2 red brown SILTY CLAY with some tan SAND highly mottled	0	
							2-2.5 dark brown and black sandy SILT, moist trace sand- very light petroleum odor	2.5	
							2.5-7 red brown SILTY CLAY, highly mottled, moist towards 7 feet petroleum odor, some grey staining, and little tan silty	27	14.5
							7-7.5 red brown SILTY CLAY with some grey/tan SANDY SILT, moist		
							7.5-8 GREY and some red brown CLAYEY SILT with some fine sand, saturated	0	
							* depth intervals in feet are written before charateristics		
							Refusal Depth 9.2 feet		
							Sample Time: 12:15		
							Sample Collection Depth (feet) D 5.5-6.5		
							Sample Analyzed? No		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 7

Project: One Bristol Avenue Site RI/AA
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 5/16/2007
Finish Date
Driller J. Agar
Geologist J. Kaminski

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - course "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
							0-1.5 dark brown, moist SANDY SILT topsoil/fill with some fine sand		
							1.5-2 dark brown and red brown Sandy SILT with some SILTY CLAY some angular gravel, no odor		
							2-4 red brown SILTY CLAY some grey fissures/ cracks	2.5 7	
							4-5.5 red brown and some grey SILTY CLAY moist to wet, highly mottled, petroleum odor	137	52.2
							5.5-8.4 red brown and some grey staining SILTY CLAY, saturated, highly mottled	216 4	
							* depth intervals in feet are written before charateristics		
							Refusal Depth 8.4 feet		
							Sample Time: 12:40 Sample Collection Depth (feet) D 5.5-6.0 Sample Analyzed? No		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 8

Project: One Bristol Avenue Site RI/AA
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 5/16/2007
Finish Date
Driller J. Agar
Geologist J. Kaminski

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - course "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
				6"			0-1.5 dark brown, moist SANDY SILT topsoil/fill with some fine sand	0	
				6"			1-2 black SANDY SILT, no odor, moist		
				24"			2-4 red brown SILTY CLAY highly mottled, moist	0	
				24"			4-6 red brown and grey SILTY CLAY highly mottled, moist some grey fissures/cracks		
				12"			6-7 red brown and grey SILTY CLAY, wet	44	42.9
				12"			7-8 grey and some red brown SILTY CLAY, saturated, light petroleum odor		
				7"			8-8.7 Grey and trace red brown SILTY CLAY completely saturated	8.2	
							* depth intervals in feet are written before charateristics		
							Refusal Depth 8.7 feet		
							Sample Time: 1:17 PM		
							Sample Collection Depth (feet) D 5-6		
							Sample Analyzed? No		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 9

Project: One Bristol Avenue Site RI/AA
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 5/16/2007
Finish Date
Driller J. Agar
Geologist J. Kaminski

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - course "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
							0-1.5 dark brown, moist SANDY SILT topsoil/fill with some fine sand	2 3	
							1-1.5 red brown SILTY CLAY with some angular gravel. Moist, highly mottled, trace yellow brown sand		
							1.5-1.9 black stratified SANDY SILT, coal like		
							1.9-4 red brown, moist SILTY CLAY with tiny grey fissures and a little tan SILTY SAND		
							4-6 red brown SILTY CLAY, moist, grey fissures petroleum odor		
							6-7 red brown and grey SILTY CLAY, moist strong petroleum odor		344
							7-8 GREY and little red brown SILTY CLAY, wet strong diesel odor	634	
							8-8.4 GREY and little red brown SILTY CLAY saturated, strong petroleum odor	1120 145	
							* depth intervals in feet are written before charateristics		
							Refusal Depth 8.4 feet		
							Sample Time: 1:40 PM		
							Sample Collection Depth (feet) D 7-7.7		
							Sample Analyzed? No		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 10

Project: One Bristol Avenue Site RI/AA
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 5/16/2007
Finish Date
Driller J. Agar
Geologist J. Kaminski

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - course "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
							0-1.8 dark brown, moist SANDY SILT topsoil/fill with some red brick pieces up to 1/2 inch diameter some angular gravel	0	
							1.8-4 red brown SILTY CLAY, moist, highly mottled	1	
							4-7 red brown SILTY CLAY, moist, mottled some dark grey fissures, petro odor	0	
							7-7.5 red brown SILTY CLAY, wet, petroleum odor mottled		2.9
							7.5-8 brick red and grey SILTY CLAY, wet petroleum odor	17.7	
							8-8.3 GREY and red brown SILTY CLAY, satrated petroleum odor	23.7	
							* depth intervals in feet are written before charateristics		
							Refusal Depth 8.3 feet		
							Sample Time: 2:00 PM		
							Sample Collection Depth (feet) D 7 - 7.5		
							Sample Analyzed? No		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 11

Project: One Bristol Avenue Site RI/AA
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 5/16/2007
Finish Date
Driller J. Agar
Geologist J. Kaminski

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - course "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
							0-1dark brown, moist SANDY SILT topsoil/fill		
							with some fine sand	0	
							1-2.5 very light red/pink/ tan CLAYEY SILT		
							powdery, DRY angular gravel- possible concrete		
							pieces up to 2" long		
							2.5-3 black SILTY SAND with varing sizes, moist		0
							3-4 Silver and grey gravel up to 3" long and Grey		
							SANDY SILT, concrete pieces		
							4-7 red brown SILTY CLAY, moist		
							7-8 red brown with some yellow grey SILTY CLAY,	0	
							wet, mottled		
							8-9 red brown SILTY CLAY some light grey gravel		
							wet		
							9-9.3 red brown SILTY CLAY some light grey gravel		
							saturated	0	
							* depth intervals in feet are written		
							before charateristics		
							Refusal Depth 9.3 feet		
							Sample Time: 2:30		
							Sample Collection Depth (feet) D 7-8		
							Sample Analyzed for STARS? Yes		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 12

Project: One Bristol Avenue Site RI/AA
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 5/16/2007
Finish Date
Driller J. Agar
Geologist J. Kaminski

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - course "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
							0-1 dark brown, moist SANDY SILT topsoil/fill with some fine sand and orange brick		
							1-2 red brown SILTY CLAY, moist, highly mottled		
							2-2.5 black SANDY SILT, coal lense		
							2.5-3 red brown SILTY CLAY, moist yellow brown lense	0.2	
							3-6 red brown SILTY CLAY, highly mottled moist	0.2	
							6-6.5 red brown with trace yellow SILTY CLAY, highly mottled, wet	0.5	0.6
							6.5-8.4 red brown with trace yellow SILTY CLAY, saturated	0.5	
							* depth intervals in feet are written before charateristics		
							Refusal Depth 8.4 feet		
							Sample Time: 3:07		
							Sample Collection Depth (feet) D 6-6.5		
							Sample Analyzed for STARS? Yes		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 13

Project: One Bristol Avenue Site RI/AA
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 5/16/2007
Finish Date
Driller J. Agar
Geologist J. Kaminski

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - course "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
				6"			0-1 dark brown, moist SANDY SILT topsoil/fill with some fine sand		
				36"			1-4 red brown SILTY CLAY, some grey fissures moist	0.2	
							4-5.5 red brown SILTY CLAY, highly mottled, wet petroleum odor	102	6.9
							5.5-6 red brown SILTY CLAY with some grey fissures, wet		
							6-7.8 Grey and little red brown SILTY CLAY Saturated, petroleum odor	502	
							* depth intervals in feet are written before charateristics		
							Refusal Depth 7.8 feet		
							Sample Time: 3:15		
							Sample Collection Depth (feet) D 5-6		
							Sample Analyzed for STARS? Yes		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 14

Project: One Bristol Avenue Site RI/AA
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 5/16/2007
Finish Date
Driller J. Agar
Geologist J. Kaminski

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - course "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
							0-0.5 dark brown, moist SANDY SILT topsoil/fill		
							with some fine sand	0	
							0.5-1 yellow brown SANDY SILT some fine SAND		
							1-1.9 black topsoil/fill some firebrick, moist		
							1.9-4 red brown SILTY CLAY, moist		
							some grey fissures/cracks, fine sand throught	0	
							yellow brown lense at 2.3 feet		
							4-4.8 black Sandy silt with some clay		
							4.8-5.2 red brown SILTY CLAY, moist		
							5.2-6 red brown and yellow brown SILTY CLAY		
							little gravel, moist		
							6-7 red brown SILTY CLAY trace yellow brown	0	1.2
							with trace gravel		
							7-8.2 red brown SILTY CLAY, saturated	0.3	
							* depth intervals in feet are written before charateristics		
							Refusal Depth 8.2 feet		
							Sample Time: 3:45 PM		
							Sample Collection Depth (feet) D 6-7		
							Sample Analyzed? No		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 15

Project: One Bristol Avenue Site RI/AA
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 5/16/2007
Finish Date
Driller J. Agar
Geologist J. Kaminski

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - course "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
				24"			0-2 dark brown, moist SANDY SILT topsoil/fill with some medium sand and angular gravel possibly concrete pieces	0	
							2-4 red brown SILTY CLAY trace gravel, moist grey/black fissures/cracks		
							4-7 red brown SILTY CLAY and yellow/grey lense		0
							SANDY SILT, wet. Trace angular gravel	0	
							7-8.2 red brown and trace grey SILTY CLAY, saturated		
							* depth intervals in feet are written before charateristics		
							Refusal Depth 8.2 feet		
							Sample Time: 4:20		
							Sample Collection Depth (feet) D 6-7		
							Sample Analyzed for STARS? Yes		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 16

Project: One Bristol Avenue Site RI/AA
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 5/17/2007
Finish Date
Driller J. Agar
Geologist J. Kaminski

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - course "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
				1.5'			0-1.5 dark brown, moist SANDY SILT topsoil/fill with trace medium sand, moist, angular gravel	0	
				0.5'			1.5-2.0 yellow and tan to pink medium SAND, moist		
				2'			2-4 red brown SILTY CLAY trace angular gravel and some sand moist		
				2'			4-8 red brown SILTY CLAY with fuel oil odor no grey staining, moist	160	
				2.4'			8-8.4 red brown SILTY CLAY with some grey and black staining, wet, strong diesel/petroleum odor	404 996	493
							* depth intervals in feet are written before charateristics		
							Refusal Depth 8.4 feet		
							Sample Time: 9:10		
							Sample Collection Depth (feet) D 7.8-8.4		
							Sample Analyzed for STARS? Yes		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 17

Project: One Bristol Avenue Site RI/AA
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 5/17/2007
Finish Date
Driller J. Agar
Geologist J. Kaminski

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - course "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
							0-1.5 dark brown, moist SANDY SILT topsoil/fill		
							with trace brick and firebrick	0	
							1.5-2 light grey gravel (1/16 to 3 inches long)		
							possibly concrete and some tan medium sand	0.4	
							moist		
							2-4 red brown AND grey SILTY CLAY trace brick		
							moist	0	
							4-7 red brown SILTY CLAY and tan and grey		
							fine sand, moist		
							7-8 grey trace red brown SILTY CLAY	0.5	
							wet, very light petroleum odor		
							8-8.2 black gravel mixed into redbrown	15	
							SILTY CLAY wet, very light petroleum odor		90
							8.2-8.7 red brown SILTY CLAY, no staining		
							light petroleum odor, wet	41	
							* depth intervals in feet are written before charateristics		
							Refusal Depth 8.7 feet		
							Sample Time: 9:50		
							Sample Collection Depth (feet) D 8.2-8.7		
							Sample Analyzed? No		

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SOIL PROBE LOG

PROBE NO. SP- 18

Project: One Bristol Avenue Site RI/AA
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 5/17/2007
Finish Date
Driller J. Agar
Geologist J. Kaminski

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - course "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
				0.5'			0-1 dark brown, moist SANDY SILT topsoil/fill with some red brown SILTY CLAY. Dark black/ coal lense at 1 foot		
				.9'			1-2 Grey SILTY SAND with some red brown SILTY CLAY and angular gravel/fire brick		
				2'			2-4 red brown SILTY CLAY, moist, grey fissures and a thin yellow SILTY CLAY fissure light petroleum odor	50	
				2'			4-5 Grey trace red brown SILTY CLAY with some grey fine sand, moist		
				1'			5-6 grey and red brown SILTY CLAY with some grey fissures, moist, light petroleum odor		353
				1'			6-7 Grey with trace red brown SILTY CLAY strong petroleum odor, moist	1228	
				1.4'			7-8.4 Grey trace red brown SILTY CLAY and some grey SANDY CLAY strong petroleum odor, wet	452	
							* depth intervals in feet are written before charateristics		
							Refusal Depth 8.4 feet		
							Sample Time: 10:20		
							Sample Collection Depth (feet) D 6.5-7.5		
							Sample Analyzed for STARS? Yes		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 19

Project: One Bristol Avenue Site RI/AA
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 5/17/2007
Finish Date
Driller J. Agar
Geologist J. Kaminski

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - course "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
							0-1 dark brown, moist SANDY SILT topsoil/fill		
							with some angular gravel, moist	0	
							1-3 red brown and grey SILTY CLAY with		
							grey black fissures with some fine tan sand		
							Clay is highly mottled, moist		
							3-3.5 angular light gravel, moist and SANDY GRAVE		
							3.5-5.5 red brown and grey SILTY CLAY with		
							grey black fissures with some fine tan sand		
							Clay is highly mottled, moist	0	
							5.5-6.5 red brown and grey SILTY CLAY with		
							grey black fissures with some fine tan sand	0.5	
							Clay is highly mottled, WET, light petroleum odor		7.2
							6.5-7.6 Grey and trace redbrown SILTY CLAY	0.8	
							very light petroleum odor, saturated		
							* depth intervals in feet are written before charateristics		
							Refusal Depth 7.6 feet		
							Sample Time: 10:30		
							Sample Collection Depth (feet) D 5.5- 6.5		
							Sample Analyzed for STARS? Yes		

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SOIL PROBE LOG

PROBE NO. SP- 20

Project: One Bristol Avenue Site RI/AA
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 5/17/2007
Finish Date
Driller J. Agar
Geologist J. Kaminski

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Blows per 6"	Recovery	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - course "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
				0.5'			0-0.5 dark brown, moist SANDY SILT topsoil/fill		
							little angular fine gravel, SATURATED	0	
				0.5'			0.5-1 dark brown, moist SANDY SILT topsoil/fill	17.5	
							little angular fine gravel, moist		
				3'			1-5 Grey little brown red SILTY CLAY		
							some grey fissures/cracks, moist	525	
				1'			5-6 Grey little brown red SILTY CLAY		
							Stong petroleum odor, wet		
				1.1'			6-7.1 Grey little red brown SILTY CLAY	1952	831
							Very strong petroleum odor, SATURATED	421	
							* depth intervals in feet are written before charateristics		
							Refusal Depth 7.1 feet		
							Sample Time: 11:15 AM		
							Sample Collection Depth (feet) D 5-6		
							Sample Analyzed for STARS? Yes		

