FEASIBILITY STUDY

OLD ERIE CANAL SITE
CLYDE, NEW YORK
SITE NO. 859015

Prepared For:
Parker-Hannifin Corporation
Cleveland, Ohio

and

General Electric Company
Albany, New York

Prepared by:
Conestoga-Rovers & Associates

2371 George Urban Blvd.
Depew, New York 14043

Office: 716·206·0202
Fax: 716·206·0201

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TABLE OF CONTENTS

TABLE OF CONTENTS

Page

TABLE OF CONTENTS

Page

TABLE OF CONTENTS

Page

TABLE OF CONTENTS

Page

LIST OF FIGURES
(Following Text)

LIST OF FIGURES
(Following Text)

LIST OF TABLES
(Following Text)

LIST OF TABLES
(Following Text)

LIST OF TABLES
(Following Text)

LIST OF TABLES
(Following Text)

LIST OF APPENDICES

1.0 INTRODUCTION

Conestoga-Rovers & Associates, Inc. (CRA) has prepared this Feasibility Study (FS) on behalf of Parker-Hannifin Corporation (P-H) and the General Electric Company (GE) for the Old Erie Canal Site located in Clyde, New York (Site). The location of the Site is shown on Figure 1.1.

The Site is listed in the Registry of Inactive Hazardous Waste Disposal Sites in New York State (NYS) as Site No. 859015. The FS has been completed pursuant to Order on Consent Index No. B8-0533-98-06 between the New York State Department of Environmental Conservation (NYSDEC), P-H, and GE, and the NYSDEC-approved Remedial Investigation/Feasibility Study (RI/FS) Work Plan prepared by O'Brien & Gere Engineers, Inc. (OBG) and dated December 2001. The FS has been performed in a manner consistent with the NYSDEC-approved RI/FS Work Plan, the National Oil and Hazardous Substances Contingency Plan (NCP), the United States Environmental Protection Agency (USEPA) "Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA", dated October 1988, and NYSDEC "TAGM HWR-90-4030: Selection of Remedial Actions at Inactive Hazardous Waste Sites", dated May 15, 1990.

1.1 OBJECTIVE

The primary purpose of the FS is to identify and evaluate the most appropriate remedial alternatives to eliminate or mitigate, through the proper application of scientific and engineering principles, any significant threats to the public health and to the environment presented by hazardous wastes disposed or released at the Site.

1.2 ORGANIZATION OF THE REPORT

This report presents an analysis of remedial alternatives and is organized as follows:

i) Section 1 – Introduction: An overview of the project is presented in Section 1;

ii) Section 2 – Site Description and History: A description of the Site and a summary of its history are presented in Section 2;

iii) Section 3 - Summary of Investigations and Qualitative Risk Assessment: The results of the RI and Supplemental Groundwater Investigation and qualitative risk assessment conducted by OBG are summarized in Section 3;

iv) <u>Section 4</u> - Remedial Goals and Remedial Action Objectives: The goals and objectives of the proposed remedy are discussed in Section 4;

v) <u>Section 5</u> - General Response Actions and Identification of Remedial Technologies: A review and screening of applicable technologies for remediating environmental media exhibiting concentrations of organic chemicals exceeding relevant standards at the Site are presented in Section 5;

vi) <u>Section 6</u> – Initial Screening of Remedial Technologies: The initial screening of the remedial technologies potentially applicable at the Site is presented in Section 6;

vii) <u>Section 7</u> – Detailed Analyses of Retained Remedial Alternatives: The detailed analyses of retained potential remedial alternatives to address the presence of organic chemicals at concentrations exceeding relevant regulatory criteria in environmental media at the Site is presented in Section 7;

viii) <u>Section 8</u> – Comparative Analyses of Remedial Alternative: The comparative analyses of the remedial alternatives for the Site are presented in Section 8;

ix) <u>Section 9</u> – Recommended Remedial Alternatives: A recommendation for the Site remedy and justification of the selection is presented in Section 9; and

x) <u>Section 10</u> – List of References: A list of the references used in the preparation of this FS is presented in Section 10.

2.0 SITE DESCRIPTION AND HISTORY

The Site is approximately 10.5 acres in size and is located at 124 Columbia Street in the Village of Clyde, New York. The Site includes both property currently owned by P-H, as well as portions of the abandoned Erie Canal (Old Erie Canal) and former Barge Turnaround, currently owned by the Village of Clyde. The Site is bounded by Columbia Street and residential property to the north, the P&C grocery store and commercial property to the east, active rail lines and the NYS Barge Canal (Clyde River) to the south, and residential properties to the west. The P-H property is comprised of the main manufacturing building, three additional storage buildings located along the western side of the Property, paved parking areas, and undeveloped portions of the Old Erie Canal and former Barge Turnaround. A Site Plan is presented on Figure 2.1.

2.1 SITE HISTORY

Manufacturing operations have been conducted on the Site since the early 1800s. Glass manufacturing dominated Site operations into the early 1930s. The Acme Electric Company (Acme Electric) purchased the property in 1941 for production of transformers. The current facility located at the Site was built in or about 1941 shortly after the property was purchased by Acme Electric. From 1941-1945, Acme Electric manufactured electrical equipment, transistors, radar components and transformer components for use by the United States Navy during World War II. These manufacturing activities were similar to the manufacturing activities at Acme Electric's nearby Cuba Plant. During the manufacturing activities at the Cuba Plant, Acme Electric generated halogenated solvents, spent stripping solutions, plating bath sludges, polychlorinated biphenyl (PCB) capacitors, and paint sludges. These wastes were disposed of at the Cuba Landfill Site. (See NYSDEC Record of Decision-Village of Cuba, Municipal Waste Disposal Site, Site Number 9-02-012.) It is likely that the similar manufacturing activities conducted by Acme Electric at the Clyde facility resulted in the generation of similar wastes. The NYSDEC Registry listing for the Old Erie Canal Site identifies Acme Electric as one of the manufacturers at the site who generated waste solvents and other materials.

GE purchased the facility in 1945 for the manufacture of electrical equipment, including fluorescent light ballasts, rectifiers, transistors, and diodes. P-H purchased the facility from GE in 1965 initially for the manufacture of automobile air conditioning systems. Historical manufacturing processes included the use of one stationary closed-loop vapor degreaser and several small portable closed-loop vapor degreasers as well as miscellaneous metal fabricating activities.

The Old Erie Canal was excavated through the southern portion of the Site between 1817 and 1825. Initially, the canal was 40 feet wide and 4 feet deep. Between 1836 and 1862, the canal was enlarged to a width of 70 feet and a depth of 7 feet. The enlarged canal included the former Barge Turnaround located in the southwestern portion of the Site. The present day Barge Canal was constructed beginning in 1908 utilizing a portion of the Clyde River south of the Site. The portion of the Old Erie Canal adjacent to the Site was abandoned in 1917.

The Old Erie Canal and former Barge Turnaround were used as historical disposal/fill sites. In the Village of Clyde, local contractors used the abandoned canal for the disposal of construction and demolition debris. The section of the Old Erie Canal along the southern portion of the P-H property was reportedly filled by P-H between 1968 and 1979.

The Village of Clyde sanitary sewer system historically discharged to a septic tank located at the confluence of the former Barge Turnaround and the Old Erie Canal. Waste was discharged from the septic tank to a catchbasin (CB-3) located in the unfilled portion of the Old Erie Canal, and ultimately, to the Clyde River. The Village abandoned and subsequently demolished the septic tank as part of sanitary sewer system improvements completed between 1968 and 1972. The discharge pipe leading to CB-3 from the septic tank was plugged during the septic tank abandonment.

P-H attempted to install a 12-inch corrugated metal pipe (CMP) to alleviate drainage issues east of the Site in 1971. The proposed plan was to install a 12-inch CMP to direct surface water from the eastern, unfilled portion of the Old Erie Canal to CB-3. During construction, the excavation collapsed and P-H abandoned the project. Later in 1971, the Village of Clyde installed a 48-inch CMP to direct surface water from the eastern area to the western, unfilled portion of the Old Erie Canal. P-H then connected two new storm drains to the 48-inch CMP.

The results of stormwater sampling conducted during the RI, revealed the presence of volatile organic compounds (VOCs) in stormwater discharging to catchbasin CB-3 and in two upgradient manholes (MH-3A and MH-3B), Figure 2.1. Based on the results of the stormwater sampling and subsequent evaluations of the Site storm sewers, an Interim Remedial Measure (IRM) was completed in November 2003 consisting of:

- Decommissioning of storm sewer lines 3 and 4 by filling them with flowable fill, and decommissioning of manholes MH-3A and MH-3B and catchbasins CB-3E and CB-3 by filling them with concrete.

- Installation of concrete water-stops on abandoned storm sewer lines 3 and 4, to minimize potential migration of groundwater along the sewer trenches.
- Regrading and paving a portion of the parking lot behind the manufacturing building to direct surface water away from the locations of the abandoned catchbasins and storm sewer lines.

This IRM is more fully described in the Storm Water IRM Completion Report, prepared by OBG, dated December 2003. The completion report was approved by the NYSDEC in February 2004.

2.2 CURRENT OPERATIONS

Current operations by P-H include the manufacture and testing of fuel injection nozzles for military and industrial applications.

The P-H property is fenced along the east side (Elm Street), south side (Old Erie Canal), and on the west side along the former Barge Turnaround. Access into the manufacturing building is controlled through a secure door access system. Personnel are on-Site 7 days a week, generally between the hours of 5:00 a.m. and 11:00 p.m. on weekdays and 5:00 a.m. and 12:00 p.m. on weekends.

The floors within the production area are sealed with a 100 percent solids, copolymer resin applied at a thickness of 16 to 50 mils. This sealant provides a chemical and abrasion resistant covering which also seals any cracks present in the concrete floor.

Facility personnel are trained in hazard communication and health and safety procedures are in place which define special procedures for subsurface activities performed within areas of known chemical presence in Site soil or groundwater.

Indoor air sampling is conducted periodically to ensure compliance with Occupational Safety and Health Administration (OSHA) standards.

3.0 SUMMARY OF REMEDIAL INVESTIGATION AND ASSOCIATED STUDIES

The NYSDEC and New York State Department of Health (NYSDOH) conducted a number of environmental investigations and sampling rounds at the Site and surrounding residential properties between 1989 and 1994. These investigations involved collection of surface soil, groundwater, surface water, stormwater, sub-slab soil gas, residential well and basement sump water, and residential indoor air samples. Samples were analyzed for Target Compound List (TCL) VOCs, semi-volatile organic compounds (SVOCs), pesticides, PCBs, Target Analyte List (TAL) metals, and total cyanide. The results of the NYSDEC and NYSDOH investigations were presented in the "Remedial Investigation/Feasibility Study Work Plan", prepared by OBG and approved by NYSDEC in December 2001.

A Remedial Investigation (RI) was conducted by OBG on behalf of GE and P-H between April 2002 and January 2005. The results of the RI were reported in the:

i) "Remedial Investigation Report" prepared by OBG and dated November 2003; and

ii) "Remedial Investigation Addendum No. 1 Report" prepared by OBG and dated May 13, 2005.

A Supplemental Groundwater Investigation (SGI) was conducted in November/December 2006 to gather additional site data to be considered in the FS. The results of the SGI are presented as Appendix G to this FS in the "Supplemental Groundwater Investigation Summary Report" prepared by OBG and dated March 29, 2007.

Summaries of the results of the RI and SGI and identified potential exposure pathways for each of the impacted environmental media prepared from the information presented in the above-referenced reports are presented in the following subsections.

3.1 GEOLOGY/HYDROGEOLOGY

3.1.1 SITE OVERBURDEN STRATIGRAPHY

The Site is located on the Lake Ontario plain within the Finger Lakes physiographic region of NYS. The soils overlying bedrock at the Site consist of the following in ascending order:

i) glacial till;

ii) glaciofluvial deposits; and

iii) fill.

The combined thickness of the unconsolidated deposits beneath the Site range from 16.5 to 31.0 feet.

Geologic cross-sections were prepared by OBG and presented in the RI and SGI reports. Copies of the most recent cross-sections are presented on Figures 3.2 through 3.4 of this FS. A cross-section location plan is shown on Figure 3.1.

Glacial Till

The till beneath the Site is a Lodgment Till consisting of a poorly sorted mixture of red-brown clayey silt with some coarse to fine sand and little gravel. The till is present across the majority of the Site, ranging in thickness between 3.5 and 27.2 feet. The till is thickest at MW-7B, west of the former Barge Turnaround. As shown on the cross-sections, the till is thin or absent along an apparent channel in the vicinity of the former Barge Turnaround. A contour map showing the elevation of the top of the till, reproduced from the SGI Report, is presented on Figure 3.5.

Where present, the till acts as an aquitard separating the fill and glaciofluvial deposits from the bedrock unit.

Glaciofluvial Deposits

Glaciofluvial deposits consisting of channel silt, sand and gravel, sand, and gravel are present across the majority of the Site. Where the till is absent in the channel near the former Barge Turnaround, the glaciofluvial deposits directly overlie the bedrock. The maximum observed thickness of the glaciofluvial deposits is 23 feet at boring GP-36 located in the southern portion of the Site. The stratigraphic detail shown in the geologic cross-section presented on Figure 3.3 shows that the thickness of the glaciofluvial deposits is less east of the manufacturing building and in the southeast parking lot than it is in the center of the Site. Interbedded silt and clay, referred to in the RI Report as "backswamp deposits," is present overlying the channel materials in the former Barge Turnaround area.

Fill

Fill material is present across the majority of the Site, including on the property owned by the Village of Clyde located west of the P-H property. Fill thicknesses range up to approximately 12 feet east of the manufacturing building (Figure 3.3). The fill on the P-H property is not contiguous with the fill on the Village of Clyde property.

The Site fill generally consists of sand, gravel, and silt mixed with cinders, ash, slag, brick, and glass. The volumes of fill are greatest in the Old Erie Canal along the southern Site boundary, along the eastern portion of the former Barge Turnaround, and in the vicinity of the manufacturing building.

3.1.2 SITE BEDROCK

The bedrock beneath the Site consists of shale and dolomitic limestone of the Late Silurian Syracuse-Camillus Formation. Based on the lithologic descriptions of the bedrock cores presented in the RI Report, the bedrock is gray to dark greenish-gray, fine-grained, moderately fractured shale and thinly bedded gray dolomitic limestone which is also moderately fractured.

During the Site investigations, the bedrock was encountered at depths ranging between 16.5 and 31 feet below grade. The bedrock surface generally slopes from the northeast to the southwest. A contour map showing the surface elevation of the bedrock is presented on Figure 3.6.

3.1.3 SITE HYDROGEOLOGY

The geologic units identified in the previous section were grouped into two major hydrogeologic units as follows:

- Shallow unconsolidated unit; and
- Shallow bedrock unit.

Each of these hydrogeologic units is described below.

Shallow Unconsolidated Unit

The shallow unconsolidated unit consists of the fill and glaciofluvial geologic units. This unit ranges in thickness from 1.0 to 29.2 feet, and is thickest within the glacial channel west of the facility. Based on testing conducted during the Site Investigations, the hydraulic conductivity ranges from 0.33 feet per day (ft/day) (MW-9S) to 38.12 ft/day (-TMW-2). The geometric mean hydraulic conductivity was determined to be 4.75 ft/day.

Water level measurements were collected during the Site investigations on five occasions. The general pattern of groundwater flow exhibited by the five sets of groundwater contours is consistent. The groundwater contour maps for August 3, 2004 and November 28, 2006 are provided on Figures 3.7 and 3.8, respectively. Examination of these figures shows that the glacial channel acts as a local groundwater drainage point where groundwater flow from the east, north, and west converges. Groundwater flow from the eastern and central portions of the Site is westward toward the gravel-filled channel. Groundwater flow from the remainder of the Site is southward, toward the Clyde River. The horizontal hydraulic gradients within the shallow unconsolidated unit are variable. In general, steeper gradients (i.e., on the order of 0.02 feet per feet (ft/ft) occur at the limits of the glacial channel. Within the channel, the hydraulic gradients are much smaller, due to the fact that the unit here consists principally of glaciofluvial sand and gravel.

The volume of groundwater flow into the glacial channel was estimated using the unit's hydraulic conductivity and hydraulic gradient. The flow into the channel was divided into three components (east, north, and west) based on the August 3, 2004 groundwater contours. The calculations show that the total groundwater flow into the channel is on the order of ,1,500 ft^3/day (8 gallons per minute [gpm]). A groundwater extraction system would typically be required to pump in excess of the natural flow rate to achieve hydraulic containment. For this FS, it was assumed that a combined rate of 20 gpm would be required. The estimations of natural groundwater flow rate and of groundwater pumping rates are provided in Appendix A.

Over most of the Site, the shallow unconsolidated unit is separated from the shallow bedrock unit by a low hydraulic conductivity, dense glacial till. The only area where the till is thin or absent occurs within the glacial channel. Within the Site, vertical hydraulic gradients are downward from the shallow unconsolidated unit to the shallow bedrock unit. This indicates a potential for groundwater migration from the unconsolidated unit to the bedrock. The intervening till unit mitigates this potential groundwater flow path. There is a potential connection between the unconsolidated unit and the bedrock along the axis of the glacial channel. This connection is manifested by the presence of Site-related chemicals in bedrock monitoring well MW-6B.

The groundwater contours and surface water measurements collected confirm that the groundwater in the unconsolidated unit discharges to the Clyde River. There is also a small potential for shallow groundwater to migrate to the shallow bedrock, where the till is absent.

Shallow Bedrock Unit

The shallow bedrock unit is part of the Syracuse-Camillus Formation and consists of interbedded shale and limestone. Groundwater flow in this unit will occur principally through secondary porosity features (e.g., bedding plane fractures and joints). The hydraulic conductivity of the shallow bedrock is directly related to the frequency and degree of interconnection of the secondary porosity features. The geometric mean hydraulic conductivity of the shallow bedrock unit, based on testing conducted during the Site investigations, is 0.05 ft/day. The bedrock unit is much less permeable than the shallow unconsolidated unit.

A potentiometric contour map of the shallow bedrock unit has been prepared using the hydraulic monitoring data collected on November 28, 2006. The contour map is presented on Figure 3.9. Groundwater flow in the shallow bedrock beneath the Site is southwesterly. The data collected from the bedrock monitoring wells located south of the Barge Canal suggests that flow from south of the Barge Canal is to the northeast, toward the Site.

3.2 NATURE AND EXTENT OF CONTAMINATION

The investigations and data analyses presented in previously submitted reports indicated that current or potential future risks to human health and/or the environment were present if there was direct exposure to:

i) impacted groundwater;

ii) on-Site surface water or surface soil; or

iii) exposure to sub-slab soil gas through vapor intrusion into the manufacturing building.

The potential impact of soil vapor migration and intrusion to the off-Site properties north (upgradient) of the Site is being further investigated and will be evaluated in a separate report.

3.2.1 GROUNDWATER

Groundwater analytical data summaries are presented in Tables 3.1 through 3.6. The groundwater sample locations are shown on Figure 3.10. The analytical data have been compared to the NYSDEC standards for Class GA (potable) groundwater and detected concentrations exceeding the standards are highlighted on the tables. Review of the data shows the following:

i) VOCs, primarily trichloroethene (TCE), its degradation products cis-1,2-dichloroethene (cis-1,2-DCE) and vinyl chloride (VC), toluene, and xylene are present in Site groundwater at concentrations exceeding the relevant standards;

ii) few SVOCs were detected in groundwater samples at low concentrations exceeding relevant standards;

iii) no PCBs or pesticides were detected in groundwater samples;

iv) iron, manganese, magnesium, ,and sodium were detected in a number of samples at concentrations exceeding the relevant standards;

v) antimony was detected at a concentration exceeding its standard in one sample;

vi) chemical presence in Site groundwater occurs primarily in the shallow overburden unit; and

vii) chemical presence in groundwater within the bedrock unit at concentrations exceeding the relevant standards is limited to the shallow bedrock in the immediate vicinity of the former Barge Turnaround. Chemicals have not been detected at concentrations exceeding standards in samples collected from bedrock monitoring wells MW-10B, MW-11B, or MW-12B located approximately 400 feet downgradient of the southern Site boundary, across the Barge Canal.

The concentrations of TCE, cis-1,2-DCE, and VC,,, in the overburden and shallow bedrock monitoring wells are shown on Figures 3.11 and 3.12, respectively.

The data collected during the Site investigations demonstrate that natural attenuation of chemicals in Site groundwater through biodegradation is effectively reducing chemical presence. Review of the groundwater VOC data shows that in many locations the concentrations of cis-1,2-DCE and VC, the degradation products of TCE, are higher than the concentration of TCE. In some cases, TCE makes up less than 1 percent of the total VOCs in the groundwater. This indicates that reductive dechlorination is highly advanced in the most highly contaminated areas of the Site. The data further show that in these same areas the degradation of TCE has progressed to the formation of its non-hazardous end products, ethane and ethene. Geochemical data indicate that, at the Site, the groundwater aquifer conditions are reducing which is favorable to the reductive biodegradation of TCE and its daughter products.

3.2.2 SUBSURFACE SOIL

Subsurface soil analytical data summaries are presented in Tables 3.7 through 3.12. The locations from which subsurface soil samples were collected are shown on Figure 3.10. The subsurface soil analytical data have been compared to the NYSDEC recommended soil cleanup objectives and to the data obtained from analysis of a sample collected from a background location (GP-7). Reported concentrations exceeding both the soil cleanup objectives and background concentrations are highlighted in Tables 3.7 through 3.12. Review of the data shows the following:

i) VOCs, primarily TCE and VC, are present in subsurface soil at concentrations exceeding the soil cleanup objectives within the former Barge Turnaround and beneath and adjacent to the manufacturing building;

ii) SVOCs and pesticides are present at concentrations exceeding the soil cleanup objectives in background soils;

iii) SVOCs were not detected in Site subsurface soils at concentrations exceeding both the soil cleanup objectives and background concentrations;

iv) pesticides were not detected in Site subsurface soils at concentrations exceeding the soil cleanup objectives;

v) PCBs were not detected in any subsurface soils sample; and

vi) metals detected in subsurface soil samples at concentrations exceeding both background concentrations and soil cleanup objectives are primarily calcium, magnesium, manganese, nickel, and potassium. Aluminum, beryllium, chromium, iron, and vanadium were each detected at concentrations exceeding both the background concentrations and soil cleanup objectives in a single sample located south of the southern Site boundary (GP-39).

Generally, subsurface soils selected for chemical analyses were those exhibiting elevated organic vapor screening values. Review of the stratigraphic logs presented in

Appendices B and C of the RI Report and Appendices A and B of the SGI Report shows that, with the exception of the sample collected from SB-6B, the depth intervals of samples selected for analyses from locations outside the manufacturing building were below the water table elevation. Thus, the samples were saturated and the analytical results are deemed most reflective of the presence of impacted groundwater. Stratigraphic logs are not available for the sampling conducted below the slab of the manufacturing building. However, if it is assumed that the water table is approximately 8 feet below ground surface (bgs) or higher, as indicated by the logs from the RI, it is apparent that the highest concentrations of VOCs in sub-slab soils were also detected in samples that are also most likely saturated (SSB-7 and SSB-8).

The potential exposure pathway to subsurface soil is for short-term direct contact with VOC-impacted soils by workers conducting subsurface construction-related activities.

3.2.3 SURFACE WATER

Surface water analytical data summaries are presented in Tables 3.13 through 3.18. The locations from which surface water samples were collected are shown on Figure 3.13. As can be seen on the figure, the samples were collected from the former Barge Turnaround west of the manufacturing building and from the drainage swale along the southern boundary of the Site.

Neither the former Barge Turnaround nor the drainage swale are classified streams. These features function to collect surface water runoff and are intermittently dry. For screening purposes, the surface water analytical data have been compared to the regulatory standards for Class C fresh surface waters. Other than mercury, there are no Class C standards for human exposure to metals in surface waters; therefore, to present a conservative evaluation of the presence of metals in surface water, the analytical data have been compared to aquatic standards. Concentrations of analytes exceeding the Class C surface water criteria are highlighted in Tables 3.13 through 3.18. The locations of the exceedances are shown on Figure 3.13. Review of the data shows the following:

i) VOCs and SVOCs were detected in background/upgradient surface water samples, however, no concentration exceeded the Class C surface water standards;

ii) concentrations of VOCs and SVOCs detected in surface water discharging from the 48-inch drainage pipe which traverses the southern portion of the Site in the east-west direction and passes through the filled portion of the Old Erie Canal were all below the Class C surface water standards. Therefore, discharge from this drainage pipe is not a continuing source of chemicals to surface or ground waters;

iii) tetrachloroethene (PCE) and TCE were detected in surface water samples located near catchbasin CB-3 at concentrations exceeding the Class C surface water standards. Other VOCs, including cis-1,2-DCE, VC, and SVOCs were also detected in these samples; however, the other compounds detected either do not have published standards or were detected at very low concentrations. CB-3 and its contributing lines were abandoned as an IRM completed in November 2003 and, therefore, are no longer potential continuing sources of chemicals to surface or ground waters;

iv) VOCs were not detected at concentrations exceeding the Class C surface water standards in samples collected from the drainage swale west (downstream) of the Site (no sample for SVOCs was collected);

v) no PCBs or pesticides were detected in any surface water samples collected during the investigations; and

vi) aluminum and lead were detected at concentrations exceeding both background and the Class C surface water standards only in the samples collected at the confluence of the former Barge Turnaround and the Old Erie Canal, near CB-3.

As defined in 6 New York Code of Rules and Regulations (NYCRR) Part 701.8, "The best usage of Class C waters is fishing. These waters shall be suitable for fish propagation and survival. The water quality shall be suitable for primary and secondary recreation, although other factors may limit the use for these purposes." As stated previously, the surface water samples were all collected from the Barge Turnaround or from the drainage swale. Neither of these areas would be suitable for uses defined for a Class C stream. A walking path crossing the former Barge Turnaround has been built over the filled Old Erie Canal. It is possible that trespassers or persons or pets leaving the walking path could enter the former Barge Turnaround. Therefore, the potential pathways for exposure to impacted surface water are:

i) direct contact to workers in the former Barge Turnaround area near CB-3;

ii) direct contact to trespassers entering the former Barge Turnaround area near CB-3; and/or

iii) direct contact to individuals leaving the walking path and entering the former Barge Turnaround area near CB-3.

3.2.4 SURFACE SOIL

Surface soil analytical data summaries are presented in Tables 3.19 through 3.24. The locations from which surface soil samples were collected are shown on Figure 3.13. As can be seen on the figure, the samples were collected from the former Barge Turnaround west of the manufacturing building and from the drainage swale along the southern boundary of the Site at the locations from which surface water samples were collected.

Specific information regarding surface soil sample depths was not provided in the RI Report. However, the RI/FS Work Plan described the soils to be sampled as "surface". The potential pathways for exposure to impacted surface soils are:

i) direct contact to workers in the former Barge Turnaround area near CB-3;

ii) direct contact to trespassers entering the former Barge Turnaround area near CB-3; and/or

iii) direct contact to individuals leaving the walking path and entering the former Barge Turnaround area near CB-3.

The surface soil analytical data have been compared to the NYSDEC-recommended soil cleanup objectives. Reported concentrations exceeding both the Site background as defined by the data from locations SED-1 and SED-2 and the soil cleanup objectives are highlighted in Tables 3.19 through 3.24 and on Figure 3.13. Review of the data shows the following:

i) VOCs were not detected at concentrations exceeding the soil cleanup objectives at any location;

ii) no detected concentrations of PCBs or pesticides in surface soil samples exceeded the soil cleanup objectives;

iii) SVOCs were detected in background/upgradient surface soil samples at concentrations exceeding the soil cleanup objectives;

iv) a number of SVOCs were detected in surface soil samples from the area of CB-3 at concentrations which exceeded both the background concentrations and soil cleanup objectives;

v) with the exception of benzo(a)anthracene, which was detected at a concentration slightly higher than background (2,200 micrograms per kilogram [μg/Kg] versus 2,100 μg/Kg) in the surface soil sample collected at the most downgradient location (SED-10), SVOCs were not detected in surface soil samples collected from any locations other than those near CB-3; and

vi) metals were detected in all surface soil samples at concentrations exceeding both background and the soil cleanup objectives.

3.2.5 SUB-SLAB SOIL GAS

Soil gas samples were collected from beneath the floor slab of the manufacturing building at the locations shown on Figure 3.14. The sub-slab soil gas analytical results are presented in Table 3.25 and summarized on Figure 3.14. Review of the data shows the following:

i) TCE was detected in all sub-slab soil gas samples; and

ii) other VOCs, including 1,2-DCE, were also detected in the soil gas samples.

As stated in the NYSDOH "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" (Public Comment Draft, February 2005), NYS currently does not have any standards, criteria, or guidance values for concentrations of compounds in subsurface vapors for use in comparison to the Site data. NYSDOH has developed air guideline values for a limited number of compounds as stipulated in the above-referenced document. All detected concentrations of TCE in sub-slab soil gas samples exceed the NYSDOH guideline value of 5 micrograms per cubic meter ($\mu g/m^3$).

The potential exposure pathway of sub-slab soil gas to indoor air and subsequent inhalation has been carried forward for evaluation in this FS.

To aid in the evaluation of potential remedial technologies to address the intrusion of sub-slab soil gas into the indoor air of the manufacturing building, a building survey, visual inspection, and sub-slab diagnostic communication testing were performed. The results of this investigative work was reported to NYSDEC in the "Remedial Investigation Addendum No. 1 Report" prepared by OBG for P-H and GE and dated May 13, 2005. Copies of the portions of the report presenting the results of these investigations are presented in Appendix F.

3.3 GROUNDWATER MIGRATION PATHWAYS AND RECEPTORS

The Site investigations have shown that groundwater has been impacted by previous Site activities. Groundwater flow beneath the Site is primarily westward toward the glacial channel. Once the shallow unconsolidated unit groundwater reaches the glacial channel, flow is directed south, along the axis of the channel, due to the presence of very permeable material within the channel. The groundwater in the shallow unconsolidated unit within the channel flows toward the Clyde River.

The shallow unconsolidated unit is separated from the bedrock over most of the Site by a low hydraulic conductivity, dense till unit. Where present, this till unit mitigates potential groundwater and chemical migration to the bedrock. The only area where impacted groundwater in the unconsolidated unit is in connection with the bedrock is within the glacial channel. Here the stratigraphic logs indicate that the till unit has been eroded and the glaciofluvial deposits likely rest on the bedrock surface. The hydraulic connection between the unconsolidated unit and the bedrock has been confirmed by the presence of chemicals of concern in the shallow bedrock at monitoring well locations MW-4B and MW-6B.

The limit of chemical presence in shallow bedrock groundwater has been defined by monitoring wells MW-7B, MW-5B, MW-3B, and MW-2B located around the perimeter of the Site to the west and east, by wells MW-10B, MW-11B, and MW-12B, located on the south side of the Clyde River, and by MW-4C located adjacent to MW-4B in the deeper bedrock. Chemical data from groundwater monitoring wells confirm that the process of natural attenuation in the bedrock is effective in limiting the migration of residual chemicals in groundwater.

Chemicals of concern within the shallow unconsolidated unit may also migrate through the vadose zone to indoor or ambient air. Currently, only the Site buildings are located over shallow groundwater exhibiting chemical presence. There is little potential for future building development in the former Barge Turnaround.

An important aspect of the FS is to include consideration of the current and future receptors of chemicals of concern in the groundwater. The Site and the Village of Clyde are serviced by a municipal water supply. The water source for this supply is a well located approximately 4 miles northwest and hydraulically upgradient of the Site. Thus, the Site cannot impact the source water. Given the availability of the municipal water supply system, there is little probability of the future use of Site groundwater for potable purposes. The future use of groundwater on the Site can be restricted through deed restrictions preventing future use of groundwater beneath the properties.

An inventory of residential wells was conducted during the RI. This inventory noted that there were seven wells within a 1/2-mile radius of the Site. Three of the seven wells are currently used for potable purposes, although municipal water is available. The three residential wells in use are located north and west of the Site as shown on Figure 3.15.

Thus, there are no current users of groundwater located hydraulically downgradient of the Site. There are currently no regional restrictions on the use of groundwater for potable or other water needs. Therefore, there is potential for future use of groundwater as a water supply source in areas hydraulically downgradient of the Site.

In summary, the primary receptors of chemicals of concern in the shallow unconsolidated unit groundwater are:

i) the Clyde River;

ii) the Shallow Bedrock aquifer; and

iii) ambient and indoor air.

3.4 SUMMARY OF THE NATURE AND EXTENT OF CONTAMINATION AND POTENTIAL EXPOSURE PATHWAYS

The results of the Site investigations indicate that the primary media of concern is groundwater. Subsurface soil exhibits chemical presence at concentrations exceeding the NYSDEC soil cleanup objectives only in samples collected from below the water table. Therefore, remedial actions addressing groundwater will also address chemical presence in subsurface soil. Surface water exhibited chemical concentrations exceeding the Class C surface water quality standards during the sampling conducted for the RI. An IRM consisting of the abandonment of CB-3 and contributing laterals was completed in November 2003. The IRM has mitigated the potential impact of surface water at the Site and, therefore, surface water has been eliminated as a media of concern in this FS.

SVOCs and metals were detected in surface soil samples at concentrations exceeding both the NYSDEC soil cleanup objectives and Site background. Given the industrial/commercial usage of the area in general and the nearby location of a railroad right-of-way, these constituents are ubiquitous in this area. Nonetheless, surface soil has been carried forward for evaluation in the FS.

The following summarizes the compounds of concern (COCs) and potential exposure pathways identified through the completion of the RI:

i) Groundwater
   - COCs – VOCs
   - Potential Exposure Pathways – worker or resident ingestion, inhalation, and/or direct contact;

ii) Surface Soil

- COCs – SVOCs and metals
- Potential Exposure Pathways - worker or trespasser direct contact; and

iii) Sub-Slab Soil Gas

- COCs – VOCs
- Potential Exposure Pathways – worker inhalation of indoor air.

3.5 TREATABILITY STUDIES

Bench scale laboratory treatability studies have been conducted to gather the data necessary for evaluations of in situ chemical oxidation (ISCO) and enhanced biodegradation as remedial alternatives for Site groundwater. In addition, an evaluation of monitored natural attenuation (MNA) as a remedial Alternative for the Site was performed in accordance with USEPA guidance. Summaries of the results of the studies and evaluation are presented in the following subsections.

3.5.1 ENHANCED BIODEGRADATION

A microcosm study was designed and conducted to determine whether the complete reductive dechlorination of TCE to ethene could be stimulated at the Site. The results of the study are summarized as follows:

i) Enhanced bioremediation is a feasible remedial option at this Site. All of the electron donors supported complete reductive dechlorination of TCE to ethene within the course of the experiment. The addition of electron donors promoted a two to three fold increase in the overall biodegradation rate over the comparable unamended control. TCE was biodegraded very rapidly in all the amended bottles. Lactate, chitin, and soybean oil promoted the fastest biodegradation of cis-DCE. Chitin and soybean oil promoted the fastest biodegradation of VC. In these cases, VC was biodegraded almost as fast as it was formed, so that very little was measured in the bottles. The choice of electron donor for use in a potential field application would depend on site conditions and stratigraphy.

ii) Complete reductive dechlorination of TCE to ethene was observed in both the unamended controls at both concentration levels. It is unusual to observe this level of activity at such a high TCE concentration and indicates robust intrinsic biological activity is currently operative at the site. This suggests that monitored natural attenuation should be an important part of the remedial strategy at this Site.

iii) The addition of supplemental nutrients did not have a substantial positive effect on the rate or extent of TCE dechlorination. Bioaugmentation also did not have a significant effect on the results observed. These results indicate that neither supplemental nutrients nor bacteria would be required to promote the rapid biodegradation of TCE at this Site.

The complete report of the microcosm studies is presented in Appendix B.

3.5.2 IN SITU CHEMICAL OXIDATION

Bench scale treatability studies utilizing potassium permanganate, Fenton's Reagent, and sodium persulfate as oxidizing agents for VOCs in Site groundwater were conducted. The tests included treatability of groundwater samples as well as quantification of the natural oxidant demand of the site soils. The results of the studies are summarized as follows:

i) the natural oxidant demand of Site soils is high, which is likely due to the presence of petroleum hydrocarbons and natural organic matter. It was concluded that the natural oxidant demand (NOD) of the Site soil is too high for the use of ISCO alone to be a cost-effective treatment; and

ii) Fenton's reagent was the recommended oxidant if ISCO is included in the final remedy.

The complete report of the ISCO treatability studies is presented in Appendix C.

3.5.3 MONITORED NATURAL ATTENUATION

An evaluation of MNA was conducted in association with the performance of the FS for the Site. The MNA evaluation was completed to determine the subsurface geochemical conditions and evaluate the significance of biodegradation of chlorinated volatile organic compounds (CVOCs) in groundwater at and in the vicinity of the Site as a result of naturally occurring biological activity. The findings were utilized to support the conclusions of the FS and selection of remedial technologies.

The MNA evaluation was performed in accordance with the protocols outlined in the USEPA documents entitled "*Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites*" (USEPA OSWER Directive 9200.4-17P, April 1999) and "*Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water*" (USEPA, September 1998). During the MNA evaluation groundwater samples were collected and analyzed and the results were evaluated for the following evidence or indicators of natural biological activity in groundwater:

i) CVOC concentrations over time and space;

ii) geochemical parameters that indicate strong reducing conditions;

iii) presence of CVOC daughter products;

iv) microbial evidence of biodegradation potential; and

v) estimation of chemical mass destroyed by biodegradation.

Results of the MNA analysis are summarized as follows:

i) there is insufficient data to conduct a meaningful analysis of CVOC concentrations over time;

ii) geochemical parameters collected from groundwater indicate that the overburden and bedrock aquifers at the Site are reducing. These geochemical conditions are favorable for the reductive biodegradation of TCE, cis-DCE, and VC;

iii) with a few exceptions, the parent compound TCE is much diminished at the Site relative to its reductive chlorination daughter products cis-DCE, VC, and ethene/ethane. In some cases, TCE made up less than 1 percent of the total VOCs in the groundwater. This indicates that reductive dechlorination is highly advanced in the most highly contaminated areas of the Site. This is supported by the presence of ethane and ethene at those locations, indicating that the dechlorination is proceeding all the way to non-hazardous end products;

iv) benzene, toluene, ethylbenzene, and xylene (BTEX) compounds are also present in the former Barge Turnaround, suggesting that BTEX may be an important electron donor in supporting the reductive dechlorination of TCE and its daughter products. However, given the swampy nature of the area, natural dissolved organic carbon (DOC) in the form of humic materials is also present and will likely contribute to the support of reductive dechlorination; and

vi) substantial natural biodegradation by reductive dechlorination is occurring at Site. Calculations based on chloride concentrations and groundwater flux through the bioactive zone suggest that 500 to 5,000 pounds per year (lbs/yr) of

TCE are being destroyed due to ongoing biodegradation processes. This may be a conservative estimate. This analysis, coupled with the stable migration of groundwater and lack of groundwater use in the area indicate that the CVOCs are attenuating rapidly and sufficiently such that there is no threat to groundwater users.

4.0 REMEDIAL GOALS AND REMEDIAL ACTION OBJECTIVES

4.1 POTENTIAL STANDARDS, CRITERIA, AND GUIDELINES

4.1.1 TYPES AND APPLICABILITY

Applicable or relevant and appropriate Standards, Criteria, and Guidelines (SCGs) are used to develop remedial action objectives (RAOs) and to scope and formulate remedial action technologies and alternatives. SCGs may include Federal Applicable or Relevant and Appropriate Requirements (ARARs) or standards if they are more stringent than State standards. SCGs are categorized as:

i) chemical-specific requirements that define acceptable exposure levels and may, therefore, be used in establishing preliminary remediation goals;

ii) location-specific requirements that may set restrictions on activities without specific locations, such as floodplains or wetlands; and/or

iii) action-specific requirements which may set controls or restrictions for particular treatment and disposal activities related to the management of hazardous wastes.

Potential SCGs are described in the following subsections.

4.1.1.1 CHEMICAL-SPECIFIC SCGs

Chemical-specific SCGs define health- or risk-based concentration limits in various environmental media for hazardous substances and contaminants. Concentration limits provide protective cleanup levels or may be used as a basis for estimating appropriate cleanup levels for the COCs in the designated media. Chemical-specific SCGs may be used to determine treatment system discharge requirements or disposal restrictions for remedial activities and/or to assess the effectiveness or suitability of a remedial alternative. Chemical-specific SCGs are generally promulgated standards or other ARARs. Applicable or relevant and appropriate guidance values may be appropriate where a promulgated standard for a particular substance is not available.

Potential chemical-specific SCGs that may apply to groundwater, surface soil, and air at the Site are described in the subsections that follow.

4.1.1.1.1 GROUNDWATER

For the purpose of this FS, Site groundwater will be considered Class GA. Class GA groundwater pertains to fresh groundwater found in the saturated zone of unconsolidated deposits and bedrock. The best usage of Class GA groundwater is a source of potable water supply; however, Site groundwater is not used as a drinking water source. The NYS water quality standards and guidance values for Class GA groundwater are stipulated in:

i) New York Water Classifications and Quality Standards (6 NYCRR Parts 609, and 700-704); and

ii) Technical and Operation Guidance Standards (TOGS) 1.1.1, Ambient Water Quality Standards and Guidance Values dated October 22, 1993 (reissued June 1998).

The Class GA groundwater SCGs for VOCs detected in Site groundwater at concentrations exceeding standards are presented in Table 4.1.

4.1.1.1.2 SURFACE SOIL

For the purpose of the FS and the potential exposure scenarios described in Section 3.2.4, potential chemical-specific SCGs for surface soils consist of the NYSDEC recommended soil cleanup objectives. The NYSDEC recommended soil cleanup objectives are stipulated in Technical and Administrative Guidance Memoranda (TAGM) 4046, Determination of Soil Cleanup Objectives and Cleanup Levels dated January 24, 1994. The SCGs for the chemical compounds detected in Site surface soils at concentrations exceeding standards are presented in Table 4.2.

4.1.1.1.3 SUB-SLAB SOIL GAS

As stated in the NYSDOH "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" (Public Comment Draft, February 2005), NYS currently does not have any standards, criteria, or guidance values for concentrations of compounds in subsurface vapors for use in comparison of the Site data. NYSDOH has developed air guideline values for a limited number of compounds as stipulated in the above-referenced document. For the purpose of this FS, these guideline values are considered to be SCGs.

NYS Ambient Air Criteria may be applicable to specific remedial alternatives.

The air SCGs for the constituents detected in Site groundwater and sub-slab soil gas are presented in Table 4.3.

4.1.1.2 ACTION-SPECIFIC SCGs

Action-specific SCGs are determined by the particular remedial activities that are selected for the Site cleanup. Action-specific requirements establish controls or restrictions on the design, implementation, and performance of remedial activities. Following the development of remedial alternatives, action-specific SCGs that specify performance levels, actions, technologies, or specific levels for discharged or residual chemicals provide a means for assessing the feasibility and effectiveness of the remedial activities.

The action-specific SCGs that may be applicable to potential Site remedial technologies are presented in Table 4.4.

4.1.1.3 LOCATION-SPECIFIC SCGs

Potential location-specific SCGs are requirements that set restrictions on activities depending on the physical and environmental characteristics of the Site or its immediate surroundings.

The Site is bounded by commercial, residential, and undeveloped properties. The Fish and Wildlife Impact Analysis, provided as Appendix R to the RI Report, has demonstrated that there are no identified rare, threatened or endangered species, habitats of concern, or freshwater wetlands within a 1/2-mile radius of the Site.

Potential location-specific SCGs that may be applicable to potential Site remedial technologies are the Village of Clyde zoning ordinances and building codes.

4.2 REMEDIAL ACTION GOALS AND OBJECTIVES

4.2.1 REMEDIAL ACTION GOALS

The primary goals of any remedial action are that:

i) it be protective of human health and the environment;

ii) it maintains protection over time; and

iii) it minimizes untreated waste (NCP).

The remedy selection process will be performed in a manner consistent with the NYSDEC approved RI/FS Work Plan, the USEPA guidance document "Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA" dated October 1988 (USEPA Guidance), NYSDEC "TAGM HWR-90-4030: Selection of Remedial Actions at Inactive Hazardous Waste Sites", dated May 15, 1990 (NYSDEC TAGM), and any other appropriate USEPA and NYSDEC technical and administrative documents.

4.2.2 REMEDIAL ACTION OBJECTIVES

The USEPA Guidance states "*Remedial action objectives consist of medium-specific or operable-unit specific goals for protecting human health and the environment. The objectives should be as specific as possible but not so specific that the range of alternatives that can be developed is unduly limited.*" RAOs established for the protection of human health and the environment should specify:

i) the contaminants and media of concern;

ii) the exposure routes and receptors; and

iii) an acceptable contaminant level or range of levels for each exposure route.

Based on the results of the RI and the implementation of the IRM, the remedial actions evaluated for the Site in this FS address on-Site groundwater, surface soil, and soil gas impacted by COCs. The following RAOs have been established for Site media:

i) to eliminate or mitigate all significant threats to the public health and to the environment presented by the disposal or release of hazardous waste at the Site;

ii) to prevent unacceptable exposure of human receptors to VOCs detected in Site groundwater, VOCs detected in soil gas, and SVOCs and metals in surface soil;

iii) to address groundwater impacts to the extent practicable so that Site groundwater conditions are consistent with the contemplated use of the Site as a commercial/industrial manufacturing facility;

iv) to prevent or mitigate, to the extent practicable, the migration of impacted groundwater to off-Site areas; and

v) to monitor the groundwater to confirm that the selected remedy is protective of human health and the environment.

5.0 GENERAL RESPONSE ACTIONS AND IDENTIFICATION OF REMEDIAL TECHNOLOGIES

General response actions are remedial approaches encompassing those actions that will satisfy the RAOs. General response actions may include treatment, containment, excavation, disposal, institutional controls, or a combination of these, if required, to address varied Site environmental problems and to be effective in meeting all of the RAOs. The general response actions and remedial technologies evaluated for each medium of concern at the Site are described in the following subsections and listed in Table 5.1.

5.1 GROUNDWATER

5.1.1 NO ACTION

The No Action response is primarily used as a basis for comparison with other alternatives. Under the No Action response, no remedial measures are taken to improve environmental conditions at the Site. This response does not reduce the volume, mobility, or toxicity of the hazardous constituents of the Site media beyond the reductions which are achieved through the ongoing natural attenuation mechanisms discussed in Section 3.

In the case of the Site, the No Action Alternative includes the institutional controls already in place. These institutional controls include:

i) fencing restricting unauthorized access to the P-H property;
ii) security procedures for access to the P-H property; and
iii) health and safety procedures for worker protection when conducting subsurface construction in areas within the limit of chemical presence in groundwater.

In addition, public water is available to the Site and the surrounding properties.

5.1.2 INSTITUTIONAL CONTROL

The institutional control response is not intended to reduce the toxicity, mobility, or volume of hazardous site constituents but to reduce the potential for human and wildlife exposure to those constituents. Institutional controls may include controls to restrict or limit the use of the Site or the contaminated media until such time that it is restored to acceptable quality consistent with the intended land use, implementation of a long-term monitoring program to track contaminant migration and transport, and/or development of protective work procedures to reduce the potential for exposure of workers to Site contaminants during ground intrusive construction activities. At the Site, this may be an additional layer of protection over what currently exists, or an assurance that if P-H stops activities at the site, any controls will remain in place.

5.1.3 MONITORED NATURAL ATTENUATION

Natural attenuation refers to natural subsurface processes that reduce VOC concentrations. Natural attenuation can be sufficiently protective of human health and the environment and can be more cost-effective than other remedial alternatives. Biodegradation, which has been demonstrated to be active at the Site as described in Section 3, is the most important natural in situ destructive mechanism. Non-destructive natural mechanisms include sorption, dispersion, dilution, and volatilization.

The MNA evaluation presented in Appendix D and summarized in Section 3, demonstrates that MNA can be implemented successfully at the Site.

MNA includes long-term groundwater monitoring at and downgradient of the Site until VOC concentrations are deemed acceptable relative to applicable standards and intended Site use.

5.1.4 IN SITU GROUNDWATER TREATMENT

The in situ groundwater treatment technologies identified as potentially applicable at the Site are ISCO, air sparging, enhanced biological degradation, permeable reactive barrier, and in-well air stripping. Each of these technologies is described in detail in the following subsections.

Groundwater monitoring will be included in the Operation and Maintenance Plan (O&M Plan) of any in situ groundwater treatment alternative.

5.1.4.1 CHEMICAL OXIDATION

ISCO uses an oxidizing agent to convert the target compounds into non-hazardous or less toxic compounds, primarily carbon dioxide, water, and chloride.

Because any chemical oxidant is short-lived in the subsurface, the effectiveness of chemical oxidants as a treatment technology depends greatly on the ability to quickly disperse the oxidant throughout the treatment area. The shallow overburden unit at the Site consists of a mixture of till, silt and sand. The hydraulic conductivity of the shallow overburden is generally low (geometric mean of 4.8 ft/day), corresponding to silt or silty sand. A low hydraulic conductivity means that the radius of treatment around each injection point will be relatively small, requiring more numerous injection points compared to the longer-lived bioremediation amendments.

Once in the subsurface, the chemical oxidant will react with the compounds of concern and any naturally occurring material this is oxidizable (e.g., natural organic material, iron coatings). The treatability testing described in Section 3.5 determined that the NOD of the unconsolidated material is high. This means that additional oxidant will be required to treat the groundwater because a significant portion of the oxidant will be consumed by naturally-occurring material.

Fenton's Reagent, potassium permanganate ($KMnO_4$), and ozone are the most commonly used oxidants. Sodium persulfate is emerging as a promising oxidizing reagent but is still in the developmental stage. The following paragraphs present the preliminary screening of each of these oxidants.

Fenton's Reagent

Based on the microcosm tests performed during the treatability study, Fenton's reagent was identified as being the most effective oxidant in treating the VOCs in the soil. However, the use of Fenton's reagent can cause off-gassing of oxygen to the surface. This is a serious safety concern at this Facility because of the presence of open flames in the building above the proposed injection area. The use of Fenton's reagent can also result in excess heat and in rare cases, possibly explosion. Due to these safety concerns, Fenton's reagent will not be considered further.

$KMnO_4$

$KMnO_4$ is generally preferred because it is easier and safer to handle than Fenton's Reagent. The application involves simple methods and does not require the sophisticated equipment used in ozone treatment. However, the treatability testing presented in Appendix C indicated that $KMnO_4$ was not effective in treating many VOCs in the soil samples. This was likely due to interference because of the presence of petroleum hydrocarbon. Therefore, $KMnO_4$ will not be considered further.

Sodium Persulfate

Sodium persulfate was identified as being as effective as Fenton's reagent in treating VOCs. However, sodium persulfate requires a catalyst to be effective, and the catalyst generally used is hydrogen peroxide. The use of hydrogen peroxide will result in the production and off-gassing of oxygen, which is a health and safety concern because of the presence of open flames in the facility. Therefore, sodium persulfate will not be considered further.

Ozone

Ozone injection includes the same health and safety concerns as Fenton's reagent, due to the gas production and potential oxygen release during its use. Therefore ozone will not be considered further.

Each of the chemical oxidants evaluated has been eliminated from consideration due to the results of treatability tests or safety concerns resulting from injection beneath the facility. Therefore, ISCO will not be considered further as a remedy.

5.1.4.2 PERMEABLE REACTIVE BARRIER

A permeable reactive barrier (PRB) consists of a barrier wall installed across the flow path of impacted groundwater. Groundwater passes through the wall and the target compounds are either degraded or retained in a concentrated form by the barrier material. This method of treatment results in either permanent containment of or decreased volume of chemicals in groundwater passing through the wall. To address the Site groundwater COCs, the reactive barrier material may consist of zero-valent iron.

