Site Investigation Report:

Tifft and Hopkins Site
(NYSDEC #915131)

Prepared For:

Honeywell

101 Columbia Road
Morristown, New Jersey

Prepared By:

PARSONS

180 Lawrence Bell Drive, Suite 104
Williamsville, New York 14221
Phone: (716) 633-7074
Fax: (716) 633-7195

REVIEWED AND APPROVED BY:

Project Manager: _____ _____
Date

Technical Manager: _____ _____
Date

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1.4 ORGANIZATION OF REPORT

This report documents the results of the site investigation completed in February 2003, and the supplemental investigation completed in November 2003.

The report is organized as follows:

- Section 1-Introduction, describes the project background, project purpose and objectives and the report organization.
- Section 2-Site Description, describes the site location, site history, land use, topography, and previous investigations.
- Section 3-Subsurface Investigation, discusses the subsurface investigation, shallow groundwater investigation, geotechnical investigation, and the site survey.
- Section 4-Results, details the results of the investigation. Site geology and hydrogeology findings are summarized, and the subsurface fill and groundwater analytical results are presented.
- Section 5-Conclusions, includes a discussion of the results and a summary of the impacts to the Site.
- Section 6-References, provides a list of references used in the preparation of this report.

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SECTION 1
INTRODUCTION

1.1 PROJECT BACKGROUND

The Tifft and Hopkins Street Site (Site) is listed in the Registry of Inactive Hazardous Waste Disposal Sites in New York State as Site #915131. The listed Site includes 666 Tifft Street and 360 Hopkins Street in the City of Buffalo, Erie County, New York. A site location map is included as Figure 1.

In 1985, during the excavation of a water main located in the paper road known as Providence Street, the City of Buffalo exposed a layer of black, granular, odorous material approximately 4 to 7 feet below the parking lot (E.C. Jordan, 1991).

Since 1985, three investigations of the property have been completed. Between 1991 and 1998, investigations involving the excavation of test pits and direct push (Geoprobe®) borings were completed by the New York State Department of Environmental Conservation (NYSDEC). These previous investigations include:

- E.C. Jordan Co., 1991, Preliminary Site Assessment, Tifft and Hopkins Street Site, City of Buffalo, New York.
- ABB Environmental Services, 1993. Preliminary Site Assessment Evaluation Report of Initial Data, Volume I, Tifft and Hopkins Street Site, City of Buffalo, New York.
- NYSDEC, 1998. Tifft and Hopkins Street (915131) Immediate Investigation Work Assignment Report.

During these investigations, visual screening and laboratory analysis of samples were used to describe the materials encountered. The historical sampling locations are shown on the Site plan (Figure 2).

In 1998, the NYSDEC conducted a limited investigation of the Site under the Immediate Investigation Work Assignment (IIWA) Program.

The "target material" described in the 1998 IIWA report was a greenish-gray to black, fine, iridescent, granular debris resembling roughly processed carborundum (NYSDEC, 1998). Carborundum was made from refractory-type processing and is very similar in composition and physical properties to wastes from steel-making operations. Chemical compounds were detected with concentrations exceeding the NYSDEC Recommended Soil Cleanup Objectives provided in the Technical and Administrative Guidance Manual Memorandum #4046 (TAGM).

These compounds included benzene, toluene, chlorobenzene, ethylbenzene, xylene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 4-methylphenol, nitrobenzene, 1,2,4-trichlorobenzene, naphthalene, 4-chloroanaline, 2,6-dinitrotoluene, 2,4-dinitrotoluene, and phenanthrene. The analytical results from the IIWA investigation have been summarized in Tables 1a and 1b. Table 1a lists the chemical compounds, established during investigations of the Alltift satellite sites, JD Cousins, Lehigh Valley and Tifft Hopkins, as Honeywell Constituents of Concern. As identified in the approved October 2002 RI Work Plan, this Honeywell COC list was established as the focus for this site investigation.

In the IIWA report, impacted fill was identified at a neighboring parcel, 380 Hopkins Street, which borders 360 Hopkins St. to the north. Boring logs were not available to assess the profile of material on this parcel; however, available analytical data from two borings (GP-A4 and GP-A5) from the 380 Hopkins Street site were evaluated. Benzene and chlorobenzene were detected in the samples, indicating the possible presence of similar material on the Site. These borings were located on the western half of the 380 Hopkins parcel. Based on the analytical data reviewed and location of the borings, the extent of the material on the western side of 380 Hopkins Street had not been reliably defined.

With the results of the IIWA, the NYSDEC determined that based on "the combination of chemical analysis, site location and historical information, it is likely that the material found at the site has the same source as the waste materials previously identified at the Alltift Landfill."

The primary focus of this additional investigation was to define the vertical and lateral extent of material impacted by the Honeywell COCs at the Site. In addition to completion of the subsurface borings, this investigation included installation and sampling of shallow groundwater monitoring wells.

In November 2003, Honeywell completed an additional site investigation to better define the extent and chemical concentrations of all impacted materials at the Site. This second phase of the investigation included the completion and sampling of additional borings and the addition of five shallow groundwater monitoring wells.

The investigation also included a review of historical information intended to identify sources of the fill materials and located areas where fill had been placed. Based on a review of the records of the Buffalo Fire Department, the locations of six underground fuel storage tanks have been identified. There are two underground storage tanks (USTs) located near the Tifft St. entrance for 666 Tifft St. southeast of the main building. These tanks were identified in the Preliminary Site Assessment (E.C. Jordan, 1993) and are believed to have been emptied. According to the owner of the property, the tanks were emptied and have since become filled with water. The location of two tanks has been identified on the eastern side of 380 Hopkins St. It is believed that there are two 2000-gallon USTs that had been associated with the former fueling station

located in the frame building (Figure 2). The location of two USTs and a fueling island have been identified in the western end of the 380 Hopkins property. It is believed that two 5,000-gallons tanks were used for the storage of diesel fuel in support of a freight operation.

1.2 PURPOSE AND OBJECTIVES

The intent of this Site Investigation, completed in November 2003, was to delineate the areas of the Site which have been impacted by Honeywell COCs. The six chemical compounds that have been defined as site specific Honeywell constituents of concern (HON-COCs) are chlorobenzene, 4-chloroanaline, 1,2-dichlorobenzene, 1,3-dichlorobenzene, nitrobenzene, and 1,2,4-trichlorobenzene. The overall objective of the site investigation was to collect enough information to determine the limit of impacts of these specific chemical constituents. The project specific objectives were:

- To determine the location of fill on site that had been impacted by HON-COCs.
- To determine the location of the fill on site that has been impacted by contaminants other than the HON-COCs.
- Characterization of the physical properties of the subsurface materials.
- Identification of potential off-site sources of impacts to the subsurface as a result of off-site activities.
- Characterization of the shallow groundwater within the fill material at the Site.

1.3 SITE HISTORY

The historical review includes information gathering from EDR reports, a Freedom of Information Law request, historical maps, and historical aerial photos.

Historically, the Site has had a number of commercial uses including petroleum filling stations, loading yards, vehicle service centers, and freight yards. At the present time, 666 Tifft St and 360 Hopkins are used as a heavy equipment service center and a trailer drop area. The 380 Hopkins St. property is not actively being used at this time. The review of Buffalo Fire Department UST installation and removal permits (1946-1979) at 666 Tifft St. indicated that a total of 16 USTs were installed during this time frame, while only 10 USTs have been removed. Based on this information, it is possible that at least six unidentified USTs remain in place at the 666 Tifft St. parcel.

A complete site history including aerial photographs and topographical maps has been included as Appendix A.

LIST OF APPENDICES

SECTION 2
SITE DESCRIPTION

2.1 SITE LOCATION

The Tifft and Hopkins Site is comprised of three properties, as shown in Figure 2. The properties are identified as 666 Tifft Street, 360 Hopkins Street, and 380 Hopkins Street, all located in the City of Buffalo. Together, the three parcels form an approximately seven acre Site that is relatively flat. The 666 Tifft St. and 360 Hopkins St. parcels have a common owner and are mostly undeveloped and open, serving primarily as a parking facility for tractor-trailers. There is an office/garage/warehouse building in the southwest corner of the 666 Tifft St. parcel. A chain-link fence divides the northern border of the tractor-trailer parking lot and the 380 Hopkins parcel. The 380 Hopkins St. parcel is mostly open with brush and trees growing along the fence lines that surround the parcel. Abandoned motor vehicles, piles of tires, and miscellaneous debris are randomly scattered across the 380 Hopkins parcel. Prior to any development, the Tifft and Hopkins Site was shown on maps as a low-lying wetland area.

Located in an industrialized area of South Buffalo, the Site was subjected to dumping and could have been subjected to dumping of materials from multiple sources. Because of their density and strength, steel-making and other industrial waste materials were often used as structural fill in lowland areas prior to development. Review of historical topographic maps and aerial photographs suggest that filling has occurred on all or portions of the three parcels that make up the Site. The specific sources of the fill materials are not known.

2.2 REGIONAL GEOLOGY

The Site lies within the Erie-Ontario Lowlands Province and the Erie-Niagara Basin (Muller, 1977). The geology of the Erie-Niagara Basin, as described by La Sala (1968), is generally unconsolidated deposits, glaciolacustrine in origin, overlying Silurian and Devonian age sedimentary bedrock. The bedrock formations underlying the Site included the Marcellus shale, Onondaga limestone, Akron dolomite, Bertie limestone, Camillus shale, and the Lockport dolomite. The bedrock formations in the region dip to the south and are masked with gentle folding. Rock units in Erie County strike east-west, dip southward at 40 to 60 feet per mile (approximately 1^{o}) and are exposed locally in east-west trending bands.

The natural occurring unconsolidated deposits in the area consist of the following three general types: 1) alluvial silt, sand and gravel deposited during Recent geologic time; 2) Late Pleistocene lacustrine sediments composed primarily of silt, sand and clay; 3) Pleistocene glacial till, a heterogeneous mixture of particles deposited directly from glacial ice. Relief in the area is due to preglacial erosion of bedrock and topographic modification during and subsequent to glaciation. Granular deposits frequently act as

shallow aquifers, whereas lacustrine clays, as well as tills, often inhibit shallow groundwater movement. Water-lain sediments often contain horizontal lamination and sand seams which facilitate groundwater movement through otherwise low permeability material (Dames and Moore, 1994).

2.3 REGIONAL HYDROGEOLOGY

In the Erie-Niagara Basin, the major sources of groundwater are glacial sand and gravel deposits, and the underlying limestone and shale bedrock sequences. In some areas, the overlying glacial deposits may be hydraulically connected to the bedrock, particularly where the upper bedrock surface is fractured and the glacial deposits consist of sand and gravel. However, where the bedrock surface is competent and overlain by lacustrine silts, clays, or clayey tills, no or very little hydraulic connection exists. Groundwater flow within and along the bedrock units is controlled by the primary permeability of the unit and the secondary porosity which includes fractures, joints, and open bedding plane surfaces. The main sources of groundwater within the bedrock are fractures and solution cavities. Shales at depth, typically, have a much lower permeability than the fractures zone at the top of the shale (La Sala, 1968).

Groundwater recharge to the unconsolidated deposits in the Erie-Niagara basin ranges from about 500,000 gallons per day per square mile ($2.4x10^{-3}$ft/day) for surficial sand and gravel deposits to about 50,000 gallons per day per square mile ($2.4x10^{-4}$ ft/day) when the alluvial deposits are overlain by tills (Dames and Moore, 1994).

SECTION 3
SUBSURFACE INVESTIGATION METHODOLOGY

3.1 INTRODUCTION

To better define the extent and chemical concentrations of all potentially impacted materials, the subsurface investigation included:

- a soils investigation which included the soil boring, soil sampling and chemical analyses of subsurface samples,
- a shallow groundwater investigation which included installation of monitoring wells and sampling of groundwater,
- a geotechnical investigation to determine the engineering properties of the subsurface materials, and
- a site survey to develop detailed mapping of the subsurface and site features.

This section includes a description of the activities accomplished as part of the subsurface investigation.

3.2 SOILS INVESTIGATION

February 2003 Investigation

In order to better define the lateral and vertical extent of material described in the 1998 IIWA, 38 borings (GP-50 through GP-87) were completed in February 2003. Where there had been a visual indication of black granular non-native fill material that also had analytical results confirming the presence of HON-COCs in the IIWA borings, new borings were located next to them and sampled to identify the chemical characteristics of the material.

The borings were completed using a truck-mounted Geoprobe® unit equipped with a 1.5-inch diameter Macro-Core® direct push sampler. Borings were advanced to the top of the native material. Soil cores were visually logged for lithology as well as for the presence of the black granular materials visually similar to those identified as materials containing HON-COCs in the IIWA report. A photoionization detector (PID) was used to screen the soil cores for the presence of volatile organic compounds (VOCs). Soil boring logs are provided in Appendix B.

If the material at a given location was considered to have black granular material similar to the materials found to contain HON-COCs in the IIWA report and screening results indicated the presence of VOCs, no chemical analytical samples were collected, and a new boring was advanced approximately 10 feet away. This procedure was

repeated until fill that did not contain the black granular shown to be associated with the HON-COCs and or PID Screening indicated that the materials did not contain VOCs was identified. A sample of the fill was collected at this location and analyzed by EPA Method 8270 for HON-COCs in accordance with the NYSDEC-approved workplan. If the analytical results indicated the presence of HON-COCs, another boring was advanced following the same procedure. If the analytical results indicated there were no HON-COCs, the boring location was used to delineate the extent of impacted material. Upon completion to depth, the borings were backfilled with cement/bentonite grout or excess soils. All investigation-derived wastes were placed in properly labeled Department of Transportation (DOT)-approved 17-H type 55-gallon drums and staged onsite for future disposal.

November 2003 Investigation

Based on the results of the February investigation, an additional phase of soil investigation was completed to define the extent and chemical concentrations of all (Honeywell and non-Honeywell related) impacted materials at the Site.

During this phase, an additional 45 Geoprobe borings (GP-301 to GP-345) were completed. Borings GP301-GP345 were used to further characterize the lateral and vertical extent of fill impacted. Borings were completed along the eastern property line for 666 Tifft St. to determine if there had been any impact to the Site from offsite source specifically the fuel station located at 356 Tifft St. Soil samples were also collected on the western boundary of the Site along Germania St. to determine to extent of any off-site impacts. Samples from these borings provided the chemical composition of the impacted materials across all three parcels.

In order to analyze the chemical nature of the impacted "black-granular" material, Geoprobe® borings were completed adjacent to February 2003 locations. Samples were taken of material adjacent to previous Geoprobe® borings GP-50, GP-65, and GP-66, so the chemical nature of the impacted material could be quantified. The interval selected for chemical analysis from each boring location was representative of the most seemingly impacted section of the core. In borings where no impacts were observed, the sample section was selected to correspond to the top of the shallow groundwater table.

A total of 15 soil samples were collected and analyzed for target compound list (TCL) VOCs, TCL semi-volatile organic compounds (SVOCs), TCL pesticides, TCL polychlorinated biphenyls (PCBs), target analyte list (TAL) Metals and cyanide. In addition, two duplicate samples were analyzed for quality control/quality assurance purposes.

The borings were advanced to the top of native material, approximately 6-8 feet below ground surface (BGS). The soils were visually assessed as they were collected, and provided field screening for the presence of VOCs using a photoionization detector. Soil boring logs are provided in Appendix B. Borings were backfilled with cement/bentonite grout or excess soils. All investigation-derived wastes were placed in

properly labeled DOT-approved 17-H type 55-gallon drums and staged onsite for future disposal.

3.3 SHALLOW GROUNDWATER INVESTIGATION

An investigation to determine the potential impact that the Site materials have had on shallow groundwater underneath the Site was completed as part of the site investigation. In February 2003, three monitoring wells (MW-1 through MW-3) were installed at the locations shown on Figure 2.

The borings for the monitoring wells were completed using 4.25-inch hollow-stem augers to drill to the native soils under the Site (approximately 7.2 feet). The monitoring wells were constructed using five feet of two-inch diameter PVC with 0.010-inch slotted well screens, filter packs, and bentonite seals. The filter pack material was a silica sand of #0 size. Each well was finished with a PVC riser and closed with a j-plug and padlock. Monitoring well construction records have been included as Appendix B.

Following installation, the monitoring wells were developed using a dedicated disposable bailer. During development, the wells were surged by raising and lowering the bailer through the saturated portion of the well screen. Wells were considered to be developed after the turbidity was estimated to be below 50 nephelometric turbidity units (NTUs) or a minimum of three well volumes of water had been removed and pH, specific conductivity, and temperature readings stabilized.

Following development, the groundwater samples were collected from each of the wells. The groundwater samples from each of these wells were analyzed for: TCL VOCs (Method 8260); TCL SVOCs (Method 8270); TCL pesticides (Method 8081); TAL PCBs (Method 8082); TAL metals; and cyanide (Methods 9012). Monitoring wells MW-1, MW-2, and MW-3 were sampled in April 2003. Rising head slug tests were conducted on the three wells in March 2003. Slug tests were conducted by removing 1 liter of water using a Teflon bailer. Water level measurements were recorded manually with a water level indicator.

As part of the November 2003 investigation an additional five monitoring wells (MW-4 through MW-8) were installed at the Site. The new wells were installed using the same construction as was previously used. The new wells were installed with protective surface casings. Monitoring well construction records have been included in Appendix B. In addition to the new installations, the well MW-3 was modified from its original installation. The stick-up PVC was removed and replaced with a flush-mounted curb box.

Monitoring wells completed in November were developed in the same manner and groundwater was sampled for the same parameters as during the February investigation.

3.4 GEOTECHNICAL INVESTIGATION

During the field operations, geotechnical sampling and analysis was conducted to assess the site conditions for potential engineering controls. During each well installation, standard penetration tests were used to evaluate the strength and resistance to penetration of the fill material. Penetration test results are included on the boring records in Appendix B. At each well location, material from the upper two feet of fill was sampled and analyzed for grain size using ASTM C-136.

3.5 SITE SURVEY

After the field activities were completed, a site survey of sample and well locations was conducted. The locations of the borings and the location and elevation of all eight monitoring wells were surveyed. Monuments were established on the Site so that future work can be tied into the existing base map. All surveying was completed by a New York State licensed surveyor.

SECTION 4
RESULTS

4.1 SITE GEOLOGY

The Site was a marshy low lying area, similar to those areas located to the northwest of the property, which had been filled in to provide sites for development. This hypothesis was confirmed by a review of the available historical topographic maps and aerial photographs combined with observations made during the boring program.

To simplify the physical and chemical description of the subsurface at the Site, the following classifications have been developed to describe materials found.

- Fill - consists of any subsurface materials that are not native to the Site.
- Native - materials that are indigenous to the Site and generally indicate the top of the ground surface prior to filling.

Native soils were not identified anywhere on the surface of the Site. The fill material appears to be a combination of demolition debris, industrial waste material and clayey soils. Soil borings were continued until native soils were identified. The depth of fill on site range from approximately 2 to 7.5 feet. Borings were completed to the underlying grey and black organics and clay layer overlying a silt/clay zone. In a few locations, there was a medium to coarse native sand and gravel observed in the borings; however, the deposits were limited in size and found intermittently across the Site. Based on the data compiled from the borings that have been completed across the Site, it is likely that the entirety of the Site is underlain by the grey silt and clay identified as layer F in the cross sections. The native materials observed beneath the Site have properties consistent with the poorly drained, silty lacustrine deposits found in the Niagara series. Information available for the Alltift Landfill Site, located on the south side of Tifft St., approximately 0.3 miles southwest of the Site, shows glaciolactustrine clay varying from 6 to 43 feet in thickness. Laboratory permeability testing performed on this clay yielded hydraulic conductivity results of 6×10^{-8} cm/s (E.C. Jordan, 1991).

A depiction of the Site stratigraphy is shown on the cross sections that have been compiled from the boring soil classifications. The location of the cross sections are shown on Figure 3. Cross sections have been included as Figures 4a, 4b, and 4c.

4.2 SITE HYRDOGEOLOGY

Four rounds of shallow groundwater elevation data were collected as part of this investigation (Table 3). Shallow groundwater was identified at a depth of approximately 2 to 4 feet below ground surface. Groundwater elevation data from the three wells installed as part of the February 2003 investigation and groundwater elevation data

observed on November 26, 2003 are shown on the Groundwater Elevation Map (Figure 3). Based upon sets of data that have been collected, no consistent shallow groundwater flow direction is discernible. The underlying stratigraphy and subsurface characteristics indicate that the shallow groundwater is perched and underlain by low permeability stratigraphic units.

The hydraulic conductivity of the fill material has been determined with slug tests completed on the three monitoring wells located near the center of the Site (MW-1, MW-2 and MW-3). The slug test data was analyzed using the Bouwer-Rice method. A copy of the slug test data and graphical analysis has been included as Appendix C. The hydraulic conductivity of the fill material in which the first three monitoring wells were set was estimated to range between $3x10^{-3}$ and $7x10^{-5}$ cm/second. These results are considered to be consistent with the heterogeneous nature of the fill material and the observations made during the completion of geoprobe borings which did not penetrate any highly permeable sections.

There are no known local uses of the shallow groundwater. Nearby residents and industry are supplied with municipal water. No potable water wells are known to exist within three miles of the Site. Industrial wells within a two-mile radius of the Site have been identified at the Republic Steel and the Hayden-Wegman Sites (E.C. Jordan, 1993).

4.3 SOIL INVESTIGATION RESULTS

A total of forty-two soil samples were collected and analyzed during this investigation including twenty-seven soil samples from February 2003 and fifteen samples from borings completed in November 2003. A summary of all of the HON-COC soil analytical data from each of the investigations has been included as Table 1a (NYSDEC IIWA 1998), Table 4, (February 2003) and Table 5 (November 2003). The location of the samples that have been impacted with HON-COCs and the corresponding chemical concentrations are shown as Figure 6.

Fill with concentrations of HON-COCs exceeding the TAGM cleanup objectives have been identified in three areas on the Site (Figure 6). The three areas are: 1) the 666 Tifft Street property in the center of the Site where the water main break and original excavation were located; 2) the 380 Hopkins Street property to the west of the concrete pad and structure; and 3) the southwest corner of the 380 Hopkins Street property north of the frame building.

In the first area, HON-COC impacted fill was found in samples to a depth of 4.7 feet. The extent of the impacted area and the concentrations of HON-COCs found are shown on the cross sections B-B' and C-C' which are included as Figure 4b and Figure 4c. The maximum depth of fill in this area was found to be approximately 6 feet.

The second area that has fill impacted with HON-COCs is central to the 380 Hopkins St. property and was found to have HON-COCs with concentrations exceeding the TAGM standard in samples to a depth of 6 feet. The extent of the impacted area and the

concentrations of HON-COCs found are shown on the cross sections A-A' and B-B' which are included as Figure 4a and Figure 4c. The maximum depth of the fill in this area was found to be approximately 6 feet.

The third impacted area is located in the southwest corner of the 380 Hopkins St. property north of the frame building near Germania Street. The identification of HON-COC impacted fill in this area is based the analytical results for the samples from GP-342 and GP-343 with depth intervals of 1 ft to 4 ft and 1 ft to 3 ft, respectively. The extent of the impacted area and the concentrations of HON-COCs found are shown on cross section A-A' which is included as Figure 4a. The maximum depth of fill in this area was found to be approximately 6 feet.

A map showing the thickness of the fill underlying the Site has been created based on the results of the boring program (Figure 7). Chemical analysis and observations made during site investigation indicate that the locations where HON-COCs were detected above the TAGM cleanup objectives generally correspond to the greatest thickness of the fill at the Site.

In addition to the HON-COCs, other chemical compounds were detected across the Site with concentrations exceeding the TAGM cleanup objectives. These compounds included the VOCs: benzene, 2-butanone, ethylbenzene, toluene, xylene, as well as the SVOCs: aniline, benzo(a)anthracene, benzo(a)pyrene, 2,4-dinitritoluene, naphthalene, phenol, phenanthrene, 2,6-dinitrotoluene, 4-methylphenol, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dimethylphthalate, ideno(1,2,3-cd)pyrene, 2-methylnaphthalene, 1,4-dichlorobenzene, n-nitrosodiphenylamine. The pesticides endosulfan and endrin were found in one sample in exceedance of the TAGM standard. A summary of all of the non HON-COC soil analytical data from each of the investigations has been included as Table 1b (NYSDEC IIWA 1998), Table 6 (February 2003) and Table 7 (November 2003).

4.4 SHALLOW GROUNDWATER INVESTIGATION RESULTS

As part of the first phase of the site investigation, groundwater samples were collected from monitoring wells MW-1, MW-2, and MW-3. During the second phase of the investigation, groundwater samples were only collected from the five additional wells installed in October 2003 (MW-4 through MW-8). A summary of the compounds detected in groundwater with their corresponding standards are provided in Table 8.

The HON-COCs were detected in groundwater samples from six of the monitoring wells. Chlorobenzene and 4-chloroanaline were detected with concentrations exceeding the NYSDEC Class GA Groundwater Standard in MW-1, MW-2 and MW-3, MW-5 and MW-8. 4-chloroanaline was also found in MW-4. In addition to the HON-COCs the samples from MW-1, MW-2, and MW-3 also had concentrations of benzene and toluene exceeding the Class GA standard.

The high metals concentrations in the samples collected as part of the first phase of the investigation may be an artifact of a high level of suspended solids in the samples. Although direct turbidity measurements were not recorded, the technician who sampled the wells noted that the samples were brown or black and turbid (Appendix D).

4.5 GEOTECHNICAL RESULTS

During the installation of the groundwater monitoring wells as part of the second phase of the site investigation soil samples were collected from the top two feet of the fill material and analyzed for particle size distribution.

The samples of fill from the upper two feet of the Site is similar in character and can be considered to be representative of the fill across the Site. The particle size distribution shows that the fill is well graded with no particle larger than 1.5 inches. The results from the particle size testing have been summarized on Table 9. A complete copy of the geotechnical testing report has been included as Appendix E.

In addition to grain size, standard penetration tests were completed over the full depth of the well borings. The standard penetration results are included with the boring logs/monitoring well construction records included as Appendix B.

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SECTION 5
CONCLUSIONS

The primary focus of this Site Investigation was to delineate the areas of the Site that have been impacted by Honeywell COCs. The six chemical compounds that have been identified as the HON-COCs are chlorobenzene, 4-chloroanaline, 1,2-dichlorobenzene, 1,3-dichlorobenzene, nitrobenzene, and 1,2,4-trichlorobenzene. The conclusions derived from the site investigation, in relation to the primary focus of the investigation as well as the secondary goals of the investigation as listed in Section 1 of this report, are discussed in this section.

1) Determine the location of the fill that has been impacted by the HON-COCs

There are three areas of the Site that have been identified as having been impacted with HON-COCs. These areas are located in the central part of 666 Tifft St., the central part of 380 Hopkins St. and the southwest corner of 380 Hopkins St., (see Figure 6). The full extent of the HON-COC impacted material has been delineated vertically and is confined to the fill material and the upper native materials that have been identified above the grey silt and clay (Cross Section Layer F) which has been identified as existing across the Site. The lateral extent of the fill impacted by the HON-COCs has been fully defined by the site investigation.

2) Determine the location of the fill that has been impacted by contaminants other than the HON-COCs

While the presence of the HON-COCs is generally limited to the central part of the Site, there are additional VOC and SVOC compounds not identified as HON-COCs, that have been identified in other areas of the Site with concentrations in excess of the TAGM guidelines.

The other impacted areas included the areas in the vicinity of the three sets of USTs that have been found on site. Two sets of USTs are located in site areas that have not been impacted by HON-COCs. These areas are located on the eastern side of 380 Hopkins St. and on the south side of 666 Tifft St. The third set of tanks and appurtenances is located near the frame building on the west end of the 380 Hopkins St. property. Soil and groundwater samples from this area indicated that there are impacts the soils in this area both from the HON-COCs and from past operation of the fuel facilities.

The vertical and lateral extent of the impacts from the non HON-COCs has not been fully delineated.

3) Characterization of physical properties of the subsurface materials

More than 117 soil borings have been completed in support of site investigations. The observations made during the completion of these borings has provided a significant amount of data that have been used to develop a stratigraphic profile of the Site. The completion of laboratory geotechnical testing as part of the November 2003 investigation has also proved to be valuable. The Site consists of fill ranging in depth from 2 to approximately 7.5 feet. Based on the slug test results the fill is highly permeable with a hydraulic conductivity between 10^{-3} and 10^{-5} cm/second. Underlying the fill is a variety of water lain deposits including sand, silt and clay and organic matter. A consistent stratigraphic unit consisting of grey silt and clay has been shown to be in existence across the entirety of the Site at a depth between eight and 12 feet. Historical testing performed on similar silty clays at the Alltift Landfill Site indicated that the expected permeability of this clay is 6×10^{-8} cm/s (E.C. Jordan, 1991).

4) Identification of potential of impacts to the subsurface as a result of off-site activities

To determine if the Site was being impacted by any off-site sources, borings were completed near the periphery of the Site and five shallow groundwater monitoring wells were installed. Based on the observation made during the field work and the results of the analytical data, no off-site sources of contamination have been identified that may be impacting the Site.

5) Characterization of the shallow groundwater within the fill material at the Site

In order to characterize shallow groundwater, a total of eight monitoring wells were installed and sampled. Shallow groundwater has been found to occur at depths between two and 4 feet. The average elevation is approximately 581 feet above mean sea level. Four rounds of groundwater elevation data have been collected at the Site. Based on these measurements, there does not appear to be any distinct flow direction. The shallow groundwater is likely perched and is influenced by the heterogeneous nature and variable permeability of the fill.

Shallow groundwater has been impacted by HON-COCs in six of the eight monitoring wells. In addition to the HON-COCs, there were other compounds detected in the groundwater samples with concentrations exceeding the NYSDEC Class GA standard. There are no indications that the Site is being impacted by contaminants migrating from offsite sources or that there are any impacts to the groundwater outside of the Site boundary.

SECTION 6
REFERENCES

- ABB Environmental Services, 1993. Preliminary Site Assessment Evaluation Report of Initial Data, Volume I, Tifft and Hopkins Street Site, City of Buffalo, New York.

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- EDR- Historical Topographic Map Report, 2003; Inquiry Number: 902404-2 .

- EDR- Sanborn Map Report, 2003; Inquiry Number: 902404.1S.

- EDR- Site Report, 2003; Inquiry Number: 902404-2.

- Erie County Soil Conservation Service; East Aurora, New York; 1938, 1942, 1951 aerial photographs.

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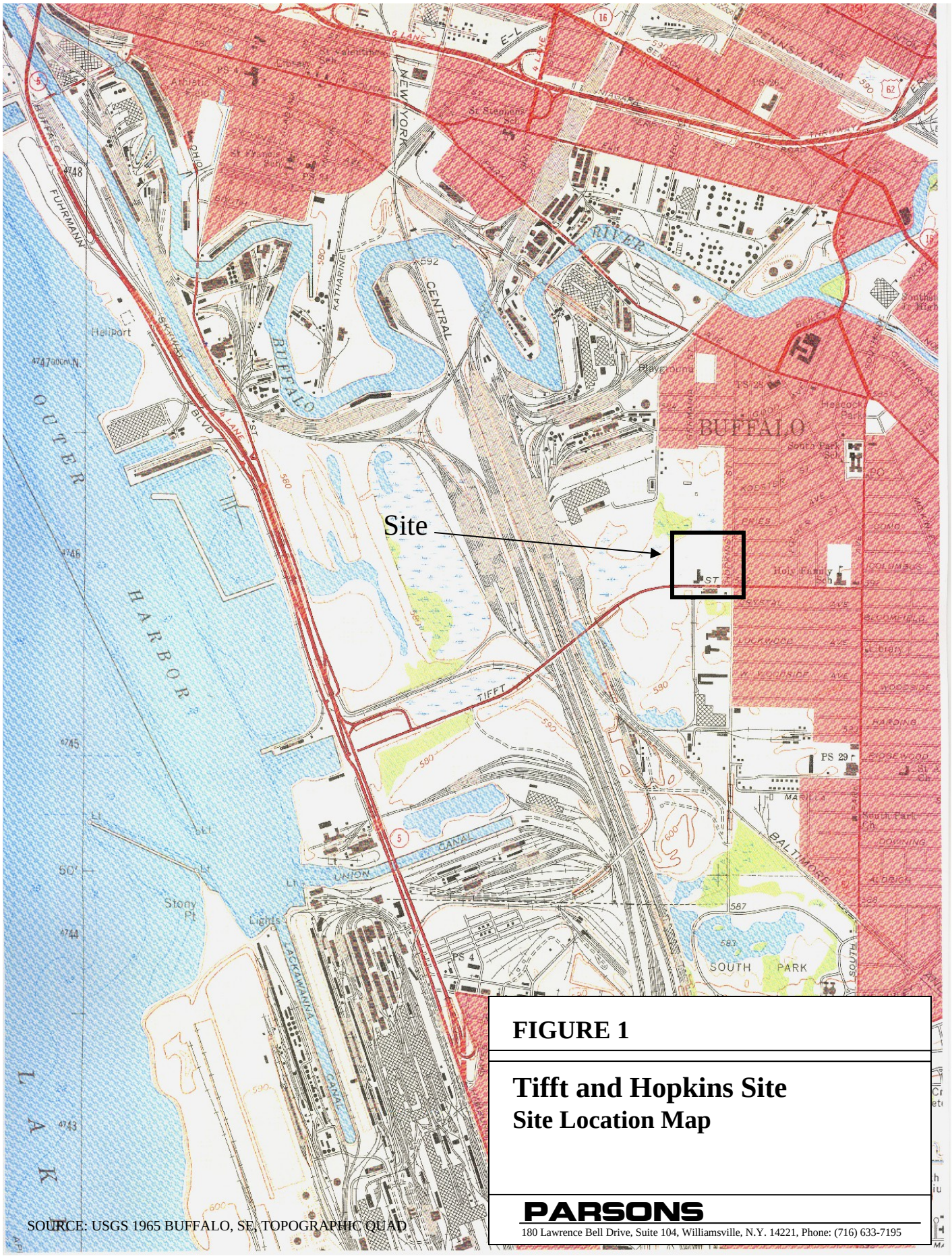
- NYSDEC 1994. Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels.



SOURCE: USGS 1965 BUFFALO, SE, TOPOGRAPHIC QUAD

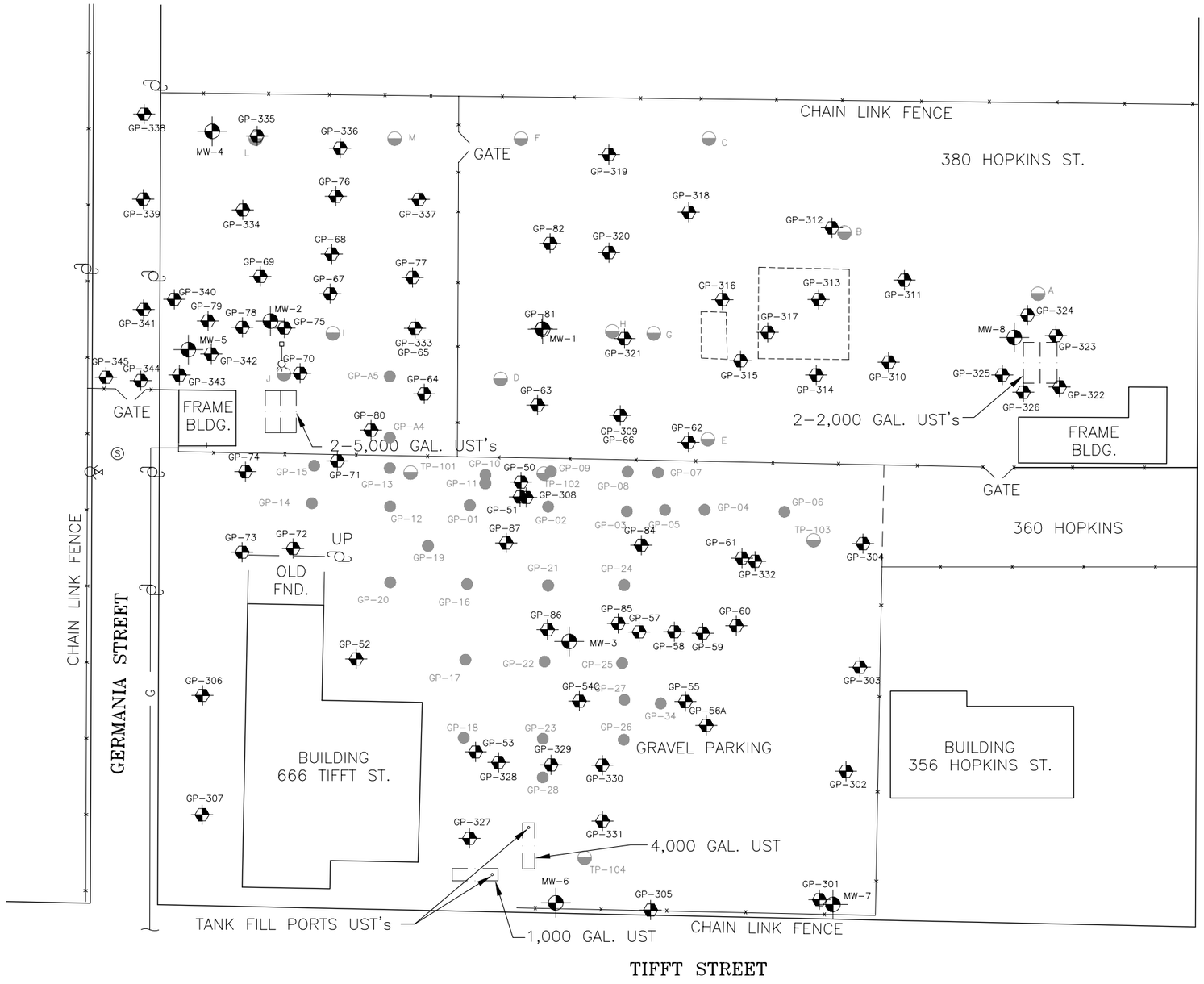
FIGURE 1

Tifft and Hopkins Site

Site Location Map

PARSONS
180 Lawrence Bell Drive, Suite 104, Williamsville, N.Y. 14221, Phone: (716) 633-7195

(40707\cad\site location map.ppt)



COMPILED FROM:

ABB ENVIRONMENTAL SERVICES, 1993. PRELIMINARY SITE ASSESSMENT EVALUATION REPORT OF INITIAL DATA, VOLUME I, TIFFT AND HOPKINS STREET SITE, CITY OF BUFFALO, NEW YORK.