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SOIL PROBE LOG

PROBE NO. SP- 21

Project: One Bristol Avenue Site RI/AA Field Work #2
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 8/16/2007
Finish Date 8/16/2007
Driller C. Stockmaster
Geologist J. Manzella

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Depth (feet)	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - coarse "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
			0-0.5'				Brown sandy silt, topsoil, moist fine sand	0	
			0.5-1.7'				Brown sandy silt, trace sand, moist fine sand		
							with little angular gravel		
			1.7-4'				Red Brown silty clay, moist		
			4-7.5'				Red Brown silty clay, wet at 6.5'	0	
							little grey fissures		
							Refusal Depth 7.5'		
							Sample Time: 9:20		
							Sample Collection Depth (feet) 4.5-6'		
							Analyzed? Full TCL/TAL & MS/MSD		

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SOIL PROBE LOG

PROBE NO. SP- 22

Project: One Bristol Avenue Site RI/AA Field Work #2
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 8/16/2007
Finish Date 8/16/2007
Driller C. Stockmaster
Geologist J. Manzella

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Depth (feet)	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - coarse "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
			0-0.5'				Brown sandy silt, topsoil, moist fine sand	0	
			0.5-3'				Dark Brown sandy silt, with ashpalt fragments		
							and trace brick		
			3-4'				Red Brown silty clay, moist with clay pipe pieces		
			4-5.6'				Red Brown silty clay, moist with clay pipe pieces	0	
							highly mottled yellow/gray, trace angular gravel		
							moist		
							Refusal Depth 5.6'		
							Sample Time: 10:00		
							Sample Collection Depth (feet) 3-4'		
							Analyzed? STARS VOCs/SVOCs		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 23

Project: One Bristol Avenue Site RI/AA Field Work #2
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 8/16/2007
Finish Date 8/16/2007
Driller C. Stockmaster
Geologist J. Manzella

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Depth (feet)	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - coarse "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
			0-1'				Brown sandy silt trace sand moist		
			1-4'				Red Brown clay silt, moist little gravel with lens		
							2" each of brown sandy silt at 3' and 3.8'	0.7 @ 4'	
							Red Brown clay silt, moist little gravel and mild	292 @ 7.6'	
							diesel odor and gray staining, moist		
							Refusal Depth 7.9'		
							Sample Time: 10:30		
							Sample Collection Depth (feet) 7.1-7.7'		
							Analyzed? STARS VOCs/SVOCs		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 24

Project: One Bristol Avenue Site RI/AA Field Work #2
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 8/16/2007
Finish Date 8/16/2007
Driller C. Stockmaster
Geologist J. Manzella

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Depth (feet)	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - coarse "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
			0-0.5'				Brown sandy silt, topsoil, moist	0	
			0.5-1.6'				Brown sandy silt with trace gravel, trace concrete	0	
							pieces, moist		
			1.6-4'				Red brown silty clay with gray mottling, moist	1.1 @ 4-6'	
			4-8.7'				Red brown silty clay with gray mottling	131 @ 7.5'	
							gray staining at 7.7', moist		
							wet 7.7-8.7'	243 @ 8.5'	
							Refusal Depth 8.7'		
							Sample Time: 11:15		
							Sample Collection Depth (feet) 6.8-7.7'		
							Analyzed? Full TCL/TAL - No Herbs		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 25

Project: One Bristol Avenue Site RI/AA Field Work #2
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 8/16/2007
Finish Date 8/16/2007
Driller C. Stockmaster
Geologist J. Manzella

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Depth (feet)	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - coarse "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
			0-0.5'				Brown topsoil sandy silt, dry	0	
			0.5-3'				Gray sandy silt and gravel, moist	0	
			3-4'				Red Brown silt clay, moist	0	
			4-6.5'				Red Brown silt clay, with black staining moist to	2.1	
							wet at 6.2'		
			6.5-8'				Gray silty sand, saturated with mild petroleum odor	0.6	
			8-8.8'				Rock was in sampling tip and therefore		
							no recovery		
							Refusal Depth 8.8'		
							Sample Time: 11:55		
							Sample Collection Depth (feet) 5.9-6.1'		
							Analyzed? STARS VOCs/SVOCs		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 26

Project: One Bristol Avenue Site RI/AA Field Work #2
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 8/16/2007
Finish Date 8/16/2007
Driller C. Stockmaster
Geologist J. Manzella

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Depth (feet)	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - coarse "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
			0-0.5'				Brown topsoil sandy silt	0	
			0.5-2.6'				Brown sandy silt and angular gravel with asphalt		
							like pieces @ 2.5', moist		
			2.6-4'				Red brownh silty clay moist	0	
			4-7.9'				Red brown silty clay wet at 7.3'	847 @ 6.8'	
							and saturated at 7.7' Gray staining from 6.7-7.9'	60.1 @ 7.8'	
							Refusal Depth 7.9'		
							Sample Time: 12:45		
							Sample Collection Depth (feet) 6.7-7.2'		
							Analyzed? STARS VOCs/SVOCs		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 27

Project: One Bristol Avenue Site RI/AA Field Work #2
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 8/16/2007
Finish Date 8/16/2007
Driller C. Stockmaster
Geologist J. Manzella

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Depth (feet)	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - coarse "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
			0-1'				Gray sandy silt with white ashy material	0	
			1-6.8'				Red Brown silty clay, moist	0	
							No visible, olfactory or PID reading to indicate contamination		
							Refusal Depth 6.8'		
							Sample Time:		
							Sample Collection Depth (feet) no sample		
							Analyzed?		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 28

Project: One Bristol Avenue Site RI/AA Field Work #2
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 8/16/2007
Finish Date 8/16/2007
Driller C. Stockmaster
Geologist J. Manzella

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Depth (feet)	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - coarse "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
			0-2.4'				Gray brown sandy silt, trace gravel, concrete	0	
			2.4-4'				pieces and red lens of same material at 2', moist		
							Red Brown silty clay with gray mottling and roots,	0	
							moist		
			4-6.8'				Red Brown silty clay with gray mottling and roots,	40.1	
							moist		
			6.8-7.7'				Red Brown silty clay with gray mottling and roots,	2254 @ 7'	
							gray staining, strong petroleum odor and gravel,		
							moist		
							Refusal Depth 7.7'		
							Sample Time: 14:20		
							Sample Collection Depth (feet) 6.8-7.7'		
							Analyzed? Full TCL/TAL & Herbs		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 29

Project: One Bristol Avenue Site RI/AA Field Work #2
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 8/16/2007
Finish Date 8/16/2007
Driller C. Stockmaster
Geologist J. Manzella

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Depth (feet)	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - coarse "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
			0-1'				Brown topsoil sand, sandy silt, moist		
			1-3.8'				Rusty Dark brown silty silt with white ashy material		
							at 3.5-3.8' and asphalt material		
			3.8-4'				Red brown silty clay moist		
			4-8'				Red brown silty clay moist with gray staining	1486 @ 6.1'	
							and strong petroleum odor at 6.0', wet at 7'	1162 @ 7.5'	
							odor most significant at 6-7'		
			8-9.3'				Red brown silty clay, gray staining, strong odor	1720	
							saturated		
							Refusal Depth 9.3'		
							Sample Time: 15:00		
							Sample Collection Depth (feet) 6-6.5'		
							Analyzed? STARS VOCs/SVOCs		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 30

Project: One Bristol Avenue Site RI/AA Field Work #2
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 8/16/2007
Finish Date 8/16/2007
Driller C. Stockmaster
Geologist J. Manzella

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Depth (feet)	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - coarse "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
			0-0.5'				Brown topsoil sand silt, moist	0	
			0.5-4.2'				Brown clay silt, with brick concrete and asphalt	0	
							throughout and lens of white ashy material, moist		
			4.2-6.2'				Red Brown silty clay, moist	0 @ 5.0'	
			6.2'-7.7'				Gray silty clay moist with strong odor and staining	19.9 @ 6.0'	
							little trace gravel	331 @ 7.0'	
								357 @ 7.5'	
							Refusal Depth 7.7'		
							Sample Time: 15:35		
							Sample Collection Depth (feet) 7-7.5'		
							Analyzed? STARS VOCs/SVOCs		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 31

Project: One Bristol Avenue Site RI/AA Field Work #2
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 8/16/2007
Finish Date 8/16/2007
Driller C. Stockmaster
Geologist J. Manzella

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Depth (feet)	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - coarse "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
			0-0.5'				Gray silty gravel	0	
			0.5-1.5'				Dark Brown gravely sand, moist		
			1.5-3.5'				Brown, Dark brown rusty colored medium to fine	0	
							sand with coal like pieces with a lens of ashpaltic		
							material and white ashy material (3.3-3.5'), moist		
			3.5-4'				Red brown silty clay moist little gravel	16.5 @ 5'	
			4-7.6'				Red brown silty clay moist little gravel with	153 @ 6'	
							minor odor and minor staining @ 6.0'	87 @ 7.0'	
							wet at 7.0'		
							Refusal Depth 7.6'		
							Sample Time: 16:05		
							Sample Collection Depth (feet) 6-6.5'		
							Analyzed? STARS VOCs/SVOCs		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 32

Project: One Bristol Avenue Site RI/AA Field Work #2
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 8/16/2007
Finish Date 8/16/2007
Driller C. Stockmaster
Geologist J. Manzella

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Depth (feet)	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - coarse "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
			0-0.5'				Brown topsoil, sandy silt, moist	0	
			0.5-2'				Brown silty sand, moist and small angular gravel		
			2-3.6'				Brown rust colored fine to medium sand with		
							black staining at 3.6'		
			3.6-4'				Brown to Dark Brown trace red silty clay with coal	0	
							fragments, moist		
			4-6.8'				Brown to Dark Brown trace red silty clay with gray	5.1	
							staining, glass fragments, yellow mottling and		
							white ashy material at 6.0', petroleum odor		
							moist		
							Refusal Depth 6.8'		
							Sample Time: 16:20		
							Sample Collection Depth (feet) 6-6.8'		
							Analyzed? STARS VOCs/SVOCs		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 33

Project: One Bristol Avenue Site RI/AA Field Work #2
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 8/16/2007
Finish Date 8/16/2007
Driller C. Stockmaster
Geologist J. Manzella

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Depth (feet)	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - coarse "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
			0-3.5'				Black silt sand with gravel and rust color sand at	0	
							3 feet	0	
			3.5-4'				White ashy material, moist		
			4-4.5'				Red brown clay silt with coal fragments		
			4.5-7'				Gray stained clay silt with strong odor	273 @ 5'	
							trace gravel	476 @ 6'	
			7-7.5'				Red Brown clay silt with orange and gray mottling	720 @ 6.5'	
							wet to saturated wet at 7.2'		
							Refusal Depth 7.5'		
							Sample Time: 16:45		
							Sample Collection Depth (feet) 5.8-7'		
							Analyzed? Full TCL/TAL No Herbs		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 34

Project: One Bristol Avenue Site RI/AA Field Work #2
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 8/16/2007
Finish Date 8/16/2007
Driller C. Stockmaster
Geologist J. Manzella

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Depth (feet)	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - coarse "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
			0-0.5'				Brown silty sand and gravel, dry	0	
			0.5-3.5				Brown silty sand and gravel with coal fragments	0	
			3.5-4.2'				White sandy ash and rusty colored		
			4.2-6.3'				Red brown silty clay, moist	108 @ 5'	
								282 @ 5.5'	
								465 @ 6'	
			6.3'-8.1'				Gray some red silty clay with staining and strong	404 @ 6.5'	
							odor wet at 7' and saturated at 7.5'	68 @ 7'	
								20 @ 7.5'	
							Refusal Depth 8.1'		
							Sample Time: 17:05		
							Sample Collection Depth (feet) 5.5-6.7'		
							Analyzed? Full TCL/TAL No herbs		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 35

Project: One Bristol Avenue Site RI/AA Field Work #2
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 8/16/2007
Finish Date 8/16/2007
Driller C. Stockmaster
Geologist J. Manzella

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Depth (feet)	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - coarse "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
			0-0.5'				Dark Brown topsoil, little gravel	0	
			0.5-3'				Dark brown and gray silty sand and gravel with	0	
							black fragments, moist		
							white ash material at 2.0'		
			3-4'				Dark brown sandy silt and clay, little gravel, moist		
			4-7.2'				Red brown clay silt with gray staining from 6-7'	20.2 @ 6'	
							odor, moist , wet at 7'	120 @ 6.5'	
								20 @7	
							Refusal Depth 7.2'		
							Sample Time: 17:35		
							Sample Collection Depth (feet) 6.2-6.7'		
							Analyzed? STARS VOCs/SVOCs		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 36

Project: One Bristol Avenue Site RI/AA Field Work #2
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 8/16/2007
Finish Date 8/16/2007
Driller C. Stockmaster
Geologist J. Manzella

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Depth (feet)	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - coarse "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
			0-0.5'				Brown topsoil sand silt, dry	0	
			0.5-3'				Gray brown gravely sandy silt		
			3-3.6'				Dark Brown silty silt and trace brick, coal, and		
							white ashy material		
			3.6-6'				Red brown silty clay moist	0 @ 5'	
			6-7.8'				Gray stained silty clay moist to wet	235 @ 6'	
							wet at 7.2'		
							Refusal Depth 7.8'		
							Sample Time: 17:50		
							Sample Collection Depth (feet) 6.5-7'		
							Analyzed? STARS VOCs/SVOCs		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 37

Project: One Bristol Avenue Site RI/AA Field Work #2
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 8/16/2007
Finish Date 8/16/2007
Driller C. Stockmaster
Geologist J. Manzella

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

Well Construction	Depth (feet)	Sample No.	Depth (feet)	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - coarse "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
			0-0.2				Brown sandy silt topsoil		
			0.2-2.8'				Gray brown gravely sandy silt		
			2.8-7'				Red brown clay silt, gravel, moist	105 @ 3.5'	
							strong odor, mild staining	1782 @ 3.8'	
								1182 @ 6.5'	
							poor recovery on first and second attempts	489 @ 7'	
							Refusal Depth 7.0'		
							Sample Time: 18:15		
							Sample Collection Depth (feet) 3.8-7'		
							Analyzed? STARS VOCs/SVOCs		