A PRB may be modified to involve a funnel-and-gate system. For treatment of groundwater, the funnel-and-gate system consists of low permeable cutoff walls (the funnel) and higher conductivity reaction zones (the gate).

Metals precipitation/biofouling is a cause of concern with a PRB, particularly in the presence of elevated calcium and magnesium concentrations. Metal precipitation within the barrier wall causes gradual loss of permeability and deterioration in the treatment performance. Over extended treatment times, the reactive media loses its treatment capacity and may need to be replaced.

5.1.4.3 REDUCTIVE DECHLORINATION

Reductive dechlorination utilizing nano-scale zero valent iron has been shown to be effective in treating a wide range of chemical compounds including chlorinated organic solvents. Nano-scale particles are of small size and large surface area. They have crystalline lattice structures and their size varies around 10^{-9} meters. Nano-particles can be injected in solution under pressure or by gravity into the groundwater aquifer.

Nano-scale iron particles are not affected by soil acidity, temperature, or nutrient levels. Zero valent iron has been shown to promote favorable redox conditions and served as an electron donor for microbes in reductive dechlorination of chlorinated solvents. Emulsified zero-valent iron has been utilized to remediate dense non-aqueous phase liquid (DNAPL).

The potential benefits of nano-scale zero valent iron injection include reduced treatment time and cost when compared to traditional pump-and-treat systems. However, there is potential for matrix effects that can limit the treatment ability of this technology. Due to the heavy weight of the nano-iron, distribution over distances of greater than 5 feet is difficult; thus, application of this technology is most appropriate in hotspot areas. Applications of this technology have been limited; therefore, sufficient information as to its effectiveness is not readily available for assessment of the uncertainties.

5.1.4.4 ENHANCED BIODEGRADATION

Biological degradation is a treatment process whereby contaminants are metabolized into less toxic or non-toxic compounds by naturally occurring microorganisms. In the case of the Site COCs, the microorganisms utilize the contaminants for cellular respiration. The by-products are mainly carbon dioxide, ethane, ethene, chloride, and water. Biological degradation can be enhanced through the addition of nutrients and carbon/energy sources.

Techniques that may be applied to enhance the biodegradation of the Site groundwater COCs include injection of co-substrates such as molasses, lactate, chitin, or soybean oil to enhance the rate of reductive dechlorination of TCE and its daughter products currently occurring at the Site.

A Site-specific laboratory microcosm study was conducted to evaluate biodegradation and enhancement as a potential remedial technology for Site groundwater. The results of the study, which are presented in Appendix B and summarized in Section 3, demonstrated that enhanced biodegradation through nutrient enhancement is a feasible remedial option for the Site.

5.1.4.5 AIR SPARGING

Air sparging is accomplished by introduction of air into the groundwater below the level of contamination where it percolates into the groundwater. The air increases the partitioning of dissolved and adsorbed phase VOCs to the vapor phase and into bubbles. The bubbles ideally travel to the top of the water table at a 45° angle, but the actual flow path may vary depending on aquifer heterogeneity, groundwater flow conditions, and sparge pressure. Once the air bubbles reach the vadose zone, the VOCs are removed through soil vapor extraction (SVE). In some cases, direct venting through the vadose zone offers sufficient treatment of the vapors. Following extraction, soil vapors are treated and/or vented to the atmosphere.

For enhancement, sparging can be conducted using steam. However, this is generally applied for removal of SVOCs or fuels and not for VOC removal.

The zone of influence of air sparging wells increases with the depth of groundwater table, using this system in shallow groundwater such as at the Site would likely require installation of wells at narrow spacing.

Given the Site's anaerobic conditions, which promote biodegradation of chemicals in groundwater, implementation of air sparging at the Site would inhibit the natural attenuation processes, which are actively dechlorinating COCs in Site groundwater.

5.1.4.6 IN-WELL AIR STRIPPING

In-well air stripping combines air sparging with water circulation. This combination of processes results in more efficient stripping of chemicals than through air sparging alone. For in-well air stripping, double-screened wells are constructed with the lower screen installed within the saturated zone and the upper screen installed in the unsaturated zone. During in-well air stripping, pressurized air is injected into a double-screened well below the water table, lifting the water in the well and forcing it out the upper screen. Simultaneously, additional water is drawn into the lower screen. The aeration of the water within the lower well screen increases the partitioning of dissolved and adsorbed phase VOCs to the vapor phase and into bubbles which rise in the well to the water surface where vapors are drawn off and treated and/or discharged by an SVE system. Modifications to the basic in-well stripping process may involve injection of additives (e.g., nutrients) into the stripping well to enhance biodegradation.

Groundwater is not extracted in this type of system. Therefore, pumping and treatment costs may be reduced.

Complete definition of the extent of chemical presence in groundwater is required prior to the installation of a circulating well system to prevent expansion of chemical presence in the groundwater regime. In addition, fouling of the circulating system may occur due to precipitation of constituents of the groundwater.

Given the Site's anaerobic conditions, which currently promote biodegradation of chemicals in groundwater, implementation of in-well air stripping at the Site would inhibit the natural attenuation processes, which are actively dechlorinating COCs in Site groundwater.

5.1.5 CONTAINMENT TECHNOLOGIES

Containment technologies induce physical and hydraulic containment. The containment response does not reduce the volume or toxicity of the contaminants in the Site media. The purpose of this response is to reduce contaminant mobility, and in doing so, minimize exposure and reduce potential hazards. Periodic monitoring is necessary following implementation of the containment response to determine its effectiveness and evaluate the need for further action.

Physical barriers for containment of groundwater at the Site consist of subsurface vertical barriers to control groundwater migration. Surface barriers to control surface water infiltration and thus transport of COCs from soils to groundwater are not applicable at the Site, as COC presence in vadose zone soil has not been identified. Hydraulic containment of groundwater may be achieved through the operation of collection systems (i.e., extraction wells or collection trenches).

Groundwater monitoring will be included in the O&M Plan of any containment alternative.

5.1.6 COLLECTION TECHNOLOGIES

Collection technologies reduce the mass of contaminants present to a greater or lesser degree, dependent on the aggressiveness of the collection effort. Use of collection technologies reduces the mobility and toxicity of Site contaminants by removal and disposition at a secure location. These technologies provide no treatment of contaminated media but may be used in conjunction with an ex situ disposal and/or treatment option to meet the Site-specific goals and objectives.

The groundwater collection technology identified as potentially applicable to the Site utilizes vertical extraction wells and/or a collection trench.

Groundwater monitoring will be included in the O&M Plan of any collection alternative.

5.1.7 EX SITU TREATMENT TECHNOLOGIES

The purpose of an ex situ groundwater treatment technology is to reduce the volume, toxicity and/or mobility of Site contaminants in extracted groundwater. Remedial treatment technologies potentially applicable at the Site are air stripping and carbon treatment.

5.1.7.1 AIR STRIPPING

VOCs are partitioned from extracted groundwater by increasing the surface area of the impacted groundwater exposed to air. Aeration methods include packed towers, diffused aeration, tray aeration, and spray aeration. Water droplets fall from the top of the air stripper, while air is forced countercurrent to the water flow. VOCs partition into the air, which is discharged into the atmosphere. Depending on the concentration of VOCs in the air, it may require treatment prior to discharge.

Air stripping equipment can be subject to fouling when elevated concentrations of metals are present in the incoming stream. Under these conditions, the influent is pretreated with flocculants or sequestering agents to either remove the metals constituents or keep them in the dissolved state.

5.1.7.2 ACTIVATED CARBON

Either extracted groundwater or vapor can be treated by adsorption of VOCs onto activated carbon. Groundwater or vapor is passed through one or more vessels containing activated carbon and VOCs in the influent flow are adsorbed onto the carbon. When the concentration of VOCs in the effluent from the carbon bed(s) exceeds a predetermined level, the carbon is replaced.

When elevated concentrations of metals are present in an influent groundwater stream, carbon beds are subject to fouling due to precipitation. This can result in high operation and maintenance costs.

Carbon treatment may not be appropriate where high concentrations of specific VOCs (e.g., VC) are present.

5.1.8 DISPOSAL TECHNOLOGIES

Disposal technologies involve off-Site or on-Site disposal of contaminated media or products of treatment processes. Disposal technologies do not usually involve reduction of contaminant volume or toxicity, but are primarily intended to reduce contaminant mobility.

5.1.8.1 OFF-SITE DISPOSAL

Off-Site disposal options include municipal sewer discharge or disposal at a permitted treatment, storage, and disposal facility (TSDF). Off-Site disposal options normally involve transportation of the waste to the TSDF. Pre-treatment may be required as a condition for off-site disposal to a municipal sewer. In addition, volume restrictions may be imposed on discharges to a municipal sewer.

5.1.8.2 ON-SITE DISPOSAL

The on-Site treated water disposal options potentially applicable for Site groundwater are injection back into the groundwater aquifer or permitted discharge to surface water.

5.1.8.2.1 INJECTION

In disposal of treated groundwater through injection, treated groundwater is discharged into injection wells. Injection wells are generally located downgradient of the groundwater extraction system, but may be located upgradient or cross-gradient to improve flow of impacted groundwater toward the extraction system. The injection systems may be either passive (e.g., gravity flow) or active (e.g., pumping).

Hydraulic monitoring is required in conjunction with injection to assure that containment of the groundwater in the area of concern is maintained.

5.1.8.2.2 DISCHARGE TO SURFACE WATER

Disposal of treated groundwater can be made through permitted direct discharge to a storm sewer or surface water body. Monitoring of the treated effluent would be conducted in accordance with permit requirements to insure that the quality of discharged water is in accordance with applicable standards.

5.2 SURFACE SOIL

5.2.1 NO ACTION

The No Action response is primarily used as a basis for comparison with other alternatives. Under the No Action response, no additional measures are taken to improve environmental conditions at the Site. This response does not reduce the volume, mobility, or toxicity of the hazardous constituents of the Site media.

5.2.2 INSTITUTIONAL CONTROL

The institutional control response is not intended to reduce the toxicity, mobility, or volume of hazardous site constituents but to reduce the potential for human and wildlife exposure to those constituents. Options may include initiation of institutional controls to restrict or limit the use of the Site or the contaminated media and/or development of protective work procedures to reduce the potential for exposure of workers to Site contaminants during ground intrusive construction activities.

5.2.3 CONTAINMENT TECHNOLOGIES

Containment technologies for surface soils consist of physical containment. The containment response does not reduce the volume or toxicity of the contaminants in the Site media. The purpose of this response is to reduce contaminant mobility, and in doing so, minimize exposure and reduce potential hazards at the Site. Periodic monitoring in the way of inspection is necessary to insure that containment is maintained.

The soil containment technology identified as potentially applicable to the Site is the use of a permeable surface barrier (cap) to prevent exposure to contaminants in Site surface soils.

5.2.4 COLLECTION TECHNOLOGIES

Collection technologies reduce the mass of contaminants present to a greater or lesser degree, dependent on the aggressiveness of the collection effort. Use of the collection technologies reduces the mobility and toxicity of Site contaminants by removal and disposition at a secure location. These technologies provide no treatment of contaminated media but may be used in conjunction with a disposal and/or treatment option to meet the Site-specific goals and objectives.

The collection technology identified as potentially applicable to surface soil at the Site is excavation of impacted soil.

5.2.5 EX SITU TREATMENT TECHNOLOGIES

The purpose of a treatment technology is to reduce the volume, toxicity and/or mobility of Site contaminants. Remedial treatment technologies include biological, physical, chemical, and thermal processes or some combination of those processes (e.g., physical/thermal treatment).

The treatment technologies identified as potentially applicable to excavated surface soils at the Site are thermal desorption and incineration. Considering the relatively small volume of impacted surface soils at the Site, treatment would most likely be performed off-Site.

5.2.5.1 THERMAL DESORPTION

Thermal desorption is a physical treatment method for excavated soils. Thermal desorption does not result in reduction of the volume or toxicity of the Site contaminants. To thermally treat the SVOCs in Site surface soils, excavated soil would be heated to high temperature to volatilize water and the COCs. The resultant vapors would then be transported in a carrier gas or by vacuum extraction to a treatment system.

Dewatering of soils may be required to achieve acceptable soil moisture content prior to treatment.

5.2.5.2 INCINERATION

Incineration is a potential physical/chemical treatment method for excavated soils. Organic chemical compounds present in excavated soils would be destroyed through volatilization and combustion. Off gases and combustion residuals may require treatment.

5.2.6 DISPOSAL TECHNOLOGIES

Disposal technologies involve off-Site or on-Site disposal of contaminated media or products of treatment processes. Disposal technologies do not usually involve reduction of contaminant volume or toxicity, but are primarily intended to reduce contaminant mobility. Off-Site disposal options include disposal at a permitted TSDF. Off-Site disposal options normally involve transportation of the waste to the TSDF.

On-Site soil disposal options include use of excavated, treated soil as excavation backfill. This option is not technically feasible where excavated soil is treated off-Site. The off-Site disposal option for soil is transport to a TSDF.

5.3 SUB-SLAB SOIL GAS BENEATH THE MANUFACTURING BUILDING

5.3.1 NO ACTION

The No Action response is primarily used as a basis for comparison with other alternatives. Under the No Action response, no remedial measures are taken to improve environmental conditions at the Site. This response does not reduce the volume, mobility, or toxicity of the hazardous constituents of the Site media beyond that which is realized through natural attenuation and/or engineered and institutional controls already in place.

5.3.2 ENGINEERED CONTROLS

Engineered controls for the manufacturing building are potentially applicable to address the migration of sub-slab soil gas to indoor air to reduce the potential for exposure of workers to contaminants through inhalation. The engineered controls potentially applicable in or around the manufacturing building are sub-slab venting of soil gas, floor sealing, and positive indoor pressure maintained through building ventilation systems.

The floor of the manufacturing building is sealed with an epoxy coating, which is maintained in good condition. There are no sumps, floor drains, or other significant routes of entry for soil gas through the facility floor. Additionally, as the manufacturing facility is operational, the building has a functional HVAC system providing ventilation for employee comfort and process needs. Information on currently provided engineering controls is available from P-H upon request.

5.3.3 COLLECTION TECHNOLOGIES

Collection technologies reduce the mass of contaminants present to a greater or lesser degree, dependent on the aggressiveness of the collection effort. Use of the collection technologies also reduces the mobility of Site contaminants. These technologies provide no treatment of contaminated media and thus do not reduce the toxicity of the contaminants present. However, collection may be used in conjunction with a treatment option to reduce chemical toxicity.

SVE is identified as a potentially applicable collection technology for sub-slab soil gas at the Site. Shallow vapor extraction wells would be installed and soil gas would be extracted through a vacuum system to remove VOCs from the sub-slab vadose zone. Depending upon VOC concentrations, the extracted soil vapor would either be treated or directly discharged to ambient air.

At the Site, the operation of an SVE system would likely inhibit the natural anaerobic biodegradation of TCE.

5.3.4 TREATMENT TECHNOLOGIES

The purpose of a treatment technology, when used alone or in conjunction with a collection technology, is to reduce the volume, toxicity, and/or mobility of Site contaminants. Remedial treatment technologies include biological, physical, chemical, and thermal processes or some combination of those processes (e.g., physical/thermal treatment).

The treatment technologies identified as potentially applicable to extracted soil gas at the Site are activated carbon and/or catalytic oxidation. Extracted vapors are passed through the treatment system and subsequently discharged to ambient air.

6.0 INITIAL SCREENING OF REMEDIAL TECHNOLOGIES

Prior to developing a list of remedial alternatives potentially applicable at the Site for detailed analysis and comparison, all identified available and appropriate technologies are screened. The identified technologies described in Section 5 have been screened utilizing the following criteria:

i) short- and long-term effectiveness;
ii) implementability;
iii) relative cost; and
iv) short-term risk.

The initial screening of remedial technologies and process options is designed to determine their applicability to the Site and eliminate those technologies that technically cannot be implemented.

The results of the initial screening of the remedial technologies assembled to address the general response actions presented in Section 5 and listed in Table 5.1, are shown in Tables 6.1 through 6.6.

In summary, the technologies listed below are retained for assembly into remedial alternatives and further evaluation.

6.1 GROUNDWATER

The following technologies are retained for further evaluation. These technologies may be used individually or in combination.

i) No Action;
ii) Institutional Control;
iii) Monitored Natural Attenuation;
iv) In Situ Treatment Utilizing a Permeable Reactive Barrier;
v) In Situ Treatment Utilizing In-Well Stripping;
vi) In Situ Treatment Utilizing Enhanced Biodegradation;
vii) Hydraulic Containment/Collection Utilizing Extraction Wells;
viii) Ex Situ Treatment Utilizing Air Stripping; and

ix) On-Site Disposal of Groundwater through Discharge to Surface Water.

6.2 SURFACE SOIL

The following technologies are retained for further evaluation. These technologies may be used individually or in combination.

i) No Further Action;

ii) Institutional Control;

iii) Containment through Capping;

iv) Collection through Excavation; and

v) Off-Site Disposal of Excavated Soil.

6.3 SOIL GAS/INDOOR AIR

The following technologies are retained for further evaluation. These technologies may be used individually or in combination.

i) No Action;

ii) Engineered Controls Utilizing Sub-Slab Vapor Venting;

iii) Collection through SVE; and

iv) Ex Situ Treatment Utilizing Activated Carbon.

7.0 DETAILED ANALYSES OF RETAINED REMEDIAL ALTERNATIVES

Remedial alternatives for Site groundwater, surface soil, and sub-slab soil gas were developed in Section 6 for possible application at the Site. These alternatives are subject to a detailed analysis using the evaluation criteria outlined in USEPA guidance. The evaluation criteria are as follows:

i) overall protection of human health and the environment;
ii) compliance with ARARs/SCGs;
iii) reduction of toxicity, mobility, or volume;
iv) short-term effectiveness;
v) long-term effectiveness and permanence;
vi) implementability;
vii) cost; and
viii) community acceptance.

The criterion of community acceptance cannot be evaluated at the feasibility study stage because it is based upon public comments regarding the Site remedy. Consequently, no further discussion of this criterion is provided in this FS.

The remaining seven criteria are divided into two primary groups, namely threshold criteria and balancing criteria.

The threshold criteria include compliance with applicable SCGs and overall protection of human health and the environment. With the exception of the No Action alternative, all remedial alternatives must meet the threshold criteria to be eligible for further consideration.

The remaining five evaluation criteria are considered the balancing criteria. Each of the remedial alternatives is assessed and analyzed on a comparative basis using these evaluation criteria. Ultimately, a remedial action plan is proposed that incorporates the alternatives, which provides the best solution with respect to the balancing criteria.

The detailed analysis of retained alternatives has been performed in a manner consistent with the applicable regulations. The analyses are described in detail in the following subsections. Backup information for the cost estimates is presented in Appendix D.

7.1 GROUNDWATER

The groundwater remedial technologies retained following the initial screening have been assembled into the following alternatives for detailed analysis.

i) Groundwater Alternative 1: No Action.

ii) Groundwater Alternative 2: Monitored Natural Attenuation with Institutional Control.

iii) Groundwater Alternative 3: Monitored Natural Attenuation with Enhanced Biodegradation in Hotspot Areas and Institutional Control.

iv) Groundwater Alternative 4: Permeable Reactive Barrier with Enhanced Biodegradation in Hotspot Areas, Monitored Natural Attenuation, and Institutional Control.

v) Groundwater Alternative 5: In-Well Air Stripping with Enhanced Biodegradation in Hotspot Areas and Institutional Control.

vi) Groundwater Alternative 6: Hydraulic Containment/Collection with On-Site Treatment and Disposal.

Each of the groundwater remedial alternatives is described and evaluated in detail in the following subsections.

7.1.1 GROUNDWATER ALTERNATIVE 1: NO ACTION

7.1.1.1 DESCRIPTION

Groundwater Alternative 1 (GW Alternative 1), No Action, provides no active remedial measures to improve environmental conditions at the Site. Natural attenuation and biodegradation would reduce COC concentrations in groundwater over the long term. A Microcosm Study was conducted to determine whether TCE and its degradation products could be completely degraded via natural reductive biodegradation at the Site. The Microcosm Study report is presented in Appendix B. Complete reductive dechlorination of TCE to ethene was observed in unamended sample groups, demonstrating robust intrinsic biodegradation at the Site. Furthermore, the MNA evaluation presented in Appendix D and summarized in Section 3 showed that the estimated TCE destruction rate through natural attenuation in the former Barge Turnaround is 500, to 5,000 lbs/yr.

The No Action Alternative also includes the institutional controls already in place. These institutional controls include:

i) fencing restricting unauthorized access to the P-H property;

ii) security procedures for access to the P-H property; and

iii) health and safety procedures for worker protection when conducting subsurface construction in areas within the limit of chemical presence in groundwater.

In addition, public water is available to the Site and the surrounding properties.

No additional remedial actions, institutional controls, or monitoring would be implemented with GW Alternative 1. However, existing institutional controls and protective measures would be maintained and enforced until groundwater quality is restored to the extent necessary for the intended future use of the properties.

7.1.1.2 ASSESSMENT

Overall Protection of Human Health and the Environment: Because no additional remedial measures are implemented with GW Alternative 1, the potential future risk to human health and the environment would not be reduced beyond that which would be achieved through natural degradation processes (biodegradation and natural physical processes). However, it has been demonstrated that these processes are destroying TCE at an estimated rate of 500, to 5,000 lbs/yr in the former Barge Turnaround.

Compliance with SCGs: GW Alternative 1 would not achieve the chemical-specific SCGs which apply to groundwater through a remedial action. However, the chemical-specific SCGs will be achieved over time through the natural attenuation processes. Since no remedial action would be implemented, no action-specific or location-specific SCGs apply to GW Alternative 1. The potentially applicable location-specific SCG for this Alternative is the Village of Clyde building codes and zoning ordinances.

Reduction of Toxicity, Mobility, or Volume: GW Alternative 1 provides no active reduction of toxicity, mobility, or volume of the COCs. However, over the long term, the volume and toxicity of COCs in groundwater will be reduced at the Site through the active natural attenuation and biological degradation processes.

Short-Term Effectiveness: GW Alternative 1 requires no remedial actions. Therefore, there would be no additional short-term risks posed to the community, the workers, or the environment as a result of the implementation of this alternative.

Long-Term Effectiveness and Permanence: GW Alternative 1 would not result in any further remedial actions; therefore, the residual risks would not be reduced beyond that which will be achieved through natural attenuation and biological degradation processes and existing controls and practices. GW Alternative 1 will achieve the GW RAOs over time and will provide a permanent remedy once groundwater is restored through the natural attenuation processes.

The RAOs for surface soil or sub-slab soil gas would not be met by GW Alternative 1.

Implementability: Because there are no remedial actions being undertaken, the implementability criterion is not applicable.

Cost: There are no remedial actions, institutional controls, or monitoring being undertaken in GW Alternative 1; therefore, there are no costs. This is reflected in the cost summary is presented in Table 7.1.

7.1.2 GROUNDWATER ALTERNATIVE 2: MNA WITH INSTITUTIONAL CONTROL

7.1.2.1 DESCRIPTION

Data collected during the RI and groundwater treatability studies demonstrate that significant natural attenuation of VOCs in groundwater is currently taking place at the Site.

A Microcosm Study was conducted to determine whether TCE and its degradation products could be completely degraded via natural reductive biodegradation at the Site. The Microcosm Study report is presented in Appendix B. Complete reductive dechlorination of TCE to ethene was observed in unamended sample groups, demonstrating robust intrinsic biodegradation at the Site.

An evaluation of MNA was performed in accordance with the protocols outlined in the USEPA documents entitled "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites" (USEPA, OSWER Directive 9200.4-17P, April 1999) and "Technical Protocol for Evaluating Natural Attenuation of

Chlorinated Solvents in Groundwater" (USEPA, September 1998). A detailed report of the MNA evaluation is presented in Appendix D. In summary, the evaluation demonstrated that:

i) geochemical conditions in overburden and bedrock are favorable for reductive dechlorination of the COCs in groundwater;
ii) natural biodegradation by reductive dechlorination is occurring at the Site; and
iii) the estimated TCE destruction rate through natural attenuation in the former Barge Turnaround is 500, to 5,000 lbs/yr.

In GW Alternative 2, a long-term groundwater monitoring program would be conducted to evaluate the continuing effectiveness of the natural attenuation processes in restoring groundwater quality. The groundwater monitoring program would consist of both hydraulic and water quality monitoring in overburden and bedrock monitoring wells. The purpose of the hydraulic monitoring program would be to confirm that the groundwater flow patterns do not change over time resulting in unexpected off-site impact. Groundwater quality monitoring would be conducted to track the reductions in COC concentrations over time, evaluate the continuing favorable conditions for natural attenuation, and confirm the protectiveness of the remedy. To obtain a conservative cost estimate for use in this FS it has been assumed that the groundwater monitoring network would consist of approximately 25 wells and that groundwater samples would be analyzed for VOCs and geochemical parameters. A complete monitoring plan would be prepared and submitted to NYSDEC for approval prior to implementation of the remedy.

In GW Alternative 2, additional Institutional Controls beyond those already in place at the Site (see Section 2.2) would be implemented to further restrict direct exposure to contaminated groundwater. Specifically:

i) additional safe work practices and definitions of levels of personnel protective equipment (PPE) for specific work activities would be developed if necessary and implemented for subsurface maintenance or construction activities conducted within the limits of COC presence in groundwater; and
ii) a Deed Restriction or Record Notice would be added as an addendum to the existing deeds of the properties beneath which groundwater exhibiting COCs is present. The deed restrictions would inform the property owners of the Site history and restricted land use on the property. Deed restrictions would also require the property owners to notify the NYSDEC before performing construction activities in areas within the limit of COC presence in groundwater. Any future conveyance of the property would be subject to these restrictions. The

restriction or restrictive covenants would be drafted in accordance with applicable and relevant State and municipal legal codes to be enforceable.

7.1.2.2 ASSESSMENT

Overall Protection of Human Health and the Environment: Effective deed restrictions and monitoring would be protective of human health by preventing potential exposure to contaminated groundwater. The potential future risk to the environment using GW Alternative 2 would not be reduced beyond that which will be achieved through natural attenuation and biological degradation. However, it has been demonstrated that these processes are destroying TCE at an estimated rate of ,500 to 5,000 lbs/yr in the former Barge Turnaround.

Compliance with SCGs: GW Alternative 2 would achieve the chemical-specific SCGs which apply to groundwater through the Site's active natural attenuation processes. Since no remedial action would be implemented, no action-specific SCGs apply to GW Alternative 2. The potentially applicable location-specific SCGs for this Alternative are the Village of Clyde zoning ordinances.

Reduction of Toxicity, Mobility, or Volume: GW Alternative 2 will provide reductions in toxicity and volume of the COCs in groundwater over time. The mobility of the COCs will not be reduced through the implementation of GW Alternative 2.

Short-Term Effectiveness: No additional short-term risk to the community or the environment would be posed as a result of the implementation of GW Alternative 2. Risk to workers conducting the monitoring program would be mitigated through the implementation of safe work practices and proper PPE.

Long-Term Effectiveness and Permanence: The additional institutional controls established for GW Alternative 2 would make this Alternative effective in the long term as long as they are enforced until groundwater has been restored to the extent necessary for the intended future land use.

GW Alternative 2 would achieve the groundwater RAOs if the institutional controls described in Section 7.1.2.1 are imposed and enforced until groundwater has been restored to the extent necessary for the intended future land use. The RAOs for surface soil or sub-slab soil gas would not be met by GW Alternative 2.

Implementability: The implementability of GW Alternative 2 is dependent upon the ability to impose and enforce institutional controls on the impacted properties.

Cost: The estimated 30-year present worth cost for GW Alternative 2, is $609,000. The cost summary is presented in Table 7.2.

7.1.3 GROUNDWATER ALTERNATIVE 3: ENHANCED BIODEGRADATION WITH MNA AND INSTITUTIONAL CONTROL

7.1.3.1 DESCRIPTION

Groundwater Alternative 3 (GW Alternative 3) would consist of in situ groundwater treatment performed in hotspot areas to accelerate the biodegradation of COCs in groundwater and thus actively reduce risk. In situ enhancement of biodegradation would be conducted utilizing enhanced biodegradation through supplementation of nutrient/carbon sources. In addition, MNA and Institutional Controls as described for GW Alternative 2 in Section 7.1.2 would be part of GW Alternative 3.

Nutrient/carbon enhancement would consist of the injection of sodium lactate/soybean oil through temporary well points installed in the treatment areas. A field scale pilot test would be conducted to determine injection point spacing and verify the effectiveness of the treatment. The design of the full-scale treatment would be finalized upon completion of the pilot test and analysis of the monitoring data. For the purpose of preparing a cost estimate for this FS, it is assumed that injection points would be installed within the areas shown on Figure 7.1 and that one treatment would be performed.

In GW Alternative 3, a long-term groundwater monitoring program would be conducted to evaluate the continuing effectiveness of the remedial action in restoring groundwater quality. The groundwater monitoring program would consist of both hydraulic and water quality monitoring in overburden and bedrock monitoring wells. The purpose of the hydraulic monitoring program would be to confirm that the groundwater flow patterns do not change over time resulting in unexpected off-Site impact. Groundwater quality monitoring would be conducted to track the reductions in COC concentrations over time, evaluate the continuing favorable conditions for natural attenuation, and confirm the protectiveness of the remedy. To obtain a conservative cost estimate for use in this FS it has been assumed that the groundwater monitoring network would consist of approximately 25 wells and that groundwater samples would be analyzed for VOCs and geochemical parameters. A complete monitoring plan would be prepared and submitted to NYSDEC for approval prior to implementation of the remedy.

7.1.3.2 ASSESSMENT

Overall Protection of Human Health and the Environment: GW Alternative 3 would reduce the highest concentrations of COCs in groundwater, thus immediately reducing the potential risk attributable to exposure to Site groundwater and enhancing the conditions under which natural attenuation processes can progress. Further, hotspot treatment beneath and adjacent to the manufacturing building would immediately reduce the COC concentrations in groundwater beneath the building, thus immediately reducing potential exposure to COCs in sub-slab soil vapor through intrusion into indoor air.

Compliance with SCGs: GW Alternative 3 would achieve the chemical-specific SCGs which apply to groundwater. The potentially applicable action-specific SCGs which apply to GW Alternative 3 are those listed in Table 4.4 under the following headings:

i) Container Storage; and

ii) Surface Water Control.

The potentially applicable location-specific SCGs for this Alternative are the Village of Clyde zoning ordinances.

Reduction of Toxicity, Mobility, or Volume: GW Alternative 3 will provide reduction of the toxicity and volume of the COCs. The mobility of COCs in groundwater will not be effected by GW Alternative 3. The volume of COCs in sub-slab soil vapor will also be reduced by GW Alternative 3.

Short-Term Effectiveness: Short-term hazards to workers during the in situ treatment or monitoring events would be mitigated through the implementation of safe work practices and proper PPE. Mixing and pumping mechanisms may be present on the ground surface during the treatment process; however, all solutions would be containerized and no additional short-term risks would be posed to the community, the workers, or the environment.

Long-Term Effectiveness and Permanence: GW Alternative 3 will achieve the groundwater RAOs and will enhance the performance of the selected remedial

Alternative for sub-slab soil gas. GW Alternative 3 will not achieve the RAOs for surface soil.

GW Alternative 3 would achieve the groundwater RAOs if the institutional controls described in Section 7.1.2.1 are imposed and enforced until groundwater has been restored to the extent necessary for the intended future land use. The RAOs for surface soil or sub-slab soil gas would not be met by GW Alternative 2.

Implementability: The implementability of GW Alternative 3 is primarily dependent upon the ability to impose and enforce institutional controls on the impacted off-Site properties. The ability to access the lowlying areas of the former Barge Turnaround for the injections of the treatment substrate will also effect the implementability of GW Alternative 3.

Cost: The estimated 30-year present worth cost for GW Alternative 3 as described in Section 7.1.3.1 is $876,000. The cost summary is presented in Table 7.3.

7.1.4 GROUNDWATER ALTERNATIVE 4: PERMEABLE REACTIVE BARRIER WITH ENHANCED BIODEGRADATION, MNA, AND INSTITUTIONAL CONTROL

7.1.4.1 DESCRIPTION

Groundwater Alternative 4 (GW Alternative 4) would consist of MNA and Institutional Controls as described in Section 7.1.2, Enhanced Biodegradation in the hotspots beneath and adjacent to the manufacturing building as described in Section 7.1.3, and the construction of a PRB across the groundwater flow pathway at the downgradient boundary of the area exhibiting COC presence in groundwater.

The PRB constructed at the Site would consist of a passive iron treatment wall. The iron treatment wall would be comprised of 70 percent soil/sand and 30 percent iron contained in a slurry. The slurry is injected into the subsurface under pressure to create a barrier. At the Site, the PRB would be constructed in a "T" configuration as shown schematically on Figure 7.2. The PRB would extend vertically to the top of the confining layer (e.g., till) or, where the till is not present, to the top of the bedrock surface. The geotechnical properties of Site soils would require further characterization prior to the design and construction of a PRB.

Natural attenuation processes would reduce COC concentrations in impacted groundwater downgradient of the alignment of the PRB.

In GW Alternative 4, a long-term groundwater monitoring program would be conducted to evaluate the continuing effectiveness of the remedial action in restoring groundwater quality. The groundwater monitoring program would consist of both hydraulic and water quality monitoring in overburden and bedrock monitoring wells. The purpose of the hydraulic monitoring program would be to confirm that the groundwater flow patterns do not change over time resulting in unexpected off-site impact. Groundwater quality monitoring would be conducted to track the reductions in COC concentrations over time, evaluate the continuing favorable conditions for natural attenuation, and confirm the protectiveness of the remedy. To obtain a conservative cost estimate for use in this FS it has been assumed that the groundwater monitoring network would consist of approximately 25 wells and that groundwater samples would be analyzed for VOCs and geochemical parameters. A complete monitoring plan would be prepared and submitted to NYSDEC for approval prior to implementation of the remedy.

7.1.4.2 ASSESSMENT

Overall Protection of Human Health and the Environment: GW Alternative 4 would be protective of human health and the environment through the treatment of COCs in groundwater and mitigation of the potential for future transport of COCs to off-Site groundwater. The combination of hotspot treatment and treatment of on-site groundwater as it follows its natural flow-path and through the PRB would result in the reduction of COC concentrations. In addition, the hotspot treatment would immediately reduce the COC concentrations in groundwater beneath the manufacturing building, thus immediately reducing potential exposure to COCs in sub-slab soil vapor through intrusion into indoor air.

Compliance with SCGs: GW Alternative 4 would achieve the chemical-specific SCGs which apply to groundwater. The potentially applicable action-specific SCGs which apply to GW Alternative 4 are those listed in Table 4.4 under the following headings:

i) Container Storage;
ii) Excavation; and
iii) Surface Water Control.

Potentially applicable location-specific SCGs for this Alternative are the Village of Clyde zoning ordinances and building codes.

Reduction of Toxicity, Mobility, or Volume: GW Alternative 4 will provide reduction of the toxicity, volume, and mobility of the COCs in groundwater. The volume of COCs in sub-slab vapor will also be reduced by GW Alternative 4.

Short-Term Effectiveness: Short-term hazards to workers during the in situ treatment, PRB construction, or monitoring events would be mitigated through the implementation of safe work practices and proper PPE. Mixing and pumping mechanisms may be present on the ground surface during the treatment and construction processes; however, all solutions would be containerized and no additional short-term risks would be posed to the community, the workers, or the environment. Dust control measures would be implemented during excavation activities associated with the construction of the PRB to prevent airborne dispersion of particulates.

Long-Term Effectiveness and Permanence: The implementation of GW Alternative 4 will achieve the groundwater RAOs and will complement the effectiveness of the remedial Alternative selected for sub-slab soil gas. The RAOs for surface soil would not be met by GW Alternative 4.

Implementability: The implementability of GW Alternative 4 is dependent upon the ability to enact and enforce the institutional controls on the impacted off-Site properties and upon the ability to obtain access permission to off-Site properties for construction of the PRB.

Cost: The estimated 30-year present worth cost for GW Alternative 4 as described in Section 7.1.4.1 is $1,898,000. The cost summary is presented in Table 7.4.

7.1.5 GROUNDWATER ALTERNATIVE 5: IN-WELL AIR STRIPPING WITH ENHANCED BIODEGRADATION AND INSTITUTIONAL CONTROL

7.1.5.1 DESCRIPTION

Groundwater Alternative 5 (GW Alternative 5) would consist of enhanced biodegradation in the hotspot areas beneath and adjacent to the manufacturing building and institutional control as described for GW Alternatives 3 and 4 combined with in-well air stripping in the former Barge Turnaround.

In-well stripping of COCs would be performed in a system of double-screened wells installed within the former Barge Turnaround. Groundwater would be circulated through the wells in situ for stripping of COCs and soil vapor would be extracted for treatment by catalytic oxidation or carbon. For cost estimation purposes, it is assumed that seven wells would be installed in the former Barge Turnaround and that catalytic oxidation will be required for vapor treatment. A conceptual layout of the well system is shown in plan view on Figure 7.3. A schematic representation of a stripping well is presented on Figure 7.4. Pumping and pilot scale testing will be required prior to design of the circulating well and vapor treatment systems.

In GW Alternative 4, a long-term groundwater monitoring program would be conducted to evaluate the continuing effectiveness of the remedial action in restoring groundwater quality. The groundwater monitoring program would consist of both hydraulic and water quality monitoring in overburden and bedrock monitoring wells. The purpose of the hydraulic monitoring program would be to confirm that the groundwater flow patterns do not change over time resulting in unexpected off-Site impact. Groundwater quality monitoring would be conducted to track the reductions in COC concentrations over time, evaluate the continuing favorable conditions for natural attenuation, and confirm the protectiveness of the remedy. To obtain a conservative cost estimate for use in this FS it has been assumed that the groundwater monitoring network would consist of approximately 25 wells and that groundwater samples would be analyzed for VOCs and geochemical parameters. A complete monitoring plan would be prepared and submitted to NYSDEC for approval prior to implementation of the remedy.

7.1.5.2 ASSESSMENT

Overall Protection of Human Health and the Environment: GW Alternative 5 would be protective of human health and the environment through the treatment of COCs in groundwater and mitigation of the potential for future off-site transport of COCs in groundwater. The combination of hotspot treatment under the manufacturing building and treatment of groundwater as it follows its natural flow-path into the area in which the circulation wells would be located would result in reductions in COC concentrations. In addition, the hotspot treatment would immediately reduce the COC concentrations in groundwater beneath the manufacturing building, thus immediately reducing potential exposure to COCs in sub-slab soil vapor through intrusion into indoor air.

Compliance with SCGs: GW Alternative 5 will achieve the chemical-specific SCGs, which apply to groundwater. The potentially applicable action-specific SCGs which apply to GW Alternative 5 are those listed in Table 4.4 under the following headings:

i) Container Storage;
ii) Land Treatment;
iii) Surface Water Control;
iv) Treatment (in a unit);
v) Closure of Land Treatment Units;
vi) Transporting Hazardous Waste Off Site; and
vii) Vapor Emissions.

Potentially applicable location-specific SCGs for this Alternative are the Village of Clyde zoning ordinances and building codes.

Reduction of Toxicity, Mobility, or Volume: GW Alternative 5 will provide reduction of the toxicity and volume of the COCs. However, there is concern that the implementation of this technology in the former Barge Turnaround will adversely impact the natural anaerobic conditions and inhibit the ongoing natural attenuation processes resulting in slower restoration of groundwater than is occurring through the natural processes. GW Alternative 5 will not address the mobility of the COCs.

Short-Term Effectiveness: Short-term hazards to workers during the in situ treatment, well system installation and operation/maintenance, or monitoring events would be mitigated through the implementation of safe work practices and proper PPE. Mixing and pumping mechanisms may be present on the ground surface during the treatment and construction processes; however, all solutions would be containerized and no additional short-term risks would be posed to the community, the workers, or the environment.

Long-Term Effectiveness and Permanence: The implementation of GW Alternative 5 will achieve the groundwater RAOs and will complement the effectiveness of the remedial Alternative selected for sub-slab soil gas. However, it is possible that the Site's ongoing natural attenuation processes will be inhibited by the aeration which will occur in the aquifer. This inhibition of the natural degradation processes may result in slower restoration of groundwater quality. The RAOs for surface soil would not be met by GW Alternative 5.

Implementability: The implementability of GW Alternative 5 is primarily dependent upon the ability to impose and enforce the institutional controls on the off-Site properties and upon the ability to obtain access permission for construction of the well system in the former Barge Turnaround. The implementability may also be effected by fouling of well screens due to the presence of metals precipitates and bacteria.

Cost: The estimated 30-year present worth cost for GW Alternative 5 as described in Section 7.1.5.1 is $2,504,000. The cost summary is presented in Table 7.5.

7.1.6 GROUNDWATER ALTERNATIVE 6: HYDRAULIC CONTAINMENT/COLLECTION WITH ON-SITE TREATMENT AND DISPOSAL AND INSTITUTIONAL CONTROL

7.1.6.1 DESCRIPTION

Groundwater Alternative 6 (GW Alternative 6) would consist of enhanced biodegradation in the hotspot areas beneath and adjacent to the manufacturing building and institutional controls as described for GW Alternatives 3 through 5 combined with hydraulic containment and groundwater collection in the former Barge Turnaround.

The extraction well system would be designed to contain and recover impacted groundwater. The system would consist of a series of extraction wells constructed in the former Barge Turnaround. For cost estimation purposes, it is assumed that seven wells would be installed in the alignment shown on Figure 7.5.

Extracted groundwater would be treated utilizing air stripping. If required, catalytic oxidation or carbon would be used to treat vapors. The existing data suggest that carbon treatment of vapors may not be effective. Therefore, for the purpose of the FS cost estimate, it has been assumed that catalytic oxidation will be required. Treated water would be discharged directly to the storm sewer south of the Site. This sewer discharges into the Clyde River.

Pumping and pilot scale testing will be required prior to design of the extraction and treatment systems.

In GW Alternative 6, a long-term groundwater monitoring program would be conducted to evaluate the continuing effectiveness of the remedial action in restoring groundwater quality. The groundwater monitoring program would consist of both hydraulic and water quality monitoring in overburden and bedrock monitoring wells. The purpose of the hydraulic monitoring program would be to confirm that the groundwater flow patterns do not change over time resulting in unexpected off-Site impact. Groundwater quality monitoring would be conducted to track the reductions in COC concentrations over time, evaluate the continuing favorable conditions for natural attenuation, and confirm the protectiveness of the remedy. To obtain a conservative cost estimate for use in this FS it has been assumed that the groundwater monitoring network would consist of approximately 25 wells and that groundwater samples would be analyzed for VOCs and geochemical parameters. A complete monitoring plan would be prepared and submitted to NYSDEC for approval prior to implementation of the remedy.

Treatment system influent and effluent monitoring would be conducted as necessary to monitor system performance and meet permit requirements. For the purpose of the FS, it is assumed that influent and effluent analyses would be conducted weekly for three months and monthly thereafter.

7.1.6.2 ASSESSMENT

Overall Protection of Human Health and the Environment: GW Alternative 6 would be protective of human health and the environment through the hydraulic containment, collection and treatment of contaminated groundwater, and through the enforcement of additional institutional controls.

Compliance with SCGs: GW Alternative 6 will achieve the chemical-specific SCGs, which apply to groundwater. The potentially applicable action-specific SCGs which apply to GW Alternative 5 are those listed in Table 4.4 under the following headings:

i) Container Storage;
ii) Discharge of Treatment System Effluent;
iii) Land Treatment;
iv) Surface Water Control;
v) Treatment (in a unit);
vi) Closure of Land Treatment Units;
vii) Transporting Hazardous Waste Off Site; and
viii) Vapor Emissions.

Potentially applicable location-specific SCGs for this Alternative are the Village of Clyde zoning ordinances and building codes.

Reduction of Toxicity, Mobility, or Volume: GW Alternative 6 will provide reduction of the toxicity, volume, and mobility of the COCs in groundwater. However, there is concern that the implementation of this technology in the former Barge Turnaround will adversely impact the natural anaerobic conditions and inhibit the ongoing natural attenuation processes resulting in slower restoration of groundwater than is occurring through the natural processes.

Short-Term Effectiveness: Short-term hazards to workers during the extraction well and treatment system installation and operation/maintenance and monitoring events would be mitigated through the implementation of safe work practices and proper PPE. The short-term effectiveness of GW Alternative 6 would be almost immediate upon startup of the on-Site treatment system as a result of the near-immediate commencement of reduction of the toxicity, mobility, and volume of COCs in groundwater. No additional short-term risks would be posed to the community or the environment.

Long-Term Effectiveness and Permanence: GW Alternative 6 will achieve the groundwater RAOs. However, it is possible that the Site's ongoing natural attenuation processes will be inhibited by waters drawn into the area. This inhibition of the natural degradation processes may result in slower restoration of groundwater quality. GW Alternative 6 will not achieve the RAOs for surface soil and will only achieve the RAOs for sub-slab soil gas after groundwater has been restored.

Implementability: The implementability of GW Alternative 6 is primarily dependent upon the ability to impose and enforce institutional controls on the off-Site properties and upon the ability to obtain access permission for construction of the extraction system in the former Barge Turnaround. The implementability may also be effected by fouling of well screens due to the presence of metals precipitates and bacteria.

Cost: The estimated 30-year present worth cost for GW Alternative 6 as described in Section 7.1.6.1 is $2,991,000. The cost summary is presented in Table 7.6.

7.2 SURFACE SOIL

The surface soil remedial technologies retained following the initial screening have been assembled into the following alternatives for detailed analysis:

i) Surface Soil Alternative 1: No Further Action;

ii) Surface Soil Alternative 2: Institutional Control;

iii) Surface Soil Alternative 3: Capping with Institutional Control; and

iv) Surface Soil Alternative 4: Excavation with Off-Site Disposal and Institutional Control.

Each of the surface soil remedial alternatives is evaluated in detail in the following subsections.

7.2.1 SURFACE SOIL ALTERNATIVE 1: NO FURTHER ACTION

7.2.1.1 DESCRIPTION

Surface Soil Alternative 1 (SS Alternative 1), No Further Action, provides no active remedial measures to improve environmental conditions at the Site beyond those already completed as the Storm Water IRM. Natural degradation would reduce COC concentrations in surface soil over the long term. No further remedial actions, institutional controls, or monitoring would be conducted.

7.2.1.2 ASSESSMENT

Overall Protection of Human Health and the Environment: Because no additional remedial measures are implemented with SS Alternative 1, the potential future risk to human health and the environment would not be reduced beyond that which would be achieved through natural degradation processes (biodegradation and natural physical processes) and realized as an indirect result of the remedial action implemented to address Site groundwater.

The apparent source of COCs in surface soil is historic stormwater and/or septic discharge into the former Barge Turnaround. Both of these sources of continuing discharge have been eliminated; therefore, SS Alternative 1 will be protective of human health and the environment in the future.

Compliance with SCGs: SS Alternative 1 would not achieve the chemical-specific SCGs which apply to surface soil. Since no remedial action would be implemented, no action-specific or location-specific SCGs apply to SS Alternative 1.

Reduction of Toxicity, Mobility, or Volume: SS Alternative 1 provides no active reduction of toxicity, mobility, or volume of the COCs. However, over the long term, the volume and toxicity of COCs in surface soil will be reduced by natural degradation processes.

Short-Term Effectiveness: SS Alternative 1 requires no remedial actions. Therefore, there would be no additional short-term risks posed to the community, the workers, or the environment as a result of the implementation of this alternative.

Long-Term Effectiveness and Permanence: Over time, through natural degradation processes, SS Alternative 1 will achieve the RAOs applicable to surface soil but will not achieve the RAOs for groundwater or sub-slab soil gas.

Implementability: Because there are no remedial actions being undertaken, the implementability criterion is not applicable.

Cost: Because there are no remedial actions, institutional controls, or monitoring being undertaken, there are no costs associated with SS Alternative 1. The cost summary is presented in Table 7.7.

7.2.2 SURFACE SOIL ALTERNATIVE 2: INSTITUTIONAL CONTROL

7.2.2.1 DESCRIPTION

Surface Soil Alternative 2 (SS Alternative 2), Institutional Control, consists of the implementation of institutional control to restrict exposure to contaminated surface soil in the former Barge Turnaround. Specifically,

i) the area of the former Barge Turnaround in which the soils exhibiting chemical presence in excess of SCGs are contained would be enclosed with fencing;

ii) safe work practices and definitions of levels of PPE for specific work activities would be developed and implemented for maintenance or construction activities conducted in the area; and

iii) if possible, a Deed Restriction or Record Notice would be added as an addendum to an existing deed for the former Barge Turnaround property. The deed restriction would inform the property owner of the Site history and restricted land use on the property. Deed restrictions would also require the property owner to obtain regulatory approvals before performing construction activities in the area in which the subject soils are located. Any future conveyance of the property would be subject to these restrictions. The restriction or restrictive covenants would be drafted in accordance with applicable and relevant State and municipal legal codes to be enforceable.

7.2.2.2 ASSESSMENT

Overall Protection of Human Health and the Environment: The combination of a physical barrier (fencing) and effective deed restrictions would be protective of human health by preventing incidental exposure to the subject soils. The potential future risk to the environment using SS Alternative 2 would not be reduced beyond that which will be achieved through natural attenuation and as an indirect result of the remedial action implemented to address on-Site groundwater.

Compliance with SCGs: SS Alternative 2 would not achieve the chemical-specific SCGs which apply to surface soil. No action-specific SCGs apply to Alternative 2. The potentially applicable location-specific SCGs for this Alternative are the Village of Clyde zoning ordinances and building codes.

Reduction of Toxicity, Mobility, or Volume: SS Alternative 2 provides no active reduction of toxicity, mobility, or volume of the COCs. However, over the long term, the volume and toxicity of COCs in surface soil will be reduced by natural degradation processes and as an indirect result of the remedial action implemented to address on-Site groundwater.

Short-Term Effectiveness: No additional short-term risk to the community or the environment would be posed as a result of the implementation of SS Alternative 2. Risk to workers installing fencing around the area would be mitigated through the implementation of safe work practices and proper PPE.

Long-Term Effectiveness and Permanence: The institutional controls established for SS Alternative 2 would make this Alternative effective in the long term as long as they are enforced and maintained. The RAOs for groundwater and sub-slab soil gas would not be met by SS Alternative 2, and a permanent remedy would not be provided.

Implementability: The implementability of SS Alternative 2 is dependent upon the consent of the owner of the former Barge Turnaround property, the Village of Clyde.

Cost: The estimated 30-year present worth cost for SS Alternative 2, given an estimated life of fencing of 15 years (or two replacements over a 30-year period) is $54,500. The cost summary is presented in Table 7.8.

7.2.3 SURFACE SOIL ALTERNATIVE 3: CAPPING WITH INSTITUTIONAL CONTROL

7.2.3.1 DESCRIPTION

Surface Soil Alternative 3 (SS Alternative 3), Capping, includes:

i) construction of a permeable cover (cap) over surface soils containing SVOCs at concentrations exceeding SCGs; and

ii) implementation of institutional controls to restrict exposure to contaminated subsurface soil.

The estimated area to be capped in SS Alternative 3 is shown on Figure 7.6. Additional surface soil sampling and analyses may be required to fully define the area to be capped. Prior to placing the cap, the area would be cleared and graded as necessary to maintain drainage and the area would be covered with filter fabric to provide a visual separation between the soil and the imported cover. Impacted surface soils would not be removed from the former Barge Turnaround area. The cap would consist of 1 foot of imported, clean, granular fill placed over the entire area containing impacted soil. Four inches of topsoil would be placed on top of the fill and the area revegetated. A long-term O&M program, comprising periodic inspections and routine maintenance activities, would be implemented to maintain the long-term integrity of the cap.