E.C. JORDAN CO., 1991, PRELIMINARY SITE ASSESSMENT, TIFFT AND HOPKINS STREET SITE, CITY OF BUFFALO, NEW YORK.

EDR– HISTORICAL TOPOGRAPHIC MAP REPORT, 2003; INQUIRY NUMBER: 902404–2

EDR– SANBORN MAP REPORT, 2003; INQUIRY NUMBER: 902404.1S

EDR– SITE REPORT, 2003; INQUIRY NUMBER: 902404–2

ERIE COUNTY SOIL CONSERVATION SERVICE; EAST AURORA, NEW YORK; 1938, 1942, 1951 AERIAL PHOTOGRAPHS.

BUFFALO FIRE DEPARTMENT (BFD) UST INSTALLATION/REMOVAL PERMITS.

NYSDEC, 1998. TIFFT AND HOPKINS STREET (915131) IMMEDIATE INVESTIGATION WORK ASSIGNMENT REPORT (IIWA).

LEGEND

- GP–01 TO GP–28 GEOPROBE LOCATION NYSDEC 1998 IIWA
- GP–50 TO GP–87 GEOPROBE LOCATION PARSONS FEBRUARY 2003
- GP–301 TO GP–345 GEOPROBE LOCATION PARSONS NOVEMBER 2003
- MONITORING WELL LOCATION
- A–M TEST PIT LOCATIONS GZA MARCH 2003
- FENCE
- EXISTING GAS LINE
- EXISTING SEWER MANHOLE
- EXISTING HYDRANT W/VALVE
- EXISTING LIGHT POLE AND ABANDONED DIESEL PUMPS
- EXISTING UTILITY POLE
- CONCRETE PAD & STRUCTURE
- UST LOCATION

80 40 0 80 160

SCALE: 1"=80'

FIGURE 2

TIFFT AND HOPKINS SITE

SITE PLAN

PARSONS
180 LAWRENCE BELL DRIVE, SUITE 104, WILLIAMSVILLE, N.Y. 14221, PHONE: 716–633–7074

P:\440707 (Tifft&Hopkins)\CAD\40707F04.dwg, 01/28/04 at 10:54, MAB, 1=1
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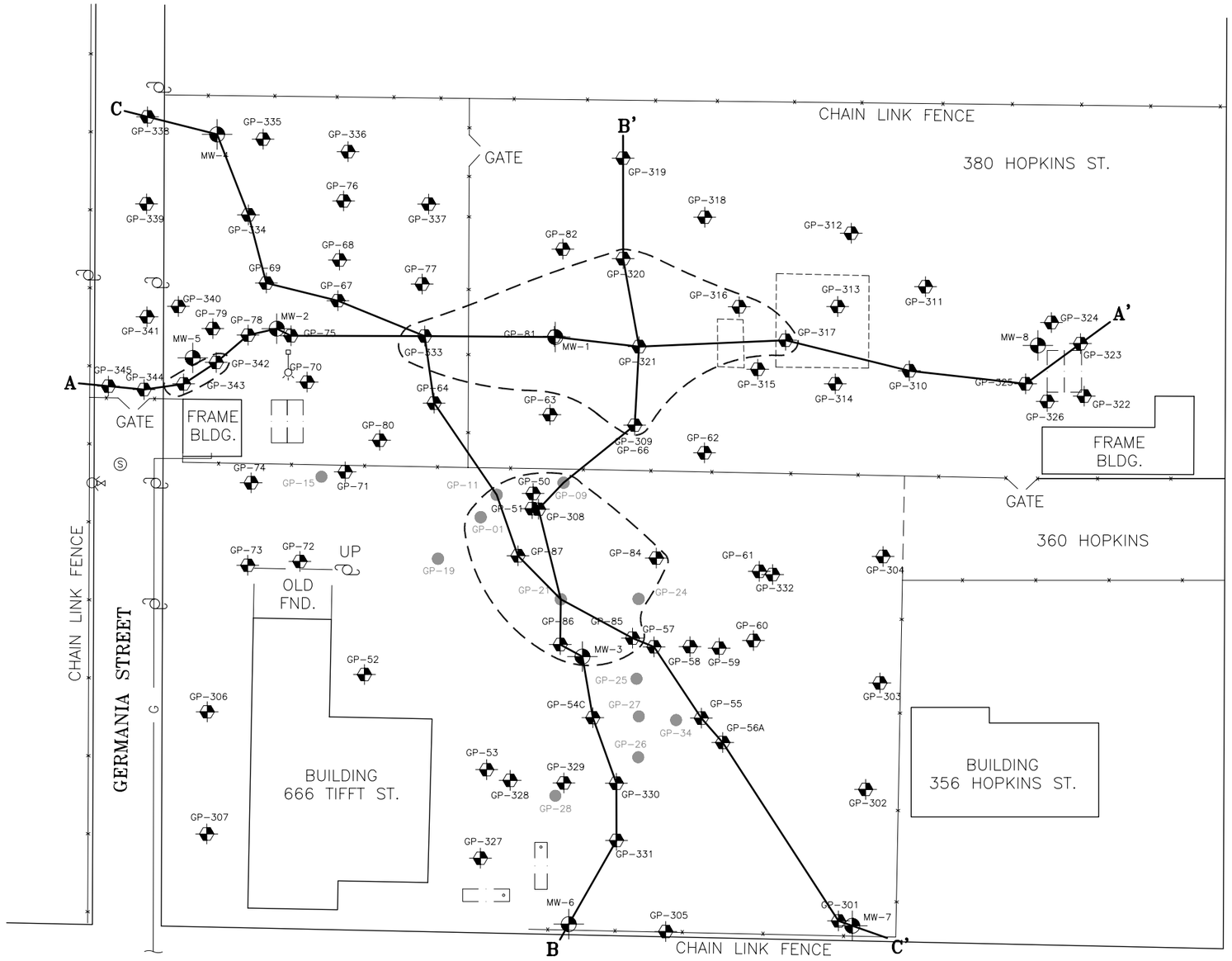

COMPILED FROM:

ABB ENVIRONMENTAL SERVICES, 1993. PRELIMINARY SITE ASSESSMENT EVALUATION REPORT OF INITIAL DATA, VOLUME I, TIFFT AND HOPKINS STREET SITE, CITY OF BUFFALO, NEW YORK.

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EDR– SITE REPORT, 2003; INQUIRY NUMBER: 902404–2

ERIE COUNTY SOIL CONSERVATION SERVICE; EAST AURORA, NEW YORK; 1938, 1942, 1951 AERIAL PHOTOGRAPHS.

BUFFALO FIRE DEPARTMENT (BFD) UST INSTALLATION/REMOVAL PERMITS.

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LEGEND

- GP–01 TO GP–28 GEOPROBE LOCATION NYSDEC 1998 IIWA
- GP–50 TO GP–87 GEOPROBE LOCATION PARSONS FEBRUARY 2003
- GP–301 TO GP–345 GEOPROBE LOCATION PARSONS NOVEMBER 2003
- MONITORING WELL LOCATION
- FENCE
- G EXISTING GAS LINE
- Ⓢ EXISTING SEWER MANHOLE
- EXISTING HYDRANT W/VALVE
- EXISTING LIGHT POLE AND ABANDONED DIESEL PUMPS
- EXISTING UTILITY POLE
- CONCRETE PAD & STRUCTURE
- UST LOCATION
- ESTIMATED EXTENT OF HON–COC IMPACTED FILL

80 40 0 80 160

SCALE: 1"=80'

FIGURE 3

TIFFT AND HOPKINS SITE

CROSS SECTION LOCATION MAP

PARSONS
180 LAWRENCE BELL DRIVE, SUITE 104, WILLIAMSVILLE, N.Y. 14221, PHONE: 716–633–7074

P:\440707 (Tifft&Hopkins)\CAD\40707F09.dwg, 04/28/04 at 13:34, MAB, 1=1
No XREFs

GP-343	
(1–3')	
CB	430,000
CA	ND
oDB	680,000 D
mDB	56,000
NB	ND
TB	100,000

GP-342	
(1–4')	
CB	340,000 D
CA	ND
oDB	25,000
mDB	9,200 J
NB	ND
TB	11,000

GP-75	
(3.2–4.2')	
CB	NA
CA	ND
oDB	ND
mDB	ND
NB	ND
TB	ND

GP-333	
(3–5.5')	
CB	200,000
CA	ND
oDB	37,000
mDB	ND
NB	ND
TB	7,900 J

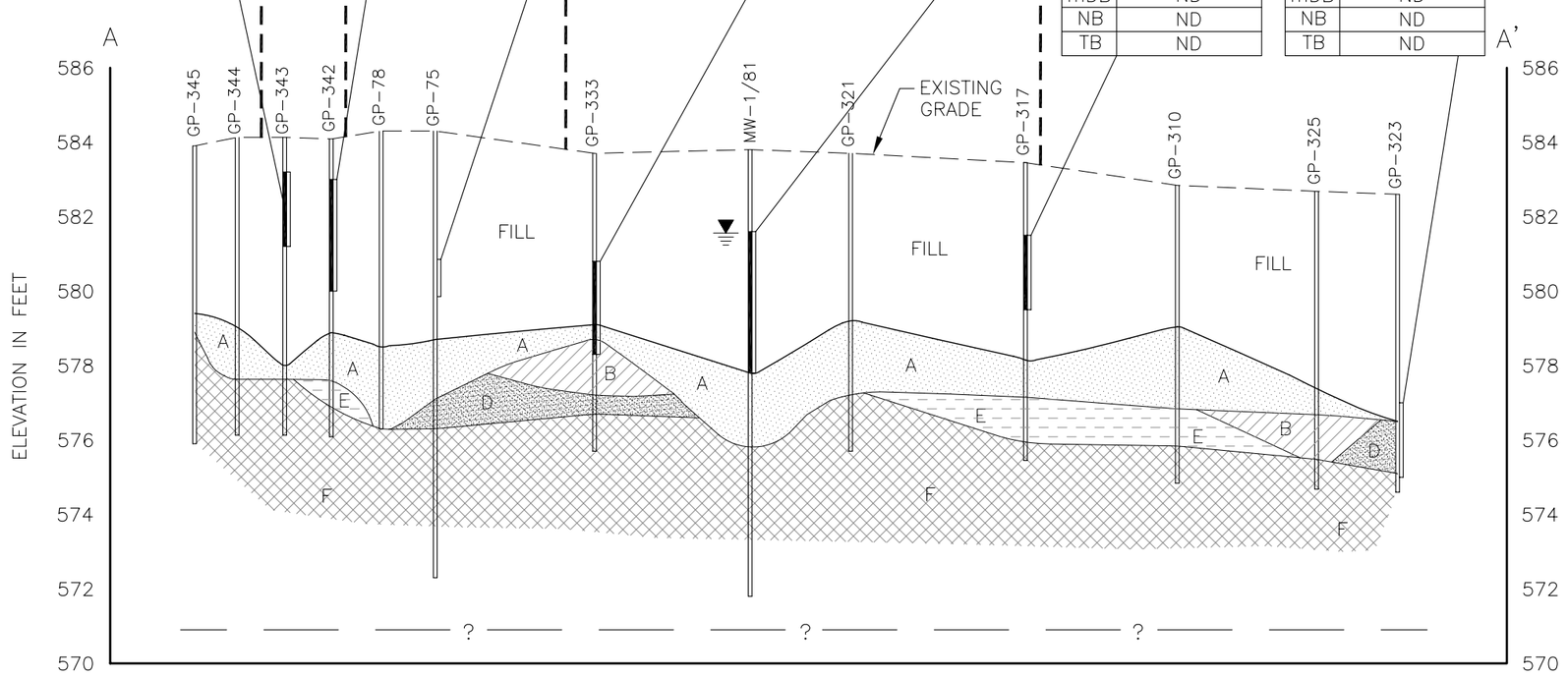
GP-81	
(3–6')	
CB	NA
CA	360,000 E
oDB	21,000
mDB	ND
NB	ND
TB	69,000

GP-317	
(2–4')	
CB	14,000 D
CA	5,800
oDB	16,000
mDB	ND
NB	ND
TB	ND

GP-323	
(6–8')	
CB	16
CA	ND
oDB	ND
mDB	ND
NB	ND
TB	ND

HON–COC IMPACTED AREA

HON–COC IMPACTED AREA



SECTION A–A'

LEGEND

- A – GREY/BLACK MOTTLED ORGANICS AND CLAY, LITTLE SILT
- B – GREY/BROWN/ORANGE MOTTLED SILTY CLAY
- C – GREY/BROWN MOTTLED CLAY AND SILT
- D – GREY/BLACK COARSE SAND
- E – GREY/BROWN FINE–MEDIUM SAND, LITTLE SILT
- F – GREY SILT AND CLAY
- GROUNDWATER ELEVATION (DEC. 9, 2003)
- GEOPROBE
- SAMPLE INTERVAL
- IMPACTED WITH HON–COC's

BORING ID (SAMPLE DEPTH)		
ABR.	COMPOUND	TAGM STANDARD (ug/kg)
CB	CHLOROBENZENE	1700
CA	4–CHLOROANALINE	220
oDB	1,2–DICHLOROBENZENE	7900
mDB	1,3–DICHLOROBENZENE	1600
NB	NITROBENZENE	200
TB	1,2,4–TRICHLOROBENZENE	100

80 40 0 80 160

HORIZ. SCALE: 1"=80'

4 2 0 4 8

VERT. SCALE: 1"=4'

FIGURE 4A

TIFFT AND HOPKINS SITE

CROSS SECTION A–A'

PARSONS
180 LAWRENCE BELL DRIVE, SUITE 104, WILLIAMSVILLE, N.Y. 14221, PHONE: 716–633–7074

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No XREFs

GP-86 (2–4.7')	
CB	NA
CA	ND
oDB	270,000
mDB	ND
NB	ND
TB	140,000

GP-21 (2–3.5')	
CB	27,000
CA	ND
oDB	1,400 J
mDB	ND
NB	6,600
TB	470 J

GP-308 (2–4')	
CB	48,000 D
CA	2,500
oDB	8,500 J
mDB	ND
NB	ND
TB	48,000

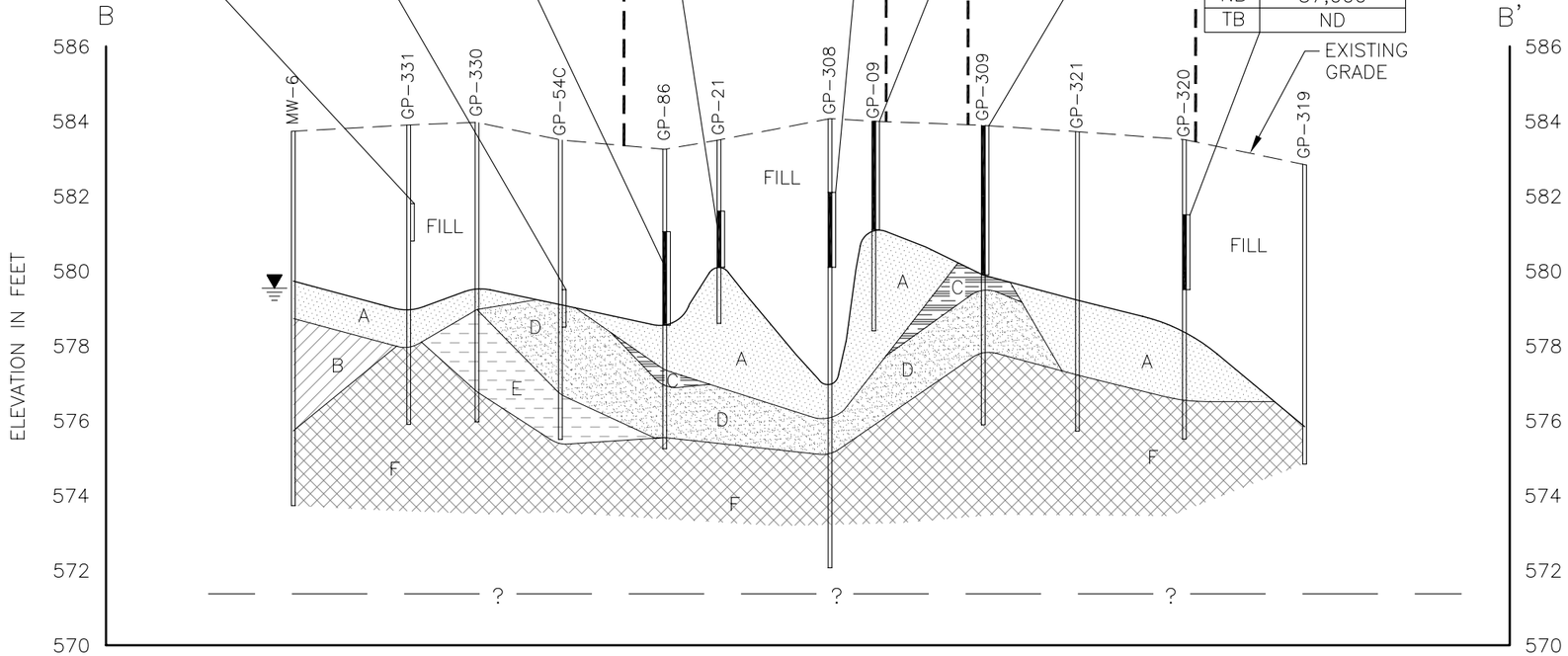
GP-09 (0–3')	
CB	73,000 D
CA	ND
oDB	17,000
mDB	5,500
NB	ND
TB	32,000

GP-309 (0–4')	
CB	29
CA	ND
oDB	ND
mDB	ND
NB	ND
TB	3,900 J

GP-331 (2–3')	
CB	ND
CA	ND
oDB	ND
mDB	ND
NB	ND
TB	ND

GP-54C (4.5–5.4')	
CB	NA
CA	ND
oDB	ND
mDB	ND
NB	ND
TB	ND

GP-320 (2–4')	
CB	16
CA	ND
oDB	ND
mDB	ND
NB	57,000
TB	ND



SECTION B–B'

LEGEND

- A – GREY/BLACK MOTTLED ORGANICS AND CLAY, LITTLE SILT
- B – GREY/BROWN/ORANGE MOTTLED SILTY CLAY
- C – GREY/BROWN MOTTLED CLAY AND SILT
- D – GREY/BLACK COARSE SAND
- E – GREY/BROWN FINE–MEDIUM SAND, LITTLE SILT
- F – GREY SILT AND CLAY
- GROUNDWATER ELEVATION (DEC. 9, 2003)
- GEOPROBE
- SAMPLE INTERVAL
- IMPACTED WITH HON–COC's

BORING ID (SAMPLE DEPTH)		
ABR.	COMPOUND	TAGM STANDARD (ug/kg)
CB	CHLOROBENZENE	1700
CA	4–CHLOROANALINE	220
oDB	1,2–DICHLOROBENZENE	7900
mDB	1,3–DICHLOROBENZENE	1600
NB	NITROBENZENE	200
TB	1,2,4–TRICHLOROBENZENE	100

80 40 0 80 160

HORIZ. SCALE: 1"=80'

4 2 0 4 8

VERT. SCALE: 1"=4'

FIGURE 4B

TIFFT AND HOPKINS SITE

CROSS SECTION B–B'

PARSONS
180 LAWRENCE BELL DRIVE, SUITE 104, WILLIAMSVILLE, N.Y. 14221, PHONE: 716–633–7074

P:\440707 (Tifft&Hopkins)\CAD\40707F11.dwg, 04/20/04 at 16:35, mab, 1=1
No XREFs

GP-11	
(1–3.5')	
CB	17,000
CA	ND
oDB	4,800 J
mDB	820 J
NB	ND
TB	220,000

GP-21	
(2–3.5')	
CB	27,000
CA	ND
oDB	1,400 J
mDB	ND
NB	6,600
TB	470 J

GP-334	
(1–3')	
CB	3 J
CA	ND
oDB	ND
mDB	ND
NB	ND
TB	ND

GP-69	
(3.6–4')	
CB	NA
CA	ND
oDB	ND
mDB	ND
NB	ND
TB	ND

GP-333	
(3–5.5')	
CB	200,000
CA	ND
oDB	37,000
mDB	ND
NB	ND
TB	7,900 J

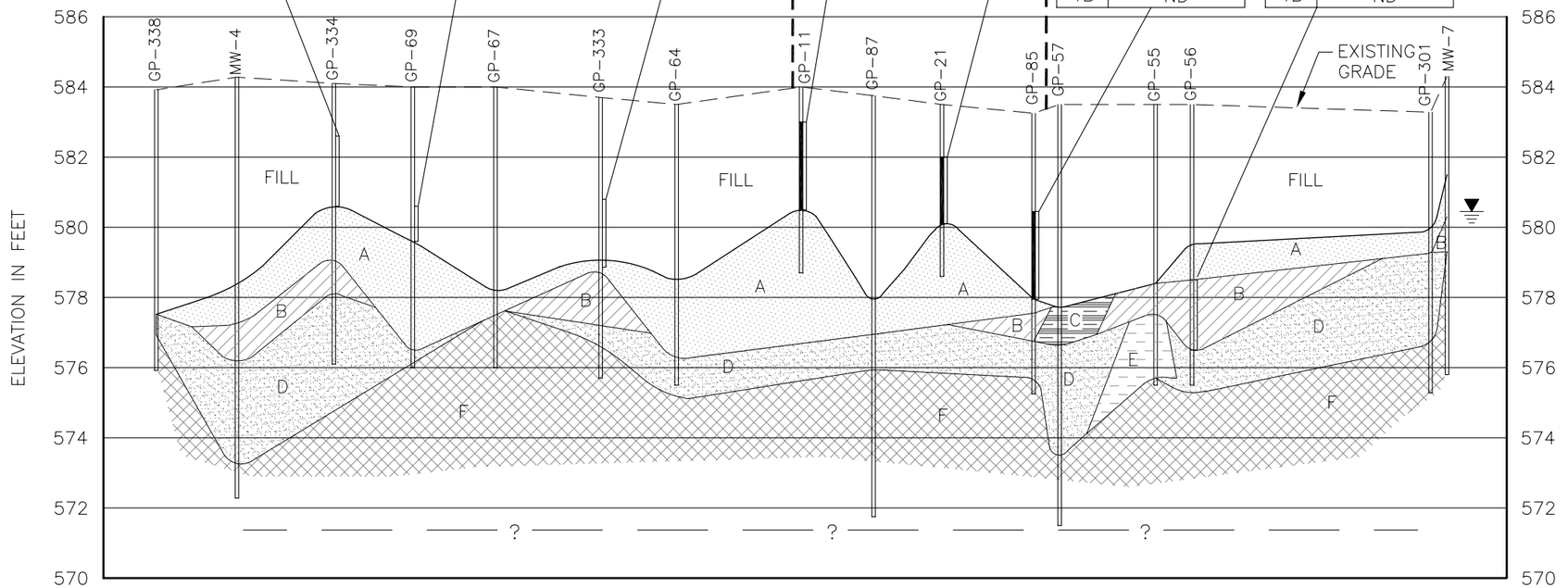
GP-85	
(2–4.8')	
CB	NA
CA	ND
oDB	110,000 J
mDB	ND
NB	ND
TB	ND

GP-56	
(5–7')	
CB	NA
CA	ND
oDB	ND
mDB	ND
NB	ND
TB	ND

HON–COC IMPACTED AREA

C

C'



SECTION C–C'

LEGEND

- A – GREY/BLACK MOTTLED ORGANICS AND CLAY, LITTLE SILT
- B – GREY/BROWN/ORANGE MOTTLED SILTY CLAY
- C – GREY/BROWN MOTTLED CLAY AND SILT
- D – GREY/BLACK COARSE SAND
- E – GREY/BROWN FINE–MEDIUM SAND, LITTLE SILT
- F – GREY SILT AND CLAY
- GROUNDWATER ELEVATION (DEC. 9, 2003)
- GEOPROBE
- SAMPLE INTERVAL
- IMPACTED WITH HON–COC's

BORING ID (SAMPLE DEPTH)		
ABR.	COMPOUND	TAGM STANDARD (ug/kg)
CB	CHLOROBENZENE	1700
CA	4–CHLOROANALINE	220
oDB	1,2–DICHLOROBENZENE	7900
mDB	1,3–DICHLOROBENZENE	1600
NB	NITROBENZENE	200
TB	1,2,4–TRICHLOROBENZENE	100

80 40 0 80 160

HORIZ. SCALE: 1"=80'

4 2 0 4 8

VERT. SCALE: 1"=4'

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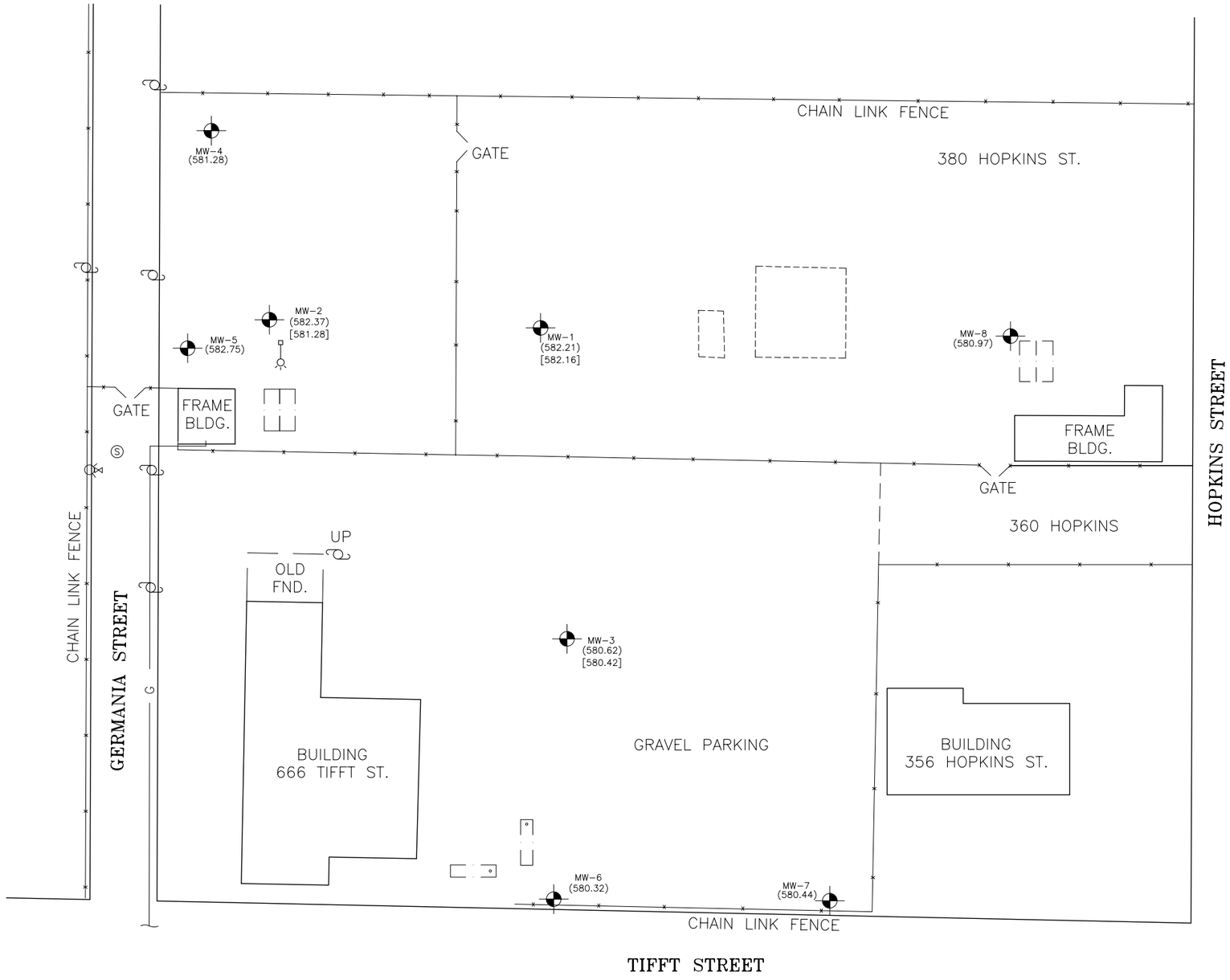
No XREFs

FIGURE 4C

TIFFT AND HOPKINS SITE

CROSS SECTION C–C'

PARSONS
180 LAWRENCE BELL DRIVE, SUITE 104, WILLIAMSVILLE, N.Y. 14221, PHONE: 716–633–7074



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EDR– SANBORN MAP REPORT, 2003; INQUIRY NUMBER: 902404.1S

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BUFFALO FIRE DEPARTMENT (BFD) UST INSTALLATION/REMOVAL PERMITS.

NYSDEC, 1998. TIFFT AND HOPKINS STREET (915131) IMMEDIATE INVESTIGATION WORK ASSIGNMENT REPORT (IIWA).

NORTH

LEGEND

- MONITORING WELL LOCATION
- (580.62) GROUNDWATER ELEVATION NOVEMBER 26, 2003
- [580.42] GROUNDWATER ELEVATION MARCH 5, 2003
- FENCE
- EXISTING GAS LINE
- EXISTING SEWER MANHOLE
- EXISTING HYDRANT W/VALVE
- EXISTING LIGHT POLE AND ABANDONED DIESEL PUMPS
- EXISTING UTILITY POLE
- CONCRETE PAD & STRUCTURE
- UST LOCATION

80 40 0 80 160

SCALE: 1"=80'

FIGURE 5

TIFFT AND HOPKINS SITE

GROUNDWATER ELEVATION MAP

PARSONS

180 LAWRENCE BELL DRIVE, SUITE 104, WILLIAMSVILLE, N.Y. 14221, PHONE: 716–633–7074

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No XREFs

GP-65	
(2.1–4')	
CB	NA
CA	ND
oDB	ND
mDB	ND
NB	ND
TB	ND

GP-342	
(1–4')	
CB	340,000 D
CA	ND
oDB	25,000
mDB	9,200 J
NB	ND
TB	11,000

GP-343	
(1–3')	
CB	430,000
CA	ND
oDB	680,000 D
mDB	56,000
NB	ND
TB	100,000

GP-01	
(1.2–3.8')	
CB	23,000
CA	ND
oDB	19,000
mDB	11,000
NB	ND
TB	480,000 D

GP-19	
(2–3')	
CB	73,000 D
CA	ND
oDB	17,000
mDB	5,500
NB	ND
TB	32,000

GP-21	
(2–3.5')	
CB	27,000
CA	ND
oDB	1,400 J
mDB	ND
NB	6,600
TB	470 J

GP-86	
(2–4.7')	
CB	NA
CA	ND
oDB	270,000
mDB	ND
NB	ND
TB	140,000

GP-333	
(3–5.5')	
CB	200,000
CA	ND
oDB	37,000
mDB	ND
NB	ND
TB	7,900 J

GP-24	
(1.2–2.25')	
CB	12,000 J
CA	ND
oDB	19,000
mDB	1,000 J
NB	890 J
TB	3,300 J

GP-81	
(3–6')	
CB	NA
CA	360,000 E
oDB	21,000
mDB	ND
NB	ND
TB	69,000

GP-85	
(2–4.8')	
CB	NA
CA	ND
oDB	110,000 J
mDB	ND
NB	ND
TB	ND

GP-320	
(2–4')	
CB	16
CA	ND
oDB	ND
mDB	ND
NB	57,000
TB	ND

GP-309	
(0–4')	
CB	29
CA	ND
oDB	ND
mDB	ND
NB	ND
TB	3,900 J

GP-66	
(2.8–3.2')	
CB	NA
CA	ND
oDB	ND
mDB	ND
NB	ND
TB	ND

GP-316	
(1–5')	
CB	190 D
CA	300 J
oDB	ND
mDB	ND
NB	ND
TB	ND

GP-317	
(2–4')	
CB	14,000 D
CA	5,800
oDB	16,000
mDB	ND
NB	ND
TB	ND

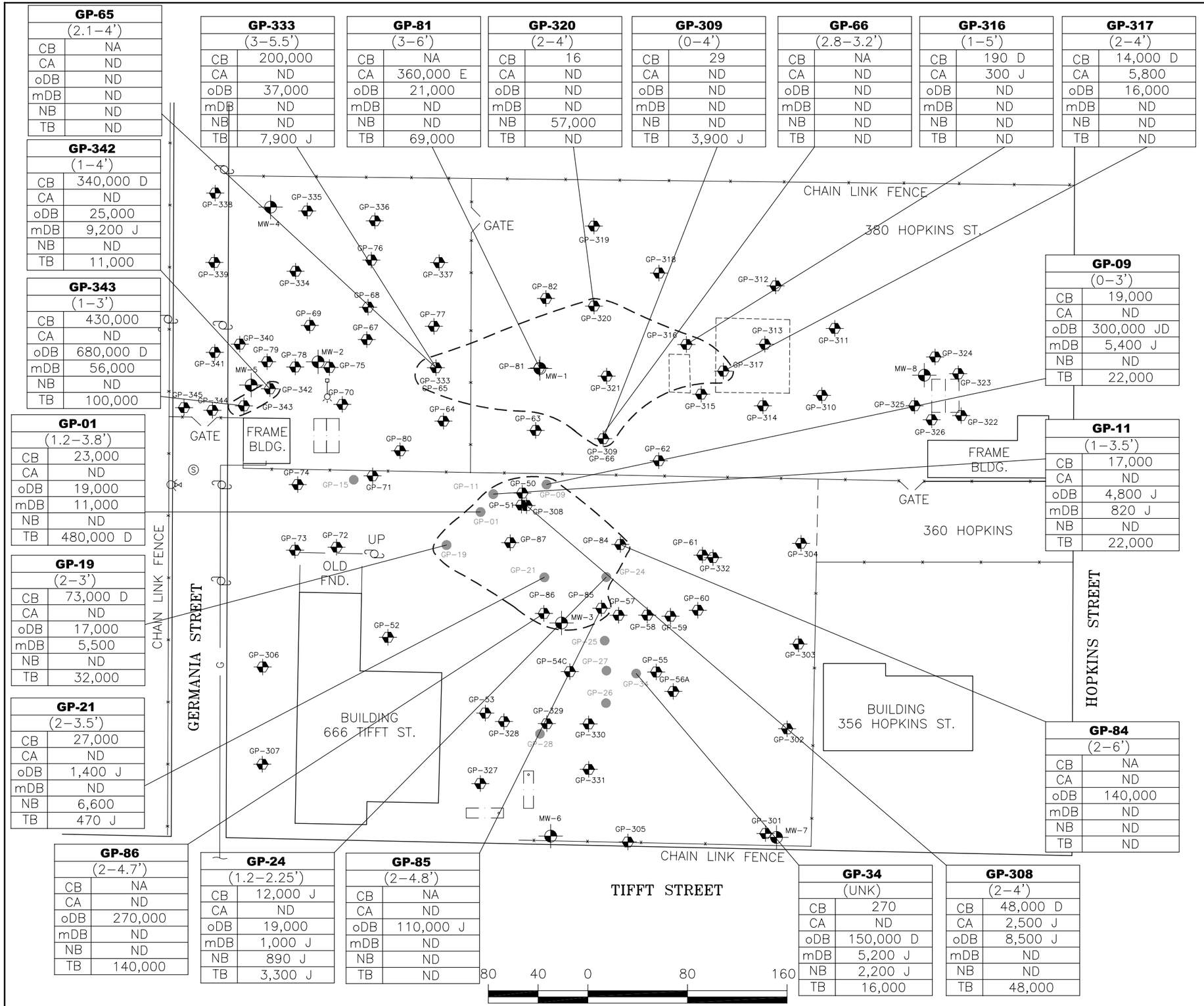
GP-09	
(0–3')	
CB	19,000
CA	ND
oDB	300,000 JD
mDB	5,400 J
NB	ND
TB	22,000

GP-11	
(1–3.5')	
CB	17,000
CA	ND
oDB	4,800 J
mDB	820 J
NB	ND
TB	22,000

GP-84	
(2–6')	
CB	NA
CA	ND
oDB	140,000
mDB	ND
NB	ND
TB	ND

GP-34	
(UNK)	
CB	270
CA	ND
oDB	150,000 D
mDB	5,200 J
NB	2,200 J
TB	16,000

GP-308	
(2–4')	
CB	48,000 D
CA	2,500 J
oDB	8,500 J
mDB	ND
NB	ND
TB	48,000



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ERIE COUNTY SOIL CONSERVATION SERVICE; EAST AURORA, NEW YORK; 1938, 1942, 1951 AERIAL PHOTOGRAPHS.

BUFFALO FIRE DEPARTMENT (BFD) UST INSTALLATION/REMOVAL PERMITS.

NYSDEC, 1998. TIFFT AND HOPKINS STREET (915131) IMMEDIATE INVESTIGATION WORK ASSIGNMENT REPORT (IIWA).