TVGA CONSULTANTS

SOIL PROBE LOG

PROBE NO. SP- 38

Project: One Bristol Avenue Site RI/AA Field Work #2
Client: City of Lockport
Contractor: TREC Environmental

Project No. 2007.0015.00
GS Elev
WS Ref Elev
N-S Coord
E-W Coord
Start Date 8/16/2007
Finish Date 8/16/2007
Driller C. Stockmaster
Geologist J. Manzella

Groundwater Data (feet)				Equipment Data			
Date	Time	Depth	Elev		Casing	Sampler	Core
				Type	Acetate	Macro Core	
				Diameter	1.75"	2.0"	
				Weight			
				Fall			

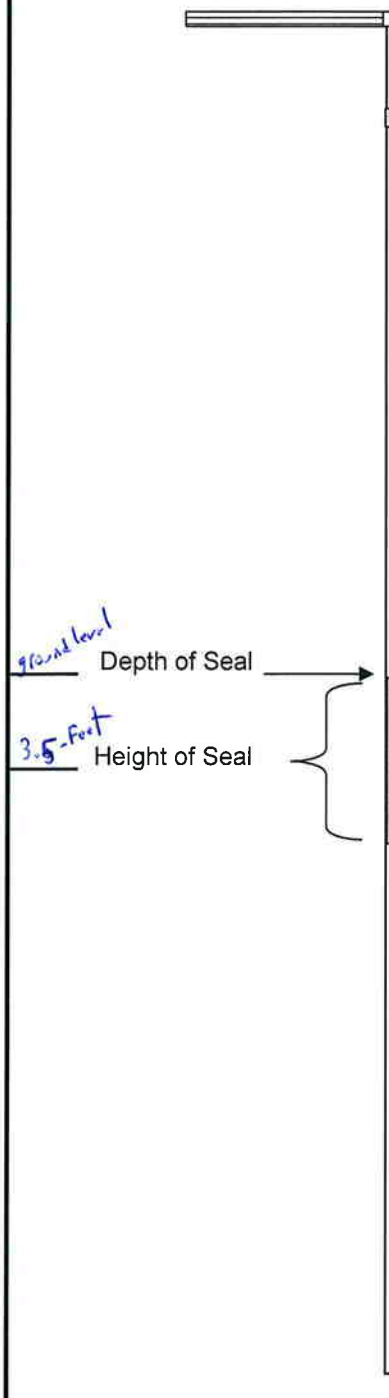
Well Construction	Depth (feet)	Sample No.	Depth (feet)	Recovery (in.)	Log	Unified	Field Description Material Classification (Burmister System) f - fine m - medium c - coarse "and" = 35-50% "some" = 20-35% "little" = 10-20% "trace" = 1-10%	Remarks PID Reading (ppm) Direct	Head
			0-0.2				Sandy silt topsoil, moist		
			0.2-2.3				Mixture of fragments, top to bottom	0	
							concrete pieces throughout		
							brown silty sand and gravel		
							red crushed brick		
							white ashy material		
							black silt sand and gravel		
							simialar material to what was encountered on		
							northern part of property		
			2.3-6.8'				Red brown clay silt with gray mottling moist to	0	
							saturated. No odor or stains.		
							Saturation at 6.0'		
							Refusal Depth 6.8'		
							Sample Time: 18:40		
							Sample Collection Depth (feet) 0.2-2.3'		
							Analyzed? Full TCL/TAL and Herbs		

TVGA CONSULTANTS

VAPOR PROBE INSTALLATION REPORT

Project Name: Bristol Avenue Site RI/AA
Project Number: 2007.0015.00
Contractor: TREC Environmental
Date of Installation: 9/30/2008
Project Location: Lockport, NY

Geologist: J. Manzella
Driller: Paul Willey
Vapor Probe No.: 1
Probe No.: 1
Sheet 1 of 1



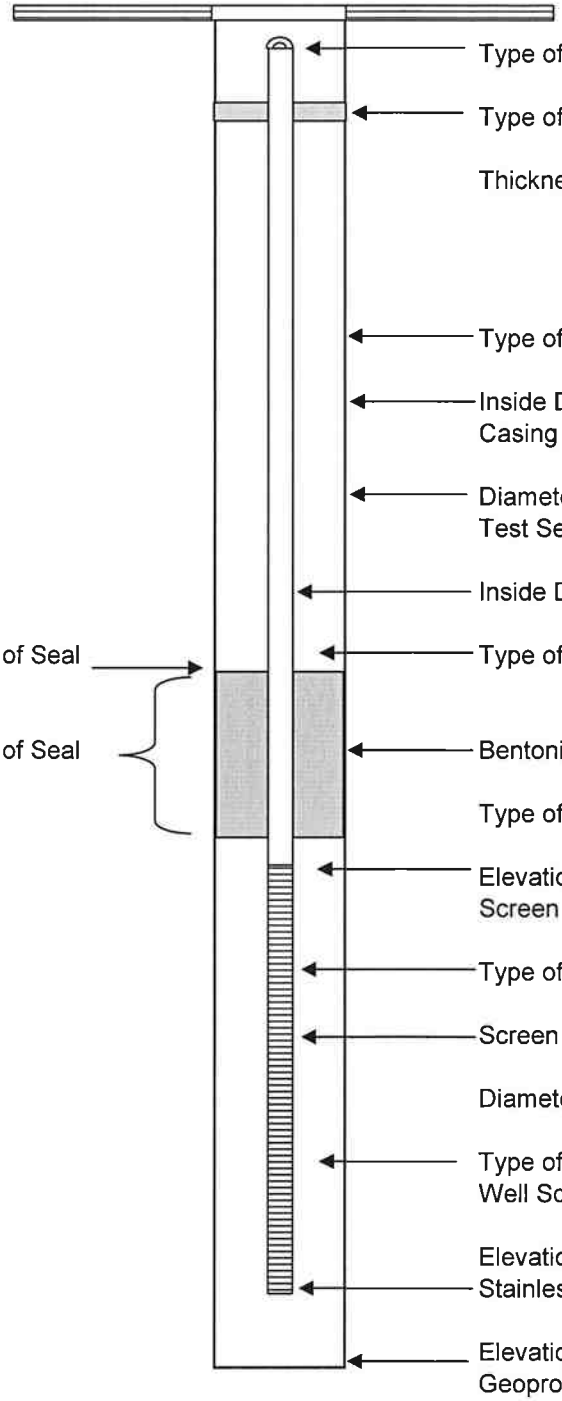
Type of valve on sampling tube	
Type of Surface Seal	Bentonite
Thickness of Surface Seal	3.5 feet
Type of Protective Casing	None
Inside Diameter of Protective Casing	N/A
Diameter of Geoprobe Hole Within Test Section	2.25 inches
Inside Diameter of Tube	1/4 - inches
Type of clean backfill used	Bentonite
Bentonite seal	
Type of Riser/tube Coupling	Polyethylene / Stainless Steel
Elevation/Depth of Top of Screen	4-feet
Type of Well Screen	Stainless Steel
Screen Slot Size	0.0057 - inches
Diameter of Well Screen	3/8 inch ID
Type of Porous Backfill Around Well Screen	Glass Beads
Elevation/Depth of Bottom of Stainless Steel Vapor Screen	5-feet
Elevation/Depth of Bottom of Geoprobe Hole	5-feet

TVGA CONSULTANTS

VAPOR PROBE INSTALLATION REPORT

Project Name: Bristol Avenue Site RI/AA
Project Number: 2007.0015.00
Contractor: TREC Environmental
Date of Installation: 9/30/2008
Project Location: Lockport, NY

Geologist: J. Manzella
Driller: Paul Willey
Vapor Probe No.: 2
Probe No.: 2
Sheet: 1 of 1



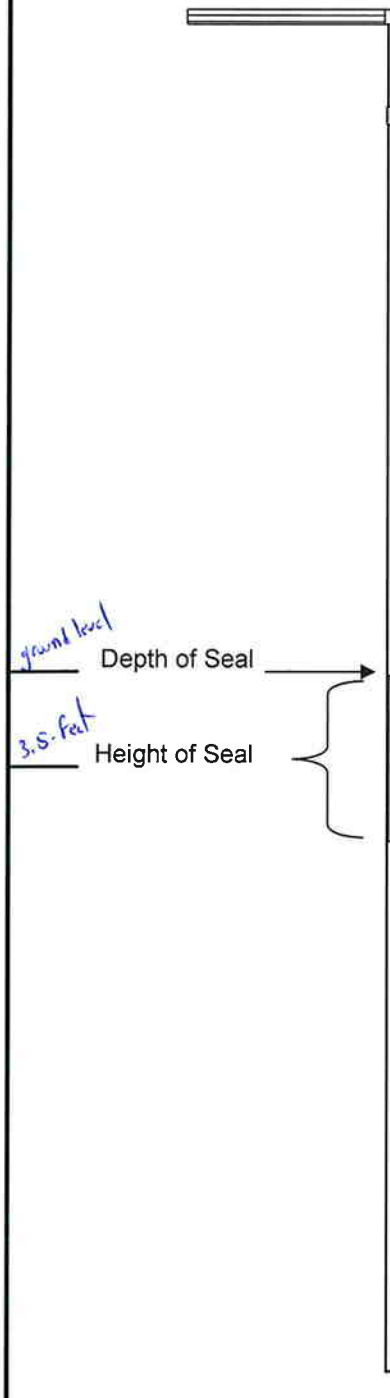
Type of valve on sampling tube	
Type of Surface Seal	Bentonite
Thickness of Surface Seal	3.5 feet
Type of Protective Casing	None
Inside Diameter of Protective Casing	N/A
Diameter of Geoprobe Hole Within Test Section	2.25 inches
Inside Diameter of Tube	1/4 - inches
ground level Depth of Seal	
Type of clean backfill used	Bentonite
3.5 feet Height of Seal	
Bentonite seal	
Type of Riser/tube Coupling	Polyethylene / Stainless Steel
Elevation/Depth of Top of Screen	4-feet
Type of Well Screen	Stainless Steel
Screen Slot Size	0.0057 - inches
Diameter of Well Screen	3/8 inch ID
Type of Porous Backfill Around Well Screen	Glass Beads
Elevation/Depth of Bottom of Stainless Steel Vapor Screen	5-feet
Elevation/Depth of Bottom of Geoprobe Hole	5-feet

TVGA CONSULTANTS

VAPOR PROBE INSTALLATION REPORT

Project Name: Bristol Avenue Site RI/AA
Project Number: 2007.0015.00
Contractor: TREC Environmental
Date of Installation: 9/30/2008
Project Location: Lockport, NY

Geologist: J. Manzella
Driller: Paul Willey
Vapor Probe No.: 3
Probe No.: 3
Sheet 1 of 1



Type of valve on sampling tube	
Type of Surface Seal	Bentonite
Thickness of Surface Seal	3.5 feet
Type of Protective Casing	None
Inside Diameter of Protective Casing	N/A
Diameter of Geoprobe Hole Within Test Section	2.25 inches
Inside Diameter of Tube	1/4 - inches
Type of clean backfill used	Bentonite
Bentonite seal	
Type of Riser/tube Coupling	Polyethylene / Stainless Steel
Elevation/Depth of Top of Screen	4-feet
Type of Well Screen	Stainless Steel
Screen Slot Size	0.0057 - inches
Diameter of Well Screen	3/8 inch ID
Type of Porous Backfill Around Well Screen	Glass Beads
Elevation/Depth of Bottom of Stainless Steel Vapor Screen	5-feet
Elevation/Depth of Bottom of Geoprobe Hole	5-feet

APPENDIX E

DATA VALIDATION REPORT (TEXT ONLY)

DATA USABILITY
SUMMARY REPORT

ONE BRISTOL AVENUE

SDG MF0646 May 2007
SDG MF1161 August 2007
SDG MF1162 August 2007

Prepared for:

TVGA CONSULTANTS
1000 Maple Road
Elma, NY 14059

Prepared by:

DATAVAL, Inc.
518 Hooper Rd., PMB 283
Endwell, NY 13760

DATA USABILITY SUMMARY REPORT

for

TVGA Consultants

1000 Maple Road

Elma, NY 14059

ONE BRISTOL AVENUE
Soil Samples
SDG: MF0646
Sampled 05/16/07 and 05/17/07

VOLATILE ORGANICS

SP167884	F0646-01	SP186575S0	F0646-03
SP195565S0	F0646-04	SP20D56S0	F0646-05
SP3D67S0	F0646-09	SP5D78S0	F0646-11
SP11D78S0	F0646-17	SP12D665S0	F0646-18
SP13D56S0	F0646-19	SP15D67S0	F0646-21

DATA ASSESSMENT

A volatile organics data package containing analytical results for ten soil samples was received from TVGA Consultants on 10Oct07. The ASP deliverables package included formal reports, raw data, the necessary QC, and supporting information. The samples, taken from the One Bristol Avenue site, were identified by Chain of Custody documents and traceable through the work of MITKEM Corporation, the laboratory contracted for analysis. Analyses, performed according to SW-846 Method 8260, addressed STARS list volatiles. Laboratory data was evaluated according to the quality assurance / quality control requirements of the New York State Department of Environmental Conservation's Analytical Services Protocol, September 1989, Rev. 07/2005. When the required protocol was not followed, the current EPA Region II Functional Guidelines (SOP HW-24, Rev 1, June 1999, Standard Operating Procedure for the Validation of Organic Data Acquired Using SW-846 Method 8260B (Rev 2, Dec 1996) was used as a technical reference.

The results obtained from medium level soil analyses have been qualified as estimations because these determinations were not performed within the program holding time limitations.

The positive results reported from the low level analyses of SP167884 and SP186575S0, and the medium level determination of SP20D56S0 have been qualified as estimations due to unacceptably high surrogate standard recoveries

The identifications of 1,3,5-trimethylbenzene in SP167884, SP20D56S0 and SP3D67S0, toluene, xylene and n-butylbenzene in SP167884, and ethylbenzene in SP13D56S0 were not conclusive, based on the mass spectra references included in the raw data. These analytes should be considered undetected in the affected samples.

The results reported from this group of samples have been qualified as estimations due to poor matrix spike recoveries.

CORRECTNESS AND USABILITY

Reported data should be considered technically defensible and completely usable in its present form. Reported concentrations that are felt to provide a usable estimation of the conditions being measured have been flagged "J" or "UJ". Estimated data should be used with caution. A detailed discussion of the review process follows.