The institutional controls implemented as part of SS Alternative 3 consist of:

i) safe work practices and definitions of levels of PPE for specific work activities developed and implemented for maintenance or construction activities conducted in the area; and

ii) if possible, a Deed Restriction or Record Notice added as an addendum to an existing deed for the former Barge Turnaround property. The deed restriction would inform the property owner of the Site history and restricted land use on the property. Deed restrictions would also require the property owner to obtain regulatory approvals before performing construction activities in the area in which the subject soils are located. Any future conveyance of the property would be subject to these restrictions. The restriction or restrictive covenants would be drafted in accordance with applicable and relevant State and municipal legal codes to be enforceable.

7.2.3.2 ASSESSMENT

Overall Protection of Human Health and the Environment: SS Alternative 3 would be protective of human health by preventing potential incidental exposure to contaminated soil. SS Alternative 3 would be protective of the environment by reducing the future potential transport of SVOCs on soil to off-Site areas as a result of wind dispersion, surface runoff, or other mechanical means.

Compliance with SCGs: SS Alternative 3 will comply with the chemical-specific SCGs which apply to surface soil by covering the existing surface soil with clean, imported fill.

The potentially applicable action-specific SCGs for this Alternative are those listed in Table 4.4 under the following headings:

i) Capping;
ii) Construction of New Landfill on Site;
iii) Surface Water Control;
iv) Treatment (in a unit);
v) Waste Pile; and
vi) Closure with Waste in Place.

These SCGs would be satisfied by SS Alternative 3.

The potentially applicable location-specific SCGs for this Alternative are the Village of Clyde zoning ordinances and building codes.

Reduction of Toxicity, Mobility, or Volume: SS Alternative 3 provides no active reduction in toxicity or volume of COCs in surface soil. Mobility of SVOCs in surface soil would be reduced through the mitigation of transport of soil from the area. Over the long term, the volume and toxicity of SVOCs in surface soil would be reduced by natural degradation processes.

Short-Term Effectiveness: The permeable cap would be constructed using standard techniques. Short-term hazards to workers would be mitigated through proper work and health and safety procedures. The short-term effectiveness of SS Alternative 3 would be almost immediate upon completion of the construction of the cap, since direct exposure of human receptors to surface soils in the former Barge Turnaround exhibiting chemical concentrations exceeding SCGs would immediately be prevented. No additional short-term risks would be posed to the community or the environment by SS Alternative 3.

Long-Term Effectiveness and Permanence: The enforcement of the institutional controls to be established for SS Alternative 3 and implementation of a long-term O&M program would make this Alternative effective in the long term. In addition, the incremental risk attributable to surface soils would be further reduced over the long term as a result of the natural degradation processes of SVOCs in the surface soils. The RAOs for groundwater and sub-slab soil gas would not be achieved by SS Alternative 3.

Cost: The estimated 30-year present worth cost for SS Alternative 3, given the estimated annual repairs to the cap, is $73,500. The cost summary is presented in Table 7.9.

7.2.4 SURFACE SOIL ALTERNATIVE 4: EXCAVATION WITH OFF-SITE DISPOSAL AND INSTITUTIONAL CONTROL

7.2.4.1 DESCRIPTION

Surface Soil Alternative 4 (SS Alternative 4) includes:

i) excavation of surface soil within the former Barge Turnaround exhibiting SVOC concentrations exceeding SCGs;

ii) off-Site disposal of the excavated soil at a permitted landfill; and

iii) implementation of institutional controls to restrict exposure to contaminated subsurface soil.

The estimated area from which surface soil would be excavated is shown on Figure 7.6. Additional surface soil sampling and analyses may be required prior to commencement of the excavation activities to further define the horizontal extent of the excavation. Given that the former Barge Turnaround has been filled with debris from several sources, definition of the limit of excavation may be difficult.

The surface soils would be excavated to a depth sufficient to allow sufficient backfill to cover the remaining soil/soil and maintain surface water drainage. For the purpose of this FS, it is assumed that soils would be removed from the area to a depth of 1 foot. Excavated soils would be transported to an off-Site, permitted TSDF for treatment (if required) and disposal.

Following completion of the excavation activities, the bottom of the excavation would be covered with filter fabric to provide a visual separation between the soil and the imported cover. The excavation would then be backfilled with a minimum of 1 foot of clean, imported, granular fill and regraded as necessary to promote drainage. The filled area will be covered with 4 inches of topsoil and revegetated.

Excavated soil likely would be removed from the Site concurrently with the excavation activities.

7.2.4.2 ASSESSMENT

Overall Protection of Human Health and the Environment: SS Alternative 4 would be protective of human health by preventing potential incidental exposure to contaminated soil. SS Alternative 4 would be protective of the environment by reducing the future potential transport of SVOCs on soil to off-Site areas as a result of wind dispersion, surface runoff, or other mechanical means.

Compliance with SCGs: SS Alternative 4 would achieve the chemical-specific SCGs which apply to surface soil. However, the chemical-specific SCGs applying to subsurface soils may not be achieved.

The potentially applicable action-specific SCGs for this Alternative are those listed in Table 4.4 under the following headings:

i) Capping;
ii) Container Storage;
iii) Excavation;
iv) Surface Water Control;
v) Waste Pile;
vi) Closure with Waste in Place; and
vii) Transporting Hazardous Waste Off Site.

These SCGs would be satisfied by SS Alternative 4.

The potentially applicable location-specific SCGs for this Alternative are the Village of Clyde zoning ordinances and building codes.

Reduction of Toxicity, Mobility, or Volume: SS Alternative 4 does not provide a reduction in toxicity or volume of COCs in excavated soil unless treatment is required at the disposal facility. Mobility of SVOCs in surface soil would be reduced through the mitigation of transport of soil from the area.

SS Alternative 4 will not achieve the RAOs for groundwater or sub-slab soil gas.

Short-Term Effectiveness: Surface soil excavation and excavation backfill can be completed using standard techniques. Short-term hazards to workers would be mitigated through proper work and health and safety procedures. The short-term effectiveness of SS Alternative 4 would be almost immediate upon completion since the potential for direct exposure of human receptors to surface soils in the former Barge Turnaround would be eliminated immediately. Dust control and community air monitoring programs would be implemented during construction activities to control short-term risks posed to the community by SS Alternative 4.

Long-Term Effectiveness and Permanence: SS Alternative 4 is a permanent solution to prevent exposure to contaminated surface soils. The enforcement of the institutional controls to be established for SS Alternative 4 would make this Alternative effective to prevent exposure to chemicals in remaining impacted subsurface soils, if present.

Cost: The estimated 30-year present worth cost for SS Alternative 4 is $115,000, assuming that the excavated materials are classified hazardous and are landfilled without pretreatment. The cost summary is presented in Table 7.10. The cost of SS Alternative 4 is highly dependent upon i) the volume of soil excavated; and ii) whether the excavated soil is a hazardous waste for disposal. Disposal costs range between approximately $60/ton for non-hazardous material and $400/ton for hazardous material requiring pretreatment and disposal in a secure (Subtitle C) landfill. With this range of disposal costs, SS Alternative 4 is estimated to cost between approximately $80,000 and $180,000.

7.3 SOIL GAS/INDOOR AIR

The soil gas/indoor air remedial technologies retained following the initial screening have been assembled into the following alternatives for detailed analysis.

i) Soil Gas Alternative 1: No Action;

ii) Soil Gas Alternative 2: Sub-Slab Ventilation with Carbon; and

iii) Soil Gas Alternative 3: Soil Vapor Extraction with Carbon Treatment.

7.3.1 SOIL GAS ALTERNATIVE 1: NO ACTION

7.3.1.1 DESCRIPTION

Soil Gas Alternative 1 (SG Alternative 1), No Action, provides no active remedial measures to improve environmental conditions at the Site. COC concentrations in sub-slab soil gas would decrease over time as groundwater quality is restored. No further remedial actions addressing sub-slab soil gas would be conducted.

As discussed previously, the potential route for human exposure to sub-slab soil gas is through intrusion into indoor air and subsequent inhalation by workers at the Site, particularly inside the manufacturing building. There is little potential for transport of soil gas to indoor air within the manufacturing building. There are no sumps or floor drains in the building. Further, the floor within the manufacturing portion of the building (which comprises approximately 90 percent of the building area) is sealed with an epoxy coating which is routinely maintained. The floors of the other portions of the building are covered with tile or carpet.

7.3.1.2 ASSESSMENT

Overall Protection of Human Health and the Environment: Because no remedial measures are implemented with SG Alternative 1, the potential future risk to human health and the environment would not be reduced beyond that which is already realized as a result of the building maintenance and air monitoring programs. No change in Site use or building configuration or further degradation of sub-slab vapor quality is anticipated. Therefore, increased future risk due to intrusion of soil vapors to indoor air is unlikely.

Compliance with SCGs: SG Alternative 1 would not achieve the chemical-specific SCGs listed in Table 4.3. Since no remedial action would be implemented, no action-specific or location-specific SCGs apply to SG Alternative 1.

Reduction of Toxicity, Mobility, or Volume: SG Alternative 1 provides no active reduction of toxicity, mobility, or volume of the COCs. However, over the long term, the volume and toxicity of COCs in sub-slab soil gas will be reduced through natural attenuation as groundwater COC concentrations decrease.

Short-Term Effectiveness: SG Alternative 1 requires no remedial actions. Therefore, there would be no additional short-term risks posed to the community, the workers, or the environment as a result of the implementation of this alternative.

Long-Term Effectiveness and Permanence: Because this Alternative would not result in any further remedial actions, the residual risks would not be reduced beyond that which will be achieved through natural attenuation and the ongoing building maintenance and indoor air monitoring programs. RAOs would not be met by SG Alternative 1, and a permanent remedy would not be provided.

Implementability: Because there are no remedial actions being undertaken, the implementability criterion is not applicable.

Cost: Because there are no remedial actions, institutional controls, or monitoring being undertaken, there are no costs associated with SG Alternative 1. The cost summary is presented in Table 7.11.

7.3.2 SOIL GAS ALTERNATIVE 2: SUB-SLAB VENTILATION

7.3.2.1 DESCRIPTION

Soil Gas Alternative 2 (SG Alternative 2), Sub-Slab Ventilation with Vapor Treatment As Required, consists of the installation of a sub-slab venting system beneath the floor slab of the manufacturing building. The venting system provides a preferential pathway for the migration of sub-slab soil gas, preventing its possible intrusion into indoor air.

At the Site, the sub-slab ventilation system would consist of vapor extraction wells connected to a vacuum system. The vacuum system would be of a size sufficient to provide adequate pressure to create and maintain a gradient for vapor flow into the system. For the purpose of the FS, it is assumed that six wells would be installed along the center line of the manufacturing building and that, to prevent odor nuisance, vented vapors would be passed through vapor phase carbon prior to discharge to ambient air.

7.3.2.2 ASSESSMENT

Overall Protection of Human Health and the Environment: The ongoing OSHA indoor air monitoring program demonstrates that there is currently no risk to human health posed by the presence of VOCs in soil vapor beneath the slab of the manufacturing building. SG Alternative 2 would be protective of future human health exposure through the collection of soil vapors.

Compliance with SCGs: SG Alternative 2 will achieve the chemical-specific SCGs as long as the vented vapors are treated. The action-specific SCGs that may apply to SG Alternative 2 are those listed in Table 4.4 under the headings:

i) Container Storage;
ii) Land Treatment;
iii) Surface Water Control;
iv) Treatment (in a unit);
v) Closure of Land Treatment Units;
vi) Transporting Hazardous Waste Off Site; and
vii) Vapor Emissions.

No location-specific SCGs apply to SG Alternative 2.

Reduction of Toxicity, Mobility, or Volume: SG Alternative 2 would reduce the mobility of COCs in soil gas. SG Alternative 2 would not provide reduction of toxicity or volume of the COCs in soil gas unless treatment is required.

Short-Term Effectiveness: Short-term hazards to workers during the ventilation system installation would be mitigated through the implementation of safe work practices and proper PPE. The short-term effectiveness of SG Alternative 2 would be almost immediate upon completion, as a result of the near-immediate reduction in potential COC migration into indoor air in the manufacturing building. No additional short-term risks would be posed to the community of the environment.

Long-Term Effectiveness and Permanence: The implementation of SG Alternative 2 will achieve the sub-slab soil gas RAOs through long-term maintenance of a negative pressure preventing flow of vapors to indoor air. Vapor treatment would permanently remove COCs from the soil gas. SG Alternative 2 would achieve the RAOs for sub-slab soil gas. The RAOs for groundwater or surface soil would not be met by SG Alternative 2.

Implementability: The implementability of SG Alternative 2 is dependent upon the construction details of the manufacturing building.

Cost: The estimated 30-year present worth cost for SG Alternative 2 as described in Section 7.3.2.1 is $155,000. The cost summary is presented in Table 7.12.

7.3.3 SOIL GAS ALTERNATIVE 3: SOIL VAPOR EXTRACTION WITH CARBON TREATMENT

7.3.3.1 DESCRIPTION

Soil Gas Alternative 3 (SG Alternative 3), Soil Vapor Extraction with Carbon Treatment, consists of the installation of a SVE system beneath the floor slab of the manufacturing building. The SVE system would actively extract soil vapors, promote additional volatilization from soil and/or groundwater, and ultimately prevent intrusion of sub-slab soil vapors into indoor air.

For the purpose of the FS, it is assumed that nine wells would be installed evenly spaced in the manufacturing building and that extracted vapors would be passed through vapor phase carbon for treatment prior to discharge to ambient air.

Monitoring of SG Alternative 3 would consist of monthly sampling of influent and effluent from the vapor treatment system with analysis of the samples for VOCs.

7.3.3.2 ASSESSMENT

Overall Protection of Human Health and the Environment: The ongoing OSHA indoor air monitoring program demonstrates that there is currently no risk to human health posed by the presence of VOCs in soil vapor beneath the slab of the manufacturing building. SG Alternative 3 would be protective of future human health exposure and the environment through the collection and treatment of soil vapors.

Compliance with SCGs: SG Alternative 3 would achieve the chemical-specific SCGs in sub-slab soil gas assuming that the on-going source of COCs (groundwater COC presence) is removed. The action-specific SCGs that may apply to SG Alternative 3 are those listed in Table 4.4 under the headings:

i) Container Storage;
ii) Land Treatment;
iii) Surface Water Control;
iv) Treatment (in a unit);

v) Closure of Land Treatment Units;

vi) Transporting Hazardous Waste Off Site; and

vii) Vapor Emissions.

The potentially applicable location-specific SCG for this Alternative is the Village of Clyde zoning ordinances and building codes.

Reduction of Toxicity, Mobility, or Volume: SG Alternative 3 would reduce the toxicity and mobility of COCs in soil gas. The volume of COCs in soil gas would be reduced by SG Alternative 3 once the ongoing source (COCs in groundwater) has been removed.

Short-Term Effectiveness: Short-term hazards to workers during the installation of the SVE system would be mitigated through the implementation of safe work practices and proper PPE. The short-term effectiveness of SG Alternative 3 would be almost immediate upon completion, as a result of the near-immediate reduction in potential COC migration into indoor air in the manufacturing building. No additional short-term risks would be posed to the community of the environment.

Long-Term Effectiveness and Permanence: The implementation of SG Alternative 3 will achieve the sub-slab soil gas RAOs through long-term extraction of vapors preventing flow of vapors to indoor air. Vapor treatment would permanently remove COCs from the soil gas. SG Alternative 3 would achieve the RAOs for sub-slab soil gas. The RAOs for groundwater or surface soil would not be met by SG Alternative 3.

Implementability: The implementability of SG Alternative 3 is dependent upon the ability to install an adequate number of extraction wells beneath the floor of the manufacturing building.

Cost: The estimated 30-year present worth cost for SG Alternative 3 as described in Section 7.3.3.1 is $777,000. The cost summary is presented in Table 7.13.

8.0 COMPARATIVE ANALYSES OF REMEDIAL ALTERNATIVES

The purpose of the comparative analysis is to identify the relative advantages and disadvantages of each Alternative evaluated in detail in the previous sections. The detailed evaluation assessed each remedial Alternative independently. The comparison of remedial alternatives in this section evaluates the relative performance of each Alternative with respect to the detailed evaluation criteria: overall protection of human health and the environment, compliance with SCGs, short term effectiveness, long-term effectiveness and permanence, reduction of toxicity, mobility, and volume, implementability and cost.

8.1 COMPARATIVE ANALYSIS OF GROUNDWATER REMEDIAL ALTERNATIVES

Table 8.1 presents a ranking of each of the groundwater remedial alternatives included in the detailed analysis presented in Section 7.1. Discussions of the relative advantages and disadvantages of the alternatives are presented in the following subsections.

Each of the groundwater remedial alternatives except the No Action Alternative would be combined with additional institutional controls and overburden and bedrock groundwater monitoring. The costs associated with the institutional controls and monitoring are included in the cost estimates presented in Tables 7.1 through 7.6.

8.1.1 OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

The groundwater remedial alternatives are ranked as follows relative to overall protection of human health and the environment:

i) GW Alternative 3, Enhanced Biodegradation with MNA and Institutional Control;

ii) GW Alternative 5, In-Well Air Stripping with Enhanced Biodegradation and Institutional Control;

iii) GW Alternative 4, PRB with Enhanced Biodegradation in Hotspots and Institutional Control;

iv) GW Alternative 6, Hydraulic Containment/Collection with On-Site Treatment and Disposal; GW Alternative 2, MNA with Institutional Control; and

v) GW Alternative 1, No Action.

GW Alternative 3, Enhanced Biodegradation with MNA and Institutional Control, would be the most protective of human health and the environment. In situ enhancement of biodegradation in the areas in which COC concentrations are the highest would immediately reduce chemical presence, consequently also immediately reducing the potential risk to human health and the environment. This would be especially effective in the hotspot areas beneath the manufacturing building which is the only area of the Site in which there is currently potential for human exposure to groundwater COCs (via transport to sub-slab soil vapor and subsequently to indoor air).

GW Alternative 5, In-Well Air Stripping with Enhanced Biodegradation in Hotspots and Institutional Control, is ranked second in protectiveness. GW Alternative 5 will immediately reduce chemical presence in groundwater beneath the manufacturing building with an associated immediate reduction in potential risk to human health due to transport of COCs to sub-slab soil vapor and subsequently to indoor air. GW Alternative 5 will also directly treat COC presence in groundwater in the former Barge Turnaround.

GW Alternative 4, PRB with Enhanced Biodegradation in Hotspots and Institutional Control, is ranked third in protection. GW Alternative 4 will immediately reduce chemical presence in groundwater beneath the manufacturing building with an associated immediate reduction in potential risk to human health due to transport of COCs to sub-slab soil vapor and subsequently to indoor air. GW Alternative 4 is deemed less protective than GW Alternative 5 because treatment in the former Barge Turnaround would occur at the rate at which groundwater flows through the reactive barrier. Thus, the restoration time for groundwater quality is expected to be longer with GW Alternative 4 than with GW Alternative 5.

The protectiveness provided by GW Alternative 6, Hydraulic Containment/Collection with On-Site Treatment and Disposal, is ranked fourth. GW Alternative 6 would effectively reduce the potential risk to human health and the environment primarily through containment of groundwater exhibiting COC presence. GW Alternative 6 would also provide reductions in COC presence; however, the dilution effects expected as waters are drawn into the system from the areas surrounding the former Barge Turnaround, which contain lower chemical concentrations, are expected to make this technology less efficient than most others. There would be no immediate reduction in the current potential for risk to human health (transport of COCs to indoor air) with the implementation of GW Alternative 6.

The monitoring conducted in conjunction with GW Alternative 2, MNA with Institutional Control, would make this Alternative more protective than GW Alternative 1 (No Action). However, the restoration of groundwater quality would not be accelerated beyond that which would be achieved by the natural attenuation processes. That being said, the studies conducted at the Site to date demonstrate that natural attenuation is effectively reducing chemical presence in the former Barge Turnaround area.

GW Alternative 1, No Action, provides the least additional protection to human health or the environment.

8.1.2 COMPLIANCE WITH SCGS

All the GW Alternatives considered for the Site will achieve compliance with SCGs over time. Groundwater Alternative 1, No Action, is ranked sixth in compliance with SCGs. All other alternatives are ranked equally, as each will achieve the chemical-specific SCGs either through natural attenuation or a combination of natural attenuation and another remedial technology. All groundwater alternatives will comply with the applicable action- and location-specific SCGs, where such exist.

8.1.3 REDUCTION OF TOXICITY, MOBILITY, AND VOLUME

All the GW Alternatives considered for the Site will achieve reductions in toxicity and volume over time. The groundwater remedial alternatives are ranked as follows relative to reduction of toxicity, mobility, and volume:

i) GW Alternative 4, PRB with Enhanced Biodegradation in Hotspots and Institutional Control;

ii) GW Alternative 6, Hydraulic Containment/Collection with On-Site Treatment and Disposal;

iii) GW Alternative 3, Enhanced Biodegradation with MNA and Institutional Control;

iv) GW Alternative 5, In-Well Air Stripping with Enhanced Biodegradation in Hotspots and Institutional Control;

v) GW Alternative 2, MNA with Institutional Control; and

vi) GW Alternative 1, No Action.

GW Alternative 4, PRB with Enhanced Biodegradation in Hotspots and Institutional Control, is ranked first in reduction of toxicity, mobility, and volume. The toxicity and volume of COCs in groundwater will be reduced by GW Alternative 4. As a result, the volume of COCs in sub-slab soil gas will also be reduced. GW Alternative 4 will also reduce the mobility of COCs in overburden groundwater by providing a barrier to additional off-Site migration.

GW Alternative 6, Hydraulic Containment/Collection with On-Site Treatment and Disposal, is ranked second in reduction of toxicity, mobility, and volume. However, this ranking is based on the presumption that this technology will provide additional reductions in toxicity and volume beyond those achieved through natural attenuation and that it does not inhibit the Site's ongoing natural attenuation processes. GW Alternative 6 would also provide a barrier to off-Site migration of overburden groundwater from the former Barge Turnaround.

GW Alternative 3, Enhanced Biodegradation with MNA and Institutional Control, is ranked third in reduction of toxicity, mobility, and volume. GW Alternative 3 will achieve reductions in toxicity and volume of COCs in groundwater. However, the mobility of impacted groundwater would not be reduced by GW Alternative 3.

GW Alternative 5, In-Well Air Stripping with Enhanced Biodegradation in Hotspots and Institutional Control, is ranked fourth in reduction of toxicity, mobility, and volume. Immediate reductions in toxicity and volume of COCs in groundwater in the immediate treatment area would be realized with GW Alternative 5. However, there is concern that the aeration of the groundwater aquifer, which will occur as a result of the implementation of this technology, will inhibit the Site's natural attenuation processes. A risk of increasing the mobility of COCs in groundwater and soil vapor is associated with GW Alternative 5.

GW Alternatives 1 and 2, No Action and MNA with Institutional Control are ranked sixth and fifth in reduction of toxicity, mobility, and volume, respectively. The reductions in toxicity and volume of COCs in groundwater will be the same in both remedial alternatives. However, the monitoring component of GW Alternative 2 will reduce mobility through identification of changes in groundwater flow patterns.

8.1.4 SHORT-TERM EFFECTIVENESS

The groundwater remedial alternatives are ranked as follows relative to short-term effectiveness:

i) GW Alternative 1, No Action;

ii) GW Alternative 2, MNA with Institutional Control;

iii) GW Alternative 3, Enhanced Biodegradation with MNA and Institutional Control;

iv) GW Alternative 5, In-Well Air Stripping with Enhanced Biodegradation in Hotspots and Institutional Control;

v) GW Alternative 6, Hydraulic Containment/Collection with On-Site Treatment and Disposal; and

vi) GW Alternative 4, PRB with Enhanced Biodegradation and Institutional Control.

No risk to the community, workers, or the environment would be presented by the implementation of GW Alternative 1, No Action. Therefore, GW Alternative 1 is ranked first in short-term effectiveness.

GW Alternative 2, MNA with Institutional Control, is ranked second in short-term effectiveness because a low risk to workers conducting monitoring activities would be present. However, this risk can be mitigated through proper work procedures.

The differences in short-term effectiveness associated with GW Alternatives 3 through 6 are associated with the risks posed by system construction, maintenance, and monitoring activities and the potential for spills or leaks of treatment solutions or extracted groundwater. All these risks can be minimized through the implementation of proper work procedures and operating plans.

GW Alternative 3, Enhanced Biodegradation with MNA and Institutional Control, is ranked third in short-term effectiveness. Risks to workers conducting monitoring activities are the same in GW Alternatives 2 and 3. However, there is additional risk and, as a result, less effectiveness in GW Alternative 3 due to the storage and handling of the in situ treatment solutions.

GW Alternative 5, In-Well Air Stripping with Enhanced Biodegradation in Hotspots and Institutional Control, is ranked fourth in short-term effectiveness. Risks to workers conducting monitoring activities are the same in GW Alternatives 2, 3, and 5. However, additional risk and potentially less effectiveness are associated with the maintenance and operation of the stripping wells and treatment system in GW Alternative 5.

GW Alternative 6, Hydraulic Containment/Collection with On-Site Treatment and Disposal, is ranked fifth in short-term effectiveness. Risks to workers conducting monitoring activities are the same in GW Alternatives 2, 3, 5, and 6. However, greater risk and potentially less effectiveness is associated with GW Alternative 6 through the maintenance and operation of the extraction and treatment systems and the potential for leaks or spills of untreated extracted groundwater.

GW Alternative 4, PRB with Enhanced Biodegradation and Institutional Control is ranked sixth in short-term effectiveness. This ranking is due to the more complex nature of the construction activities associated with this alternative, the greater potential for dust dispersion, and anticipated increase in vehicle access.

8.1.5 LONG-TERM EFFECTIVENESS AND PERMANENCE

The groundwater remedial alternatives are ranked as follows relative to long-term effectiveness and permanence:

i) GW Alternative 3, Enhanced Biodegradation with MNA and Institutional Control;
ii) GW Alternative 4, PRB with Enhanced Biodegradation and Institutional Control;
iii) GW Alternative 6, Hydraulic Containment/Collection with On-Site Treatment and Disposal;
iv) GW Alternative 5, In-Well Air Stripping with Enhanced Biodegradation in Hotspots and Institutional Control;
v) GW Alternative 2, MNA with Institutional Control; and
vi) GW Alternative 1, No Action.

No significant continuing sources of VOCs to groundwater remain at the Site. Therefore, since the Site's natural attenuation processes are effective for the destruction of COCs in groundwater, all remedial alternatives evaluated will provide long-term effectiveness and permanence.

GW Alternative 3, Enhanced Biodegradation with MNA and Institutional Control, is ranked first in long-term protectiveness and permanence because it is the most predictable of the alternatives and will reduce chemical concentrations through treatment (in situ biodegradation) thus accelerating the restoration of groundwater quality. The extent of natural attenuation at the Site is well defined and will effectively and permanently degrade and destroy the COCs in groundwater. The enforcement of the institutional controls will protect residents and workers until such time as the restoration of groundwater quality to the extent appropriate for the intended future land use is complete.

GW Alternative 4, PRB with Enhanced Biodegradation and Institutional Control, is ranked second in long-term protectiveness and permanence. GW Alternative 4 is ranked lower than GW Alternative 3 because the permanence of the reactive barrier is unknown.

GW Alternative 6, Hydraulic Containment/Collection with On-Site Treatment and Disposal, is ranked third in long-term protectiveness and permanence. More uncertainty as to long-term effectiveness is associated with GW Alternative 6 as it is difficult to establish and maintain hydraulic containment. In addition, the effect that groundwater pumping will have on the natural attenuation mechanisms is unknown. The permanence of the remedy is also uncertain as extraction well and treatment system maintenance may be problematic due to the high metals content of the groundwater and potential for fouling of well screens, pumps, and treatment equipment.

GW Alternative 5, In-Well Air Stripping with Enhanced Biodegradation in Hotspots and Institutional Control, is ranked fourth in long-term protectiveness and permanence. Uncertainties similar to those described for GW Alternative 6 are associated with GW Alternative 5. The implementation of GW Alternative 5 is more likely to interfere with the Site's ongoing natural attenuation processes and, therefore, be less effective over the long term than the alternatives discussed previously. The potential difficulty in the control of soil vapor migration with GW Alternative 5 also makes it less effective in mitigating risk to human health or the environment over the long term. As with GW Alternative 6, the permanence of the remedy is uncertain as circulation well maintenance may be problematic due to the fouling of the well screens.

GW Alternative 2, MNA with Institutional Control, provides greater long-term effectiveness than GW Alternative 1, No Action, through the monitoring of groundwater and enforcement of institutional controls for protection of residents and workers while restoration of groundwater quality is underway.

The long-term effectiveness and permanence of GW Alternative 1, No Action, is the lowest of the remedial alternatives evaluated. While the Site's ongoing natural attenuation processes will effectively and permanently restore groundwater quality over the long term, there would not be protection provided by the institutional controls which are part of the other remedies.

8.1.6 IMPLEMENTABILITY

The groundwater remedial alternatives are ranked as follows relative to implementability:

i) GW Alternative 1, No Action;

ii) GW Alternative 2, MNA with Institutional Control;

iii) GW Alternative 3, Enhanced Biodegradation with MNA and Institutional Control;

iv) GW Alternative 5, In-Well Air Stripping with Enhanced Biodegradation in Hotspots and Institutional Control;

v) GW Alternative 6, Hydraulic Containment/Collection with On-Site Treatment and Disposal; and

vi) GW Alternative 4, PRB with Enhanced Biodegradation and Institutional Control.

GW Alternative 1, No Action, would be the most implementable since there would be no work involved and thus no access to off-Site properties required, interference with ongoing facility operations, and no imposition or enforcement of institutional controls.

The ability to impose and enforce institutional controls is a major factor in the implementability of the other remedial alternatives. The other important factor is the acquisition of access permission to off-Site properties for construction/treatment and monitoring and maintenance.

The differences in ranking are primarily due to the access issues. GW Alternative 4, PRB with Enhanced Biodegradation and Institutional Control will require access to areas beyond the former Barge Turnaround for construction. Therefore, it is considered the most difficult to implement. The other alternatives are ranked based upon the extent access is required to the off-Site areas and the duration and frequency of system operation and maintenance.

8.1.7 COST

The cost associated with the implementation of the groundwater remedial alternatives is lowest for GW Alternative 1, No Action ($0). The costs of GW Alternatives 2 through 6 are $609,000, $876,000, $1,898,000, $2,504,000, and $2,991,000, respectively.

8.2 COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES FOR SURFACE SOIL

Table 8.2 presents a ranking of each of the surface soil remedial alternatives included in the detailed analysis presented in Section 7.2. Discussions of the relative advantages and disadvantages of the alternatives are presented in the following subsections.

8.2.1 OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

The surface soil remedial alternatives are ranked as follows relative to overall protection of human health and the environment:

i) SS Alternative 4, Excavation and Disposal;

ii) SS Alternative 3, Capping with Institutional Control;

iii) SS Alternative 2, Institutional Control and Fencing; and

iv) SS Alternative 1, No Further Action.

SS Alternative 4, Excavation and Disposal provide the highest overall protection of human health and the environment. Excavation of surface soils with disposal in accordance with applicable regulations will eliminate potential impacts on human health through removal and potential impacts to the environment through transport to off-Site areas. Subsurface soil exhibiting chemical presence may be left in place; however, it would be covered with the permeable backfill preventing incidental contact.

SS Alternative 3, Capping with Institutional Control, is protective although the impacted soils will remain in place. Potential incidental exposure to the soils or transport from the area will be eliminated because the soils will not be exposed. The institutional controls will mitigate worker exposure through safe work practices.

SS Alternative 2, Institutional Control and Fencing, will be protective of human health through the enforcement of institutional controls and restriction of access to the area in which the impacted soils are located. No additional protection of the environment will be afforded by SS Alternative 2.

SS Alternative 1, No Further Action, provides no protection to human health or the environment.

8.2.2 COMPLIANCE WITH SCGs

The surface soil remedial alternatives are ranked as follows relative to compliance with SCGs:

i) SS Alternative 4, Excavation and Disposal;

ii) SS Alternative 3, Capping with Institutional Control; and

iii) SS Alternative 2, Institutional Control and Fencing and SS Alternative 1, No Further Action.

SS Alternative 4, Excavation and Disposal, will comply with the chemical-specific SCGs for surface soil by removing the surface soils from the Site. Underlying soil would be covered with clean, imported fill.

SS Alternative 3, Capping with Institutional Control, will comply with the chemical-specific SCGs for surface soil by covering the existing surface soil with clean, imported fill.

Neither SS Alternative 1 (No Further Action) nor SS Alternative 2 (Institutional Control and Fencing) will comply with the chemical-specific SCGs.

All surface soil alternatives will comply with the applicable action- and location-specific SCGs, where such exist.

8.2.3 REDUCTION OF TOXICITY, MOBILITY, AND VOLUME

The surface soil remedial alternatives are ranked as follows regarding reduction of toxicity, mobility, and volume:

i) SS Alternative 4, Excavation and Disposal;

ii) SS Alternative 3, Capping with Institutional Control; and

iii) SS Alternative 2, Institutional Control and Fencing and SS Alternative 1, No Further Action.

SS Alternative 4, Excavation and Disposal, will reduce the mobility and volume of COCs in surface soils by removal from the Site. Toxicity will be reduced through proper disposal at a TSDF.

SS Alternative 3, Capping with Institutional Control, will result in reduction in mobility of COCs in surface soil but will not effect the toxicity or volume.

Neither SS Alternative 1, No Further Action, nor SS Alternative 2, Institutional Control and Fencing, will actively reduce the toxicity, mobility, or volume of the COCs in surface soil.

8.2.4 SHORT-TERM EFFECTIVENESS

The surface soil remedial alternatives are ranked as follows regarding short-term effectiveness:

i) SS Alternative 1, No Further Action;

ii) SS Alternative 2, Institutional Control and Fencing;

iii) SS Alternative 3, Capping with Institutional Control; and

iv) SS Alternative 4, Excavation and Disposal.

No risk to the community, workers, or the environment would be presented by the implementation of SS Alternative 1, No Further Action.

A low risk to community, workers, or the environment would be presented by SS Alternatives 2 and 3, Institutional Control and Fencing and Capping with Institutional Control. However, these risks can be mitigated through proper work procedures. SS Alternative 3 is ranked lower than SS Alternative 2 since handling of impacted surface soils (e.g., grading) may be required.

The greatest risk to the community, workers, or the environment would be presented by the implementation of SS Alternative 4, Excavation and Disposal. All these risks can be minimized through the implementation of proper work procedures and community monitoring plans.

8.2.5 LONG-TERM EFFECTIVENESS AND PERMANENCE

The surface soil remedial alternatives are ranked as follows relative to long-term effectiveness and permanence:

i) SS Alternative 4, Excavation and Disposal;

ii) SS Alternative 3, Capping with Institutional Control;

iii) SS Alternative 2, Institutional Control and Fencing; and

iv) SS Alternative 1, No Further Action.

SS Alternative 4, Excavation and Disposal, provides both long-term effectiveness and permanence through removal of the impacted surface soil from the Site.

SS Alternative 3, Capping with Institutional Control, is similar to SS Alternative 4 in that it can provide long-term effectiveness. However, SS Alternative 3 does not provide a permanent remedy, as the impacted soil will remain in place. Risks associated with the remaining soil will be mitigated through the maintenance of the cap and enforcement of the institutional controls for protection of workers required to perform sub-surface activities in the area.

SS Alternative 2, Institutional Control and Fencing, can provide long-term effectiveness by preventing incidental contact with impacted surface soil. However, SS Alternative 2 does not provide a permanent remedy.

No long-term effectiveness or permanence is provided by SS Alternative 1, No Further Action.

8.2.6 IMPLEMENTABILITY

The surface soil remedial alternatives are ranked as follows for implementability:

i) SS Alternative 1, No Further Action;

ii) SS Alternative 2, Institutional Control and Fencing;

iii) SS Alternative 3, Capping with Institutional Control; and

iv) SS Alternative 4, Excavation and Disposal.

SS Alternative 1 would be the most implementable since there would be no work involved.

The implementability of the other alternatives is primarily dependent upon:

i) the ability to obtain access to off-Site properties for construction and long-term maintenance; and
ii) the complexity of the construction activities.

Assuming that access is acquired, SS Alternative 4, Excavation and Disposal, would be the most difficult to implement.

The former Barge Turnaround is a lowlying area, which is wet during most seasons. Implementation of SS Alternative 4 would be very difficult if the excavation were to be conducted under these wet conditions. Dewatering of excavated materials with containment and possibly treatment of water would be difficult to implement and would add significant additional cost.

8.2.7 COST

The cost associated with the implementation of the surface soil remedial alternatives is lowest for SS Alternative 1, No Further Action ($0). The costs of SS Alternatives 2 through 4 are $54,500, $73,500, and $115,000, respectively. There is a high degree of uncertainty associated with the cost of SS Alternative 4, Excavation and Disposal. These uncertainties include the extent of the excavation due to the presence of fill materials from other sources, the unknown characterization of the excavated materials for disposal, and the handling of excavated soils and water should the excavation have to be conducted during wet periods.

8.3 COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES FOR SUB-SLAB SOIL VAPOR

Table 8.3 presents a ranking of each of the sub-slab soil vapor remedial alternatives included in the detailed analysis presented in Section 7.3. Discussions of the relative advantages and disadvantages of the alternatives are presented in the following subsections.

8.3.1 OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

The sub-slab soil vapor remedial alternatives are ranked as follows relative to overall protection of human health and the environment:

i) SG Alternative 2, Sub-Slab Ventilation;

ii) SG Alternative 3, Soil Vapor Extraction; and

iii) SG Alternative 1, No Action.

SG Alternative 2, Sub-Slab Ventilation, will be protective of human health through the venting of sub-slab vapors to ambient air thus preventing intrusion into indoor air.

SG Alternative 3, Soil Vapor Extraction, would also be protective of human health through the extraction of sub-slab vapors thus preventing intrusion into indoor air. However, there is potential that the vapor extraction process could interfere with the natural attenuation processes for COCs in groundwater beneath the manufacturing building.

SG Alternative 1, No Action, provides no additional protection to human health or the environment.

8.3.2 COMPLIANCE WITH SCGS

The sub-slab soil vapor remedial alternatives are ranked as follows relative to compliance with SCGs:

i) SG Alternative 3, Sub-Slab Ventilation;

ii) SG Alternative 2, Soil Vapor Extraction; and

iii) SG Alternative 1, No Action.

There are no promulgated chemical-specific SCGs applicable directly to sub-slab soil vapors. Over time, VOC concentrations in sub-slab soil vapor will be reduced through combinations of natural attenuation and the implementation of groundwater and/or sub-slab soil vapor remedial alternatives. The ranking of the sub-slab soil vapor remedial alternatives is based on these anticipated reductions.

SG Alternative 3, Soil Vapor Extraction, would reduce concentrations of VOCs in sub-slab soil vapor over time.

SG Alternative 2, Sub-Slab Ventilation, will reduce concentrations of VOCs in sub-slab soil vapor if the vented vapors are treated and will prevent migration of VOCs in sub-slab vapor into the indoor air of the manufacturing building.

SG Alternative 1, No Action, will not reduce concentrations of VOCs in sub-slab soil vapor nor will it address intrusion of sub-slab vapors into indoor air.

All sub-slab soil vapor alternatives will comply with the applicable action- and location-specific SCGs.

8.3.3 REDUCTION OF TOXICITY, MOBILITY, AND VOLUME

The sub-slab soil vapor remedial alternatives are ranked as follows relative to reduction of toxicity, mobility, and volume:

i) SG Alternative 3, Sub-Slab Ventilation;
ii) SG Alternative 2, Soil Vapor Extraction; and
iii) SG Alternative 1, No Action.

SG Alternative 3, Soil Vapor Extraction, will reduce the toxicity, mobility, and volume of VOCs in sub-slab soil vapor through extraction of the vapors with treatment prior to discharge to ambient air.

SG Alternative 2, Sub-Slab Ventilation, will reduce the mobility of soil vapors by preventing intrusion into indoor air. SG Alternative 2 will not reduce the toxicity or volume of VOCs in sub-slab soil vapor.

SG Alternative 1, No Action, will not actively reduce the toxicity, mobility, or volume of the VOCs in sub-slab soil vapor.

8.3.4 SHORT-TERM EFFECTIVENESS

The sub-slab soil vapor remedial alternatives are ranked as follows for short-term effectiveness:

i) SG Alternative 1, No Action;

ii) SG Alternative 2, Sub-Slab Ventilation; and

iii) SG Alternative 3, Soil Vapor Extraction.

No risk to the community, workers, or the environment would be presented by the implementation of SG Alternative 1, No Action.

A low risk to workers inside the manufacturing building would be presented by SG Alternatives 2 and 3 during construction. However, these risks can be mitigated through proper work procedures and scheduling. SG Alternative 3 has additional potential risk associated with discharge of extracted vapors.

8.3.5 LONG-TERM EFFECTIVENESS AND PERMANENCE

The sub-slab soil vapor remedial alternatives are ranked as follows for long-term effectiveness:

i) SG Alternative 3, Soil Vapor Extraction;

ii) SG Alternative 2, Sub-Slab Ventilation; and

iii) SG Alternative 1, No Action.

SG Alternative 3, Soil Vapor Extraction, can provide long-term effectiveness through the extraction of sub-slab soil vapors and a permanent remedy through the treatment of VOCs in the extracted vapors.

SG Alternative 2, Sub-Slab Ventilation, can provide long-term effectiveness through the mitigation of soil vapor intrusion into indoor air. However, SG Alternative 2 does not provide a permanent remedy in that VOCs present in sub-slab vapors will not be destroyed. Nonetheless, the venting of vapors to ambient air (with treatment , if necessary) will be protective of human health.

No long-term effectiveness or permanence is provided by SG Alternative 1, No Action.

8.3.6 IMPLEMENTABILITY

The sub-slab soil vapor remedial alternatives are ranked as follows for implementability:

i) SG Alternative 1, No Action;

ii) SG Alternative 2, Sub-Slab Ventilation; and

iii) SG Alternative 3, Soil Vapor Extraction

SG Alternative 1 would be the most implementable since there would be no work involved.

SG Alternative 2, Sub-Slab Ventilation, is implementable with difficulty due to interference with manufacturing activities. These interferences can be minimized through adjusting work schedules during construction and through proper siting of permanent features of the ventilation system.

SG Alternative 3, Soil Vapor Extraction, will be the most difficult to implement due to the more extensive extraction and treatment systems.

8.3.7 <u>COST</u>

The cost associated with the implementation of the sub-slab soil vapor remedial alternatives is lowest for SG Alternative 1, No Action ($0). The costs of SG Alternatives 2 and 3 are $155,000 and $777,000, respectively.

9.0 RECOMMENDED REMEDIAL ALTERNATIVE

The remedial Alternative recommended for the Site is a combination of remedial alternatives for groundwater, surface soil, and sub-slab soil vapor. The recommended remedial Alternative is:

i) GW Alternative 3, Enhanced Biodegradation with MNA and Institutional Control;

ii) SS Alternative 3, Capping; and

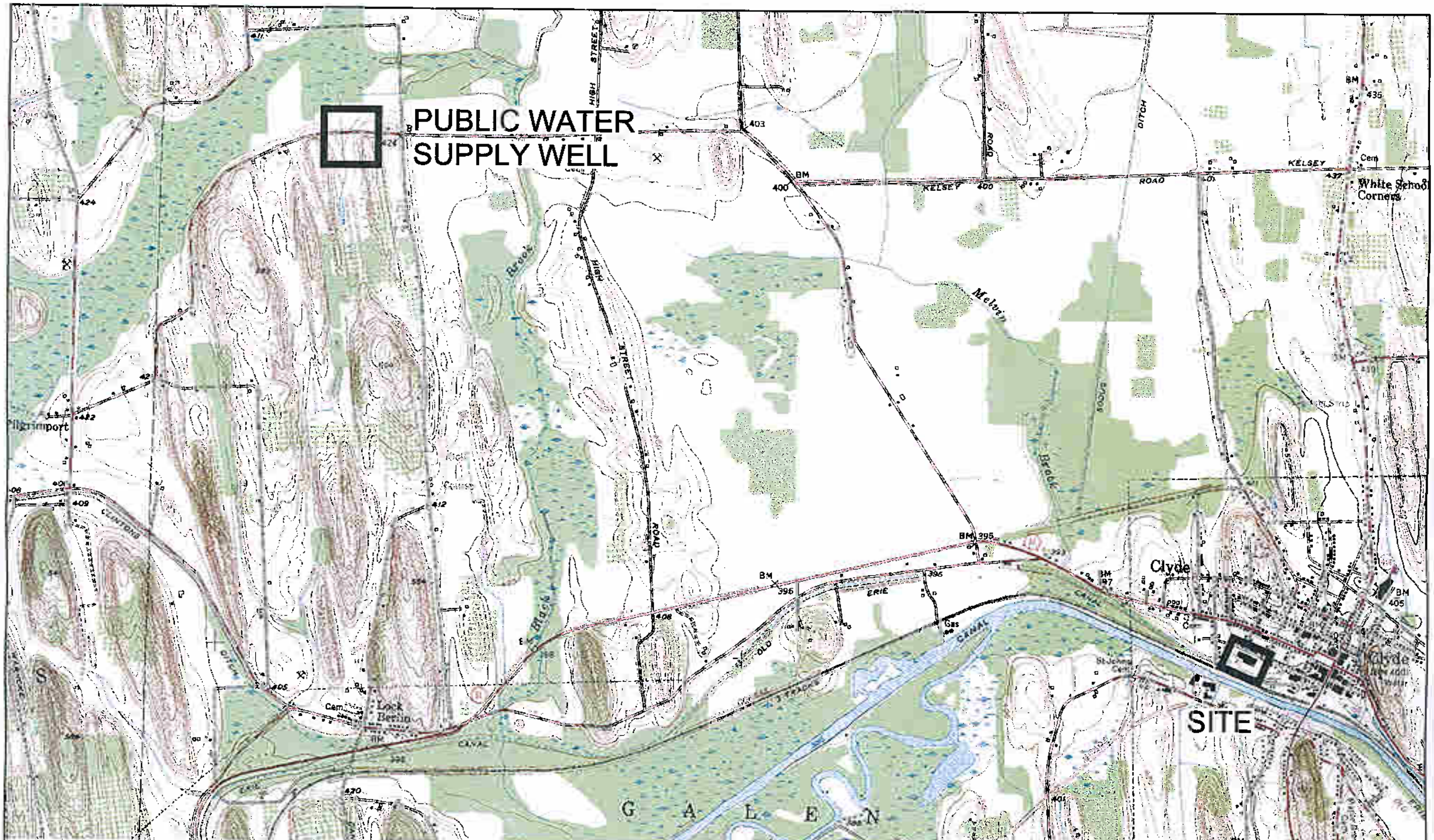
iii) SG Alternative 2, Sub-Slab Ventilation.

This combination of remedial alternatives will achieve the RAOs for each of the environmental media as discussed previously in this FS Report.

The total estimated cost of the recommended remedial Alternative is $1,104,500.

10.0 REFERENCES

- NYSDEC, "Technical and Guidance Memorandum #4030, Selection of Remedial Actions at Inactive Hazardous Waste Sites," May 15, 1990.
- O'Brien and Gere Engineers, Inc., "Fish and Wildlife Impact Analysis, Old Erie Canal Site, Clyde, New York," November 2003.
- O'Brien and Gere Engineers, Inc., "Remedial Investigation/Feasibility Study Work Plan, Old Erie Canal Site, Clyde, New York," November 27, 2001.
- O'Brien and Gere Engineers, Inc., "Remedial Investigation Report, Old Erie Canal Site, Clyde, New York," November 24, 2003.
- 6 NYCRR Part 701, "Classifications-surface Waters and Groundwaters."
- New York State Department of Environmental Conservation, "DAR-1 AGC/SGC Tables," December 22, 2003.
- New York State Department of Health, "Guidance for Evaluating Soil Vapor Intrusion in the State of New York, Public Comment Draft," February 2005.
- Correspondence from J. R. Heckathorne, P.E. (O'Brien & Gere) to D. G. Pratt, P.E. (NYSDEC), dated December 23, 2003.
- New York State Department of Environmental Conservation, Division Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels, January 24, 1994 [TAGM 4046]
- Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Reissued June 1998 [TOGS 1.1.1]
- Federal Remediation Technologies Roundtable, "Remediation Technologies Screening Matrix and Reference Guide," Version 4.0.
- O'Brien and Gere Engineers, Inc., "Supplemental Ground Water Investigation Summary Report, Old Erie Canal site, Clyde, New York," March 29, 2007.