LEGEND

- GP–01 TO GP–28 GEOPROBE LOCATION NYSDEC 1998 IIWA
- GP–50 TO GP–87 GEOPROBE LOCATION PARSONS FEBRUARY 2003
- GP–301 TO GP–345 GEOPROBE LOCATION PARSONS NOVEMBER 2003
- MONITORING WELL LOCATION
- FENCE
- G EXISTING GAS LINE
- S EXISTING SEWER MANHOLE
- EXISTING HYDRANT W/VALVE
- EXISTING LIGHT POLE AND ABANDONED DIESEL PUMPS
- EXISTING UTILITY POLE
- CONCRETE PAD & STRUCTURE
- UST LOCATION
- ESTIMATED EXTENT OF HON–COC IMPACTED FILL
- NA NOT ANALYZED
- ND NOT DETECTED

BORING ID (SAMPLE DEPTH)		
ABR.	COMPOUND	TAGM STANDARD (ug/kg)
CB	CHLOROBENZENE	1700
CA	4–CHLOROANALINE	220
oDB	1,2–DICHLOROBENZENE	7900
mDB	1,3–DICHLOROBENZENE	1600
NB	NITROBENZENE	200
TB	1,2,4–TRICHLOROBENZENE	100

FIGURE 6

TIFFT AND HOPKINS SITE

HON–COC SOIL SAMPLE RESULTS

PARSONS
180 LAWRENCE BELL DRIVE, SUITE 104, WILLIAMSVILLE, N.Y. 14221, PHONE: 716–633–7074

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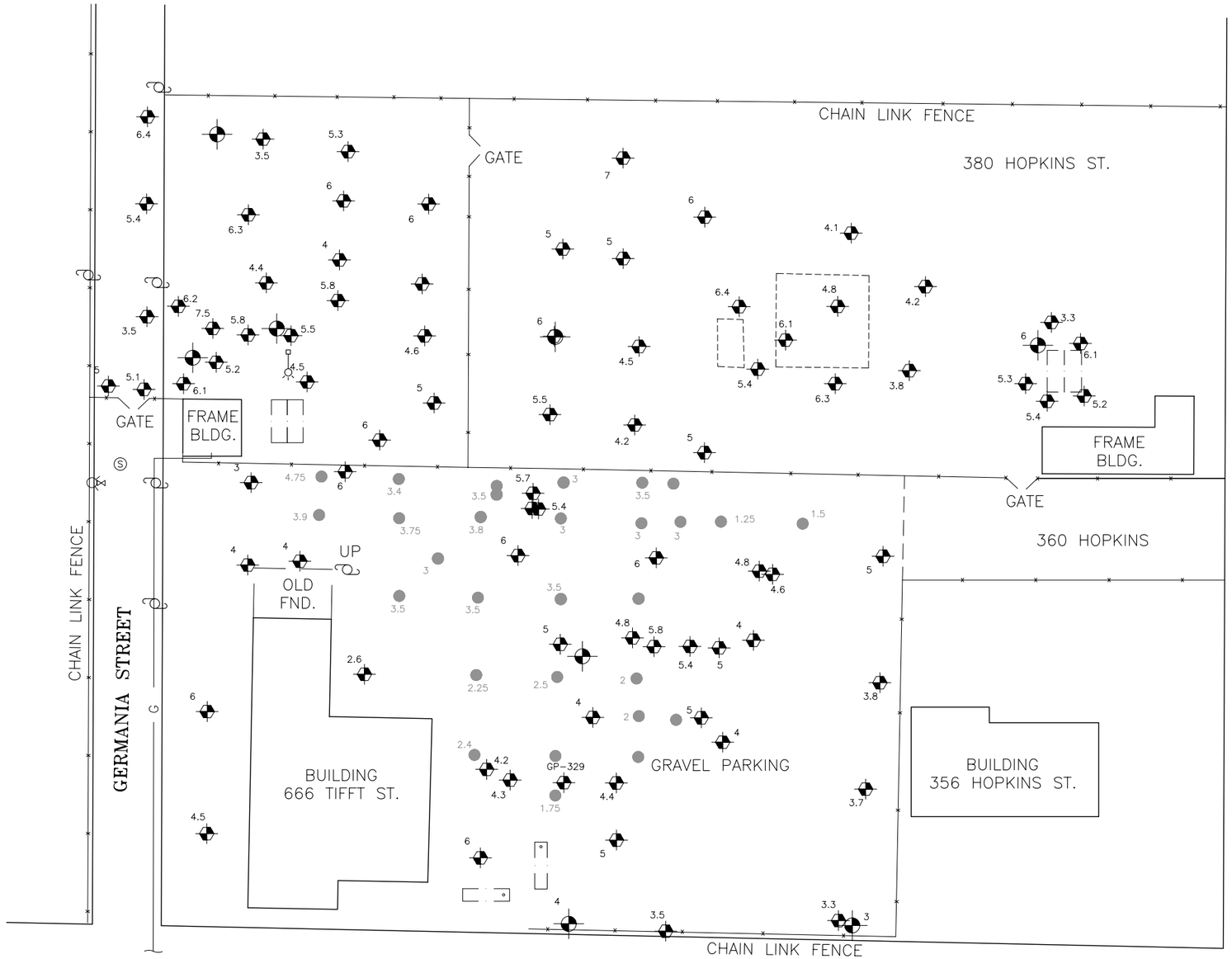

COMPILED FROM:

ABB ENVIRONMENTAL SERVICES, 1993. PRELIMINARY SITE ASSESSMENT EVALUATION REPORT OF INITIAL DATA, VOLUME I, TIFFT AND HOPKINS STREET SITE, CITY OF BUFFALO, NEW YORK.

E.C. JORDAN CO., 1991, PRELIMINARY SITE ASSESSMENT, TIFFT AND HOPKINS STREET SITE, CITY OF BUFFALO, NEW YORK.

EDR– HISTORICAL TOPOGRAPHIC MAP REPORT, 2003; INQUIRY NUMBER: 902404–2

EDR– SANBORN MAP REPORT, 2003; INQUIRY NUMBER: 902404.1S

EDR– SITE REPORT, 2003; INQUIRY NUMBER: 902404–2

ERIE COUNTY SOIL CONSERVATION SERVICE; EAST AURORA, NEW YORK; 1938, 1942, 1951 AERIAL PHOTOGRAPHS.

BUFFALO FIRE DEPARTMENT (BFD) UST INSTALLATION/REMOVAL PERMITS.

NYSDEC, 1998. TIFFT AND HOPKINS STREET (915131) IMMEDIATE INVESTIGATION WORK ASSIGNMENT REPORT (IIWA).

LEGEND

- GP–01 TO GP–28 GEOPROBE LOCATION NYSDEC 1998 IIWA
- GP–50 TO GP–87 GEOPROBE LOCATION PARSONS FEBRUARY 2003
- GP–301 TO GP–345 GEOPROBE LOCATION PARSONS NOVEMBER 2003
- 5.4 DEPTH FILL IN FEET
- MONITORING WELL LOCATION
- FENCE
- EXISTING GAS LINE
- EXISTING SEWER MANHOLE
- EXISTING HYDRANT W/VALVE
- EXISTING LIGHT POLE AND ABANDONED DIESEL PUMPS
- EXISTING UTILITY POLE
- CONCRETE PAD & STRUCTURE
- UST LOCATION

80 40 0 80 160

SCALE: 1"=80'

FIGURE 7

TIFFT AND HOPKINS SITE

DEPTH OF FILL MAP

PARSONS
180 LAWRENCE BELL DRIVE, SUITE 104, WILLIAMSVILLE, N.Y. 14221, PHONE: 716–633–7074

P:\440707 (Tifft&Hopkins)\CAD\40707F07.dwg, 04/15/04 at 21:24, MAB, 1=1
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TABLE 1a

Tifft and Hopkins Site
HON-COCs Soil Analytical Data

(NYSDEC IIWA 1998)

Sample ID:		NYSDEC TAGM	GP-01 (1.2'-3.8')	GP-09 (0'-3')	GP-11 (1'-3.5')	GP-15 (4'-4.75')	GP-19 (2'-3')	GP-21 (2'-3.5')	GP-24 (1.2'-2.25')	GP-34 (unknown)	GP-A4 (unknown)	GP-A5 (unknown)
Lab Sample ID:		#4046										
Source:			NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC
Matrix:			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sampled:			Oct-97	Oct-97	Oct-97	Oct-97	Oct-97	Oct-97	Oct-97	Oct-97	Oct-97	Oct-97
	units											
Volatile Compounds												
Chlorobenzene	ug/kg	1700	23000	19000	17000	ND	73000 D	27000	12000 J	270	390	570000
Semi-Volatile Compounds												
4-Chloroanaline	ug/kg	220	ND	ND	ND	ND	ND	ND	ND	ND	NA	6400
1,2-Dichlorobenzene	ug/kg	7900	19000	300000 JD	4800 J	ND	17000	1400 J	19000	150000 D	NA	1400 J
1,3-Dichlorobenzene	ug/kg	1600	11000	5400 J	820 J	ND	5500	ND	1000 J	5200 J	NA	ND
Nitrobenzene	ug/kg	200	ND	ND	ND	ND	ND	6600	890 J	2200 J	NA	ND
1,2,4-Trichlorobenzene	ug/kg	100	480000 D	22000	22000	ND	32000	470 J	3300 J	16000	NA	210 J

ND: Compounds was analyzed for but not detected at or above the reporting limit
NA: Compounds was not analyzed for
J: Indicates an estimated value
D: Compounds identified in an analysis at the secondary dilution factor
NYSDEC TAGM #4046: New York State Department of Environmental Conservation, Technical and Administrative Guidance Memorandum #4046, Recommended Soil Cleanup Objectives
: compound concentration exceeds TAGM #4046 Recommended Soil Cleanup Standards

TABLE 1b

Tifft and Hopkins Site
non HON-COCs Soil Analytical Data

(NYSDEC IIWA 1998)

Sample ID:		NYSDEC TAGM	GP-01 (1.2'-3.8')	GP-09 (0'-3')	GP-11 (1'-3.5')	GP-15 (4'-4.75')	GP-19 (2'-3')	GP-21 (2'-3.5')	GP-24 (1.2'-2.25')	GP-34 (unknown)	GP-A4 (unknown)	GP-A5 (unknown)
Lab Sample ID:		#4046										
Source:			NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC
Matrix:			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sampled:			Oct-97	Oct-97	Oct-97	Oct-97	Oct-97	Oct-97	Oct-97	Oct-97	Oct-97	Oct-97
	units											
Volatile Compounds												
2-Butanone	ug/kg	300	ND	ND	ND	ND	23 J	ND	ND	ND	100	ND
Benzene	ug/kg	60	ND	240 J	450 J	ND	150	59000 D	34000	62 J	6700 D	260000 D
Toluene	ug/kg	1500	ND	260 J	ND	ND	38 J	570000 D	280000	ND	170	4100
Ethylbenzene	ug/kg	5500	ND	600 J	ND	1900	25 J	8000	ND	79	ND	460 J
Xylene	ug/kg	1200	180 J	13000	270 J	1600	92	16000	4400 J	79	48 J	4900
Semi-Volatile Compounds												
2-Chloronaphthalene	ug/kg	50000	230 J	11000	590	ND	290 J	ND	ND	ND	NA	ND
2,4 Dinitrotoluene	ug/kg	50000	ND	ND	ND	ND	ND	87000 D	21000	ND	NA	190 J
2,6 Dinitrotoluene	ug/kg	1000	ND	ND	ND	ND	ND	84000 D	17000	ND	NA	ND
Fluoranthene	ug/kg	50000	2500 J	2400 J	6900 J	130 J	6500	780 J	590 J	4700 J	NA	460 J
2-Methylnaphthalene	ug/kg	36400	ND	670 J	6200	ND	970 J	3100 J	2300 J	1500 J	NA	220 J
4-Methylphenol	ug/kg	900	ND	ND	3600 J	ND	ND	ND	ND	ND	NA	ND
Naphthalene	ug/kg	13000	4500	1400000 D	320000	350 J	32000	130000 D	140000 D	61000	NA	6200
n-Nitrosodiphenylamine	ug/kg	50000	4000 J	13000	43000	ND	18000	ND	2900 J	15000	NA	560 J
Phenanthrene	ug/kg	50000	2600 J	7600 J	19000	530	11000	640 J	1800 J	120000 D	NA	1800 J

ND: Compounds was analyzed for but not detected at or above the reporting limit
NA: Compounds was not analyzed for
J: Indicates an estimated value
D: Compounds identified in an analysis at the secondary dilution factor
NYSDEC TAGM #4046: New York State Department of Environmental Conservation, Technical and Administrative Guidance Memorandum #4046, Recommended Soil Cleanup Objectives
: compound concentration exceeds TAGM #4046 Recommended Soil Cleanup Standards

Table 2

Tifft and Hopkins Site
Boring Summary

Location Identification	Location (easting)	(northing)	Ground Surface Elevation (masl)	Depth of Fill (ft)	Completed by	Date Completed	Analytical Available
GP 1	1081053.3191	1037734.9755	584.00 E	3.8	DEC	10/30/97	VOC/SVOC
GP 2	1081104.6098	1037734.0656	584.00 E	3.1	DEC	10/31/97	
GP 3	1081156.1925	1037731.0060	584.00 E	3.2	DEC	11/1/97	
GP 4	1081207.0692	1037732.0109	584.00 E	1.3	DEC	11/2/97	
GP 5	1081181.1727	1037731.8898	584.00 E	3.0	DEC	11/3/97	
GP 6	1081259.3181	1037730.7131	584.00 E	1.5	DEC	11/4/97	
GP 7	1081176.6490	1037756.3033	584.00 E	refusal	DEC	11/5/97	
GP 8	1081156.7120	1037756.9239	584.00 E	3.6	DEC	11/6/97	
GP 9	1081106.3490	1037757.0302	584.00 E	2.9	DEC	11/7/97	VOC/SVOC
GP 10	1081063.5677	1037754.8578	584.00 E	refusal	DEC	11/8/97	
GP 11	1081063.5422	1037749.3181	584.00 E	3.5	DEC	11/9/97	VOC/SVOC
GP 12	1081001.1739	1037734.2037	584.00 E	3.8	DEC	11/10/97	
GP 13	1081000.9276	1037759.3009	584.00 E	3.4	DEC	11/11/97	
GP 14	1080949.9591	1037736.2504	584.00 E	3.9	DEC	11/12/97	
GP 15	1080951.4414	1037760.8516	584.00 E	4.3	DEC	11/13/97	VOC/SVOC
GP 16	1081051.5687	1037683.3934	584.00 E	3.5	DEC	11/14/97	
GP 17	1081050.4878	1037633.9114	584.00 E	2.3	DEC	11/15/97	
GP 18	1081049.3258	1037582.8035	584.00 E	2.0	DEC	11/16/97	
GP 19	1081026.0076	1037708.4338	584.00 E	3.0	DEC	11/17/97	VOC/SVOC
GP 20	1081001.2491	1037684.4943	584.00 E	3.6	DEC	11/18/97	
GP 21	1081104.5806	1037682.5035	583.50 E	3.4	DEC	11/19/97	VOC/SVOC
GP 22	1081102.2637	1037632.6831	584.00 E	2.6	DEC	11/20/97	
GP 23	1081101.1421	1037582.1412	584.00 E	refusal	DEC	11/21/97	
GP 24	1081154.3536	1037682.7431	584.00 E	2.3	DEC	11/22/97	VOC/SVOC
GP 25	1081153.0354	1037631.6806	584.00 E	1.9	DEC	11/23/97	
GP 26	1081154.1246	1037581.5305	584.00 E	refusal	DEC	11/24/97	
GP 27	1081154.4991	1037607.6334	584.00 E	2.1	DEC	11/25/97	
GP 28	1081101.0584	1037556.8765	583.80 E	1.8	DEC	11/26/97	
GP 50	1081178.3533	1037605.2815	584.00 E	5.7	Parsons	1/27/03	SVOC
GP 51	1081090.7029	1037754.7975	584.00 E	5.4	Parsons	1/27/03	
GP 52	1081086.8505	1037750.1351	584.00 E	2.6	Parsons	1/27/03	SVOC
GP 53	1080978.9549	1037634.3569	583.44 E	4.2	Parsons	1/27/03	SVOC
GP 54	1081057.1459	1037573.5394	583.50 E	4.4	Parsons	1/27/03	SVOC
GP 55	1081125.0800	1037606.7700	583.50 E	5.1	Parsons	1/27/03	
GP 56	1081194.4800	1037606.5130	583.50 E	4.0	Parsons	1/27/03	SVOC
GP 57	1081208.1780	1037590.8900	583.50 E	5.8	Parsons	1/27/03	
GP 58	1081164.2164	1037652.0572	583.50 E	5.4	Parsons	1/27/03	
GP 59	1081187.2644	1037652.1489	583.50 E	5.0	Parsons	1/27/03	
GP 60	1081205.9011	1037651.2519	583.50 E	4.0	Parsons	1/28/03	SVOC
GP 61	1081227.8380	1037656.0790	583.74 E	4.8	Parsons	1/28/03	SVOC
GP 62	1081231.5600	1037700.3330	583.89 E	5.0	Parsons	1/28/03	SVOC
GP 63	1081196.4910	1037776.1270	583.72 E	5.5	Parsons	1/28/03	SVOC
GP 64	1081097.6490	1037800.4610	583.50 E	5.0	Parsons	1/28/03	
GP 65	1081023.5297	1037807.8733	583.70 E	5.8	Parsons	1/28/03	SVOC
GP 66	1081019.5520	1037852.5440	583.89 E	3.3	Parsons	1/28/03	SVOC
GP 67	1081151.1570	1037793.0280	584.00 E	5.8	Parsons	1/28/03	
GP 68	1080962.9540	1037899.3780	584.00 E	4.0	Parsons	1/28/03	SVOC
GP 69	1080916.1710	1037884.6990	584.00 E	4.4	Parsons	1/28/03	SVOC
GP 70	1080942.3010	1037821.3350	584.00 E	4.5	Parsons	1/28/03	SVOC
GP 71	1080966.6140	1037763.9480	583.50 E	6.0	Parsons	1/28/03	SVOC
GP 72	1080937.6646	1037706.6640	584.00 E	4.0	Parsons	1/28/03	SVOC
GP 73	1080904.2917	1037704.2297	584.00 E	4.0	Parsons	1/28/03	
GP 74	1080906.4548	1037756.9498	584.00 E	3.0	Parsons	1/28/03	
GP 75	1080931.9684	1037850.9473	584.30 E	5.5	Parsons	1/28/03	SVOC
GP 76	1080965.6360	1037937.1470	583.50 E	6.0	Parsons	2/3/03	SVOC
GP 77	1081015.8614	1037883.9991	583.50 E	5.3	Parsons	2/3/03	SVOC
GP 78	1080904.4687	1037851.3893	584.30 E	5.8	Parsons	2/3/03	
GP 79	1080881.9140	1037855.5570	584.40 E	7.5	Parsons	2/3/03	SVOC
GP 80	1080988.6500	1037784.1200	583.50 E	6.0	Parsons	2/3/03	SVOC
GP 81	1081100.4070	1037850.5390	583.80 E	6.0	Parsons	2/3/03	SVOC
GP 82	1081105.8980	1037906.3420	583.50 E	5.0	Parsons	2/3/03	SVOC
GP 83	1081095.4003	1037939.6524	583.50 E	5.3	Parsons	2/3/03	
GP 84	1081165.6519	1037708.8294	583.75 E	6.0	Parsons	2/4/03	SVOC
GP 85	1081150.4675	1037657.6418	583.25 E	4.8	Parsons	2/4/03	SVOC
GP 86	1081104.2198	1037653.5365	583.25 E	4.7	Parsons	2/4/03	SVOC
GP 87	1081077.1825	1037710.2922	583.75 E	5.8	Parsons	2/4/03	

Table 2

Tifft and Hopkins Site
Boring Summary

Location Identification	Location (easting)	Location (northing)	Ground Surface Elevation (masl)	Depth of Fill (ft)	Completed by	Date Completed	Analytical Available
GP 301	1081282.2280	1037476.8290	583.28	3.3	Parsons	11/3/03	
GP 302	1081299.6100	1037560.9160	583.68	3.7	Parsons	11/3/03	
GP 303	1081308.7240	1037628.9480	583.71	3.8	Parsons	11/3/03	VOC/SVOC/PEST/PCB/METALS
GP 304	1081310.7570	1037709.8110	583.48	5.0	Parsons	11/3/03	
GP 305	1081171.7050	1037470.0340	583.52	3.5	Parsons	11/3/03	
GP 306	1080878.3180	1037610.5250	583.56	6.0	Parsons	11/3/03	
GP 307	1080878.0470	1037532.4450	583.15	4.5	Parsons	11/3/03	
GP 308	1081090.2750	1037740.1110	584.07	7.1	Parsons	11/3/03	VOC/SVOC/PEST/PCB/METALS
GP 309	1081151.8670	1037793.7870	583.89	4.0	Parsons	11/3/03	VOC/SVOC/PEST/PCB/METALS
GP 310	1081327.5780	1037828.5490	582.84	3.8	Parsons	11/3/03	
GP 311	1081337.8980	1037882.3220	582.45	4.2	Parsons	11/3/03	
GP 312	1081290.3970	1037916.5180	582.53	4.1	Parsons	11/3/03	
GP 313	1081281.7190	1037869.6420	583.45	4.8	Parsons	11/3/03	
GP 314	1081280.1900	1037820.2230	583.23	6.3	Parsons	11/3/03	
GP 315	1081230.5950	1037829.5300	583.46	5.4	Parsons	11/3/03	VOC/SVOC/PEST/PCB/METALS
GP 316	1081218.6860	1037869.4600	583.08	6.4	Parsons	11/3/03	VOC/SVOC/PEST/PCB/METALS
GP 317	1081248.4070	1037848.0760	583.45	5.3	Parsons	11/3/03	VOC/SVOC/PEST/PCB/METALS
GP 318	1081196.6630	1037926.7500	582.86	6.0	Parsons	11/3/03	
GP 319	1081144.4160	1037964.5060	582.84	7.0	Parsons	11/4/03	
GP 320	1081144.4530	1037900.2560	583.51	5.0	Parsons	11/4/03	VOC/SVOC/PEST/PCB/METALS
GP 321	1081154.6400	1037844.0230	583.72	4.5	Parsons	11/4/03	
GP 322	1081439.4410	1037812.3630	582.68	5.2	Parsons	11/4/03	
GP 323	1081437.0580	1037845.9580	582.60	6.1	Parsons	11/4/03	VOC/SVOC/PEST/PCB/METALS
GP 324	1081418.4880	1037859.4190	582.66	3.3	Parsons	11/4/03	
GP 325	1081401.9490	1037820.2360	582.68	5.3	Parsons	11/4/03	
GP 326	1081415.7480	1037808.9580	583.01	5.4	Parsons	11/4/03	
GP 327	1081053.1530	1037516.9390	583.28	6.0	Parsons	11/4/03	VOC/SVOC/PEST/PCB/METALS
GP 328	1081072.1600	1037566.6970	583.44	4.5	Parsons	11/4/03	
GP 329	1081106.5620	1037565.0260	583.80	refusal	Parsons	11/4/03	
GP 330	1081140.1290	1037564.8260	583.97	4.4	Parsons	11/4/03	
GP 331	1081140.2280	1037528.3210	583.90	5.0	Parsons	11/4/03	VOC/SVOC/PEST/PCB/METALS
GP 332	1081240.0990	1037698.3040	583.74	4.6	Parsons	11/4/03	
GP 333	1081017.4650	1037850.7900	583.70	4.6	Parsons	11/5/03	VOC/SVOC/PEST/PCB/METALS
GP 334	1080904.7350	1037928.2510	584.10	3.5	Parsons	11/5/03	VOC/SVOC/PEST/PCB/METALS
GP 335	1080914.0770	1037976.6490	583.97	3.5	Parsons	11/5/03	
GP 336	1080968.4630	1037968.6720	583.64	5.3	Parsons	11/5/03	
GP 337	1081020.0120	1037935.1560	583.42	6.0	Parsons	11/5/03	
GP 338	1080840.1640	1037990.9560	583.92	6.4	Parsons	11/5/03	
GP 339	1080839.5160	1037935.2700	584.00	5.4	Parsons	11/5/03	
GP 340	1080859.8940	1037869.7200	584.40	6.2	Parsons	11/5/03	
GP 341	1080839.8370	1037863.0780	584.24	3.5	Parsons	11/5/03	VOC/SVOC/PEST/PCB/METALS
GP 342	1080884.1070	1037833.9160	584.08	5.2	Parsons	11/5/03	VOC/SVOC/PEST/PCB/METALS
GP 343	1080863.2290	1037820.1920	584.13	6.1	Parsons	11/5/03	VOC/SVOC/PEST/PCB/METALS
GP 344	1080837.9360	1037816.5620	584.13	5.1	Parsons	11/5/03	
GP 345	1080815.1600	1037818.7350	583.90	4.5	Parsons	11/5/03	
TP 101	1081014.5645	1037756.3915	-	-	AAB	5/1/93	
TP 102	1081101.7692	1037755.7691	-	-	AAB	6/1/93	
TP 103	1081278.4237	1037712.0428	-	-	AAB	7/1/93	
TP 104	1081128.5190	1037504.2669	-	-	AAB	8/1/93	
TP A	1081425.3738	1037873.4310	-	-	GZA	3/3/03	
TP B	1081298.6168	1037913.4869	-	-	GZA	3/3/03	
TP C	1081209.9244	1037974.9824	-	-	GZA	3/3/03	
TP D	1081073.5104	1037817.6512	-	-	GZA	3/4/03	
TP E	1081209.2254	1037778.2510	-	-	GZA	3/4/03	
TP F	1081086.8473	1037995.3024	-	-	GZA	3/4/03	
TP G	1081173.8054	1037847.5243	-	-	GZA	3/4/03	
TP H	1081146.6079	1037848.7923	-	-	GZA	3/4/03	
TP I	1080963.7154	1037847.5493	-	-	GZA	3/4/03	
TP J	1080931.5994	1037820.8887	-	-	GZA	3/4/03	
TP K	1080886.6651	1037840.1502	-	-	GZA	3/4/03	
TP L	1080913.1486	1037998.9039	-	-	GZA	3/4/03	
TP M	1081004.1032	1037997.5344	-	-	GZA	3/4/03	
MW 1	1081101.1100	1037850.1670	583.80	-	Parsons	2/28/03	
MW 2	1080923.0950	1037850.1730	584.30	-	Parsons	2/28/03	
MW 3	1081118.4050	1037855.6940	583.24	-	Parsons	2/28/03	
MW 4	1080884.9330	1037855.5310	584.28	6.0	Parsons	10/21/03	
MW 5	1080868.9590	1037645.8420	584.09	10.0	Parsons	10/21/03	
MW 6	1080869.0770	1037645.8420	583.73	4.0	Parsons	10/20/03	
MW 7	1081291.0550	1037980.0410	583.36	2.8	Parsons	10/21/03	
MW 8	1081409.9320	1037979.7280	586.24	4.0	Parsons	10/20/03	

Table 3

Tifft and Hopkins Site
Shallow Groundwater Elevation Summary

Location	Top of PVC elevation	Ground Surface Elevation	Groundwater Elevation 5-Mar-03	Groundwater Elevation November 7, 2003	Groundwater Elevation November 26, 2003	Groundwater Elevation December 9, 2003
MW-1	587.48	583.80	587.48	587.48	587.48	587.48
MW-2	585.95	584.30	585.95	585.95	585.95	585.95
MW-3	583.24	584.15	586.20	583.24	583.24	583.24
MW-4	586.24	584.28	-	586.24	586.24	586.24
MW-5	586.21	584.09	-	586.21	586.21	586.21
MW-6	582.75	583.73	-	582.75	582.75	582.75
MW-7	582.56	583.36	-	582.56	582.56	582.56
MW-8	584.84	581.69	-	584.84	584.84	584.84

TABLE 4
Tifft and Hopkins Site
HON-COCs Soil Analytical Data

(February 2003)

Sample ID:		NYSDEC TAGM	GP-50 (2-4)	GP-52 (4.2-4.4)	GP-53 (4-4.2)	GP-54 (4.4-5.4)	GP-56 (5-7)	GP-60 (3.4-4)	GP-61 (4-5.1)	GP-62 (3-3.3)
Lab Sample ID:		#4046	A3078203	A3078201	A3078202	A3078204	A3078205	A3083201	A308202	A3083203
Source:			STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo
Matrix:			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sampled:			1/27/2003	1/27/2003	1/27/2003	1/27/2003	1/27/2003	1/28/2003	1/28/2003	1/28/2003
Compound	units									
4-Chloroaniline	ug/kg	220	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ug/kg	7900	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ug/kg	1600	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	ug/kg	200	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	ug/kg	100	ND	ND	ND	ND	ND	ND	ND	ND

ND: Compounds was analyzed for but not detected at or above the reporting limit
J: Indicates an estimated value
D: Compounds identified in an analysis at the secondary dilution factor
NYSDEC TAGM #4046: New York State Department of Environmental Conservation, Technical and Administrative Guidance Memorandum #4046, Recommended Soil Cleanup Objectives
: compound concentration exceeds TAGM #4046 Recommended Soil Cleanup Standards

TABLE 4
Tifft and Hopkins Site
HON-COCs Soil Analytical Data

(February 2003)

Sample ID:		NYSDEC TAGM	GP-63 (4-5)	GP-65 (2.1-4.0)	GP-66 (2.8-3.2)	GP-68 (2.1-2.7)	GP-69 (3.6-4.0)	GP-70 (7.8-8)	GP-71 (3.9-5)	GP-72 (3.8-4.2)	GP-75 (3.2-4.2)
Lab Sample ID:		#4046	A3083204	A3083205	A308206	A3083207	A3083208	A3083209	A3087101	A3087301	A3087302
Source:			STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo
Matrix:			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sampled:			1/28/2003	1/28/2003	1/28/2003	1/28/2003	1/28/2003	1/28/2003	1/29/2003	1/29/2003	1/29/2003
Compound	units										
4-Chloroaniline	ug/kg	220	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ug/kg	7900	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ug/kg	1600	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	ug/kg	200	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	ug/kg	100	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 4
Tifft and Hopkins Site
HON-COCs Soil Analytical Data

(February 2003)

Sample ID:		NYSDEC TAGM	GP-76 (5-6)	GP-77 (3.9-5.2)	GP-79 (2.8-4)	GP-80 (3.7-5.9)	GP-81 (3-6)	GP-82 (4.5-5)	GP-84 (2-6)	GP-85 (2-4.8)	GP-86 (2-4.7)
Lab Sample ID:		#4046	A3099201	A3099202	A3099203	A3099204	A3099205	A3099205	A3101801	A3101802	A3101803
Source:			STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo
Matrix:			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sampled:			2/3/2003	2/3/2003	2/3/2003	2/3/2003	2/3/2003	2/3/2003	2/4/2003	2/4/2003	2/4/2003
Compound	units										
4-Chloroaniline	ug/kg	220	ND	ND	ND	ND	360000 E	ND	ND	ND	ND
1,2-Dichlorobenzene	ug/kg	7900	ND	ND	ND	ND	21000	ND	140000	110000 J	270000
1,3-Dichlorobenzene	ug/kg	1600	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	ug/kg	200	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	ug/kg	100	ND	ND	ND	ND	69000	ND	ND	ND	140000

Table 5
Tifft and Hopkins Site
HON-COCs Soil Analytical Data

(November 2003)

Sample ID:		NYSDEC	GP303	GP308	GP309	GP315	GP316	GP317	GP320	GP323	GP327
Sample Depth (feet):		TAGM	(2-4)	(2-4)	(0-4)	(2-5)	(1-5)	(2-4)	(2-4)	(6-8)	(3-5)
Lab Sample ID:		#4046	A3A68707	A3A68705DL	A3A68706	A3A68711	A3A68708DL	A3A38710	A3A68709	A3A68701	A3A68702
Laboratory:			STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo
Matrix:			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sampled:			11/3/2003	11/3/2003	11/3/2003	11/3/2003	11/3/2003	11/3/2003	11/4/2003	11/4/2003	11/4/2003
	units										
Volatile Compounds											
Chlorobenzene	ug/kg	1700	ND	48000 D	29	170	190 D	14000 D	16	16	ND
Semi-Volatile Compounds											
4-Chloroaniline	ug/kg	220	ND	2500 J	ND	ND	300 J	5800	ND	ND	ND
1,2-Dichlorobenzene	ug/kg	7900	ND	8500 J	ND	5800	ND	16000	ND	ND	ND
1,3-Dichlorobenzene	ug/kg	1600	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	ug/kg	200	ND	ND	ND	ND	ND	ND	57000	ND	ND
1,2,4-Trichlorobenzene	ug/kg	100	ND	48000	3900 J	ND	ND	ND	ND	ND	ND

ND: Compounds was analyzed for but not detected at or above the reporting limit
J: Indicates an estimated value
D: Compounds identified in an analysis at the secondary dilution factor
NYSDEC TAGM #4046: New York State Department of Environmental Conservation, Technical and Administrative Guidance Memorandum #4046, Recommended Soil Cleanup Objectives
: compound concentration exceeds TAGM #4046 Recommended Soil Cleanup Standards

Table 5
Tifft and Hopkins Site
HON-COCs Soil Analytical Data

(November 2003)

Sample ID:		NYSDEC	GP331	Duplicate of GP331 GPDUP1	GP333	Duplicate of GP333 DUP-2	GP334	GP341	GP342	GP343
Sample Depth (feet):		TAGM	(2-3)		(3-5.5)		(1-3)	(4-5)	(1-4)	(1-3)
Lab Sample ID:		#4046	A3A68703	A3A68704	A3A74504	A3A74506	A3A74504	A3A74501	A3A74052DL	A3A74503
Laboratory:			STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo
Matrix:			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sampled:			11/4/2003	11/4/2003	11/5/2003	11/5/2003	11/5/2003	11/5/2003	11/5/2003	11/5/2003
	units									
Volatile Compounds										
Chlorobenzene	ug/kg	1700	ND	ND	200000	200000	3 J	3 J	340000 D	430000
Semi-Volatile Compounds										
4-Chloroaniline	ug/kg	220	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ug/kg	7900	ND	ND	37000	ND	ND	ND	25000	680000 D
1,3-Dichlorobenzene	ug/kg	1600	ND	ND	ND	ND	ND	ND	9200 J	56000
Nitrobenzene	ug/kg	200	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	ug/kg	100	ND	ND	7900 J	ND	ND	ND	11000	100000

TABLE 6
Tifft and Hopkins Site
non HON-COCs Soil Analytical Data

(February 2003)

Sample ID:		NYSDEC TAGM	GP-50 (2-4)	GP-52 (4.2-4.4)	GP-53 (4-4.2)	GP-54 (4.4-5.4)	GP-56 (5-7)	GP-60 (3.4-4)	GP-61 (4-5.1)	GP-62 (3-3.3)
Lab Sample ID:		#4046	A3078203	A3078201	A3078202	A3078204	A3078205	A3083201	A308202	A3083203
Source:			STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo
Matrix:			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sampled:			1/27/2003	1/27/2003	1/27/2003	1/27/2003	1/27/2003	1/28/2003	1/28/2003	1/28/2003
Compound	units									
Aniline	ug/kg	100	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	ug/kg	50000	ND	ND	ND	ND	7500	ND	ND	ND
Benzidine	ug/kg	NS	53000 J	ND	ND	ND	ND	ND	ND	ND
Benzo[a]anthracene	ug/kg	224	ND	ND	330 J	ND	ND	ND	ND	ND
Benzo[a]pyrene	ug/kg	61	ND	ND	260 J	ND	ND	ND	ND	ND
Chrysene	ug/kg	400	ND	ND	300 J	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	ug/kg	1000	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Diphenylhydrazine	ug/kg	50000	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	ug/kg	50000	ND	ND	560	ND	ND	ND	ND	ND
Phenanthrene	ug/kg	50000	ND	ND	ND	ND	7700	ND	ND	ND
Phenol	ug/kg	30	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	ug/kg	50000	ND	ND	490	ND	ND	ND	ND	ND
Naphthalene	ug/kg	13000	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine	ug/kg	50000	13000 J	ND	ND	ND	ND	ND	ND	ND

ND: Compounds was analyzed for but not detected at or above the reporting limit
J: Indicates an estimated value
D: Compounds identified in an analysis at the secondary dilution factor
NYSDEC TAGM #4046: New York State Department of Environmental Conservation, Technical and Administrative Guidance Memorandum #4046, Recommended Soil Cleanup Objectives
: compound concentration exceeds TAGM #4046 Recommended Soil Cleanup Standards

TABLE 6
Tifft and Hopkins Site
non HON-COCs Soil Analytical Data

(February 2003)

Sample ID:		NYSDEC TAGM	GP-63 (4-5)	GP-65 (2.1-4.0)	GP-66 (2.8-3.2)	GP-68 (2.1-2.7)	GP-69 (3.6-4.0)	GP-70 (7.8-8)	GP-71 (3.9-5)	GP-72 (3.8-4.2)	GP-75 (3.2-4.2)
Lab Sample ID:		#4046	A3083204	A3083205	A308206	A3083207	A3083208	A3083209	A3087101	A3087301	A3087302
Source:			STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo
Matrix:			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sampled:			1/28/2003	1/28/2003	1/28/2003	1/28/2003	1/28/2003	1/28/2003	1/29/2003	1/29/2003	1/29/2003
Compound	units										
Aniline	ug/kg	100	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	ug/kg	50000	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzidine	ug/kg	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo[a]anthracene	ug/kg	224	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo[a]pyrene	ug/kg	61	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	ug/kg	400	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	ug/kg	1000	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Diphenylhydrazine	ug/kg	50000	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	ug/kg	50000	ND	ND	ND	ND	18000 J	ND	ND	ND	ND
Phenanthrene	ug/kg	50000	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenol	ug/kg	30	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	ug/kg	50000	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	ug/kg	13000	ND	7700000 E	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine	ug/kg	50000	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 6
Tifft and Hopkins Site
non HON-COCs Soil Analytical Data

(February 2003)

Sample ID:		NYSDEC TAGM	GP-76 (5-6)	GP-77 (3.9-5.2)	GP-79 (2.8-4)	GP-80 (3.7-5.9)	GP-81 (3-6)	GP-82 (4.5-5)	GP-84 (2-6)	GP-85 (2-4.8)	GP-86 (2-4.7)
Lab Sample ID:		#4046	A3099201	A3099202	A3099203	A3099204	A3099205	A3099205	A3101801	A3101802	A3101803
Source:			STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo
Matrix:			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sampled:			2/3/2003	2/3/2003	2/3/2003	2/3/2003	2/3/2003	2/3/2003	2/4/2003	2/4/2003	2/4/2003
Compound	units										
Aniline	ug/kg	100	ND	ND	ND	ND	220000	ND	ND	200000	270000
Anthracene	ug/kg	50000	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzidine	ug/kg	NS	13000	ND	26000 J	ND	ND	ND	ND	ND	260000 J
Benzo[a]anthracene	ug/kg	224	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo[a]pyrene	ug/kg	61	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	ug/kg	400	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	ug/kg	1000	ND	ND	12000 J	ND	ND	ND	ND	ND	ND
1,2-Diphenylhydrazine	ug/kg	50000	ND	ND	ND	ND	9800 J	ND	ND	ND	ND
Fluoranthene	ug/kg	50000	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	ug/kg	50000	ND	ND	ND	ND	ND	ND	57000 J	ND	ND
Phenol	ug/kg	30	ND	ND	ND	ND	15000 J	ND	ND	ND	ND
Pyrene	ug/kg	50000	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	ug/kg	13000	ND	ND	58000	ND	99000	ND	110000 J	430000	130000
N-Nitrosodiphenylamine	ug/kg	50000	ND	42000	ND	ND	10000 J	ND	ND	ND	ND