Two facts should be considered by all data users. No compound 3concentration, even if it has passed all QC testing, can be guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error. Secondly. DATAVAL, Inc. guarantees the quality of this data

assessment. However, DATAVAL, Inc. does not warrant any interpretation or utilization of this data by a third party.

Reviewer's signature: James B. Baldwin Date: 16NOV07

SAMPLE HISTORY

Analyte concentrations can deteriorate with time due to chemical instability, bacterial degradation or volatility. Samples that are not properly preserved or are not analyzed within established holding times may no longer be considered representative. Holding times are calculated from the Verified Time of Sample Receipt (VTSR). Samples must remain chilled to 4°C between the time of collection and the time of analysis. Acid preserved VOA samples must be analyzed within 12 days of VTSR, unpreserved samples within 5 days. The holding time for soils is 10 days.

This sample delivery group contained ten soil samples collected from the One Bristol Avenue site on 16May07 and 17May07. The samples were shipped to the laboratory via FedEx, arriving on 18May07. The samples arrived intact, packed with ice, with custody seals in place. A cooler temperature of 4°C was recorded at the time of receipt.

Eight samples from this delivery group were analyzed as low level soils between 19May07 and 24May07. The remaining two samples, SP20D56S0 and SP3D67S0, were analyzed as medium level soils on 30May07. Additionally, repeated analyses of SP167884 and SP186575S0 were performed as medium level soils on 31May07 and 01Jun07. Each medium level analysis was completed beyond the program's ten day holding time limitation. The results reported from each medium level determination have been qualified as estimations due to this error.

BLANKS

Blanks are analyzed to evaluate various sources of sample contamination. Field blanks monitor sampling activities. Method blanks are analyzed to verify instrument integrity. Samples are considered compromised by conditions causing contamination in any blank. Any sample concentration less than 5 times the level determined in a blank must be qualified. The qualification criteria is extended to ten times the concentration observed in blanks for common laboratory artifacts. These include acetone, methylene chloride and 2-butanone. Chloroform is also frequently present as a laboratory artifact.

Five method blanks were analyzed with this group of samples. Each of these blanks demonstrated acceptable chromatography and was free of targeted analyte contamination.

MS TUNING

Mass spectrometer tuning and performance criteria are established to ensure sufficient mass resolution and sensitivity to accurately detect and identify targeted analytes. Verification is accomplished using a certified standard.

An Instrument Performance Check Standard of BFB was analyzed prior to each analytical sequence and during every 12-hour period of instrument operation. An Instrument Performance Check Form is present for each BFB evaluation. The BFB tunes associated with

this group of samples satisfied the program acceptance criteria.

CALIBRATION

Requirements for instrument calibration are established to ensure that laboratory equipment is capable of producing accurate, quantitative data. Initial calibrations demonstrate a range through which measurements may be made. Continuing calibration standards verify instrument stability.

Initial instrument calibrations were performed on 11May07 and 27May07. Standards of 5, 20, 50, 100 and 200 µg/l were included. The 11May07 calibration incorporated a heated purge. Each targeted analyte produced the required levels of instrument response and demonstrated an acceptable degree of linearity during both initial calibrations.

Continuing calibration checks were performed on 18May07, 23May07, 30May07 and 31May07, prior to each twelve-hour period of instrument operation that included samples from this program. When compared to the initial calibrations, these checks demonstrated an acceptable degree of instrument stability.

SURROGATES

Each sample, blank and standard is spiked with surrogate compounds prior to analysis. The structures of surrogates are similar to analytes of interest, but they are not normally found in environmental samples. Surrogate recoveries are monitored to evaluate overall laboratory performance and the efficiency of laboratory technique.

Although Surrogate Summary Sheets were properly prepared, the laboratory applied its own acceptance criteria. When compared to the ASP requirements, unacceptably high recoveries were reported for the additions of toluene-d8 and bromofluorobenzene to the low level samples of SP167884 and SP186575S0, and the medium level sample of SP20D56S0. The results reported from each of these samples have been qualified as estimations based on this performance. SP167884, SP186575S0 and a 1:5 dilution of SP20D56S0 were reanalyzed as medium level soils. Each of these samples produced acceptable surrogate recoveries. The results reported from these preparations have been left unqualified.

INTERNAL STANDARDS

Internal standards are added to each sample, blank and standard just prior to injection. Analyte concentrations are calculated relative to the response of a specific internal standard. Internal standard performance criteria ensure that GC/MS sensitivity and response are stable during the analysis of each sample. The area of internal standard peaks may not vary by more than 40%. When compared to the preceding calibration check, retention times may not vary by more than 20 seconds.

The laboratory correctly calculated control limits for internal standard response and retention times. When compared to these

limits, acceptable performance was observed.

MATRIX SPIKES

Matrix spiking refers to the addition of known analyte concentrations to a sample, prior to analysis. Analyte recoveries provide an indication of laboratory accuracy. The analysis of a duplicate spiked aliquot provides a measurement of precision.

SP13D56S0 was selected for matrix spiking. Each targeted analyte was added to two portions of this sample. When compared to the laboratory's acceptance criteria, the recoveries reported for these additions were unacceptably low. The results reported from this delivery group have been qualified as estimations due to these indications of negative bias.

Five spiked blanks (LCS) were analyzed with this delivery group. Each LCS produced an acceptable recovery of each targeted analyte.

DUPLICATES

Two aliquots of the same sample are processed separately through all aspects of sample preparation and analysis. Results produced by the analysis of this pair of samples are compared as a measurement of precision. Poor precision may be indicative of sample non-homogeneity, method defects or poor laboratory technique.

A field split duplicate sample was not identified in this delivery group.

REPORTED ANALYTES

Formal reports were provided for each sample. The data package also included total ion chromatograms and raw instrument printouts. Reference mass spectra were provided to confirm the identification of each targeted analyte that was detected in this group of samples. Reported concentrations, and CRDL's have been adjusted to reflect sample size and moisture content.

The identifications of 1,3,5-trimethylbenzene in SP167884, SP20D56S0 and SP3D67S0, toluene, xylene and n-butylbenzene in SP167884, and ethylbenzene in SP13D56S0 were not conclusive, based on the mass spectra references included in the raw data. These analytes should be considered undetected in the affected samples.

Tentatively Identified Compounds (TIC) were not reported.

SUMMARY OF QUALIFIED DATA

One Bristol Avenue

SAMPLED: August 16, 2007

		HOLD TIME MED SOIL	SURROGATES LOW SOIL	SURROGATES MED SOIL	MATRIX SPIKES	SPECTRA ID
SP167884	F0646-01	ALL MED DJ	ALL POS J		ALL J/UJ	MS1,MS2 UJ
SP186575S0	F0646-03	ALL MED DJ	ALL POS J		ALL J/UJ	
SP195565S0	F0646-04				ALL J/UJ	
SP20D56S0	F0646-05	ALL MED DJ		ALL MED DJ	ALL J/UJ	MS1 UJ
SP3D67S0	F0646-09				ALL J/UJ	MS1 UJ
SP5D78S0	F0646-11				ALL J/UJ	
SP11D78S0	F0646-17				ALL J/UJ	
SP12D665S0	F0646-18				ALL J/UJ	
SP13D56S0	F0646-19				ALL J/UJ	MS3 UJ
SP15D67S0	F0646-21				ALL J/UJ	

MS1 = 1,3,5-trimethylbenzene
MS2 = toluene, xylene, n-butylbenzene
MS3 = ethylbenzene

DATA VALIDATION REPORT

for

TVGA Consultants

1000 Maple Road

Elma, NY 14059

ONE BRISTOL AVENUE
Soil Samples
SDG: MF0646
Sampled 05/16/07 and 05/17/07

SEMIVOLATILE ORGANICS

SP167884	F0646-01	SP186575S0	F0646-03
SP195565S0	F0646-04	SP20D56S0	F0646-05
SP3D67S0	F0646-09	SP5D78S0	F0646-11
SP11D78S0	F0646-17	SP12D665S0	F0646-18
SP13D56S0	F0646-19	SP15D67S0	F0646-21

DATA ASSESSMENT

A semivolatile organics data package containing analytical results for ten soil samples was received from TVGA Consultants on 10Oct07. The ASP deliverables package included formal reports, raw data, the necessary QC, and supporting information. The samples, taken from the One Bristol Avenue site, were identified by Chain of Custody documents and traceable through the work of MITKEM Corporation, the laboratory contracted for analysis. Analyses, performed according to SW-846 Method 8270, addressed STARS list semivolatiles. Laboratory data was evaluated according to the quality assurance / quality control requirements of the New York State Department of Environmental Conservation's Analytical Services Protocol, September 1989, Rev. 07/2005. When the required protocol was not followed, the current EPA Region II Functional Guidelines (SOP HW-22, Rev 2, June 2001, Standard Operating Procedure for the Validation of Organic Data Acquired Using SW-846 Method 8270C (Rev 3, Dec 1996) was used as a technical reference.

The presence of benzo(a)anthracene in SP20D56S0 and fluorene in SP3D67S0 could not be conclusively confirmed, based on the mass spectra library searches included in the raw data. These analytes should be considered undetected in the affected samples.

CORRECTNESS AND USABILITY

Reported data should be considered technically defensible and completely usable in its present form. Reported concentrations that are felt to provide a usable estimation of the conditions being measured have been flagged "J" or "UJ". Estimated data should be used with caution. A detailed discussion of the review process follows.

Two facts should be considered by all data users. No compound concentration, even if it has passed all QC testing, can be guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error. Secondly. DATAVAL, Inc. guarantees the quality of this data assessment. However, DATAVAL, Inc. does not warrant any interpretation or utilization of this data by a third party.

Reviewer's signature: James B. Baldwin Date: 16 NOV 07

SAMPLE HISTORY

Analyte concentrations can deteriorate with time due to chemical instability, bacterial degradation or volatility. Samples that are not properly preserved or are not analyzed within established holding times may no longer be considered representative. Holding times are calculated from the Verified Time of Sample Receipt. Samples must remain chilled to 4°C between the time of collection and the time of analysis. Sample extractions must be completed within 5 days of receipt. Analyses must be completed within 40 days of extraction.

This sample delivery group contained ten soil samples collected from the One Bristol Avenue site on 16May07 and 17May07. The samples were shipped to the laboratory via FedEx, arriving on 18May07. The samples arrived intact, packed with ice, with custody seals in place. A cooler temperature of 4°C was recorded at the time of receipt.

Each sample was extracted on 23May07 and analyzed on 06Jun07. The program holding time limitations were satisfied.

BLANKS

Blanks are analyzed to evaluate various sources of sample contamination. Field blanks monitor sampling activities. Method blanks are analyzed to verify instrument integrity. Samples are considered compromised by conditions causing contamination in any blank. Any sample concentration less than 5 times the level determined in a blank must be qualified. The qualification criteria is extended to ten times the concentration observed in blanks for common laboratory artifacts. These include phthalate esters.

One method blank was analyzed with this group of samples. This blank produced acceptable chromatography and was free of targeted analyte contamination.

MS TUNING

Mass spectrometer tuning and performance criteria are established to ensure sufficient mass resolution and sensitivity to accurately detect and identify targeted analytes. Verification is accomplished using a certified standard.

An Instrument Performance Check Standard of DFTPP was analyzed prior to each analytical sequence and during every 12-hour period of instrument operation. An Instrument Performance Check Form is present for each DFTPP evaluation. The DFTPP tunes associated with this group of samples satisfied the program acceptance criteria.

CALIBRATION

Requirements for instrument calibration are established to ensure that laboratory equipment is capable of producing accurate, quantitative data. Initial calibrations demonstrate a range through which measurements may be made. Continuing calibration standards verify instrument stability.

The initial instrument calibration was performance on 05Jun07.

Standards of 5, 20, 50, 80, 120 and 160 ng were included. During this calibration, each targeted analyte produced acceptable levels of instrument response and demonstrated an acceptable degree of linearity.

Calibration verifications were performed on 05Jun07, 06Jun07 and 07Jun07, prior to each twelve-hour period of instrument operation that included samples from this program. When compared to the initial instrument calibration, these checks demonstrated an acceptable level of instrument stability.

SURROGATES

Each sample, blank and standard is spiked with surrogate compounds prior to analysis. The structures of surrogates are similar to analytes of interest, but they are not normally found in environmental samples. Surrogate recoveries are monitored to evaluate overall laboratory performance and the efficiency of laboratory technique.

Although Surrogate Summary Sheets were properly prepared, the laboratory applied its own acceptance criteria. However, when compared to the ASP requirements acceptable surrogate performance was observed.

INTERNAL STANDARDS

Internal standards are added to each sample, blank and standard just prior to injection. Analyte concentrations are calculated relative to the response of a specific internal standard. Internal standard performance criteria ensure that GC/MS sensitivity and response are stable during the analysis of each sample. The area of internal standard peaks may not vary by more than a factor of two. When compared to the preceding calibration check, retention times may not vary by more than 30 seconds.

The laboratory correctly calculated control limits for internal standard response and retention times. When compared to this criteria, acceptable performance was indicated for the internal standard additions to each program sample.

MATRIX SPIKES

Matrix spiking refers to the addition of known analyte concentrations to a sample, prior to analysis. Analyte recoveries provide an indication of laboratory accuracy. The analysis of a duplicate spiked aliquot provides a measurement of precision.

SP13D56S0 was selected for matrix spiking. Each targeted analyte was added to two portions of this sample. The recoveries reported for these additions demonstrated acceptable levels of measurement precision and accuracy.

One spiked blank (LCS) was also analyzed with this delivery group. This LCS produced an acceptable recovery of each targeted analyte.

DUPLICATES

Two aliquots of the same sample are processed separately through all aspects of sample preparation and analysis. Results produced by the analysis of this pair of samples are compared as a measurement of precision. Poor precision may be indicative of sample non-homogeneity, method defects or poor laboratory technique.

A field split duplicate was not identified in this delivery group.

SAMPLE INFORMATION

Formal reports were provided for each sample. The data package also included total ion chromatograms and raw instrument printouts. Reference mass spectra were provided to confirm the identification of each analyte that was detected in this group of samples. Reported concentrations have been adjusted to reflect sample size and moisture content.

The presence of benzo(a)anthracene in SP20D56S0 and fluorene in SP3D67S0 could not be conclusively confirmed, based on the mass spectra library searches included in the raw data. These analytes should be considered undetected in the affected samples.

Tentatively Identified Compounds (TIC) were not reported.