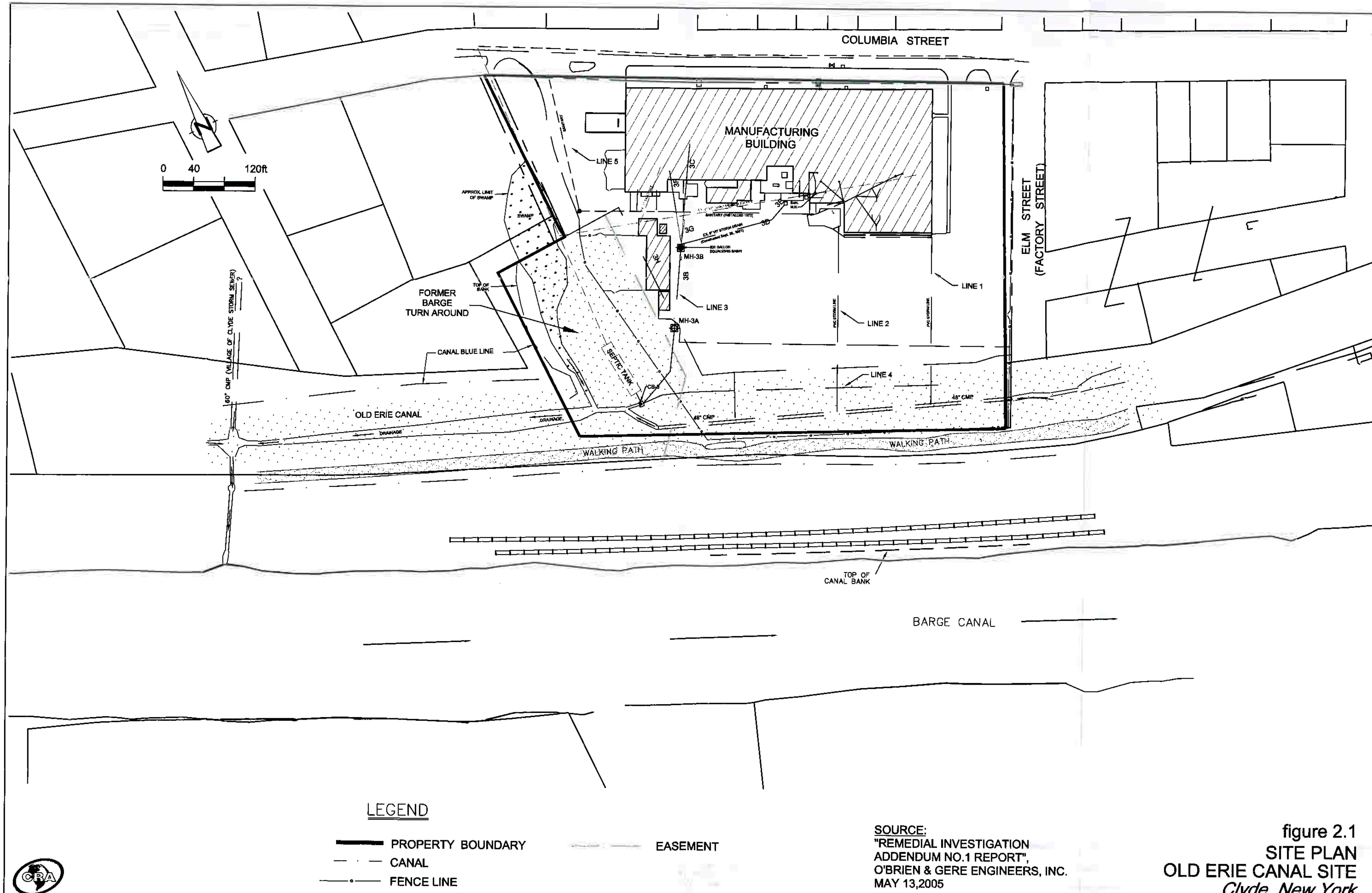


SOURCE:
USGS, USC&GS,TVA, NEW YORK
QUADRANGLE, DATED 1953

figure 1.1

SITE LOCATION MAP
OLD ERIE CANAL SITE
Clyde, New York

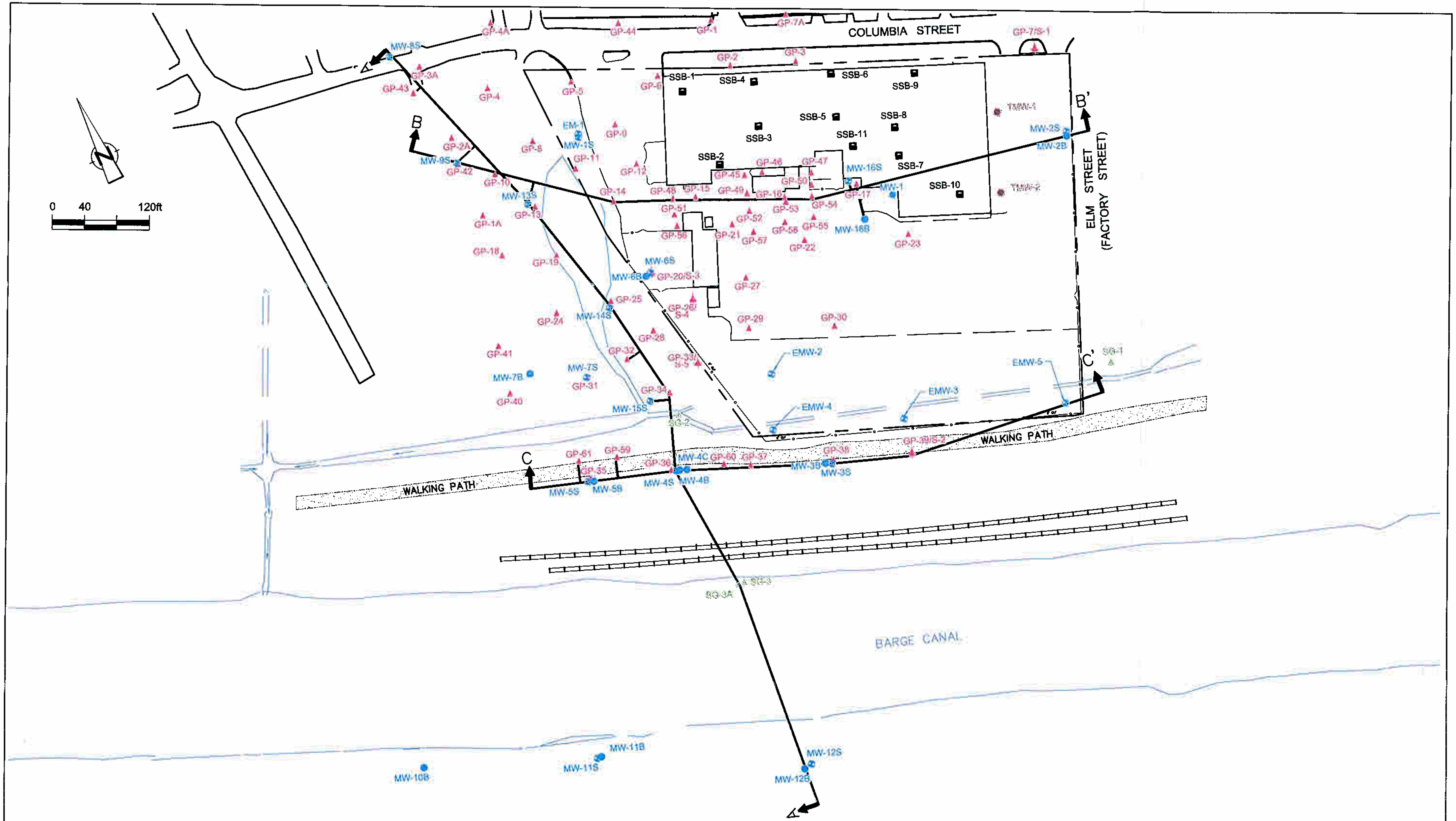
35048-00(SOURCE)GN-NF001 OCT 05/2005



SOURCE:
"REMEDIAL INVESTIGATION ADDENDUM NO.1 REPORT",
O'BRIEN & GERE ENGINEERS, INC.
MAY 13,2005

figure 2.1
SITE PLAN
OLD ERIE CANAL SITE
Clyde, New York

35048-01(002)GN-BE001 MAR 14/2007



LEGEND

PROPERTY BOUNDARY
CANAL
STORM SEWER
48-INCH CMP

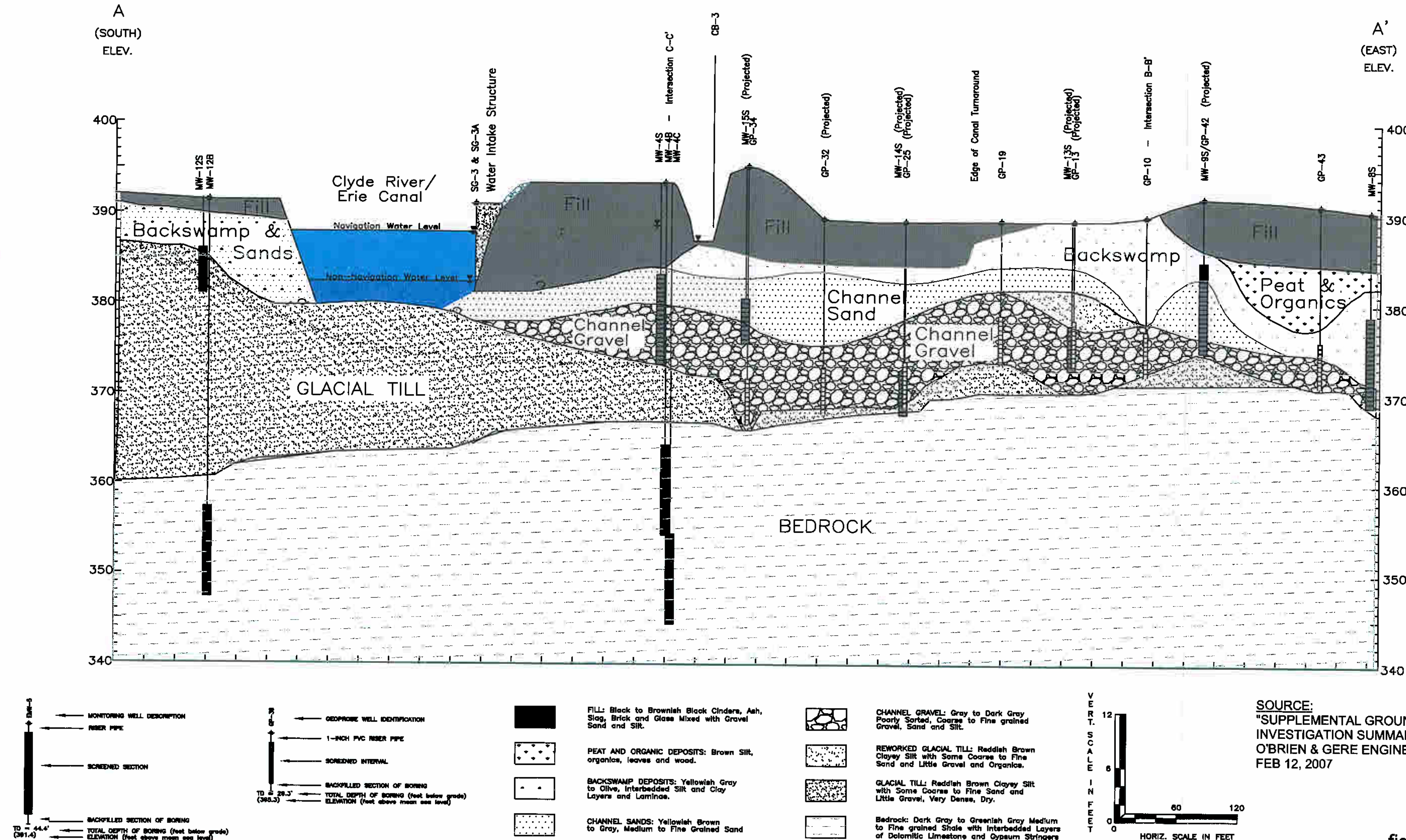
MW-3S OVERBURDEN MONITORING WELL
MW-3B BEDROCK MONITORING WELL
GP-39 DIRECT PUSH SAMPLE LOCATION
GP-7/S-1 DIRECT PUSH AND SUBSURFACE SOIL SAMPLE LOCATION
SSB-10 SUB-SLAB SOIL AND GROUND WATER SAMPLE LOCATION
TEMPORARY MONITORING WELL

CRA

figure 3.1

CROSS SECTION LOCATION MAP
OLD ERIE CANAL SITE
Clyde, New York

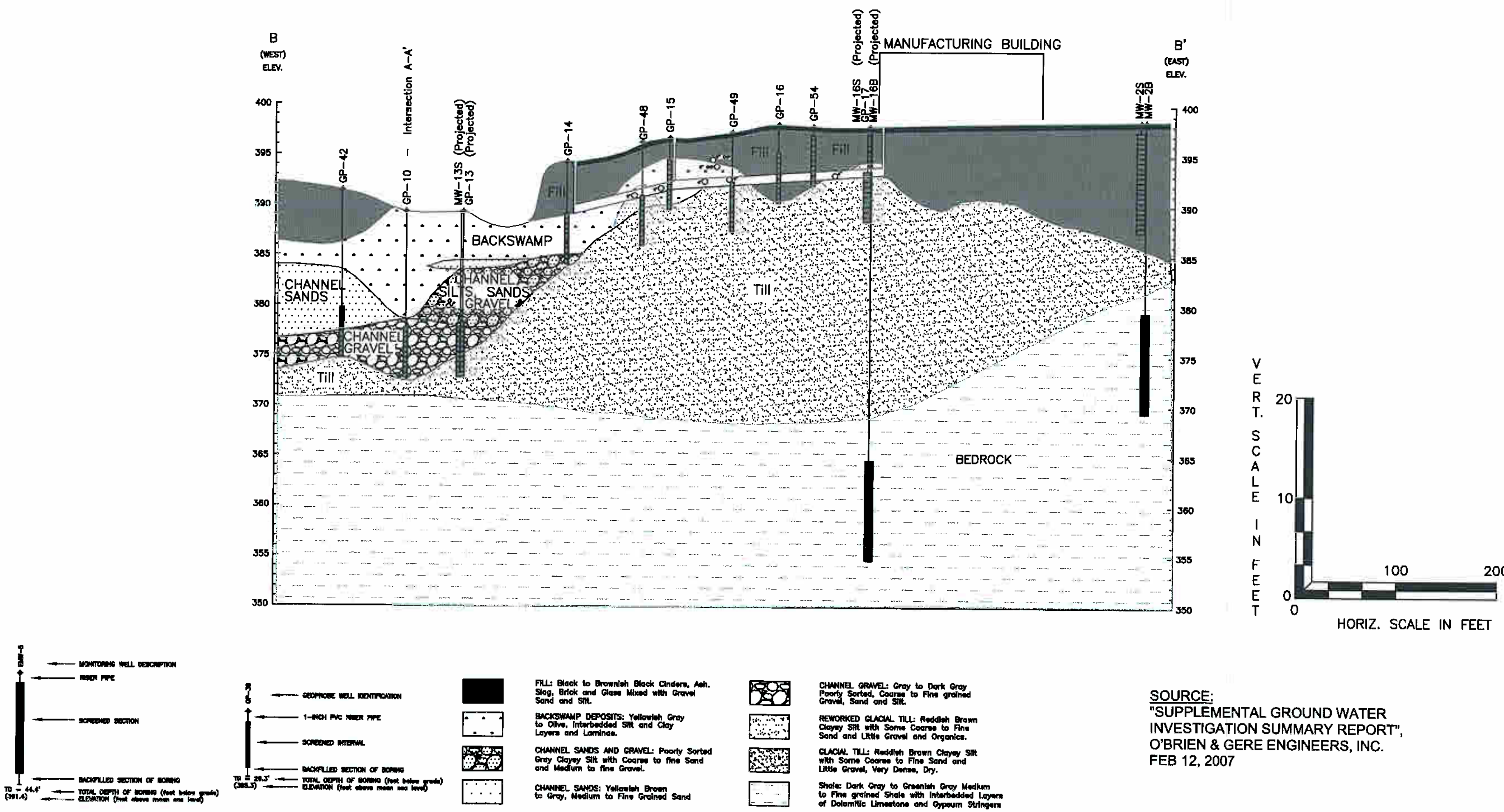
35048-01(002)GN-BE005 MAR 19/2007



SOURCE:
"SUPPLEMENTAL GROUND WATER INVESTIGATION SUMMARY REPORT", O'BRIEN & GERE ENGINEERS, INC. FEB 12, 2007

figure 3.2

NORTH-SOUTH GEOLOGIC CROSS SECTION A-A'
OLD ERIE CANAL SITE
Clyde, New York

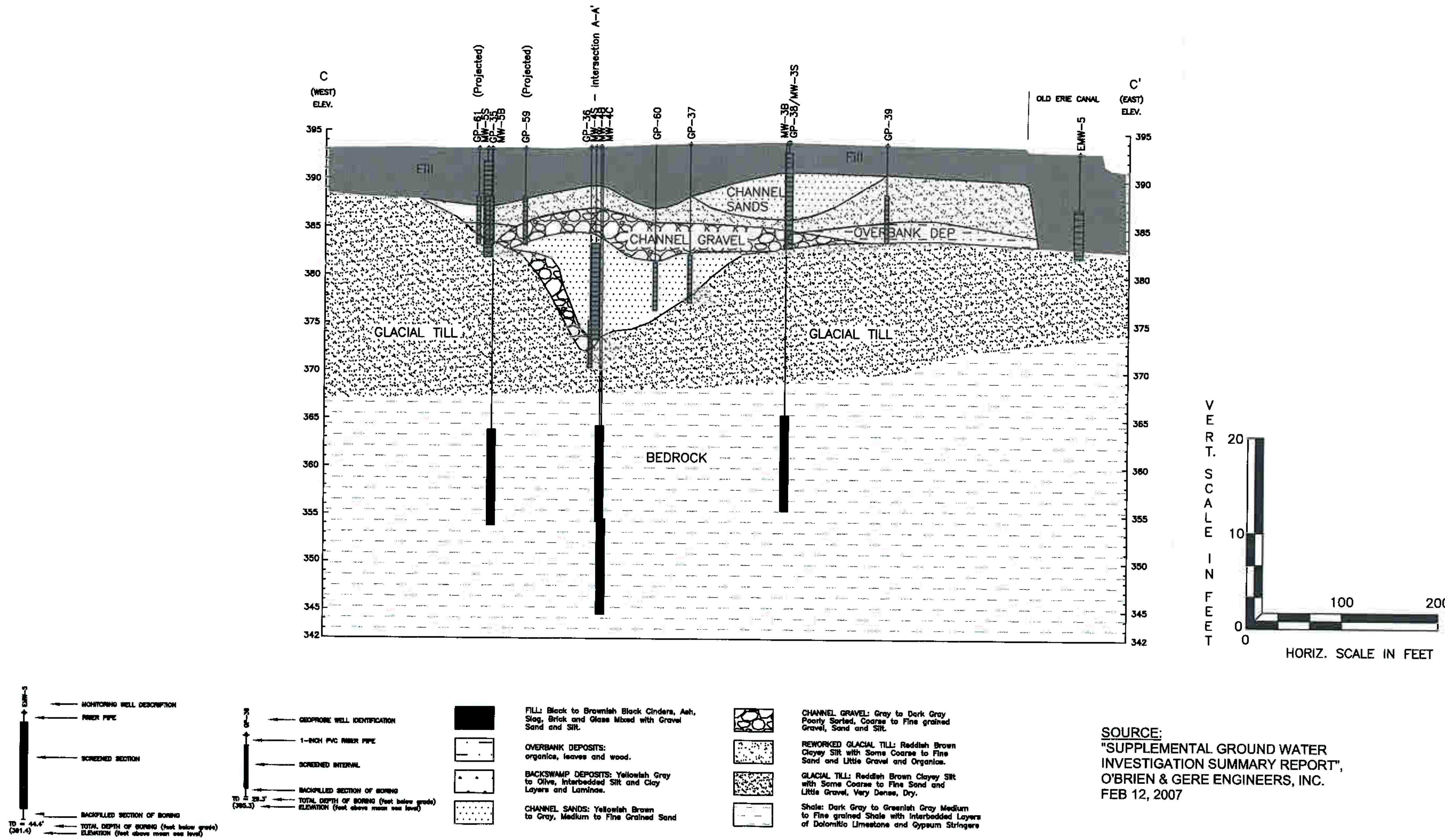


SOURCE:
"SUPPLEMENTAL GROUND WATER INVESTIGATION SUMMARY REPORT",
O'BRIEN & GERE ENGINEERS, INC.
FEB 12, 2007

figure 3.3

EAST-WEST GEOLOGIC
CROSS SECTION B-B'
OLD ERIE CANAL SITE
Clyde, New York

35048-01(002)GN-BE007 MAR 20/2007

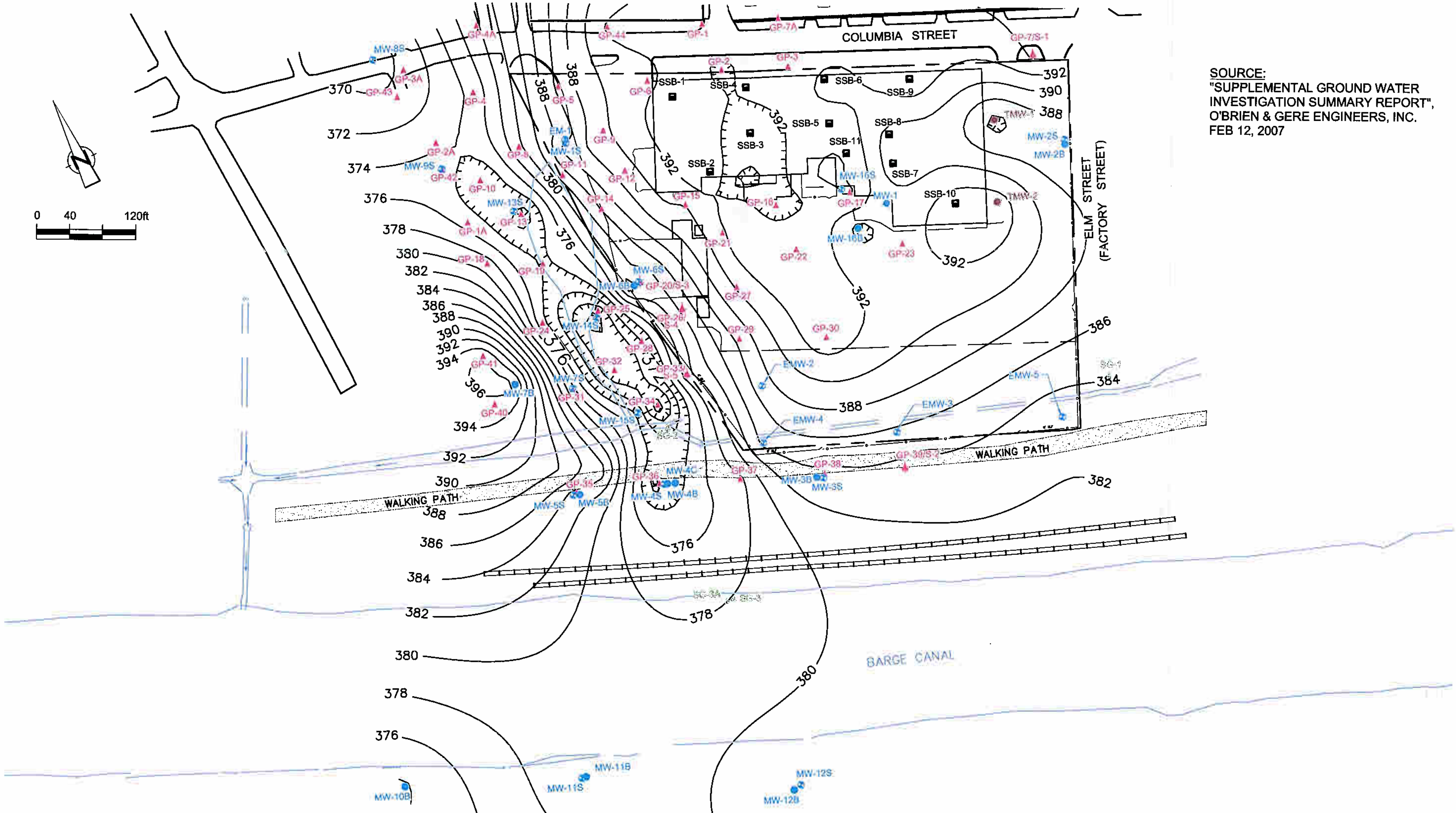


SOURCE:
"SUPPLEMENTAL GROUND WATER INVESTIGATION SUMMARY REPORT",
O'BRIEN & GERE ENGINEERS, INC.
FEB 12, 2007

figure 3.4

EAST-WEST GEOLOGIC CROSS SECTION C-C'
OLD ERIE CANAL SITE
Clyde, New York

35048-01(002)GN-BE008 MAR 20/2007



SOURCE:
"SUPPLEMENTAL GROUND WATER INVESTIGATION SUMMARY REPORT", O'BRIEN & GERE ENGINEERS, INC. FEB 12, 2007

LEGEND

PROPERTY BOUNDARY
CANAL
STORM SEWER
48-INCH CMP

MW-3S OVERBURDEN MONITORING WELL
MW-3B BEDROCK MONITORING WELL
GP-39 DIRECT PUSH SAMPLE LOCATION
GP-7/S-1 DIRECT PUSH AND SUBSURFACE SOIL SAMPLE LOCATION
SSB-10 SUB-SLAB SOIL AND GROUND WATER SAMPLE LOCATION
TEMPORARY MONITORING WELL
TEMPORARY MONITORING WELL INSTALLED DURING

CRA

figure 3.5
TOP OF TILL CONTOUR MAP
OLD ERIE CANAL SITE
Clyde, New York

35048-01(002)GN-BE010 MAR 29/2007

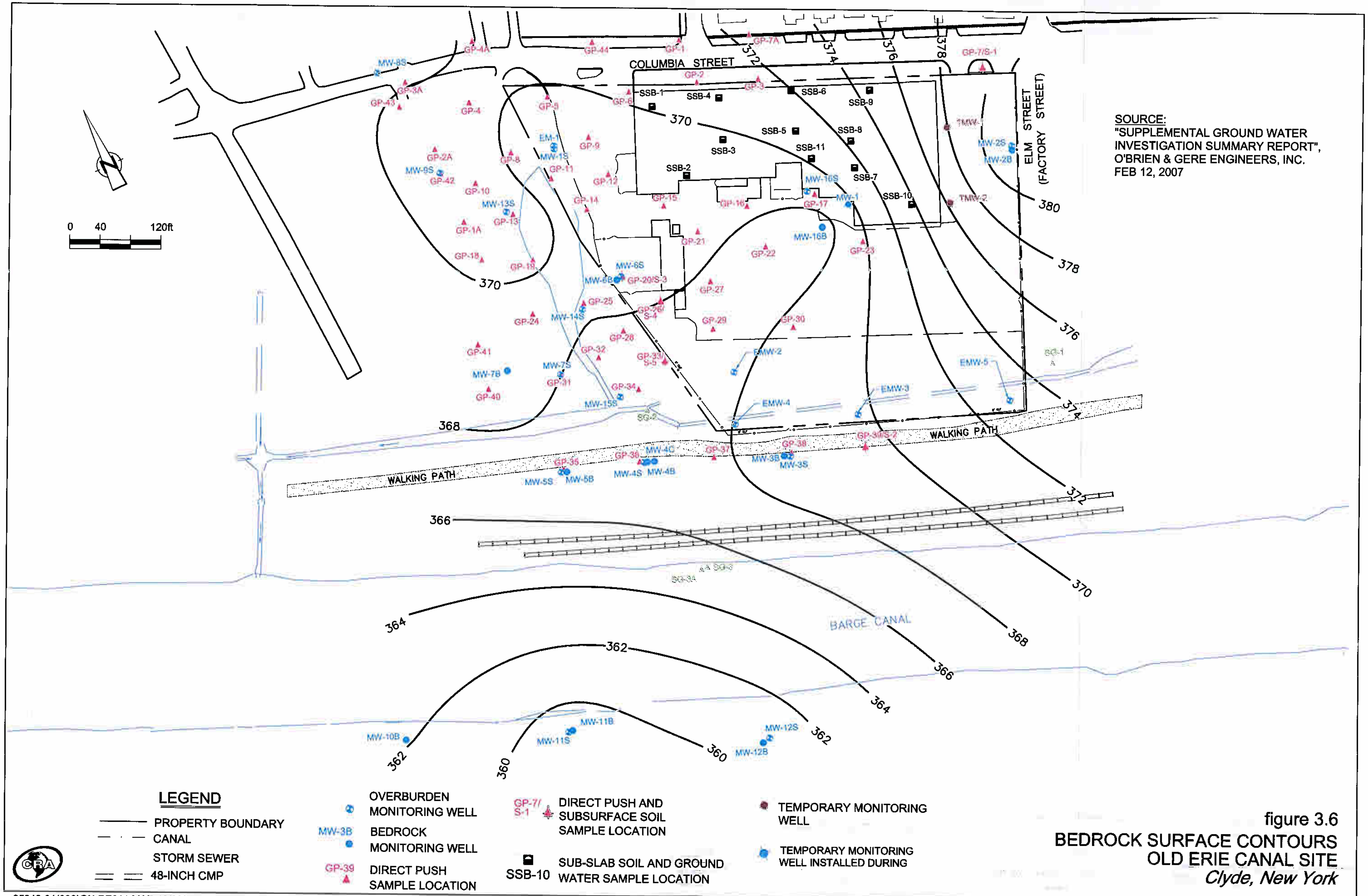


figure 3.6

BEDROCK SURFACE CONTOURS
OLD ERIE CANAL SITE
Clyde, New York

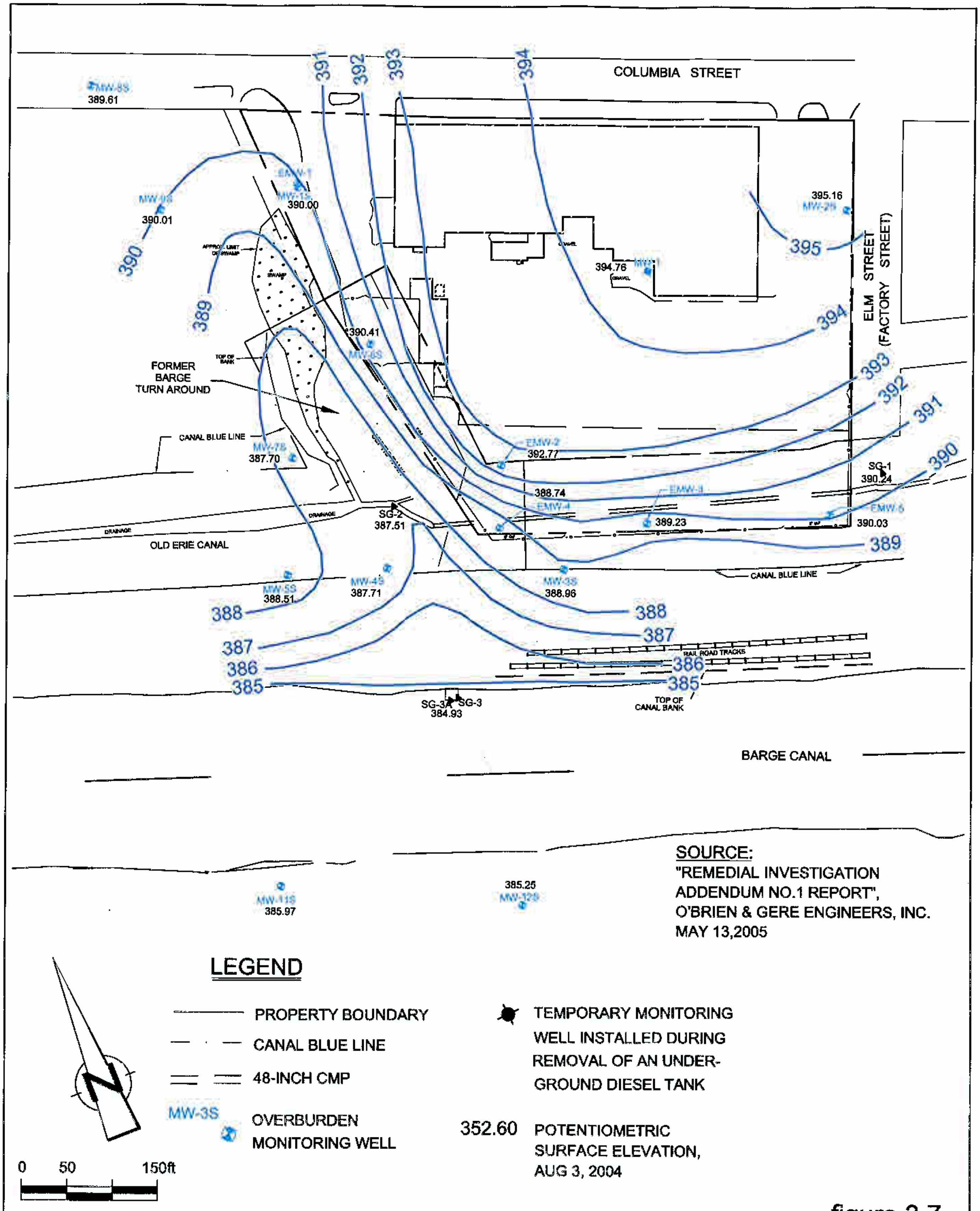


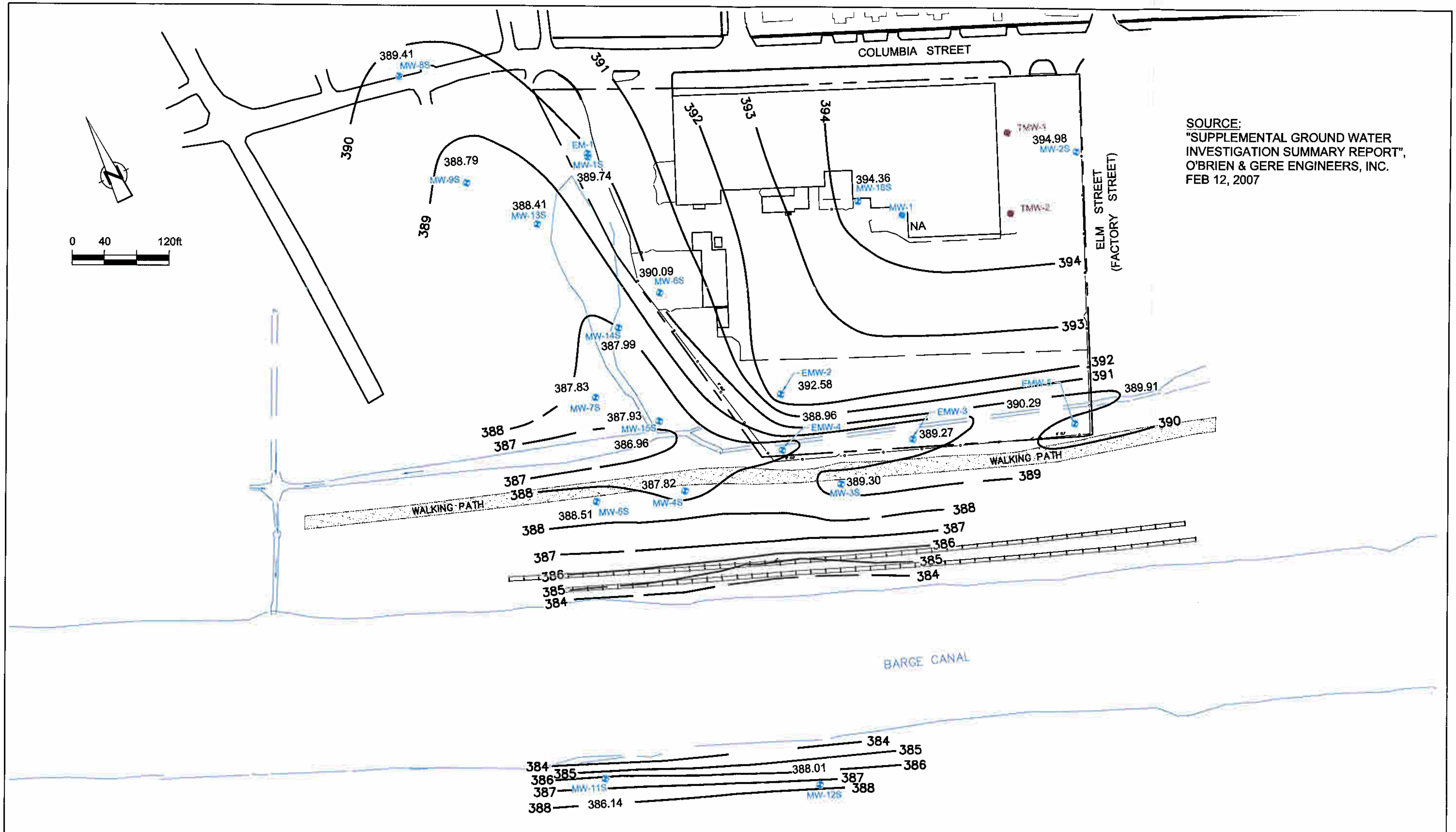
figure 3.7

OVERBURDEN POTENTIOMETRIC CONTOURS - AUGUST 2004

OLD ERIE CANAL SITE

Clyde, New York

35048-01(002)GN-BE012 MAR 20/2007



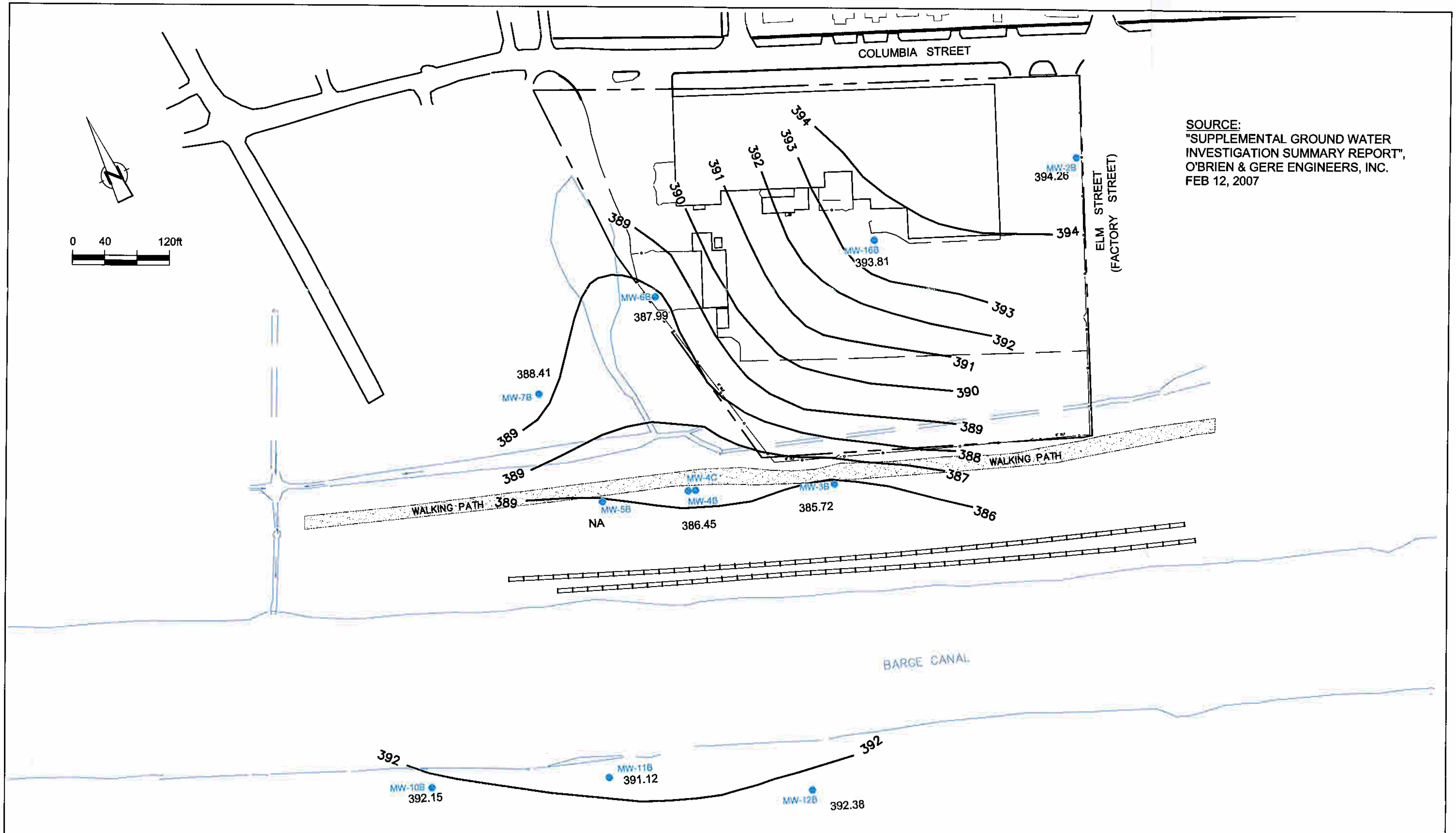
LEGEND

- PROPERTY BOUNDARY
- CANAL
- STORM SEWER
- 48-INCH CMP
- OVERBURDEN MONITORING WELL
- TEMPORARY MONITORING WELL INSTALLED DURING
- 352.60 POTENTIOMETRIC SURFACE ELEVATION, NOVEMBER 28, 2006
- DIRECT PUSH AND SUBSURFACE SOIL SAMPLE LOCATION
- TEMPORARY MONITORING WELL

figure 3.8

OVERBURDEN POTENTIOMETRIC CONTOURS - NOVEMBER 2006
OLD ERIE CANAL SITE
Clyde, New York

35048-01(002)GN-BE042 MAR 19/2007

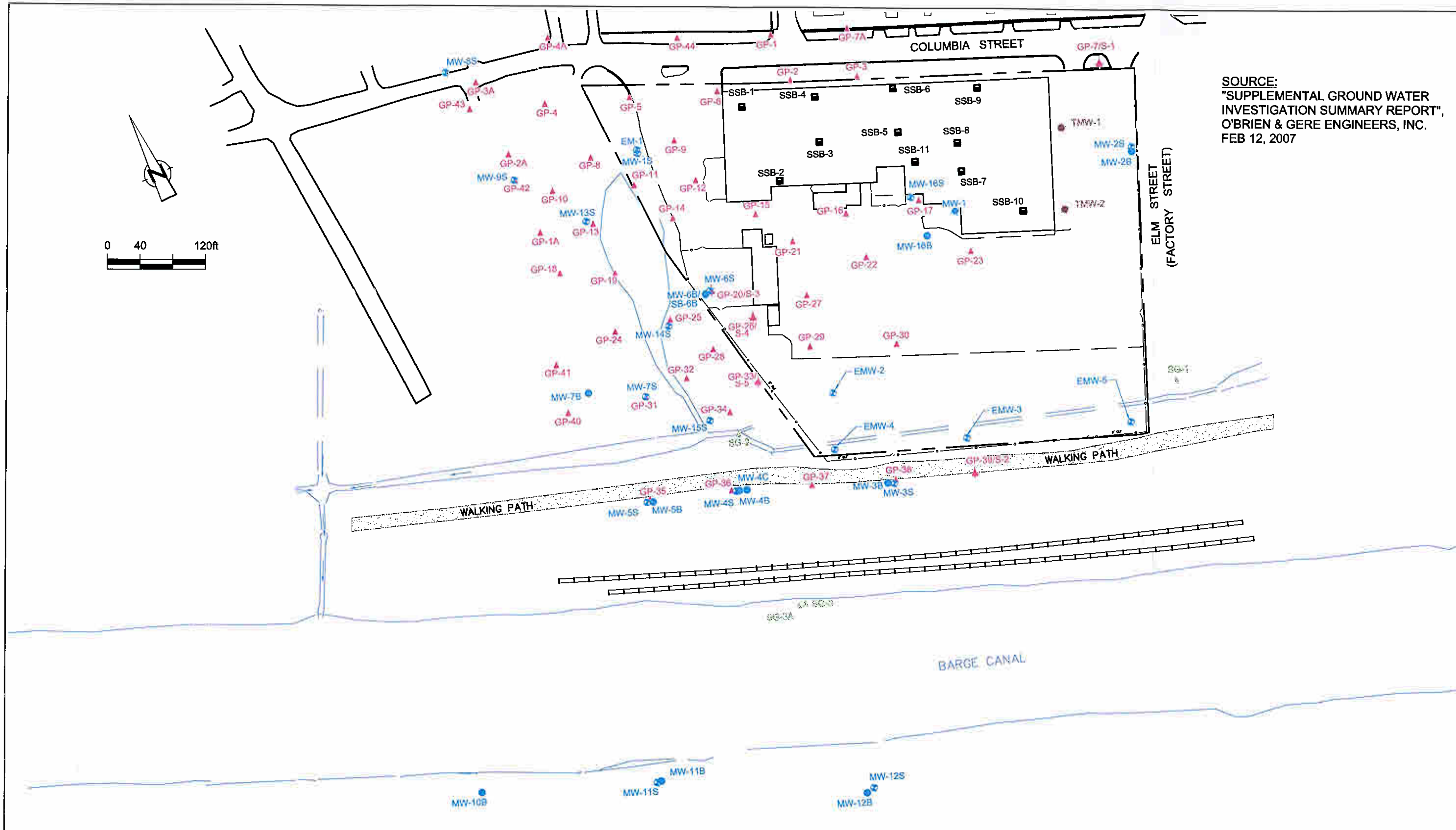


LEGEND

PROPERTY BOUNDARY
CANAL
STORM SEWER
48-INCH CMP
MW-3B BEDROCK MONITORING WELL
352.60 POTENTIOMETRIC SURFACE ELEVATION, NOVEMBER 28, 2006

figure 3.9
SHALLOW BEDROCK POTENTIOMETRIC CONTOURS - NOVEMBER 2006
OLD ERIE CANAL SITE
Clyde, New York

35048-01(002)GN-BE043 MAR 20/2007



LEGEND

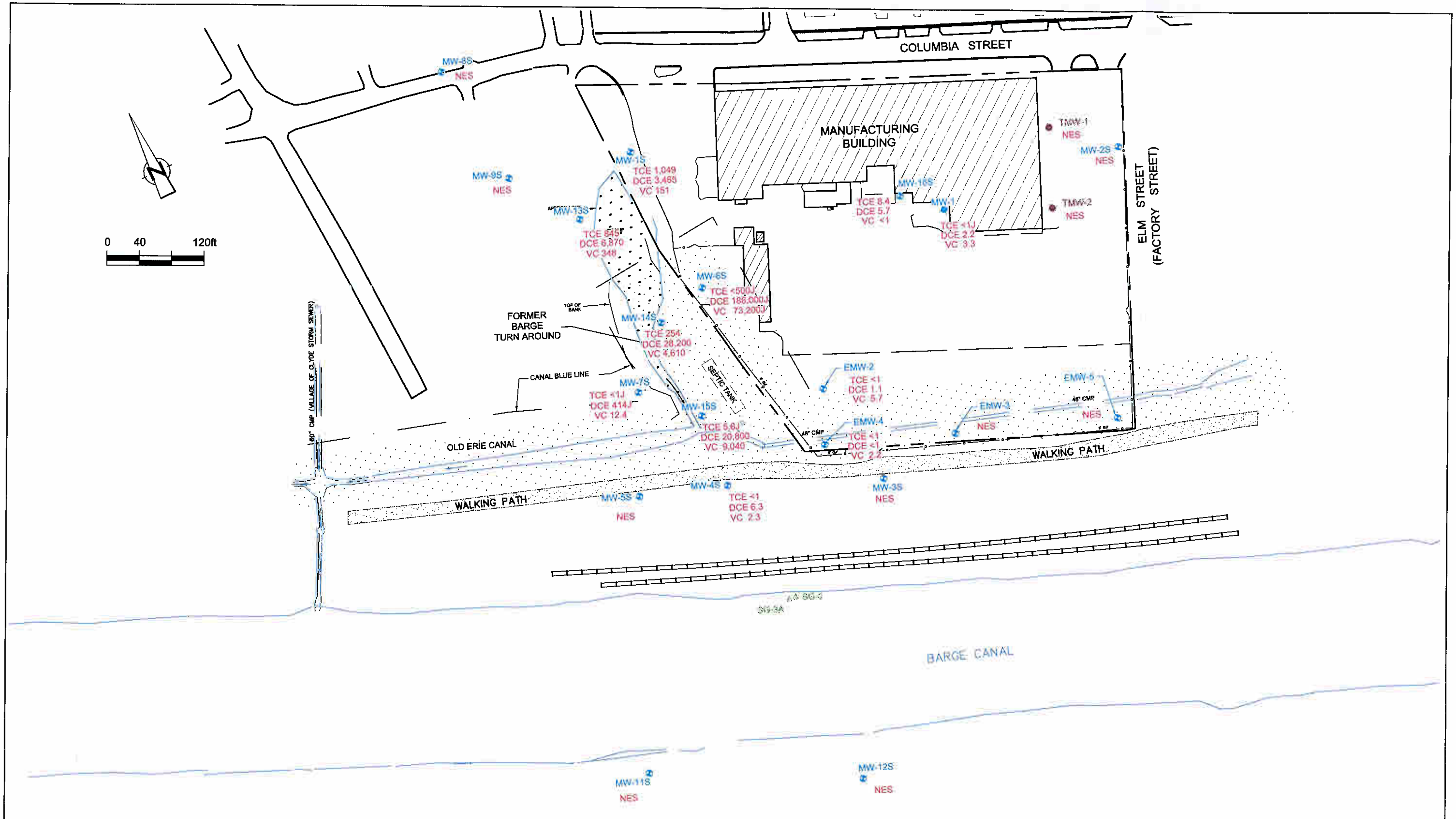
- PROPERTY BOUNDARY
- CANAL
- STORM SEWER
- 48-INCH CMP
- MW-3S — OVERBURDEN MONITORING WELL
- MW-3B — BEDROCK MONITORING WELL
- GP-39 — DIRECT PUSH SAMPLE LOCATION
- GP-7/S-1 — DIRECT PUSH AND SUBSURFACE SOIL SAMPLE LOCATION
- SSB-10 — SUB-SLAB SOIL AND GROUND WATER SAMPLE LOCATION
- TEMPORARY MONITORING WELL

CRA

figure 3.10

GROUNDWATER & SUBSURFACE SOIL SAMPLE LOCATIONS
OLD ERIE CANAL SITE
Clyde, New York

35048-01(002)GN-BE003 MAR 20/2007



LEGEND

PROPERTY BOUNDARY
CANAL
STORM SEWER
48-INCH CMP
MW-3S OVERBURDEN MONITORING WELL
TEMPORARY MONITORING WELL
J VALUE IS ESTIMATED
NES NO EXCEEDANCE OF STANDARD

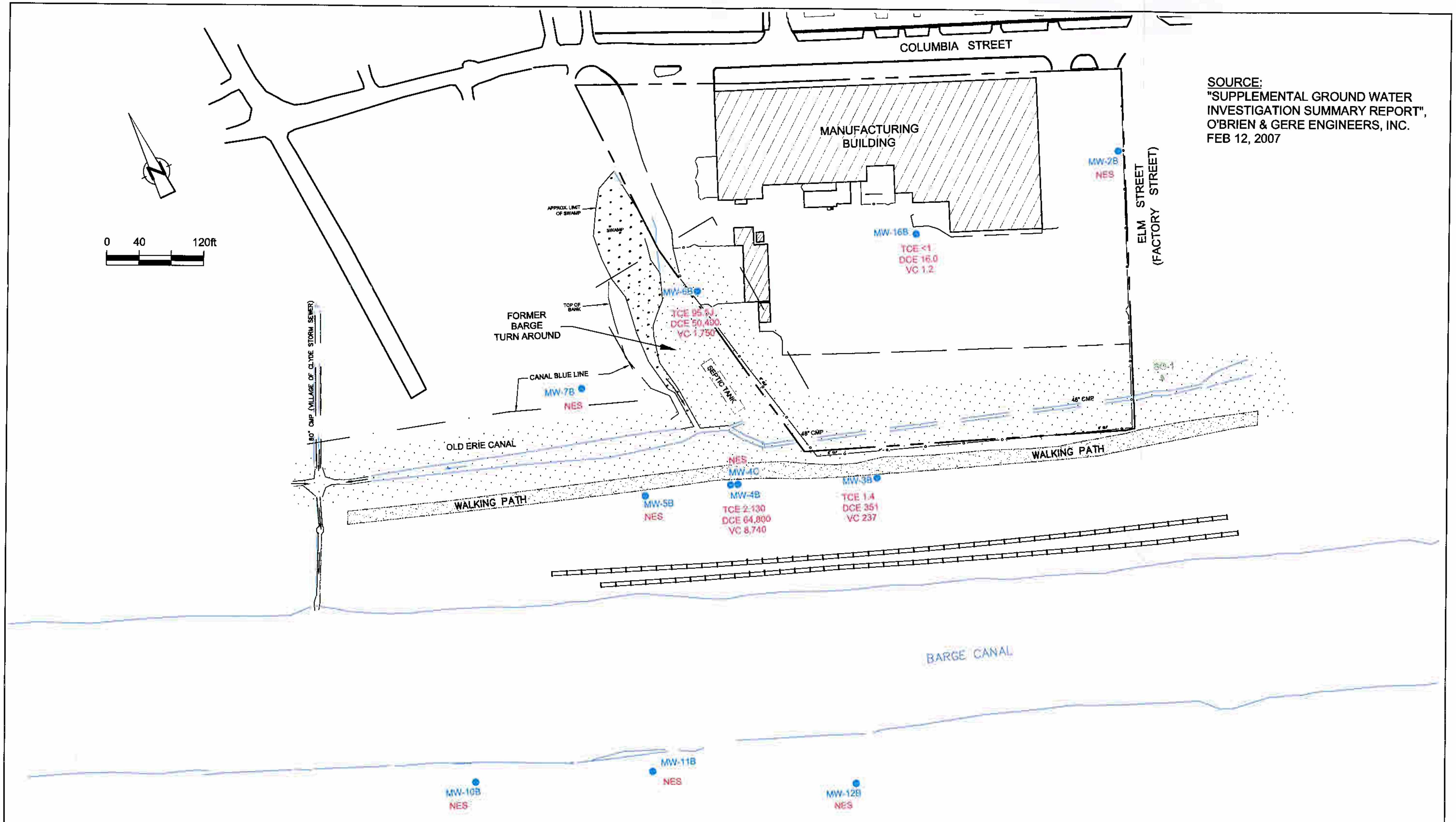
NOTES

CONCENTRATIONS EXPRESSED IN ug/L

figure 3.11

CONCENTRATIONS OF TCE, DCE, & VINYL CHLORIDE IN OVERBURDEN GROUNDWATER - DECEMBER 2006
OLD ERIE CANAL SITE
Clyde, New York