Table 7
Tifft and Hopkins Site
non HON-COCs Soil Analytical Data

(November 2003)

Sample ID:		NYSDEC	GP303	GP308	GP309	GP315	GP316	GP317	GP320	GP323	GP327
Sample Depth (feet):		TAGM	(2-4)	(2-4)	(0-4)	(2-5)	(1-5)	(2-4)	(2-4)	(6-8)	(3-5)
Lab Sample ID:		#4046	A3A68707	A3A68705DL	A3A68706	A3A68711	A3A68708DL	A3A38710	A3A68709	A3A68701	A3A68702
Laboratory:			STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo
Matrix:			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sampled:			11/3/2003	11/3/2003	11/3/2003	11/3/2003	11/3/2003	11/3/2003	11/4/2003	11/4/2003	11/4/2003
	units										
Volatile Compounds											
Acetone	ug/kg	200	ND	ND	140	130	31	98	88	58	170
Benzene	ug/kg	60	ND	3000	16	110	51	53	ND	ND	ND
2-Butanone	ug/kg	300	ND	1000 J	ND	ND	ND	ND	12 J	ND	24 J
Ethylbenzene	ug/kg	5500	ND	210 J	ND	ND 460	ND	6 J	ND	ND	ND
Carbon Disulfide	ug/kg	2700	ND	ND	3 J	ND	ND	ND	ND	ND	ND
Methylene Chloride	ug/kg	100	6	ND	9	ND	7	ND	ND	6	7
Toluene	ug/kg	1500	ND	1900	ND	3 J	ND	4 J	ND	ND	ND
Total Xylenes	ug/kg	1200	ND	1900	ND	ND	ND	13 J	ND	ND	ND
Semi-Volatile Compounds											
Acenaphthene	ug/kg	50000	1600 J	ND	ND	ND	ND	ND	ND	ND	3800 J
Acenphthylene	ug/kg	41000	1700 J	ND	ND	ND	ND	ND	ND	ND	2100 J
Anthracene	ug/kg	50000	5600	ND	ND	14000	ND	ND	ND	ND	9800
Benzo(a)anthracene	ug/kg	224	8300	ND	ND	3300 J	ND	ND	ND	ND	16000
Benzo(b)fluoranthene	ug/kg	1100	6200	ND	ND	ND	ND	2300 J	ND	ND	10000
Benzo(k)fluoranthene	ug/kg	1100	4300	ND	ND	2300 J	ND	2400 J	ND	ND	8700
Benzo(ghi)perylene	ug/kg	50000	3500	ND	ND	ND	ND	ND	ND	ND	7500
Benzo(a)pyrene	ug/kg	61	6900	ND	ND	2400 J	ND	ND	ND	ND	12000
Chrysene	ug/kg	400	7000	ND	ND	2700 J	ND	ND	ND	ND	13000
Dibenzo (a,h) anthracene	ug/kg	14	ND	ND	ND	ND	ND	ND	ND	ND	2700 J
Dibenzofuran	ug/kg	6200	2100	ND	ND	ND	ND	ND	ND	ND	3900
1,4-Dichlorobenzene	ug/kg	8500	ND	ND	ND	2300 J	ND	ND	ND	ND	ND
Dimethyl phthalate	ug/kg	2000	ND	13000	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	ug/kg	50000	18000	ND	2900 J	5600	ND	2900 J	2600 J	ND	33000
Fluorene	ug/kg	50000	3000	ND	ND	ND	ND	ND	ND	ND	6000
Ideno(1,2,3-cd) pyrene	ug/kg	3200	3400	ND	ND	ND	ND	ND	ND	ND	7300
2-Methylnapthalene	ug/kg	36400	1200 J	ND	ND	ND	ND	ND	ND	ND	2100 J
Naphthalene	ug/kg	13000	2300	5800 J	3800 J	26000	ND	ND	ND	ND	4500
N-Nitrosodiphenylamine	ug/kg	50000*	ND	3600 J	ND	4400	ND	7200	ND	210 J	ND
Phenanthrene	ug/kg	50000	24000	ND	1400 J	23000	ND	3200 J	2200 J	ND	33000
Pyrene	ug/kg	50000	18000	ND	2900 J	5700	ND	2600 J	2600 J	ND	30000

ND: Compounds was analyzed for but not detected at or above the reporting limit
J: Indicates an estimated value
D: Compounds identified in an analysis at the secondary dilution factor
NYSDEC TAGM #4046: New York State Department of Environmental Conservation, Technical and Administrative Guidance Memorandum #4046, Recommended Soil Cleanup Objectives
: compound concentration exceeds TAGM #4046 Recommended Soil Cleanup Standards

Table 7
Tifft and Hopkins Site
non HON-COCs Soil Analytical Data

(November 2003)

Sample ID:		NYSDEC	GP331	Duplicate of GP331 GPDUP1	GP333	Duplicate of GP333 DUP-2	GP334	GP341	GP342	GP343
Sample Depth (feet):		TAGM	(2-3)		(3-5.5)		(1-3)	(4-5)	(1-4)	(1-3)
Lab Sample ID:		#4046	A3A68703	A3A68704	A3A74504	A3A74506	A3A74504	A3A74501	A3A74052DL	A3A74503
Laboratory:			STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo
Matrix:			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sampled:			11/4/2003	11/4/2003	11/5/2003	11/5/2003	11/5/2003	11/5/2003	11/5/2003	11/5/2003
	units									
Volatile Compounds										
Acetone	ug/kg	200	130	230	ND	ND	ND	55	ND	ND
Benzene	ug/kg	60	ND	ND	16000	18000	ND	ND	780 J	ND
2-Butanone	ug/kg	300	24 J	37	ND	ND	ND	8 J	ND	ND
Ethylbenzene	ug/kg	5500	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	ug/kg	2700	ND	1 J	ND	ND	ND	ND	ND	ND
Methylene Chloride	ug/kg	100	9	8	ND	ND	ND	ND	ND	ND
Toluene	ug/kg	1500	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	ug/kg	1200	ND	ND	ND	ND	ND	ND	3600 J	ND
Semi-Volatile Compounds										
Acenaphthene	ug/kg	50000	ND	ND	ND	ND	ND	ND	ND	ND
Acenphthylene	ug/kg	41000	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	ug/kg	50000	2400 J	ND	9400	ND	ND	ND	35000	ND
Benzo(a)anthracene	ug/kg	224	5300	6100 J	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	ug/kg	1100	3400 J	4200 J	ND	ND	1700 J	ND	ND	ND
Benzo(k)fluoranthene	ug/kg	1100	3700 J	ND	ND	ND	ND	ND	ND	ND
Benzo(ghi)perylene	ug/kg	50000	2900 J	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	ug/kg	61	4300	5000 J	ND	ND	1700 J	ND	ND	ND
Chrysene	ug/kg	400	4600	5100 J	ND	ND	1600 J	ND	ND	ND
Dibenzo (a,h) anthracene	ug/kg	14	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	ug/kg	6200	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ug/kg	8500	ND	ND	18000	ND	ND	ND	69000	140000
Dimethyl phthalate	ug/kg	2000	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	ug/kg	50000	10000	13000	5100 J	ND	2400 J	ND	6700 J	ND
Fluorene	ug/kg	50000	ND	ND	ND	ND	ND	ND	4000 J	4800 J
Ideno(1,2,3-cd) pyrene	ug/kg	3200	2700 J	ND	ND	ND	ND	ND	ND	ND
2-Methylnapthalene	ug/kg	36400	ND	ND	4500 J	ND	ND	ND	4000 J	ND
Naphthalene	ug/kg	13000	ND	ND	1500000 D	1800000 D	16000	ND	490000 D	700000 D
N-Nitrosodiphenylamine	ug/kg	50000*	ND	ND	7100 J	ND	ND	ND	36000	12000
Phenanthrene	ug/kg	50000	7700	9600	14000	ND	1800 J	ND	20000	26000
Pyrene	ug/kg	50000	9600	12000	4200 J	ND	2600 J	ND	6000 J	ND

Table 7 cont.
Tifft and Hopkins Site
Soil Analytical Data
PCBs, Pesticides, Metals
(November 2003)

	NYSDEC TAGM #4046	SAMPLE ID:	GP303 (2-4)	GP308 (2-4)	GP309 (0-4)	GP315 (2-5)	GP316 (1-5)	GP317 (2-4)	GP320 (2-4)	GP323 (6-8)
		LAB ID:	A3A68707	A3A68705	A3A68706	A3A68711	A3A68708	A3A68710	A3A68709	A3A68701
		LABORATORY	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo
		MATRIX:	soil	soil	soil	soil	soil	soil	soil	soil
		SAMPLED:	11/3/2003	11/3/2003	11/3/2003	11/3/2003	11/3/2003	11/030/03	11/3/2003	11/4/2003
COMPOUND		UNITS:								
PESTICIDES										
gamma-BHC (Lindane)	60	ug/kg	ND	ND	ND	ND	ND	17	ND	ND
beta-BHC	200	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	900	ug/kg	ND	ND	ND	ND	ND	17	ND	ND
Heptachlor epoxide	20	ug/kg	ND	ND	ND	ND	ND	8.2 J	ND	ND
alpha-BHC	110	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
delta-BHC	300	ug/kg	ND	ND	ND	ND	ND	14	ND	ND
Endrin	100	ug/kg	11	ND	ND	ND	460	ND	ND	ND
Endosulfan Sulfate	1000	ug/kg	ND	120 J	ND	ND	ND	ND	ND	ND
Endrin aldehyde	NS	ug/kg	5.3 J	ND	ND	ND	ND	16	ND	ND
4,4-DDT	2100	ug/kg	4.8 J	ND	ND	ND	ND	ND	ND	ND
4,4'-DDD	2900	ug/kg	ND	ND	ND	230	ND	ND	110	ND
Methoxychlor	NS	ug/kg	ND	ND	ND	ND	ND	13	ND	ND
4,4'-DDE	2100	ug/kg	4.6 J	ND	5.3 J	ND	ND	ND	ND	ND
PCBs Total										
Aroclor 1254	10000 subsurface	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	10000 subsurface	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND
Metals - Total										
Aluminum	SB/33000	mg/kg	10200	7300	10800	5870	6250	2820	11200	4540
Antimony	SB	mg/kg	ND	60.5	ND	49.3	ND	137	35.4	ND
Arsenic	SB/7.5	mg/kg	16.6	40.6	50.5	23.4	6.2	27.3	24.8	5.1
Barium	300	mg/kg	65.5	181	145	199	51.2	294	270	123
Beryllium	SB/0.16	mg/kg	0.46	1.2	0.59	0.44	0.31	ND	1.3	0.34
Cadmium	SB/1	mg/kg	ND	0.39	ND	ND	ND	ND	ND	ND
Calcium	SB/35000	mg/kg	10300	39300	24000	23400	3530	46700	33400	20900
Chromium	SB/10	mg/kg	15.4	408	69.6	288	39	670	537	6.5
Iron	SB/2000	mg/kg	23500	68900	40100	63300	26400	112000	39900	12800
Cobalt	SB/30	mg/kg	5	9.8	10.4	8.2	7.8	11.1	7.4	4.7
Copper	SB/25	mg/kg	27.3	420	149	392	34.4	323	178	18.8
Lead	SB/500	mg/kg	80	6260	556	1090	52	12100	7500	7.8
Magnesium	SB/5000	mg/kg	1700	3710	5780	3890	2580	2330	6080	4830
Manganese	SB/5000	mg/kg	304	1370	1280	712	271	1120	616	543
Mercury	0.1	mg/kg	0.13	2.8	4	4.7	ND	6.3	7.9	ND
Nickel	SB/13	mg/kg	12.9	72	48.8	51.8	32.4	166	36.5	16.4
Potassium	SB/43000	mg/kg	888	865	2050	1140	880	393	1350	940
Sodium	SB/8000	mg/kg	251	394	ND	753	318	417	251	ND
Vanadium	SB/150	mg/kg	19.7	37.3	25.7	27.7	17.4	65.4	20.4	11.4
Zinc	SB/20	mg/kg	141	1230	271	2490	63.1	928	424	43.1
Cyanide - Total										
Cyanide		ug/kg	ND	ND	ND	ND	1.7	ND	ND	ND

Table 7 cont.
Tifft and Hopkins Site
Soil Analytical Data
PCBs, Pesticides, Metals
(November 2003)

					Duplicate of GP331		Duplicate of GP333				
	NYSDEC TAGM #4046	SAMPLE ID:	GP327 (3-5)	GP331 (3-5.5)	GPDUP1	GP333 (3-5.5)	DUP2	GP334 (1-3)	GP341 (4-5)	GP342 (1-4)	GP343 (1-3)
		LAB ID:	A3A68702	A3A74505RE	A3A68704	A3A74505	A3A74506RE	A3A7450RE	A3A74501RE	A3A74502RE	A3A74503RE
		LABORATORY	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo
		MATRIX:	soil	soil	soil	soil	soil	soil	soil	soil	soil
		SAMPLED:	11/4/2003	11/5/2003	11/4/2003	11/5/2003	11/3/2003	11/5/2003	11/5/2003	11/5/2003	11/050/03
COMPOUND		UNITS:									
PESTICIDES											
gamma-BHC (Lindane)	60	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND
beta-BHC	200	ug/kg	ND	ND	ND	ND	120 J	ND	ND	ND	56 J
Endosulfan I	900	ug/kg	ND	ND	ND	380 J	ND	ND	ND	ND	ND
Heptachlor epoxide	20	ug/kg	ND	ND	6.8 J	ND	ND	ND	7.1 J	ND	32 J
alpha-BHC	110	ug/kg	ND	ND	ND	ND	ND	ND	ND	88 J	ND
delta-BHC	300	ug/kg	8.6 J	7.6 J	7.2 J	ND	ND	19	10	100 J	280
Endrin	100	ug/kg	5.6 J	ND	ND	ND	230 J	ND	17	80 J	ND
Endosulfan Sulfate	1000	ug/kg	ND	ND	ND	ND	ND	34	ND	80 J	32 J
Endrin aldehyde	NS	ug/kg	8.6 J	14	12	ND	ND	ND	7.5 J	ND	ND
4,4-DDT	2100	ug/kg	ND	3.7 J	4.6 J	ND	ND	ND	ND	ND	ND
4,4'-DDD	2900	ug/kg	ND	ND	ND	510 J	ND	ND	ND	ND	76 J
Methoxychlor	NS	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	100 J
4,4'-DDE	2100	ug/kg	10	ND	ND	ND	ND	ND	ND	ND	73 J
PCBs Total											
Aroclor 1254	10000 subsurface	ug/kg	ND	ND	ND	ND	ND	ND	160	ND	ND
Aroclor 1260	10000 subsurface	ug/kg	ND	ND	ND	ND	1600	ND	110	ND	ND
Metals - Total											
Aluminum	SB/33000	mg/kg	5330	8180	7810	3130	4080	10300	9750	4280	4120
Antimony	SB	mg/kg	ND	25	ND	76.2	79.4	ND	ND	119	108
Arsenic	SB/7.5	mg/kg	26.4	28.5	27	240	215	20.2	21.4	86.7	162
Barium	300	mg/kg	123	211	284	200	225	241	162	737	298
Beryllium	SB/0.16	mg/kg	0.36	0.64	0.74	0.38	0.47	1	0.8	0.41	0.48
Cadmium	SB/1	mg/kg	ND	ND	ND	2.5	1.7	0.69	ND	11.7	2
Calcium	SB/35000	mg/kg	11000	28400	33500	25500	33900	82600	24800	12300	53900
Chromium	SB/10	mg/kg	191	982	530	899	1710	269	135	2070	536
Iron	SB/2000	mg/kg	31400	27000	27400	42800	38100	50500	31200	76700	69500
Cobalt	SB/30	mg/kg	6.4	8.3	7.6	5.9	5.8	11.3	8.5	9.6	9.9
Copper	SB/25	mg/kg	136	122	98.2	386	257	481	121	816	717
Lead	SB/500	mg/kg	157	132	168	563	497	377	346	1800	1190
Magnesium	SB/5000	mg/kg	2480	3730	3730	2550	3150	18000	6360	3140	2420
Manganese	SB/5000	mg/kg	465	349	370	858	1750	16200	536	537	2340
Mercury	0.1	mg/kg	0.049	1.6	1.5	14.1	7	1.1	1.2	38.3	11.4
Nickel	SB/13	mg/kg	20	26.9	24.6	56.8	38.1	20.2	33	98.9	86.4
Potassium	SB/43000	mg/kg	877	1070	1020	573	615	1170	1470	736	570
Sodium	SB/8000	mg/kg	ND	481	490	386	340	294	244	404	402
Vanadium	SB/150	mg/kg	16.7	19.4	18.6	45.4	58.9	132	30.5	161	75.2
Zinc	SB/20	mg/kg	269	241	249	2970	2470	2080	436	5220	4890
Cyanide - Total											
Cyanide		ug/kg	ND	ND	3.6	ND	3.8	25.9	ND	ND	2.3

ND: Compounds was analyzed for but not detected at or above the re
J: Indicates an estimated value
D: Compounds identified in an analysis at the secondary dilution factc
NYSDEC TAGM #4046: New York State Department of Environmenta
: compound concentration exceeds TAGM a

Table 8
Tifft and Hopkins Site
HON-COCs Groundwater Analytical Data Summary

						Duplicate of MW-3		Duplicate of MW-4				
SAMPLE ID:			MW-1	MW-2	MW-3	MW-4	MW-4	MW-Dup	MW-5	MW-6	MW-7	MW-8
LAB ID:		NYSDEC(a)	A03-322201	A03-322202	A03-322203	A03-322204	A3A22701	A3A22706	A3A22702	A3A22703	A3A22704	A3A22705
SOURCE:		Class GA Groundwater	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo
MATRIX:		Standards	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
SAMPLED:			4/8/2003	4/8/2003	4/8/2003	4/8/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003
COMPOUND	UNITS:											
TCL Volatiles												
Chlorobenzene	ug/L	5	160	860	410	360 D	ND	ND	7500 D	ND	ND	26
TCL Semi-Volatiles												
1,2-Dichlorobenzene	ug/L	3	ND	ND	200	210	ND	ND	460	ND	ND	ND
1,3-Dichlorobenzene	ug/L	3	ND	ND	ND	ND	ND	ND	45 J	ND	ND	ND
4-Chloroaniline	ug/L	5	22000	350 J	500	460	5 J	11	650	ND	ND	16
Nitrobenzene	ug/L	0.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzne	ug/L	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Qualifiers:

(a) NYSDEC June 1998 Ambient Water Quality Standards and Guidance Values for Groundwater Class GA
(e) refers to sum of all phenolic compounds
ND: Compounds was analyzed for , but not detected
J: Indicates an estimated value
D: Compound identified in an analysis at the secondary dilution factor

TABLE 8 cont.
Tifft and Hopkins Site
Groundwater Analytical Data Summary

SAMPLE ID:		NYSDEC(a)	MW-1	MW-2	MW-3	MW-4 (Duplicate of MW-3)	MW-4	MW-Dup (Duplicate of MW-4)	MW-5	MW-6	MW-7	MW-8
LAB ID:		Class GA	A03-322201	A03-322202	A03-322203	A03-322204	A3A22701	A3A22706	A3A22702	A3A22703	A3A22704	A3A22705
SOURCE:		Groundwater	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo
MATRIX:		Standard	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
SAMPLED:			4/8/2003	4/8/2003	4/8/2003	4/8/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003
COMPOUND	UNITS:											
Pesticides												
Endosulfan II	ug/L	NS	ND	ND	ND	ND	ND	ND	0.29	ND	ND	ND
Heptachlor epoxide	ug/L	0.03	ND	ND	ND	ND	ND	ND	0.42	ND	ND	0.021 J
delta-BHC	ug/L	0.04	ND	ND	ND	ND	ND	0.021 J	ND	ND	ND	0.033 J
4,4'-DDE	ug/L	0.2	ND	0.11 J	ND	ND	ND	ND	ND	ND	ND	ND
PCBs												
Aroclors	ug/L		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Metals - Total												
Aluminum	ug/L	NS	3800	3200	25800	30900	28.8	25.9	0.28	24.8	0.4	3.5
Antimony	ug/L	3	460	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	ug/L	25	53	8.4	60	70	0.033	0.032	ND	0.024	ND	0.011
Barium	ug/L	1000	370	360	890	980	0.52	0.53	1.9	0.49	0.11	0.35
Cadmium	ug/L	5	ND	ND	6.5	7.7	ND	ND	ND	ND	ND	ND
Calcium	ug/L	NS	1520000	281000	570000	638000	401	414	175	320	131	194
Chromium	ug/L	50	220	150	240	270	0.046	0.042	0.027	0.037	ND	0.0081
Cobalt	ug/L	NS	ND	ND	14	170	0.017	0.017	ND	0.016	ND	0.0041
Copper	ug/L	200	87	28	160	180	0.11	0.11	ND	0.098	ND	0.012
Iron	ug/L	300	15100	19700	82800	97200	73.5	71.7	8.3	48.8	1.2	8.4
Lead	ug/L	25	160	57	2100	2400	0.18	0.2	0.025	0.038	ND	0.011
Magnesium	ug/L	35000	144000	76800	47900	50400	59.3	60.2	49.1	55.5	21.1	43.8
Manganese	ug/L	300	2100	750	5300	5800	3.7	3.6	0.29	7.8	2.9	0.98
Mercury	ug/L	0.7	0.2	0.21	0.44	0.24	0.00047	0.00058	ND	ND	ND	ND
Nickel	ug/L	100	24	ND	59	70	0.055	0.053	ND	0.064	ND	0.01
Potassium	ug/L	NS	39700	15400	15400	16300	16.4	16.9	13.3	9.6	7.4	9.2
Selenium	ug/L	10	ND	ND	28	31	ND	ND	ND	ND	ND	ND
Sodium	ug/L	20000	360000	97600	76200	78500	31.2	32	40.2	202	48.9	93.3
Vanadium	ug/L	NS	820	24	100	110	0.066	0.058	0.0061	0.051	ND	0.0072
Zinc	ug/L	2000	780	270	2400	2900	0.36	0.37	0.067	0.14	ND	0.029
Cyanide - Total												
Cyanide	ug/L	200	87	ND	ND	ND	ND	ND	ND	ND	ND	ND

(a) NYSDEC June 1998 Ambient Water Quality Standards and Guidance Values for Groundwater Class GA
(e) refers to sum of all phenolic compounds
ND: Compounds was analyzed for , but not detected at or above the reporting limit
J: Indicates an estimated value
D: Compound identified in an analysis at the secondary dilution factor

Table 8 cont.
Tifft and Hopkins Site
non HON_COCs Groundwater Analytical Data Summary

SAMPLE ID:			MW-1	MW-2	MW-3	Duplicate of MW-3 MW-4	MW-4	Duplicate of MW-4 MW-Dup	MW-5	MW-6	MW-7	MW-8
LAB ID:		NYSDEC(a)	A03-322201	A03-322202	A03-322203	A03-322204	A3A22701	A3A22706	A3A22702	A3A22703	A3A22704	A3A22705
SOURCE:		Class GA Groundwater	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo	STL Buffalo
MATRIX:		Standards	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
SAMPLED:			4/8/2003	4/8/2003	4/8/2003	4/8/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003
COMPOUND	UNITS:											
TCL Volatiles												
Benzene	ug/L	1	360	57	190	190	ND	ND	64	ND	ND	ND
Ethylbenzene	ug/L	5	ND	ND	ND	2.7 J	ND	ND	ND	ND	ND	ND
Toluene	ug/L	5	170	30 J	17 J	20	ND	ND	ND	ND	ND	ND
Xylene (total)	ug/L	5	10 J	ND	ND	7.7 J	ND	ND	ND	ND	ND	ND
TCL Semi-Volatiles												
1,4-Dichlorobenzene	ug/L	3	ND	ND	ND	31 J	ND	ND	390	ND	ND	ND
2,4-Dimethylphenol	ug/L	1(e)	ND	ND	ND	ND	ND	ND	16 J	ND	ND	ND
2,4-Dinitrotoluene	ug/L	5	ND	ND	ND	32 J	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	ug/L	5	ND	ND	45 J	34 J	ND	ND	ND	ND	ND	ND
2-Chlorophenol	ug/L	1(e)	ND	ND	ND	ND	ND	ND	17 J	ND	ND	ND
2-Methylnaphthalene	ug/L	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	7 J
Acenaphthene	ug/L	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	2 J
Bromodichloromethane	ug/L	50	ND	ND	ND	ND	ND	ND	64	ND	ND	ND
Naphthalene	ug/L	10	ND	10000 D	770	660	ND	ND	1200 D	ND	ND	2 J
N-nitrosodiphenylamine	ug/L	50	ND	ND	ND	ND	ND	ND	24 J	ND	ND	ND

Qualifiers:

(a) NYSDEC June 1998 Ambient Water Quality Standards and Guidance Values for Groundwater Class GA
(e) refers to sum of all phenolic compounds
ND: Compounds was analyzed for , but not detected
J: Indicates an estimated value
D: Compound identified in an analysis at the secondary dilution factor

TABLE 9

Geotechnical Results Summary
(percent passing by weight)

Classificat	Sample Lo	PERCENT PASSING				
	Sieve Size	MW-4 (1-2 ft)	MW-5 (1-2 ft)	MW-6 (1-2 ft)	MW-7 (1-2 ft)	MW-8 (1-2 ft)
Gravel Size	1.5 inch	100.0	100.0	100.0	100.0	100.0
	1 inch	85.1	95.1	95.7	97.5	96.3
	0.75 inch	80.1	90.5	88.6	66.6	75.1
	0.5 inch	70.8	74.4	81.8	49.4	63.1
	0.25 inch	51.6	49.9	68.9	27.5	50.5
Sand Size	#4	42.6	41.2	64.0	19.7	46.2
	#10	33.8	31.5	55.2	17.3	40.6
	#20	28.0	24.1	48.3	15.1	35.8
	#50	23.9	18.9	40.0	12.9	30.8
	#100	16.8	12.9	29.4	9.7	21.7
Silt Size	#200	14.3	10.5	24.8	8.7	17.7

APPENDIX A

SITE HISTORY REPORT

Historical Summary Report:

Tifft and Hopkins Site
NYSDEC #915131

Prepared For:

Honeywell

101 Columbia Road
Morristown, New Jersey

Prepared By:

PARSONS

290 Elwood Davis Road, Suite 312
Liverpool, New York 13088
Phone: (315) 451-9560
Fax: (315) 451-9570

REVIEWED AND APPROVED BY:

Project Manager: _____ _____
Date

Technical Manager: _____ _____
Date

April 2004

INTRODUCTION

Parsons has completed a review of available historical information for the Tifft and Hopkins Site (#915131). This report is a summary of the information developed from: historical topographical maps, freedom of information requests, Sanborn Maps, an environmental records report from Environmental Data Resources Inc. (EDR), aerial photographs, previous investigation reports, and records of personal interviews.

SITE DESCRIPTION

The site incorporates three adjoining properties which combined cover an area of approximately 7 acres . The parcels are identified as 666 Tifft Street, 360 Hopkins Street, and 380 Hopkins Street, all located in the City of Buffalo. Together the three parcels form an approximate three to five acre site that is relatively flat. The 666 Tifft and 360 Hopkins parcels are mostly undeveloped and open, serving primarily as a parking facility for tractor-trailers. There is a building in the southwest corner of the 666 Tifft St. parcel that serves as an office, garage, and warehouse. The 380 Hopkins St. parcel is currently overgrown with dense vegetation and abandoned motor vehicles scattered across the site. A chain-link fence divides the 380 Hopkins parcel from 360 Hopkins and the rear of the 666 Tifft St. parcel.

SITE HISTORY

A review of the various sources of historical information is summarized below in chronological order.

- **Pre-1890:** The site was adjacent to one of the most extensive wetlands associated with Lake Erie before port facilities were expanded to serve the booming industrial growth of the late 1800's (Lehigh Valley Phase II report, 1991). Figure 1 (1950 topographic map) shows the location of the three parcels.
- **1890:** Property first appears on Erie County Registry Deeds (Map 377) titled: South Park Development Co. (E.C. Jordan Co., 1991).
- **1907:** City of Buffalo installed a water main in an east-west direction across the 360 Hopkins parcel (E.C. Jordan Co., 1991).
- **1917:** The 1917 Sanborn map shows Germania Street extending north from Tifft St. at least 1,000 feet and Roland Avenue (later referred to as Providence St.), transecting the east-west water main. The map shows the area northwest of the Tifft and Hopkins intersection divided into blocks and parcels, although no buildings were present. This indicated a plan for residential development in the area bounded by Tifft, Hopkins, South Park and Abby Street (see Figure 2).
- **1927:** Aerial photograph showed the Republic Steel and Donner-Hanna Coke Corporation facilities were fully developed. Abby Street, now abandoned, was open from South Park Ave. to Tifft St. Barren ground at the end of Abby St. on the south side of Tifft St. may have indicated the beginning of dumping activity at Alltifft Landfill. Abby

St. provided direct access to Tifft St. and Alltift Landfill. Figure 3 is the 1927 aerial photograph.

- **1938:** On the 1938 aerial photograph (Figure 4), three streets existed which are now abandoned: (1) Germania St. was continuous from Tifft St. north to South Park Ave; (2) Abby St was still in use; and (3) Hopkins St. and Germania St. are connected by a cross street (possibly Roland Avenue) approximately 800 feet north of Tifft St. [These streets and other lineaments transect an area that is considered wetlands on the 1965 topographic map]. (see Figure 5).
- Nearby at Alltift Realty (now Alltift Landfill), possible dumping of material extending south.
- **1940:** The Sanborn map shows the same street and parcel divisions as the 1917 map. Roland Ave., renamed Providence St., and all streets northwest of Tifft and Hopkins were "Not Opened." The 1940 map was similar to the 1917 Sanborn Map indicating the same residential development was planned but not yet initiated.
- **1942:** The aerial photograph indicated activity along the southern end of Germania St. continued from 1938. Germania St. remained an active roadway from Tifft St. northward. Abby St appeared to be partly overgrown indicating less activity. An east to west lineament, possibly a tree line, existed near 360 Hopkins (see Figure 6).
- Activity and dumping at Alltift Realty increased, as evidenced by the 1942 photograph. Abby and Germania Streets appear to be capable of providing the most direct path to Tifft Street for vehicles hauling material from the northern industrial area.
- **1946:** Mr. A.J. Terzian, operating a "commercial filling station" at 666 Tifft St., installed 1-3,000 gallon gasoline underground storage tank (UST) [Buffalo Fire Department (BFD) tank installation permit].
- **1949:** Mr. A.J. Terzian removed 1-3,000 gallon UST and installed 2-3,000 gallon gasoline USTs at 666 Tifft St. (BFD tank installation permit).
- **1950:** The Sanborn map shows a building similar to the present structure at the west end of the 666 Tifft St. parcel, east of Germania St. The southern portion of the building is labeled, but not legible. The northern portion of the building is labeled as, "MOTOR FRT. STA". The eastern portion of the parcel is labeled, "Auto Convoy Loading Yard." Streets northwest of Tifft and Hopkins remained, "Not Opened" (see Figure 7).
- Wilson Freight Forwarding Co. installed 2-3,000 gallon diesel oil USTs at 666 Tifft St. (BFD tank installation permit).
- **1951:** The 1951 aerial photograph (Figure 8) indicates the site was developed into conditions similar to present. Germania was narrower, indicating less use. The building at 666 Tifft St. was in use, with numerous objects, presumably tractor-trailers, occupying the premises.
- **1953:** Mr. A.J. Terzian removed 1-2,000 gallon UST, and replaced it with 1-3,000 gallon gasoline UST at 666 Tifft St. (BFD tank installation permit).
- **1957:** Tifft Sales & Service installed 2-4,000 gallon gasoline USTs at 666 Tifft St. (BFD tank installation permit).

- **1958:** Wilson Freight Forwarding replaced 1-3,000 gallon gasoline UST at 666 Tifft St. (BFD tank installation permit).
- **1960:** Buffalo Servicenter, Inc. was located on the site for unknown time (E.C. Jordan Co., 1991).
- **1961:** Tifft Sales & Service replaced 2-3,000 gallon gasoline USTs at 666 Tifft St. (BFD tank installation permit).
- Hopkins Storage and Delivery purchased the property from Tifft Sales and Service Company (E.C. Jordan Co., 1991).
- **1964:** Eastern Freightways installed 1-5,000 gallon gasoline UST and 1-5,000 gallon diesel UST at 666 Tifft St. (BFD tank installation permit).
- Hopkins Storage and Delivery installed 1-4,000 gallon gasoline UST at 666 Tifft St. (BFD tank installation permit).
- **1964-1965**: In testimony (1987) given by George Panepinto, he stated that he was contracted to excavate trenches (approximately 12' to 20' deep) at Tifft and Hopkins and "Downing Dump" (Alltift Realty). "Purple sludge" was transported from National Aniline to these sites, dumped into the trenches, and buried. The exact location in the vicinity of Tifft and Hopkins is unknown.
- **1969:** McBride Transportation, Inc. replaced 1-4,000 gallon "leaking" gasoline UST with 1-4,000 gallon new gasoline UST at 666 Tifft St. (BFD tank installation permit).
- **1970:** McBride Transportation, Inc. installed 1-10,000 gallon gasoline UST at 666 Tifft St. (BFD tank installation permit).
- **1978:** Artim Transportation Systems, Inc. purchased the site from Hopkins Storage and Delivery. Artim used the site from 1978 to 1982 as part of an iron and steel product hauling operation (ABB, 1993).
- **1979:** Artim Transportation Systems, Inc. installed 1-550 gallon waste-oil UST at 666 Tifft St. (BFD tank installation permit).
- **1982:** Artim Transportation Systems, Inc. leased the site to Consumer Beverages from 1982 until at least 1987 (E.C. Jordan Co., 1991).
- **1985:** The City of Buffalo excavated the 1907 water main crossing the property (360 Hopkins) in order to repair a leak. In doing so, a layer of black, granular, odorous material covered by an apparent clay cap (ABB, 1993) was discovered. Erie County Department of Environmental Planning (ECDEP) and the New York State Department of Environmental Conservation (NYSDEC) investigated and collected samples of the material for chemical analysis. Soil samples exhibited concentrations of 2 mg/kg of chlorobenzene. The water main was repaired and put back into service, then abandoned in place in 1986 (E.C. Jordan Co., 1993).
- Final decommissioning of the former Donner-Hanna Coke and Republic Steel Facilities was completed by LTV Corp. City of Buffalo purchased and began to develop Hickory Woods subsidized properties (Buffnet, 2000). The location of these sites and other NYSDEC inactive hazardous waste sites are seen on Figure 9.

- **1986:** The Sanborn map depicts the location of structures and conditions of site.
- **1991:** E.C. Jordan Co. performed a Preliminary Site Assessment and recommended further studies.
- **1992:** City of Buffalo foreclosed on the Tifft and Hopkins property (E.C. Jordan Co., 1993).
- **1993:** ABB Environmental Services Preliminary Site Assessment Evaluation Report detailed a geophysical study and environmental sampling. Results included identification of two USTs approximately 10,000 gallons each, filled to near capacity, with fuel odors noted. Subsurface test pit samples detected various VOCs, 35 TCL SVOCs and 21 TAL inorganics. Recommendations were made to delist the site.
- The following volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) found at Tifft and Hopkins during the 1993 ABB study were also listed as hazardous substances associated with the iron and steel industry (USEPA 440/1-82/024, in Malcolm Pirnie, 1993). They included benzene, toluene, phenol, 2,4-dimethyphenol, naphthalene, 2-chloronaphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, carbazole, fluoranthene, pryene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, and benzo(a)pryene.
- The following Inorganic Hazardous Substances Associated with the iron and steel industry (USEPA 440/1-82/024, in Malcolm Pirnie, 1993) were detected above New York State region background (McGovern, no date, in ABB, 1993) during the 1993 ABB study: antimony, arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc were detected.
- Honeywell VOCs of concern were detected (except for 4-nitroaniline) in the 1993 ABB study.
- **1997:** NYSDEC discovered an abandoned tractor-trailer at 666 Tifft St. containing "thousands" of hazardous waste containers in disrepair, ranging in size from 1-quart to 5-gallon. The contents of these containers were primarily paints and solvents.
- **1998:** NYSDEC Immediate Investigation Work Assignment Report (IIWA) detailed activities that took place from 10/28/97 to 10/30/97. Targeted material was described as greenish-gray to black, fine (iridescent) granular debris (resembling roughly processed carborundum). Targeted material was found at 666 Tifft St., 360 Hopkins St., and 380 Hopkins St. (EDR Site Report).
- The Geoprobe investigation completed during the IIWA, confirmed the presence of the following VOCs and SVOCs exceeding the TAGM 4046 recommended soil clean-up objectives: benzene, toluene, chlorobenzene, ethylbenzene, xylene, 1, (2,3,4)-dichlorobenzene, 4-methylphenol, nitrobenzene, 1,2,4 trichlorobenzene, naphthalene, 4-chloroaniline, 2-methylnaphthalene, 2-choronaphthalene, 2, (4,6)-dinitrotoluene, 2,4-dinitrophenol, n nitrosodiphenylamine, phenanthrene, and fluoranthene.
- Two identified USTs contained less than 1 inch and less than 5 inches of liquid. A motor fueling location was evident in the back of the wood frame building at the 380 Hopkins parcel.