SUMMARY OF QUALIFIED DATA

One Bristol Avenue site

SAMPLED: May 16, 2007 and May 17, 2007

		SPECTRA ID BENZO(a)ANTHRACENE	SPECTRA ID FLUORENE
SP167884	F0646-01		
SP186575S0	F0646-03		
SP195565S0	F0646-04		
SP20D56S0	F0646-05	390U	
SP3D67S0	F0646-09		400U
SP5D78S0	F0646-11		
SP11D78S0	F0646-17		
SP12D665S0	F0646-18		
SP13D56S0	F0646-19		
SP15D67S0	F0646-21		

DATA USABILITY SUMMARY REPORT

for

TVGA Consultants

1000 Maple Road

Elma, NY 14059

ONE BRISTOL AVENUE
Soil Samples
SDG: MF1161
Sampled 08/16/07

VOLATILE ORGANICS

22D34S0	F1161-01	23D7177S0	F1161-02
25D5961S0	F1161-03	26D6772S0	F1161-04
29D665S0	F1161-05	30D775S0	F1161-06
31D665S0	F1161-07	32D668S0	F1161-08
35D6267S0	F1161-09	36D657S0	F1161-10
	37D387S0	F1161-11	

DATA ASSESSMENT

A volatile organics data package containing analytical results for eleven soil samples was received from TVGA Consultants on 10Oct07. The ASP deliverables package included formal reports, raw data, the necessary QC, and supporting information. The samples, taken from the One Bristol Avenue site, were identified by Chain of Custody documents and traceable through the work of MITKEM Corporation, the laboratory contracted for analysis. Analyses, performed according to SW-846 Method 8260, addressed STARS list volatiles. Laboratory data was evaluated according to the quality assurance / quality control requirements of the New York State Department of Environmental Conservation's Analytical Services Protocol, September 1989, Rev. 07/2005. When the required protocol was not followed, the current EPA Region II Functional Guidelines (SOP HW-24, Rev 1, June 1999, Standard Operating Procedure for the Validation of Organic Data Acquired Using SW-846 Method 8260B (Rev 2, Dec 1996) was used as a technical reference.

30D775S0 was initially analyzed on 29Aug07. The analysis was repeated on 30Aug07. A second analysis of 26D6772S0, 29D665S0 and 37D387S0 was performed on 30Aug07. The results obtained from these determinations have been qualified as estimations because the program holding time limitation was exceeded at the time of analysis.

The identifications of ethylbenzene in 26D6772S0 and 4-isopropyltoluene in 37D387S0 were not conclusive, based on the mass spectra references included in the raw data. These analytes should be considered undetected in the affected samples.

CORRECTNESS AND USABILITY

Reported data should be considered technically defensible and completely usable in its present form. Reported concentrations that are felt to provide a usable estimation of the conditions being measured have been flagged "J" or "UJ". Estimated data should be used with caution. A detailed discussion of the review process follows.

Two facts should be considered by all data users. No compound concentration, even if it has passed all QC testing, can be guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error. Secondly. DATAVAL, Inc. guarantees the quality of this data assessment. However, DATAVAL, Inc. does not warrant any interpretation or utilization of this data by a third party.

Reviewer's signature: James B. Baldwin Date: 16 NOV 07

SAMPLE HISTORY

Analyte concentrations can deteriorate with time due to chemical instability, bacterial degradation or volatility. Samples that are not properly preserved or are not analyzed within established holding times may no longer be considered representative. Holding times are calculated from the Verified Time of Sample Receipt (VTSR). Samples must remain chilled to 4°C between the time of collection and the time of analysis. Acid preserved VOA samples must be analyzed within 12 days of VTSR, unpreserved samples within 5 days. The holding time for soils is 10 days.

This sample delivery group contained eleven soil samples collected from the One Bristol Avenue site on 16Aug07. The samples were shipped to the laboratory via FedEx, arriving on 18Aug07. The samples arrived intact, packed with ice, with custody seals in place. A cooler temperature of 2°C was recorded at the time of receipt.

The initial analysis of each sample except 30D775S0 was completed on 27Aug07. However, 26D6772S0, 29D665S0 and 37D387S0 were reanalyzed on 30Aug07. 30D775S0 was initially analyzed on 29Aug07 and reanalyzed on 30Aug07. The results reported from samples analyzed on 29Aug07 and 30Aug07 have been qualified as estimations because they were obtained beyond the program holding time limitation.

BLANKS

Blanks are analyzed to evaluate various sources of sample contamination. Field blanks monitor sampling activities. Method blanks are analyzed to verify instrument integrity. Samples are considered compromised by conditions causing contamination in any blank. Any sample concentration less than 5 times the level determined in a blank must be qualified. The qualification criteria is extended to ten times the concentration observed in blanks for common laboratory artifacts. These include acetone, methylene chloride and 2-butanone. Chloroform is also frequently present as a laboratory artifact.

Three method blanks were analyzed with this group of samples. Each of these blanks demonstrated acceptable chromatography. Naphthalene was detected in one medium level method blank. The presence of this artifact, however, had no impact on reported data. Naphthalene was not reported from any sample associated with the contaminated blank.

MS TUNING

Mass spectrometer tuning and performance criteria are established to ensure sufficient mass resolution and sensitivity to accurately detect and identify targeted analytes. Verification is accomplished using a certified standard.

An Instrument Performance Check Standard of BFB was analyzed prior to each analytical sequence and during every 12-hour period of instrument operation. An Instrument Performance Check Form is

present for each BFB evaluation. The BFB tunes associated with this group of samples satisfied the program acceptance criteria.

CALIBRATION

Requirements for instrument calibration are established to ensure that laboratory equipment is capable of producing accurate, quantitative data. Initial calibrations demonstrate a range through which measurements may be made. Continuing calibration standards verify instrument stability.

Initial instrument calibrations were performed on 26Aug07 and 29Aug07. Standards of 5, 20, 50, 100 and 200 µg/l were included. The 26Aug07 calibration incorporated a heated purge. Each targeted analyte produced the required levels of instrument response and demonstrated an acceptable degree of linearity during both initial calibrations.

Continuing calibration checks were performed on 27Aug07 and 29Aug07, prior to each twelve-hour period of instrument operation that included samples from this program. When compared to the initial calibration, these checks demonstrated an acceptable degree of instrument stability.

SURROGATES

Each sample, blank and standard is spiked with surrogate compounds prior to analysis. The structures of surrogates are similar to analytes of interest, but they are not normally found in environmental samples. Surrogate recoveries are monitored to evaluate overall laboratory performance and the efficiency of laboratory technique.

Although Surrogate Summary Sheets were properly prepared, the laboratory applied its own acceptance criteria. However, when compared to the ASP requirements, acceptable recoveries were reported for the surrogate additions to this group of samples.

INTERNAL STANDARDS

Internal standards are added to each sample, blank and standard just prior to injection. Analyte concentrations are calculated relative to the response of a specific internal standard. Internal standard performance criteria ensure that GC/MS sensitivity and response are stable during the analysis of each sample. The area of internal standard peaks may not vary by more than 40%. When compared to the preceding calibration check, retention times may not vary by more than 20 seconds.

The laboratory correctly calculated control limits for internal standard response and retention times. When compared to these limits, acceptable performance was observed.

MATRIX SPIKES

Matrix spiking refers to the addition of known analyte concentrations to a sample, prior to analysis. Analyte recoveries provide an indication of laboratory accuracy. The analysis of a duplicate

spiked aliquot provides a measurement of precision.

MS/MSD samples were not analyzed with this group of samples.

Four spiked blanks (LCS) were analyzed with this delivery group. Each LCS produced an acceptable recovery of each targeted analyte.

DUPLICATES

Two aliquots of the same sample are processed separately through all aspects of sample preparation and analysis. Results produced by the analysis of this pair of samples are compared as a measurement of precision. Poor precision may be indicative of sample non-homogeneity, method defects or poor laboratory technique.

A field split duplicate sample was not identified in this delivery group.

REPORTED ANALYTES

Formal reports were provided for each sample. The data package also included total ion chromatograms and raw instrument printouts. Reference mass spectra were provided to confirm the identification of each targeted analyte that was detected in this group of samples. Reported concentrations, and CRDL's have been adjusted to reflect sample size and moisture content.

The identifications of ethylbenzene in 26D6772S0 and 4-isopropyltoluene in 37D387S0 were not conclusive, based on the mass spectra references included in the raw data. These analytes should be considered undetected in the affected samples.

Tentatively Identified Compounds (TIC) were not reported.

SUMMARY OF QUALIFIED DATA

One Bristol Avenue

SAMPLED: August 16, 2007

		SPECTRA ID ETHYLBENZENE	SPECTRA ID ISOPROPYLTOLUENE	HOLD TIME
22D34S0	F1161-01			
23D7177S0	F1161-02			
25D5961S0	F1161-03			
26D6772S0	F1161-04	10U		HT1 ALL DJ
29D665S0	F1161-05			HT2 DJ
30D775S0	F1161-06			ALL J/UJ/DJ
31D665S0	F1161-07			
32D668S0	F1161-08			
35D6267S0	F1161-09			
36D657S0	F1161-10			
37D387S0	F1161-11		40U	HT3 ALL DJ

HT1 = 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene
HT2 = 1,2,4-trimethylbenzene
HT3 = ethylbenzene, xylene, 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene

DATA VALIDATION REPORT

for

TVGA Consultants

1000 Maple Road

Elma, NY 14059

ONE BRISTOL AVENUE
Soil Samples
SDG: MF1161
Sampled 08/16/07

SEMIVOLATILE ORGANICS

22D34S0	F1161-01	23D7177S0	F1161-02
25D5961S0	F1161-03	26D6772S0	F1161-04
29D665S0	F1161-05	30D775S0	F1161-06
31D665S0	F1161-07	32D668S0	F1161-08
35D6267S0	F1161-09	36D657S0	F1161-10
	37D387S0	F1161-11	

DATA ASSESSMENT

A semivolatile organics data package containing analytical results for eleven soil samples was received from TVGA Consultants on 10Oct07. The ASP deliverables package included formal reports, raw data, the necessary QC, and supporting information. The samples, taken from the One Bristol Avenue site, were identified by Chain of Custody documents and traceable through the work of MITKEM Corporation, the laboratory contracted for analysis. Analyses, performed according to SW-846 Method 8270, addressed STARS list semivolatiles. Laboratory data was evaluated according to the quality assurance / quality control requirements of the New York State Department of Environmental Conservation's Analytical Services Protocol, September 1989, Rev. 07/2005. When the required protocol was not followed, the current EPA Region II Functional Guidelines (SOP HW-22, Rev 2, June 2001, Standard Operating Procedure for the Validation of Organic Data Acquired Using SW-846 Method 8270C (Rev 3, Dec 1996) was used as a technical reference.

The presence of benzo(a)anthracene in 25D5961S0 and 32D668S0, indeno(1,2,3-cd)pyrene and dibenzo(a,h)anthracene in 25D5961S0, and fluorene in 29D665S0 could not be conclusively confirmed, based on the mass spectra library searches included in the raw data. These analytes should be considered undetected in the affected samples.

30D775S0 was held in the laboratory for ten days prior to extraction and analysis. This exceeded the program limitation by five days. The results reported from 30D775S0 have been qualified as estimations due to this error.

CORRECTNESS AND USABILITY

Reported data should be considered technically defensible and completely usable in its present form. Reported concentrations that are felt to provide a usable estimation of the conditions being measured have been flagged "J" or "UJ". Estimated data should be used with caution. A detailed discussion of the review process follows.

Two facts should be considered by all data users. No compound concentration, even if it has passed all QC testing, can be guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error. Secondly. DATAVAL, Inc. guarantees the quality of this data assessment. However, DATAVAL, Inc. does not warrant any interpretation or utilization of this data by a third party.

Reviewer's signature: James B. Baldwin Date: 16NOV07

SAMPLE HISTORY

Analyte concentrations can deteriorate with time due to chemical instability, bacterial degradation or volatility. Samples that are not properly preserved or are not analyzed within established holding times may no longer be considered representative. Holding times are calculated from the Verified Time of Sample Receipt. Samples must remain chilled to 4°C between the time of collection and the time of analysis. Sample extractions must be completed within 5 days of receipt. Analyses must be completed within 40 days of extraction.

This sample delivery group contained eleven soil samples collected from the One Bristol Avenue site on 16Aug07. The samples were shipped to the laboratory via FedEx, arriving on 18Aug07. The samples arrived intact, packed with ice, with custody seals in place. A cooler temperature of 2°C was recorded at the time of receipt.

Every sample except 30D775S0 was extracted on 21Aug07 and analyzed on 27Aug07 or 28Aug07. 30D775S0 was extracted and analyzed on 28Aug07. The results obtained from 30D775S0 have been qualified as estimations because the program holding time limitation, prior to extraction, was exceeded by five days. The remaining samples were processed within the program holding time limitations.

BLANKS

Blanks are analyzed to evaluate various sources of sample contamination. Field blanks monitor sampling activities. Method blanks are analyzed to verify instrument integrity. Samples are considered compromised by conditions causing contamination in any blank. Any sample concentration less than 5 times the level determined in a blank must be qualified. The qualification criteria is extended to ten times the concentration observed in blanks for common laboratory artifacts. These include phthalate esters.

Two method blanks were analyzed with this group of samples. Both of these blanks produced acceptable chromatography and were free of targeted analyte contamination.

MS TUNING

Mass spectrometer tuning and performance criteria are established to ensure sufficient mass resolution and sensitivity to accurately detect and identify targeted analytes. Verification is accomplished using a certified standard.

An Instrument Performance Check Standard of DFTPP was analyzed prior to each analytical sequence and during every 12-hour period of instrument operation. An Instrument Performance Check Form is present for each DFTPP evaluation. The DFTPP tunes associated with this group of samples satisfied the program acceptance criteria.

CALIBRATION

Requirements for instrument calibration are established to ensure that laboratory equipment is capable of producing accurate,

quantitative data. Initial calibrations demonstrate a range through which measurements may be made. Continuing calibration standards verify instrument stability.

The initial instrument calibration was performance on 06Aug07. Standards of 5, 20, 50, 80, 120 and 160 ng were included. During this calibration, each targeted analyte produced acceptable levels of instrument response and demonstrated an acceptable degree of linearity.

Calibration verifications were performed on 28Aug07 and 30Aug07, prior to each twelve-hour period of instrument operation that included samples from this program. When compared to the initial instrument calibration, these checks demonstrated an acceptable level of instrument stability.