35048-01(002)GN-BE040 MAR 19/2007



LEGEND

- PROPERTY BOUNDARY
- CANAL
- STORM SEWER
- 48-INCH CMP
- MW-3B ● BEDROCK MONITORING WELL
- J VALUE IS ESTIMATED
- NES NO EXCEEDANCE OF STANDARD

NOTES

CONCENTRATIONS EXPRESSED IN ug/L

figure 3.12

CONCENTRATIONS OF TCE, DCE, & VINYL CHLORIDE IN BEDROCK GROUNDWATER - DECEMBER 2006
OLD ERIE CANAL SITE
Clyde, New York

CRA

35048-01(002)GN-BE041 MAR 19/2007

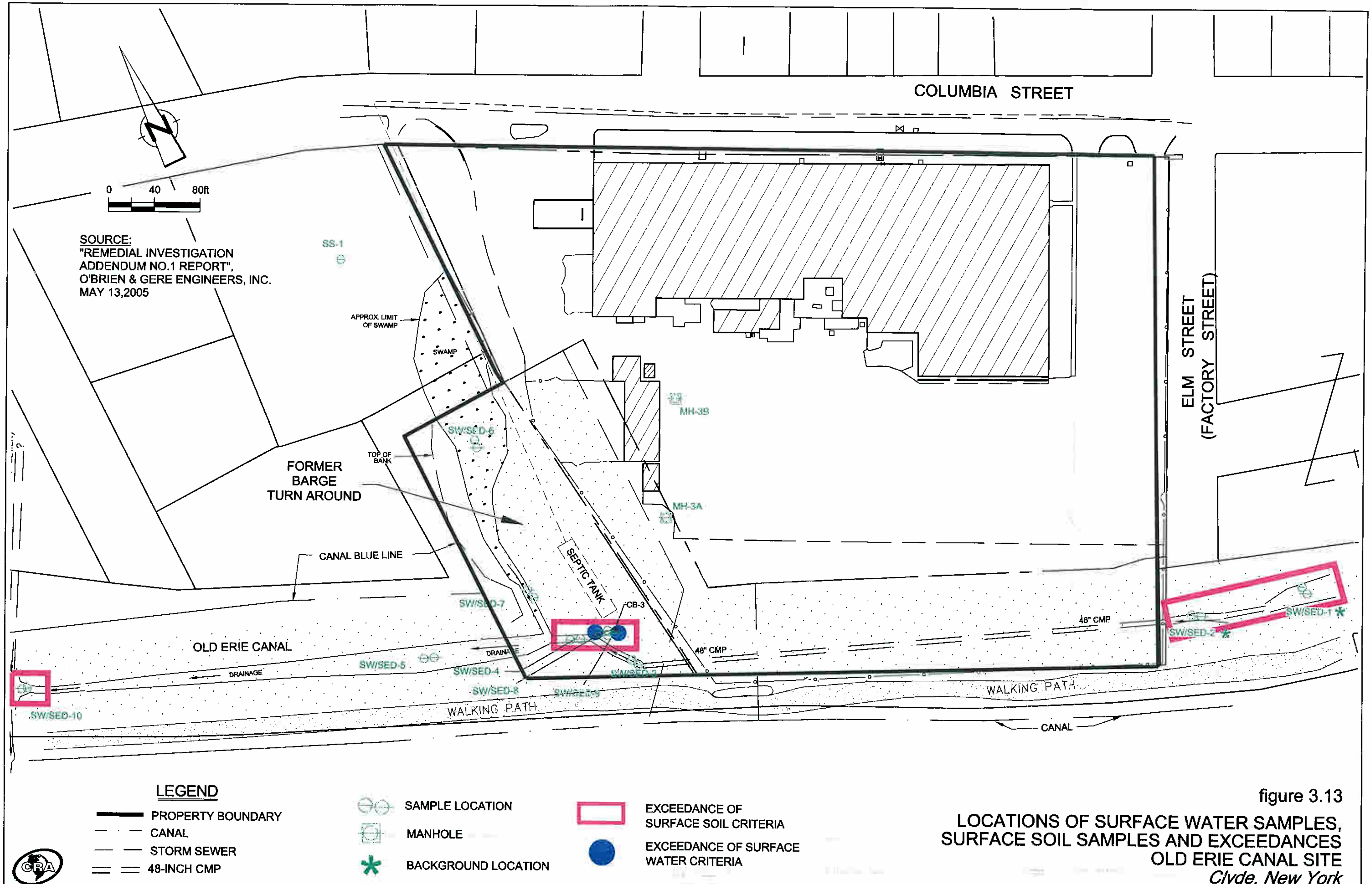
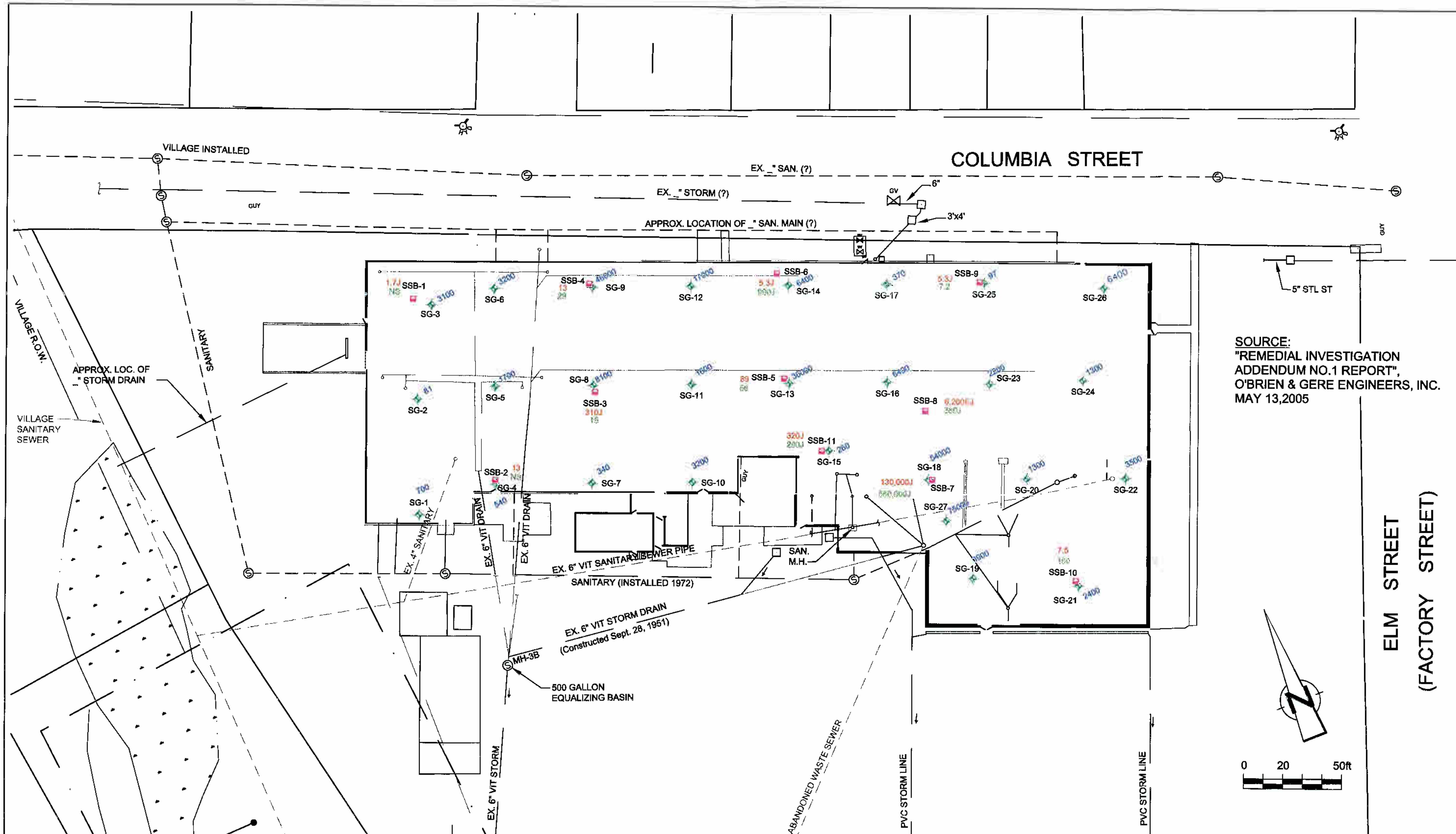


figure 3.13

LOCATIONS OF SURFACE WATER SAMPLES, SURFACE SOIL SAMPLES AND EXCEEDANCES
OLD ERIE CANAL SITE
Clyde, New York

35048-01(002)GN-BE004 NOV 2/2005



LEGEND

- PROPERTY BOUNDARY
- CANAL
- STORM SEWER

300 TCE IN SOIL GAS, ug/m
200 TCE IN SOIL, ug/Kg
1000 TCE IN GROUNDWATER, ug/L

SG-1 SOIL GAS SAMPLE LOCATION

SSB-10 SUB-SLAB SOIL AND GROUND WATER SAMPLE LOCATION

figure 3.14

SUB-SLAB SAMPLE LOCATIONS AND TCE ANALYTICAL RESULTS
OLD ERIE CANAL SITE
Clyde, New York

35048-01(002)GN-BE002 OCT 21/2005

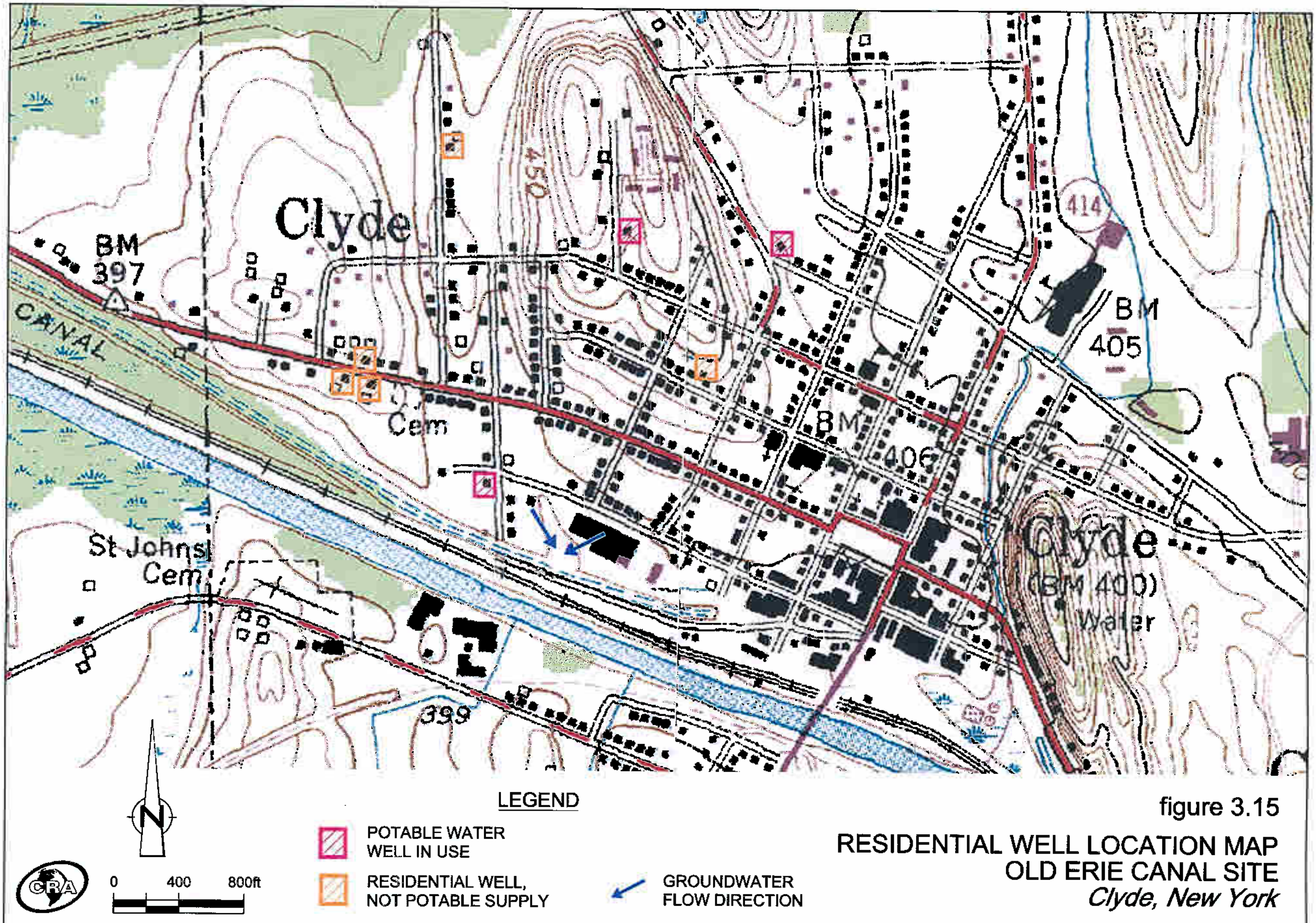


figure 3.15

RESIDENTIAL WELL LOCATION MAP
OLD ERIE CANAL SITE
Clyde, New York

35048-01(002)GN-BE023 SEP 28/2005

TABLE 3.1

GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Compound	Criteria [1]	Units	EMW-2 6/26/2002	EMW-2 12/19/2002	EMW-2 5/27/2003 PB	EMW-2 5/27/2003 PB-Duplicate	EMW-2 11/4/2003 PB	EMW-2 11/4/2003 PB-Duplicate	EMW-2 8/25/2005	EMW-2 8/25/2005 Duplicate	EMW-2 11/30/2006	EMW-3 6/26/2002	EMW-3 5/27/2003 PB	EMW-3 8/25/2005	EMW-3 12/1/2006	EMW-4 6/26/2002
1,1,1,2-Tetrachloroethane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	--	---	---
1,1,1-Trichloroethane	5	µg/L	2 U	2 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	5	µg/L	2 U	2 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1	µg/L	2 U	2 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	5	µg/L	2 U	2 U	2.5 U	1 U	0.54 J	0.64 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2
1,1-Dichloroethene	5	µg/L	2 U	2 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	0.6	µg/L	2 U	2 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1	µg/L	2 U	2 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone (MEK)	50[2]	µg/L	10 U	10 R	13UR	5UR	5UR	1.3 R	5 U	5 U	5 UR	5 U	5UR	5 U	5 UR	5 R
2-Hexanone	50[2]	µg/L	10 U	10 UJ	13UR	5UR	5UR	5UR	5 U	5 U	5 U	5 U	5UR	5 U	5 U	5 UJ
4-Methyl-2-pentanone	NS	µg/L	10 U	10 U	13UR	5UR	5UR	5UR	5 U	5 U	5 U	5 U	5UR	5 U	5 U	5 U
Acetone	50	µg/L	10 U	10 R	13UR	6.2R	13R	11 R	5 U	5 U	5 UR	5 U	6.1R	5 U	5 UR	5 U
Benzene	1	µg/L	2 U	2 U	2.5 U	1 U	1.6	2.1	1 U	1 U	0.37 J	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	50	µg/L	2 U	2 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	50	µg/L	2 U	2 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	5	µg/L	2 U	2 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	5	µg/L	2 U	2 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	5	µg/L	2 U	2 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	5	µg/L	2 U	2 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	5	µg/L	2 U	2 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.64 J
Chloroform	7	µg/L	2 U	2 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	5	µg/L	2 U	2 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	5	µg/L	26	63 D	15	16J	1.7	1.5	21.6	24.2	1.1	0.51 J	1 U	1 U	1 U	1.1
cis-1,3-Dichloropropene	0.4	µg/L	2 U	2 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	50	µg/L	2 U	2 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	µg/L	2 U	2 U	2.5 U	1 U	0.61 J	0.7 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
M+P-Xylene	5	µg/L	---	---	2.5 U	2.1J	4.5	5.4	---	---	---	---	1 U	---	---	---
Methylene chloride	5	µg/L	0.8 J	4 U	2.5 U	1 U	1 U	1 U	2 U	2 U	2 U	2 U	1 U	2 U	2 U	2 U
O-Xylene	5	µg/L	---	---	2.5 U	1 U	0.54 J	0.57 J	---	---	---	---	1 U	---	---	---
Styrene	5	µg/L	2 U	2 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	5	µg/L	2 U	2 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	5	µg/L	2 U	3	20	23J	40	45	9.6	10.3	1 U	1 U	1 U	10.3	1 U	1 U
trans-1,2-Dichloroethene	5	µg/L	0.54 J	2 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	0.4	µg/L	2 U	2 U	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	5	µg/L	2 U	1 J	2.5 U	1 U	1 U	1 U	5.6 U	5.6 U	1 U	1 U	1 U	1.5 U	1 U	1 U
Vinyl chloride	2	µg/L	53	130 D	640	530EJ	3.7	4.1	7.2	8.1	5.7	1 U	1 U	1.0 U	1 U	11
Xylene (total)	5	µg/L	6 U	0.71 J	---	---	---	---	1.0	1.1	0.57 J	3 U	---	1.1	1 U	3 U

TABLE 3.1

GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Compound	Criteria [1]	Units	EMW-2 6/26/2002	EMW-2 12/19/2002	EMW-2 5/27/2003 PB	EMW-2 5/27/2003 PB-Duplicate	EMW-2 11/4/2003 PB	EMW-2 11/4/2003 PB-Duplicate	EMW-2 8/25/2005	EMW-2 8/25/2005 Duplicate	EMW-2 11/30/2006	EMW-3 6/26/2002	EMW-3 5/27/2003 PB	EMW-3 8/25/2005	EMW-3 12/1/2006	EMW-4 6/26/2002
Trichlorofluoromethane (CFC-11)	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,1-Dichloropropene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,3-Trichlorobenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,3-Trichloropropane	0.04	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,4-Trimethylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2-Dibromo-3-chloropropane (DBCP)	0.04	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2-Dibromoethane (EDB)	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,3,5-Trimethylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,3-Dichloropropane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,2-Dichloropropane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Phenylbutane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Bromobenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Chlorobromomethane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Cymene	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dibromomethane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dichloromonofluoromethane	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Isopropylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
n-Butylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
n-Propylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
p-Xylene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
tert-Butylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

(1) Groundwater Effluent Limitations, Class GA Groundwater, NYSDEC TOGS 1.1.1, June 1998.

(2) Guidance value.

--- Compound not analyzed.

D Compounds identified in an analysis at the secondary dilution factor.

E Reported value is outside the calibration range of the instrument.

J Detected concentration is estimated.

N Tentatively identified compound.

NS No standard.

PB Passive Bag sampling technique.

R Reported sample result is not usable.

U Compound was not detected at or above the quantitation limit shown.

[box] Concentration exceeds criteria.

TABLE 3.1

GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Compound	Criteria [1]	Units	EMW-4 12/19/2002	EMW-4 5/27/2003 PB	EMW-4 11/4/2003 PB	EMW-4 8/25/2005	EMW-4 12/6/2006	EMW-5 6/26/2002	EMW-5 5/27/2003	EMW-5 8/25/2005	EMW-5 12/1/2006	MW-1 6/25/2002	MW-1 5/28/2003 PB	MW-1 12/6/2006	MW-1S 6/26/2002	MW-1S 11/4/2003
1,1,1,2-Tetrachloroethane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,1,1-Trichloroethane	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	100 U	1 U
1,1,2,2-Tetrachloroethane	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	100 U	1 U
1,1,2-Trichloroethane	1	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	100 U	1 U
1,1-Dichloroethane	5	µg/L	1.8	1.6	0.54 J	1.1	0.71 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	100 U	1 U
1,1-Dichloroethene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	100 U	7.5
1,2-Dichloroethane	0.6	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	100 U	1 U
1,2-Dichloropropane	1	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	100 U	1 U
2-Butanone (MEK)	50[2]	µg/L	5UR	5UR	5UR	5 U	5 U	5 U	5UR	5 U	5 UR	5 U	5UR	5 U	500 U	5 U
2-Hexanone	50[2]	µg/L	5UJ	5UR	5UR	5 U	5 U	5 U	5UR	5 U	5 U	5 U	5UR	5 U	500 U	5 U
4-Methyl-2-pentanone	NS	µg/L	5 U	5UR	5UR	5 U	5 U	5 U	5UR	5 U	5 U	5 U	5UR	5 U	500 U	5 U
Acetone	50	µg/L	5UR	5UR	8.2R	5 U	5 U	5 U	8.4R	5 U	5 UR	2.5 J	8.3R	5 U	500 U	5 U
Benzene	1	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	100 U	1 U
Bromodichloromethane	50	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	100 U	1 U
Bromoform	50	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	100 U	1 U
Bromomethane	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	100 U	1 U
Carbon disulfide	5	µg/L	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	100 U	1 U
Carbon tetrachloride	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	100 U	1 U
Chlorobenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	100 U	1 U
Chloroethane	5	µg/L	0.61 J	1 U	1 U	1 U	1.4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	100 U	1 U
Chloroform	7	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	100 U	1 U
Chloromethane	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	100 U	1 U
cis-1,2-Dichloroethene	5	µg/L	0.76 J	1 U	1 U	7.2	1 U	1 U	1 U	1 U	1 U	3.4	4.7	2.2	3700	3100
cis-1,3-Dichloropropene	0.4	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	100 U	1 U
Dibromochloromethane	50	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	100 U	1 U
Ethylbenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	100 U	1 U
M+P-Xylene	5	µg/L	---	1 U	1 U	1 U	---	---	1 U	---	---	---	1 U		---	1 U
Methylene chloride	5	µg/L	2 U	1 U	1 U	1 U	2 U	2 U	1 U	2 U	2 U	2 U	1 U	2 U	200 U	1 U
O-Xylene	5	µg/L	---	1 U	1 U	1 U	---	---	1 U	---	---	---	1 U		---	1 U
Styrene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	100 U	11
Tetrachloroethene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	100 U	1 U
Toluene	5	µg/L	1 U	1 U	1 U	3.1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	100 U	100 U
trans-1,2-Dichloroethene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	32 J	35
trans-1,3-Dichloropropene	0.4	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	100 U	1 U
Trichloroethene	5	µg/L	1 U	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U	5.9	3.2	0.58 J	1000	890
Vinyl chloride	2	µg/L	14	2NJ	1U	5.1	2.2	1 U	1 U	1 U	1 U	0.42 J	1 U	3.3	280	180
Xylene (total)	5	µg/L	1 U	---	---	1 U	1 U	3 U	---	1 U	1 U	3 U	---	1 U	300 U	---

TABLE 3.1

GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Compound	Criteria [1]	Units	EMW-4 12/19/2002	EMW-4 5/27/2003 PB	EMW-4 11/4/2003 PB	EMW-4 8/25/2005	EMW-4 12/6/2006	EMW-5 6/26/2002	EMW-5 5/27/2003	EMW-5 8/25/2005	EMW-5 12/1/2006	MW-1 6/25/2002	MW-1 5/28/2003 PB	MW-1 12/6/2006	MW-1S 6/26/2002	MW-1S 11/4/2003
Trichlorofluoromethane (CFC-11)	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,1-Dichloropropene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,3-Trichlorobenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,3-Trichloropropane	0.04	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,4-Trimethylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2-Dibromo-3-chloropropane (DBCP)	0.04	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2-Dibromoethane (EDB)	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,3,5-Trimethylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,3-Dichloropropane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,2-Dichloropropane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Phenylbutane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Bromobenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Chlorobromomethane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Cymene	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dibromomethane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dichloromonofluoromethane	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Isopropylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
n-Butylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
n-Propylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
p-Xylene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
tert-Butylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

(1) Groundwater Effluent Limitations, Class GA Groundwater, NYSDEC TOGS 1.1.1, June 1998.
(2) Guidance value.
--- Compound not analyzed.
D Compounds identified in an analysis at the secondary dilution factor.
E Reported value is outside the calibration range of the instrument.
J Detected concentration is estimated.
N Tentatively identified compound.
NS No standard.
PB Passive Bag sampling technique.
R Reported sample result is not usable.
U Compound was not detected at or above the quantitation limit shown.
[box] Concentration exceeds criteria.

TABLE 3.1

GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Compound	Criteria [1]	Units	MW-1S 8/24/2005	MW-1S 11/29/2006	MW-1S 11/29/2006 Duplicate	MW-2S 6/24/2002	MW-2S 5/28/2003 PB	MW-2S 8/25/2005	MW-2S 11/29/2006	MW-2B 6/25/2002	MW-2B 5/28/2003 PB	MW-2B 8/25/2005	MW-2B 11/29/2006	MW-3S 6/25/2002	MW-3S 5/27/2003 PB	MW-3S 8/24/2005
1,1,1,2-Tetrachloroethane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,1,1-Trichloroethane	5	µg/L	25 U	25 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	5	µg/L	25 U	25 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1	µg/L	25 U	25 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	5	µg/L	25 U	25 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	5	µg/L	25 U	25 U	6.9 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	0.6	µg/L	25 U	25 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1	µg/L	25 U	25 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone (MEK)	50[2]	µg/L	130 U	130 UR	50 UR	5 R	5UR	5 U	5 U	5 R	5UR	5 U	5 UR	5 U	5UR	5 U
2-Hexanone	50[2]	µg/L	130 U	130 U	50 U	5 U	5UR	5 U	5 U	5 U	5UR	5 U	5 U	5 U	5UR	5 U
4-Methyl-2-pentanone	NS	µg/L	130 U	130 U	50 U	5 U	5UR	5 U	5 U	5 U	5UR	5 U	5 U	5 U	5UR	5 U
Acetone	50	µg/L	130 U	130 UR	50 U	5 R	8.1R	5 U	5 U	1.9 J	11R	5 U	5 UR	2.8 J	10R	7.2
Benzene	1	µg/L	25 U	25 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	50	µg/L	25 U	25 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	50	µg/L	25 U	25 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	5	µg/L	25 U	25 U	10 U	1 UJ	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	5	µg/L	25 U	25 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	5	µg/L	25 U	25 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	5	µg/L	25 U	25 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	5	µg/L	25 U	25 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	7	µg/L	25 U	25 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	5	µg/L	25 U	25 U	10 U	1 UJ	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	5	µg/L	4880	3690	3240	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	57.1
cis-1,3-Dichloropropene	0.4	µg/L	25 U	25 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	50	µg/L	25 U	25 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	µg/L	25 U	15 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.95 J
M+P-Xylene	5	µg/L	---	---	---	---	1 U	---	---	---	1 U	---		---	1 U	---
Methylene chloride	5	µg/L	25 U	50 U	20 U	2 U	1 U	2 U	2 U	2 U	1 U	2 U	2 U	2 U	1 U	2 U
O-Xylene	5	µg/L	---	---	---	---	1 U	---	---	---	1 U	---	---	---	1 U	---
Styrene	5	µg/L	25 U	25 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	5	µg/L	17.3 J	11.0 J	10.6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	5	µg/L	25 U	25 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.96 J
trans-1,2-Dichloroethene	5	µg/L	50.6	32.4	34.2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.68 J
trans-1,3-Dichloropropene	0.4	µg/L	25 U	25 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	5	µg/L	1940	1110	988	1 U	1 U	6.4 U	1 U	1 U	1 U	4 U	1 U	1 U	1 U	53.7
Vinyl chloride	2	µg/L	345	147	155	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	7.9
Xylene (total)	5	µg/L	25 U	25 U	10 U	3 U	---	1 U	1 U	3 U	---	1 U	1 U	0.7 J	---	2.8

TABLE 3.1

GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Compound	Criteria [1]	Units	MW-1S 8/24/2005	MW-1S 11/29/2006	MW-1S 11/29/2006 Duplicate	MW-2S 6/24/2002	MW-2S 5/28/2003 PB	MW-2S 8/25/2005	MW-2S 11/29/2006	MW-2B 6/25/2002	MW-2B 5/28/2003 PB	MW-2B 8/25/2005	MW-2B 11/29/2006	MW-3S 6/25/2002	MW-3S 5/27/2003 PB	MW-3S 8/24/2005
Trichlorofluoromethane (CFC-11)	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,1-Dichloropropene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,3-Trichlorobenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,3-Trichloropropane	0.04	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,4-Trimethylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2-Dibromo-3-chloropropane (DBCP)	0.04	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2-Dibromoethane (EDB)	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,3,5-Trimethylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,3-Dichloropropane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,2-Dichloropropane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Phenylbutane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Bromobenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Chlorobromomethane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Cymene	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dibromomethane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dichloromonofluoromethane	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Isopropylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
n-Butylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
n-Propylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
p-Xylene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
tert-Butylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

(1) Groundwater Effluent Limitations, Class GA Groundwater,
NYSDEC TOGS 1.1.1, June 1998.

(2) Guidance value.

--- Compound not analyzed.

D Compounds identified in an analysis at the secondary dilution factor.

E Reported value is outside the calibration range of the instrument.

J Detected concentration is estimated.

N Tentatively identified compound.

NS No standard.

PB Passive Bag sampling technique.

R Reported sample result is not usable.

U Compound was not detected at or above the quantitation limit shown.

[box] Concentration exceeds criteria.

TABLE 3.1

GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Compound	Criteria [1]	Units	MW-3S 12/5/2006	MW-3B 12/5/2006	MW-4S 6/25/2002	MW-4S 12/19/2002	MW-4S 4/24/2003 PB-Top	MW-4S 4/24/2003 PB-Bottom	MW-4S 5/28/2003 PB-Top	MW-4S 5/28/2003 PB-Bottom	MW-4S 7/2/2003 PB-Top	MW-4S 7/2/2003 PB-Bottom	MW-4S 11/4/2003 PB-Bottom	MW-4S 8/24/2005	MW-4S 12/5/2006	MW-4B 6/25/2002
1,1,1,2-Tetrachloroethane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	--	---	---
1,1,1-Trichloroethane	5	µg/L	1 U	1 U	1 U	4 U	1U	1U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	2000 U
1,1,2,2-Tetrachloroethane	5	µg/L	1 U	1 U	1 U	4 U	1U	1U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	2000 U
1,1,2-Trichloroethane	1	µg/L	1 U	1 U	1 U	4 U	1U	1U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	2000 U
1,1-Dichloroethane	5	µg/L	1 U	1 U	1 U	2 J	1U	1U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	2000 U
1,1-Dichloroethene	5	µg/L	1 U	1 U	1 U	5.4	1U	1U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	2000 U
1,2-Dichloroethane	0.6	µg/L	1 U	1 U	1 U	4 U	1UJ	1UJ	1 U	1 U	1UJ	1 U	1 U	1 UJ	1 U	2000 U
1,2-Dichloropropane	1	µg/L	1 U	·1 U	1 U	4 U	1U	1U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	2000 U
2-Butanone (MEK)	50[2]	µg/L	5 U	5 UR	5 U	20 R	5UR	5UR	5UR	5UR	4.6JR	5UR	5UR	5 UJ	5 UR	10000 UR
2-Hexanone	50[2]	µg/L	5 U	5 U	5 U	20 UJ	5UR	5UR	5UR	5UR	5UR	5UR	5UR	5 UJ	5 U	10000 U
4-Methyl-2-pentanone	NS	µg/L	5 U	5 U	5 U	20 U	5UR	5UR	5UR	5UR	5UR	5UR	5UR	5 UJ	5 U	10000 U
Acetone	50	µg/L	5 U	5 U	4 J	20 UR	5UR	5UR	10R	9.5R	7.6R	10R	9.4R	5 UJ	5 U	10000 U
Benzene	1	µg/L	1 U	1 U	1 U	1.1 J	1U	1U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	2000 U
Bromodichloromethane	50	µg/L	1 U	1 U	1 U	4 U	1U	1U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	2000 U
Bromoform	50	µg/L	1 U	1 U	1 U	4 U	1U	1U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	2000 U
Bromomethane	5	µg/L	1 U	1 U	1 U	4 U	1UJ	1UJ	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	2000 U
Carbon disulfide	5	µg/L	1 U	1 U	1 U	4 U	1U	1U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	2000 U
Carbon tetrachloride	5	µg/L	1 U	1 U	1 U	4 U	1U	1U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	2000 U
Chlorobenzene	5	µg/L	1 U	1 U	1 U	4 U	1U	1U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	2000 U
Chloroethane	5	µg/L	1 U	1 U	1 U	4 U	1UJ	1UJ	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	2000 U
Chloroform	7	µg/L	1 U	1 U	1 U	4 U	1U	1U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	2000 U
Chloromethane	5	µg/L	1 U	1 U	0.48 J	4 U	1U	1U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	2000 U
cis-1,2-Dichloroethene	5	µg/L	1 U	351	120 D	6400 D	8.7	3.9	1.6	3.2	2.9	2.3	7.9	121 J	6.3	58000
cis-1,3-Dichloropropene	0.4	µg/L	1 U	1 U	1 U	4 U	1U	1U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	2000 U
Dibromochloromethane	50	µg/L	1 U	1 U	1 U	4 U	1U	1U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	2000 U
Ethylbenzene	5	µg/L	1 U	1 U	1 U	4 U	1U	1U	1 U	1 U	1 U	1 U	1 U	0.44 J	1 U	2000 U
M+P-Xylene	5	µg/L	---	---	---	---	1U	1U	1 U	1 U	1 U	1 U	1 U	---	---	---
Methylene chloride	5	µg/L	2 U	2 U	2 U	8 U	1U	1U	1 U	1 U	1 U	1 U	1 U	2 UJ	2 U	1200 J
O-Xylene	5	µg/L	---	---	---	---	1U	1U	1 U	1 U	1 U	1 U	1 U	---	---	---
Styrene	5	µg/L	1 U	1 U	1 U	4 U	1UJ	1UJ	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	2000 U
Tetrachloroethene	5	µg/L	1 U	1 U	1 U	4 U	1U	1U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	2000 U
Toluene	5	µg/L	1 U	0.48 J	1.2	9	1U	1U	1 U	1 U	1 U	1 U	1 U	0.71 J	1 U	2000 U
trans-1,2-Dichloroethene	5	µg/L	1 U	5.9	0.76 J	37	1U	1U	1 U	1 U	1 U	1 U	1 U	1.2 J	1 U	2000 U
trans-1,3-Dichloropropene	0.4	µg/L	1 U	1 U	1 U	4 U	1U	1U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	2000 U
Trichloroethene	5	µg/L	1 U	1.5	0.36 J	3 J	1U	1U	1 U	1 U	1 U	1 U	1 U	47.7 J	1 U	1900 J
Vinyl chloride	2	µg/L	1 U	237	110 D	6600 D	13	3.6	1 U	1.4	1 U	0.85 J	58	47.0 J	2.3	27000
Xylene (total)	5	µg/L	1 U	1 U	3 U	4 U	---	---	---	---	---	---	---	0.98 J	1 U	6000 U

TABLE 3.1

GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Compound	Criteria [1]	Units	MW-3S	MW-3B	MW-4S	MW-4S	MW-4S	MW-4S	MW-4S	MW-4S	MW-4S	MW-4S	MW-4S	MW-4S	MW-4S	MW-4B
		Sample Date:	12/5/2006	12/5/2006	6/25/2002	12/19/2002	4/24/2003	4/24/2003	5/28/2003	5/28/2003	7/2/2003	7/2/2003	11/4/2003	8/24/2005	12/5/2006	6/25/2002
							PB-Top	PB-Bottom	PB-Top	PB-Bottom	PB-Top	PB-Bottom	PB-Bottom			
Trichlorofluoromethane (CFC-11)	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,1-Dichloropropene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,3-Trichlorobenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,3-Trichloropropane	0.04	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,4-Trimethylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2-Dibromo-3-chloropropane (DBCP)	0.04	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2-Dibromoethane (EDB)	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,3,5-Trimethylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,3-Dichloropropane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,2-Dichloropropane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Phenylbutane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Bromobenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Chlorobromomethane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Cymene	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dibromomethane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dichloromonofluoromethane	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Isopropylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
n-Butylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
n-Propylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
p-Xylene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
tert-Butylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:
(1) Groundwater Effluent Limitations, Class GA Groundwater,
NYSDEC TOGS 1.1.1, June 1998.
(2) Guidance value.
--- Compound not analyzed.
D Compounds identified in an analysis at the secondary dilution factor.
E Reported value is outside the calibration range of the instrument.
J Detected concentration is estimated.
N Tentatively identified compound.
NS No standard.
PB Passive Bag sampling technique.
R Reported sample result is not usable.
U Compound was not detected at or above the quantitation limit shown.
[box] Concentration exceeds criteria.

TABLE 3.1

GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Compound	Criteria [1]	Sample Location: / Sample Date: / Units	MW-4B 6/25/2002 Duplicate	MW-4B 12/19/2002	MW-4B 12/19/2002 Duplicate	MW-4B 5/28/2003 PB	MW-4B 11/4/2003 PB	MW-4B 8/24/2005	MW-4B 12/5/2006	MW-4C 12/5/2006	MW-4C 12/5/2006 Du;licate	MW-5S 6/25/2002	MW-5S 5/28/2003 PB	MW-5S 11/4/2003 PB	MW-5S 8/25/2005	MW-5S 12/5/2006
1,1,1,2-Tetrachloroethane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,1,1-Trichloroethane	5	µg/L	2000 U	2000 U	2000 U	100 U	250 U	200 UJ	100 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	5	µg/L	2000 U	2000 U	2000 U	100 U	250 U	200 UJ	100 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1	µg/L	2000 U	2000 U	2000 U	100 U	250 U	200 UJ	100 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	5	µg/L	2000 U	2000 U	2000 U	100 U	250 U	200 UJ	100 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	5	µg/L	2000 U	2000 U	2000 U	100 U	250 U	105 J	100 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	0.6	µg/L	2000 U	2000 U	2000 U	100 U	250 U	200 UJ	100 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1	µg/L	2000 U	2000 U	2000 U	100 U	250 U	200 UJ	100 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
2-Butanone (MEK)	50[2]	µg/L	10000 U	10000 R	10000 R	500UR	1300UR	1000 UJ	500 U	5 UR	5 UR	5 U	5UR	5UR	5 U	5 UR
2-Hexanone	50[2]	µg/L	10000 U	10000 UJ	10000 UJ	500UR	1300UR	1000 UJ	500 U	5 U	5 UJ	5 U	5UR	5UR	5 U	5 U
4-Methyl-2-pentanone	NS	µg/L	10000 U	10000 U	10000 U	500UR	1300UR	1000 UJ	500 U	5 U	5 UJ	5 U	5UR	5UR	5 U	5 U
Acetone	50	µg/L	10000 U	10000 R	10000 R	500UR	1300UR	1000 UJ	500 U	5 U	5 UJ	3.8 J	11R	7.5R	5 U	5 U
Benzene	1	µg/L	2000 U	2000 U	2000 U	100 U	250 U	200 UJ	100 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	50	µg/L	2000 U	2000 U	2000 U	100 U	250 U	200 UJ	100 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
Bromoform	50	µg/L	2000 U	2000 U	2000 U	100 U	250 U	200 UJ	100 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
Bromomethane	5	µg/L	2000 U	2000 U	2000 U	100 U	250 U	200 UJ	100 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	5	µg/L	2000 U	2000 U	2000 U	100 U	250 U	200 UJ	100 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	5	µg/L	2000 U	2000 U	2000 U	100 U	250 U	200 UJ	100 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	5	µg/L	2000 U	2000 U	2000 U	100 U	250 U	200 UJ	100 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
Chloroethane	5	µg/L	2000 U	2000 U	2000 U	100 U	250 U	200 UJ	100 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
Chloroform	7	µg/L	2000 U	2000 U	2000 U	100 U	250 U	200 UJ	100 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
Chloromethane	5	µg/L	2000 U	2000 U	2000 U	100 U	250 U	200 UJ	100 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	5	µg/L	79000	100000 D	100000 D	32000	31000	84500 J	64800	1 U	1 UJ	1 U	1 U	1 U	15.1	1 U
cis-1,3-Dichloropropene	0.4	µg/L	2000 U	2000 U	2000 U	100 U	250 U	200 UJ	100 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	50	µg/L	2000 U	2000 U	2000 U	100 U	250 U	200 UJ	100 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	µg/L	2000 U	2000 U	2000 U	100 U	250 U	200 UJ	100 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
M+P-Xylene	5	µg/L	---	---	---	100 U	250 U	---	---	---	---	---	1 U	1 U	---	---
Methylene chloride	5	µg/L	1200 J	4000 U	4000 U	100 U	250 U	400 UJ	200 U	2 U	2 UJ	2 U	1 U	1 U	2 U	2 U
O-Xylene	5	µg/L	---	---	---	100 U	250 U	---	---	---	---	---	1 U	1 U	---	---
Styrene	5	µg/L	2000 U	2000 U	2000 U	100 U	250 U	200 UJ	100 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	5	µg/L	2000 U	2000 U	2000 U	100 U	250 U	200 UJ	100 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
Toluene	5	µg/L	2000 U	2000 U	2000 U	100 U	250 U	95.5 J	100 U	1 U	1 UJ	1 U	1 U	1 U	7.4	1 U
trans-1,2-Dichloroethene	5	µg/L	2000 U	2000 U	2000 U	100 U	250 U	345 J	130	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	0.4	µg/L	2000 U	2000 U	2000 U	100 U	250 U	200 UJ	100 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
Trichloroethene	5	µg/L	2600	680 J	750 J	100 U	250 U	5170 J	2130	1 U	1 UJ	1 U	1 U	1 U	5.2 U	1 U
Vinyl chloride	2	µg/L	42000	33000	35000	14000	9400	30500 J	8740	1 U	1 UJ	1 U	1 U	1 U	1.7	1 U
Xylene (total)	5	µg/L	6000 U	2000 U	2000 U	---	---	200 UJ	100 U	1 U	1 UJ	3 U	---	---	0.5 J	1 U

TABLE 3.1

GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Compound	Criteria (1)	Units	MW-4B 6/25/2002 Duplicate	MW-4B 12/19/2002	MW-4B 12/19/2002 Duplicate	MW-4B 5/28/2003 PB	MW-4B 11/4/2003 PB	MW-4B 8/24/2005	MW-4B 12/5/2006	MW-4C 12/5/2006	MW-4C 12/5/2006 Du;licate	MW-5S 6/25/2002	MW-5S 5/28/2003 PB	MW-5S 11/4/2003 PB	MW-5S 8/25/2005	MW-5S 12/5/2006
Trichlorofluoromethane (CFC-11)	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,1-Dichloropropene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,3-Trichlorobenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,3-Trichloropropane	0.04	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,4-Trimethylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2-Dibromo-3-chloropropane (DBCP)	0.04	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2-Dibromoethane (EDB)	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,3,5-Trimethylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,3-Dichloropropane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,2-Dichloropropane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Phenylbutane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Bromobenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Chlorobromomethane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Cymene	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dibromomethane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dichloromonofluoromethane	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Isopropylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
n-Butylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
n-Propylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
p-Xylene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
tert-Butylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

(1) Groundwater Effluent Limitations, Class GA Groundwater,
NYSDEC TOGS 1.1.1, June 1998.

(2) Guidance value.

--- Compound not analyzed.
D Compounds identified in an analysis at the secondary dilution factor.
E Reported value is outside the calibration range of the instrument.
J Detected concentration is estimated.
N Tentatively identified compound.
NS No standard.
PB Passive Bag sampling technique.
R Reported sample result is not usable.
U Compound was not detected at or above the quantitation limit shown.
[ ] Concentration exceeds criteria.

TABLE 3.1

GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Compound	Criteria (1)	Units	MW-5B 12/6/2006	MW-6S 6/26/2002	MW-6S 5/28/2003 PB-Top	MW-6S 5/28/2003 PB-Bottom	MW-6S 11/4/2003 PB-Bottom	MW-6S 8/24/2005	MW-6S 12/6/2006	MW-6B 12/6/2006	MW-7S 6/24/2002	MW-7S 12/18/2002	MW-7S 5/27/2003 PB	MW-7S 5/27/2003 PB-Duplicate	MW-7S 11/4/2003 PB	MW-7S 8/26/2005
1,1,1,2-Tetrachloroethane	5	µg/L	---	---	---	---	---	--	---	---	---	---	---	---	---	---
1,1,1-Trichloroethane	5	µg/L	1 U	1000 U	5 U	100 U	5 U	100 UJ	500 UJ	100 U	1 U	50 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	5	µg/L	1 U	1000 U	5 U	100 U	5 U	100 UJ	500 UJ	100 U	1 U	50 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1	µg/L	1 U	1000 U	5 U	100 U	5 U	100 UJ	500 UJ	100 U	1 U	50 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	5	µg/L	1 U	1000 U	5 U	100 U	5 U	100 UJ	500 UJ	100 U	1 U	50 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	5	µg/L	1 U	1000 U	5 U	100 U	5 U	100 UJ	500 UJ	59.3 J	1.2	50 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	0.6	µg/L	1 U	1000 U	5 U	100 U	5 U	100 UJ	500 UJ	100 U	1 U	50 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1	µg/L	1 U	1000 U	5 U	100 U	5 U	100 UJ	500 UJ	100 U	1 U	50 U	1 U	1 U	1 U	1 U
2-Butanone (MEK)	50(2)	µg/L	5 U	5000 U	25UR	500UR	25UR	500 UJ	2500 UR	500 UR	5 R	250 R	5UR	5UR	5UR	5U
2-Hexanone	50(2)	µg/L	5 U	5000 U	25UR	500UR	25UR	500 UJ	2500 UJ	500 U	5 U	250 UJ	5UR	5UR	5UR	5U
4-Methyl-2-pentanone	NS	µg/L	5 U	1000 J	25UR	500UR	25UR	500 UJ	2500 UJ	500 U	5 U	250 U	5UR	5UR	5UR	5U
Acetone	50	µg/L	4.7 J	5000 U	25UR	500UR	25UR	500 UJ	2500 UJ	500 U	5 R	250 R	11R	13R	7.8R	5U
Benzene	1	µg/L	1 U	1000 U	5 U	100 U	5 U	100 UJ	500 UJ	100 U	1 U	50 U	1 U	1 U	1 U	1 U
Bromodichloromethane	50	µg/L	1 U	1000 U	5 U	100 U	5 U	100 UJ	500 UJ	100 U	1 U	50 U	1 U	1 U	1 U	1 U
Bromoform	50	µg/L	1 U	1000 U	5 U	100 U	5 U	100 UJ	500 UJ	100 U	1 U	50 U	1 U	1 U	1 U	1 U
Bromomethane	5	µg/L	1 U	1000 U	5 U	100 U	5 U	100 UJ	500 UJ	100 U	1 UJ	50 U	1 U	1 U	1 U	1 U
Carbon disulfide	5	µg/L	1 UJ	1000 U	5 U	100 U	5 U	100 UJ	500 UJ	100 UJ	1 U	50 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	5	µg/L	1 U	1000 U	5 U	100 U	5 U	100 UJ	500 UJ	100 U	1 U	50 U	1 U	1 U	1 U	1 U
Chlorobenzene	5	µg/L	1 U	1000 U	5 U	100 U	5 U	100 UJ	500 UJ	100 U	1 U	50 U	1 U	1 U	1 U	1 U
Chloroethane	5	µg/L	1 U	1000 U	5 U	100 U	5 U	100 UJ	500 UJ	100 U	1 U	50 U	1 U	1 U	1 U	1 U
Chloroform	7	µg/L	1 U	1000 U	5 U	100 U	5 U	100 UJ	500 UJ	100 U	1 U	50 U	1 U	1 U	1 U	1 U
Chloromethane	5	µg/L	1 U	1000 U	5 U	100 U	5 U	100 UJ	500 UJ	100 U	1 UJ	50 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	5	µg/L	1 U	80000 D	1500	9500	480	33100 J	186000 J	50400	1500 D	2100 D	140	130	140	180
cis-1,3-Dichloropropene	0.4	µg/L	1 U	1000 U	5 U	100 U	5 U	100 UJ	500 UJ	100 U	1 U	50 U	1 U	1 U	1 U	1 U
Dibromochloromethane	50	µg/L	1 U	1000 U	5 U	100 U	5 U	100 UJ	500 UJ	100 U	1 U	50 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	µg/L	1 U	1000 U	5 U	100 U	5 U	100 UJ	500 UJ	100 U	1 U	50 U	1 U	1 U	1 U	1 U
M+P-Xylene	5	µg/L	---	---	6.8	100 U	18	---	---	---	---	---	1 U	1 U	1 U	---
Methylene chloride	5	µg/L	2 U	2000 U	5 U	100 U	5 U	200 UJ	1000 UJ	200 U	2 U	100 U	1 U	1 U	1 U	2 U
O-Xylene	5	µg/L	---	---	5 U	100 U	4.0J	---	---	---	---	---	1 U	1 U	1 U	---
Styrene	5	µg/L	1 U	1000 U	5 U	100 U	5 U	100 UJ	500 UJ	100 U	1 U	50 U	1 U	1 U	1 U	1 U
Tetrachloroethene	5	µg/L	1 U	1000 U	5 U	100 U	5 U	100 UJ	500 UJ	100 U	1 U	50 U	1 U	1 U	1 U	1 U
Toluene	5	µg/L	1 U	9800	26	670	22	4180	24900 J	100 U	1 U	50 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	5	µg/L	1 U	1000 U	5 U	100 U	5 U	65.5 J	478 J	119	14	50 U	1 U	1 U	1 U	0.60 J
trans-1,3-Dichloropropene	0.4	µg/L	1 U	1000 U	5 U	100 U	5 U	100 UJ	500 U	100 U	1 U	50 U	1 U	1 U	1 U	1 U
Trichloroethene	5	µg/L	1 U	960 J	5 U	960 J	5 U	100 UJ	500 U	95.5 J	3.7	50 U	1 U	1 U	1 U	12.5 U
Vinyl chloride	2	µg/L	1 U	38000	650	4800	170	13200 J	73200 J	1750	81 D	220	2.0	2.1	1.5	66.4
Xylene (total)	5	µg/L	1 U	3000 U	---	---	---	103 J	854 J	100 U	3 U	50 U	---	---	---	1 U

TABLE 3.1

GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Compound	Criteria (1)	Units	MW-5B 12/6/2006	MW-6S 6/26/2002	MW-6S 5/28/2003 PB-Top	MW-6S 5/28/2003 PB-Bottom	MW-6S 11/4/2003 PB-Bottom	MW-6S 8/24/2005	MW-6S 12/6/2006	MW-6B 12/6/2006	MW-7S 6/24/2002	MW-7S 12/18/2002	MW-7S 5/27/2003 PB	MW-7S 5/27/2003 PB-Duplicate	MW-7S 11/4/2003 PB	MW-7S 8/26/2005
Trichlorofluoromethane (CFC-11)	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,1-Dichloropropene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,3-Trichlorobenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,3-Trichloropropane	0.04	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,4-Trimethylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2-Dibromo-3-chloropropane (DBCP)	0.04	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2-Dibromoethane (EDB)	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,3,5-Trimethylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,3-Dichloropropane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,2-Dichloropropane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Phenylbutane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Bromobenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Chlorobromomethane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Cymene	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dibromomethane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dichloromonofluoromethane	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Isopropylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
n-Butylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
n-Propylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
p-Xylene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
tert-Butylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

(1) Groundwater Effluent Limitations, Class GA Groundwater, NYSDEC TOGS 1.1.1, June 1998.