ASTM SEARCH

An ASTM search for environmental records by Environmental Data Recourses Inc. listed twenty-four hazardous waste sites in the area. Of these, only six had specific locations, the closest being Lehigh Valley Railroad, approximately ½ mile west. Tifft and Hopkins was listed, but contained no information (EDR Site Report). The remaining orphan sites were typically small spills from automobile accidents or known hazardous wastes sites such as Alltift Realty (see Figure 9).

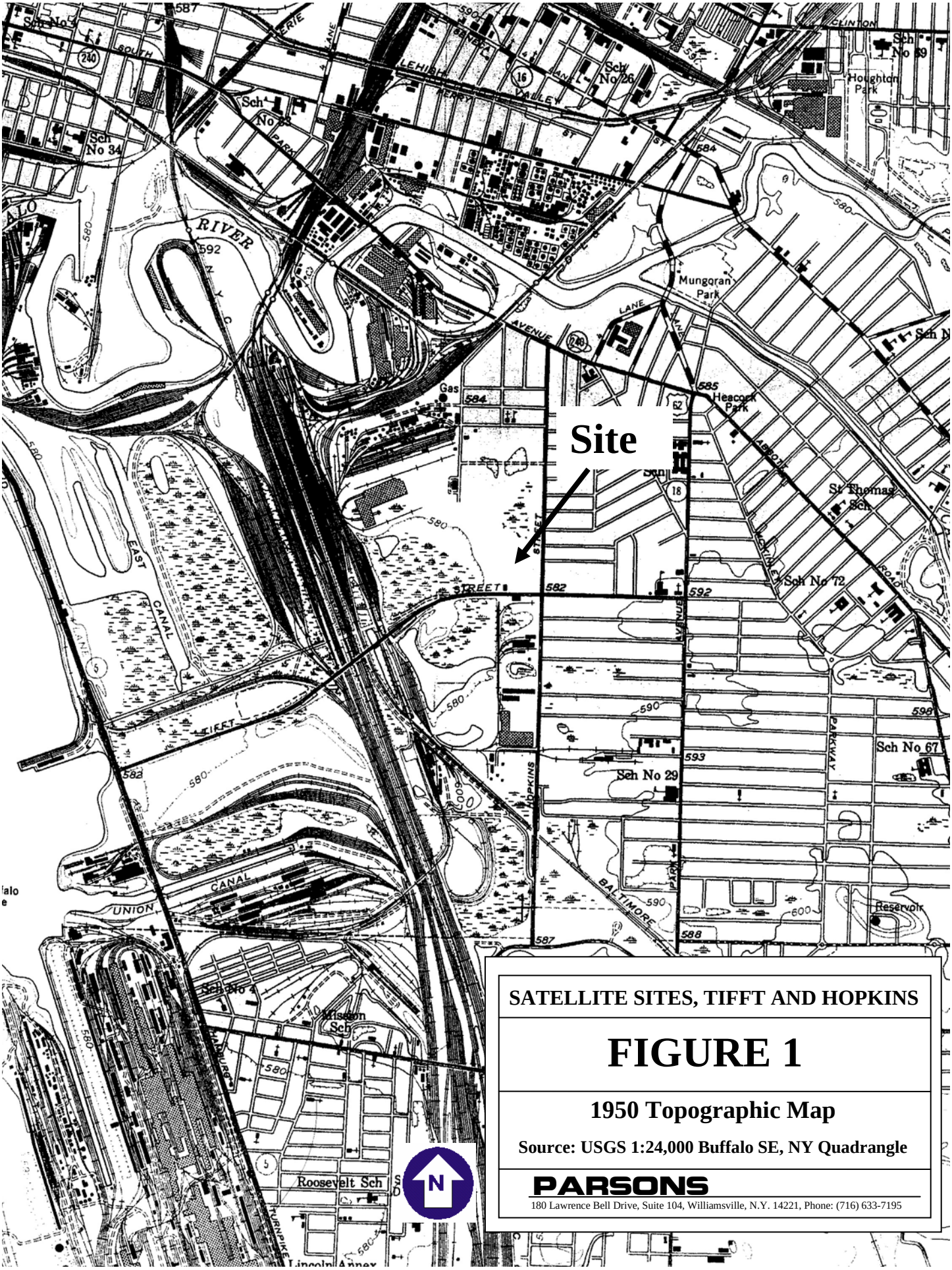
SUMMARY

The Tifft and Hopkins Site is located in an area of South Buffalo which was industrial and subject to industrial waste dumping. At least 10 inactive hazardous waste sites are within a few miles.

The targeted material in the IIWA at the Tifft and Hopkins Site may have been emplaced sometime between 1907 and 1950. The material was found above the water main and below a clay cap. Records indicate the water main was installed in 1907. It is also plausible that city workers dug through the fill in order to emplace the water main. If so, the material may have been emplaced before 1907. By 1946, the site was developed and used for tractor-trailer parking and miscellaneous automobile service station activity. Since 1950, the site has undergone little change in use, merely different owners and occupants.

REFERENCES

- ABB Environmental Services, 1993. Preliminary Site Assessment Evaluation Report of Initial Data, Volume I, Tifft and Hopkins Street Site, City of Buffalo, New York.
- E.C. Jordan Co., 1991, Preliminary Site Assessment, Tifft and Hopkins Street Site, City of Buffalo, New York.
- EDR- Historical Topographic Map Report, 2003; Inquiry Number: 902404-2
- EDR- Sanborn Map Report, 2003; Inquiry Number: 902404.1S
- EDR- Site Report, 2003; Inquiry Number: 902404-2
- Erie County Soil Conservation Service; East Aurora, New York; 1938, 1942, 1951 aerial photographs.
- Buffalo Fire Department (BFD) UST installation/removal permits.
- Timeline depicting owners of the site from 1942-1998.



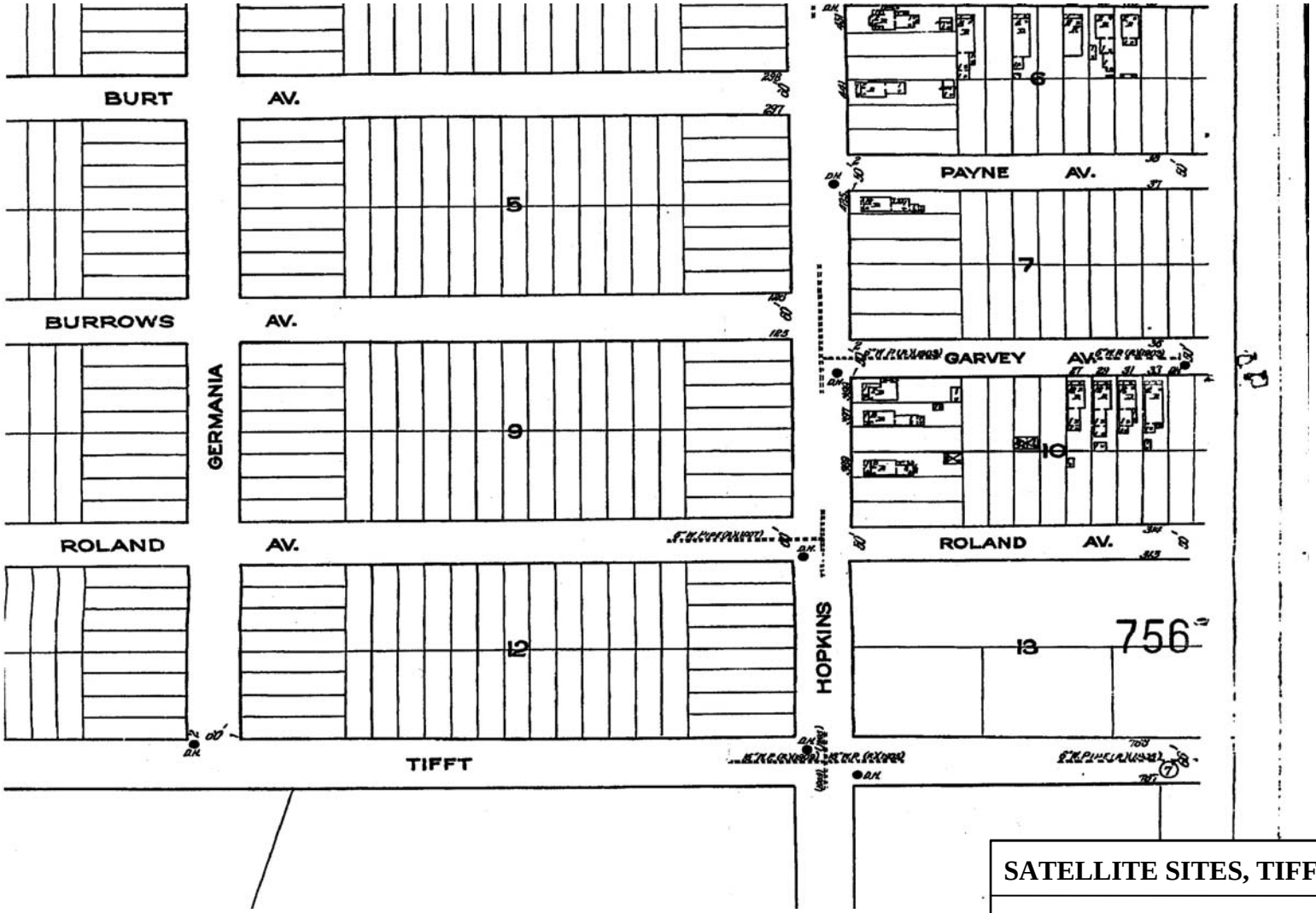
SATELLITE SITES, TIFFT AND HOPKINS

FIGURE 1

1950 Topographic Map

Source: USGS 1:24,000 Buffalo SE, NY Quadrangle

PARSONS
180 Lawrence Bell Drive, Suite 104, Williamsville, N.Y. 14221, Phone: (716) 633-7195



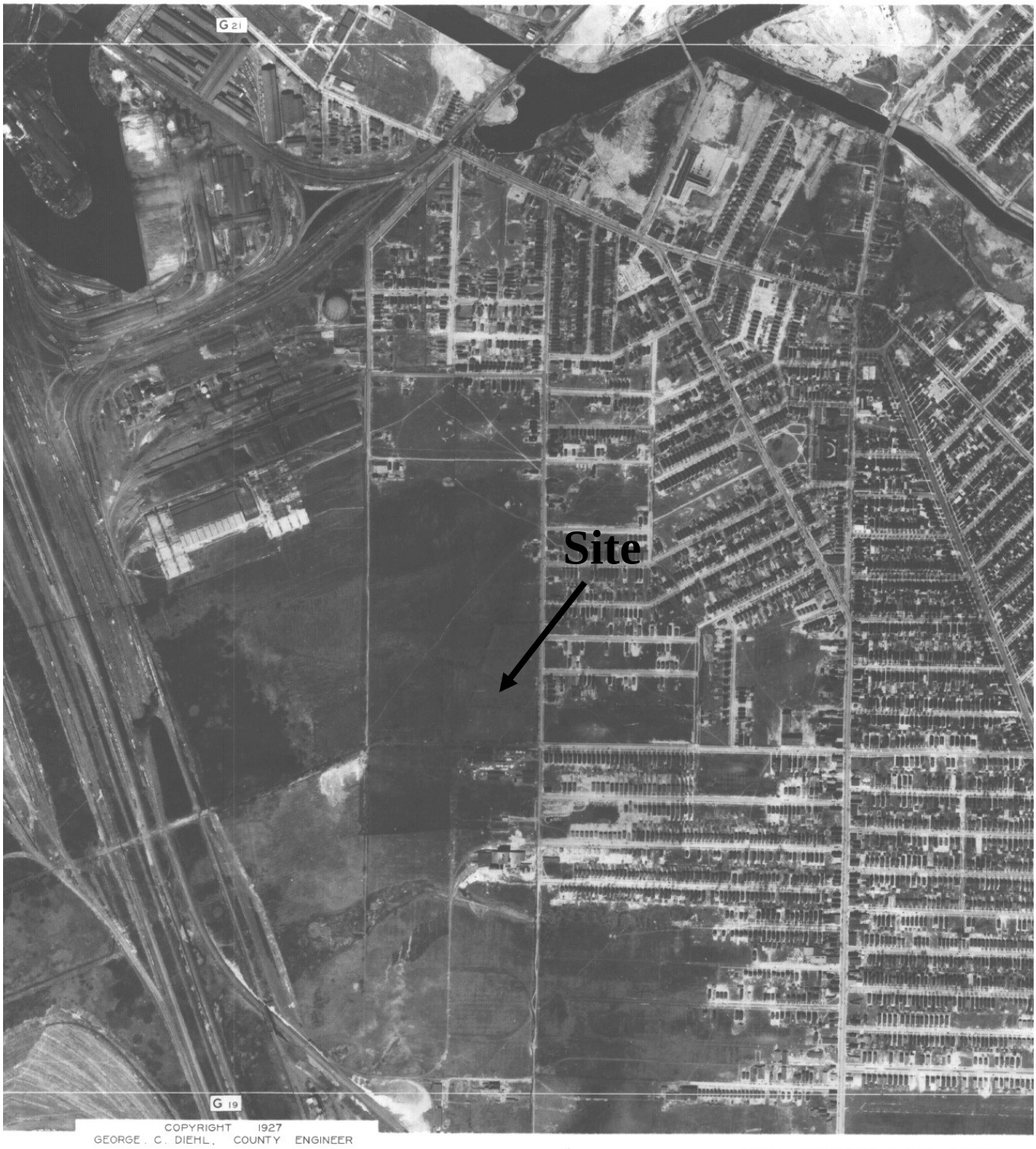
SATELLITE SITES, TIFFT AND HOPKINS

FIGURE 2

1917 Historical Map

Source: 1917 Fire Inspection Map, Tifft and Hopkins

PARSONS
180 Lawrence Bell Drive, Suite 104, Williamsville, N.Y. 14221, Phone: (716) 633-7195



SATELLITE SITES, TIFFT AND HOPKINS

FIGURE 3

1927 Aerial Photograph

Source: http://www.erie.gov/depts/community/highways_aerial.phtml

PARSONS
180 Lawrence Bell Drive, Suite 104, Williamsville, N.Y. 14221, Phone: (716) 633-7195

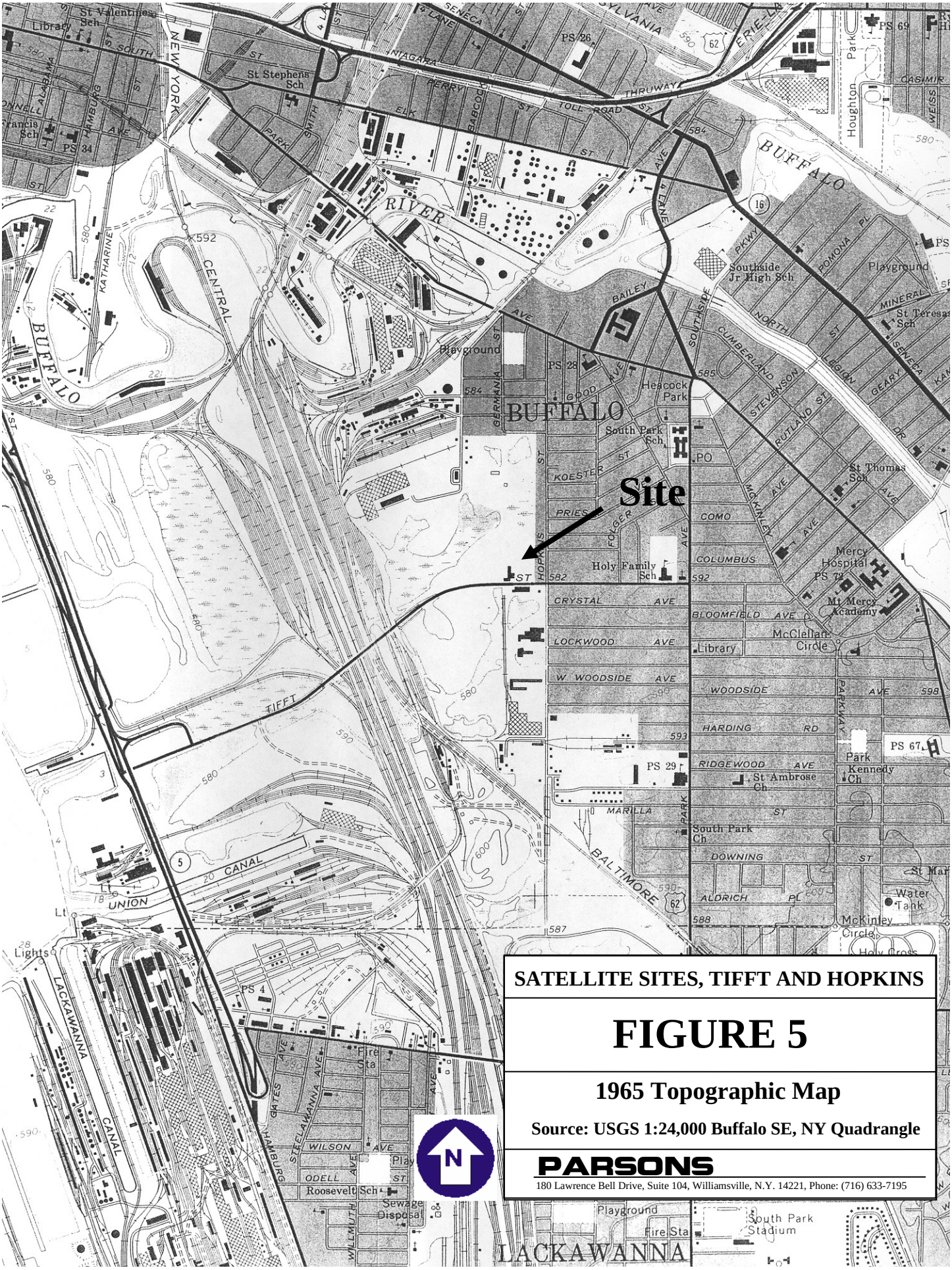
SATELLITE SITES, TIFFT AND HOPKINS

FIGURE 4

1938 Aerial Photograph

Source: Erie County Soil Conservation Survey

PARSONS
180 Lawrence Bell Drive, Suite 104, Williamsville, N.Y. 14221, Phone: (716) 633-7195



SATELLITE SITES, TIFFT AND HOPKINS

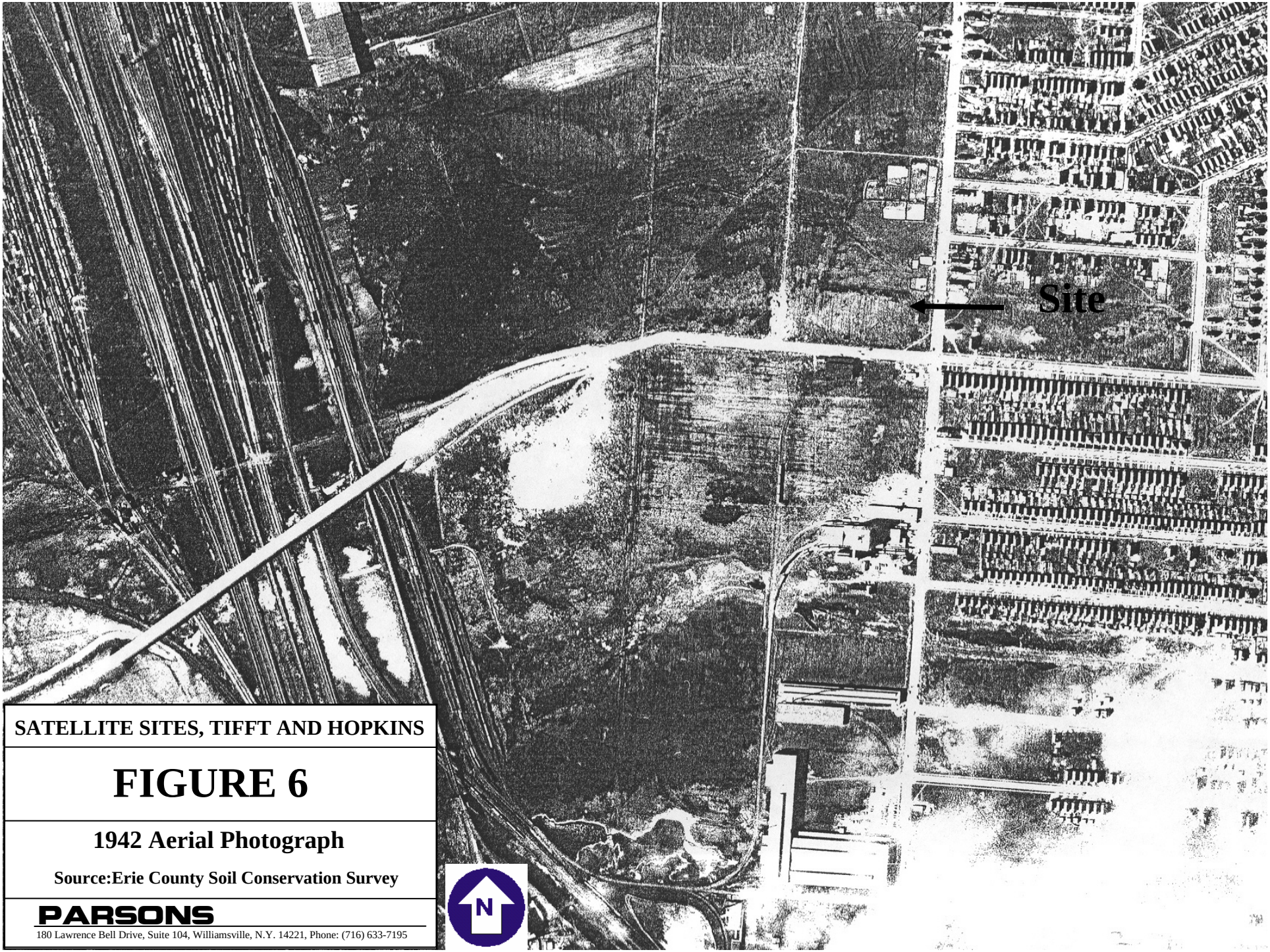
FIGURE 5

1965 Topographic Map

Source: USGS 1:24,000 Buffalo SE, NY Quadrangle

PARSONS

180 Lawrence Bell Drive, Suite 104, Williamsville, N.Y. 14221, Phone: (716) 633-7195



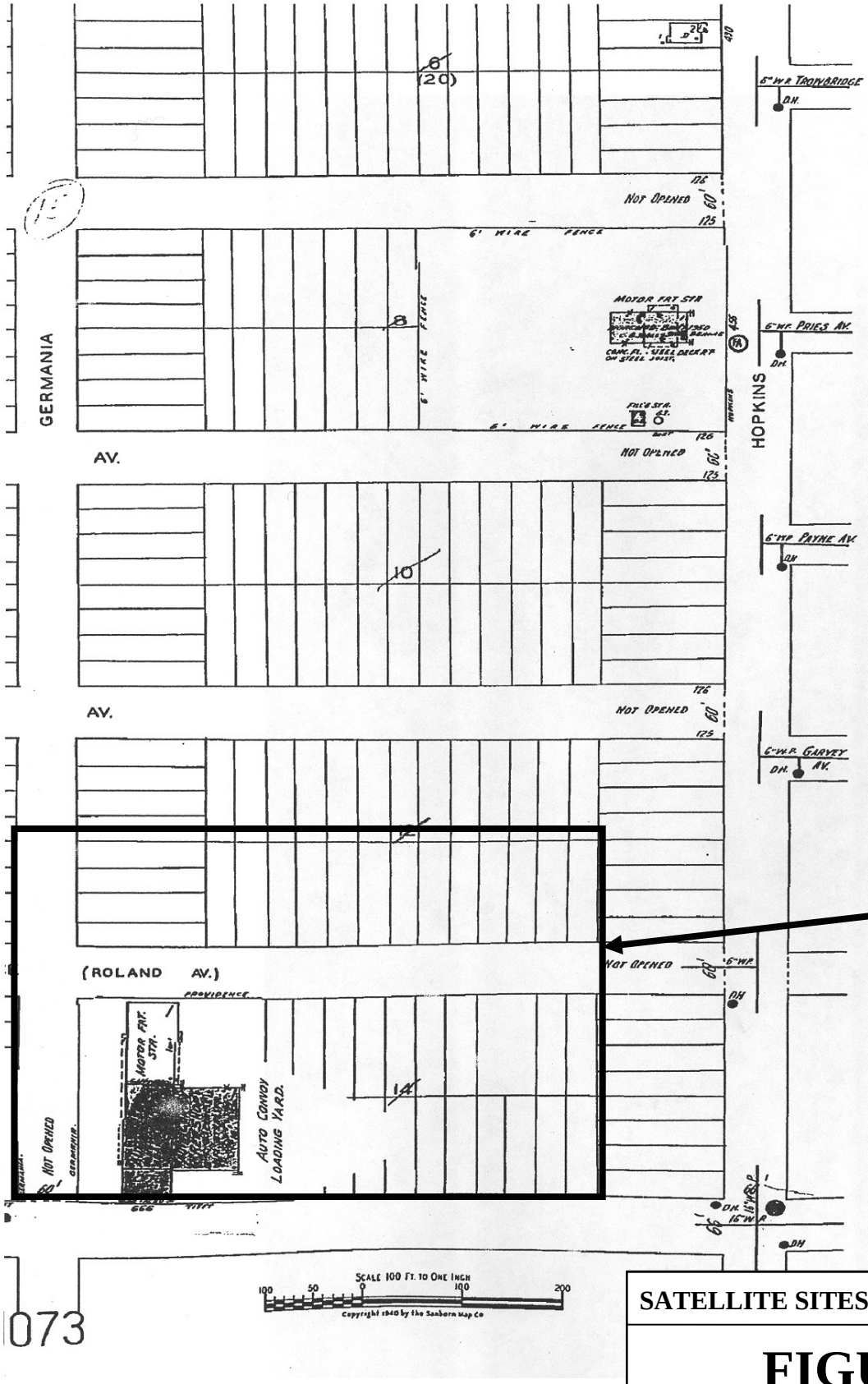
SATELLITE SITES, TIFFT AND HOPKINS

FIGURE 6

1942 Aerial Photograph

Source:Erie County Soil Conservation Survey

PARSONS
180 Lawrence Bell Drive, Suite 104, Williamsville, N.Y. 14221, Phone: (716) 633-7195



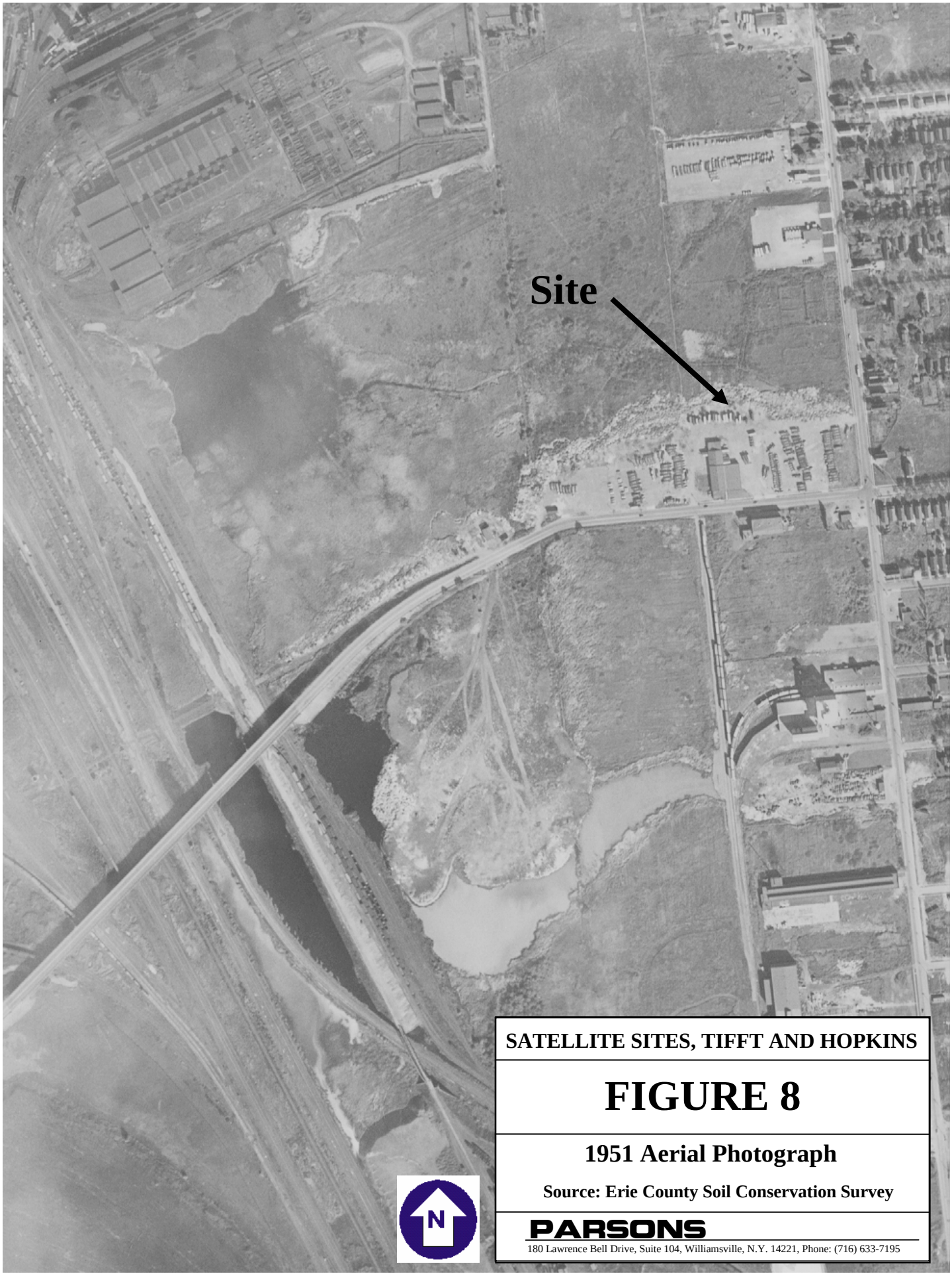
SATELLITE SITES, TIFFT AND HOPKINS

FIGURE 7

1950 Historical Map

Source: 1950 Fire Inspection Map, Tifft and Hopkins

PARSONS
180 Lawrence Bell Drive, Suite 104, Williamsville, N.Y. 14221, Phone: (716) 633-7195



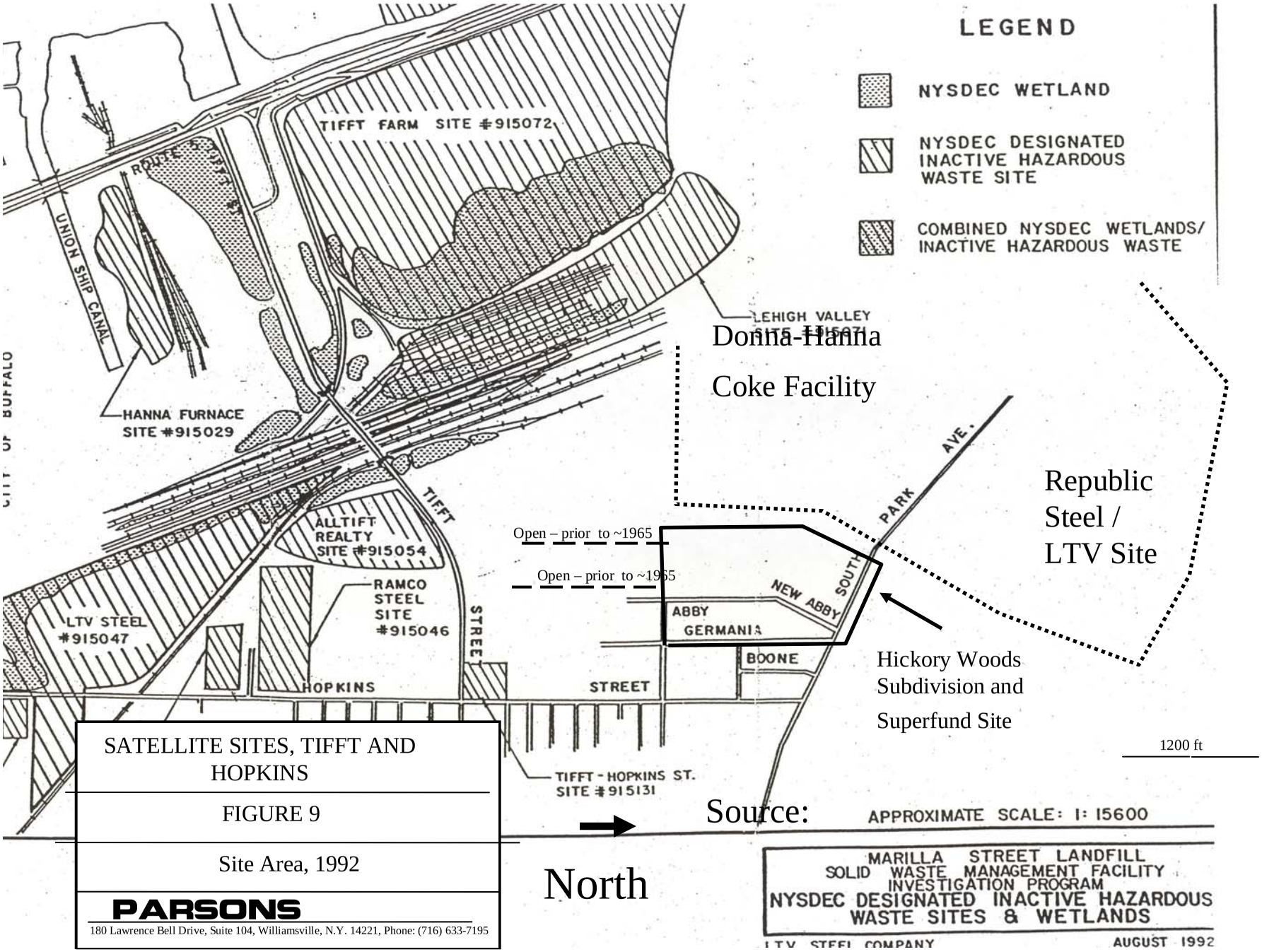
SATELLITE SITES, TIFFT AND HOPKINS

FIGURE 8

1951 Aerial Photograph

Source: Erie County Soil Conservation Survey

PARSONS
180 Lawrence Bell Drive, Suite 104, Williamsville, N.Y. 14221, Phone: (716) 633-7195



SATELLITE SITES, TIFFT AND HOPKINS

FIGURE 9

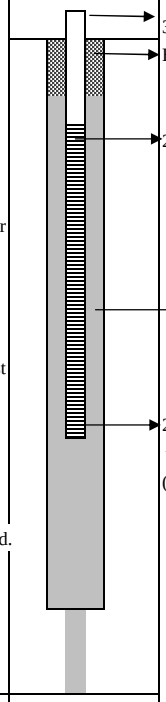
Site Area, 1992

PARSONS
180 Lawrence Bell Drive, Suite 104, Williamsville, N.Y. 14221, Phone: (716) 633-7195

APPENDIX B

BORING LOGS
AND
MONITORING WELL CONSTRUCTION RECORDS

Contractor: SJB Services					**PARSONS DRILLING RECORD**	**BORING NO.**	**MW-1**
Driller: Ken							
Inspector: Jim Schuetz					PROJECT NAME Tifft and Hopkins	Sheet 1 of 1	
Rig Type: CME					PROJECT NUMBER 440707		
Method: 4.25 HAS						Location: 380 Hopkins Street	
					Weather		
GROUNDWATER OBSERVATIONS							
Date					Date/Time Start 2/28/2003 9:30		
Time							
Depth					Date/Time Finish 2/28/2003 10:10		

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL DIAGRAM	COMMENTS
0	1	0	90		FILL		3.7' stick-up Bentonite chips 2.0" SCH 40 PVC well riser Sand 2.0" SCH 40 PVC well screen, 0.010" slot (2.2=7.2 ft bgs)
		1					
		2					
		3			Moist-wet, black, ash to granular, some very dark brown granular odor		
0	2	4	100		Same as above		
		5			top 0.1' peat, slight odor		
		6			mottled brown, grey and black, organics, CLAY, some silt, little sand (f-c) tracefine gravel. moist		
		7					
0	3	8	100				
		9			Wet, mottled brown and grey. SILT, little clay, trace fine grianed sand.		
		10					
		11					
		12			Boring Terminated at 11.5 ft bgs		
		13					
		14					
		15					
		16					
		17					
		18					
		19					

STANDARD PENETRATION
SS = SPLIT SPOON
EOB=END OF BORING
PZ= PIEZOMETER

SUMMARY:

PARSONS
DRILLING RECORD

BORING NO. **MW-2**

Contractor: SJB Services
Driller: Ken
Inspector: Jim Schuetz
Rig Type:
Method: 4.25 HSA

PROJECT NAME: Tifft and Hopkins
PROJECT NUMBER: 440707

Sheet 1 of 1

Location: 380 Hopkins Street

Weather: Sunny, 14 degrees F

Date/Time Start: 1/28/2003 10:13

Date/Time Finish: 2/28/2003 0:00

GROUNDWATER OBSERVATIONS				
Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL DIAGRAM	COMMENTS
		0	90				1.7' stick-up
0	1				moist/frozen, brown and grey		Bentonite chips
		1			FILL		
		2			Moist,granular, black with red brick fragments		1.0" SCH 40 PVC
					odor		well riser
		3					
		4	100		Moist to wet, black granular, shiny fracture surfaces on grains, up		
					to 0.7 cm		
		5			Dry loose, white grey, crystaline material with well defined		Sand
0	2				cleavage planes		
		6			Moist, mottled brown, grey and dark grey CLAY and some silt, little		
					sand, Fine rootlets and organics.		
		7			wet, black, fine SAND, little silt odor		1.0" SCH 40 PVC
							well screen, 0.010" slot
		8	50		Wet, mottled, brown and grey SILT and CLAY, no odor		
		9					
0	3						
		10					
		11			wet, grey SILT, no odor		
		12			boring terminated at 11.5 ft bgs		
		13					
		14					
		15					
		16					
		17					
		18					
		19					

STANDARD PENETRATION
SS = SPLIT SPOON
EOB=END OF BORING
PZ= PIEZOMETER

SUMMARY:

Contractor: SJB Services					**PARSONS DRILLING RECORD**	**BORING NO.**	**MW-3**
Driller: ken							
Inspector: Jim Schuetz					PROJECT NAME Tifft and Hopkins	Sheet 1 of 1	
Rig Type:					PROJECT NUMBER 440707		
Method:						Location: 666 Tifft Street	
GROUNDWATER OBSERVATIONS					Weather		
Date					Date/Time Start		
Time							
Depth					Date/Time Finish 2/28/2003 13:15		

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL DIAGRAM	COMMENTS
		0					2.0' stick-up
0	1		100.0%		moist, brown and gray, FILL, gravel, and industrial slag		Bentonite chips
		1					
					moist		
		2			black ash and grannular FILL odor		1.0" SCH 40 PVC
0	2		100.0%				well riser
		3					2.3'
		4			same as above, sheen, 0.7mm pieces of red-orange rust color		
0	3		100		SAND/SILT odor		
		5			black PEAT, mottled dark grey/dark brown, org moist		Sand
					CLAY and silt, slight odor		
		6			mottled brown grey and black, CLAY and SILT, trace fine sand		
					odor		
		7			dark SAND, fine to course, little silt wet		1.0" SCH 40 PVC
							well screen, 0.010" slot
		8					
		9					
		10					
		11					
		12			boring terminated at 11.5 feet bgs		
		13					
		14					
		15					
		16					
		17					
		18					
		19					

STANDARD PENETRATION

SS = SPLIT SPOON

EOB=END OF BORING

PZ= PIEZOMETER

SUMMARY:

Contractor: SJB Services					**PARSONS DRILLING RECORD**	**BORING NO.**	**MW-4**
Driller: Dale Mathies							
Inspector: Jeffrey Poulsen					PROJECT NAME Tifft and Hopkins	Sheet 1 of 1	
Rig Type: CMW55					PROJECT NUMBER 440707		
Method: 4.25 HSA						Location: 380 Hopkins	
GROUNDWATER OBSERVATIONS					Weather		
Date					Date/Time Start 10/21/2003 9:20		
Time							
Depth					Date/Time Finish 10/21/2003 10:10		

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL DIAGRAM	COMMENTS
0		0	50	14			2.0' stick-up
	1			13	Rubble Fill		Bentonite chips
		1		10			
				8			
3.0		2	50	7	Dark grey clay, soil FILL, debris		2.0" SCH 40 PVC
				3			well riser
	2	3		5			
				5			
0		4	0	2	no recovery, fill only, wet wet		
				2			
	3	5		19			Sand
				7	6 ft.		
0		6	75	2	5.0" organic mottled grey CLAY, little sand		
				2	6.0" mottled orange/grey SANDY SILT, fine gravel		
	4	7		3	6.0" dark grey fine to medium SAND, little silt, wet		2.0" SCH 40 PVC
				3			well screen, 0.010" slot
0		8	75	1	medium to dark grey, medium to course SAND, little silt		(3.5-8.5 ft bgs)
	5			1			
		9		WHO			
				1			
0		10	100	1			
	6			2	11 ft		
		11		3	medium grey, SILTY CLAY, firm damp		
				3			
		12			Boring teminated at 12 ft bgs		
		13					
		14					
		15					
		16					
		17					
		18					
		19					

STANDARD PENETRATION

SS = SPLIT SPOON

EOB=END OF BORING

PZ= PIEZOMETER

SUMMARY:

Contractor: SJB Services					**PARSONS DRILLING RECORD**	**BORING NO.**	**MW-5**
Driller: Dale Mathies							
Inspector: Jeffrey Poulsen					PROJECT NAME Tifft and Hopkins S-te	Sheet 1 of 1	
Rig Type: CMW55					PROJECT NUMBER 440707		
Method: 4.25 HSA						Location: 380 Hopkins Street	
GROUNDWATER OBSERVATIONS					Weather		
Date					Date/Time Start 10/21/2003 11:05		
Time							
Depth					Date/Time Finish 10/21/2003 11:31		
Photovac Reading	**Sample I.D.**	**Sample Depth**	**Percent Recovery**	**SPT**	**FIELD IDENTIFICATION OF MATERIAL**	**WELL DIAGRAM**	**COMMENTS**
		0		12			2.0' stick-up
0	1		20	18	dark brown rubble FILL dry		Bentonite chips
		1		6			
				4			
8		2	70	4	black FILL, silt gravel, little mottled clay odor		2.0" SCH 40 PVC
				3			well riser
	2	3		2			
				3	wet		
70		4	75	2	black/red FILL odor		
				3	4.5 ft		
	3	5		1	dark grey CLAY, firm, black organic mottles		Sand
				2			
17		6	100	4	mottled grey/orange SANDY SILT		
				3	grading to silty-sand, trace organics		
	4	7		4			2.0" SCH 40 PVC
				3			well screen, 0.010" slot
-		8	0	4			(3 - 8 ft bgs)
	5			2	Rock in split spoon, no recovery		
		9		2			
				5			
		10	30	4			
0	6			3	Medium SILT, little clay, firm, damp		
		11		7			
				5			
		12			Boring tetminated at 12 feet bgs		
		13					
		14					
		15					
		16					
		17					
		18					
		19					

STANDARD PENETRATION

SS = SPLIT SPOON

EOB=END OF BORING

PZ= PIEZOMETER

SUMMARY:

PARSONS
DRILLING RECORD

BORING NO. **MW-6**

Contractor: SJB Services
Driller: Dale Mathies
Inspector: Jeffrey Poulsen
Rig Type: CMW55
Method: 4.25 HSA

PROJECT NAME: Tifft and Hopkins
PROJECT NUMBER: 440707

Sheet 1 of 1

Location: 666 Tifft Street

Weather:

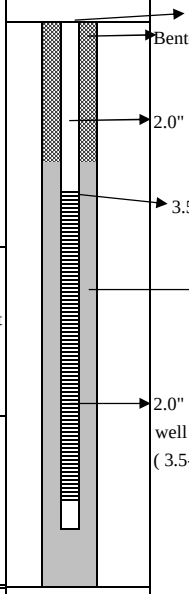
Date/Time Start: 10/20/2003 10:30

Date/Time Finish: 10/20/2003 10:55

GROUNDWATER OBSERVATIONS				
Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL
-		0			
				HA	
	1	1		HA	black rubble FILL
				HA	
		2		HA	4.0" rubble fill
0			50	7	4.0" grey CLAY
	2	3		9	4.0" dark grey clayey-SILT
				11	
		4		8	
0			50	6	medium grey, medium SILTY SAND
	3	5		3	
				4	wet
		6		2	
0			100	3	
	4	7		2	
				5	mottled gray/brown/orange SILT, trace-little clay
		8		3	
0			50	3	dark grey SILT, little clay
	5	9		4	
				7	
		10		5	
					Boring terminated at 10 feet
		11			
		12			
		13			
		14			
		15			
		16			
		17			
		18			
		19			

WELL DIAGRAM



COMMENTS

STANDARD PENETRATION
SS = SPLIT SPOON
EOB=END OF BORING
PZ= PIEZOMETER

SUMMARY:

Contractor: SJB Services					**PARSONS DRILLING RECORD**	**BORING NO.**	**MW-7**
Driller: Dale Mathies							
Inspector: Jeffrey Poulsen					PROJECT NAME Tifft and Hopkins	Sheet 1 of 1	
Rig Type: CMW55					PROJECT NUMBER 440707		
Method: 4.25 HSA						Location: 666 Tifft Street	
					Weather partly cloudy, windy, 65F		
GROUNDWATER OBSERVATIONS							
Date					Date/Time Start 10/21/2003 8:00		
Time							
Depth					Date/Time Finish 10/21/2003 8:35		

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL DIAGRAM	COMMENTS
0		0	50	7			road box
	1			8	rubble FILL (brick, stone, clay) dry		Bentonite chips
		1		4			
				4			
0		2	75	2			2.0" SCH 40 PVC
				1	3.0" blackPEAT, organics, firm grading to medium brown damp		well riser
	2	3		3	SANDY SILT,firm, some orange mottles.		
				3			
0		4	50	5	grey mottled medium brown SILT, little clay, wet		
				1			
	3	5		2			Sand
				3			
0		6	100	8	medium to dark grey SILT, little clay,		
				6			
	4	7		6			2.0" SCH 40 PVC
				9			well screen, 0.010" slot
		8					(3.5-8.5 ft bgs)
					boring completed at 8 feet bgs		
		9					
		10					
		11					
		12					
		13					
		14					
		15					
		16					
		17					
		18					
		19					

STANDARD PENETRATION
SS = SPLIT SPOON
EOB=END OF BORING
PZ= PIEZOMETER

SUMMARY:

Contractor: SJB Services					**PARSONS DRILLING RECORD**	**BORING NO.**	**MW-8**
Driller: Dale Mathies							
Inspector: JS Poulsen					PROJECT NAME Tifft and Hopkins	Sheet 1 of 1	
Rig Type: CMW55					PROJECT NUMBER 440707		
Method: 4.25 HSA						Location: 380 Hopkins	
					Weather		
GROUNDWATER OBSERVATIONS							
Date					Date/Time Start 10/20/2003 14:35		
Time							
Depth					Date/Time Finish 10/20/2003 15:00		

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	WELL DIAGRAM	COMMENTS
		0	20	3			
210	1			14	rubble FILL, coarse dry		Bentonite chips
		1		12			
				19			
120		2	20	39	black stained sandy, clayey SILT diesel odor		2.0" SCH 40 PVC
				9	damp		well riser
	2	3		3			
				4			
100		4	50	5	wet		
				2	dark grey medium SAND little-some silt odor		
	3	5		2	trace fine gravel		Sand
				2			
117		6	100	2			
				8			
	4	7		5			2.0" SCH 40 PVC
				7	medium-dark grey SILT, trace clay, firm wet		well screen, 0.010" slot
		8	50	4			(3.5-8.5 ft bgs)
0	5			2			
		9		3			
				4			
		10			Boring teminated at 10 feet bgs		
		11					
		12					
		13					
		14					
		15					
		16					
		17					
		18					
		19					

STANDARD PENETRATION
SS = SPLIT SPOON
EOB=END OF BORING
PZ= PIEZOMETER

SUMMARY:

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS
DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-50
Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather
Date/Time Start: 1/27/2004 0900
Date/Time Finish: 1/27/2004 0920

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	100			
		3				
		4				Probe hole backfilled with Cuttings
		5				
0	SS2	6	100		5.7 ft	
		7			grey SILT and CLAY, trace silt and fine sand	
		8				
		9			boring terminated at 8 feet	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample 2-4 feet

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS
DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-51
Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather
Date/Time Start: 1/27/2004 0935
Date/Time Finish: 1/27/2004 0945

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	100			
		3				
		4				Probe hole backfilled with Cuttings
		5				
0	SS2	6	100		5.4 ft	
		7			grey/brown fine-medium SAND little silt	
		8				
		9			boring terminated at 8 feet	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS
DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-52
Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather
Date/Time Start: 1/27/2004 1015
Date/Time Finish: 1/27/2004 1030

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1		100			
		2				
		3				
		4			4.4 ft	← Probe hole backfilled with Cuttings
		5			fine SAND and SILT, little clay	
0	SS2		100			
		6				
		7			6.8 ft	
		8			brown/grey mottled SILT, little clay	
					boring terminated at 8 feet	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample 4.2-4.4 feet

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS
DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-53
Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather
Date/Time Start: 1/27/2004 1140
Date/Time Finish: 1/27/2004 1200

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1		100			
		2				
		3				
		4			4.2 ft	← Probe hole backfilled with Cuttings
		5			grey/black mottled organics and CLAY	
0	SS2		100		5.0 ft	
		6			brown/grey SILT, some clay, trace fine sand	
		7			6.0 ft	
		8			brown fine SAND, some silt, trace gravel	
					7.0 ft	
					grey/brown SILT and CLAY, trace fine sand	
					boring terminated at 8 feet	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample 4-4.2 feet

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-54

Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather

Date/Time Start: 1/27/2004 1300

Date/Time Finish: 1/27/2004 1400

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	75			
		3				
		4			4.4 ft	Probe hole backfilled with Cuttings
		5			grey/black coarse SAND	
0	SS2	6	80		6.8 ft	
		7			grey/brown fine-medium SAND, little silt	
		8				
					boring terminated at 8 feet	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample 4.4-5.4 feet

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-55

Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather

Date/Time Start: 1/27/2004 1408

Date/Time Finish: 1/27/2004 1430

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	100			
		3				
		4				Probe hole backfilled with Cuttings
		5			5.1 ft	
0	SS2	6	100		gre/brown/orange mottled CLAY, some silt	
		7			6.0 ft grey/brown fine-medium SANd, little silt	
		8			7.8 ft grey SILT and CLAY	
					boring terminated at 8 feet	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-56

Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather

Date/Time Start: 1/27/2004 1448
Date/Time Finish: 1/27/2004 1455

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	100			
		3				
		4			4.0 ft	
		5			grey/black mottled organics and CLAY	Probe hole backfilled with Cuttings
0	SS2	6	100		5.0 ft grey/brown mottled CLAY, some silt	
		7			7.0 ft	
		8			grey/black coarse SAND	
		9			boring terminated at 8 feet	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample 5-7 feet

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-57

Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather

Date/Time Start: 1/27/2004 1520
Date/Time Finish: 1/27/2004 1550

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	100			
		3				
		4				Probe hole backfilled with Cuttings
		5				
0	SS2	6	100		5.8 ft grey/brown mottled CLAY and SILT	
		7			6.9 ft	
		8			grey/black coarse SAND	
		9				
0	SS3	10	100		10 ft	
		11			grey SILT, little clay	
		12				
		13			boring terminated at 12 feet	
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS
DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-58
Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather
Date/Time Start: 1/27/2004 1555
Date/Time Finish: 1/27/2004 1610

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	100			
		3				
		4				Probe hole backfilled with Cuttings
		5			5.2 ft	
0	SS2	6	100		grey/brown mottled CLAY and SILT	
		7			6.0 ft brown fine SAND, trace silt 7.0 ft	
		8			grey SILT, trace clay	
		9			boring terminated at 8 feet	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS
DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-59

Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather

Date/Time Start: 1/27/2004 1615
Date/Time Finish: 1/27/2004 1650

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	100			
		3				
		4			4.6 ft	Probe hole backfilled with Cuttings
		5				
0	SS2	6	100		grey/brown mottled CLAY and SILT 6.7 ft	
		7			brown fine SAND, trace silt 7.0 ft	
		8			grey SILT, trace clay	
		9			boring terminated at 8 feet	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-60
Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather: overcast, 50°F
Date/Time Start: 1/28/2003 0840
Date/Time Finish: 1/28/2003 0850

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
0	SS1	1	100		FILL	
		2				
		3				
		4			4.0 ft	← Probe hole backfilled with Cuttings
0	SS2	5	100		grey/black mottled organics and CLAY, trace silt	
		6			6.0 ft	
		7			grey/black fine-coarse SAND, trace silt	
		8			7.5 ft grey SILT	
					boring terminated at 8 feet	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample 3.4-4.0 feet

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-61
Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather: overcast, 50°F
Date/Time Start: 1/28/2003 0905
Date/Time Finish: 1/28/2003 0930

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
0	SS1	1	100		FILL	
		2				
		3				
		4			4.5 ft	← Probe hole backfilled with Cuttings
0	SS2	5	100		grey/black mottled organics and CLAY, trace silt	
		6			6.0 ft	
		7			brown/grey mottled SILT, some fine sand trace clay 7.0 ft	
		8			dark grey fine SAND, trace silt 7.5 ft brown/grey mottled SILT, little clay	
					boring terminated at 8 feet	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample 4-5.1 feet

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-62
Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather: overcast, 50^{0}F
Date/Time Start: 1/28/2003 0950
Date/Time Finish: 1/28/2003 1015

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	85			
		3				
		4				Probe hole backfilled with Cuttings
		5			5.0 ft	
0	SS2	6	100		dark grey mollted organics and CLAY, some silt trace fine sand 6.0 ft grey, brown medium-coarse SAND	
		7			7.8 ft	
		8			grey SILT, little clay boring terminated at 8 feet	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample 3-3.3 feet

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-63
Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather: overcast, 50^{0}F
Date/Time Start: 1/28/2003 1040
Date/Time Finish: 1/28/2003 1050

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	90			
		3				
		4				Probe hole backfilled with Cuttings
		5			5.5 ft	
0	SS2	6	80		black/grey mottled organics and CLAY, little silt trace fine sand 6.2 ft	
		7			grey/brown SILT,some clay little fine sand 7.8 ft	
		8			grey/brown SILT,little clay boring terminated at 8 feet	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical samples 4-5 feet

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-64
Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather: overcast, 50°F
Date/Time Start: 1/28/2003 1100
Date/Time Finish: 1/28/2003 1200

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
0	SS1	1	75		FILL	
		2				
		3				
		4				Probe hole backfilled with Cuttings
		5			5.0 ft	
0	SS2	6	75		dark grey/brown mottled organics and CLAY	
		7			7.2 ft	
		8			dark grey fine SAND, little silt	
					boring terminated at 8 feet	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-65
Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather: overcast, 50°F
Date/Time Start: 1/28/2003 1300
Date/Time Finish: 1/28/2003 1320

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
0	SS1	1	90		FILL	
		2				
		3				
		4				Probe hole backfilled with Cuttings
					4.6 ft	
		5			grey/black mottled organics and CLAY, some silt 5.0 ft	
0	SS2	6	95		brown/orange mottled CLAY and SILT	
					6.5 ft	
		7			grey/black coarse SAND 7.0 ft	
					grey SILT and CLAY	
		8				
					boring terminated at 8 feet	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample 2.1-4.0 feet

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-66
Sheet 1 of 1
Location: see figure

Weather: overcast, 50°F
Date/Time Start: 1/28/2003 1330
Date/Time Finish: 1/28/2003 1405

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
0	SS1	1	80		FILL	
		2				
		3				
		4				Probe hole backfilled with Cuttings
0	SS2	5	75			
		6			6.0 ft	
					grey/black organics and CLAY	
		7			trace sand 7.0 ft	
					dark grey/black coarse SAND	
		8				
					boring terminated at 8 feet	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample 2.8-3.2 feet

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-67
Sheet 1 of 1
Location: see figure

Weather: overcast, 50°F
Date/Time Start: 1/28/2003 1430
Date/Time Finish: 1/28/2003 1450

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
0	SS1	1	90		FILL	
		2				
		3				
		4				Probe hole backfilled with Cuttings
0	SS2	5	90			
		6			5.8 ft black mottled organics and CLAY 6.3 ft	
		7			grey SILT and CLAY, little fine sand	
		8				
					boring terminated at 8 feet	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

PARSONS DRILLING RECORD

BORING NO. GP-68

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

Sheet 1 of 1
Location: see figure

Weather: overcast, 50°F
Date/Time Start: 1/28/2003 1455
Date/Time Finish: 1/28/2003 1508

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1		90			
		2				
		3				
		4				Probe hole backfilled with Cuttings
		5			5.5 ft	
0	SS2		100			
		6			grey/black organics and CLAY, little silt	
		7			7.5 ft	
		8			grey/black medium-coarse SAND	
		9			9 ft	
0	SS3		100			
		10			grey SILT and CLAY	
		11				
		12			boring terminated at 12 feet	
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample 2.1-2.7 feet

PARSONS DRILLING RECORD

BORING NO. GP-69

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

Sheet 1 of 1
Location: see figure

Weather: overcast, 50°F
Date/Time Start: 1/28/2003 1515
Date/Time Finish: 1/28/2003 1555

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1		75			
		2				
		3				
		4			4.4 ft	Probe hole backfilled with Cuttings
		5				
0	SS2		75		black/grey organics and CLAY	
		6				
		7			7.5 ft	
		8			grey/black coarse SAND, trace silt	
		9			boring terminated at 8 feet	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample 3.6-4.0 feet

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-70
Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather
Date/Time Start: 1/28/2003 1555
Date/Time Finish: 1/28/2003 1610

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	80			
		3				
		4			4.5 ft	Probe hole backfilled with Cuttings
		5			brown/grey mottled CLAY and SILT	
0	SS2	6	100		trace fine sand	
		7			7.8 ft	
		8			dark grey SAND, little silt	
					boring terminated at 8 feet	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample from 7.8-8 feet

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-71
Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather
Date/Time Start: 1/29/2003 0845
Date/Time Finish: 1/29/2003 0930

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	90			
		3				
		4				Probe hole backfilled with Cuttings
		5				
15	SS2	6	100		6.0 ft	
		7			black/grey mottled organics and CLAY 7.0 ft	
		8			brown/grey mottled CLAY, little -some fine-coarse sand	
					boring terminated at 8 feet	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample from 3.9-5 feet

PARSONS
DRILLING RECORD

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

Weather:

Date/Time Start: 1/29/2003 0930
Date/Time Finish: 1/29/2003 0950

BORING NO. GP-72
Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Date	
Time	
Depth	

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1		50			
		2				
		3				
		4				Probe hole backfilled with Cuttings
					4.7 ft	
		5			black/grey mottled organics and CLAY	
0	SS2		100		5.5 ft	
		6			brown/grey mottled CLAY, little silt	
					6.5 ft	
		7			grey/black coarse SAND 7.0 ft	
					brown/grey SILT, trace clay	
		8				
					boring terminated at 8 feet	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample from 3.8-4.3 feet

PARSONS
DRILLING RECORD

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

Weather:

Date/Time Start: 1/29/2003 1000
Date/Time Finish: 1/29/2003 1035

BORING NO. GP-73
Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Date	
Time	
Depth	

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1		90			
		2				
		3				
		4			4.0 ft	Probe hole backfilled with Cuttings
		5			grey/black mottle organics and CLAY	
0	SS2		90		some silt	
		6			6.5 ft	
		7				
					grey/black SAND, little silt	
		8				
					boring terminated at 8 feet	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS
DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707

BORING NO. GP-74

Sheet 1 of 1
Location:

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather
Date/Time Start: 01/29/03 1055
Date/Time Finish: 01/29/03 1110

See Figure

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	60			
		3			3.2 ft	
		4			grey/brown CLAY, some sand 4.0 ft	← Probe hole backfilled with Cuttings
		5			grey/brown orange mottled CLAY and SILT	
		6				
0	SS2	7	80		7.0 ft grey/black SAND	
		8				
		9			boring terminated at 8.0 ft bgs	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS
DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707

BORING NO. GP-75

Sheet 1 of 1
Location:

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather
Date/Time Start: 01/29/03 1130
Date/Time Finish: 01/29/03 1200

See Figure

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			Fill	
0	SS1	2	90			
		3				
		4				← Probe hole backfilled with Cuttings
		5			5.6 ft	
		6			grey/black mottled organics and CLAY, some silt	
0	SS2	7	100		7.2 ft	
		8			grey/black SAND, wet 8.0	
		9			grey/brown mottled CLAY and SILT	
		10				
0	SS3	11	50		11.0 ft grey SILT, wet	
		12				
		13			boring terminated at 12.0 ft bgs.	
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample from 3.2-4.2 feet

PARSONS DRILLING RECORD

BORING NO. GP-76

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707

Sheet 1 of 1
Location:

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather

Date/Time Start: 02/03/03 0850

Date/Time Finish: 02/03/03 0950

See Figure

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	90			
		3				
		4				Probe hole backfilled with Cuttings
		5			6.0 ft	
0	SS2	6	75		grey/black mottled organics and CLAY, some silt	
		7			7.9 ft	
		8			grey/black SAND, wet	
		9			boring terminated at 8.0 ft bgs	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample from 5-6 feet

PARSONS DRILLING RECORD

BORING NO. GP-77

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707

Sheet 1 of 1
Location:

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather

Date/Time Start: 2/3/2003 0950

Date/Time Finish: 02/03/043 1015

See Figure

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	95			
		3				
		4				Probe hole backfilled with Cuttings
		5			5.2 ft	
0	SS2	6	95		grey/black mottled organics and CLAY, some silt	
		7			6.3 ft	
		8			grey/brown/orange mottled SILTY CLAY	
		9			boring terminated at 8.0 ft bgs.	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample from 3.9-5.2 feet

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS
DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707

BORING NO. GP-78

Sheet 1 of 1
Location:

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather
Date/Time Start: 02/03/03 1030
Date/Time Finish: 02/03/03 1035

See Figure

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	95			
		3				
		4				Probe hole backfilled with Cuttings
		5			6.0 ft	
		6			grey/black mottled organics and CLAY and SILT	
0	SS2	7	80			
		8				
		9			boring terminated at 8.0 ft bgs	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS
DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707

BORING NO. GP-79

Sheet 1 of 1
Location:

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather
Date/Time Start: 02/03/03 1050
Date/Time Finish: 02/03/03 1115

See Figure

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	75			
		3				
		4				Probe hole backfilled with Cuttings
		5				
		6				
0	SS2	7	60		7.5 ft	
		8			grey/black mottled organics and CLAY, little SILT	
		9			boring terminated at 8.0 ft bgs.	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample from 2.8-4 feet

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS
DRILLING RECORD

PROJECT NAME Tifft and Hopkins Site
PROJECT NUMBER 440707

BORING NO. **GP-80**

Sheet 1 of 1
Location:

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather
Date/Time Start 02/03/04 1130
Date/Time Finish 02/03/04 1155

See Figure

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	100			
		3				
		4				Probe hole backfilled with Cuttings
		5				
		6			6.4 ft	
0	SS2	7	100		grey/black mottled organics and CLAY 6.5 ft grey/brown mottled CLAY some silt	
		8				
		9			boring terminated at 8.0 ft bgs	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample from 3.7-5.9 feet

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS
DRILLING RECORD

PROJECT NAME Tifft and Hopkins Site
PROJECT NUMBER 440707

BORING NO. **GP-81**

Sheet 1 of 1
Location:

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather
Date/Time Start 2/3/2004 1300
Date/Time Finish 02/03/04 1335

See Figure

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	90			
		3				
		4				Probe hole backfilled with Cuttings
		5			6.0 ft	
0	SS2	6	100		grey/black mottled organics and CLAY, some silt slight odor	
		7				
		8				
		9			boring terminated at 8.0 ft bgs.	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample from 3-6 feet

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS
DRILLING RECORD

PROJECT NAME Tifft and Hopkins Site
PROJECT NUMBER 440707

BORING NO. **GP-83**

Sheet 1 of 1
Location:

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather
Date/Time Start 02/03/04 1350
Date/Time Finish 02/03/04 1420

See Figure

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			Fill	
0	SS1	2	100.0			
		3				
		4				Probe hole backfilled with Cuttings
		5			5.2 ft	
					grey/black mottled organics and CLAY with some silt. 6.0 ft	
		6			grey/brown/orange mottled CLAY some silt	
0	SS2	7	80.0		7.5 ft	
					grey/black SAND, wet 7.9 ft	
		8			grey SILT, little clay	
		9			boring terminated at 8.0 ft bgs	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: Sampled 3.5-4.0' bgs

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS
DRILLING RECORD

PROJECT NAME Tifft and Hopkins Site
PROJECT NUMBER 440707

BORING NO. **GP-82**

Sheet 1 of 1
Location:

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather
Date/Time Start 2/3/2004 1335
Date/Time Finish 02/03/04 1415

See Figure

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	100.0			
		3				
		4				Probe hole backfilled with Cuttings
					5.0 ft	
		5			grey/black mottled organics and CLAY, little silt 5.2 ft	
					grey/brown/orange mottled CLAY some silt	
0	SS2	6	75.0			
		7			7.9 ft	
		8			grey/brown SILT and CLAY	
		9			boring terminated at 8.0 ft bgs.	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: Sampled 4.5-5.0' bgs

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS
DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707

BORING NO. GP-84

Sheet 1 of 1
Location:

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather: windy, 38°F overcast and rain
Date/Time Start: 02/04/2003 0845
Date/Time Finish: 02/04/2003 0915

See Figure

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	100.0			
		3				
		4				Probe hole backfilled with Cuttings
		5			6.0 ft	
		6			grey/black mottled organics (peat) and CLAY, some silt	
0	SS2	7	100.0		7.0 ft grey/black coarse SAND	
		8			7.6 ft grey SILT, trace CLAY, wet	
		9			boring terminated at 8.0 ft bgs.	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample from 2-6 feet

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PARSONS
DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707

BORING NO. GP-85

Sheet 1 of 1
Location:

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather: windy, 38°F overcast and rain
Date/Time Start: 11/05/2003 1232
Date/Time Finish: 11/05/2003 1235

See Figure

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	100.0			
		3				
		4				Probe hole backfilled with Cuttings
		5			5.0 ft grey/black mottled organics and CLAY, little silt	
		6			5.7 ft grey/brown/orange mottled CLAY some silt	
0	SS2	7	100.0		6.5 ft grey/brown fine-medium SAND	
		8			7.6 ft grey SILT and CLAY	
		9			boring terminated at 8.0 ft bgs.	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample from 2-4.8 feet

PARSONS DRILLING RECORD

BORING NO. GP-87

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707

Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather: windy, 38°F overcast and rain
Date/Time Start: 02/04/03 1010
Date/Time Finish: 02/04/03 1030

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL		COMMENTS
		0					
		1			FILL		
0	SS1	2	60				
		3					
		4					Probe hole backfilled with Cuttings
		5					
		6				6.0 ft	
0	SS2	7	50		grey/black mottled organics and CLAY	6.6 ft	
		8			grey/black coarse SAND	7.8 ft	
		9			grey/brown mottled CLAY and SILT	8.0 ft	
0	SS3	10	75		grey/brown SILT and CLAY		
		11					
		12					
		13			Boring terminated at 8.0 ft bgs		
		14					
		15					
		16					
		17					
		18					
		19					

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

PARSONS DRILLING RECORD

BORING NO. GP-86

Contractor: Zebra
Operator: Phil
Inspector: JWS
Rig Type: Geoprobe
Method: Direct push

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707

Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather: windy, 38°F overcast and rain
Date/Time Start: 11/05/2003 1232
Date/Time Finish: 11/05/2003 1235

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL		COMMENTS
		0					
		1			FILL		
0	SS1	2	100				
		3					
		4					Probe hole backfilled with Cuttings
		5				5.0 ft	
		6			grey/black mottled organics and CLAY	6.0 ft	
0	SS2	7	100		grey/brown/orange mottled CLAY some silt	6.5 ft	
		8			grey/black coarse SAND	7.7 ft	
		9			grey brown CLAY and SILT		
		10			boring terminated at 8.0 ft bgs.		
		11					
		12					
		13					
		14					
		15					
		16					
		17					
		18					
		19					

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample from 2-4.7 feet

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

BORING NO. GP-301

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707
Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Weather: rain, overcast, 50°F
Date/Time Start: 11/03/03 0915
Date/Time Finish: 11/03/03 0920

Date					
Time					
Depth					

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
0	SS1	1	80.0		FILL	
		2				
		3			3.5 ft	
		4			grey/black mottle organics and CLAY, little si 4.0 ft	← backfilled with cuttings
		5			grey/black coarse SAND, little silt	
0	SS2	6	100.0		6.5 ft	
		7			medium grey SILT and CLAY	
		8				
		9			boring terminated at 8 ft. bgs	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Chris Donavar
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

BORING NO. GP-302

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707
Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Weather: rain, overcast, 50°F
Date/Time Start: 11/03/03 0925
Date/Time Finish: 11/03/03 0935

Date					
Time					
Depth					

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
0	SS1	1	50.0		FILL	
		2				
		3			3.5 ft.	
		4			grey/black mottle organics and CLAY, little si 5.0 ft	← backfilled with Cuttings
		5			grey/black coarse SAND, little-some silt	
0	SS2	6	100.0			
		7				
		8				
		9				
0	SS3	10	100.0		10.0 ft.	
		11			firm medium grey SILT and CLAY coarsening downward to silt with cla	
		12				
		13			boring terminated at 12 ft bgs.	
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-303

Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather: rain, overcast, 50 °F
Date/Time Start: 11/03/03 1000
Date/Time Finish: 11/03/03 1020

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	100.0			
		3				
		4			4.9 ft.	← Probe hole backfilled with Cuttings
		5			yellow orange, medium to coarse SAND, little to trace silt, grading to silt and some sand.	
0	SS2	6	100.0		6.0 ft	
		7			grey/black coarse SAND, wet, trace silt 6.75 ft	
		8			gray SILT and CLAY	
		9			boring terminated at 8 feet bgs	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample 2-4 feet

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-304

Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather: rain, overcast, 50 °F
Date/Time Start: 11/03/03 1020
Date/Time Finish: 11/03/03 1035

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
15	SS1	2	80.0			
		3				
		4			5. 0 ft	← Probe hole backfilled with Cuttings
		5			grey/black mottled ORGANICS and CLAY 5.5 ft	
0	SS2	6	80.0			
		7			grey/brown fine-medium SAND, little silt 7.0 ft.	
		8			grey SILT and CLAY	
		9			boring terminated at 8 ft. bgs	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-305
Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather: rain, overcast, 50 °F
Date/Time Start: 11/03/03 1053
Date/Time Finish: 11/03/03 1055

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
NA	SS1	2	80.0			
		3			3.5 ft	
		4			grey/black mottled organics and CLAY	← Probe hole backfilled with Cuttings
		5			5.0 ft	
NA	SS2	6	100.0		grey/brown mottled CLAY and SILT	
		7			7.0 ft	
		8			grey SILT and CLAY	
		9			boring terminated at 8 ft.	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-306
Sheet 1 of 1
Location: near MW-7

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather: rain, overcast, 50 °F
Date/Time Start: 11/03/03 1110
Date/Time Finish: 11/03/03 1115

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
NA	SS1	2	50			
		3				
		4				← Probe hole backfilled with Cuttings
		5				
NA	SS2	6	75		6. 0 ft	
		7			medium grey/black mottled organics and CLAY, little silt	
		8			7. 0 ft	
		9			orange/grey CLAY, some silt	
		10			boring terminated at 8 ft.	
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-307

Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Weather: rain, overcast, 50 °F

Date/Time Start: 11/03/03 1125
Date/Time Finish: 11/03/03 1130

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
NA	SS1		80.0			
		2				
		3				
		4				Probe hole backfilled with Cuttings
					4.5 ft	
		5			coarse SAND, little silt, wet	
					5.5 ft.	
NA	SS2	6	80.0			
		7			mottled brown/orange SILT, some clay 7. 0 ft	
					grey SILT and CLAY	
		8				
					boring terminated at 8 ft.	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-308

Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Weather: rain, overcast, 50 °F

Date/Time Start: 11/03/03 1145
Date/Time Finish: 11/03/03 1152

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
7.4	SS1	2	60.0			
		3				
		4				Probe hole backfilled with Cuttings
		5				
3.4	SS2	6	100.0			
		7			7.1 ft	
		8			grey/black mottled organics and CLAY, little silt 8.0 ft	
		9			grey/black medium-coarse SAND trace silt 9.0 ft	
0	SS3	10	60.0		grey SILT and CLAY	
		11				
		12				
					boring terminated at 12 feet	
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample from 2-4 feet

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-309
Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather: rain, overcast, 50 °F
Date/Time Start: 11/03/03 1214
Date/Time Finish: 11/03/03 1220

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
0	SS1	1	80.0		FILL	
		2				
		3				
		4			4. 0 ft	
					gray/brown mottled CLAY and SILT 4.3 ft	← Probe hole backfilled with Cuttings
		5			grey/black coarse SAND	
		6			6.0 ft	
0	SS2		100.0			
		7			dark gray/black mottled firm SAND, wet	
					7.5 ft	
		8			black/yellow mottled SILT with little clay, trace medium gravel	
					boring terminated at 8 feet	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample from 0-4 feet

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-310
Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather: rain, overcast, 50 °F
Date/Time Start: 11/03/03 1310
Date/Time Finish: 11/03/03 1322

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
0	SS1	1	100.0		FILL	
		2				
		3				
		4			3.8 ft	
						← Probe hole backfilled with Cuttings
		5			grey/black mottled organics and CLAY, little silt	
0	SS2	6	75.0		6.0 ft	
					grey/brown fine-medium SAND, little silt	
		7			7.0 ft	
					grey SILT and CLAY	
		8				
					boring terminated at 8 feet	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-311
Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather: rain, overcast, 50 °F
Date/Time Start: 11/03/03 1334
Date/Time Finish: 11/03/03 1345

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	50.0			
		3				
		4			4.0 ft	
		5			grey/black mottled organics and CLAY, little silt 5.0 ft	← Probe hole backfilled with Cuttings
		6			black/grey medium-coarse SAND 5.5 ft	
0	SS2	7	100		grey/brown mottled SILT and CLAY 6.5 ft	
		8			gray SILT and CLAY, trace fine sand	
		9			boring terminated at 8 feet	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-312
Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather: rain, overcast, 50 °F
Date/Time Start: 11/03/03 0925
Date/Time Finish: 11/03/03 0935

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	80.0			
		3				
		4			4.0 ft	
		5			grey/black mottled organics and CLAY 5.0 ft	← Probe hole backfilled with Cuttings
0	SS2	6	100.0		grey/black fine-coarse SAND 7.0 ft	
		7			grey SILT and CLAY	
		8			boring terminated at 8 feet	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-313
Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather: rain, overcast, 50 °F
Date/Time Start: 11/03/03 1400
Date/Time Finish: 11/03/03 1410

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	80			
		3				
		4				Probe hole backfilled with Cuttings
					4.8 ft	
		5			grey/black mottled organics and CLAY	
		6			6.5 ft	
0	SS2		80.0			
		7			grey/brown mottled SAND, little silt	
					7.5 ft	
		8			grey SILT and CLAY	
					boring terminated at 8 feet	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-314
Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather: rain, overcast, 50 °F
Date/Time Start: 11/03/03 1420
Date/Time Finish: 11/03/03 1425

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	50.0			
		3				
		4				Probe hole backfilled with Cuttings
		5				
0	SS2	6	25.0		6.25 ft	
		7			black/grey mottled organics and CLAY, some silt	
					7.5	
		8			grey SILT and CLAY	
					boring terminated at 8 feet	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-315

Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather: rain, overcast, 50 °F
Date/Time Start: 11/03/03 1450
Date/Time Finish: 11/03/03 1453