SURROGATES

Each sample, blank and standard is spiked with surrogate compounds prior to analysis. The structures of surrogates are similar to analytes of interest, but they are not normally found in environmental samples. Surrogate recoveries are monitored to evaluate overall laboratory performance and the efficiency of laboratory technique.

Although Surrogate Summary Sheets were properly prepared, the laboratory applied its own acceptance criteria. However, when compared to the ASP requirements acceptable surrogate performance was observed.

INTERNAL STANDARDS

Internal standards are added to each sample, blank and standard just prior to injection. Analyte concentrations are calculated relative to the response of a specific internal standard. Internal standard performance criteria ensure that GC/MS sensitivity and response are stable during the analysis of each sample. The area of internal standard peaks may not vary by more than a factor of two. When compared to the preceding calibration check, retention times may not vary by more than 30 seconds.

The laboratory correctly calculated control limits for internal standard response and retention times. When compared to this criteria, acceptable performance was indicated for the internal standard additions to each program sample.

MATRIX SPIKES

Matrix spiking refers to the addition of known analyte concentrations to a sample, prior to analysis. Analyte recoveries provide an indication of laboratory accuracy. The analysis of a duplicate spiked aliquot provides a measurement of precision.

MS/MSD samples were not analyzed with this group of samples.

Three spiked blanks (LCS) were analyzed with this delivery group. Each LCS produced an acceptable recovery of each targeted analyte.

DUPLICATES

Two aliquots of the same sample are processed separately through all aspects of sample preparation and analysis. Results produced by the analysis of this pair of samples are compared as a measurement of precision. Poor precision may be indicative of sample non-homogeneity, method defects or poor laboratory technique.

A field split duplicate was not identified in this delivery group.

SAMPLE INFORMATION

Formal reports were provided for each sample. The data package also included total ion chromatograms and raw instrument printouts. Reference mass spectra were provided to confirm the identification of each analyte that was detected in this group of samples. Reported concentrations have been adjusted to reflect sample size and moisture content.

The presence of benzo(a)anthracene in 25D5961S0 and 32D668S0, indeno(1,2,3-cd)pyrene and dibenzo(a,h)anthracene in 25D5961S0, and fluorene in 29D665S0 could not be conclusively confirmed, based on the mass spectra library searches included in the raw data. These analytes should be considered undetected in the affected samples.

Tentatively Identified Compounds (TIC) were not reported.

SUMMARY OF QUALIFIED DATA

One Bristol Avenue site

SAMPLED: August 16, 2007

		SPECTRA ID BENZO(a)ANTHRACENE	SPECTRA ID INDENO(1,2,3-CD)PYRENE	SPECTRA ID DIBENZO(A,H)ANTHRACENE	SPECTRA ID FLUORENE
22D34S0	F1161-01				
23D7177S0	F1161-02				
25D5961S0	F1161-03	400U	400U	400U	
26D6772S0	F1161-04				
29D665S0	F1161-05				380U
30D775S0	F1161-06				
31D665S0	F1161-07				
32D668S0	F1161-08	410U			
35D6267S0	F1161-09				
36D657S0	F1161-10				
37D387S0	F1161-11				

		HOLD TIME
22D34S0	F1161-01	
23D7177S0	F1161-02	
25D5961S0	F1161-03	
26D6772S0	F1161-04	
29D665S0	F1161-05	
30D775S0	F1161-06	ALL J/UJ
31D665S0	F1161-07	
32D668S0	F1161-08	
35D6267S0	F1161-09	
36D657S0	F1161-10	
37D387S0	F1161-11	

DATA USABILITY SUMMARY REPORT

for

TVGA Consultants

1000 Maple Road

Elma, NY 14059

ONE BRISTOL AVENUE
Soil Samples
SDG: MF1162
Sampled 08/16/07

VOLATILE ORGANICS

21D456S0	F1162-01	24D6877S0	F1162-02
28D6877S0	F1162-03	33D587S0	F1162-04
34D5567S0	F1162-05	38D0223S0	F1162-06

DATA ASSESSMENT

A volatile organics data package containing analytical results for six soil samples was received from TVGA Consultants on 10Oct07. The ASP deliverables package included formal reports, raw data, the necessary QC, and supporting information. The samples, taken from the One Bristol Avenue site, were identified by Chain of Custody documents and traceable through the work of MITKEM Corporation, the laboratory contracted for analysis. Analyses, performed according to SW-846 Method 8260, addressed Target Compound List analytes. Laboratory data was evaluated according to the quality assurance / quality control requirements of the New York State Department of Environmental Conservation's Analytical Services Protocol, September 1989, Rev. 07/2005. When the required protocol was not followed, the current EPA Region II Functional Guidelines (SOP HW-24, Rev 1, June 1999, Standard Operating Procedure for the Validation of Organic Data Acquired Using SW-846 Method 8260B (Rev 2, Dec 1996) was used as a technical reference.

The identifications of methylcyclohexane and xylene in 28D6877S0, and 2-hexanone and xylene in 33D587S0 were not conclusive, based on the mass spectra references included in the raw data. These analytes should be considered undetected in the affected samples.

The Tentatively Identified Compounds (TIC) reported from 28D6877S0, 33D587S0 and 34D5567S0 have been edited where necessary to provide appropriate identifications.

CORRECTNESS AND USABILITY

Reported data should be considered technically defensible and completely usable in its present form. Reported concentrations that are felt to provide a usable estimation of the conditions being measured have been flagged "J" or "UJ". Estimated data should be used with caution. A detailed discussion of the review process follows.

Two facts should be considered by all data users. No compound concentration, even if it has passed all QC testing, can be guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error. Secondly. DATAVAL, Inc. guarantees the quality of this data assessment. However, DATAVAL, Inc. does not warrant any interpretation or utilization of this data by a third party.

Reviewer's signature: James B. Baldwin Date: 16 NOV 07

SAMPLE HISTORY

Analyte concentrations can deteriorate with time due to chemical instability, bacterial degradation or volatility. Samples that are not properly preserved or are not analyzed within established holding times may no longer be considered representative. Holding times are calculated from the Verified Time of Sample Receipt (VTSR). Samples must remain chilled to 4°C between the time of collection and the time of analysis. Acid preserved VOA samples must be analyzed within 12 days of VTSR, unpreserved samples within 5 days. The holding time for soils is 10 days.

This sample delivery group contained six soil samples collected from the One Bristol Avenue site on 16Aug07. The samples were shipped to the laboratory via FedEx, arriving on 18Aug07. The samples arrived intact, packed with ice, with custody seals in place. A cooler temperature of 2°C was recorded at the time of receipt.

The VOA analyses were completed on 27Aug07 and 28Aug07. The program holding time limitations were satisfied.

BLANKS

Blanks are analyzed to evaluate various sources of sample contamination. Field blanks monitor sampling activities. Method blanks are analyzed to verify instrument integrity. Samples are considered compromised by conditions causing contamination in any blank. Any sample concentration less than 5 times the level determined in a blank must be qualified. The qualification criteria is extended to ten times the concentration observed in blanks for common laboratory artifacts. These include acetone, methylene chloride and 2-butanone. Chloroform is also frequently present as a laboratory artifact.

Two method blanks were analyzed with this group of samples. Both blanks demonstrated acceptable chromatography and were free of targeted analyte contamination.

MS TUNING

Mass spectrometer tuning and performance criteria are established to ensure sufficient mass resolution and sensitivity to accurately detect and identify targeted analytes. Verification is accomplished using a certified standard.

An Instrument Performance Check Standard of BFB was analyzed prior to each analytical sequence and during every 12-hour period of instrument operation. An Instrument Performance Check Form is present for each BFB evaluation. The BFB tunes associated with this group of samples satisfied the program acceptance criteria.

CALIBRATION

Requirements for instrument calibration are established to ensure that laboratory equipment is capable of producing accurate, quantitative data. Initial calibrations demonstrate a range through which measurements may be made. Continuing calibration

standards verify instrument stability.

The initial instrument calibration was performed on 27Aug07. Standards of 5, 20, 50, 100 and 200 µg/l were included. The calibration incorporated a heated purge. Each targeted analyte produced the required levels of instrument response and demonstrated an acceptable degree of linearity during the initial calibration.

A continuing calibration check was performed on 27Aug07, prior to the twelve-hour period of instrument operation that included samples from this program. When compared to the initial calibration, this check demonstrated an acceptable degree of instrument stability.

SURROGATES

Each sample, blank and standard is spiked with surrogate compounds prior to analysis. The structures of surrogates are similar to analytes of interest, but they are not normally found in environmental samples. Surrogate recoveries are monitored to evaluate overall laboratory performance and the efficiency of laboratory technique.

Surrogate Summary Sheets were properly prepared, the correct acceptance criteria applied. When compared to the ASP requirements, acceptable recoveries were reported for the surrogate additions to this group of samples.

INTERNAL STANDARDS

Internal standards are added to each sample, blank and standard just prior to injection. Analyte concentrations are calculated relative to the response of a specific internal standard. Internal standard performance criteria ensure that GC/MS sensitivity and response are stable during the analysis of each sample. The area of internal standard peaks may not vary by more than 40%. When compared to the preceding calibration check, retention times may not vary by more than 20 seconds.

The laboratory correctly calculated control limits for internal standard response and retention times. When compared to these limits, acceptable performance was observed.

MATRIX SPIKES

Matrix spiking refers to the addition of known analyte concentrations to a sample, prior to analysis. Analyte recoveries provide an indication of laboratory accuracy. The analysis of a duplicate spiked aliquot provides a measurement of precision.

21D456S0 was selected for matrix spiking. The correct mixture of analytes was added to two portions of this sample. The recoveries reported for these additions demonstrated acceptable levels of measurement precision and accuracy.

One spiked blank (LCS) was also analyzed with this delivery group.

The LCS also produced acceptable analyte recoveries.

DUPLICATES

Two aliquots of the same sample are processed separately through all aspects of sample preparation and analysis. Results produced by the analysis of this pair of samples are compared as a measurement of precision. Poor precision may be indicative of sample non-homogeneity, method defects or poor laboratory technique.

A field split duplicate sample was not identified in this delivery group.

REPORTED ANALYTES

Formal reports were provided for each sample. The data package also included total ion chromatograms and raw instrument printouts. Reference mass spectra were provided to confirm the identification of each targeted analyte that was detected in this group of samples. Reported concentrations, and CRDL's have been adjusted to reflect sample size and moisture content.

The identifications of methylcyclohexane and xylene in 28D6877S0, and 2-hexanone and xylene in 33D587S0 were not conclusive, based on the mass spectra references included in the raw data. These analytes should be considered undetected in the affected samples.

Tentatively Identified Compounds (TIC) were reported. A library search was conducted to provide an identification of each TIC. When these identifications were not felt to be conclusive Form 1F was edited to provide an appropriate identification. 28D6877S0, 33D587S0 and 34D5567S0 were affected.

SUMMARY OF QUALIFIED DATA

One Bristol Avenue

SAMPLED: August 16, 2007

		SPECTRA ID METHYLCYCLOHEXANE	SPECTRA ID XYLENE	SPECTRA ID 2-HEXANONE	SPECTRA ID TIC
21D456S0	F1162-01				
24D6877S0	F1162-02				
28D6877S0	F1162-03	13U	13U		CORRECT
33D587S0	F1162-04		5J	12U	CORRECT
34D5567S0	F1162-05				CORRECT
38D0223S0	F1162-06				

DATA VALIDATION REPORT

for

TVGA Consultants

1000 Maple Road

Elma, NY 14059

ONE BRISTOL AVENUE
Soil Samples
SDG: MF1162
Sampled 08/16/07

SEMIVOLATILE ORGANICS

21D456S0	F1162-01	24D6877S0	F1162-02
28D6877S0	F1162-03	33D587S0	F1162-04
34D5567S0	F1162-05	38D0223S0	F1162-06

DATA ASSESSMENT

A semivolatile organics data package containing analytical results for six soil samples was received from TVGA Consultants on 10Oct07. The ASP deliverables package included formal reports, raw data, the necessary QC, and supporting information. The samples, taken from the One Bristol Avenue site, were identified by Chain of Custody documents and traceable through the work of MITKEM Corporation, the laboratory contracted for analysis. Analyses, performed according to SW-846 Method 8270, addressed Target Compound List analytes. Laboratory data was evaluated according to the quality assurance / quality control requirements of the New York State Department of Environmental Conservation's Analytical Services Protocol, September 1989, Rev. 07/2005. When the required protocol was not followed, the current EPA Region II Functional Guidelines (SOP HW-22, Rev 2, June 2001, Standard Operating Procedure for the Validation of Organic Data Acquired Using SW-846 Method 8270C (Rev 3, Dec 1996) was used as a technical reference.

The identifications of naphthalene in 33D587S0 and 34D5567S0, acenaphthene in 34D5567S0, and benzaldehyde in 38D0223S0 were not conclusive, based on the mass spectra references included in the raw data. These analytes should be considered undetected in the affected samples.

The Tentatively Identified Compounds (TIC) reported from 24D6877S0, 28D6877S0, 33D587S0, 34D5567S0 and 38D0223S0 have been edited where necessary to provide more appropriate identifications.

The concentrations of bis(2-ethylhexyl)phthalate found in this group of samples are assumed to represent laboratory artifacts. Bis(2-ethylhexyl)phthalate should be considered undetected in the affected sample.

The TIC identifications from 24D6877S0, 28D6877S0 and 33D587S0 have been edited tp remove reported analytes that were also present in the associated blanks.

Benzaldehyde, n-nitroso-di-n-propylamine, 4,6-dinitro-2-methyl-phenol and 3,3'-dichlorobenzidine demonstrated poor calibration performance. These analytes have been qualified as estimations in associated samples,

CORRECTNESS AND USABILITY

Reported data should be considered technically defensible and completely usable in its present form. Reported concentrations that are felt to provide a usable estimation of the conditions being measured have been flagged "J" or "UJ". Estimated data should be used with caution. A detailed discussion of the review process follows.

Two facts should be considered by all data users. No compound concentration, even if it has passed all QC testing, can be guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error. Secondly. DATAVAL, Inc. guarantees the quality of this data assessment. However, DATAVAL, Inc. does not warrant any interpretation or utilization of this data by a third party.

Reviewer's signature: James B. Baldwin Date: 16 NOV 07

SAMPLE HISTORY

Analyte concentrations can deteriorate with time due to chemical instability, bacterial degradation or volatility. Samples that are not properly preserved or are not analyzed within established holding times may no longer be considered representative. Holding times are calculated from the Verified Time of Sample Receipt. Samples must remain chilled to 4°C between the time of collection and the time of analysis. Sample extractions must be completed within 5 days of receipt. Analyses must be completed within 40 days of extraction.