(2) Guidance value.

--- Compound not analyzed.

D Compounds identified in an analysis at the secondary dilution factor.

E Reported value is outside the calibration range of the instrument.

J Detected concentration is estimated.

N Tentatively identified compound.

NS No standard.

PB Passive Bag sampling technique.

R Reported sample result is not usable.

U Compound was not detected at or above the quantitation limit shown.

[ ] Concentration exceeds criteria.

TABLE 3.1

GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Compound	Criteria [1]	Units	MW-7S 12/4/2006	MW-7B 6/25/2002	MW-7B 5/27/2003 PB	MW-7B 11/4/2003 PB	MW-7B 8/26/2005	MW-7B 12/4/2006	MW-8S 6/24/2002	MW-8S 5/27/2003 PB	MW-8S 5/27/2003	MW-8S 8/3/2004	MW-8S 11/30/2006	MW-9S 6/24/2002	MW-9S 12/19/2002	MW-9S 5/27/2003 PB
1,1,1,2-Tetrachloroethane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,1,1-Trichloroethane	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	5	µg/L	0.62 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	0.6	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone (MEK)	50[2]	µg/L	5 U	5 R	5UR	5UR	5 U	5 U	5 R	5UR	5UR	5 U	5 UR	5 R	5 R	5UR
2-Hexanone	50[2]	µg/L	5 U	5 U	5UR	5UR	5 U	5 U	5 U	5UR	5UR	5 U	5 U	5 U	5 UJ	5UR
4-Methyl-2-pentanone	NS	µg/L	5 U	5 U	5UR	5UR	5 U	5 U	5 U	5UR	5UR	5 U	5 U	5 U	5 U	5UR
Acetone	50	µg/L	5 U	0.75 J	9.3R	6.2R	5 U	5 U	5 R	11R	11R	1 U	5 UR	5 R	5 R	6.2R
Benzene	1	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	50	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	50	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	5	µg/L	1 U	1 UJ	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	5	µg/L	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	7	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	5	µg/L	1 U	1 UJ	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	5	µg/L	414 J	1 U	10	3.0	1.9	0.58 J	2.6	1 U	1 U	1 U	1 U	0.55 J	1 U	1 U
cis-1,3-Dichloropropene	0.4	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	50	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
M+P-Xylene	5	µg/L	---	---	1 U	1 U	---	---	---	1 U	1 U	1 U	---	---	---	1 U
Methylene chloride	5	µg/L	2 U	2 U	1 U	1 U	2 U	2 U	2 U	1 U	1 U	1 U	2 U	2 U	2 U	1 U
O-Xylene	5	µg/L	---	---	1 U	1 U	---	---	---	1 U	1 U	1 U	---	---	---	1 U
Styrene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.28 J	0.28 J	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	5	µg/L	2.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	0.4	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	5	µg/L	0.46 J	1 U	4.7	1.0	3.5 U	0.35 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride	2	µg/L	12.4	1 U	2NJ	0.68 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylene (total)	5	µg/L	1 U	3 U	---	---	1 U	1 U	3 U	---	---	1 U	1 U	3 U	1 U	---

TABLE 3.1

GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	*MW-7S*	*MW-7B*	*MW-7B*	*MW-7B*	*MW-7B*	*MW-7B*	*MW-8S*	*MW-8S*	*MW-8S*	*MW-8S*	*MW-8S*	*MW-9S*	*MW-9S*	*MW-9S*
		Sample Date:	*12/4/2006*	*6/25/2002*	*5/27/2003*	*11/4/2003*	*8/26/2005*	*12/4/2006*	*6/24/2002*	*5/27/2003*	*5/27/2003*	*8/3/2004*	*11/30/2006*	*6/24/2002*	*12/19/2002*	*5/27/2003*
					PB	*PB*				*PB*						*PB*
Compound	*Criteria* [1]	*Units*														
Trichlorofluoromethane (CFC-11)	5	µg/L	---	---		---	---	---	---	---	---	---	---	---	---	---
1,1-Dichloropropene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,3-Trichlorobenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,3-Trichloropropane	0.04	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,4-Trimethylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2-Dibromo-3-chloropropane (DBCP)	0.04	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2-Dibromoethane (EDB)	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,3,5-Trimethylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,3-Dichloropropane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,2-Dichloropropane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Phenylbutane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Bromobenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Chlorobromomethane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Cymene	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dibromomethane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dichloromonofluoromethane	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Isopropylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
n-Butylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
n-Propylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
p-Xylene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
tert-Butylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

(1) Groundwater Effluent Limitations, Class GA Groundwater,
NYSDEC TOGS 1.1.1, June 1998.

(2) Guidance value.

--- Compound not analyzed.

D Compounds identified in an analysis at the secondary dilution factor.

E Reported value is outside the calibration range of the instrument.

J Detected concentration is estimated.

N Tentatively identified compound.

NS No standard.

PB Passive Bag sampling technique.

R Reported sample result is not usable.

U Compound was not detected at or above the quantitation limit shown.

[ ] Concentration exceeds criteria.

TABLE 3.1

GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Compound	Criteria [1]	Sample Location: / Sample Date: / Units	MW-9S 8/3/2004	MW-9S 11/4/2003 PB	MW-8S 8/24/2005	MW-9S 8/24/2005	MW-9S 11/30/2006	MW-10B 12/17/2002	MW-10B 5/27/2003 PB	MW-10B 11/4/2003 PB	MW-10B 11/30/2006	MW-11S 12/17/2002	MW-11S 5/27/2003 PB	MW-11S 11/30/1006	MW-11B 12/17/2002	MW-11B 5/27/2003 PB
1,1,1,2-Tetrachloroethane	5	µg/L	---	---	--	---	---	---	---	---	---	---	---	---	---	---
1,1,1-Trichloroethane	5	µg/L	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	5	µg/L	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1	µg/L	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	5	µg/L	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	5	µg/L	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	0.6	µg/L	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1	µg/L	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone (MEK)	50[2]	µg/L	5UR	5UR	5 UJ	5U	5 UR	5 R	5UR	5UR	5 UR	5 R	5UR	5 UR	5 R	5UR
2-Hexanone	50[2]	µg/L	5UR	5UR	5 UJ	5U	5 U	5 UJ	5UR	5UR	5 U	5 UJ	5UR	5 U	5 UJ	5UR
4-Methyl-2-pentanone	NS	µg/L	5UR	5UR	5 UJ	5U	5 U	5 U	5UR	5UR	5 U	5 U	5UR	5 U	5 U	5UR
Acetone	50	µg/L	3.7 J	9.1R	5 UJ	5U	5 UR	5 R	10R	7.6R	5 UR	5 R	7.1R	5 UR	5 R	9.1R
Benzene	1	µg/L	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	50	µg/L	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	50	µg/L	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	5	µg/L	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	5	µg/L	1 U	1 U	1 UJ	1 U	0.55 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	5	µg/L	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	5	µg/L	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	0.29 J	1 U	1 U	1 U	1 U
Chloroethane	5	µg/L	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	7	µg/L	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	5	µg/L	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	5.9 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	5	µg/L	1 U	1 U	1.9 J	0.83 J	1 U	1 U	1 U	1 U	1 U	1 U	1U	1 U	1 U	1U
cis-1,3-Dichloropropene	0.4	µg/L	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	50	µg/L	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	µg/L	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
M+P-Xylene	5	µg/L	1 U	1 U	---	---	---	---	1 U	1 U	---	---	1 U	---	---	1 U
Methylene chloride	5	µg/L	1 U	1 U	2 UJ	2 U	2 U	2 U	1 U	1 U	2 U	2 U	1 U	2 U	2 U	1 U
O-Xylene	5	µg/L	1 U	1 U	---	---	---	---	1 U	1 U	---	---	1 U	---	---	1 U
Styrene	5	µg/L	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	5	µg/L	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	5	µg/L	0.28 J	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	5	µg/L	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	0.4	µg/L	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	5	µg/L	1 U	1 U	8.5 UJ	22 5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride	2	µg/L	1 U	1 U	1.0 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1U	1 U	1 U	1U
Xylene (total)	5	µg/L	0.26 J	---	1 UJ	1 U	1 U	1 U	---	---	1 U	1 U	---	1 U	1 U	---

TABLE 3.1

GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Compound	Criteria [1]	Units	MW-9S 8/3/2004	MW-9S 11/4/2003 PB	MW-8S 8/24/2005	MW-9S 8/24/2005	MW-9S 11/30/2006	MW-10B 12/17/2002	MW-10B 5/27/2003 PB	MW-10B 11/4/2003 PB	MW-10B 11/30/2006	MW-11S 12/17/2002	MW-11S 5/27/2003 PB	MW-11S 11/30/1006	MW-11B 12/17/2002	MW-11B 5/27/2003 PB
Trichlorofluoromethane (CFC-11)	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,1-Dichloropropene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,3-Trichlorobenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,3-Trichloropropane	0.04	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,4-Trimethylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2-Dibromo-3-chloropropane (DBCP)	0.04	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2-Dibromoethane (EDB)	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,3,5-Trimethylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,3-Dichloropropane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,2-Dichloropropane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Phenylbutane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Bromobenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Chlorobromomethane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Cymene	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dibromomethane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dichloromonofluoromethane	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Isopropylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
n-Butylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
n-Propylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
p-Xylene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
tert-Butylbenzene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

(1) Groundwater Effluent Limitations, Class GA Groundwater, NYSDEC TOGS 1.1.1, June 1998.
(2) Guidance value.
--- Compound not analyzed.
D Compounds identified in an analysis at the secondary dilution factor.
E Reported value is outside the calibration range of the instrument.
J Detected concentration is estimated.
N Tentatively identified compound.
NS No standard.
PB Passive Bag sampling technique.
R Reported sample result is not usable.
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[ ] Concentration exceeds criteria.

TABLE 3.1

GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Compound	Criteria [1]	Units	MW-11B 11/30/2006	MW-12S 12/18/2002	MW-12S 5/27/2003 PB	MW-12S 11/30/2006	MW-12B 12/18/2002	MW-12B 5/27/2003 PB	MW-12B 11/30/1006	MW-13S 11/30/2006
		Sample Location:	*MW-11B*	*MW-12S*	*MW-12S*	*MW-12S*	*MW-12B*	*MW-12B*	*MW-12B*	*MW-13S*
		Sample Date:	*11/30/2006*	*12/18/2002*	*5/27/2003 PB*	*11/30/2006*	*12/18/2002*	*5/27/2003 PB*	*11/30/1006*	*11/30/2006*
1,1,1,2-Tetrachloroethane	5	µg/L	---	---	---	---	---	---	---	---
1,1,1-Trichloroethane	5	µg/L	1 U	5 U	1 U	1 U	1 U	1 U	1 U	40 U
1,1,2,2-Tetrachloroethane	5	µg/L	1 U	5 U	1 U	1 U	1 U	1 U	1 U	40 U
1,1,2-Trichloroethane	1	µg/L	1 U	5 U	1 U	1 U	1 U	1 U	1 U	40 U
1,1-Dichloroethane	5	µg/L	1 U	5 U	1 U	1 U	1 U	1 U	1 U	40 U
1,1-Dichloroethene	5	µg/L	1 U	5 U	1 U	1 U	1 U	1 U	1 U	40 U
1,2-Dichloroethane	0.6	µg/L	1 U	5 U	1 U	1 U	1 U	1 U	1 U	40 U
1,2-Dichloropropane	1	µg/L	1 U	5 U	1 U	1 U	1 U	1 U	1 U	40 U
2-Butanone (MEK)	50[2]	µg/L	5 UR	25 R	5UR	5 UR	5 R	5UR	5 UR	200 UR
2-Hexanone	50[2]	µg/L	5 U	25 UJ	5UR	5 U	5 UJ	5UR	5 U	200 U
4-Methyl-2-pentanone	NS	µg/L	5 U	25 U	5UR	5 U	5 U	5UR	5 U	200 U
Acetone	50	µg/L	5 UR	510 J	8.8R	5 UR	5 R	12R	5 UR	200 UR
Benzene	1	µg/L	1 U	5 U	1 U	1 U	1 U	1 U	1 U	40 U
Bromodichloromethane	50	µg/L	1 U	5 U	1 U	1 U	1 U	1 U	1 U	40 U
Bromoform	50	µg/L	1 U	5 U	1 U	1 U	1 U	1 U	1 U	40 U
Bromomethane	5	µg/L	1 U	5 U	1 U	1 U	1 U	1 U	1 U	40 U
Carbon disulfide	5	µg/L	1 U	5 U	1 U	1 U	1 U	1 U	1.0	40 U
Carbon tetrachloride	5	µg/L	1 U	5 U	1 U	1 U	1 U	1 U	1 U	40 U
Chlorobenzene	5	µg/L	1 U	5 U	1 U	1 U	1 U	1 U	1 U	40 U
Chloroethane	5	µg/L	1 U	5 U	1 U	1 U	1 U	1 U	1 U	40 U
Chloroform	7	µg/L	1 U	5 U	1 U	1 U	1 U	1 U	1 U	40 U
Chloromethane	5	µg/L	1 U	7.7 U	1 U	1 U	1 U	1 U	1 U	40 U
cis-1,2-Dichloroethene	5	µg/L	1 U	5 U	1 U	1 U	1 U	1 U	1 U	6870
cis-1,3-Dichloropropene	0.4	µg/L	1 U	5 U	1 U	1 U	1 U	1 U	1 U	40 U
Dibromochloromethane	50	µg/L	1 U	5 U	1 U	1 U	1 U	1 U	1 U	40 U
Ethylbenzene	5	µg/L	1 U	5 U	1 U	1 U	1 U	1 U	1 U	40 U
M+P-Xylene	5	µg/L	---	---	1 U	---	---	1 U	---	---
Methylene chloride	5	µg/L	2 U	10 U	1 U	2 U	2 U	1 U	2 U	80 U
O-Xylene	5	µg/L	---	---	1 U	---	---	1 U	---	---
Styrene	5	µg/L	1 U	5 U	1 U	1 U	1 U	1 U	1 U	40 U
Tetrachloroethene	5	µg/L	1 U	5 U	1 U	1 U	1 U	1 U	1 U	40 U
Toluene	5	µg/L	1 U	5 U	1 U	1 U	0.23 J	1 U	1 U	40 U
trans-1,2-Dichloroethene	5	µg/L	1 U	5 U	1 U	1 U	1 U	1 U	1 U	40 U
trans-1,3-Dichloropropene	0.4	µg/L	1 U	5 U	1 U	1 U	1 U	1 U	1 U	40 U
Trichloroethene	5	µg/L	1 U	5 U	1 U	1 U	1 U	1 U	1 U	845
Vinyl chloride	2	µg/L	1 U	5 U	1 U	1 U	1 U	1 U	1 U	348
Xylene (total)	5	µg/L	1 U	5 U	---	1 U	1 U	---	1 U	40 U

TABLE 3.1

GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Compound	Criteria (1)	Units	MW-11B 11/30/2006	MW-12S 12/18/2002	MW-12S 5/27/2003 PB	MW-12S 11/30/2006	MW-12B 12/18/2002	MW-12B 5/27/2003 PB	MW-12B 11/30/1006	MW-13S 11/30/2006
Trichlorofluoromethane (CFC-11)	5	µg/L	---	---	---	---	---	---	---	---
1,1-Dichloropropene	5	µg/L	---	---	---	---	---	---	---	---
1,2,3-Trichlorobenzene	5	µg/L	---	---	---	---	---	---	---	---
1,2,3-Trichloropropane	0.04	µg/L	---	---	---	---	---	---	---	---
1,2,4-Trimethylbenzene	5	µg/L	---	---	---	---	---	---	---	---
1,2-Dibromo-3-chloropropane (DBCP)	0.04	µg/L	---	---	---	---	---	---	---	---
1,2-Dibromoethane (EDB)	NS	µg/L	---	---	---	---	---	---	---	---
1,3,5-Trimethylbenzene	5	µg/L	---	---	---	---	---	---	---	---
1,3-Dichloropropane	5	µg/L	---	---	---	---	---	---	---	---
2,2-Dichloropropane	5	µg/L	---	---	---	---	---	---	---	---
2-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---
2-Phenylbutane	5	µg/L	---	---	---	---	---	---	---	---
3-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---
4-Chlorotoluene	5	µg/L	---	---	---	---	---	---	---	---
Bromobenzene	5	µg/L	---	---	---	---	---	---	---	---
Chlorobromomethane	5	µg/L	---	---	---	---	---	---	---	---
Cymene	NS	µg/L	---	---	---	---	---	---	---	---
Dibromomethane	5	µg/L	---	---	---	---	---	---	---	---
Dichloromonofluoromethane	NS	µg/L	---	---	---	---	---	---	---	---
Isopropylbenzene	5	µg/L	---	---	---	---	---	---	---	---
n-Butylbenzene	5	µg/L	---	---	---	---	---	---	---	---
n-Propylbenzene	5	µg/L	---	---	---	---	---	---	---	---
p-Xylene	5	µg/L	---	---	---	---	---	---	---	---
tert-Butylbenzene	5	µg/L	---	---	---	---	---	---	---	---

Notes:
(1) Groundwater Effluent Limitations, Class GA Groundwater,
NYSDEC TOGS 1.1.1, June 1998.
(2) Guidance value.
--- Compound not analyzed.
D Compounds identified in an analysis at the secondary dilution factor.
E Reported value is outside the calibration range of the instrument.
J Detected concentration is estimated.
N Tentatively identified compound.
NS No standard.
PB Passive Bag sampling technique.
R Reported sample result is not usable.
U Compound was not detected at or above the quantitation limit shown.
[ ] Concentration exceeds criteria.

TABLE 3.1

GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Compound	Criteria [1]	Units	MW-14S	MW-15S	MW-16S	MW-16B	TMW-1	TMW-2	GP-1	GP-1A
		Sample Location:	MW-14S	MW-15S	MW-16S	MW-16B	TMW-1	TMW-2	GP-1	GP-1A
		Sample Date:	12/6/2006	12/7/2006	12/6/2006	12/6/2006	11/28/2006	11/29/2006	4/26/2002	8/2/2004
1,1,1,2-Tetrachloroethane	5	µg/L	---	---	---	---	---	---	5 U	---
1,1,1-Trichloroethane	5	µg/L	50 U	25 U	1 U	1 U	1 U	1 U	5 U	1 U
1,1,2,2-Tetrachloroethane	5	µg/L	50 U	25 U	1 U	1 U	1 U	1 U	5 U	1 U
1,1,2-Trichloroethane	1	µg/L	50 U	25 U	1 U	1 U	1 U	1 U	5 U	1 U
1,1-Dichloroethane	5	µg/L	50 U	25 U	1 U	1 U	1 U	1 U	5 U	1 U
1,1-Dichloroethene	5	µg/L	51.8	13.7 J	1 U	1 U	1 U	1 U	5 U	1 U
1,2-Dichloroethane	0.6	µg/L	50 U	25 U	1 U	1 U	1 U	1 U	5 U	1 U
1,2-Dichloropropane	1	µg/L	50 U	25 U	1 U	1 U	1 U	1 U	5 U	1 U
2-Butanone (MEK)	50[2]	µg/L	250 UR	130 U	5 UR	5 UR	5 UR	5 UR	---	5 U
2-Hexanone	50[2]	µg/L	250 U	130 U	5 U	5 U	5 U	5 U	---	5 J
4-Methyl-2-pentanone	NS	µg/L	250 U	130 U	5 U	5 U	5 U	5 U	---	5 J
Acetone	50	µg/L	250 U	130 U	5 U	5 U	5 UR	5 UR	---	5R
Benzene	1	µg/L	50 U	25 U	1 U	1 U	1 U	1 U	5 U	1 U
Bromodichloromethane	50	µg/L	50 U	25 U	1 U	1 U	1 U	1 U	5 U	1 U
Bromoform	50	µg/L	50 U	25 U	1 U	1 U	1 U	1 U	5 U	1 U
Bromomethane	5	µg/L	50 U	25 U	1 U	1 U	1 U	1 U	5 U	1 U
Carbon disulfide	5	µg/L	50 U	25 U	1 UJ	1 UJ	1 U	1 U	---	1 U
Carbon tetrachloride	5	µg/L	50 U	25 U	1 U	1 U	1 U	1 U	5 U	1 U
Chlorobenzene	5	µg/L	50 U	25 U	1 U	1 U	1 U	1 U	5 U	1 U
Chloroethane	5	µg/L	50 U	25 U	1 U	1 U	1 U	1 U	5 U	1 U
Chloroform	7	µg/L	50 U	25 U	1 U	1 U	1 U	1 U	5 U	1 U
Chloromethane	5	µg/L	50 U	25 U	1 U	1 U	1 U	1 U	5 U	1J
cis-1,2-Dichloroethene	5	µg/L	28200	20800	5.7	16.0	1 U	1 U	5 U	1 U
cis-1,3-Dichloropropene	0.4	µg/L	50 U	25 U	1 U	1 U	1 U	1 U	5 U	1 U
Dibromochloromethane	50	µg/L	50 U	25 U	1 U	1 U	1 U	1 U	5 U	1 U
Ethylbenzene	5	µg/L	50 U	25 U	1 U	1 U	1 U	1 U	0.33 J	1 U
M+P-Xylene	5	µg/L	---	---	---	---	---	---	1.3 J	1 U
Methylene chloride	5	µg/L	100 U	50 U	2 U	2 U	2 U	2 U	5 U	1 U
O-Xylene	5	µg/L	---	---	---	---	---	---	0.52 J	1 U
Styrene	5	µg/L	50 U	25 U	1 U	1 U	1 U	1 U	5 U	1 U
Tetrachloroethene	5	µg/L	50 U	25 U	1 U	1 U	1 U	1 U	5 U	1 U
Toluene	5	µg/L	639	98.9	1 U	0.72 J	1 U	0.51 J	1.3 J	1 U
trans-1,2-Dichloroethene	5	µg/L	80.0	30.8	1 U	1 U	1 U	1 U	5 U	1 U
trans-1,3-Dichloropropene	0.4	µg/L	50 U	25 U	1 U	1 U	1 U	1 U	5 U	1 U
Trichloroethene	5	µg/L	254	5.6 J	8.4	1 U	1 U	1 U	0.24 BJ	1 U
Vinyl chloride	2	µg/L	4610	9040	1 U	1.2	1 U	1 U	5 U	1 U
Xylene (total)	5	µg/L	50 U	25 U	1 U	1 U	1 U	1 U	---	1 U

TABLE 3.1

GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Compound	*Criteria* [1]	*Units*	*Sample Location:* / *Sample Date:* MW-14S 12/6/2006	MW-15S 12/7/2006	MW-16S 12/6/2006	MW-16B 12/6/2006	TMW-1 11/28/2006	TMW-2 11/29/2006	GP-1 4/26/2002	GP-1A 8/2/2004
Trichlorofluoromethane (CFC-11)	5	µg/L	---	---	---	---	---	---	5 U	---
1,1-Dichloropropene	5	µg/L	---	---	---	---	---	---	5 U	---
1,2,3-Trichlorobenzene	5	µg/L	---	---	---	---	---	---	5 U	---
1,2,3-Trichloropropane	0.04	µg/L	---	---	---	---	---	---	5 U	---
1,2,4-Trimethylbenzene	5	µg/L	---	---	---	---	---	---	0.28 J	---
1,2-Dibromo-3-chloropropane (DBCP)	0.04	µg/L	---	---	---	---	---	---	5 U	---
1,2-Dibromoethane (EDB)	NS	µg/L	---	---	---	---	---	---	5 U	---
1,3,5-Trimethylbenzene	5	µg/L	---	---	---	---	---	---	5 U	---
1,3-Dichloropropane	5	µg/L	---	---	---	---	---	---	5 U	---
2,2-Dichloropropane	5	µg/L	---	---	---	---	---	---	5 U	---
2-Chlorotoluene	5	µg/L	---	---	---	---	---	---	5 U	---
2-Phenylbutane	5	µg/L	---	---	---	---	---	---	5 U	---
3-Chlorotoluene	5	µg/L	---	---	---	---	---	---	5 U	---
4-Chlorotoluene	5	µg/L	---	---	---	---	---	---	5 U	---
Bromobenzene	5	µg/L	---	---	---	---	---	---	5 U	---
Chlorobromomethane	5	µg/L	---	---	---	---	---	---	5 U	---
Cymene	NS	µg/L	---	---	---	---	---	---	0.45 J	---
Dibromomethane	5	µg/L	---	---	---	---	---	---	5 U	---
Dichloromonofluoromethane	NS	µg/L	---	---	---	---	---	---	5 U	---
Isopropylbenzene	5	µg/L	---	---	---	---	---	---	5 U	---
n-Butylbenzene	5	µg/L	---	---	---	---	---	---	5 U	---
n-Propylbenzene	5	µg/L	---	---	---	---	---	---	5 U	---
p-Xylene	5	µg/L	---	---	---	---	---	---	---	---
tert-Butylbenzene	5	µg/L	---	---	---	---	---	---	5 U	---

Notes:
(1) Groundwater Effluent Limitations, Class GA Groundwater, NYSDEC TOGS 1.1.1, June 1998.
(2) Guidance value.
--- Compound not analyzed.
D Compounds identified in an analysis at the secondary dilution factor.
E Reported value is outside the calibration range of the instrument.
J Detected concentration is estimated.
N Tentatively identified compound.
NS No standard.
PB Passive Bag sampling technique.
R Reported sample result is not usable.
U Compound was not detected at or above the quantitation limit shown.
[ ] Concentration exceeds criteria.

TABLE 3.1

GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Compound	Criteria [1]	Units	GP-2	GP-2A	GP-3A	GP-4	GP-4A	GP-5	GP-6	GP-7A	GP-8	GP-9	GP-10	GP-11	GP-12	GP-13	GP-14
Sample Date:			4/25/2002	8/2/2004	8/2/2004	4/24/2002	8/3/2004	4/25/2002	4/26/2002	8/3/2004	4/24/2002	4/26/2002	4/24/2002	4/30/2002	4/26/2002	4/30/2002	4/26/2002
1,1,1,2-Tetrachloroethane	5	µg/L	5 U	---	---	5 U	---	5 U	20 U	---	5 U	2 U	5 U	20 U	5 U	10 U	200 U
1,1,1-Trichloroethane	5	µg/L	5 U	1 U	1 U	5 U	1 U	5 U	20 U	1 U	5 U	2 U	5 U	20 U	5 U	10 U	200 U
1,1,2,2-Tetrachloroethane	5	µg/L	5 U	1 U	1 U	5 U	1 U	5 U	20 U	1 U	5 U	2 U	5 U	20 U	5 U	10 U	200 U
1,1,2-Trichloroethane	1	µg/L	5 U	1 U	1 U	5 U	1 U	5 U	20 U	1 U	5 U	2 U	5 U	20 U	5 U	10 U	200 U
1,1-Dichloroethane	5	µg/L	5 U	1 U	1 U	5 U	1 U	5 U	20 U	1 U	5 U	2 U	5 U	20 U	5 U	10 U	200 U
1,1-Dichloroethene	5	µg/L	5 U	1 U	1 U	5 U	1 U	5 U	20 U	1 U	0.37 J	2 U	5 U	20 U	5 U	22	200 U
1,2-Dichloroethane	0.6	µg/L	5 U	1 U	1 U	5 U	1 U	5 U	20 U	1 U	5 U	2 U	5 U	20 U	5 U	10 U	200 U
1,2-Dichloropropane	1	µg/L	5 U	1 U	1 U	5 U	1 U	5 U	20 U	1 U	5 U	2 U	5 U	20 U	5 U	10 U	200 U
2-Butanone (MEK)	50[2]	µg/L	---	5 U	5 R	---	5 R	---	---	5 R	---	---	---	---	---	---	---
2-Hexanone	50[2]	µg/L	---	5 J	5 U	---	5 U	---	---	5 U	---	---	---	---	---	---	---
4-Methyl-2-pentanone	NS	µg/L	---	5 J	5 U	---	5 U	---	---	5 U	---	---	---	---	---	---	---
Acetone	50	µg/L	---	4.1J	3.6J	---	1 U	---	---	2.5J	---	---	---	---	---	---	---
Benzene	1	µg/L	5 U	1 U	1 U	5 U	0.32 J	0.3 J	20 U	1 U	5 U	2 U	0.21 J	20 U	5 U	3.3 J	200 U
Bromodichloromethane	50	µg/L	5 U	1 U	1 U	5 U	1 U	5 U	20 U	1 U	5 U	2 U	5 U	20 U	5 U	10 U	200 U
Bromoform	50	µg/L	5 U	1 U	1 U	5 U	1 U	5 U	20 U	1 U	5 U	2 U	5 U	20 U	5 U	10 U	200 U
Bromomethane	5	µg/L	5 U	1 U	1 U	5 U	1 U	5 U	20 U	1 U	5 U	2 U	5 U	20 U	5 U	10 U	200 U
Carbon disulfide	5	µg/L	---	1 U	1 U	---	1.9	---	---	1.9		---	---	---	---	---	---
Carbon tetrachloride	5	µg/L	5 U	1 U	1 U	5 U	1 U	5 U	20 U	1 U	5 U	2 U	5 U	20 U	5 U	10 U	200 U
Chlorobenzene	5	µg/L	5 U	1 U	1 U	5 U	1 U	5 U	20 U	1 U	5 U	2 U	5 U	20 U	5 U	10 U	200 U
Chloroethane	5	µg/L	5 U	1 U	1 U	5 U	1 U	5 U	20 U	1 U	5 U	2 U	5 U	20 U	5 U	10 U	200 U
Chloroform	7	µg/L	5 U	1 U	1 U	5 U	1 U	5 U	20 U	1 U	5 U	2 U	5 U	20 U	5 U	10 U	200 U
Chloromethane	5	µg/L	5 U	1J	1 U	5 U	1 U	5 U	20 U	1 U	5 U	2 U	5 U	20 U	5 U	10 U	200 U
cis-1,2-Dichloroethene	5	µg/L	2.9 J	1 U	1 U	8.7	1 U	170 BD	30	1 U	230 D	14	22 D	420	21	9100 D	180 J
cis-1,3-Dichloropropene	0.4	µg/L	5 U	1 U	1 U	5 U	1 U	5 U	20 U	1 U	5 U	2 U	5 U	20 U	5 U	10 U	200 U
Dibromochloromethane	50	µg/L	5 U	1 U	1 U	5 U	1 U	5 U	20 U	1 U	5 U	2 U	5 U	20 U	5 U	10 U	200 U
Ethylbenzene	5	µg/L	5 U	1 U	1 U	5 U	1 U	5 U	360	1 U	5 U	2 U	5 U	20 U	5 U	10 U	200 U
M+P-Xylene	5	µg/L	5 U	1 U	1 U	5 U	1 U	5 U	1600	1 U	5 U	4 U	5 U	40 U	5 U	20 U	400 U
Methylene chloride	5	µg/L	0.66 J	1 U	1 U	5 U	1 U	5 U	20 U	1 U	5 U	2 U	5 U	8.6 J	5 U	10 U	200 U
O-Xylene	5	µg/L	5 U	1 U	1 U	5 U	1 U	5 U	520	1 U	5 U	2 U	5 U	20 U	5 U	10 U	200 U
Styrene	5	µg/L	5 U	1 U	1 U	5 U	1 U	5 U	20 U	1 U	5 U	2 U	5 U	20 U	5 U	10 U	200 U
Tetrachloroethene	5	µg/L	0.28 J	1 U	1 U	5 U	1 U	5 U	20 U	1 U	5 U	2 U	5 U	4.5 J	5 U	10 U	200 U
Toluene	5	µg/L	0.4 J	1 U	1 U	5 U	1.1	0.55 J	660	0.32J	5 U	0.58 J	0.28 J	9 BJ	0.27 BJ	29 B	200 U
trans-1,2-Dichloroethene	5	µg/L	0.23 J	1 U	1 U	5 U	1 U	0.46 J	20 U	1 U	1 J	2 U	5 U	4.1 J	5 U	40	200 U
trans-1,3-Dichloropropene	0.4	µg/L	5 U	1 U	1 U	5 U	1 U	5 U	20 U	1 U	5 U	2 U	5 U	20 U	5 U	10 U	200 U
Trichloroethene	5	µg/L	2.6 J	1 U	1 U	0.5 J	1 U	1.5 J	4.5 J	1 U	0.4 J	4.4 B	0.5 J	140 B	2.5 BJ	1900 BD	73 J
Vinyl chloride	2	µg/L	3.9 J	1 U	1 U	2.4 J	1 U	31	5.7 J	1 U	45 D	1 J	12	28	7.2	490 D	2700
Xylene (total)	5	µg/L	---	1 U	1 U	---	1.1	---	---	1 U	---	---	---	---	---	---	---

TABLE 3.1

GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Compound	Criteria (1)	Units	GP-2	GP-2A	GP-3A	GP-4	GP-4A	GP-5	GP-6	GP-7A	GP-8	GP-9	GP-10	GP-11	GP-12	GP-13	GP-14
		Sample Date:	4/25/2002	8/2/2004	8/2/2004	4/24/2002	8/3/2004	4/25/2002	4/26/2002	8/3/2004	4/24/2002	4/26/2002	4/24/2002	4/30/2002	4/26/2002	4/30/2002	4/26/2002
Trichlorofluoromethane (CFC-11)	5	µg/L	5 U	---	---	5 U	---	5 U	20 U	---	5 U	2 U	5 U	20 U	5 U	10 U	200 U
1,1-Dichloropropene	5	µg/L	5 U	---	---	5 U	---	5 U	20 U	---	5 U	2 U	5 U	20 U	5 U	10 U	200 U
1,2,3-Trichlorobenzene	5	µg/L	5 U	---	---	5 U	---	5 U	20 U	---	5 U	2 U	5 U	20 U	5 U	10 U	200 U
1,2,3-Trichloropropane	0.04	µg/L	5 U	---	---	5 U	---	5 U	20 U	---	5 U	2 U	5 U	20 U	5 U	10 U	200 U
1,2,4-Trimethylbenzene	5	µg/L	0.21 J	---	---	5 U	---	5 U	29	---	5 U	2 U	5 U	20 U	5 U	10 U	200 U
1,2-Dibromo-3-chloropropane (DBCP)	0.04	µg/L	5 U	---	---	5 U	---	5 U	20 U	---	5 U	2 U	5 U	20 U	5 U	10 U	200 U
1,2-Dibromoethane (EDB)	NS	µg/L	5 U	---	---	5 U	---	5 U	20 U	---	5 U	2 U	5 U	20 U	5 U	10 U	200 U
1,3,5-Trimethylbenzene	5	µg/L	5 U	---	---	5 U	---	5 U	7.9 J	---	5 U	2 U	5 U	20 U	5 U	10 U	200 U
1,3-Dichloropropane	5	µg/L	5 U	---	---	5 U	---	5 U	20 U	---	5 U	2 U	5 U	20 U	5 U	10 U	200 U
2,2-Dichloropropane	5	µg/L	5 U	---	---	5 U	---	5 U	20 U	---	5 U	2 U	5 U	20 U	5 U	10 U	200 U
2-Chlorotoluene	5	µg/L	5 U	---	---	5 U	---	5 U	20 U	---	5 U	2 U	5 U	20 U	5 U	10 U	200 U
2-Phenylbutane	5	µg/L	5 U	---	---	5 U	---	5 U	20 U	---	5 U	2 U	5 U	20 U	5 U	10 U	200 U
3-Chlorotoluene	5	µg/L	5 U	---	---	5 U	---	5 U	20 U	---	5 U	2 U	5 U	20 U	5 U	10 U	200 U
4-Chlorotoluene	5	µg/L	5 U	---	---	5 U	---	5 U	20 U	---	5 U	2 U	5 U	20 U	5 U	10 U	200 U
Bromobenzene	5	µg/L	5 U	---	---	5 U	---	5 U	20 U	---	5 U	2 U	5 U	20 U	5 U	10 U	200 U
Chlorobromomethane	5	µg/L	5 U	---	---	5 U	---	5 U	20 U	---	5 U	2 U	5 U	20 U	5 U	10 U	200 U
Cymene	NS	µg/L	5 U	---	---	5 U	---	5 U	20 U	---	5 U	2 U	5 U	20 U	5 U	10 U	200 U
Dibromomethane	5	µg/L	5 U	---	---	5 U	---	5 U	20 U	---	5 U	2 U	5 U	20 U	5 U	10 U	200 U
Dichloromonofluoromethane	NS	µg/L	5 U	---	---	5 U	---	5 U	20 U	---	5 U	2 U	5 U	20 U	5 U	10 U	200 U
Isopropylbenzene	5	µg/L	5 U	---	---	5 U	---	5 U	20 U	---	5 U	2 U	5 U	20 U	5 U	10 U	200 U
n-Butylbenzene	5	µg/L	5 U	---	---	5 U	---	5 U	20 U	---	5 U	2 U	5 U	20 U	5 U	10 U	200 U
n-Propylbenzene	5	µg/L	5 U	---	---	5 U	---	5 U	20 U	---	5 U	2 U	5 U	20 U	5 U	10 U	200 U
p-Xylene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
tert-Butylbenzene	5	µg/L	5 U	---	---	5 U	---	5 U	20 U	---	5 U	2 U	5 U	20 U	5 U	10 U	200 U

Notes:

(1) Groundwater Effluent Limitations, Class GA Groundwater, NYSDEC TOGS 1.1.1, June 1998.

(2) Guidance value.

--- Compound not analyzed.

D Compounds identified in an analysis at the secondary dilution factor.

E Reported value is outside the calibration range of the instrument.

J Detected concentration is estimated.

N Tentatively identified compound.

NS No standard.

PB Passive Bag sampling technique.

R Reported sample result is not usable.

U Compound was not detected at or above the quantitation limit shown.

[Boxed] Concentration exceeds criteria.

TABLE 3.2

GROUNDWATER ANALYTICAL RESULTS -SEMI-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Compound	*Criteria* [1]	*Units*	*GP-1*	*GP-2*	*GP-4*	*GP-5*	*GP-6*	*GP-8*	*GP-9*	*GP-10*	*GP-11*	*GP-12*	*GP-13*	*GP-14*	*GP-15*
		Sample Date:	*4/26/02*	*4/25/02*	*4/24/02*	*4/25/02*	*4/26/02*	*4/24/02*	*4/26/02*	*4/24/02*	*4/30/02*	*4/26/02*	*4/30/02*	*4/26/02*	*4/26/02*
Acenaphthene	20	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Acenaphthylene	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Anthracene	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(a)anthracene	0.002	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(b)fluoranthene	0.002	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(k)fluoranthene	0.002	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(g,h,i)perylene	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(a)pyrene	ND	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
bis(2-Chloroethoxy)methane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
bis(2-Chloroethyl)ether	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
bis(2-Chloroisopropyl)ether	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
bis(2-Ethylhexyl)phthalate	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Bromophenyl phenyl ether	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Butyl benzylphthalate	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Chloroaniline	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Chloro-3-methylphenol	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Chloronaphthalene	10	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Chlorophenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Chlorophenyl phenyl ether	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Chrysene	0.002	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Dibenzo(a,h)anthracene	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Dibenzofuran	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Di-n-butylphthalate	50	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2-Dichlorobenzene	3	µg/L	5 U	5 U	5 U	5 U	20 U	5 U	2 U	5 U	20 U	5 U	10 U	200 U	200 U
1,3-Dichlorobenzene	3	µg/L	5 U	5 U	5 U	5 U	20 U	5 U	2 U	5 U	20 U	5 U	10 U	200 U	200 U
1,4-Dichlorobenzene	3	µg/L	5 U	5 U	5 U	5 U	20 U	5 U	2 U	5 U	20 U	5 U	10 U	200 U	200 U
3,3'-Dichlorobenzidine	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dichlorophenol	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Diethyl phthalate	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dimethylphenol	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Dimethyl phthalate	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4,6-Dinitro-2-methylphenol	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dinitrophenol	10	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dinitrotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2,6-Dinitrotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Di-n-octyl phthalate	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Fluoranthene	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Fluorene	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 3.2

GROUNDWATER ANALYTICAL RESULTS -SEMI-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	*GP-1*	*GP-2*	*GP-4*	*GP-5*	*GP-6*	*GP-8*	*GP-9*	*GP-10*	*GP-11*	*GP-12*	*GP-13*	*GP-14*	*GP-15*
		Sample Date:	*4/26/02*	*4/25/02*	*4/24/02*	*4/25/02*	*4/26/02*	*4/24/02*	*4/26/02*	*4/24/02*	*4/30/02*	*4/26/02*	*4/30/02*	*4/26/02*	*4/26/02*
Compound	*Criteria* [1]	*Units*													
Hexachlorobenzene	0.04	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Hexachlorobutadiene	0.5	µg/L	5 U	5 U	5 U	5 U	20 U	5 U	2 U	5 U	20 U	5 U	10 U	200 U	200 U
Hexachlorocyclopentadiene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Hexachloroethane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Indeno(1,2,3-cd)pyrene	0.002	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Isophorone	50	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Methyl naphthalene	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Methylphenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Methylphenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Naphthalene	10	µg/L	0.91 J	0.95 J	5 U	5 U	22	5 U	2 U	5 U	20 U	5 U	10 U	200 U	200 U
2-Nitroaniline	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
3-Nitroaniline	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Nitroaniline	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Nitrobenzene	0.4	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Nitrophenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Nitrophenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
N-Nitrosodiphenylamine	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
N-Nitrosodi-n-propylamine	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Pentachlorophenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Phenanthrene	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Phenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Pyrene	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,4-Trichlorobenzene	5	µg/L	5 U	5 U	5 U	5 U	20 U	5 U	2 U	5 U	20 U	5 U	10 U	200 U	200 U
2,4,5-Trichlorophenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4,6-Trichlorophenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

(1) Groundwater Effluent Limitations, Class GA Groundwater, NYSDEC TOGS 1.1.1, June 1998.

(2) Guidance value.

--- Not analyzed.

J Detected concentration is estimated.

NS No standard.

U Compound was not detected at or above the quantitation limit shown.

[box] Concentration exceeds criteria.

TABLE 3.2

GROUNDWATER ANALYTICAL RESULTS -SEMI-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	GP-16	GP-17	GP-18	GP-19	GP-20	GP-22	GP-23	GP-24	GP-25	GP-25	GP-26	GP-27	GP-28
		Sample Date:	4/25/02	4/25/02	4/24/02	5/1/02	5/2/02	4/25/02	4/25/02	4/24/02	4/30/02	4/30/02 Duplicate	5/1/02	4/26/02	5/1/02
Compound	Criteria[1]	Units													
Acenaphthene	20	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Acenaphthylene	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Anthracene	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(a)anthracene	0.002	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(b)fluoranthene	0.002	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(k)fluoranthene	0.002	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(g,h,i)perylene	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(a)pyrene	ND	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
bis(2-Chloroethoxy)methane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
bis(2-Chloroethyl)ether	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
bis(2-Chloroisopropyl)ether	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
bis(2-Ethylhexyl)phthalate	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Bromophenyl phenyl ether	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Butyl benzylphthalate	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Chloroaniline	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Chloro-3-methylphenol	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Chloronaphthalene	10	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Chlorophenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Chlorophenyl phenyl ether	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Chrysene	0.002	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Dibenzo(a,h)anthracene	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Dibenzofuran	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Di-n-butylphthalate	50	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2-Dichlorobenzene	3	µg/L	20 U	5 U	5 U	10 U	100 U	2 U	5 U	5 U	10 U	10 U	20 U	5 U	10 U
1,3-Dichlorobenzene	3	µg/L	20 U	5 U	5 U	10 U	100 U	2 U	5 U	5 U	10 U	10 U	20 U	5 U	10 U
1,4-Dichlorobenzene	3	µg/L	20 U	5 U	5 U	10 U	100 U	2 U	5 U	5 U	10 U	10 U	20 U	5 U	10 U
3,3'-Dichlorobenzidine	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dichlorophenol	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Diethyl phthalate	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dimethylphenol	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Dimethyl phthalate	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4,6-Dinitro-2-methylphenol	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dinitrophenol	10	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dinitrotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2,6-Dinitrotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Di-n-octyl phthalate	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Fluoranthene	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Fluorene	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 3.2

GROUNDWATER ANALYTICAL RESULTS -SEMI-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	*GP-16*	*GP-17*	*GP-18*	*GP-19*	*GP-20*	*GP-22*	*GP-23*	*GP-24*	*GP-25*	*GP-25*	*GP-26*	*GP-27*	*GP-28*
		Sample Date:	*4/25/02*	*4/25/02*	*4/24/02*	*5/1/02*	*5/2/02*	*4/25/02*	*4/25/02*	*4/24/02*	*4/30/02*	*4/30/02*	*5/1/02*	*4/26/02*	*5/1/02*
												Duplicate			
Compound	*Criteria* (1)	*Units*													
Hexachlorobenzene	0.04	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Hexachlorobutadiene	0.5	µg/L	20 U	5 U	5 U	10 U	100 U	2 U	5 U	5 U	10 U	10 U	20 U	5 U	10 U
Hexachlorocyclopentadiene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Hexachloroethane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Indeno(1,2,3-cd)pyrene	0.002	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Isophorone	50	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Methyl naphthalene	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Methylphenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Methylphenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Naphthalene	10	µg/L	15 J	1.4 J	5 U	10 U	100 U	2.7	0.66 J	5 U	8.7 J	9.1 J	20 U	0.83 J	2.9 J
2-Nitroaniline	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
3-Nitroaniline	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Nitroaniline	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Nitrobenzene	0.4	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Nitrophenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Nitrophenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
N-Nitrosodiphenylamine	50(2)	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
N-Nitrosodi-n-propylamine	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Pentachlorophenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Phenanthrene	50(2)	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Phenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Pyrene	50(2)	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,4-Trichlorobenzene	5	µg/L	20 U	5 U	5 U	10 U	100 U	2 U	5 U	5 U	10 U	10 U	20 U	5 U	10 U
2,4,5-Trichlorophenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4,6-Trichlorophenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:
(1) Groundwater Effluent Limitations, Class GA Groundwater, NYSDEC TOGS 1.1.1, June 1998.
(2) Guidance value.
--- Not analyzed.
J Detected concentration is estimated.
NS No standard.
U Compound was not detected at or above the quantitation limit shown.
[box] Concentration exceeds criteria.

TABLE 3.2

GROUNDWATER ANALYTICAL RESULTS -SEMI-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Compound	*Criteria* [1]	*Units*	GP-29 4/26/02	GP-30 4/26/02	GP-31 4/24/02	GP-32 4/24/02	GP-33 5/1/02	GP-34 5/2/02	GP-34 5/2/02 Duplicate	GP-35 4/23/02	GP-36 4/23/02	GP-37 4/23/02	GP-38 4/23/02	GP-39 4/23/02	GP-40 5/2/02
Acenaphthene	20	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Acenaphthylene	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Anthracene	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(a)anthracene	0.002	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(b)fluoranthene	0.002	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(k)fluoranthene	0.002	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(g,h,i)perylene	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(a)pyrene	ND	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
bis(2-Chloroethoxy)methane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
bis(2-Chloroethyl)ether	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
bis(2-Chloroisopropyl)ether	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
bis(2-Ethylhexyl)phthalate	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Bromophenyl phenyl ether	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Butyl benzylphthalate	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Chloroaniline	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Chloro-3-methylphenol	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Chloronaphthalene	10	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Chlorophenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Chlorophenyl phenyl ether	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Chrysene	0.002	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Dibenzo(a,h)anthracene	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Dibenzofuran	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Di-n-butylphthalate	50	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2-Dichlorobenzene	3	µg/L	10 U	5 U	5 U	200 U	1 U	100 U	100 U	5 U	5 U	5 U	5 U	5 U	1 U
1,3-Dichlorobenzene	3	µg/L	10 U	5 U	5 U	200 U	1 U	100 U	100 U	5 U	5 U	5 U	5 U	5 U	1 U
1,4-Dichlorobenzene	3	µg/L	10 U	5 U	5 U	200 U	1 U	100 U	100 U	5 U	5 U	5 U	5 U	5 U	1 U
3,3'-Dichlorobenzidine	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dichlorophenol	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Diethyl phthalate	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dimethylphenol	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Dimethyl phthalate	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4,6-Dinitro-2-methylphenol	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dinitrophenol	10	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dinitrotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2,6-Dinitrotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Di-n-octyl phthalate	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Fluoranthene	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Fluorene	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 3.2

GROUNDWATER ANALYTICAL RESULTS -SEMI-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	GP-29	GP-30	GP-31	GP-32	GP-33	GP-34	GP-34	GP-35	GP-36	GP-37	GP-38	GP-39	GP-40
		Sample Date:	4/26/02	4/26/02	4/24/02	4/24/02	5/1/02	5/2/02	5/2/02 Duplicate	4/23/02	4/23/02	4/23/02	4/23/02	4/23/02	5/2/02
Compound	Criteria [1]	Units													
Hexachlorobenzene	0.04	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Hexachlorobutadiene	0.5	µg/L	10 U	5 U	5 U	200 U	1 U	100 U	100 U	5 U	5 U	5 U	5 U	5 U	1 U
Hexachlorocyclopentadiene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Hexachloroethane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Indeno(1,2,3-cd)pyrene	0.002	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Isophorone	50	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Methyl naphthalene	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Methylphenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Methylphenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Naphthalene	10	µg/L	10 U	5 U	5 U	200 U	1 U	100 U	100 U	0.76 J	5 U	5 U	5 U	5 U	1 U
2-Nitroaniline	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
3-Nitroaniline	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Nitroaniline	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Nitrobenzene	0.4	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Nitrophenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Nitrophenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
N-Nitrosodiphenylamine	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
N-Nitrosodi-n-propylamine	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Pentachlorophenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Phenanthrene	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Phenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Pyrene	50[2]	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,4-Trichlorobenzene	5	µg/L	10 U	5 U	5 U	200 U	1 U	100 U	100 U	5 U	5 U	5 U	5 U	5 U	1 U
2,4,5-Trichlorophenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4,6-Trichlorophenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

(1) Groundwater Effluent Limitations, Class GA Groundwater, NYSDEC TOGS 1.1.1, June 1998.

(2) Guidance value.

--- Not analyzed.

J Detected concentration is estimated.

NS No standard.

U Compound was not detected at or above the quantitation limit shown.

[box] Concentration exceeds criteria.