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
0	SS1	1	50.0		FILL	
		2				
		3				
		4				Probe hole backfilled with Cuttings
		5			5.5 ft	
0	SS2	6	100.0		gray/black mottled organics and CLAY 6.5 ft	
		7			gray/black medium-coarse SAND, little silt, trace (7.0 ft	
		8			mottled brown/gray SILT and CLAY	
					boring terminated at 8 feet	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample from 2-5 feet

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-316

Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather: rain, overcast, 50 °F
Date/Time Start: 11/03/03 1510
Date/Time Finish: 11/03/03 1515

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
0	SS1	1	50.0		FILL	
		2				
		3				
		4				Probe hole backfilled with Cuttings
		5				
0	SS2	6	50.0		6.4 ft	
		7			mottled gray/brown SILT and CLAY	
		8				
					boring terminated at 8 ft	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical samples from 1-5 feet

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-317

Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather: rain, overcast, 50 °F
Date/Time Start: 11/03/03 1528
Date/Time Finish: 11/03/03 1530

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	100.0			
		3				
		4				Probe hole backfilled with Cuttings
		5			5.3 ft	
0	SS2	6	75.0		grey/black mottled organics and CLAY	
		7			6.3 ft grey/brown fine-medium SAND, some silt	
		8			7.5 ft grey/brown SILT and CLAY	
		9			boring terminated at 8 ft.	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample from 2-4 feet

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-318

Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather: rain, overcast, 50 °F
Date/Time Start: 11/03/03 1545
Date/Time Finish: 11/03/03 1610

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
14	SS1	2	75			
		3				
		4				Probe hole backfilled with Cuttings
		5				
0	SS2	6	50.0		6.0 ft grey/black mottled organics and CLAY	
		7			7.0 ft grey/brown mottled SILT and CLAY	
		8				
		9			boring terminated at 8 feet	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-319

Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather: rain, overcast, 50 °F
Date/Time Start: 11/04/03 0840
Date/Time Finish: 11/04/03 0842

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	75.0			
		3				
		4				Probe hole backfilled with Cuttings
		5				
		6				
0	SS2	7	50.0		7.0 ft	
		8			mottled grey/brown SILT and CLAY	
					boring terminated at 8 feet	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-320

Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather: windy, 45 °F
Date/Time Start: 11/04/03 0850
Date/Time Finish: 11/04/03 0852

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	73			
		3				
		4				Probe hole backfilled with Cuttings
		5			5.0 ft	
0	SS2	6	100.0		black/gray mottled organics and CLAY	
		7			7.0 ft	
		8			gray/brown mottled SILT and CLAY	
					boring terminated at 8 feet	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample from 2-4 feet

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-321

Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather: rain, overcast, 50 °F
Date/Time Start: 11/04/03 0920
Date/Time Finish: 11/04/03 0927

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
0	SS1	1	80.0		FILL	
		2				
		3				
		4				Probe hole backfilled with Cuttings
0	SS2	5	100.0		grey/black mottled organics and CLAY	
		6				
		7			mottled gray/brown CLAY and SILT	
		8			boring terminated at 8 feet	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-322

Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather: windy, 45 °F
Date/Time Start: 11/04/03 0945
Date/Time Finish: 11/04/03 0955

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
0	SS1	1	75		FILL	
		2				
		3				
		4				Probe hole backfilled with Cuttings
15	SS2	5	75		5.0 ft	
		6			black/brown mottled SILTY SAND	
		7			6.5 ft medium to coarse black SAND 7 ft	
		8			gray SILT and CLAY	
		9			boring terminated at 8 feet	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-323

Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Weather: windy, 45°F

Date				
Time				
Depth				

Date/Time Start: 11/04/03 1000
Date/Time Finish: 11/04/03 1003

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	50			
		3				
		4				Probe hole backfilled with Cuttings
		5				
		6			6.0 ft	
25	SS2	7	75		grey/black medium-coarse SAND, little silt	
		8			7.5 ft firm grey SILT and CLAY	
		9			boring terminated at 8 feet	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample from 6-8 feet

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-324

Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Weather: windy, 45 °F

Date				
Time				
Depth				

Date/Time Start: 11/04/03 1029
Date/Time Finish: 11/04/03 1032

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	80			
		3				
		4			4.5 ft	Probe hole backfilled with Cuttings
		5			grey/black mottled organics and CLAY	
		6			5.5 ft grey/brown mottled CLAY and SILT 6.0 ft	
0	SS2	7	75		grey/brown fine SAND, some silt	
		8			7.0 ft grey/brown mottled SILT and CLAY	
		9			boring terminated at 8 feet	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-325

Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather: windy, 45 °F
Date/Time Start: 11/04/03 1045
Date/Time Finish: 11/04/03 1047

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	80			
		3				
		4				Probe hole backfilled with Cuttings
		5			5.3 ft	
		6			grey/black mottle organics and CLAY 6.0 ft	
0	SS2	7	80		grey/brown/orange mottled CLAY, some silt 7.2 ft	
		8			grey SILT and CLAY	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-326

Sheet 1 of 1
Location: see figure

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather: windy, 45 °F
Date/Time Start: 11/04/03 1059
Date/Time Finish: 11/04/03 1102

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	80			
		3				
		4				Probe hole backfilled with Cuttings
		5			5.5 ft	
0	SS2	6	70		grey/black mottled organics and CLAY 7.5 ft	
		7				
		8			grey/brown SILT and CLAY	
		9			boring terminated at 8 feet	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-327
Sheet 1 of 1
Location: see figure

Weather: windy, 45 °F
Date/Time Start: 11/04/03 1059
Date/Time Finish: 11/04/03 1102

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1		80			
		2				
		3				
		4				Probe hole backfilled with Cuttings
		5				
0	SS2	6	100		6.0 ft	
					grey/brown mottled CLAY and SILT	
		7			7.0 ft	
					grey/black medium-coarse SAND, little silt	
		8				
		9			9.5 ft	
0	SS3	10	60		grey SILT and CLAY	
		11				
		12				
					boring terminated at 12 feet	
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample from 3-5 feet

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PARSONS DRILLING RECORD

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBE: 440707

BORING NO. GP-328
Sheet 1 of 1
Location: see figure

Weather: windy, 45 °F
Date/Time Start: 11/04/03 1059
Date/Time Finish: 11/04/03 1102

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
	SS1	2				
		3				
		4				Probe hole backfilled with Cuttings
					4.5 ft	
		5			grey/black mottled organics and CLAY	
	SS2				5.5 ft	
		6			brown/grey mottled CLAY and SILT, trace fine sand	
		7			7.5 ft	
		8			grey SILT and CLAY	
					boring terminated at 8 feet	
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

PARSONS
DRILLING RECORD

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707

BORING NO. GP-329
Sheet 1 of 1
Location:

Weather: rain, overcast, 50 degrees F
Date/Time Start: 11/04/2003 1330
Date/Time Finish: 11/04/03 1400

See Figure

GROUNDWATER OBSERVATIONS

Date					
Time					
Depth					

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
					FILL	
		1				
0	SS1		80.0			← Probe hole backfilled with Cuttings
		2			refusal	
					3.0 ft	
		3			boring terminated at 3.0 ft bgs	
		4				
		5				
		6				
		7				
		8				
		9				
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

PARSONS
DRILLING RECORD

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707

BORING NO. GP-330
Sheet 1 of 1
Location:

Weather: rain, overcast, 50 degrees F
Date/Time Start: 11/04/03 1453
Date/Time Finish: 11/04/03 1457

See Figure

GROUNDWATER OBSERVATIONS

Date					
Time					
Depth					

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
					FILL	
		1				
0	SS1	2	75			← Probe hole backfilled with Cuttings
		3				
		4			4.3 ft	
		5			grey/black mottled organics and CLAY 4.9 ft	
					grey/brown/orange mottled CLAY 5.2 ft	
0	SS2	6	100		grey/brown medium SAND, little silt	
		7			7.2 ft	
		8			brown CLAY with SILT	
		9			boring terminated at 8.0 ft bgs.	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

PARSONS
DRILLING RECORD

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBEI: 440707

BORING NO. GP-331
Sheet 1 of 1
Location:

Weather: rain, overcast, 50 degrees F
Date/Time Start: 11/04/2003 1509
Date/Time Finish: 11/04/03 1515

See Figure

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	75			
		3				
		4				Probe hole backfilled with Cuttings
		5			5.0 ft.	
		6			grey/black mottled organics and CLAY 6.0 ft	
0	SS2	7	75		grey/brown mottled CLAY and SILT	
		8				
		9			Boring terminated at 8.0 ft bgs	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample from 2-3 feet

PARSONS
DRILLING RECORD

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBEI: 440707

BORING NO. GP-332
Sheet 1 of 1
Location:

Weather: rain, overcast, 50 degrees F
Date/Time Start: 11/04/03 1537
Date/Time Finish: 11/04/03 1545

See Figure

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	100			
		3				
		4				Probe hole backfilled with Cuttings
		5			4.5 ft	
		6			grey/black mottled organics and CLAY 5.1 ft.	
0	SS2	7	100		grey/brown mottled SILT and CLAY, trace sand 7.0 ft	
		8			grey/browm fine-medium SAND, little silt 7.35 ft	
		9			grey SILT and CLAY	
		10			boring terminated at 8.0 ft bgs.	
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

PARSONS
DRILLING RECORD

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707

BORING NO. GP-333
Sheet 1 of 1
Location:

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather: overcast, slight breeze, little rain
Date/Time Start: 11/05/2003 0844
Date/Time Finish: 11/05/03 0847

See Figure

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
44	SS1		100			
		2				
		3				
		4			4.5 ft	Probe hole backfilled with Cuttings
		5			grey/black mottled organics and CLAY 5.0 ft.	
					mottled grey brown CLAY and SILT	
		6			6.5 ft	
					grey/brown fine to medium SAND, little SILT	
25	SS2	7	100		7.25 ft	
					grey SILT and CLAY	
		8				
		9			Boring terminated at 8.0 ft bgs	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: anaytical sample from 3.5-5 feet

PARSONS
DRILLING RECORD

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707

BORING NO. GP-334
Sheet 1 of 1
Location:

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather: overcast, slight breeze, little rain
Date/Time Start: 11/05/2003 0910
Date/Time Finish: 11/05/03 0922

See Figure

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	75			
		3				
		4				Probe hole backfilled with Cuttings
		5				
0	SS2	6	50		6.5 ft.	
					grey/black mottled organics and CLAY 7.0 ft	
		7			grey/brown mottled CLAY and SILT 7.4 ft	
					medium to corase SAND, wet	
		8				
		9			boring terminated at 8.0 ft bgs.	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample from 1-3 feet

PARSONS
DRILLING RECORD

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707

BORING NO. GP-335
Sheet 1 of 1
Location:

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather: overcast, slight breeze, little rain
Date/Time Start: 11/05/2003 0930
Date/Time Finish: 11/05/03 0932

See Figure

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	50			
		3			3.5 ft	
		4			grey/black mottled organics and CLAY, wet	← Probe hole backfilled with Cuttings
		5			5.5 ft	
		6			grey/black medium to coarse SAND	
0	SS2	7	40			
		8				
		9			Boring terminated at 8.0 ft bgs	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

PARSONS
DRILLING RECORD

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707

BORING NO. GP-336
Sheet 1 of 1
Location:

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Weather: overcast, slight breeze, little rain
Date/Time Start: 11/05/2003 1009
Date/Time Finish: 11/05/2003 1013

See Figure

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	100			
		3				
		4				← Probe hole backfilled with Cuttings
		5			5.25 ft	
					grey/brown mottled SILT/SAND/CLAY 5.75 ft	
0	SS2	6	100		grey/black medium to coarse SAND 6.5 ft	
		7			brown/grey SILT and CLAY	
		8				
		9			boring terminated at 8.0 ft bgs.	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

PARSONS
DRILLING RECORD

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707

BORING NO. GP-337
Sheet 1 of 1
Location:

Weather: overcast, slight breeze, little rain
Date/Time Start: 11/05/2003 1023
Date/Time Finish: 11/05/2003 1027

See Figure

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1		100			
		2				
		3				
		4				Probe hole backfilled with Cuttings
		5				
		6			6.0 ft	
					grey/black mottled organics and CLAY, little silt	
0	SS2	7	50		7.5 ft	
		8			grey/brown mottled SILT and CLAY	
		9			Boring terminated at 8.0 ft bgs	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

PARSONS
DRILLING RECORD

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707

BORING NO. GP-338
Sheet 1 of 1
Location:

Weather: overcast, slight breeze, little rain
Date/Time Start: 11/05/2003 1047
Date/Time Finish: 11/05/2003 1100

See Figure

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			Fill	
0	SS1	2	100			
		3				
		4				Probe hole backfilled with Cuttings
		5				
NA	SS2	6	70		6.4 ft.	
					grey/black medium to coarse SAND, wet	
		7			7.25 ft	
		8			grey/brown mottled SILT and CLAY	
		9			boring terminated at 8.0 ft bgs.	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

PARSONS
DRILLING RECORD

BORING NO. GP-339

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707

Sheet 1 of 1
Location:

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather: overcast, slight breeze, little rain
Date/Time Start: 11/05/2003 1105
Date/Time Finish: 11/05/2003 1106

See Figure

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	100			
		3				
		4				Probe hole backfilled with Cuttings
		5			5.5 ft	
		6			grey/brown mottled SAND and SILT 6.25 ft	
0	SS2	7	65		grey/black SAND 6.55 ft black CLAY 7.25 ft grey/brown SILT and CLAY	
		8				
		9			Boring terminated at 8.0 ft bgs	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

PARSONS
DRILLING RECORD

BORING NO. GP-340

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707

Sheet 1 of 1
Location:

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather: overcast, slight breeze, little rain
Date/Time Start: 11/05/2003 1120
Date/Time Finish: 11/05/2003 1122

See Figure

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	100			
		3				
		4				Probe hole backfilled with Cuttings
		5				
0	SS2	6	50		6.0 ft mottled SILT and CLAY	
		7			7.0 ft grey/black coarse SAND	
		8				
		9			boring terminated at 8.0 ft bgs.	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: Sampled 4'-5' bgs

PARSONS
DRILLING RECORD

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707

BORING NO. GP-341
Sheet 1 of 1
Location:

Weather: overcast, slight breeze, little rain
Date/Time Start: 11/05/2003 1147
Date/Time Finish: 11/05/2003 1150

See Figure

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			Fill	
0	SS1	2	75			
		3			3.5 ft	
		4			grey/brown mottled CLAY 4.0 ft	Probe hole backfilled with Cuttings
		5			grey/brown/orange mottled SILTY CLAY	
		6			6.0 ft	
0	SS2	7	100		grey/black coarse SAND 6.75	
		8			grey/brown mottled CLAY and SILT	
		9			Boring terminated at 8.0 ft bgs	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample from 4-5 feet

PARSONS
DRILLING RECORD

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707

BORING NO. GP-342
Sheet 1 of 1
Location:

Weather: overcast, slight breeze, little rain
Date/Time Start: 11/05/2003 1206
Date/Time Finish: 11/05/2003 1212

See Figure

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			Fill, odor	
0	SS1	2	80			
		3				
		4				Probe hole backfilled with Cuttings
		5			5.0 ft	
		6			grey/black mottled organics and CLAY, little silt 6.0 ft	
0	SS2	7	100		grey/brown/orange mottled SILTY CLAY 7.3 ft	
		8			grey SILT and SAND	
		9			boring terminated at 8.0 ft bgs.	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample from 1-4 feet

PARSONS DRILLING RECORD

BORING NO. GP-343

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707

Sheet 1 of 1
Location:

Weather: overcast, slight breeze, little rain

Date/Time Start: 11/05/2003 1232
Date/Time Finish: 11/05/2003 1235

See Figure

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	60			
		3				
		4				Probe hole backfilled with Cuttings
		5				
		6			6.0 ft	
0	SS2	7	50		grey/black mottled organics and CLAY 6.6 ft brown/grey mottled SILTY CLAY	
		8				
		9			Boring terminated at 8.0 ft bgs	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: analytical sample from 1-3 feet

PARSONS DRILLING RECORD

BORING NO. GP-344

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707

Sheet 1 of 1
Location:

Weather: overcast, slight breeze, little rain

Date/Time Start: 11/05/2003 1252
Date/Time Finish: 11/05/2003 1257

See Figure

GROUNDWATER OBSERVATIONS
Date
Time
Depth

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1			FILL	
0	SS1	2	100			
		3				
		4				Probe hole backfilled with Cuttings
		5			5.0 ft grey/brown medium to coarse SAND with SILT	
0	SS2	6	100		6.5 ft	
		7			grey SILT and CLAY, some organics	
		8				
		9			boring terminated at 8.0 ft bgs.	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

PARSONS
DRILLING RECORD

Contractor: Zebra
Operator: Chris Donavan
Inspector: JSP
Rig Type: Geoprobe
Method: Direct push

PROJECT NAME: Tifft and Hopkins Site
PROJECT NUMBER: 440707

BORING NO. GP-345

Sheet 1 of 1
Location:

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Weather: overcast, slight breeze, little rain

Date/Time Start: 11/05/2003 1315

Date/Time Finish: 11/05/2003 1320

See Figure

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
0	SS1	1	40		FILL	
		2				
		3				
		4			5.0 ft	Probe hole backfilled with Cuttings
		5			grey/black mottled organics and CLAY 5.3 ft	
		6			grey/brown/orange mottled SILTY CLAY	
0	SS2	7	50			
		8				
		9			Boring terminated at 8.0 ft bgs	
		10				
		11				
		12				
		13				
		14				
		15				
		16				
		17				
		18				
		19				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

APPENDIX C

HYDRAULIC CONDUCTIVITY DATA AND ANALYSIS

PARSONS

Interoffice Correspondence

To: File 440707 Date: 4/28/2004

From: Jim Schuetz Phone:

Subject: Tifft and Hopkins hydraulic conductivity

On March 5, 2003, rising head slug tests were conducted on all three monitoring wells at the Tifft and Hopkins site. At each well a 5-foot screen was placed from approximately 2 to 7 feet below ground surface (BGS). Slug tests were conducted by removing 1 liter of water with a Teflon bailer. Water level measurements were recorded manually with a water level indicator. Depth to water measurements and estimated hydraulic conductivities are listed below:

Well ID	Depth to water (feet BGS)	Hydraulic conductivity (cm/sec)
MW-1	1.51	$7x\ 10^{-5}$
MW-2	2.67	4×10^{-4}
MW-3	3.73	3×10^{-3}

Wells MW-1 and MW-2 were listed within the published range of silty sands, fine sands (Fetter, 1994). Well MW-3 was listed within the published range of the range of well-sorted sands, glacial outwash (Fetter, 1994). These values are reasonable considering the heterogeneous nature of the fill.

Within the context of ground water flow during the proposed excavation, the slug tests probably underestimate the hydraulic conductivity. Flow through the fill deposits is dominated by sections of coarse grained industrial slag and bricks. Parsons observed this during test pits excavations conducted by GZA on March 4, 2003. The results from Geoprobe sampling and slug test analysis suggested the wells did not penetrate a high permeability section.

Client: **Honeywell**

Project: **Tifft and Hopkins Site**

Project No.:

Well No.: **MW-1**

Test Date: **March 5, 2003**

Formation Tested: **Fill and alluvial deposits**

Rising (R) or Falling (F) Head Test: **R**

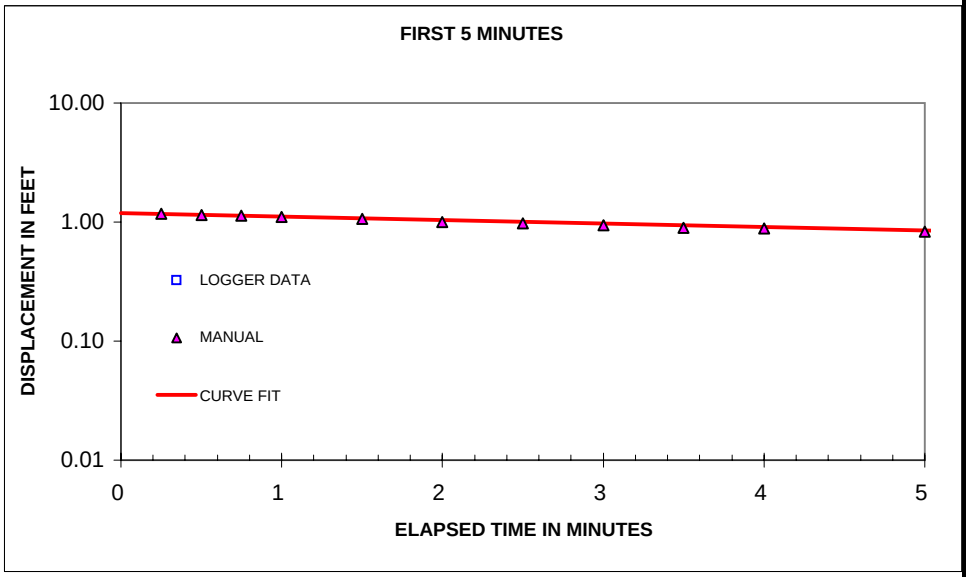
Logger Data File:

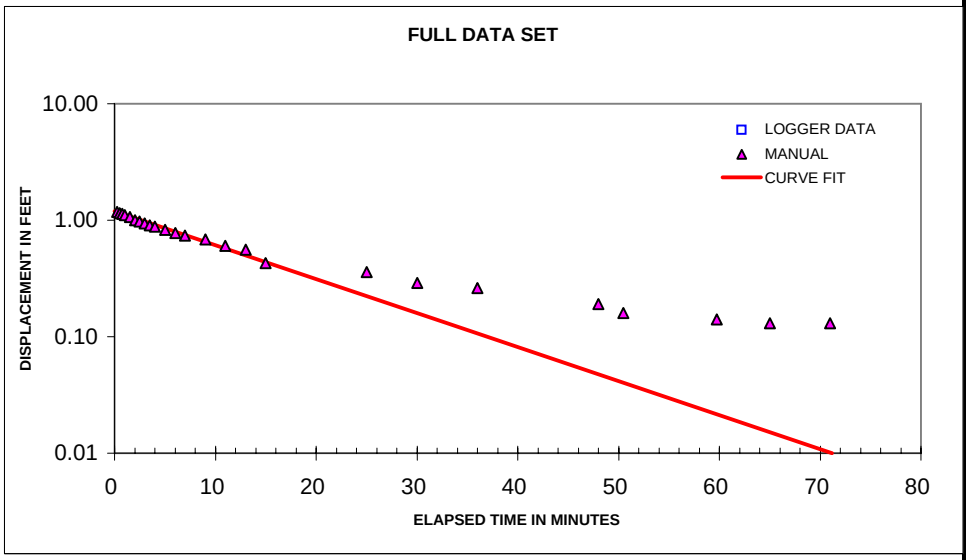
Hydraulic conductivity	**7.E-05**	**cm/sec**
	1.E-04	**ft/min**
	0	**ft/day**

Casing stickup	**3.81**	feet
Static water level (from top of casing)	**5.32**	feet
Depth to bottom of screer (from ground level)	**6.82**	feet
Boring diameter	**7.00**	inches
Casing diameter	**2.00**	inches
Screen diameter	**2.00**	inches
Screen length	**5.00**	feet
Depth to "impermeable boundary"	**16.00**	feet
Porosity of filter pack	**0.30**	
Slug diameter (optional)		inches
Slug length (optional)		feet
Theoretical ΔH at time zero (Y_0)	**0.00**	feet
Actual ΔH at time zero (Y_0)	**1.192**	feet
ΔH at time t (Y_t)	**0.130**	feet
Time	**33.00**	min

Bouwer-Rice Parameters

feet	cm		cm	
1.51	46.02	*SW*		
5.31	161.85	*H*	60.00	*L/Rw*
1.82	55.47	*Ts*	0.37	*H/D*
0.083	2.54	*Rw*	3.30	*A*
0.083	2.54	*Rc*	0.50	*B*
0.167	5.08	*DS*	2.90	*C*
5.00	152.40	*L*	4.70	*Ln[(D-H)/Rw]'*
14.4916	441.70	*D*	4.70	*Ln[(D-H)/Rw]*
1.1922	36.34	Y_0	2.79	equation (8)
0.13	3.96	Y_t	3.19	equation (9)
	1980.00	*t (seconds)*	2.79	*Ln(Re/Rw)*
	0.30	*n*	6.6E-05	equation (5)





REFERENCES:

Bouwer, Herman. 1989. "The Bouwer and Rice Slug Test - An Update". Ground Water vol. 27, no. 3, May-June 1989.

Bouwer, H. and R.C. Rice. 1976. A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers With Completely or Partially Penetrating Wells". Water Resources Research. vol 12, no. 3, June 1976.

Client: **Honeywell**

Project: **Tifft and Hopkins Site**

Project No.:

Well No.: **MW-2**

Test Date: **March 5, 2003**

Formation Tested: **Fill and alluvial deposits**

Rising (R) or Falling (F) Head Test: **rising**

Logger Data File:

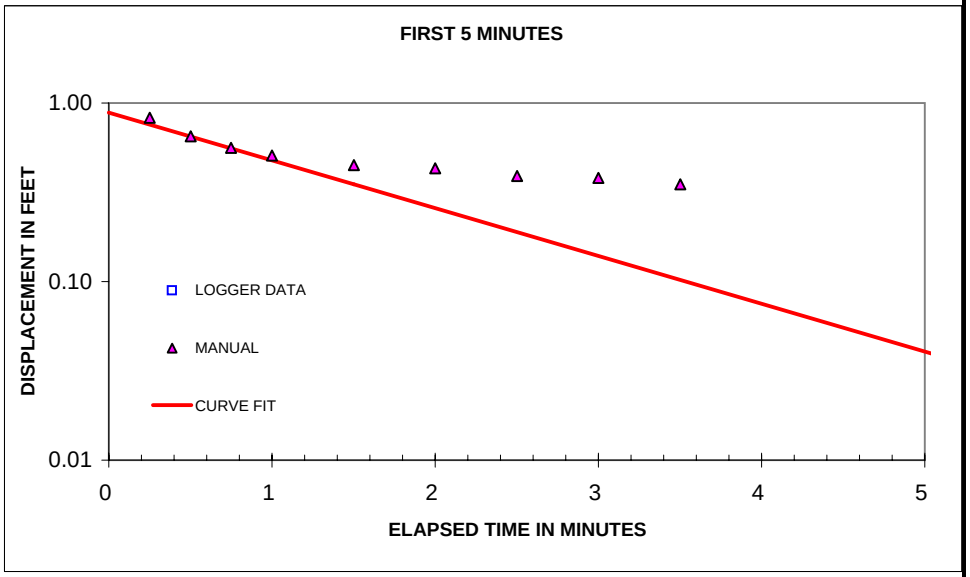
Hydraulic conductivity

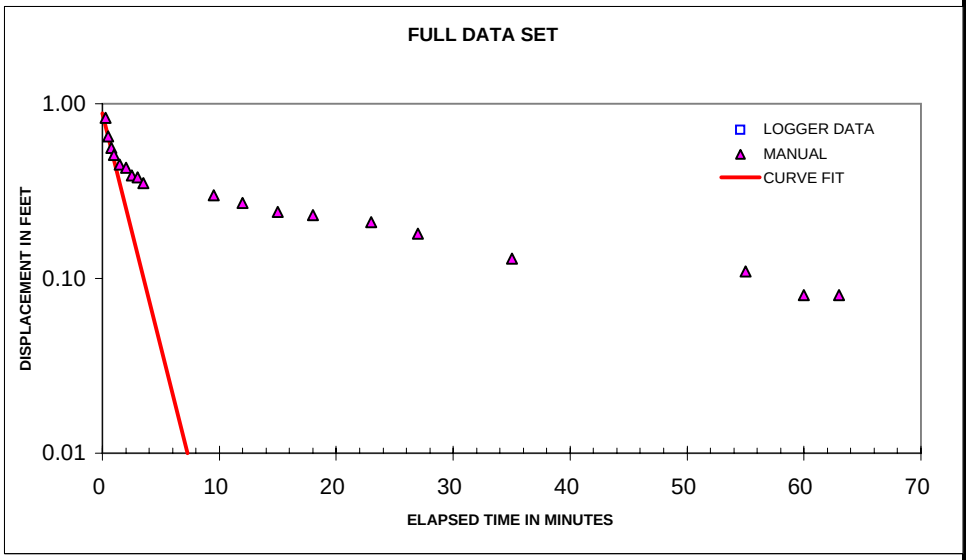
4.E-04	**cm/sec**
8.E-04	**ft/min**
1	**ft/day**

Casing stickup	**2.00**	feet
Static water level (from top of casing)	**4.67**	feet
Depth to bottom of screer (from ground level)	**7.01**	feet
Boring diameter	**7.25**	inches
Casing diameter	**2.00**	inches
Screen diameter	**2.00**	inches
Screen length	**5.00**	feet
Depth to "impermeable boundary"	**16.00**	feet
Porosity of filter pack	**0.30**	
Slug diameter (optional)		inches
Slug length (optional)		feet
Theoretical ΔH at time zero (Y_0)	**0.00**	feet
Actual ΔH at time zero (Y_0)	**0.882**	feet
ΔH at time t (Y_t)	**0.350**	feet
Time	**1.50**	min

Bouwer-Rice Parameters

feet	cm		cm	
2.67	81.38	*SW*		
4.34	132.28	*H*	14.37	*L/Rw*
2.01	61.26	*Ts*	0.33	*H/D*
0.302	9.21	*Rw*	1.93	*A*
0.083	2.54	*Rc*	0.27	*B*
0.167	5.08	*DS*	1.30	*C*
4.34	132.28	*L*	3.39	*Ln[(D-H)/Rw]'*
13.3316	406.35	*D*	3.39	*Ln[(D-H)/Rw]*
0.8822	26.89	Y_0	1.64	equation (8)
0.35	10.67	Y_t	1.99	equation (9)
	90.00	*t (seconds)*	1.64	*Ln(Re/Rw)*
	0.30	*n*	4.1E-04	equation (5)





REFERENCES:

Bouwer, Herman. 1989. "The Bouwer and Rice Slug Test - An Update". Ground Water vol. 27, no. 3, May-June 1989.

Bouwer, H. and R.C. Rice. 1976. A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers With Completely or Partially Penetrating Wells". Water Resources Research. vol 12, no. 3, June 1976.

Client: **Honeywell**

Project: **Tifft and Hopkins Site**

Project No.:

Well No.: **MW-3**

Test Date: **March 5, 2003**

Formation Tested: **Fill and alluvial deposits**

Rising (R) or Falling (F) Head Test: **rising**

Logger Data File:

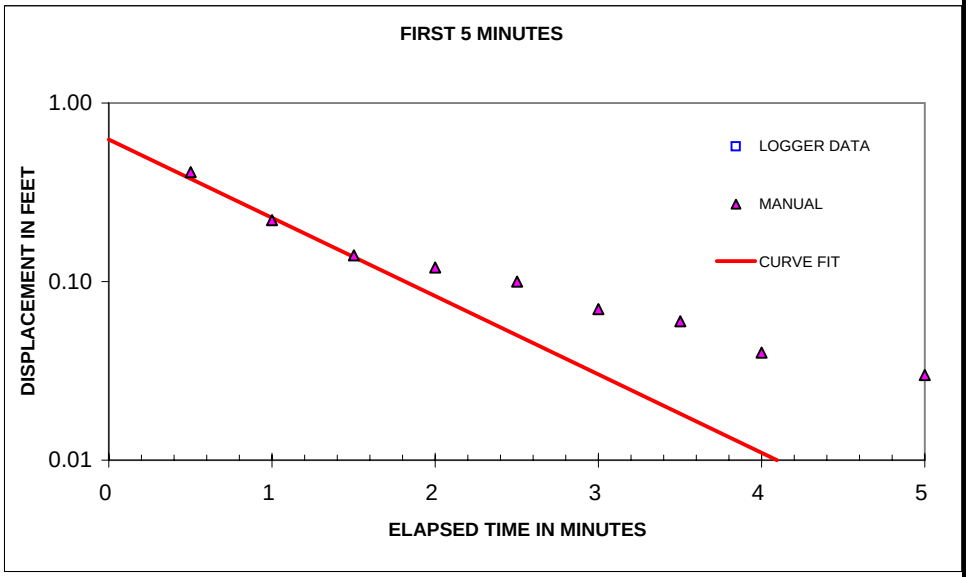
Hydraulic conductivity

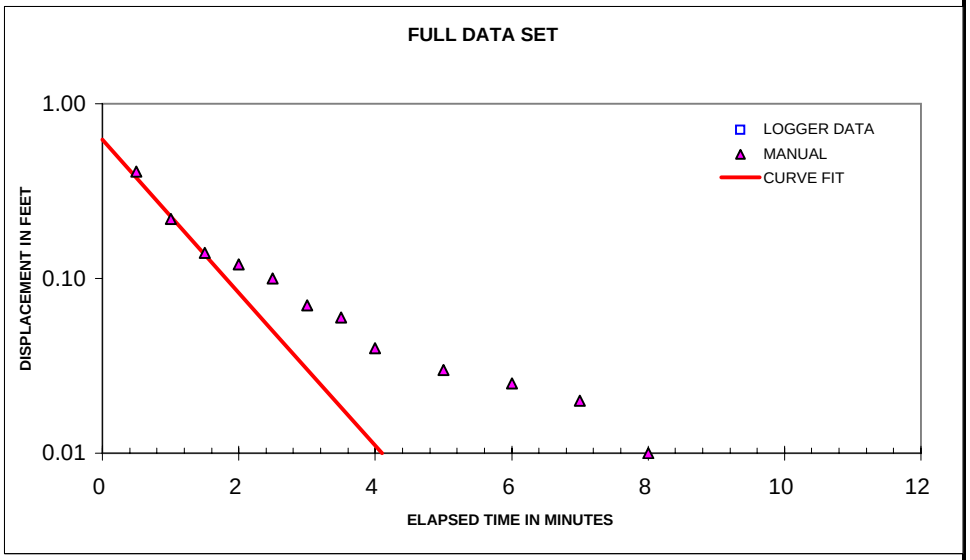
3.E-03	**cm/sec**
7.E-03	**ft/min**
10	**ft/day**

Casing stickup	**2.05**	feet
Static water level (from top of casing)	**5.78**	feet
Depth to bottom of screer (from ground level)	**7.26**	feet
Boring diameter	**7.25**	inches
Casing diameter	**2.00**	inches
Screen diameter	**2.00**	inches
Screen length	**5.00**	feet
Depth to "impermeable boundary"	**16.00**	feet
Porosity of filter pack	**0.30**	
Slug diameter (optional)		inches
Slug length (optional)		feet
Theoretical ΔH at time zero (Y_0)	**0.00**	feet
Actual ΔH at time zero (Y_0)	**0.622**	feet
ΔH at time t (Y_t)	**0.050**	feet
Time	**2.50**	min

Bouwer-Rice Parameters

feet	cm		cm	
3.73	113.69	***SW***		
3.53	107.59	***H***	11.69	***L/Rw***
2.26	68.88	***Ts***	0.29	***H/D***
0.302	9.21	***Rw***	1.80	***A***
0.180	5.47	***Rc***	0.25	***B***
0.167	5.08	***DS***	1.10	***C***
3.53	107.59	***L***	3.37	***Ln[(D-H)/Rw]'***
12.2716	374.04	***D***	3.37	***Ln[(D-H)/Rw]***
0.6222	18.96	Y_0	1.48	**equation (8)**
0.05	1.52	Y_t	1.85	**equation (9)**
	150.00	***t (seconds)***	1.48	***Ln(Re/Rw)***
	0.30	***n***	3.5E-03	**equation (5)**





REFERENCES:

Bouwer, Herman. 1989. "The Bouwer and Rice Slug Test - An Update". Ground Water vol. 27, no. 3, May-June 1989.

Bouwer, H. and R.C. Rice. 1976. A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers With Completely or Partially Penetrating Wells". Water Resources Research. vol 12, no. 3, June 1976.