This sample delivery group contained six soil samples collected from the One Bristol Avenue site on 16Aug07. The samples were shipped to the laboratory via FedEx, arriving on 18Aug07. The samples arrived intact, packed with ice, with custody seals in place. A cooler temperature of 2°C was recorded at the time of receipt.

The samples were extracted with GPC cleanup on 22Aug07. Each sample was analyzed in a run that spanned 05Sep07 and 06Sep07. 21D456S0 and 38D0223S0 were reanalyzed on 11Sep07 due to poor surrogate standard recoveries. The program holding time limitations were satisfied.

BLANKS

Blanks are analyzed to evaluate various sources of sample contamination. Field blanks monitor sampling activities. Method blanks are analyzed to verify instrument integrity. Samples are considered compromised by conditions causing contamination in any blank. Any sample concentration less than 5 times the level determined in a blank must be qualified. The qualification criteria is extended to ten times the concentration observed in blanks for common laboratory artifacts. These include phthalate esters.

Two method blanks were analyzed with this group of samples. Both of these blanks produced acceptable chromatography. One blank contained traces of bis(2-ethylhexyl)phthalate. The blanks also contained Tentatively Identified Compounds eluting at 6.88, 6.91, 8.42, 14.56, 15.18 and 18.24 minutes. A similar phthalate artifact was present in every sample except 33D587S0 and 34D5567S0. The phthalate should be interpreted as undetected in the affected samples. Artifacts similar to the TIC's seen in blanks have been removed from the reports of 24D6877S0, 28D6877S0 and 33D587S0.

MS TUNING

Mass spectrometer tuning and performance criteria are established to ensure sufficient mass resolution and sensitivity to accurately detect and identify targeted analytes. Verification is accomplished using a certified standard.

An Instrument Performance Check Standard of DFTPP was analyzed prior to each analytical sequence and during every 12-hour period of instrument operation. An Instrument Performance Check Form is present for each DFTPP evaluation. The laboratory used the SW-846 acceptance criteria to evaluate DFTPP performance. However, when

the ASP requirements were applied, elevated signals were observed for m/e = 51 and 127. These slight errors were not seen to affect reported data.

CALIBRATION

Requirements for instrument calibration are established to ensure that laboratory equipment is capable of producing accurate, quantitative data. Initial calibrations demonstrate a range through which measurements may be made. Continuing calibration standards verify instrument stability.

Initial instrument calibrations were performance on 05Sep07 and 10Sep07. Standards of 5, 20, 50, 80, 120 and 160 ng were included. During both of these calibrations, each targeted analyte produced acceptable levels of instrument response and demonstrated an acceptable degree of linearity.

Calibration verifications were performed on 05Sep07 and 11Sep07, prior to each twelve-hour period of instrument operation that included samples from this program. When compared to the initial instrument calibrations, these checks demonstrated an unacceptable shift in the response of benzealdehyde on 05Sep07, and benzaldehyde, n-nitroso-di-n-propylamine, 4,6-dinitro-2-methyl-phenol and 3,3'-dichlorobenzidine on 11Sep07. These analytes have been qualified as estimations in associated samples.

SURROGATES

Each sample, blank and standard is spiked with surrogate compounds prior to analysis. The structures of surrogates are similar to analytes of interest, but they are not normally found in environmental samples. Surrogate recoveries are monitored to evaluate overall laboratory performance and the efficiency of laboratory technique.

Surrogate Summary Sheets were properly prepared, the correct acceptance criteria applied. The surrogate additions to this group of samples produced low recoveries of 2-fluorophenol and 2,4,6-tribromophenol from 21D456S0, and of phenol-d5, 2-fluorophenol, 2,4,6-tribromophenol and 2-chlorophenol-d4 from 38D0223S0. Repeated analyses of both samples produced acceptable surrogate performance. The results obtained from the second analysis of 21D456S0 and 38D0223S0 should be included in data tables. Data qualifications are not required.

INTERNAL STANDARDS

Internal standards are added to each sample, blank and standard just prior to injection. Analyte concentrations are calculated relative to the response of a specific internal standard. Internal standard performance criteria ensure that GC/MS sensitivity and response are stable during the analysis of each sample. The area of internal standard peaks may not vary by more than a factor of two. When compared to the preceding calibration check, retention times may not vary by more than 30 seconds.

The laboratory correctly calculated control limits for internal standard response and retention times. When compared to this criteria, acceptable performance was indicated for the internal standard additions to each program sample. One exception is noted. Although a low response was reported for the perylene-d12 addition to 38D0223S0, an acceptable response was obtained when the sample was reanalyzed. Data qualifications are not required.

MATRIX SPIKES

Matrix spiking refers to the addition of known analyte concentrations to a sample, prior to analysis. Analyte recoveries provide an indication of laboratory accuracy. The analysis of a duplicate spiked aliquot provides a measurement of precision.

21D456S0 was selected for matrix spiking. The correct mixture of analytes was added to two portions of this sample. The recoveries reported for these spikes demonstrated acceptable levels of measurement precision and accuracy. It is noted that the initial analysis of the matrix spike duplicate (MSD) produced very poor results. However, the MSD was reanalyzed due to poor surrogate standard performance. The spike results from the second analysis were acceptable.

Two spiked blanks (LCS) were also created with this group of samples. Both produced acceptable analyte recoveries. It is noted that a 2,4-dinitrotoluene recovery of 100% was reported from one spiked blank. Although above the ASP acceptance criteria, data has not been qualified due to this performance.

DUPLICATES

Two aliquots of the same sample are processed separately through all aspects of sample preparation and analysis. Results produced by the analysis of this pair of samples are compared as a measurement of precision. Poor precision may be indicative of sample non-homogeneity, method defects or poor laboratory technique.

A field split duplicate was not identified in this delivery group.

SAMPLE INFORMATION

Formal reports were provided for each sample. The data package also included total ion chromatograms and raw instrument printouts. Reference mass spectra were provided to confirm the identification of each analyte that was detected in this group of samples. Reported concentrations have been adjusted to reflect sample size and moisture content.

The presence of naphthalene 33D587S0 and 34D5567S0, acenaphthene in 34D5567S0, and benzaldehyde in 38D0223S0 could not be conclusively confirmed, based on the mass spectra library searches included in the raw data. These analytes should be considered undetected in the affected samples.

Tentatively Identified Compounds (TIC) were reported. A library search was conducted to provide an identification of each TIC.

When these identifications were not felt to be conclusive, Form 1F was edited to provide an appropriate identification. 24D6877S0, 28D6877S0, 33D587S0, 34D5567S0 and 38D0223S0 were affected.

SUMMARY OF QUALIFIED DATA

One Bristol Avenue site

SAMPLED: August 16, 2007

		BLANK PHTHALATE	BLANK TIC	CALIBRATE CAL1	CALIBRATE CAL2	MS ID NAPHTHALENE	MS ID ACENAPHTHENE	MS ID CAL 1
21D456S0	F1162-01	160U			ALL UJ			
24D6877S0	F1162-02	390U	REMOVE	UJ				
28D6877S0	F1162-03	380U	REMOVE	UJ				
33D587S0	F1162-04		REMOVE	UJ		380U		
34D5567S0	F1162-05			UJ		400U	400U	
38D0223S0	F1162-06	350U			ALL UJ			350U

CAL1 = benzaldehyde
CAL2 = benzaldehyde, n-nitroso-di-n-propylamine, 4,6-dinitro-2-methyl-phenol, 3,3'-dichlorobenzidine

		MS ID TIC
21D456S0	F1162-01	
24D6877S0	F1162-02	CORRECT
28D6877S0	F1162-03	CORRECT
33D587S0	F1162-04	CORRECT
34D5567S0	F1162-05	CORRECT
38D0223S0	F1162-06	CORRECT

DATA USABILITY SUMMARY REPORT

for

TVGA Consultants

1000 Maple Road

Elma, NY 14059

ONE BRISTOL AVENUE
Soil Samples
SDG: MF1162
Sampled 08/16/07

PESTICIDES / PCB

21D456S0	F1162-01	24D6877S0	F1162-02
28D6877S0	F1162-03	33D587S0	F1162-04
34D5567S0	F1162-05	38D0223S0	F1162-06

DATA ASSESSMENT

A PEST/PCB data package containing analytical results for six soil samples was received from TVGA Consultants on 10Oct07. The ASP deliverables package included formal reports, raw data, the necessary QC, and supporting information. The samples, taken from the One Bristol Avenue site, were identified by Chain of Custody documents and traceable through the work of MITKEM Corporation, the laboratory contracted for analysis. Analyses, performed according to the CLP Pest/PCB method, addressed Target Compound List analytes. Laboratory data was evaluated according to the quality assurance / quality control requirements of the New York State Department of Environmental Conservation's Analytical Services Protocol, September 1989, Rev. 07/2005.

The positive Dieldrin result from 21D456S0, and the Endrin Ketone and gamma-Chlordane concentrations from 38D0223S0 have been qualified as estimations because the results obtained from the confirmation column differed from the reported concentrations by more than 25%. The 4,4'-DDT result from 38D0223S0 has been similarly qualified, but the identification is also presumptive. The Heptachlor Epoxide result from 28D6877S0, and the beta-BHC, Dieldrin and Endrin results from 38D0223S0 have been rejected because the reported concentrations and the conformational results differed by more than 100%.

CORRECTNESS AND USABILITY

Reported data should be considered technically defensible and completely usable its present form. Reported concentrations that are felt to provide a usable estimation of the conditions being measured have been flagged "J", "NJ" or "UJ". Results that are felt to be unreliable have been identified with a single red line and flagged "R". Rejected data should not be included in data tables. Estimated data should be used with caution. A detailed discussion of the review process follows.

Two facts should be considered by all data users. No compound concentration, even if it has passed all QC testing, can be guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error. Secondly. DATAVAL, Inc. guarantees the quality of this data assessment. However, DATAVAL, Inc. does not warrant any interpretation or utilization of this data by a third party.

Reviewer's signature: James B. Baldwin Date: 16 NOV 07

SAMPLE HISTORY

Analyte concentrations can deteriorate with time due to chemical instability, bacterial degradation or volatility. Samples that are not properly preserved or are not analyzed within established holding times may no longer be considered representative. Holding times are calculated from the Verified Time of Sample Receipt (VTSR). Samples must remain chilled to 4°C between the time of collection and the time of analysis. PCB samples must be extracted within 5 days of receipt and analyzed within 40 days of extraction.

This sample delivery group contained six soil samples collected from the One Bristol Avenue site on 16Aug07. The samples were shipped to the laboratory via FedEx, arriving on 18Aug07. The samples arrived intact, packed with ice, with custody seals in place. A cooler temperature of 2°C was recorded at the time of receipt.

The samples were extracted with GPC and sulfur cleanup on 22Aug07 and analyzed on 10Sep07 and 11Sep07. The program holding time limitations were satisfied.

BLANKS

Blanks are analyzed to evaluate various sources of sample contamination. Field blanks monitor sampling activities. Method blanks are analyzed to verify instrument integrity. Samples are considered compromised by conditions causing contamination in any blank. Any sample concentration less than 5 times the level determined in a blank must be qualified.

Two method blanks were analyzed with this group of samples. Both of these blanks demonstrated acceptable chromatography and was free of target analyte contamination.

CALIBRATION

Requirements for instrument calibration are established to ensure that laboratory equipment is capable of producing accurate, quantitative data. Initial calibrations demonstrate a range through which measurements may be made. Continuing calibration standards verify instrument stability.

Initial instrument calibrations were performed on an analytical column and a confirmation column (CLPPEST and CLPPESTII) on 10Sep07. The calibrations for each single component analyte included three levels of concentration that demonstrated an acceptable degree of linearity on both chromatographic columns. A resolution check standard demonstrated acceptable levels of column performance. A Performance Evaluation Mixture (PEM) demonstrated acceptable levels of Endrin and DDT breakdown. Response factors were established for three chromatographic peaks of each multicomponent analyte at a single level of concentration.

Program samples were bracketed by a Performance Evaluation Mixture (PEM) and a pair of single component analyte mixtures (INDAM and

INDBM). The INDAM standards demonstrated acceptable levels of instrument stability. Unacceptable drifts ere observed in the response of each single component analyte included in INDBM, on both chromatographic columns. The results obtained from this group of samples have been qualified as estimations based on this performance.

SURROGATES

Each sample, blank and standard is spiked with surrogate compounds prior to analysis. The structures of surrogates are similar to analytes of interest, but they are not normally found in environmental samples. Surrogate recoveries are monitored to evaluate overall laboratory performance and the efficiency of laboratory technique.

Surrogate Summary Sheets were properly prepared, the correct acceptance criteria applied. The recoveries reported for the surrogate additions to this group of samples satisfied program requirements.

MATRIX SPIKES

Matrix spiking refers to the addition of known analyte concentrations to a sample, prior to analysis. Analyte recoveries provide an indication of laboratory accuracy. The analysis of a duplicate spiked aliquot provides a measurement of precision.

21D456S0 was selected for matrix spiking. Additions to two portions of this sample demonstrated acceptable levels of measurement precision and accuracy.

One spiked blank (LCS) was created and analyzed with this group of samples. This LCS produced an acceptable recovery of each spiked analyte.

DUPLICATES

Two aliquots of the same sample are processed separately through all aspects of sample preparation and analysis. Results produced by the analysis of this pair of samples are compared as a measurement of precision. Poor precision may be indicative of sample non-homogeneity, method defects or poor laboratory technique.

A field split duplicate was not included in this delivery group.

REPORTED ANALYTES

Formal reports were provided for each sample. Reported concentrations and CRDL's have been adjusted to reflect sample size, moisture content, and dilutions.

Several targeted analytes were detected in this group of samples. In most cases, however, the reported concentrations and the results obtained from the confirmation column differed significantly. The qualifications necessitated by this performance are summarized below.