TABLE 3.2

GROUNDWATER ANALYTICAL RESULTS -SEMI-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	GP-41	GP-42	GP-43	GP-43	GP-45	GP-46	GP-47	GP-49	GP-50	GP-51	GP-53	GP-54	GP-56
		Sample Date:	5/2/02	5/2/02	5/2/02	5/2/02 Duplicate	11/21/02	11/21/02	11/21/02	11/21/02	11/21/02	11/21/02	11/21/02	11/21/02	11/21/02
Compound	Criteria (1)	Units													
Acenaphthene	20	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Acenaphthylene	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Anthracene	50(2)	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(a)anthracene	0.002	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(b)fluoranthene	0.002	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(k)fluoranthene	0.002	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(g,h,i)perylene	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(a)pyrene	ND	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
bis(2-Chloroethoxy)methane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
bis(2-Chloroethyl)ether	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
bis(2-Chloroisopropyl)ether	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
bis(2-Ethylhexyl)phthalate	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Bromophenyl phenyl ether	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Butyl benzylphthalate	50(2)	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Chloroaniline	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Chloro-3-methylphenol	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Chloronaphthalene	10	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Chlorophenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Chlorophenyl phenyl ether	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Chrysene	0.002	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Dibenzo(a,h)anthracene	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Dibenzofuran	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Di-n-butylphthalate	50	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2-Dichlorobenzene	3	µg/L	1 U	1 U	1 U	1 U	4 U	2 U	1 U	20 U	10 U	200 U	50 U	1 U	50 U
1,3-Dichlorobenzene	3	µg/L	1 U	1 U	1 U	1 U	4 U	2 U	1 U	20 U	10 U	200 U	50 U	1 U	50 U
1,4-Dichlorobenzene	3	µg/L	1 U	1 U	1 U	1 U	4 U	2 U	1 U	20 U	10 U	200 U	50 U	1 U	50 U
3,3'-Dichlorobenzidine	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dichlorophenol	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Diethyl phthalate	50(2)	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dimethylphenol	50(2)	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Dimethyl phthalate	50(2)	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4,6-Dinitro-2-methylphenol	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dinitrophenol	10	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dinitrotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2,6-Dinitrotoluene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Di-n-octyl phthalate	50(2)	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Fluoranthene	50(2)	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Fluorene	50(2)	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 3.2

GROUNDWATER ANALYTICAL RESULTS -SEMI-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	*GP-41*	*GP-42*	*GP-43*	*GP-43*	*GP-45*	*GP-46*	*GP-47*	*GP-49*	*GP-50*	*GP-51*	*GP-53*	*GP-54*	*GP-56*
		Sample Date:	*5/2/02*	*5/2/02*	*5/2/02*	*5/2/02* *Duplicate*	*11/21/02*	*11/21/02*	*11/21/02*	*11/21/02*	*11/21/02*	*11/21/02*	*11/21/02*	*11/21/02*	*11/21/02*
Compound	*Criteria* (1)	*Units*													
Hexachlorobenzene	0.04	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Hexachlorobutadiene	0.5	µg/L	1 U	1 U	1 U	1 U	4 U	2 U	1 U	20 U	10 U	200 U	50 U	1 U	50 U
Hexachlorocyclopentadiene	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Hexachloroethane	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Indeno(1,2,3-cd)pyrene	0.002	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Isophorone	50	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Methyl naphthalene	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Methylphenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Methylphenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Naphthalene	10	µg/L	1 U	1 U	1 U	1 U	4 U	2 U	1 U	20 U	10 U	200 U	50 U	1 U	[30 J]
2-Nitroaniline	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
3-Nitroaniline	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Nitroaniline	5	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Nitrobenzene	0.4	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Nitrophenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Nitrophenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
N-Nitrosodiphenylamine	50(2)	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
N-Nitrosodi-n-propylamine	NS	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Pentachlorophenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Phenanthrene	50(2)	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Phenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
Pyrene	50(2)	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2,4-Trichlorobenzene	5	µg/L	1 U	1 U	1 U	1 U	4 U	2 U	1 U	20 U	10 U	200 U	50 U	1 U	50 U
2,4,5-Trichlorophenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4,6-Trichlorophenol	1	µg/L	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

(1) Groundwater Effluent Limitations, Class GA Groundwater, NYSDEC TOGS 1.1.1, June 1998.
(2) Guidance value.
--- Not analyzed.
J Detected concentration is estimated.
NS No standard.
U Compound was not detected at or above the quantitation limit shown.
[ ] Concentration exceeds criteria.

TABLE 3.2

GROUNDWATER ANALYTICAL RESULTS -SEMI-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	*GP-59*	*GP-60*	*EMW-2*	*EMW-3*	*EMW-4*	*EMW-5*	*MW-1*	*MW-1S*	*MW-2B*	*MW-2S*	*MW-3S*	*MW-4B*	*MW-4B*
		Sample Date:	*11/21/02*	*11/21/02*	*6/26/02*	*6/26/02*	*6/26/02*	*6/26/02*	*6/25/02*	*6/26/02*	*6/25/02*	*6/24/02*	*6/25/02*	*6/25/02*	*6/25/02 Duplicate*
Compound	*Criteria* (1)	*Units*													
Acenaphthene	20	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	NS	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	50(2)	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	0.002	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	0.002	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	0.002	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	NS	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	ND	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethoxy)methane	5	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethyl)ether	1	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroisopropyl)ether	NS	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	5	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl phenyl ether	NS	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Butyl benzylphthalate	50(2)	µg/L	---	---	10 U	10 U	10 U	10 U	1 J	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline	5	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol	NS	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chloronaphthalene	10	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	1	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl phenyl ether	NS	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	0.002	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene	NS	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzofuran	NS	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate	50	µg/L	---	---	15	10 U	7 J	0.5 J	2 J	1 J	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	3	µg/L	1 U	5 U	---	---	---	---	---	---	---	---	---	---	---
1,3-Dichlorobenzene	3	µg/L	1 U	5 U	---	---	---	---	---	---	---	---	---	---	---
1,4-Dichlorobenzene	3	µg/L	1 U	5 U	---	---	---	---	---	---	---	---	---	---	---
3,3'-Dichlorobenzidine	5	µg/L	---	---	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2,4-Dichlorophenol	5	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Diethyl phthalate	50(2)	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	50(2)	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	0.9 J
Dimethyl phthalate	50(2)	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4,6-Dinitro-2-methylphenol	NS	µg/L	---	---	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
2,4-Dinitrophenol	10	µg/L	---	---	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
2,4-Dinitrotoluene	5	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	5	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-octyl phthalate	50(2)	µg/L	---	---	10 U	10 U	10 U	10 U	4 J	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	50(2)	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	50(2)	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

TABLE 3.2

GROUNDWATER ANALYTICAL RESULTS -SEMI-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	*GP-59*	*GP-60*	*EMW-2*	*EMW-3*	*EMW-4*	*EMW-5*	*MW-1*	*MW-1S*	*MW-2B*	*MW-2S*	*MW-3S*	*MW-4B*	*MW-4B*
		Sample Date:	*11/21/02*	*11/21/02*	*6/26/02*	*6/26/02*	*6/26/02*	*6/26/02*	*6/25/02*	*6/26/02*	*6/25/02*	*6/24/02*	*6/25/02*	*6/25/02*	*6/25/02 Duplicate*
Compound	*Criteria* (1)	*Units*													
Hexachlorobenzene	0.04	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	0.5	µg/L	1 U	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene	5	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	5	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	0.002	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Isophorone	50	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methyl naphthalene	NS	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol	1	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol	1	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	10	µg/L	1 U	5 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	5	µg/L	---	---	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
3-Nitroaniline	5	µg/L	---	---	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
4-Nitroaniline	5	µg/L	---	---	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Nitrobenzene	0.4	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol	1	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitrophenol	1	µg/L	---	---	25 UJ	25 UJ	25 UJ	25 UJ	25 UJ	25 UJ	25 UJ	25 UJ	25 UJ	25 UJ	25 UJ
N-Nitrosodiphenylamine	50 (2)	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
N-Nitrosodi-n-propylamine	NS	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	1	µg/L	---	---	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Phenanthrene	50 (2)	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Phenol	1	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	50 (2)	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	5	µg/L	1 U	5 U	---	---	---	---	---	---	---	---	---	---	---
2,4,5-Trichlorophenol	1	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	1	µg/L	---	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Notes:

(1) Groundwater Effluent Limitations, Class GA Groundwater, NYSDEC TOGS 1.1.1, June 1998.
(2) Guidance value.
--- Not analyzed.
J Detected concentration is estimated.
NS No standard.
U Compound was not detected at or above the quantitation limit shown.
[box] Concentration exceeds criteria.

TABLE 3.2

GROUNDWATER ANALYTICAL RESULTS -SEMI-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	MW-4S	MW-5S	MW-6S	MW-7B	MW-7S	MW-8S	MW-9S
		Sample Date:	6/25/02	6/25/02	6/26/02	6/25/02	6/24/02	6/24/02	6/24/02
Compound	*Criteria* [1]	*Units*							
Acenaphthene	20	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	50[2]	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	0.002	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	0.002	µg/L	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	0.002	µg/L	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	NS	µg/L	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U
Benzo(a)pyrene	ND	µg/L	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U
bis(2-Chloroethoxy)methane	5	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethyl)ether	1	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroisopropyl)ether	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	5	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	9 J
4-Bromophenyl phenyl ether	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Butyl benzylphthalate	50[2]	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline	5	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chloronaphthalene	10	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	1	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl phenyl ether	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	0.002	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene	NS	µg/L	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U
Dibenzofuran	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate	50	µg/L	0.5 J	10 U	2 J	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	3	µg/L	---	---	---	---	---	---	---
1,3-Dichlorobenzene	3	µg/L	---	---	---	---	---	---	---
1,4-Dichlorobenzene	3	µg/L	---	---	---	---	---	---	---
3,3'-Dichlorobenzidine	5	µg/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2,4-Dichlorophenol	5	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Diethyl phthalate	50[2]	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	50[2]	µg/L	10 U	10 U	3 J	10 U	10 U	10 U	10 U
Dimethyl phthalate	50[2]	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4,6-Dinitro-2-methylphenol	NS	µg/L	25 U	25 U	25 U	25 U	25 U	25 U	25 U
2,4-Dinitrophenol	10	µg/L	25 U	25 U	25 U	25 U	25 U	25 U	25 U
2,4-Dinitrotoluene	5	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	5	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-octyl phthalate	50[2]	µg/L	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U
Fluoranthene	50[2]	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	50[2]	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U

TABLE 3.2

GROUNDWATER ANALYTICAL RESULTS -SEMI-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	*MW-4S*	*MW-5S*	*MW-6S*	*MW-7B*	*MW-7S*	*MW-8S*	*MW-9S*
		Sample Date:	*6/25/02*	*6/25/02*	*6/26/02*	*6/25/02*	*6/24/02*	*6/24/02*	*6/24/02*
Compound	***Criteria*** [(1)]	***Units***							
Hexachlorobenzene	0.04	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	0.5	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene	5	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	5	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	0.002	µg/L	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U
Isophorone	50	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methyl naphthalene	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol	1	µg/L	10 U	10 U	13	10 U	10 U	10 U	10 U
4-Methylphenol	1	µg/L	10 U	10 U	66	10 U	10 U	10 U	10 U
Naphthalene	10	µg/L	10 U	10 U	4 J	10 U	10 U	10 U	10 U
2-Nitroaniline	5	µg/L	25 U	25 U	25 U	25 U	25 U	25 U	25 U
3-Nitroaniline	5	µg/L	25 U	25 U	25 U	25 U	25 U	25 U	25 U
4-Nitroaniline	5	µg/L	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Nitrobenzene	0.4	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol	1	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitrophenol	1	µg/L	25 UJ	25 UJ	25 UJ	25 UJ	25 UJ	25 UJ	25 UJ
N-Nitrosodiphenylamine	50[(2)]	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
N-Nitrosodi-n-propylamine	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	1	µg/L	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Phenanthrene	50[(2)]	µg/L	10 U	10 U	1 J	10 U	10 U	10 U	10 U
Phenol	1	µg/L	10 U	10 U	5 J	10 U	10 U	10 U	10 U
Pyrene	50[(2)]	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	5	µg/L	- - -	- - -	- - -	- - -	- - -	- - -	- - -
2,4,5-Trichlorophenol	1	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	1	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Notes:

(1) Groundwater Effluent Limitations, Class GA Groundwater, NYSDEC TOGS 1.1.1, June 1998.

(2) Guidance value.

- - - Not analyzed.

J Detected concentration is estimated.

NS No standard.

U Compound was not detected at or above the quantitation limit shown.

[box] Concentration exceeds criteria.

TABLE 3.3

GROUNDWATER ANALYTICAL RESULTS-PCBs
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	*EMW-2*	*EMW-3*	*EMW-4*	*EMW-5*	*MW-1*	*MW-1S*	*MW-2B*	*MW-2S*	*MW-3S*
		Sample Date:	*6/26/02*	*6/26/02*	*6/26/02*	*6/26/02*	*6/25/02*	*6/26/02*	*6/25/02*	*6/24/02*	*6/25/02*
Compound	*Criteria* [(1)]	*Units*									
Aroclor 1016	0.09	µg/L	0.48 U	0.48 U	0.48 U	0.48 U	0.47 U	0.48 U	0.47 U	0.48 U	0.48 U
Aroclor 1221	0.09	µg/L	0.48.U	0.48 U	0.48 U	0.48 U	0.47 U	0.48 U	0.47 U	0.48 U	0.48 U
Aroclor 1232	0.09	µg/L	0.48 U	0.48 U	0.48 U	0.48 U	0.47 U	0.48 U	0.47 U	0.48 U	0.48 U
Aroclor 1242	0.09	µg/L	0.48 U	0.48 U	0.48 U	0.48 U	0.47 U	0.48 U	0.47 U	0.48 U	0.48 U
Aroclor 1248	0.09	µg/L	0.48 U	0.48 U	0.48 U	0.48 U	0.47 U	0.48 U	0.47 U	0.48 U	0.48 U
Aroclor 1254	0.09	µg/L	0.48 U	0.48 U	0.48 U	0.48 U	0.47 U	0.48 U	0.47 U	0.48 U	0.48 U
Aroclor 1260	0.09	µg/L	0.48 U	0.48 U	0.48 U	0.48 U	0.47 U	0.48 U	0.47 U	0.48 U	0.48 U

		Sample Location:	*MW-4B*	*MW-4B*	*MW-4S*	*MW-5S*	*MW-6S*	*MW-7B*	*MW-7S*	*MW-8S*	*MW-9S*
		Sample Date:	*6/25/02*	*6/25/02*	*6/25/02*	*6/25/02*	*6/26/02*	*6/25/02*	*6/24/02*	*6/24/02*	*6/24/02*
				Duplicate							
Compound	*Criteria* [(1)]	*Units*									
Aroclor 1016	0.09	µg/L	0.47 U	0.47 U	0.47 U	0.5 U	0.48 UJ	0.47 U	0.47 U	0.5 U	0.47 U
Aroclor 1221	0.09	µg/L	0.47 U	0.47 U	0.47 U	0.5 U	0.48 UJ	0.47 U	0.47 U	0.5 U	0.47 U
Aroclor 1232	0.09	µg/L	0.47 U	0.47 U	0.47 U	0.5 U	0.48 UJ	0.47 U	0.47 U	0.5 U	0.47 U
Aroclor 1242	0.09	µg/L	0.47 U	0.47 U	0.47 U	0.5 U	0.48 UJ	0.47 U	0.47 U	0.5 U	0.47 U
Aroclor 1248	0.09	µg/L	0.47 U	0.47 U	0.47 U	0.5 U	0.48 UJ	0.47 U	0.47 U	0.5 U	0.47 U
Aroclor 1254	0.09	µg/L	0.47 U	0.47 U	0.47 U	0.5 U	0.48 UJ	0.47 U	0.47 U	0.5 U	0.47 U
Aroclor 1260	0.09	µg/L	0.47 U	0.47 U	0.47 U	0.5 U	0.48 UJ	0.47 U	0.47 U	0.5 U	0.47 U

Notes:
(1) Groundwater Effluent Limitations, Class GA Groundwater
NYSDEC TOGS 1.1.1, June 1998.
J Detected concentration is estimated.
U Compound was not detected at or above the quantitation limit shown.

TABLE 3.4

GROUNDWATER ANALYTICAL RESULTS-PESTICIDES
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	*EMW-2*	*EMW-3*	*EMW-4*	*EMW-5*	*MW-1*	*MW-1S*	*MW-2B*	*MW-2S*	*MW-3S*
		Sample Date:	*6/26/02*	*6/26/02*	*6/26/02*	*6/26/02*	*6/25/02*	*6/26/02*	*6/25/02*	*6/24/02*	*6/25/02*
Compound	*Criteria* (1)	*Units*									
Aldrin	ND	µg/L	0.047 UJ	0.048 UJ	0.048 UJ	0.047 UJ	0.048 UJ	0.048 UJ	0.047 U	0.048 U	0.05 U
alpha-BHC	NS	µg/L	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.05 U
beta-BHC	NS	µg/L	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.05 U
gamma-BHC (Lindane)	NS	µg/L	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.05 U
delta-BHC	NS	µg/L	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.05 U
Chlordane	5	µg/L	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.05 U
4,4'DDD	0.3	µg/L	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.05 U
4,4'DDE	0.2	µg/L	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.05 U
4,4'-DDT	0.2	µg/L	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.05 U
Dieldrin	0.004	µg/L	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.05 U
Endosulfan I	NS	µg/L	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.05 U
Endosulfan II	NS	µg/L	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.05 U
Endosulfan sulfate	NS	µg/L	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.05 U
Endrin	ND	µg/L	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.05 U
Endrin aldehyde	5	µg/L	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.05 U
Endrin ketone	5	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Heptachlor	0.04	µg/L	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.05 U
Heptachlor epoxide	0.03	µg/L	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.05 U
Methoxychlor	35	µg/L	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.048 U	0.047 U	0.048 U	0.05 U
Toxaphene	0.06	µg/L	0.095 U	0.097 U	0.096 U	0.095 U	0.096 U	0.095 U	0.094 U	0.095 U	0.1 U

Notes:

(1) Groundwater Effluent Limitations, Class GA Groundwater, NYSDEC TOGS 1.1.1, June 1998.
J Detected concentration is estimated.
ND Non-detect.
NS No standard.
U Compound was not detected at or above the quantitation limit shown.

TABLE 3.4

GROUNDWATER ANALYTICAL RESULTS-PESTICIDES
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	*MW-4B*	*MW-4B*	*MW-4S*	*MW-5S*	*MW-6S*	*MW-7B*	*MW-7S*	*MW-8S*	*MW-9S*
		Sample Date:	*6/25/02*	*6/25/02*	*6/25/02*	*6/25/02*	*6/26/02*	*6/25/02*	*6/24/02*	*6/24/02*	*6/24/02*
				Duplicate							
Compound	*Criteria* [(1)]	*Units*									
Aldrin	ND	µg/L	0.047 UJ	0.047 UJ	0.048 UJ	0.05 UJ	0.048 UJ	0.048 U	0.048 U	0.047 U	0.05 U
alpha-BHC	NS	µg/L	0.047 U	0.047 U	0.048 U	0.05 U	0.048 UJ	0.048 U	0.048 U	0.047 U	0.05 U
beta-BHC	NS	µg/L	0.047 U	0.047 U	0.048 U	0.05 U	0.048 UJ	0.048 U	0.048 U	0.047 U	0.05 U
gamma-BHC (Lindane)	NS	µg/L	0.047 U	0.047 U	0.048 U	0.05 U	0.048 UJ	0.048 U	0.048 U	0.047 U	0.05 U
delta-BHC	NS	µg/L	0.047 U	0.047 U	0.048 U	0.05 U	0.048 UJ	0.048 U	0.048 U	0.047 U	0.05 U
Chlordane	5	µg/L	0.047 U	0.047 U	0.048 U	0.05 U	0.048 UJ	0.048 U	0.048 U	0.047 U	0.05 U
4,4'DDD	0.3	µg/L	0.047 U	0.047 U	0.048 U	0.05 U	0.048 UJ	0.048 U	0.048 U	0.047 U	0.05 U
4,4'DDE	0.2	µg/L	0.047 U	0.047 U	0.048 U	0.05 U	0.048 UJ	0.048 U	0.048 U	0.047 U	0.05 U
4,4'-DDT	0.2	µg/L	0.047 U	0.047 U	0.048 U	0.05 U	0.048 UJ	0.048 U	0.048 U	0.047 U	0.05 U
Dieldrin	0.004	µg/L	0.047 U	0.047 U	0.048 U	0.05 U	0.048 UJ	0.048 U	0.048 U	0.047 U	0.05 U
Endosulfan I	NS	µg/L	0.047 U	0.047 U	0.048 U	0.05 U	0.048 UJ	0.048 U	0.048 U	0.047 U	0.05 U
Endosulfan II	NS	µg/L	0.047 U	0.047 U	0.048 U	0.05 U	0.048 UJ	0.048 U	0.048 U	0.047 U	0.05 U
Endosulfan sulfate	NS	µg/L	0.047 U	0.047 U	0.048 U	0.05 U	0.048 UJ	0.048 U	0.048 U	0.047 U	0.05 U
Endrin	ND	µg/L	0.047 U	0.047 U	0.048 U	0.05 U	0.048 UJ	0.048 U	0.048 U	0.047 U	0.05 U
Endrin aldehyde	5	µg/L	0.047 U	0.047 U	0.048 U	0.05 U	0.048 UJ	0.048 U	0.048 U	0.047 U	0.05 U
Endrin ketone	5	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U
Heptachlor	0.04	µg/L	0.047 U	0.047 U	0.048 U	0.05 U	0.048 UJ	0.048 U	0.048 U	0.047 U	0.05 U
Heptachlor epoxide	0.03	µg/L	0.047 U	0.047 U	0.048 U	0.05 U	0.048 UJ	0.048 U	0.048 U	0.047 U	0.05 U
Methoxychlor	35	µg/L	0.047 U	0.047 U	0.048 U	0.05 U	0.048 UJ	0.048 U	0.048 U	0.047 U	0.05 U
Toxaphene	0.06	µg/L	0.094 U	0.094 U	0.097 U	0.1 U	0.096 UJ	0.096 U	0.097 U	0.095 U	0.1 U

Notes:
(1) Groundwater Effluent Limitations, Class GA Groundwater, NYSDEC TOGS 1.1.1, June 1998.
J Detected concentration is estimated.
ND Non-detect.
NS No standard.
U Compound was not detected at or above the quantitation limit shown.

TABLE 3.5

GROUNDWATER ANALYTICAL RESULTS-TOTAL METALS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	*EMW-2*	*EMW-2*	*EMW-2*	*EMW-2*	*EMW-3*	*EMW-3*	*EMW-4*	*EMW-4*	*EMW-4*	*EMW-4*	*EMW-5*	*EMW-5*
		Sample Date:	*6/26/02*	*8/25/2005**	*8/25/2005**	*11/30/06*	*6/26/02*	*12/1/06*	*8/25/2005**	*6/26/02*	*8/25/2005**	*12/6/06*	*6/26/02*	*8/25/2005**
					Duplicate									
Constituent	*Criteria* [1]	*Units*												
Aluminum	NS	µg/L	21.3 U	--	--	--	87.1 B	--	--	21.3 U	--	--	21.3 U	--
Antimony	3	µg/L	2.3 U	--	--	--	2.3 U	--	--	2.3 U	--	--	2.3 U	--
Arsenic	25	µg/L	13.3	--	--	--	2.4 U	--	--	8.4 B	--	--	3.1 B	--
Barium	1000	µg/L	115 BJ	--	--	--	193 BJ	--	--	342 J	--	--	250 J	--
Beryllium	3	µg/L	0.3 U	--	--	--	0.3 U	--	--	0.3 U	--	--	0.3 U	--
Cadmium	5	µg/L	0.4 U	--	--	--	0.4 U	--	--	0.4 U	--	--	0.4 U	--
Calcium	NS	µg/L	109000 J	--	--	--	136000 J	--	--	108000 J	--	--	136000 J	--
Chromium	50	µg/L	0.7 U	--	--	--	0.7 U	--	--	0.7 U	--	--	0.7 U	--
Cobalt	NS	µg/L	0.7 U	--	--	--	4.7 B	--	--	0.7 U	--	--	0.7 U	--
Copper	200	µg/L	0.9 U	--	--	--	1.3 B	--	--	0.9 U	--	--	0.9 U	--
Iron	300	µg/L	13400 J	14700	15000	--	1910 J	--	6670	27900 J	32100	--	14700 J	12800
Lead	25	µg/L	1.9 U	--	--	--	1.9 U	--	--	1.9 U	--	--	1.9 U	--
Magnesium	35000	µg/L	15000 J	--	--	--	20700 J	--	--	21600 J	--	--	20000 J	--
Manganese	300	µg/L	2740 J	2560	2690	--	170 J	--	328	332 J	428	--	418 J	365
Mercury	0.7	µg/L	0.092 UJ	--	--	--	0.092 UJ	--	--	0.092 UJ	--	--	0.092 UJ	--
Nickel	100	µg/L	0.9 U	--	--	--	0.9 U	--	--	0.9 U	--	--	0.9 U	--
Potassium	NS	µg/L	1640 BJ	--	--	--	5670 J	--	--	4690 BJ	--	--	6910 J	--
Selenium	10	µg/L	4.8 UJ	--	--	--	4.8 UJ	--	--	4.8 UJ	--	--	4.8 UJ	--
Silver	50	µg/L	0.7 U	--	--	--	0.7 U	--	--	0.7 U	--	--	0.7 U	--
Sodium	20000	µg/L	90100 J	--	--	65600	28300 J	30900	--	34100 J	--	59200	57000 J	--
Thallium	1	µg/L	4.2 U	--	--	--	4.2 U	--	--	4.2 U	--	--	4.2 U	--
Vanadium	NS	µg/L	0.6 U	--	--	--	0.6 U	--	--	0.6 U	--	--	0.6 U	--
Zinc	2000	µg/L	3.6 B	--	--	--	17.4 B	--		6.7 B	--	--	4 B	--

Notes:

(1) Groundwater Effluent Limitations, Class GA Groundwater, NYSDEC TOGS 1.1.1, June 1998.

-- Not analyzed.

* Results are for dissolved

B Value greater than or equal to the instrument detection limit, but less that the quantitation limit.

J Detected concentration is estimated.

NS No standard.

U Compound was not detected at or above the quantitation limit shown.

[box] Concentration exceeds criteria.

TABLE 3.5

GROUNDWATER ANALYTICAL RESULTS-TOTAL METALS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	EMW-5	MW-1	MW-1	MW-1S	MW-1S	MW-1S	MW-1S	MW-2S	MW-2S	MW-2S	MW-2B	MW-2B
		Sample Date:	12/1/06	6/25/02	12/6/06	6/26/02	8/25/2005*	11/29/06	11/29/06 Duplicate	6/24/02	8/25/2005*	11/29/06	6/25/02	8/25/2005*
Constituent	Criteria (1)	Units												
Aluminum	NS	µg/L	--	68.6 B	--	21.3 U	--	--	--	78.4 B	--	--	188 B	--
Antimony	3	µg/L	--	2.3 B	--	2.3 U	--	--	--	2.3 U	--	--	2.3 U	--
Arsenic	25	µg/L	--	2.4 U	--	2.4 U	--	--	--	5.3 B	--	--	2.4 U	--
Barium	1000	µg/L	--	88.3 BJ	--	101 BJ	--	--	--	126 BJ	--	--	90.6 BJ	--
Beryllium	3	µg/L	--	0.3 U	--	0.3 U	--	--	--	0.46 B	--	--	0.77 B	--
Cadmium	5	µg/L	--	0.4 U	--	0.4 U	--	--	--	0.4 U	--	--	0.4 U	--
Calcium	NS	µg/L	--	45100 J	--	101000 J	--	--	--	114000 J	--	--	540000 J	--
Chromium	50	µg/L	--	0.7 U	--	0.7 U	--	--	--	0.7 U	--	--	1.4 B	--
Cobalt	NS	µg/L	--	0.7 U	--	0.7 U	--	--	--	1 B	--	--	0.7 U	--
Copper	200	µg/L	--	0.9 U	--	1.1 B	--	--	--	1.2 B	--	--	0.9 U	--
Iron	300	µg/L	--	49.4 BJ	--	19.7 BJ	100 U	--	--	683 J	819	--	133 J	291
Lead	25	µg/L	--	1.9 U	--	1.9 U	--	--	--	1.9 U	--	--	1.9 U	--
Magnesium	35000	µg/L	--	10300 J	--	28200 J	--	--	--	8300 J	--	--	54100 J	--
Manganese	300	µg/L	--	110 J	--	1980 J	2430	--	--	444 J	366	--	31.8 J	83.1
Mercury	0.7	µg/L	--	0.092 UJ	--	0.092 UJ	--	--	--	0.092 UJ	--	--	0.092 UJ	--
Nickel	100	µg/L	--	0.9 U	--	1.6 B	--	--	--	0.9 U	--	--	1.1 B	--
Potassium	NS	µg/L	--	2460 BJ	--	3120 BJ	--	--	--	7170 J	--	--	76800 J	--
Selenium	10	µg/L	--	4.8 U	--	4.8 UJ	--	--	--	4.8 U	--	--	4.8 U	--
Silver	50	µg/L	--	0.7 U	--	0.7 U	--	--	--	0.7 U	--	--	0.7 U	--
Sodium	20000	µg/L	55000	1310 BJ	21400	60800 J	--	103000	103000	43300 J	--	61800	138000 J	--
Thallium	1	µg/L	--	4.2 U	--	4.2 U	--	--	--	4.2 U	--	--	4.2 U	--
Vanadium	NS	µg/L	--	0.72 B	--	0.6 U	--	--	--	1.6 B	--	--	2.2 B	--
Zinc	2000	µg/L	--	2.9 B	--	2.9 B	--	--	--	3.8 B	--	--	13.8 B	--

Notes:
(1) Groundwater Effluent Limitations, Class GA Groundwater, NYSDEC TOGS 1.1.1, June 1998.
-- Not analyzed.
* Results are for dissolved
B Value greater than or equal to the instrument detection limit, but less that the quantitation limit.
J Detected concentration is estimated.
NS No standard.
U Compound was not detected at or above the quantitation limit shown.
[box] Concentration exceeds criteria.

TABLE 3.5

GROUNDWATER ANALYTICAL RESULTS-TOTAL METALS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	*MW-2B*	*MW-3S*	*MW-3S*	*MW-3S*	*MW-3B*	*MW-4S*	*MW-4S*	*MW-4S*	*MW-4B*	*MW-4B*	*MW-4B*	*MW-4B*
		Sample Date:	*11/29/06*	*6/25/02*	*8/25/2005**	*12/5/06*	*12/5/06*	*6/25/02*	*8/24/2005**	*12/5/06*	*6/25/02*	*6/25/02 Duplicate*	*8/25/2005**	*12/5/06*
Constituent	*Criteria* [(1)]	*Units*												
Aluminum	NS	µg/L	--	30.7 B	--	--	--	345	--		49.2 B	72.8 B	--	--
Antimony	3	µg/L	--	2.3 U	--	--	--	2.9 B	--		2.3 U	2.3 U	--	--
Arsenic	25	µg/L	--	2.4 U	--	--	--	2.9 B	--		2.4 U	2.4 U	--	--
Barium	1000	µg/L	--	246 J	--	--	--	111 BJ	--		27.4 BJ	28.2 BJ	--	--
Beryllium	3	µg/L	--	0.3 U	--	--	--	0.3 U	--		0.3 U	0.4 B	--	--
Cadmium	5	µg/L	--	0.4 U	--	--	--	0.4 U	--		0.4 U	0.4 U	--	--
Calcium	NS	µg/L	--	168000 J	--	--	--	137000 J	--		583000 J	614000 J	--	--
Chromium	50	µg/L	--	0.7 U	--	--	--	0.7 U	--		0.7 U	0.7 U	--	--
Cobalt	NS	µg/L	--	0.84 B	--	--	--	2.1 B	--		0.7 U	0.7 U	--	--
Copper	200	µg/L	--	0.9 U	--	--	--	0.9 U	--		0.9 U	0.9 U	--	--
Iron	300	µg/L	--	5070 J	5190	--	--	1480 J	2340		702 J	653 J	539	--
Lead	25	µg/L	--	1.9 U	--	--	--	1.9 U	--		1.9 U	1.9 U	--	--
Magnesium	35000	µg/L	--	37300 J	--	--	--	25500 J	--		53300 J	52900 J	--	--
Manganese	300	µg/L	--	462 J	474	--	--	1800 J	765		96.1 J	95.5 J	114	--
Mercury	0.7	µg/L	--	0.092 UJ	--	--	--	0.092 UJ	--		0.092 UJ	0.092 UJ	--	--
Nickel	100	µg/L	--	0.9 U	--	--	--	1.4 B	--		0.9 U	0.9 U	--	--
Potassium	NS	µg/L	--	3200 BJ	--	--	--	3730 BJ	--		5560 J	5700 J	--	--
Selenium	10	µg/L	--	4.8 U	--	--	--	4.8 U	--		4.8 U	4.8 UJ	--	--
Silver	50	µg/L	--	0.7 U	--	--	--	0.7 U	--		0.7 U	0.7 U	--	--
Sodium	20000	µg/L	70600	5280 J	--	11200	192000	8850 J	--	10000 U	120000 J	126000 J	--	95200
Thallium	1	µg/L	--	4.2 U	--	--	--	4.2 U	--		4.2 U	4.2 U	--	--
Vanadium	NS	µg/L	--	0.82 B	--	--	--	1.7 B	--		0.64 B	0.6 U	--	--
Zinc	2000	µg/L	--	3.2 B	--	--	--	6.6 B	--		5.9 B	3.9 B	--	--

Notes:

(1) Groundwater Effluent Limitations, Class GA Groundwater, NYSDEC TOGS 1.1.1, June 1998.

-- Not analyzed.

* Results are for dissolved

B Value greater than or equal to the instrument detection limit, but less that the quantitation limit.

J Detected concentration is estimated.

NS No standard.

U Compound was not detected at or above the quantitation limit shown.

[box] Concentration exceeds criteria.

TABLE 3.5

GROUNDWATER ANALYTICAL RESULTS-TOTAL METALS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	MW-4C	MW-4C	MW-5S	MW-5S	MW-5S	MW-5B	MW-6S	MW-6S	MW-6S	MW-6B	MW-7S	MW-7S
		Sample Date:	12/5/06	12/5/06	6/25/02	8/25/2005*	12/5/06	12/6/06	6/26/02	8/24/2005*	12/6/06	12/6/06	6/24/02	8/26/2005*
				Duplicate										
Constituent	Criteria[1]	Units												
Aluminum	NS	µg/L	--	--	51.9 B	--	--	--	309	--	--	--	347	--
Antimony	3	µg/L	--	--	2.4 B	--	--	--	2.3 U	--	--	--	3 B	--
Arsenic	25	µg/L	--	--	2.4 B	--	--	--	17.4	--	--	--	2.4 U	--
Barium	1000	µg/L	--	--	107 BJ	--	--	--	286 J	--	--	--	94.5 BJ	--
Beryllium	3	µg/L	--	--	0.3 U	--	--	--	0.3 U	--	--	--	0.42 B	--
Cadmium	5	µg/L	--	--	0.4 U	--	--	--	0.4 U	--	--	--	0.4 U	--
Calcium	NS	µg/L	--	--	150000 J	--	--	--	231000 J	--	--	--	199000 J	--
Chromium	50	µg/L	--	--	0.7 U	--	--	--	0.7 U	--	--	--	1.1 B	--
Cobalt	NS	µg/L	--	--	1.8 B	--	--	--	3.8 B	--	--	--	1 B	--
Copper	200	µg/L	--	--	0.9 U	--	--	--	0.9 U	--	--	--	2.8 B	--
Iron	300	µg/L	--	--	9110 J	858	--	--	59500 J	55000	--	--	712 J	100 U
Lead	25	µg/L	--	--	2.5 B	--	--	--	1.9 U	--	--	--	1.9 U	--
Magnesium	35000	µg/L	--	--	24300 J	--	--	--	34400 J	--	--	--	37300 J	--
Manganese	300	µg/L	--	--	3970 J	1970	--	--	2800 J	2420	--	--	652 J	495
Mercury	0.7	µg/L	--	--	0.092 UJ	--	--	--	0.092 UJ	--	--	--	0.092 UJ	--
Nickel	100	µg/L	--	--	0.9 U	--	--	--	11.3 B	--	--	--	3.2 B	--
Potassium	NS	µg/L	--	--	1440 B	--	--	--	8810 J	--	--	--	2910 BJ	--
Selenium	10	µg/L	--	--	4.8 U	--	--	--	4.8 UJ	--	--	--	4.8 U	--
Silver	50	µg/L	--	--	0.7 U	--	--	--	0.7 U	--	--	--	0.7 U	--
Sodium	20000	µg/L	244000	239000	2430 BJ	--	10000 U	166000	93600 J	--	67800	73600	50200 J	--
Thallium	1	µg/L	--	--	4.2 U	--	--	--	4.2 U	--	--	--	4.2 U	--
Vanadium	NS	µg/L	--	--	0.6 U	--	--	--	0.6 U	--	--	--	1.2 B	--
Zinc	2000	µg/L	--	--	7.6 B	--	--	--	11.5 B	--	--	--	7.6 B	--

Notes:
(1) Groundwater Effluent Limitations, Class GA Groundwater, NYSDEC TOGS 1.1.1, June 1998.
-- Not analyzed.
* Results are for dissolved
B Value greater than or equal to the instrument detection limit, but less that the quantitation limit.
J Detected concentration is estimated.
NS No standard.
U Compound was not detected at or above the quantitation limit shown.
[box] Concentration exceeds criteria.

TABLE 3.5

GROUNDWATER ANALYTICAL RESULTS-TOTAL METALS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	MW-7S	MW-7B	MW-7B	MW-7B	MW-8S	MW-8S	MW-8S	MW-9S	MW-9S	MW-9S	MW-10B	MW-11S
		Sample Date:	12/4/06	6/25/02	8/26/05	12/4/06	6/24/02	8/24/2005*	11/30/06	6/24/02	8/24/2005*	11/30/06	11/30/06	11/30/06
Constituent	Criteria [1]	Units												
Aluminum	NS	µg/L	--	123 B	--	--	207	--	--	1300	--	--	--	--
Antimony	3	µg/L	--	2.3 U	--	--	3.6 B	--	--	2.3 B	--	--	--	--
Arsenic	25	µg/L	--	7.2 B	--	--	2.4 U	--	--	2.4 U	--	--	--	--
Barium	1000	µg/L	--	14.1 BJ	--	--	117 BJ	--	--	88.7 BJ	--	--	--	--
Beryllium	3	µg/L	--	0.66 B	--	--	0.56 B	--	--	0.47 B	--	--	--	--
Cadmium	5	µg/L	--	0.61 B	--	--	0.4 U	--	--	0.4 U	--	--	--	--
Calcium	NS	µg/L	--	566000 J	--	--	164000 J	--	--	146000 J	--	--	--	--
Chromium	50	µg/L	--	0.89 B	--	--	0.98 B	--	--	2.3 B	--	--	--	--
Cobalt	NS	µg/L	--	0.7 U	--	--	0.7 U	--	--	1.4 B	--	--	--	--
Copper	200	µg/L	--	0.9 U	--	--	0.9 U	--	--	4.2 B	--	--	--	--
Iron	300	µg/L	--	636 J	25700	--	466 J	223	--	1320 J	100 U	--	--	--
Lead	25	µg/L	--	1.9 U	--	--	1.9 U	--	--	2 B	--	--	--	--
Magnesium	35000	µg/L	--	110000 J	781	--	50900 J	--	--	28900 J	--	--	--	--
Manganese	300	µg/L	--	144 J	--	--	126 J	126	--	429 J	242	--	--	--
Mercury	0.7	µg/L	--	0.092 UJ	--	--	0.092 UJ	--	--	0.092 UJ	--	--	--	--
Nickel	100	µg/L	--	0.9 U	--	--	2.8 B	--	--	3.9 B	--	--	--	--
Potassium	NS	µg/L	--	10500 J	--	--	4130 BJ	--	--	1700 BJ	--	--	--	--
Selenium	10	µg/L	--	4.8 U	--	--	4.8 U	--	--	4.8 U	--	--	--	--
Silver	50	µg/L	--	0.7 U	--	--	0.7 U	--	--	0.7 U	--	--	--	--
Sodium	20000	µg/L	37700	76700 J	--	90600	215000 J	--	158000	56300 J	--	58900	568000	10900
Thallium	1	µg/L	--	4.2 U	--	--	4.2 U	--	--	4.2 U	--	--	--	--
Vanadium	NS	µg/L	--	0.77 B	--	--	1 B	--	--	3.4 B	--	--	--	--
Zinc	2000	µg/L	--	6.1 B	--	--	3 B	--	--	9.4 B	--	--	--	--

Notes:

(1) Groundwater Effluent Limitations, Class GA Groundwater, NYSDEC TOGS 1.1.1, June 1998.

-- Not analyzed.

* Results are for dissolved

B Value greater than or equal to the instrument detection limit, but less that the quantitation limit.

J Detected concentration is estimated.

NS No standard.

U Compound was not detected at or above the quantitation limit shown.

[box] Concentration exceeds criteria.

CRA 035048 (2)

Revised: 03/21/07

TABLE 3.6

GROUNDWATER ANALYTICAL RESULTS-WET CHEMISTRY
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Constituent	*Sample Location:* / *Sample Date:* / Units	*MW-1* *6/25/02*	*MW-1* *12/6/06*	*MW-1S* *6/26/02*	*MW-1S* *5/28/03*	*MW-1S* *8/25/05*	*MW-1S* *11/29/06*	*MW-1S* *11/29/06* *Duplicate*	*MW-2S* *6/24/02*	*MW-2S* *8/25/05*	*MW-2S* *11/29/06*
Chloride	mg/L	---	24.3	75.4	173	173	182	182	26.3	52.2	21.5
Cyanide (total)	µg/L	10 U	---	10 U	---	---	---	---	10 U	---	---
Conductivity	µmhos/cm	---	---	922	1220	---	---	---	754	---	---
Nitrate (as N)	mg/L	---	0.11 U	0.22 J	0.5U	0.16	0.11 U	0.11 U	0.05 UJ	0.14	0.33
Nitrogen, Nitrate & Nitrite	µg/L	---	0.10 U	---	---	---	0.10 U	0.10 U	---	---	0.33
Nitrogen, Nitrite	µg/L	---	0.010 U	---	---	---	0.010 U	0.011	---	---	0.010 U
pH (water)	S.U.	---	---	6.98	6.81	---	---	---	6.94	---	---
Dissolved Organic Carbon (DOC)	mg/L	---	6.4	2.1	2.26	1.6	1.0 UJ	4.6 J	2.2	1.0 U	2.2
Sulfate	mg/L	---	12.7	26.7	25.6	29.3	34.9	35.1	7.7	20 U	10.4
Sulfide	mg/L	---	2.0 U	1 U	1.1	---	2.0 U	2.0 U	1 U	---	2.0 U
Alkalinity, Total(As CaCO3)	mg/L	---	275	359	391	377	374	460	366	545	441
Turbidity	ntu	---	---	5.8	0.960	---	---	---	3.8	---	---
Ethane	µg/L	---	10.4	9.6 J	7.3	3.6	7.69	11.0	2 UJ	0.10 U	0.10 U
Ethene	µg/L	---	0.1 U	2 UJ	1U	0.23	0.38	0.46	2 UJ	0.10 U	0.10 U
Methane	µg/L	---	897	26 J	13	4.07	6.88	9.54	13 J	106	206
Field Tested											
Iron II	mg/L	0.0	0.0	---	0.0	---	2.5	---	0.9	---	3.0
Redox Potential	mg/L	254.6	76	277.6	-42.0	59.0	31	---	-10.9	-84	21
Temperature	°C	20.01	14.26	16.63	12.40	21.14	14.58	---	20.48	25.83	15.86
Dissolved Oxygen	mg/L	0.63	1.59	0.69	2.99	2.56	1.19	---	0.70	4.68	1.00
pH	S.U.	7.44	7.78	6.21	6.82	6.77	7.90	---	6.89	6.69	8.02
Turbidity	ntu	3.90	0.0	4.21	0.76	>999	4.8	---	3.10	44.50	10.0
Specific Conductivity	µS/cm	---	---	---	---	1270	---	---	---	1130	---
Iron (Dissolved)	mg/L	---	---	---	---	<0.05	---	---	---	1.0	---
Nitrate	mg/L	---	---	---	---	<2.5	---	---	---	<2.5	---
Sulfite	mg/L	---	---	---	---	<2.0	---	---	---	<2.0	---
Manganese (Dissolved)	mg/L	---	---	---	---	2.0	---	---	---	<0.1	---

Notes:

U Compound was not detected at or above the quantitation limit shown.

--- Not analyzed.

J Detected concentration is estimated.

ntu Nephelometric turbidity units.

TABLE 3.6

GROUNDWATER ANALYTICAL RESULTS-WET CHEMISTRY
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Constituent	*Sample Location:* / *Units*	*MW-2B*	*MW-2B*	*MW-2B*	*MW-3S*	*MW-3S*	*MW-3S*	*MW-3B*	*MW-4S*	*MW-4S*	*MW-4S*	*MW-4S*
	Sample Date:	*6/25/02*	*8/25/05*	*11/29/06*	*6/25/02*	*8/25/05*	*12/5/06*	*12/5/06*	*6/25/02*	*5/29/03*	*8/24/05*	*12/5/06*
Chloride	mg/L	60.7	74.8	57.4	3.9	20 U	10.4	104	7.5	5.42	34.5	12.8
Cyanide (total)	µg/L	10 U	---	---	10 U	---	---	---	10 U	NA	---	---
Conductivity	µmhos/cm	2390	---	---	987	---	---	---	799	763	---	---
Nitrate (as N)	mg/L	0.05 UJ	0.11 U	0.11 U	0.05 UJ	0.11 U	0.35	0.11 U	0.19 J	0.5U	0.11 U	0.11 U
Nitrogen, Nitrate & Nitrite	µg/L	---	---	0.10 U	---	---	0.35	0.10 U	---	---	---	0.10 U
Nitrogen, Nitrite	µg/L	---	---	0.010 U	---	---	0.010 U	0.010 U	---	---	---	0.010 U
pH (water)	S.U.	8.73		---	6.83	---	---	---	7.14	7.02	---	---
Dissolved Organic Carbon (DOC)	mg/L	4.5	1.8	5.1	5.6	2.0	2.1	1.1	3.6	4.62	1.8	4.3
Sulfate	mg/L	1150	983	1140	64.4	20 U	21.3	2090	77.6	74.7	30.0	42.2
Sulfide	mg/L	1 U		2.0 U	1 U	---	2.0 U	2.0 U	1 U	1U	---	2.0 U
Alkalinity, Total(As CaCO3)	mg/L	57	135	128	487	487	462	63.4	358	358	376	393
Turbidity	ntu	1 U		---	35.1	---	---	---	19.3	29.7	---	---
Ethane	µg/L	0.46 J	0.27	0.13	2 UJ	0.10 U	0.10 U	2.3	5.4 UJ	4.5	2.5	0.12
Ethene	µg/L	0.64 J	0.10	0.10 U	2 UJ	0.11	0.10 U	16.2	13 UJ	12	2.9	0.1 U
Methane	µg/L	1.8 J	5.16	2.98	27 UJ	408	6.12	24.4	43 UJ	34	48.4	6.43
Field Tested												
Iron II	mg/L	0.0	---	1.5	6.0	---	0.0	0.0	1.3	1.6		0.5
Redox Potential	mg/L	200.8	-139	-20	-31.6	-116	-5.0	-53	-35.0	-15.2	-69	-46
Temperature	°C	15.43	22.98	17.84	14.02	21.50	11.19	11.24	13.56	9.09	15.08	12.60
Dissolved Oxygen	mg/L	1.30	5.00	2.07	0.69	0.17	1.91	0.00	0.55	1.39	0.00	1.20
pH	S.U.	10.33	7.40	7.36	6.09	7.28	9.13	7.61	5.18	7.04	7.09	9.84
Turbidity	ntu	112.00	40.4	264.0	1.19	5.20	0.0	62	45.50	11.90	2.00	0.0
Specific Conductivity	µS/cm	---	1680.0	---	---	767.0	---	---	---	---	688	---
Iron (Dissolved)	mg/L	---	0.9	---	---	7.0	---	---	---	---	2.0	---
Nitrate	mg/L	---	<2.5	---	---	<2.5	---	---	---	---	<2.5	---
Sulfite	mg/L	---	<2.0	---	---	<2.0	---	---	---	---	<2.0	---
Manganese (Dissolved)	mg/L	---	<0.1	---	---	0.9	---	---	---	---	0.0	---

Notes:
U Compound was not detected at or above the quantitation limit shown.
--- Not analyzed.
J Detected concentration is estimated.
ntu Nephelometric turbidity units.

TABLE 3.6

GROUNDWATER ANALYTICAL RESULTS-WET CHEMISTRY
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Constituent	*Sample Location:* *Sample Date:* *Units*	MW-4B 6/25/02	MW-4B 6/25/02 Duplicate	MW-4B 5/29/03	MW-4B 8/24/05	MW-4B 12/5/06	MW-4C 12/5/06	MW-4C 12/5/06 Duplicate	MW-5S 6/25/02	MW-5S 8/25/2005	MW-5S 12/5/06	MW-5B 12/6/06
Chloride	mg/L	204	204	207	193	187	253	256	2.4	20 U	2.0 U	123
Cyanide (total)	µg/L	10 U	10 U	NA	---	---	---	---	10 U	---	---	---
Conductivity	µmhos/cm	2660	2640	2540	---	---	---	---	829	---	---	---
Nitrate (as N)	mg/L	0.05 UJ	0.05 UJ	0.5U	0.11 U	0.11 U	0.11 U	0.11 U	0.05 UJ	0.11 U	0.11 U	0.11 U
Nitrogen, Nitrate & Nitrite	µg/L	---	---	---	---	0.10 U	0.10 U	0.10 U	---	---	0.10 U	0.10 U
Nitrogen, Nitrite	µg/L	---	---	---	---	0.010 U	0.010 U	0.010 U	---	---	0.010 U	0.010 U
pH (water)	S.U.	6.92	7.01	6.76	---	---	---	---	7.01	---	---	---
Dissolved Organic Carbon (DOC)	mg/L	4	4.2	7.23	2.7	2.8	1.0 U	1.0 U	4.2	4.2	1.9	1.0 U
Sulfate	mg/L	965	938	991	1030	1150	1710	1790	33.1	20 U	12.3	1840
Sulfide	mg/L	1 U	1 U	1U	---	2.0 U	2.0 U	2.0 U	1 U	---	2.0 U	2.0 U
Alkalinity, Total(As CaCO3)	mg/L	382	378	401	386	361	188	159	424	518	739	105
Turbidity	ntu	5.9	5.2	2.30	---	---	---	---	106	---	---	---
Ethane	µg/L	430 DJ	200 DJ	270	65.8	60.0	0.12	0.14 J	2 UJ	0.14	0.10 U	0.70
Ethene	µg/L	1200 DJ	640 DJ	860	181	163	0.10 U	0.10 UJ	2 UJ	0.10 U	0.10 U	0.35
Methane	µg/L	1400 J	1600 DJ	1200	294	287	4.16	4.46 J	14 UJ	94.2	21.8	6.97
Field Tested												
Iron II	mg/L	1.0	---	1.0	---	0.5	1.0	---	1.8	---	0.5	1.0
Redox Potential	mg/L	41.8	---	-62.7	-80	-43	-83	---	-38.7	-39	10	128
Temperature	°C	13.10	---	10.71	12.80	11.90	9.59	---	12.83	19.71	9.83	11.43
Dissolved Oxygen	mg/L	0.55	---	1.89	0.00	0.00	0.00	---	0.71	0.10	0.00	6.63
pH	S.U.	5.69	---	6.87	6.92	6.67	7.14	---	5.56	6.95	6.75	8.49
Turbidity	ntu	1.92	---	4.06	61.50	0.0	0.0	---	0.00	37.0	0.0	>999
Specific Conductivity	µS/cm	---	---	---	2940	---	---	---	---	752	---	---
Iron (Dissolved)	mg/L	---	---	---	0.7	---	---	---	---	1.0	---	---
Nitrate	mg/L	---	---	---	<2.5	---	---	---	---	<2.5	---	---
Sulfite	mg/L	---	---	---	<2.0	---	---	---	---	<2.0	---	---
Manganese (Dissolved)	mg/L	---	---	---	<0.1	---	---	---	---	0.9	---	---

Notes:

U Compound was not detected at or above the quantitation limit shown.