Tifft and Hopkins Site
Slug Test Data
MW-1

MANUAL SLUG-TEST DATA

Well No.: **MW-1**

Initial Depth to water (ft): 5.32
Initial Time (minutes): 10.00

Clock Time		Depth to water		Elapsed Time in Minutes	Head Change in feet	Head Ratio (H/H_0)
minutes	seconds	feet	inches			
10	0	5.32		0.00	0.00	#N/A
10	15	6.5		0.25	1.18	1.00
10	30	6.47		0.50	1.15	0.97
10	45	6.45		0.75	1.13	0.96
11	0	6.42		1.00	1.10	0.93
11	30	6.38		1.50	1.06	0.90
12	0	6.32		2.00	1.00	0.85
12	30	6.3		2.50	0.98	0.83
13	0	6.26		3.00	0.94	0.80
13	30	6.22		3.50	0.90	0.76
14		6.2		4.00	0.88	0.75
15		6.15		5.00	0.83	0.70
16		6.1		6.00	0.78	0.66
17		6.06		7.00	0.74	0.63
19		6		9.00	0.68	0.58
21		5.92		11.00	0.60	0.51
23		5.88		13.00	0.56	0.47
25		5.75		15.00	0.43	0.36
35		5.68		25.00	0.36	0.31
40		5.61		30.00	0.29	0.25
46		5.58		36.00	0.26	0.22
58		5.51		48.00	0.19	0.16
60	30	5.48		50.50	0.16	0.14
69	45	5.46		59.75	0.14	0.12
75		5.45		65.00	0.13	0.11
81		5.45		71.00	0.13	0.11

Tifft and Hopkins Site
Slug Test Data
MW-2

MANUAL SLUG-TEST DATA

Well No.: **MW-2**

Initial Depth to water (ft): 4.67
Initial Time (minutes): 50.00

Clock Time		Depth to water		Elapsed Time in Minutes	Head Change in feet	Head Ratio (H/H_0)
minutes	seconds	feet	inches			
50		4.67		0.00	0.00	#N/A
50	15	5.5		0.25	0.83	1.00
50	30	5.32		0.50	0.65	0.78
50	45	5.23		0.75	0.56	0.67
51	0	5.18		1.00	0.51	0.61
51	30	5.12		1.50	0.45	0.54
52		5.1		2.00	0.43	0.52
52	30	5.06		2.50	0.39	0.47
53		5.05		3.00	0.38	0.46
53	30	5.02		3.50	0.35	0.42
59	30	4.97		9.50	0.30	0.36
62		4.94		12.00	0.27	0.33
65		4.91		15.00	0.24	0.29
68		4.9		18.00	0.23	0.28
73		4.88		23.00	0.21	0.25
77		4.85		27.00	0.18	0.22
85		4.8		35.00	0.13	0.16
105		4.78		55.00	0.11	0.13
110		4.75		60.00	0.08	0.10
113		4.75		63.00	0.08	0.10

Tifft and Hopkins Site
Slug Test Data
MW-3

MANUAL SLUG-TEST DATA

Well No.: **MW-3**

Initial Depth to water (ft): 5.78
Initial Time (minutes): 10.00

Clock Time		Depth to water		Elapsed Time in Minutes	Head Change in feet	Head Ratio (H/H_0)
minutes	seconds	feet	inches			
10		5.78		0.00	0.00	#N/A
10	30	6.19		0.50	0.41	1.00
11		6		1.00	0.22	0.54
11	30	5.92		1.50	0.14	0.34
12		5.9		2.00	0.12	0.29
12	30	5.88		2.50	0.10	0.24
13		5.85		3.00	0.07	0.17
13	30	5.84		3.50	0.06	0.15
14		5.82		4.00	0.04	0.10
15		5.81		5.00	0.03	0.07
16		5.805		6.00	0.02	0.06
17		5.8		7.00	0.02	0.05
18		5.79		8.00	0.01	0.02
20		5.78		10.00	#N/A	#N/A

APPENDIX D

SHALLOW GROUNDWATER SAMPLING RECORDS

WELL SAMPLING RECORD

Site Name *Tifft & Hopkins (440707)* Well *MW-1*

Date *4/8/2003*

Samplers *James Scheutz* Time *1100*

Total Well Depth (TOC)	*10.6*	feet
Initial Static Water Level (TOC)	*4.77*	feet
Well Diameter	*2.0*	inches

Purging Data

Method *HDPE Bailer*

Water Volume = (Total Depth of Well - Depth To Water) x Casing Volume per Foot

= *10.6* - *4.77* x *0.16*

= *0.9* gallons

Casing Volumes (gal/ft.):					
1-inch	0.041	1.5-inch	0.092	2-inch	0.16
3-inch	0.36	4-inch	0.64	6-inch	1.4
8-inch	2.5			10 inch	4

Volume of Purge Water Removed 2.6 gallons dry

Sampling Data

Method *HDPE Bailer*

Parameters	Bottle	Pres.	Method
TCL VOCs	*2-40ml vials*	*HCl*	*8260*
TCL SVOCs	*2-1L Glass Amber*	*-*	*8270*
TCL PCBs	*2-1L Glass Amber*	*-*	*8082*
TCL Pesticides	*2-1L Glass Amber*	*-*	*8081*
TAL Metals	*1- 8 oz. Plastic*	*HNO3*	*EPA6010/7000*
Cyanide	*1- 4 oz. Plastic*	*NaOH*	*EPA 9012*

Field Parameters

	1 Volume	*2 Volume*	*3 Volume*	*Sample*
pH	*6.99*	*6.91*	*6.93*	
Temp. (^{o}C)	*6.5*	*6.6*	*6.1*	
Spec. Cond. (mS/cm)	*5.53*	*5.43*	*5.87*	
TDS (ppt)				

Comments: *well dry after 2.6 gallons*

WELL SAMPLING RECORD

Site Name *Tifft & Hopkins (440707)* Well *MW-2*

Date *4/8/2003*

Samplers *James Scheutz* Time *1230*

Total Well Depth (TOC)	*9.0*	feet
Initial Static Water Level (TOC)	*3.25*	feet
Well Diameter	*2.0*	inches

Purging Data

Method *HDPE Bailer*

Water Volume = (Total Depth of Well - Depth To Water) x Casing Volume per Foot

= *9.0* - *3.25* x *0.16*

= *0.9* gallons

Casing Volumes (gal/ft.):					
1-inch	0.041	1.5-inch	0.092	2-inch	0.16
3-inch	0.36	4-inch	0.64	6-inch	1.4
8-inch	2.5			10 inch	4

Volume of Purge Water Removed 3 gallons

Sampling Data

Method *HDPE Bailer*

Parameters	Bottle	Pres.	Method
TCL VOCs	*2-40ml vials*	*HCl*	*8260*
TCL SVOCs	*2-1L Glass Amber*	*-*	*8270*
TCL PCBs	*2-1L Glass Amber*	*-*	*8082*
TCL Pesticides	*2-1L Glass Amber*	*-*	*8081*
TAL Metals	*1- 8 oz. Plastic*	*HNO3*	*EPA6010/7000*
Cyanide	*1- 4 oz. Plastic*	*NaOH*	*EPA 9012*

Field Parameters

	1 Volume	*2 Volume*	*3 Volume*	*Sample*
pH	*7.14*	*6.93*	*6.88*	
Temp. (^{o}C)	*5.7*	*6*	*6*	
Spec. Cond. (mS/cm)	*1.41*	*1.83*	*1.80*	
TDS (ppt)				

Comments: *brown turbid water, spotty sheen, well going dry after 2.5 gallons*

WELL SAMPLING RECORD

Site Name *Tifft & Hopkins (440707)* Well *MW-3*

Date *4/8/2003*

Samplers *James Scheutz* Time *0930*

Total Well Depth (TOC)	*9.3*	feet
Initial Static Water Level (TOC)	*4.75*	feet
Well Diameter	*2.0*	inches

Purging Data

Method *HDPE Bailer*

Water Volume = (Total Depth of Well - Depth To Water) x Casing Volume per Foot

= *9.3* - *4.75* x *0.16*

= *0.7* gallons

Casing Volumes (gal/ft.):					
1-inch	0.041	1.5-inch	0.092	2-inch	0.16
3-inch	0.36	4-inch	0.64	6-inch	1.4
8-inch	2.5			10 inch	4

Volume of Purge Water Removed 2.5 gallons

Sampling Data

Method *HDPE Bailer*

Parameters	Bottle	Pres.	Method
TCL VOCs	*2-40ml vials*	*HCl*	*8260*
TCL SVOCs	*2-1L Glass Amber*	*-*	*8270*
TCL PCBs	*2-1L Glass Amber*	*-*	*8082*
TCL Pesticides	*2-1L Glass Amber*	*-*	*8081*
TAL Metals	*1- 8 oz. Plastic*	*HNO3*	*EPA6010/7000*
Cyanide	*1- 4 oz. Plastic*	*NaOH*	*EPA 9012*

Field Parameters

	1 Volume	*2 Volume*	*3 Volume*	*Sample*
pH	*6.55*	*6.62*	*6.71*	
Temp. (^{o}C)	*4.3*	*6*	*5.9*	
Spec. Cond. (mS/cm)	*2.98*	*2.91*	*2.80*	
TDS (ppt)				

Comments: *black turbid water with spotty sheen,*

WELL SAMPLING RECORD

Site Name *Tifft & Hopkins (440707)* Well *MW-4*

Date *10/22/2003*

Samplers *Jeffrey Poulsen* Time *1500*

Sara Chmura

Total Well Depth (TOC)	*11.9*	feet
Initial Static Water Level (TOC)	*7.33*	feet
Well Diameter	*2.0*	inches

Purging Data

Method *HDPE Bailer*

Water Volume = (Total Depth of Well - Depth To Water) x Casing Volume per Foot

= *11.9* - *7.33* x *0.16*

= *0.7* gallons

Casing Volumes (gal/ft.):					
1-inch	0.041	1.5-inch	0.092	2-inch	0.16
3-inch	0.36	4-inch	0.64	6-inch	1.4
8-inch	2.5			10 inch	4

Volume of Purge Water Removed 5 gallons

Sampling Data

Method *HDPE Bailer*

Parameters	Bottle	Pres.	Method
TCL VOCs	*2-40ml vials*	*HCl*	*8260*
TCL SVOCs	*2-1L Glass Amber*	*-*	*8270*
TCL PCBs	*2-1L Glass Amber*	*-*	*8082*
TCL Pesticides	*2-1L Glass Amber*	*-*	*8081*
TAL Metals	*1- 8 oz. Plastic*	*HNO3*	*EPA6010/7000*
Cyanide	*1- 4 oz. Plastic*	*NaOH*	*EPA 9012*

Field Parameters

	1 Volume	*2 Volume*	*3 Volume*	*Sample*
pH	*7.32*	*7.32*	*7.32*	
Temp. (^{o}C)	*12.3*	*13*	*13.2*	
Spec. Cond. (mS/cm)	*1.58*	*1.60*	*1.59*	
TDS (ppt)	*0.79*	*0.80*	*0.79*	

Comments:

WELL SAMPLING RECORD

Site Name *Tifft & Hopkins (440707)* Well *MW-5*

Date *10/22/2003*

Samplers *Jeffrey Poulsen* Time *1530*

Sara Chmura

Total Well Depth (TOC)	*11.9* feet
Initial Static Water Level (TOC)	*5.7* feet
Well Diameter	*2.0* inches

Purging Data

Method *HDPE Bailer*

Water Volume = (Total Depth of Well - Depth To Water) x Casing Volume per Foot

= *11.9* - *5.7* x *0.16*

= *1.0* gallons

Casing Volumes (gal/ft.):					
1-inch	0.041	1.5-inch	0.092	2-inch	0.16
3-inch	0.36	4-inch	0.64	6-inch	1.4
8-inch	2.5			10 inch	4

Volume of Purge Water Removed 3 gallons

Sampling Data

Method *HDPE Bailer*

Parameters	Bottle	Pres.	Method
TCL VOCs	*2-40ml vials*	*HCl*	*8260*
TCL SVOCs	*2-1L Glass Amber*	*-*	*8270*
TCL PCBs	*2-1L Glass Amber*	*-*	*8082*
TCL Pesticides	*2-1L Glass Amber*	*-*	*8081*
TAL Metals	*1- 8 oz. Plastic*	*HNO3*	*EPA6010/7000*
Cyanide	*1- 4 oz. Plastic*	*NaOH*	*EPA 9012*

Field Parameters

	1 Volume	*2 Volume*	*3 Volume*	*Sample*
pH	*7.04*	*7.13*	*7.13*	
Temp. (^{o}C)	*11.9*	*12.6*	*12.6*	
Spec. Cond. (mS/cm)	*1.20*	*1.21*	*1.26*	
TDS (ppt)	*0.50*	*0.60*	*0.62*	

Comments:

WELL SAMPLING RECORD

Site Name *Tifft & Hopkins (440707)* Well *MW-6*

Date *10/22/2003*

Samplers *Jeffrey Poulsen* Time *1400*

Sara Chmura

Total Well Depth (TOC)	*6.9* feet
Initial Static Water Level (TOC)	*3.66* feet
Well Diameter	*2.0* inches

Purging Data

Method *HDPE Bailer*

Water Volume = (Total Depth of Well - Depth To Water) x Casing Volume per Foot

= *6.9* - *3.66* x *0.16*

= *0.5* gallons

Casing Volumes (gal/ft.):					
1-inch	0.041	1.5-inch	0.092	2-inch	0.16
3-inch	0.36	4-inch	0.64	6-inch	1.4
8-inch	2.5			10 inch	4

Volume of Purge Water Removed 5 gallons

Sampling Data

Method *HDPE Bailer*

Parameters	Bottle	Pres.	Method
TCL VOCs	*2-40ml vials*	*HCl*	*8260*
TCL SVOCs	*2-1L Glass Amber*	*-*	*8270*
TCL PCBs	*2-1L Glass Amber*	*-*	*8082*
TCL Pesticides	*2-1L Glass Amber*	*-*	*8081*
TAL Metals	*1- 8 oz. Plastic*	*HNO3*	*EPA6010/7000*
Cyanide	*1- 4 oz. Plastic*	*NaOH*	*EPA 9012*

Field Parameters

	1 Volume	*2 Volume*	*3 Volume*	*Sample*
pH	*7.01*	*7.00*	*7.03*	
Temp. (^{o}C)	*13.5*	*14.6*	*14.7*	
Spec. Cond. (mS/cm)	*2.25*	*2.19*	*2.19*	
TDS (ppt)				

Comments:

WELL SAMPLING RECORD

Site Name *Tifft & Hopkins (440707)* Well *MW-7*

Date *10/22/2003*

Samplers *Jeffrey Poulsen* Time *1430*

Sara Chmura

Total Well Depth (TOC)	*8.1*	feet
Initial Static Water Level (TOC)	*3.32*	feet
Well Diameter	*2.0*	inches

Purging Data

Method *HDPE Bailer*

Water Volume = (Total Depth of Well - Depth To Water) x Casing Volume per Foot

= *8.1* - *3.32* x *0.16*

= *0.8* gallons

Casing Volumes (gal/ft.):					
1-inch	0.041	1.5-inch	0.092	2-inch	0.16
3-inch	0.36	4-inch	0.64	6-inch	1.4
8-inch	2.5			10 inch	4

Volume of Purge Water Removed 2.5 gallons

Sampling Data

Method *HDPE Bailer*

Parameters	Bottle	Pres.	Method
TCL VOCs	*2-40ml vials*	*HCl*	*8260*
TCL SVOCs	*2-1L Glass Amber*	*-*	*8270*
TCL PCBs	*2-1L Glass Amber*	*-*	*8082*
TCL Pesticides	*2-1L Glass Amber*	*-*	*8081*
TAL Metals	*1- 8 oz. Plastic*	*HNO3*	*EPA6010/7000*
Cyanide	*1- 4 oz. Plastic*	*NaOH*	*EPA 9012*

Field Parameters

	1 Volume	*2 Volume*	*3 Volume*	*Sample*
pH	*7.34*	*7.27*		
Temp. (^{o}C)	*12.4*	*13.7*		
Spec. Cond. (mS/cm)	*0.92*	*0.90*		
TDS (ppt)	*0.46*	*0.45*		

Comments:

WELL SAMPLING RECORD

Site Name *Tifft & Hopkins (440707)* Well *MW-8*

Date *10/22/2003*

Samplers *Jeffrey Poulsen* Time *1600*

Sara Chmura

Total Well Depth (TOC)	*10.6*	feet
Initial Static Water Level (TOC)	*6.27*	feet
Well Diameter	*2.0*	inches

Purging Data

Method *HDPE Bailer*

Water Volume = (Total Depth of Well - Depth To Water) x Casing Volume per Foot

= *10.6* - *6.27* x *0.16*

= *0.7* gallons

Casing Volumes (gal/ft.):					
1-inch	0.041	1.5-inch	0.092	2-inch	0.16
3-inch	0.36	4-inch	0.64	6-inch	1.4
8-inch	2.5			10 inch	4

Volume of Purge Water Removed 4 gallons

Sampling Data

Method *HDPE Bailer*

Parameters	Bottle	Pres.	Method
TCL VOCs	*2-40ml vials*	*HCl*	*8260*
TCL SVOCs	*2-1L Glass Amber*	*-*	*8270*
TCL PCBs	*2-1L Glass Amber*	*-*	*8082*
TCL Pesticides	*2-1L Glass Amber*	*-*	*8081*
TAL Metals	*1- 8 oz. Plastic*	*HNO3*	*EPA6010/7000*
Cyanide	*1- 4 oz. Plastic*	*NaOH*	*EPA 9012*

Field Parameters

	1 Volume	*2 Volume*	*3 Volume*	*Sample*
pH	*7.46*	*7.40*	*7.42*	
Temp. (^{o}C)	*12.9*	*13.5*	*13.7*	
Spec. Cond. (mS/cm)	*1.22*	*1.23*	*1.18*	
TDS (ppt)	*0.60*	*0.61*	*0.58*	

Comments:

APPENDIX E

GEOTECHNICAL REPORT

SJB SERVICES, INC.
Contract Drilling and Testing

BUFFALO OFFICE
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Tifft & Hopkins**

CLIENT: **Parsons Engineering**

DATE: **November 28, 2003**

PROJECT NO.: BD-03-146
REPORT NO.: LTR-1

Attached are the results of laboratory testing conducted on various samples from the above referenced project. Mr. Jeffery Poulsen, representing Parsons Engineering, chose the samples contained in this report.

The testing conducted was as follows:

ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates

Samples were received at the SJB Services, Inc. laboratory on November 10, 2003 where they were processed for testing.

If the reviewer should have any questions concerning this report, please do not hesitate to contact our office at any time.

SJB Services, Inc.

Paul Gregorczyk
Laboratory Manager

Larry Blas

Larry Blas
Testing Services Manager

SJB SERVICES, INC.
Contract Drilling and Testing

BUFFALO OFFICE
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: Tifft & Hopkins

CLIENT: Parsons Engineering

DATE: November 28, 2003

PROJECT NO.: BD-03-146
REPORT NO.: LTR-1

Sample Number: 03-1809
Sample Location: MW-4

ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates

Sieve Size	*Percent Passing*
1 ½"	100.0
1"	85.1
¾"	80.1
½"	70.8
¼"	51.6
#4	42.6
#10	33.8
#20	28.0
#40	23.9
#100	16.8
#200	14.3

Sample Number: 03-1810
Sample Location: MW-5

ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates

Sieve Size	*Percent Passing*
1 ½"	100.0
1"	95.1
¾"	90.5
½"	74.4
¼"	49.9
#4	41.2
#10	31.5
#20	24.1
#40	18.9
#100	12.9
#200	10.5

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Contract Drilling and Testing

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Hamburg, NY 14075
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Laboratory Test Report

PROJECT: Tifft & Hopkins

CLIENT: Parsons Engineering

DATE: November 28, 2003

PROJECT NO.: BD-03-146
REPORT NO.: LTR-1

Sample Number: 03-1811
Sample Location: MW-6

ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates

Sieve Size	*Percent Passing*
1 ½"	100.0
1"	95.7
¾"	88.6
½"	81.8
¼"	68.9
#4	64.0
#10	55.2
#20	48.3
#40	40.0
#100	29.4
#200	24.8

Sample Number: 03-1812
Sample Location: MW-7

ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates

Sieve Size	*Percent Passing*
1 ½"	100.0
1"	87.5
¾"	66.6
½"	49.4
¼"	27.5
#4	19.7
#10	17.3
#20	15.1
#40	12.9
#100	9.7
#200	8.7

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Laboratory Test Report

PROJECT: Tifft & Hopkins

CLIENT: Parsons Engineering

DATE: November 28, 2003

PROJECT NO.: BD-03-146
REPORT NO.: LTR-1

Sample Number: 03-1813
Sample Location: MW-8

ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates

Sieve Size	*Percent Passing*
1 ½"	100.0
1"	96.3
¾"	75.1
½"	63.1
¼"	50.5
#4	46.2
#10	40.6
#20	35.8
#40	30.8
#100	21.7
#200	17.7

SJB SERVICES, INC.
Contract Drilling and Testing

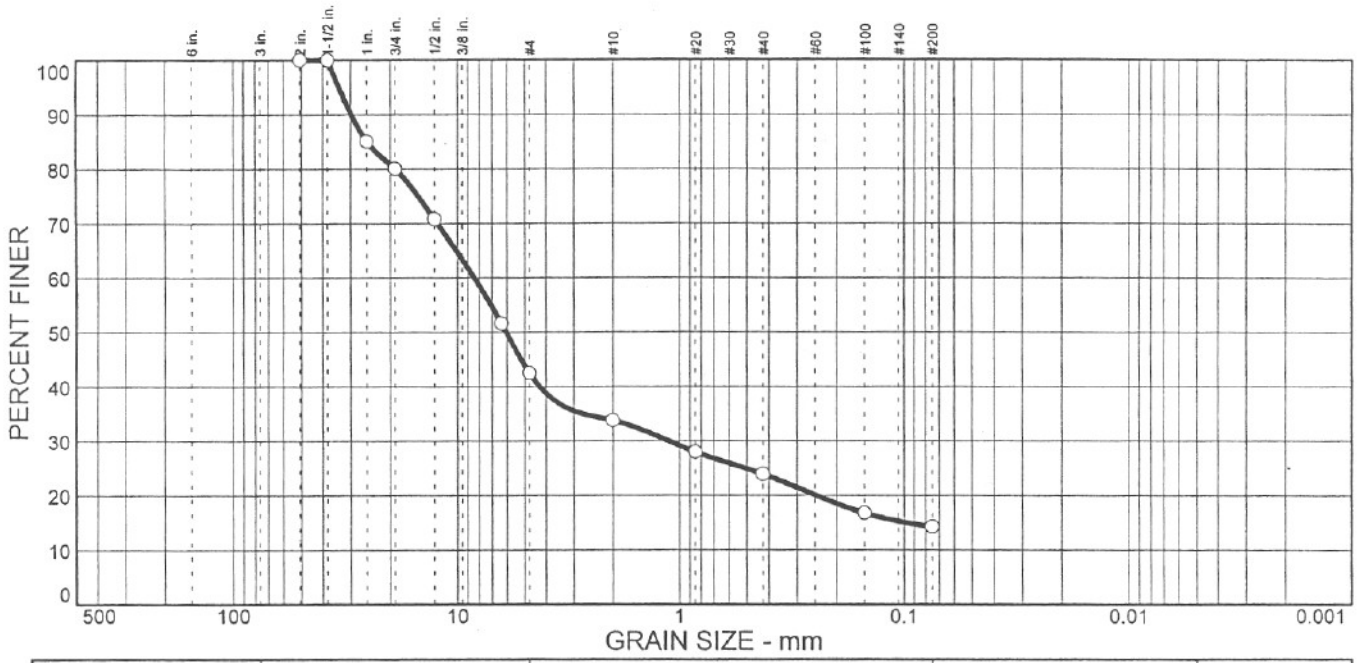
BUFFALO OFFICE
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Particle Size Distribution Report

Project: TIFFT AND HOPKINS **Project No.:** BD-03-146

Client: PARSON ENGINEERING AND SCIENCE

Sample No: 03-1809 **Source of Sample:** MW-4 **Date:** 11/26/03
Location: MW-4 **Elev./Depth:**



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	57.5	28.2	14.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2 in.	100.0		
1.5 in.	100.0		
1 in.	85.1		
.75 in.	80.1		
.50 in.	70.8		
.25 in.	51.6		
#4	42.5		
#10	33.8		
#20	28.0		
#40	23.9		
#100	16.8		
#200	14.3		

* (no specification provided)

Soil Description

MW-4

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 25.3 D_{60}= 8.42 D_{50}= 6.05
D_{30}= 1.12 D_{15}= 0.0955 D_{10}=
C_u= C_c=

Classification

USCS= GM AASHTO=

Remarks

LTR: 1
DATE RECEIVED: 11/10/03
SAMPLED BY: CLIENT

FIGURE

Contract Drilling and Testing

SJB SERVICES, INC.

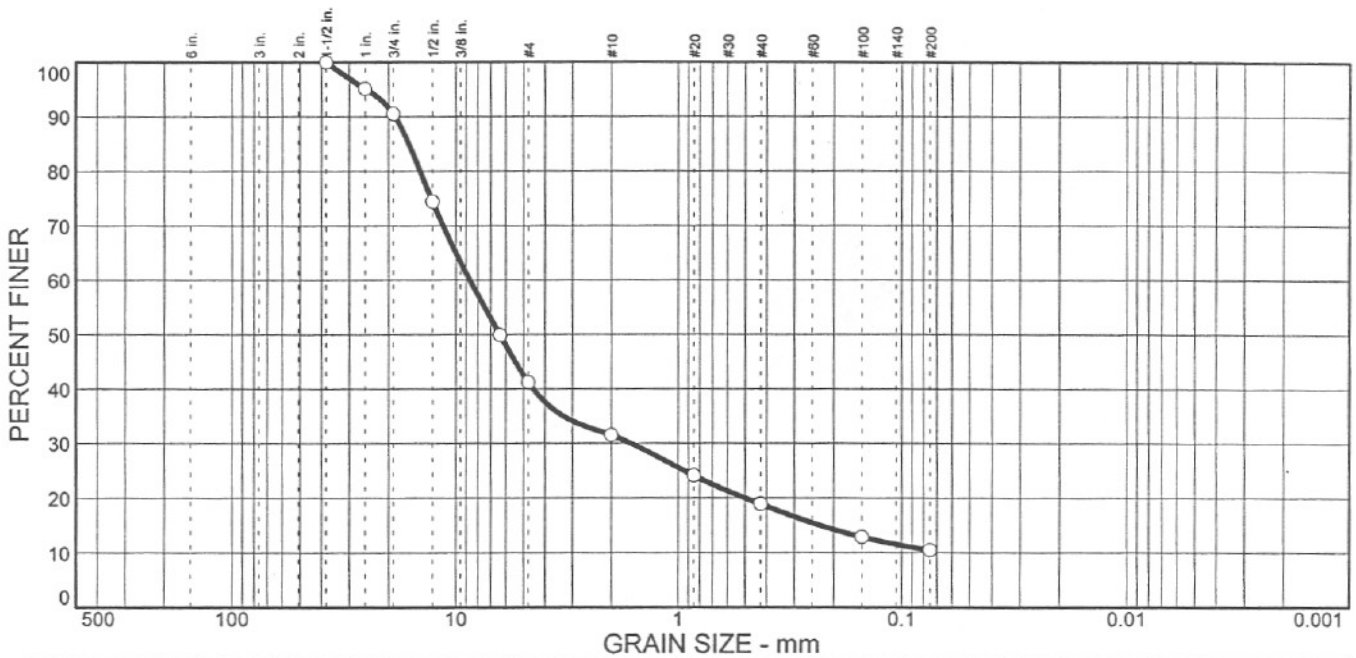
BUFFALO OFFICE
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Particle Size Distribution Report

Project: TIFFT AND HOPKINS **Project No.:** BD-03-146

Client: PARSON ENGINEERING AND SCIENCE

Sample No: 03-1810 **Source of Sample:** MW-5 **Date:** 11/26/03
Location: MW-5 **Elev./Depth:**



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	58.8	30.7	10.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5 in.	100.0		
1 in.	95.1		
.75 in.	90.5		
.5 in.	74.4		
.25 in.	49.9		
#4	41.2		
#10	31.5		
#20	24.1		
#40	18.9		
#100	12.9		
#200	10.5		

* (no specification provided)

Soil Description

MW-5

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 16.2 D_{60}= 8.66 D_{50}= 6.37
D_{30}= 1.63 D_{15}= 0.228 D_{10}=
C_u= C_c=

Classification

USCS= GP-GM AASHTO=

Remarks

LTR: 1
DATE RECEIVED: 11/10/03
SAMPLED BY: CLIENT

FIGURE

Contract Drilling and Testing

SJB SERVICES, INC.

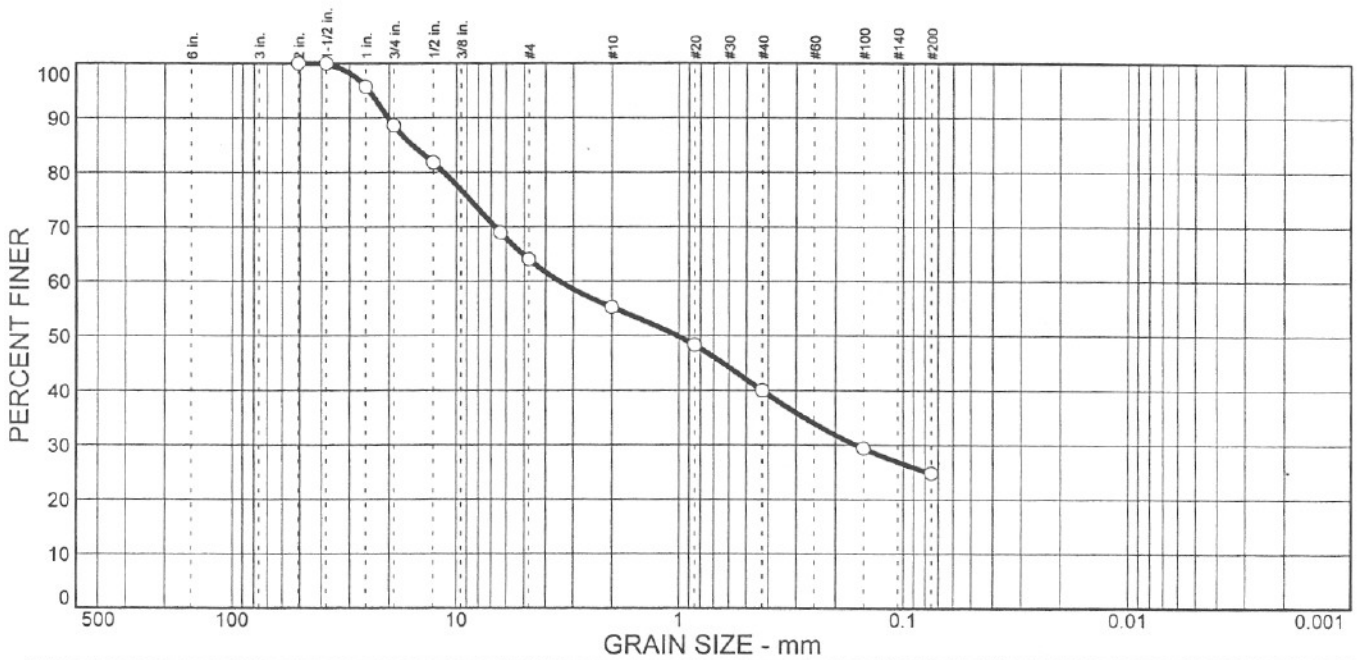
BUFFALO OFFICE
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Particle Size Distribution Report

Project: TIFFT AND HOPKINS **Project No.:** BD-03-146

Client: PARSON ENGINEERING AND SCIENCE

Sample No: 03-1811 **Source of Sample:** MW-6 **Date:** 12/1/03
Location: MW-6 **Elev./Depth:**



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	36.0	39.2	24.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2 in.	100.0		
1.5 in.	100.0		
1 in.	95.7		
.75 in.	88.6		
.5 in.	81.8		
.25 in.	68.9		
#4	64.0		
#10	55.2		
#20	48.3		
#40	40.0		
#100	29.4		
#200	24.8		

* (no specification provided)

Soil Description

MW-6

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 15.7 D_{60}= 3.47 D_{50}= 1.01
D_{30}= 0.162 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

LTR: 1
DATE RECEIVED: 11/10/03
SAMPLED BY: CLIENT

FIGURE

Contract Drilling and Testing

SJB SERVICES, INC.

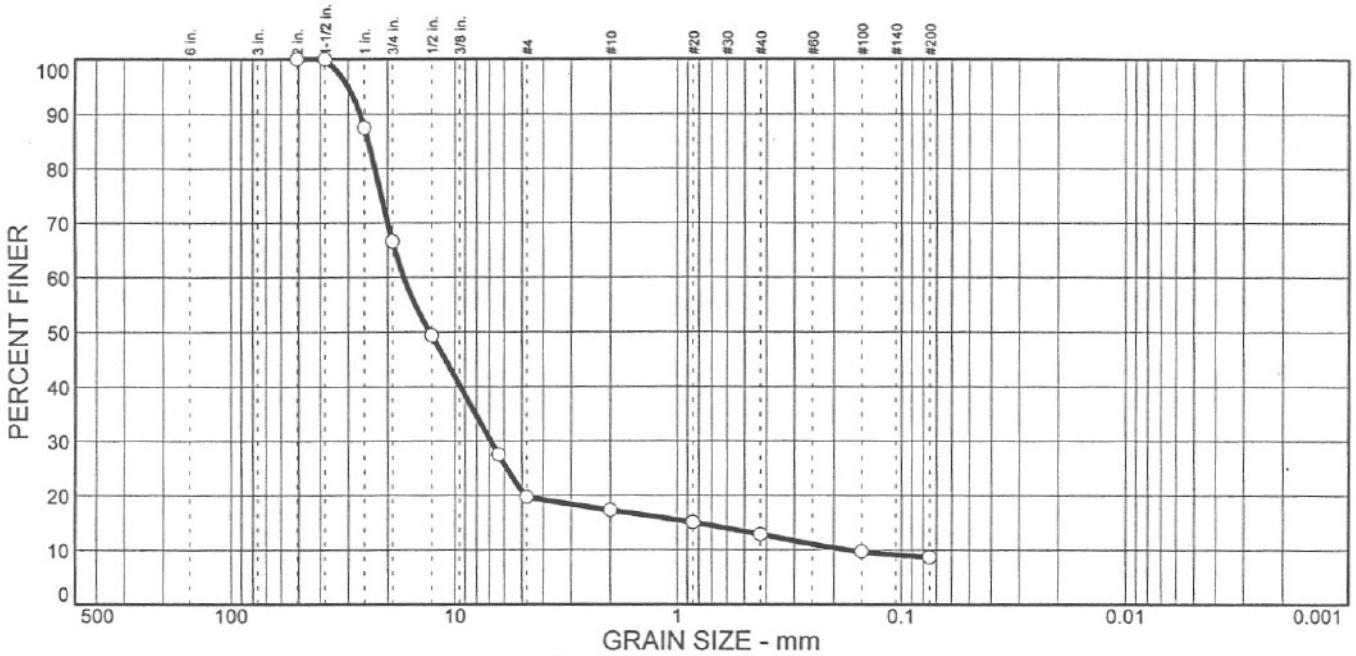
BUFFALO OFFICE
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Particle Size Distribution Report

Project: TIFFT AND HOPKINS **Project No.:** BD-03-146

Client: PARSON ENGINEERING AND SCIENCE

Sample No: 03-1812 **Source of Sample:** MW-7 **Date:** 12/1/03
Location: MW-7 **Elev./Depth:**



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	80.3	11.0	8.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2 in.	100.0		
1.5 in.	100.0		
1 in.	87.5		
.75 in.	66.6		
.5 in.	49.4		
.25 in.	27.5		
#4	19.7		
#10	17.3		
#20	15.1		
#40	12.9		
#100	9.7		
#200	8.7		

* (no specification provided)

Soil Description

MW-7

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 24.4 D_{60}= 17.0 D_{50}= 12.9
D_{30}= 6.88 D_{15}= 0.821 D_{10}= 0.171
C_u= 99.30 C_c= 16.36

Classification

USCS= GP-GM AASHTO=

Remarks

LTR: 1
DATE RECEIVED: 11/10/03
SAMPLED BY: CLIENT

FIGURE

Contract Drilling and Testing

SJB SERVICES, INC.

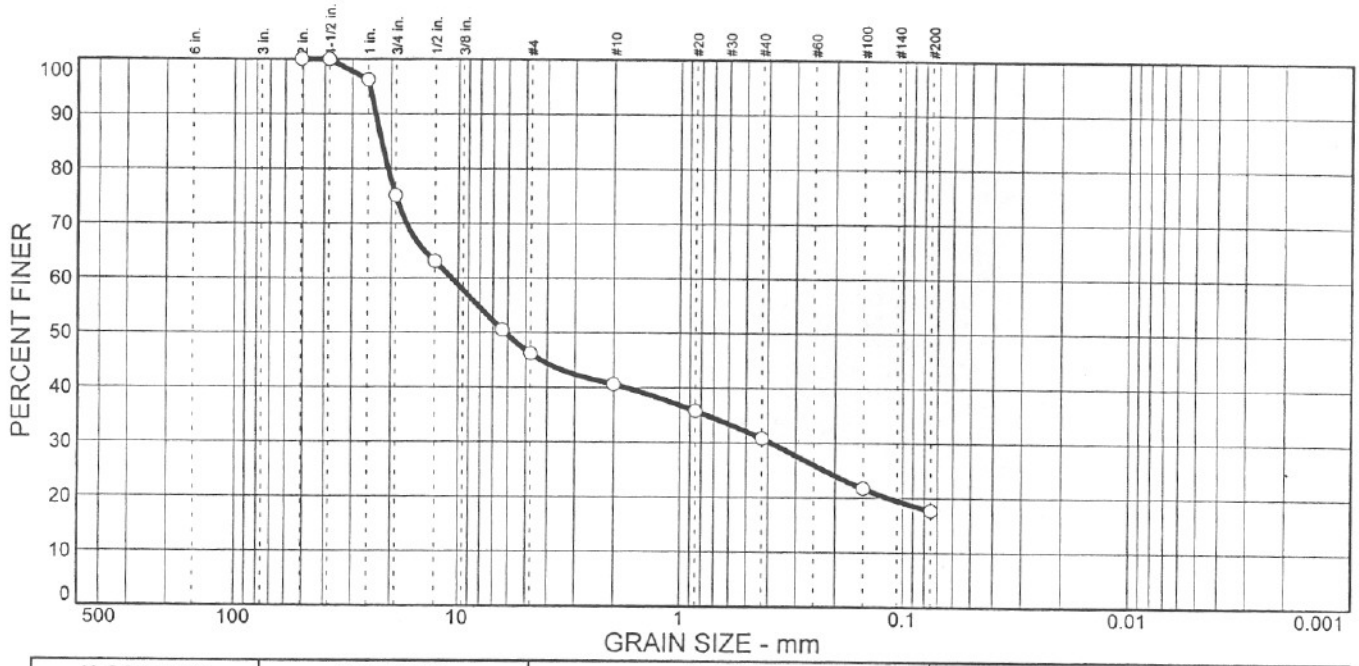
BUFFALO OFFICE
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Particle Size Distribution Report

Project: TIFFT AND HOPKINS **Project No.:** BD-03-146

Client: PARSON ENGINEERING AND SCIENCE

Sample No: 03-1813 **Source of Sample:** MW-8 **Date:** 12/1/03
Location: MW-8 **Elev./Depth:**



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	53.8	28.5	17.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2 in.	100.0		
1.5 in.	100.0		
1 in.	96.3		
.75 in.	75.1		
.5 in.	63.1		
.25 in.	50.5		
#4	46.2		
#10	40.6		
#20	35.8		
#40	30.8		
#100	21.7		
#200	17.7		

* (no specification provided)

Soil Description

MW-8

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 22.1 D_{60}= 10.7 D_{50}= 6.16
D_{30}= 0.387 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= GM AASHTO=

Remarks

LTR: 1
DATE RECEIVED: 11/10/03
SAMPLED BY: CLIENT

FIGURE