SAMPLE	ANALYTE	DIFFERENCE (%)	REPORTED
21D456S0	Dieldrin	27	6.4J
28D6877S0	Heptachlor Epoxide	837	REJECT
38D0223S0	Beta BHC	171	REJECT
	Dieldrin	>999	REJECT
	4,4'-DDE	6.8	4.4
	Endrin	>999	REJECT
	4,4'-DDT	58	5.7JN
	Endrin Ketone	30	3.7J
	Gamma-Chlordane	25	12J

SUMMARY OF QUALIFIED DATA

One Bristol Avenue

SAMPLED: August 16, 2007

		CALIBRATE	CONFIRM DIELDRIN	CONFIRM HEPT EPOXIDE	CONFIRM C1
21D456S0	F1162-01	ALL J/UJ	6.4J		
24D6877S0	F1162-02	ALL UJ			
28D6877S0	F1162-03	ALL J/UJ		REJECT	
33D587S0	F1162-04	ALL UJ			
34D5567S0	F1162-05	ALL UJ			
38D0223S0	F1162-06	ALL J/UJ			ALL R/J/JN

C1 = beta-BHC, Dieldrin, Endrin, 4,4'-DDT, Endrin Ketone, gamma-Chlordane

DATA USABILITY SUMMARY REPORT

for

TVGA Consultants

1000 Maple Road

Elma, NY 14059

ONE BRISTOL AVENUE
Soil Samples
SDG: MF1162
Sampled 08/16/07

HERBICIDES

21D456S0	1029397
28D6877S0	1029398
38D0223S0	1029399

DATA ASSESSMENT

A Herbicide data package containing analytical results for three soil samples was received from TVGA Consultants on 10Oct07. The ASP deliverables package included formal reports, raw data, the necessary QC, and supporting information. The samples, taken from the One Bristol Avenue site, were identified by Chain of Custody documents and traceable through the work of Columbia Analytical Services (CAS), the laboratory subcontracted by MITKEM Corporation, for analysis. Analyses, performed according to SW-846 Method 8151, addressed determinations of 2,4-D, Dicamba, 2,4,5-T and 2,4,5-TP. Laboratory data was evaluated according to the quality assurance / quality control requirements of the New York State Department of Environmental Conservation's Analytical Services Protocol, September 1989, Rev. 07/2005 and the cited method.

The results from this group of samples have been qualified as estimations because the five day holding time limitation prior to extraction was exceeded by six days.

The 2,4,5-T results from this delivery group have been qualified as estimations due to poor calibration performance.

CORRECTNESS AND USABILITY

Reported data should be considered technically defensible and completely usable its present form. Reported concentrations that are felt to provide a usable estimation of the conditions being measured have been flagged "UJ". Estimated data should be used with caution. A detailed discussion of the review process follows.

Two facts should be considered by all data users. No compound concentration, even if it has passed all QC testing, can be guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error. Secondly. DATAVAL, Inc. guarantees the quality of this data assessment. However, DATAVAL, Inc. does not warrant any interpretation or utilization of this data by a third party.

Reviewer's signature: James B. Baldwin Date: 16NOV07

SAMPLE HISTORY

Analyte concentrations can deteriorate with time due to chemical instability, bacterial degradation or volatility. Samples that are not properly preserved or are not analyzed within established holding times may no longer be considered representative. Holding times are calculated from the Verified Time of Sample Receipt (VTSR). Samples must remain chilled to 4°C between the time of collection and the time of analysis. Herbicide samples must be extracted within 5 days of receipt and analyzed within 40 days of extraction.

This sample delivery group contained three soil samples collected from the One Bristol Avenue site on 16Aug07. The samples were shipped to the laboratory via FedEx, arriving on 18Aug07. The samples arrived intact, packed with ice, with custody seals in place. A cooler temperature of 2°C was recorded at the time of receipt. The samples were shipped to CAS, via FedEx, on 20Aug07. They arrived the next morning. Again, the samples arrived intact, chilled with ice, with custody seals in place.

CAS held this group of samples in the laboratory for eight days prior to being extracted on 29Aug07. This resulted in a total holding time of eleven days from the date they were originally received by METCHEM. Analyses were completed on 30Aug07. The results reported from this group of samples have been qualified as estimations because the holding time limitation, prior to extraction, was exceeded.

BLANKS

Blanks are analyzed to evaluate various sources of sample contamination. Field blanks monitor sampling activities. Method blanks are analyzed to verify instrument integrity. Samples are considered compromised by conditions causing contamination in any blank. Any sample concentration less than 5 times the level determined in a blank must be qualified.

One method blank was analyzed with this group of samples. This blank demonstrated acceptable chromatography and was free of target analyte contamination.

CALIBRATION

Requirements for instrument calibration are established to ensure that laboratory equipment is capable of producing accurate, quantitative data. Initial calibrations demonstrate a range through which measurements may be made. Continuing calibration standards verify instrument stability.

The initial instrument calibration was performed on an analytical column and a confirmation column (DB-1701 and DB-17) on 07Aug07. The calibrations for each analyte included five levels of concentration that demonstrated an acceptable degree of linearity on both chromatographic columns.

Program samples were bracketed by calibration verification

standards. The check preceding the analysis of program samples demonstrated an acceptable level of instrument stability. The check following samples revealed an unacceptable shift in the response of 2,4,5-T. The 2,4,5-T results reported from this group of samples have been qualified as estimations based on this performance.

SURROGATES

Each sample, blank and standard is spiked with surrogate compounds prior to analysis. The structures of surrogates are similar to analytes of interest, but they are not normally found in environmental samples. Surrogate recoveries are monitored to evaluate overall laboratory performance and the efficiency of laboratory technique.

Surrogate Summary Sheets were not prepared. Surrogate recoveries were reported on each Form 1. The recoveries reported for the surrogate additions to this group of samples satisfied the acceptance criteria defined by SW-846.

MATRIX SPIKES

Matrix spiking refers to the addition of known analyte concentrations to a sample, prior to analysis. Analyte recoveries provide an indication of laboratory accuracy. The analysis of a duplicate spiked aliquot provides a measurement of precision.

An MS/MSD pair was not prepared with this group of samples.

One spiked blank (LCS) was created and analyzed with this group of samples. This LCS produced an acceptable recovery of each targeted analyte.

DUPLICATES

Two aliquots of the same sample are processed separately through all aspects of sample preparation and analysis. Results produced by the analysis of this pair of samples are compared as a measurement of precision. Poor precision may be indicative of sample non-homogeneity, method defects or poor laboratory technique.

A field split duplicate was not included in this delivery group.

REPORTED ANALYTES

Formal reports were provided for each sample. Reported concentrations and CRDL's have been adjusted to reflect sample size and moisture content.

SUMMARY OF QUALIFIED DATA

One Bristol Avenue

SAMPLED: August 16, 2007

		HOLD TIME	CALIBRATE 2,4,5-T
21D456S0	F1162-01	ALL UJ	UJ
28D6877S0	F1162-03	ALL UJ	UJ
38D0223S0	F1162-06	ALL UJ	UJ

DATA USABILITY SUMMARY REPORT

for

TVGA Consultants

1000 Maple Road

Elma, NY 14059

ONE BRISTOL AVENUE
Soil Samples
SDG: MF1162
Sampled 08/16/07

METALS

21D456S0	F1162-01	24D6877S0	F1162-02
28D6877S0	F1162-03	33D587S0	F1162-04
34D5567S0	F1162-05	38D0223S0	F1162-06

DATA ASSESSMENT

An inorganics data package containing analytical results from six soil samples was received from TVGA Consultants on 10Oct07. The ASP deliverables package included formal reports, raw data, the necessary QC, and supporting information. The samples, taken from the One Bristol Avenue site, were identified by Chain of Custody documents and traceable through the work of MITKEM Corporation, the laboratory contracted for analysis. Analyses, performed according to SW-846 methods, addressed Target Adnalyte List metals. Laboratory data was evaluated according to the quality assurance / quality control requirements of the New York State Department of Environmental Conservation's Analytical Services Protocol, September 1989, Rev. 07/2005. When the required protocol was not followed, the current EPA Region II Functional Guidelines (SOW HW-2, Rev. 13, Sep. 2005, Evaluation of Metals Data for the Contract Laboratory Program) was used as a technical reference.

The lead result from 21D456S0 and all selenium results have been qualified as estimations due to poor CRDL performance.

The antimony results from this delivery group have been qualified as estimations due to a low matrix spike recovery.

Cyanide, antimony, iron and mercury results have been qualified as estimations due to low LCS recoveries.

The magnesium and zinc results from this group of samples have been qualified as estimations due to poor serial dilution performance.

CORRECTNESS AND USABILITY

Reported data should be considered technically defensible and completely usable its present form. Reported concentrations that are felt to provide a usable estimation of the conditions being measured have been flagged "J", "NJ" or "UJ". Estimated data should be used with caution. A detailed discussion of the review process follows.

Two facts should be considered by all data users. No compound concentration, even if it has passed strict QC testing, can be guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error. Secondly, DATAVAL, Inc. guarantees the quality of this data

assessment. However, DATAVAL, Inc. does not warrant any interpretation or utilization of this data by a third party.

Reviewer's signature: James B. Baldwin Date: 16NOV07

SAMPLE HISTORY

Sample holding times are calculated between the Verified Time of Sample Receipt (VTSR) and the time of analysis. Mercury samples must be analyzed within 26 days of receipt; the remaining metals within 180 days.

This sample delivery group contained six soil samples collected from the One Bristol Avenue site on 16Aug07. The samples were shipped to the laboratory via FedEx, arriving on 18Aug07. The samples arrived intact, packed with ice, with custody seals in place. A cooler temperature of 2°C was recorded at the time of receipt.

The digestions and distillations for ICP metals, mercury and cyanide were performed on 28Aug07 and 29Aug07. Analyses were completed between 29Aug07 and 05Sep07. The program holding time limitations were satisfied.

CALIBRATIONS

Calibration curves are constructed, using certified materials, to define the linear range of each analytical instrument. Beyond this range, measurements cannot be made with confidence. The calibration curve is immediately tested by analyzing an initial calibration verification standard (ICV). Continuing verifications (CCV) must bracket each group of up to ten samples. ICV and CCV recoveries must meet established criteria.

Each instrument calibration was immediately verified by the analysis of an ICV standard. Continuing calibration checks were made following each group of 10 samples. These checks demonstrated acceptable levels of instrument performance and stability.

CONTRACT REQUIED DETECTION LIMIT STANARDS (CRDL)

To verify instrument linearity near CRDL, an ICP standard at a concentration of twice CRDL (CRI) is analyzed at the beginning and end of each analytical sequence. A standard equaling CRDL (CRA) must be included in each atomic adsorption sequence. CRDL standards must produce recoveries between 70% and 130%.

The CRDL results reported by the laboratory included unacceptably high recoveries of lead (140%) and selenium (171%,142%). The lead result from 21D456S0 and all selenium results have been qualified as estimations due to this performance.

BLANKS

Blanks are analyzed to evaluate various sources of sample contamination. Field blanks monitor sampling activities. Preparation blanks are carried through the digestion process with each group of samples to evaluate general laboratory technique. Calibration blanks are run periodically to verify instrument integrity. Samples are considered compromised by conditions causing contamination in any blank.

An initial blank (ICB) was analyzed following the calibration in each analytical sequence. Additional blanks were analyzed after every ten samples (CCB) and at the end of each sequence. A preparation blank was digested and analyzed with this group of samples. Each laboratory prepared blank was free of targeted analyte contamination exceeding CRDL.

INTERFERENCE CHECK SAMPLE (ICS)

ICS standards are analyzed at the beginning and end of each ICP analysis sequence to verify background and inter-element correction factors. The recoveries of specified analytes are measured in the presence of interfering concentrations of aluminum, calcium, magnesium and iron.

Interference check standards, ICSA and ICSAB, were reported from the beginning and end of each ICP analysis sequence. Each interference check demonstrated acceptable performance.

PREDIGESTION SPIKE

The recovery of spike concentrations added to samples prior to digestion and analysis demonstrates measurement bias caused by sample matrix effects. Predigestion spikes must be recovered within control limits of 75% - 125%.

21D456S0 was selected for matrix spiking. Each targeted analyte was added to this sample. With one exception, the recoveries reported for these additions demonstrated an acceptable level of measurement accuracy.

A low recovery of 27% was reported for the antimony addition. The antimony results reported from this group of samples have been qualified as estimations based on this indication of negative bias.

DUPLICATES

Two aliquots of the same sample are processed separately through all aspects of sample preparation and analysis. Results produced by this pair of samples are compared as a measurement

of precision. Poor precision may be indicative of sample non-homogeneity, method defects, or poor laboratory technique.

21D456S0 was prepared as a laboratory split duplicate. The concentrations reported from this pair of samples demonstrated an acceptable level of measurement precision.

LABORATORY CONTROL STANDARD

Laboratory control samples are prepared by adding analytes to clean sand or reagent water. Analyte concentrations are then determined without interferences caused by sample matrix effects.

A solid LCS standard was digested and analyzed with this group of samples. The recoveries reported from this sample included unacceptably low recoveries of cyanide (58%), antimony (54%), iron (66%) and mercury (54%). The cyanide, antimony, iron and mercury results from this delivery group have been qualified as estimations based on this indication of bias.

SERIAL DILUTION SAMPLE

Possible matrix effects are verified by the process of serial dilutions. Samples are diluted 1:5 to reduce matrix contributions that might bias measurements. The original sample result, and the corrected concentration of the diluted sample are compared. Sample data is qualified if the original concentrations are not recovered within 10%. Analytes with initial concentrations below 50 times IDL are not considered.

21D456S0 was prepared as a serial dilution. Of the analytes present in the undiluted aliquot of this sample, at a concentration exceeding fifty times IDL, only the magnesium and zinc results from the diluted sample differed from the initial measurements by more than 10%. Magnesium and zinc results have been qualified as estimations.

DATA QUALIFICATIONS

One Bristol Avenue

SAMPLED: August 16, 2007

		CRDL LEAD	CRDL SELENIUM	SPIKES ANTIMONY	SER DILUTE MAGNESIUM	SER DILUTE ZINC	LCS LCS 1
21D456S0	F1162-01	4.4J	0.26J	1.2BJ	9770J	39.6J	ALL J/BJ/UJ
24D6877S0	F1162-02		1.6J	1.6BJ	10200J	34.4J	ALL J/BJ/UJ
28D6877S0	F1162-03		2.1J	1.7BJ	9990J	36.4J	ALL J/BJ/UJ
33D587S0	F1162-04		1.5J	2.2BJ	9670J	38.0J	ALL J/BJ/UJ
34D5567S0	F1162-05		0.72J	2.3BJ	8810J	37.0J	ALL J/BJ/UJ
38D0223S0	F1162-06		1.9J	2.3BJ	21400J	123J	ALL J/BJ

LCS 1 = cyanide, antimony, iron, mercury

APPENDIX F

ANALYTICAL RESULTS REPORTS