--- Not analyzed.

J Detected concentration is estimated.

ntu Nephelometric turbidity units.

TABLE 3.6

GROUNDWATER ANALYTICAL RESULTS-WET CHEMISTRY
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Constituent	*Sample Location:* / *Sample Date:* / *Units*	*MW-6S* *6/26/02*	*MW-6S* *5/28/03*	*MW-6S* *5/28/03* *Duplicate*	*MW-6S* *8/24/2005*	*MW-6S* *12/6/06*	*MW-6B* *12/6/06*	*MW-7S* *6/24/02*	*MW-7S* *5/28/03*	*MW-7S* *8/24/05*	*MW-7S* *12/4/06*	*MW-7B* *6/25/02*
Chloride	mg/L	306	199	205	283	236	144	76.8	81.3	71.0	74.2	33.1
Cyanide (total)	µg/L	3.1	NA	NA	---	---	---	10 U	NA	---	---	10 U
Conductivity	µmhos/cm	1890	1560	1580	---	---	---	1340	1290	---	---	2730
Nitrate (as N)	mg/L	0.05 UJ	0.5U	0.5U	0.11 U	0.11 U	0.11 U	0.05 UJ	0.5U	0.11 U	0.11 U	0.05 UJ
Nitrogen, Nitrate & Nitrite	µg/L	---	---	---	---	0.10 U	0.10 U	---	---	---	0.10 U	---
Nitrogen, Nitrite	µg/L	---	---	---	---	0.010 U	0.010 U	---	---	---	0.010 U	---
pH (water)	S.U.	6.48	6.53	6.56	---	---	---	7.03	6.96	---	---	7.48
Dissolved Organic Carbon (DOC)	mg/L	37.7	27.7	29.0	21.0	33.8	1.5	2	6.62	9.6	1.3	1 U
Sulfate	mg/L	16.4	47.6	47.1	20 U	10.4	1420	294	346	288	231	1720
Sulfide	mg/L	1 U	1U	1U	---	2.0 U	2.0 U	1 U	1.0	---	2.0 U	1 U
Alkalinity, Total(As CaCO3)	mg/L	482	545	539	480	439	256	312	293	345	352	92
Turbidity	ntu	412	191	265	---	---	---	2.4	2.38	---	---	5.2
Ethane	µg/L	1500 DJ	650	580	3190	718 J	2.0	2 UJ	1U	8.20	0.10 U	2 UJ
Ethene	µg/L	3100 DJ	500	520	2220	2710 J	41.3	2 UJ	1U	3.66	0.10 U	2 UJ
Methane	µg/L	5300 J	1900	1700	7760	3520 J	93.0	6.6 J	3.4	51.5	6.28	5 J
Field Tested												
Iron II	mg/L	4.5	3.6	---	---	10.0	1.5	0.8	0.0	---	0.0	0.2
Redox Potential	mg/L	-92.3	-107.1	---	-149	-121	-95	206.1	-16.1	115	151	0.8
Temperature	°C	15.84	11.84	---	27.39	13.1	12.88	11.40	9.38	13.87	12.06	13.80
Dissolved Oxygen	mg/L	0.80	2.61	---	3.47	1.03	0	0.49	1.24	2.88	1.35	2.37
pH	S.U.	5.57	6.61	---	6.98	10.96	6.82	6.93	6.93	6.89	6.09	7.20
Turbidity	ntu	23.00	26.60	---	98.1	0.0	0.0	14.20	6.32	190	0.0	2.85
Specific Conductivity	µS/cm	---	---	---	2040	---	---	---	---	1240	---	---
Iron (Dissolved)	mg/L	---	---	---	>10	---	---	---	---	0.1	---	---
Nitrate	mg/L	---	---	---	<2.5	---	---	---	---	<2.5	---	---
Sulfite	mg/L	---	---	---	4.5	---	---	---	---	<2.0	---	---
Manganese (Dissolved)	mg/L	---	---	---	0.6	---	---	---	---	<0.1	---	---

Notes:

U Compound was not detected at or above the quantitation limit shown.

--- Not analyzed.

J Detected concentration is estimated.

ntu Nephelometric turbidity units.

TABLE 3.6

GROUNDWATER ANALYTICAL RESULTS-WET CHEMISTRY
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Constituent	*Units*	MW-7B 8/26/05	MW-7B 12/4/06	MW-8S 6/24/02	MW-8S 8/24/05	MW-8S 11/30/06	MW-9S 6/24/02	MW-9S 8/24/05	MW-9S 11/30/06	MW-10B 12/17/02	MW-10B 11/30/06	MW-11S 12/17/02
Chloride	mg/L	45.3	40.6	329	242	248	87.7	160	55.5	331	751 J	5.6
Cyanide (total)	µg/L	---	---	10 U	---	---	10 U	---	---	NA	---	NA
Conductivity	µmhos/cm	---	---	1820	---	---	1030	---	---	4050	---	868
Nitrate (as N)	mg/L	0.11 U	0.19	0.56 J	0.11 U	0.17	3.3 J	0.52	0.11 U	0.05 U	0.11 U	0.05 U
Nitrogen, Nitrate & Nitrite	µg/L	---	0.19	---	---	0.17	---	---	0.10 U	---	0.10 U	---
Nitrogen, Nitrite	µg/L	---	0.010 U	---	---	0.010 U	---	---	0.010 U	---	0.010 U	---
pH (water)	S.U.	---	---	7.19	---	---	6.68	---	---	7.47	---	6.9
Dissolved Organic Carbon (DOC)	mg/L	1.0 U	5.0 U	1.6	1.0	1.4	4.3	1.8	5.1	1 U	1.0 U	3.6
Sulfate	mg/L	1610	1740	72.8	62.9	67.3	49.2	386	96.3	987	1970 J	128
Sulfide	mg/L		2.0 U	1 U	---	2.0 U	1 U	---	2.0 U	1 U	2.0 U	1 U
Alkalinity, Total(As CaCO3)	mg/L	21.8	16.1	372	394	409	383	351	340	87	152	234
Turbidity	ntu		---	3.7	---	---	5.9	---	---	17.4	---	68.4
Ethane	µg/L	0.90	0.30	2 UJ	0.10 U	0.10 U	2 UJ	0.14	0.11	0.88 U	0.10 U	0.88 U
Ethene	µg/L	1.4	0.62	2 UJ	0.10 U	0.10 U	2 UJ	0.10 U	0.10 U	0.82 U	0.10 U	0.82 U
Methane	µg/L	16.1	7.1	1.4 J	0.31 U	0.13	6 J	2.51	4.0	2.1 U	2.27	65
Field Tested												
Iron II	mg/L	---	10.0	0.7	---	3.0	0.7	---	2.5	1.4	3.0	1.3
Redox Potential	mg/L	-173	-172	-6.0	-84	-11	129.5	-12	-12	-26.1	-106	-169.1
Temperature	°C	17.06	12.50	12.60	16.12	12.64	14.41	19.59	14.50	7.96	13.75	8.79
Dissolved Oxygen	mg/L	2.84	0.00	0.39	2.65	1.04	0.83	2.66	0.00	4.24	0.00	1.59
pH	S.U.	6.85	7.52	6.95	6.98	8.68	6.63	6.80	6.90	7.23	7.38	6.58
Turbidity	ntu	45.0	89.0	7.74	275	52.1	35.60	231	156.0	31.60	324.0	0.31
Specific Conductivity	µS/cm	2790	---	---	1560	---	---	1610	---	---	---	---
Iron (Dissolved)	mg/L	>10	---	---	0.2	---	---	1.5	---	---	---	---
Nitrate	mg/L	<2.5	---	---	<2.5	---	---	<2.5	---	---	---	---
Sulfite	mg/L	3.5	---	---	<2.0	---	---	<2.0	---	---	---	---
Manganese (Dissolved)	mg/L	<0.1	---	---	<2.0	---	---	<0.1	---	---	---	---

Notes:
U Compound was not detected at or above the quantitation limit shown.
--- Not analyzed.
J Detected concentration is estimated.
ntu Nephelometric turbidity units.

TABLE 3.6

GROUNDWATER ANALYTICAL RESULTS-WET CHEMISTRY
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

	Sample Location:	*MW-11S*	*MW-11B*	*MW-11B*	*MW-12S*	*MW-12S*	*MW-12B*	*MW-12B*	*MW-12B*	*MW-13S*	*MW-14S*	*MW-15S*
	Sample Date:	*11/30/06*	*12/17/02*	*11/30/06*	*12/18/02*	*11/30/06*	*12/18/02*	*12/18/02*	*11/30/06*	*11/30/06*	*12/6/06*	*12/7/06*
								Duplicate				
Constituent	*Units*											
Chloride	mg/L	10.1	548	613	81.5	3.0	682	781	964 J	163	141	122
Cyanide (total)	µg/L	--	NA	--	NA	--	NA	NA	--	--	--	--
Conductivity	µmhos/cm	--	4080	--	1560	--	6740	6780	--	--	--	--
Nitrate (as N)	mg/L	0.11 U	0.05 R	0.11 U	0.05 U	5.3	0.05 U	0.05 U	0.11 U	0.11 U	0.11 U	0.11 U
Nitrogen, Nitrate & Nitrite	µg/L	0.10 U	---	0.10 U	---	5.3	---	---	0.10 U	0.10 U	0.10 U	0.10 U
Nitrogen, Nitrite	µg/L	0.010 U	---	0.010 U	---	0.010 U	---	---	0.010 U	0.010 U	0.010 U	0.010 U
pH (water)	S.U.	--	7.26	--	7.1	--	12.2	12.2	--	--	--	--
Dissolved Organic Carbon (DOC)	mg/L	2.5	1 U	1.0 U	33.5	3.8	3.2 J	1.9 J	1.0 U	5.4	6.7	11.7
Sulfate	mg/L	24.3	1750	1930 J	483	72.4	1660	1910	2130 J	878	355	18.3
Sulfide	mg/L	2.0 U	1 U	2.0 U	1 U	2.0 U	1 U	1 U	3.0	2.0 U	2.0 U	2.0 U
Alkalinity, Total(As CaCO3)	mg/L	442	91	159	410	629	486	491	59.7	289	371	550
Turbidity	ntu	--	15.4	--	5.4	--	22	21.5	--	--	--	--
Ethane	µg/L	0.10 U	0.88 U	0.10 U	0.88 U	0.10 U	0.88 U	0.88 U	0.89	13.2	151	426
Ethene	µg/L	0.10 U	0.82 U	0.10 U	0.82 U	0.10 U	0.82 U	0.82 U	0.36	22.9	215	512
Methane	µg/L	218	2.5 U	2.87	0.62 U	34.3	1.1 U	1.1 U	2.53	115	588	6660
Field Tested												
Iron II	mg/L	10.0	1.4	1.5	0.8	0.0	0.0	---	0.0	4.0	5.5	10.0
Redox Potential	mg/L	-156	-168.7	-121	-141.8	46	-138.6	---	-412	-93	-94	-111
Temperature	°C	13.41	9.79	13.11	7.40	10.39	4.81	---	11.63	13.26	11.08	7.64
Dissolved Oxygen	mg/L	0.95	0.69	0.00	3.92	2.37	6.50	---	0.00	0.99	1.02	1.12
pH	S.U.	10.85	7.08	7.33	6.57	7.39	12.63	---	9.40	10.17	10.54	10.84
Turbidity	ntu	5.9	9.08	120.0	15.10	60.0	7.09	---	231.0	>999	68.0	339.0
Specific Conductivity	µS/cm	---	---	---	---	---	---	---	---	---	---	---
Iron (Dissolved)	mg/L	---	---	---	---	---	---	---	---	---	---	---
Nitrate	mg/L	---	---	---	---	---	---	---	---	---	---	---
Sulfite	mg/L	---	---	---	---	---	---	---	---	---	---	---
Manganese (Dissolved)	mg/L	---	---	---	---	---	---	---	---	---	---	---

Notes:

U Compound was not detected at or above the quantitation limit shown.

--- Not analyzed.

J Detected concentration is estimated.

ntu Nephelometric turbidity units.

TABLE 3.6

GROUNDWATER ANALYTICAL RESULTS-WET CHEMISTRY
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Constituent	Units	MW-16S 12/6/06	MW-16B 12/6/06	EMW-2 6/26/02	EMW-2 5/28/03	EMW-2 8/25/05	EMW-2 8/25/05 Duplicate	EMW-2 11/30/06	EMW-3 6/26/02	EMW-3 8/25/05	EMW-3 12/1/06	EMW-4 6/26/02
Chloride	mg/L	13.1	128	34.4	64.4	65.4	68.0	108.0	34	118	38.3	48.7
Cyanide (total)	µg/L	--	--	10 U	NA	--	--	--	10 U	--	--	10 U
Conductivity	µmhos/cm	--	--	929	968	--	--	--	865	--	--	806
Nitrate (as N)	mg/L	2.0	0.11 U	0.05 UJ	0.5U	0.11 U	0.11 U	0.11 U	0.2 J	0.11 U	0.66	0.05 UJ
Nitrogen, Nitrate & Nitrite	µg/L	2.0	0.10 U	---	--	--	--	0.10 U	--	--	0.66	--
Nitrogen, Nitrite	µg/L	0.010 U	0.010 U	---	--	--	--	0.010 U	--	--	0.010 U	--
pH (water)	S.U.	--	--	6.92	6.86	--	--	--	7.61	--	--	7.07
Dissolved Organic Carbon (DOC)	mg/L	1.7	21.4	6.6	12.7	6.5	10.7	4.8	5.5	8.4	3.6	5
Sulfate	mg/L	19.2	1690	2	2U	20 U	20 U	11.8	22.2	20 U	10 U	1.7
Sulfide	mg/L	2.0 U	2.0 U	1 U	1U	--	--	2.0 U	1 U	--	2.0 U	1 U
Alkalinity, Total(As CaCO3)	mg/L	134	37.6	466	450	572	426	559	410	520	453	353
Turbidity	ntu	--	--	174	200	--	--	--	24.4	--	--	319
Ethane	µg/L	0.35	0.60	12 J	48	93.5	99.8	340	2 UJ	1.8	0.56	180 DJ
Ethene	µg/L	0.13	0.72	66 J	45	2.7	3.33	36.4	2 UJ	0.10 U	0.10 U	28 J
Methane	µg/L	2.07	6.7	1700 J	1200	1000	1210	1440	980 J	4280	598	7000 J
Field Tested												
Iron II	mg/L	0.0	0.0	6.0	3.4	--	--	10.0	2.0	--	1.0	4.5
Redox Potential	mg/L	-27	-236	-84.2	-106.3	-157.0	--	-114	-44.9	-143.0	-85	-173.3
Temperature	°C	14.44	15.85	16.15	12.19	24.48	--	13.01	13.75	16.87	11.72	14.46
Dissolved Oxygen	mg/L	5.73	0	0.73	0.81	0.01	--	1.06	1.17	5.31	0.00	0.39
pH	S.U.	9.73	10.57	6.34	6.94	7.22	--	10.14	6.55	7.00	7.20	6.15
Turbidity	ntu	683.0	0.0	1.62	5.01	9.80	--	21.0	2.60	34.50	0.0	12.30
Specific Conductivity	µS/cm	---	---	---	---	855	--	--	--	1210	--	--
Iron (Dissolved)	mg/L	---	---	---	---	>10	--	--	--	8.0	--	--
Nitrate	mg/L	---	---	---	---	<2.5	--	--	--	<2.5	--	--
Sulfite	mg/L	---	---	---	---	3.60	--	--	--	2.0	--	--
Manganese (Dissolved)	mg/L	---	---	---	---	1.7	--	--	--	<0.1	--	--

Notes:
U Compound was not detected at or above the quantitation limit shown.
--- Not analyzed.
J Detected concentration is estimated.
ntu Nephelometric turbidity units.

TABLE 3.6

GROUNDWATER ANALYTICAL RESULTS-WET CHEMISTRY
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

	Sample Location:	*EMW-4*	*EMW-4*	*EMW-5*	*EMW-5*	*EMW-5*	*TMW-1*	*TMW-2*
	Sample Date:	*8/25/05*	*12/6/06*	*6/26/02*	*8/25/05*	*12/1/06*	*12/6/06*	*12/6/06*
Constituent	*Units*							
Chloride	mg/L	164	70.9	77.9	90.5	77.2	223	19.4
Cyanide (total)	µg/L	--	--	10 U	--	--	--	--
Conductivity	µmhos/cm	--	--	1000	--	--	--	--
Nitrate (as N)	mg/L	0.11 U	0.11 U	0.05 UJ	0.11 U	0.11 U	0.11 U	0.11 U
Nitrogen, Nitrate & Nitrite	µg/L	--	0.10 U	--	--	0.10 U	0.10 U	0.10 U
Nitrogen, Nitrite	µg/L	--	0.010 U	--	--	0.010 U	0.010 UJ	0.010 U
pH (water)	S.U.	--	--	7.2	--	--	--	--
Dissolved Organic Carbon (DOC)	mg/L	7.5	5.6	4.6	11.9	1.0 U	8.5	12.7
Sulfate	mg/L	20 U	10 U	17.1	20 U	10 U	72.0	35.0
Sulfide	mg/L	--	2.0 U	1 U	--	2.0 U	2.0 U	2.0 U
Alkalinity, Total(As CaCO3)	mg/L	474	425	388	485	477	840	586
Turbidity	ntu	--	--	179	--	--	--	--
Ethane	µg/L	311	226	2 UJ	0.23	0.25	1.70	1.20
Ethene	µg/L	2.6	0.10 U	2 UJ	0.10 U	0.10 U	0.53	0.10 U
Methane	µg/L	4270	5140	410 J	1400	1140	152	8.97
Field Tested								
Iron II	mg/L	--	10.0	3.1	--	9.5	5.5	0.0
Redox Potential	mg/L	-215.0	-201	-151.2	-213.0	-178	-90	136
Temperature	°C	17.33	12.11	13.40	15.96	10.11	16.49	14.16
Dissolved Oxygen	mg/L	0.24	0.90	0.42	4.95	3.88	8.21	7.63
pH	S.U.	7.48	12.47	6.57	7.11	7.37	9.50	6.31
Turbidity	ntu	97.90	0.0	2.29	15.50	41.40	107.0	>999
Specific Conductivity	µS/cm	1250.0	--	--	1070.0	--	--	--
Iron (Dissolved)	mg/L	>10	--	--	>10	--	--	--
Nitrate	mg/L	<2.5	--	--	<2.5	--	--	--
Sulfite	mg/L	2.6	--	--	4.0	--	--	--
Manganese (Dissolved)	mg/L	<0.1	--	--	<0.1	--	--	--

Notes:
U Compound was not detected at or above the quantitation limit shown.
--- Not analyzed.
J Detected concentration is estimated.
ntu Nephelometric turbidity units.

TABLE 3.7

SUBSURFACE SOIL ANALYTICAL RESULTS-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Compound	Criteria [1]	Units	GP-7	GP-16	GP-20	GP-20	GP-25	GP-26	GP-32	GP-33	GP-39	SSB-1	SSB-2
		Sample Depth (ft. bgs):	*0-4*	*8-12*	*12-16*	*12-16*	*8-12*	*12-14*	*12-16*	*12-16*	*8-12*	*4-6*	*4-5.7*
		Sample Date:	*4/24/2002*	*5/2/2002*	*5/1/2002*	*5/1/2002*	*4/26/2002*	*4/30/2002*	*4/23/2002*	*4/30/2002*	*4/22/2002*	*1/2005*	*1/2005*
			Background			*Duplicate*							
Acetone	200	µg/Kg	15 U	1360 U	1600 U	1540 U	1400 U	81 U	1350 U	53 U	12 U	34.0	30.0
Benzene	60	µg/Kg	15 U	1360 U	1600 U	1540 U	1400 U	12 U	1350 U	53 U	12 U	5.6 U	5.7 U
Bromodichloromethane	NS	µg/Kg	15 U	1360 U	1600 U	1540 U	1400 U	12 U	1350 U	53 U	12 U	5.6 U	5.7 U
Bromoform	NS	µg/Kg	15 U	1360 U	1600 U	1540 U	1400 U	12 U	1350 U	53 U	12 U	5.6 U	5.7 U
Bromomethane	NS	µg/Kg	15 U	1360 U	1600 U	1540 U	1400 U	12 U	1350 U	53 U	12 U	5.6 U	5.7 U
2-Butanone	300	µg/Kg	15 U	1360 U	1600 U	1540 U	1400 U	12 U	1350 U	11 U	12 U	3.1 J	5.5 J
Carbon disulfide	2700	µg/Kg	15 U	1360 U	1600 U	1540 U	1400 U	12 U	1350 U	53 U	12 U	11 U	4.2 J
Carbon tetrachloride	600	µg/Kg	15 U	1360 U	1600 U	1540 U	1400 U	12 U	1350 U	53 U	12 U	5.6 U	5.7 U
Chlorobenzene	1700	µg/Kg	15 U	1360 U	1600 U	1540 U	1400 U	12 U	1350 U	53 U	12 U	5.6 U	5.7 U
Chloroethane	1900	µg/Kg	15 U	1360 U	1600 U	1540 U	1400 U	12 U	1350 U	53 U	12 U	5.6 U	5.7 U
Chloroform	300	µg/Kg	15 U	1360 U	1600 U	1540 U	1400 U	12 U	1350 U	53 U	12 U	5.6 U	5.7 U
Chloromethane	NS	µg/Kg	15 U	1360 U	1600 U	1540 U	1400 U	12 U	1350 U	53 U	12 U	5.6 U	5.7 U
Dibromochloromethane	NS	µg/Kg	15 U	1360 U	1600 U	1540 U	1400 U	12 U	1350 U	53 U	12 U	5.6 U	5.7 U
1,1-Dichloroethane	200	µg/Kg	15 U	1360 U	1600 U	1540 U	1400 U	12 U	1350 U	53 U	12 U	5.6 U	5.7 U
1,2-Dichloroethane	100	µg/Kg	15 U	1360 U	1600 U	1540 U	1400 U	12 U	1350 U	53 U	12 U	5.6 U	5.7 U
1,1-Dichloroethene	400	µg/Kg	15 U	1360 U	1600 U	1540 U	1400 U	12 U	1350 U	53 U	12 U	5.6 U	5.7 U
cis-1,2-Dichloroethene	NS	µg/Kg	15 U	1400	8900	14000	700 J	14	2400	250	12 U	22.0	2.4 J
trans-1,2-Dichloroethene	300	µg/Kg	15 U	1360 U	1600 U	1540 U	1400 U	12 U	1350 U	53 U	12 U	5.6 U	5.7 U
1,2-Dichloropropane	NS	µg/Kg	15 U	1360 U	1600 U	1540 U	1400 U	12 U	1350 U	53 U	12 U	5.6 U	5.7 U
cis-1,3-Dichloropropene	NS	µg/Kg	15 U	1360 U	1600 U	1540 U	1400 U	12 U	1350 U	53 U	12 U	5.6 U	5.7 U
trans-1,3-Dichloropropene	NS	µg/Kg	15 U	1360 U	1600 U	1540 U	1400 U	12 U	1350 U	53 U	12 U	5.6 U	5.7 U
Ethylbenzene	5500	µg/Kg	15 U	1360 U	1600 U	190 J	1400 U	2 J	1350 U	53 U	12 U	5.6 U	5.7 U
2-Hexanone	NS	µg/Kg	15 U	1360 U	1600 U	1540 U	1400 U	12 U	1350 U	53 U	12 U	11 U	11 U
Methylene chloride	100	µg/Kg	30	1360 U	1600 U	1540 U	1400 U	89	180 J	200	12 U	5.6 U	5.7 U
4-Methyl-2-pentanone	1000	µg/Kg	15 U	1360 U	1600 U	1540 U	1400	12 U	1350 U	11 U	12 U	11 U	11 U
Styrene	NS	µg/Kg	15 U	1360 U	1600 U	1540 U	1400 U	12 U	1350 U	53 U	12 U	5.6 U	5.7 U
1,1,2,2-Tetrachloroethane	600	µg/Kg	15 U	1360 U	1600 U	1540 U	1400 U	12 U	1350 U	53 U	12 U	5.6 U	5.7 U
Tetrachloroethene	1400	µg/Kg	15 U	1360 U	1600 U	1540 U	1400 U	12 U	1350 U	53 U	12 U	5.6 U	5.7 U
Toluene	1500	µg/Kg	15 U	1360 U	4300 B	5800 U	1400 U	12 U	1350 U	53 U	12 U	5.6 U	5.7 U
1,1,1-Trichloroethane	800	µg/Kg	15 U	1360 U	1600 U	1540 U	1400 U	12 U	1350 U	53 U	12 U	5.6 U	5.7 U
1,1,2-Trichloroethane	NS	µg/Kg	15 U	1360 U	1600 U	1540 U	1400 U	12 U	1350 U	53 U	12 U	5.6 U	5.7 U
Trichloroethene	700	µg/Kg	15 U	2100	1600 U	590 J	4700	6 J	1350 U	9 J	12 U	1.7 J	13.0
Vinyl chloride	200	µg/Kg	15 U	1360 U	460 J	1200 J	1400 U	84	200 J	25 J	12 U	5.6 U	5.7 U
Xylene (total)	1200	µg/Kg	15 U	1875 U	1600 U	1540 U	1400 U	12 U	1350 U	15 U	15 U	---	---
O-Xylene	1200	µg/Kg	---	---	---	---	---	---	---	---	---	5.6 U	5.7 U
M+P-Xylene	1200	µg/Kg	---	---	---	---	---	---	---	---	---	5.6 U	5.7 U

Notes:

(1) Soil Cleanup Objectives, NYSDEC TAGM #4046, January 24, 1994.

--- Not analyzed.

ft. BGS Feet below ground surface.

J Detected concentration is estimated.

TABLE 3.7

SUBSURFACE SOIL ANALYTICAL RESULTS-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	*GP-7*	*GP-16*	*GP-20*	*GP-20*	*GP-25*	*GP-26*	*GP-32*	*GP-33*	*GP-39*	*SSB-1*	*SSB-2*
		Sample Depth (ft. bgs):	*0-4*	*8-12*	*12-16*	*12-16*	*8-12*	*12-14*	*12-16*	*12-16*	*8-12*	*4-6*	*4-5.7*
		Sample Date:	*4/24/2002*	*5/2/2002*	*5/1/2002*	*5/1/2002*	*4/26/2002*	*4/30/2002*	*4/23/2002*	*4/30/2002*	*4/22/2002*	*1/2005*	*1/2005*
			Background			*Duplicate*							
Compound	*Criteria* [1]	*Units*											

NS No standard.
U Compound was not detected at or above the quantitation limit shown.
[box] Concentration exceeds criteria.

TABLE 3.7

SUBSURFACE SOIL ANALYTICAL RESULTS-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	SSB-3	SSB-3	SSB-4	SSB-5	SSB-6	SSB-7	SSB-8	SSB-9	SSB-10	SSB-11
		Sample Depth (ft. bgs):	4-6	4-6	4-5.7	4-6	4-6	8.3-9.3	8.9.3	2-4	2-4	4-5.8
		Sample Date:	1/2005	1/2005	1/2005	1/2005	1/2005	1/2005	1/2005	1/2005	1/2005	1/2005
				Duplicate								
Compound	Criteria (1)	Units										
Acetone	200	µg/Kg	630 J	570	16 J	130	21 J	15000 UJ	17 J	320	13 J	39
Benzene	60	µg/Kg	54 UJ	42 U	5.9 U	6.9 U	5.9 U	3800 UJ	28 U	8.8 U	5.5 U	5.7 U
Bromodichloromethane	NS	µg/Kg	54 UJ	42 U	5.9 U	6.9 U	5.9 U	3800 UJ	28 U	8.8 U	5.5 U	5.7 U
Bromoform	NS	µg/Kg	54 UJ	42 U	5.9 U	6.9 U	5.9 U	3800 UJ	28 U	8.8 U	5.5 U	5.7 U
Bromomethane	NS	µg/Kg	54 UJ	42 U	5.9 U	6.9 U	5.9 U	3800 UJ	28 U	8.8 U	5.5 U	5.7 U
2-Butanone	300	µg/Kg	150 J	100	12 U	24.0	12 U	7600 UJ	57 U	71	1.3 J	4.0 NJ
Carbon disulfide	2700	µg/Kg	16 J	16 J	12 U	14 U	4.5 J	7600 UJ	57 U	1.9 J	11 U	1.3 J
Carbon tetrachloride	600	µg/Kg	54 UJ	42 U	5.9 U	6.9 U	5.9 U	3800 UJ	28 U	8.8 U	5.5 U	5.7 U
Chlorobenzene	1700	µg/Kg	54 UJ	42 U	5.9 U	6.9 U	5.9 U	3800 UJ	28 U	8.8 U	5.5 U	5.7 U
Chloroethane	1900	µg/Kg	54 UJ	42 U	5.9 U	6.9 U	5.9 U	3800 UJ	28 U	8.8 U	5.5 U	5.7 U
Chloroform	300	µg/Kg	54 UJ	42 U	5.9 U	6.9 U	5.9 U	3800 UJ	28 U	8.8 U	5.5 U	5.7 U
Chloromethane	NS	µg/Kg	54 UJ	42 U	5.9 U	6.9 U	5.9 U	3800 UJ	28 U	8.8 U	5.5 U	5.7 U
Dibromochloromethane	NS	µg/Kg	54 UJ	42 U	5.9 U	6.9 U	5.9 U	3800 UJ	28 U	8.8 U	5.5 U	5.7 U
1,1-Dichloroethane	200	µg/Kg	17 J	42 U	5.9 U	4.8 J	5.9 U	3800 UJ	28 U	8.8 U	5.5 U	1.9 J
1,2-Dichloroethane	100	µg/Kg	54 UJ	42 U	5.9 U	6.9 U	5.9 U	3800 UJ	28 U	8.8 U	5.5 U	5.7 U
1,1-Dichloroethene	400	µg/Kg	54 UJ	42 U	5.9 U	6.9 U	2.4 J	3800 UJ	7.3 J	8.8 U	5.5 U	5.7 U
cis-1,2-Dichloroethene	NS	µg/Kg	1600 J	1300	12	91	1200 J	10000 J	680	8.8 U	1.9 J	74
trans-1,2-Dichloroethene	300	µg/Kg	58 J	40 J	5.9 U	5.3 J	2.4 J	3800 UJ	13 J	8.8 U	5.5 U	3.1 J
1,2-Dichloropropane	NS	µg/Kg	54 UJ	42 U	5.9 U	6.9 U	5.9 U	3800 UJ	28 U	8.8 U	5.5 U	5.7 U
cis-1,3-Dichloropropene	NS	µg/Kg	54 UJ	42 U	5.9 U	6.9 U	5.9 U	3800 UJ	28 U	8.8 U	5.5 U	5.7 U
trans-1,3-Dichloropropene	NS	µg/Kg	54 UJ	42 U	5.9 U	6.9 U	5.9 U	3800 UJ	28 U	8.8 U	5.5 U	5.7 U
Ethylbenzene	5500	µg/Kg	30 J	13 J	5.9 U	2.6 J	5.9 U	3800 UJ	28 U	8.8 U	5.5 U	5.7 U
2-Hexanone	NS	µg/Kg	110 UJ	84 U	12 U	14 U	12 U	7600 UJ	57 U	18 U	11 U	11 U
Methylene chloride	100	µg/Kg	54 UJ	42 U	5.9 U	6.9 U	5.9 U	3800 UJ	28 U	2.3 J	5.5 U	5.7 U
4-Methyl-2-pentanone	1000	µg/Kg	110 UJ	84 U	12 U	14 U	12 U	7600 UJ	57 U	18 U	11 U	11 U
Styrene	NS	µg/Kg	54 UJ	42 U	5.9 U	6.9 U	5.9 U	3800 UJ	28 U	8.8 U	5.5 U	5.7 U
1,1,2,2-Tetrachloroethane	600	µg/Kg	54 UJ	42 U	5.9 U	6.9 U	5.9 U	3800 UJ	28 U	8.8 U	5.5 U	5.7 UJ
Tetrachloroethene	1400	µg/Kg	12 J	32 J	5.9 U	1.8 J	5.9 U	3800 UJ	28 U	8.8 U	5.5 U	2.1 J
Toluene	1500	µg/Kg	320 J	150	5.9 U	9.8	5.9 U	3800 UJ	28 U	4.2 J	5.5 U	5.7 U
1,1,1-Trichloroethane	800	µg/Kg	54 UJ	42 U	5.9 U	6.9 U	5.9 U	3800 UJ	28 U	8.8 U	5.5 U	5.7 U
1,1,2-Trichloroethane	NS	µg/Kg	54 UJ	42 U	5.9 U	6.9 U	5.9 U	3800 UJ	28 U	8.8 U	5.5 U	5.7 U
Trichloroethene	700	µg/Kg	220 J	400	13.0	89.0	5.3 J	130000 J	6200 J	5.3 J	7.5	320 J
Vinyl chloride	200	µg/Kg	560 J	120 J	5.3 J	18.0	210	3800 UJ	28 U	8.8 U	5.5 U	5.7 J
Xylene (total)	1200	µg/Kg	---	---	---	---	---	---	---	---	---	---
O-Xylene	1200	µg/Kg	69 J	25 J	5.9 U	5.0 J	5.9 U	3800 UJ	28 U	8.8 U	5.5 U	5.7 U
M+P-Xylene	1200	µg/Kg	430 J	150.0	5.9 U	25.0	4.6 J	3800 UJ	28 U	8.8 U	5.5 U	5.7 U

Notes:

(1) Soil Cleanup Objectives, NYSDEC TAGM #4046, January 24, 1994.

--- Not analyzed.

ft. BGS Feet below ground surface.

J Detected concentration is estimated.

TABLE 3.7

SUBSURFACE SOIL ANALYTICAL RESULTS-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	*SSB-3*	*SSB-3*	*SSB-4*	*SSB-5*	*SSB-6*	*SSB-7*	*SSB-8*	*SSB-9*	*SSB-10*	*SSB-11*
		Sample Depth (ft. bgs):	*4-6*	*4-6*	*4-5.7*	*4-6*	*4-6*	*8.3-9.3*	*8.9.3*	*2-4*	*2-4*	*4-5.8*
		Sample Date:	*1/2005*	*1/2005*	*1/2005*	*1/2005*	*1/2005*	*1/2005*	*1/2005*	*1/2005*	*1/2005*	*1/2005*
				Duplicate								
Compound	*Criteria* [(1)]	*Units*										

NS No standard.
U Compound was not detected at or above the quantitation limit shown.
[ ] Concentration exceeds criteria.

TABLE 3.8

SUBSURFACE SOIL ANALYTICAL RESULTS-SEMI-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	GP-7	GP-16	GP-20	GP-20	GP-25	GP-26	GP-32	GP-33	GP-39
		Sample Depth (ft. bgs):	0-4	8-12	12-16	12-16	8-12	12-14	12-16	12-16	8-12
		Sample Date:	4/24/2002	5/2/2002	5/1/2002	5/1/2002	4/26/2002	4/30/2002	4/23/2002	4/30/2002	4/22/2002
			Background			Duplicate					
Compound	Criteria [1]	Units									
Acenaphthene	50000	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U
Acenaphthylene	41000	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U
Anthracene	50000	µg/Kg	470	350 U	33 J	26 J	380 U	380 U	350 U	380 U	390 U
Benzo(a)anthracene	224	µg/Kg	3700	350 U	98 J	110 J	380 U	380 U	350 UJ	380 U	390 U
Benzo(b)fluoranthene	1100	µg/Kg	3600	350 U	82 J	91 J	380 U	380 U	350 UJ	380 U	390 U
Benzo(k)fluoranthene	1100	µg/Kg	3500	350 U	84 J	92 J	380 U	380 U	350 UJ	380 U	390 U
Benzo(g,h,i)perylene	50000	µg/Kg	2300	350 U	62 J	61 J	380 U	380 U	350 UJ	380 U	390 U
Benzo(a)pyrene	61	µg/Kg	3800	350 U	96 J	100 J	380 U	380 U	350 UJ	380 U	390 U
Benzyl Alcohol	NS	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U
bis(2-Chloroethoxy)methane	NS	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 UJ	380 U	390 U
bis(2-Chloroethyl)ether	NS	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U
bis(2-Chloroisopropyl)ether	NS	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U
bis(2-Ethylhexyl)phthalate	50000	µg/Kg	420 U	180 J	140 J	95 J	37 J	380 U	350 UJ	150 J	390 U
4-Bromophenyl phenyl ether	NS	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U
Butyl benzylphthalate	50000	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 UJ	380 U	390 U
4-Chloroaniline	220	µg/Kg	330 U	350 U	400 U	412 U	380 U	380 U	350 UJ	380 U	390 U
4-Chloro-3-methylphenol	240	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U
2-Chloronaphthalene	NS	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U
2-Chlorophenol	800	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U
4-Chlorophenyl phenyl ether	NS	µg/Kg	330 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U
Chrysene	400	µg/Kg	4500	350 U	110 J	120 J	380 U	380 U	350 UJ	380 U	390 U
Dibenzo(a,h)anthracene	14	µg/Kg	260 J	350 U	25 J	26 J	380 U	380 U	350 UJ	380 U	390 U
Dibenzofuran	6200	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U
Di-n-butylphthalate	8100	µg/Kg	420 U	350 U	400 U	49 J	380 U	380 U	350 U	380 U	390 U
1,2-Dichlorobenzene	7900	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U
1,3-Dichlorobenzene	1600	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U
1,4-Dichlorobenzene	8500	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U
3,3'-Dichlorobenzidine	NS	µg/Kg	660 U	660 U	660 U	660 U	660 U	660 U	660 UJ	660 U	660 U
2,4-Dichlorophenol	400	µg/Kg	330 U	350 U	400 U	412 U	380 U	380 U	350 UJ	380 U	390 U
Diethyl phthalate	7100	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U
2,4-Dimethylphenol	NS	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 UJ	380 U	390 U
Dimethyl phthalate	2000	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U
4,6-Dinitro-2-methylphenol	NS	µg/Kg	800 U	880 U	1000 U	1030 U	940 U	940 U	860 UJ	940 U	970 U
2,4-Dinitrophenol	200	µg/Kg	800 U	880 U	1000 U	1030 U	940 U	940 U	860 U	940 U	970 U
2,4-Dinitrotoluene	NS	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U
2,6-Dinitrotoluene	1000	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U
Di-n-octyl phthalate	50000	µg/Kg	420 U	350 U	21 J	30 J	380 U	380 U	350 UJ	380 U	390 U
Fluoranthene	50000	µg/Kg	9100	43 J	210 J	220 J	380 U	380 U	350 U	380 U	390 U
Fluorene	50000	µg/Kg	420 U	350 U	28 J	22 J	380 U	380 U	350 U	380 U	390 U
Hexachlorobenzene	410	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U
Hexachlorobutadiene	NS	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 UJ	380 U	390 U
Hexachlorocyclopentadiene	NS	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U
Hexachloroethane	NS	µg/Kg	330 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U

TABLE 3.8

SUBSURFACE SOIL ANALYTICAL RESULTS-SEMI-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	GP-7	GP-16	GP-20	GP-20	GP-25	GP-26	GP-32	GP-33	GP-39
		Sample Depth (ft. bgs):	0-4	8-12	12-16	12-16	8-12	12-14	12-16	12-16	8-12
		Sample Date:	4/24/2002	5/2/2002	5/1/2002	5/1/2002	4/26/2002	4/30/2002	4/23/2002	4/30/2002	4/22/2002
			Background			Duplicate					
Compound	Criteria [1]	Units									
Indeno(1,2,3-cd)pyrene	3200	µg/Kg	2200	350 U	57 J	57 J	380 U	380 U	350 UJ	380 U	390 U
Isophorone	4400	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 UJ	380 U	390 U
2-Methyl naphthalene	36400	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 UJ	380 U	390 U
2-Methylphenol	100	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U
4-Methylphenol	900	µg/Kg	420 U	350 U	400 U	412 U	31 J	380 U	350 U	380 U	390 U
Naphthalene	13000	µg/Kg	420 U	350 U	56 J	54 J	380 U	380 U	350 UJ	380 U	390 U
2-Nitroaniline	430	µg/Kg	800 U	880 U	1000 U	1030 U	940 U	940 U	860 U	940 U	970 U
3-Nitroaniline	500	µg/Kg	800 U	880 U	1000 U	1030 U	940 U	940 U	860 U	940 U	970 U
4-Nitroaniline	NS	µg/Kg	800 UJ	880 U	1000 U	1030 U	940 U	940 U	860 UJ	940 U	970 U
Nitrobenzene	200	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 UJ	380 U	390 U
2-Nitrophenol	330	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 UJ	380 U	390 U
4-Nitrophenol	100	µg/Kg	800 UJ	880 U	1000 U	1030 U	940 U	940 U	860 UJ	940 U	970 U
N-Nitrosodiphenylamine	NS	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U
N-Nitrosodi-n-propylamine	NS	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U
Pentachlorophenol	1000	µg/Kg	800 U	880 U	1000 U	1030 U	940 U	940 U	860 U	940 U	970 U
Phenanthrene	50000	µg/Kg	3900	350 U	180 J	140 J	380 U	380 U	350 U	380 U	390 U
Phenol	30	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U
Pyrene	50000	µg/Kg	6800	33 J	190 J	190 J	380 U	380 U	350 UJ	380 U	390 U
1,2,4-Trichlorobenzene	3400	µg/Kg	330 U	350 U	400 U	412 U	380 U	380 U	350 UJ	380 U	390 U
2,4,5-Trichlorophenol	100	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U
2,4,6-Trichlorophenol	NS	µg/Kg	420 U	350 U	400 U	412 U	380 U	380 U	350 U	380 U	390 U

Notes:
(1) Soil Cleanup Objectives, NYSDEC TAGM #4046, January 24, 1994.
ft. bgs Feet below ground surface.
J Detected concentration is estimated.
NS No standard.
U Compound was not detected at or above the quantitation limit shown.
[ ] Concentration exceeds criteria.

TABLE 3.9

SUBSURFACE SOIL ANALYTICAL RESULTS-PCBs
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	*GP-7*	*GP-16*	*GP-20*	*GP-20*	*GP-25*	*GP-26*	*GP-32*	*GP-33*	*GP-39*
		Sample Depth (ft. BGS):	*0-4*	*8-12*	*12-16*	*12-16*	*8-12*	*12-14*	*12-16*	*12-16*	*8-12*
		Sample Date:	*04/24/02*	*5/2/2002*	*5/1/2002*	*5/1/2002*	*4/26/2002*	*4/30/2002*	*4/23/2002*	*4/30/2002*	*4/22/2002*
			Background			*Duplicate*					
Compound	*Criteria* [1]	*Units*									
Aroclor 1016	10000	µg/Kg	42 U	18 U	40 U	40 U	38 U	37 U	35 U	38 U	38 U
Aroclor 1221	10000	µg/Kg	42 U	18 U	40 U	40 U	38 U	37 U	35 U	38 U	38 U
Aroclor 1232	10000	µg/Kg	42 U	18 U	40 U	40 U	38 U	37 U	35 U	38 U	38 U
Aroclor 1242	10000	µg/Kg	42 U	18 U	40 U	40 U	38 U	37 U	35 U	38 U	38 U
Aroclor 1248	10000	µg/Kg	42 U	18 U	40 U	40 U	38 U	37 U	35 U	38 U	38 U
Aroclor 1254	10000	µg/Kg	42 U	18 U	40 U	40 U	38 U	37 U	35 U	38 U	38 U
Aroclor 1260	10000	µg/Kg	42 U	18 U	40 U	40 U	38 U	37 U	35 U	38 U	38 U

Notes:

[1] Soil Cleanup Objectives, NYSDEC TAGM #4046, January 24, 1994.
ft. bgs Feet below ground surface.
PCBs Polychlorinated Biphenyls.
U Compound was not detected at or above the quantitation limit shown.

TABLE 3.10

SUBSURFACE SOIL ANALYTICAL RESULTS-PESTICIDES
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	GP-7	GP-16	GP-20	GP-20	GP-25	GP-26	GP-32	GP-33	GP-39
		Sample Depth (ft. bgs):	0-4	8-12	12-16	12-16	8-12	12-14	12-16	12-16	8-12
		Sample Date:	4/24/2002	5/2/2002	5/1/2002	5/1/2002	4/26/2002	4/30/2002	4/23/2002	4/30/2002	4/22/2002
			Background			Duplicate					
Compound	Criteria [1]	Units									
Aldrin	41	µg/Kg	21 U	1.8 U	8.3 U	8.4 UJ	7.8 U	7.8 U	1.8 U	7.8 U	2 U
alpha-BHC	110	µg/Kg	21 U	1.8 U	8.3 U	8.4 UJ	7.8 U	7.8 U	1.8 U	7.8 U	2 U
beta-BHC	200	µg/Kg	21 U	1.8 U	8.3 U	8.4 UJ	7.8 U	7.8 U	1.8 U	7.8 U	2 U
gamma-BHC (Lindane)	60	µg/Kg	21 U	1.8 U	8.3 U	8.4 UJ	7.8 U	7.8 U	1.8 U	7.8 U	2 U
delta-BHC	300	µg/Kg	21 U	1.8 U	8.3 U	8.4 UJ	7.8 U	7.8 U	1.8 U	7.8 U	2 U
Chlordane	540	µg/Kg	210 U	18 U	48 J	32 J	78 U	78 U	18 U	78 U	20 U
4,4'DDD	2900	µg/Kg	21 U	1.8 U	8.3 U	8.4 UJ	7.8 U	7.8 U	1.8 U	7.8 U	2 U
4,4'DDE	2100	µg/Kg	26 J	1.8 U	8.3 U	8.4 UJ	7.8 U	7.8 U	1.8 U	7.8 U	2 U
4,4'-DDT	2100	µg/Kg	34	1.8 U	8.3 U	8.4 UJ	7.8 U	7.8 U	1.8 U	7.8 U	2 U
Dieldrin	44	µg/Kg	130	1.8 U	8.3 U	8.4 UJ	7.8 U	7.8 U	1.8 U	7.8 U	2 U
Endosulfan I	900	µg/Kg	21 U	1.8 U	8.3 U	8.4 UJ	7.8 U	7.8 U	1.8 U	7.8 U	2 U
Endosulfan II	900	µg/Kg	21 U	1.8 U	8.3 U	8.4 UJ	7.8 U	7.8 U	1.8 U	7.8 U	2 U
Endosulfan sulfate	1000	µg/Kg	21 U	1.8 U	8.3 U	8.4 UJ	7.8 U	7.8 U	1.8 U	7.8 U	2 U
Endrin	100	µg/Kg	21 U	1.8 U	8.3 U	8.4 UJ	7.8 U	7.8 U	1.8 U	7.8 U	2 U
Endrin aldehyde	NS	µg/Kg	21 U	1.8 U	8.3 U	8.4 UJ	7.8 U	7.8 U	1.8 U	7.8 U	2 U
Heptachlor	20	µg/Kg	21 U	1.8 U	8.3 U	8.4 UJ	7.8 U	7.8 U	1.8 U	7.8 U	2 U
Heptachlor epoxide	NS	µg/Kg	21 U	1.8 U	8.3 U	8.4 UJ	7.8 U	7.8 U	1.8 U	7.8 U	2 U
Methoxychlor	NS	µg/Kg	21 U	1.8 U	8.3 U	8.4 UJ	7.8 U	7.8 U	1.8 U	7.8 U	2 U
Toxaphene	NS	µg/Kg	500 U	43 U	200 U	200 UJ	180 U	180 U	43 U	180 U	47 U
Endrin ketone	NS	µg/Kg	21 U	1.8 U	8.3 U	8.4 UJ	7.8 U	7.8 U	1.8 U	7.8 U	2 U

Notes:
(1) Soil Cleanup Objectives, NYSDEC TAGM #4046, January 24, 1994.
ft. bgs Feet below ground surface.
J Detected concentration is estimated.
NS No standard.
U Compound was not detected at or above the quantitation limit shown.
[boxed] Concentration exceeds criteria.

CRA 035045 (2)

TABLE 3.11

SUBSURFACE SOIL ANALYTICAL RESULTS-METALS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	GP-7	GP-16	GP-20	GP-20	GP-25	GP-26	GP-32	GP-33	GP-39
		Sample Depth (ft. bgs):	0-4	8-12	12-16	12-16	8-12	12-14	12-16	12-16	8-12
		Sample Date:	4/24/02	5/2/2002	5/1/2002	5/1/2002	4/26/2002	4/30/2002	4/23/2002	4/30/2002	4/22/2002
			Background			Duplicate					
Compound	Criteria[1]	Units									
Aluminum	SB[2]	mg/Kg	9790 J	4630 J	7720 J	6510 J	6330 J	5050 J	4110 J	4770 J	11100 J
Antimony	SB[2]	mg/Kg	7.8 UJ	6.7 UJ	7.7 UJ	7.9 UJ	7.2 UJ	6.8 UJ	6.5 UJ	7.1 UJ	7.2 UJ
Arsenic	7.5	mg/Kg	5.8	2.9	2.5	1.5	1.5	4.7	4.6	1.5	6.5
Barium	300	mg/Kg	71.9 J	55.9 J	43.2 J	32.1 J	45.2 J	36.2 J	46.1 J	33 J	83.6 J
Beryllium	0.16	mg/Kg	0.65 U	0.56 U	0.64 U	0.66 U	0.6 U	0.56 U	0.54 U	0.6 U	0.64
Cadmium	1.5	mg/Kg	0.65 U	0.56 U	0.64 U	0.66 U	0.6 U	0.56 U	0.54 U	0.6 U	0.6 U
Calcium	SB[2]	mg/Kg	24400 J	68600 J	46500 J	44600 J	26900 J	70800 J	116000 J	72400 J	4210 J
Chromium	SB[2]	mg/Kg	14.8	7.4	11.5	11.4	9.3	7.9	6.1	7.2	14.9
Cobalt	30	mg/Kg	6.5 U	5.6 U	6.5	6.6 U	6 U	5.6 U	5.4 U	6 U	8.4
Copper	SB[2]	mg/Kg	22.7	12.5	17.9	15.6	10.8	16.7	20.6	18.2	13.7
Iron	SB[2]	mg/Kg	16000 J	11000 J	13200 J	10800 J	8020 J	12200 J	15000 J	10200 J	21300 J
Lead	SB[2]	mg/Kg	29.1	4.3	8.7	6.6	1480	6.8	6.7	8.5	9.5
Magnesium	SB[2]	mg/Kg	4970 J	17600 J	18800 J	18700 J	8940 J	14800 J	23800 J	21800 J	3650 J
Manganese	SB[2]	mg/Kg	277 J	437 J	345 J	280 J	183 J	400 J	1070 J	373 J	570 J
Nickel	13	mg/Kg	12.9 J	9.2 J	14.2 J	13.5 J	9.1 J	10.4 J	7.9 J	9.2 J	16.7 J
Potassium	SB[2]	mg/Kg	1260 J	1550 J	1830 J	1450 J	1000 J	1280 J	967 J	1430 J	1110 J
Selenium	SB[2]	mg/Kg	0.92	0.56 U	0.86	0.68	0.6 U	0.56 U	0.54 U	0.6 U	0.88
Mercury	0.1	mg/Kg	0.084	0.022 U	0.024 U	0.023 U	0.025 U	0.021 U	0.022 U	0.021 U	0.03
Silver	SB[2]	mg/Kg	1.3 U	1.1 U	1.3 U	1.3 U	1.2 U	1.1 U	1.1 U	1.2 U	1.2 U
Sodium	SB[2]	mg/Kg	646 U	556 U	641 U	656 U	597 U	563 U	539 U	595 U	600 U
Thallium	SB[2]	mg/Kg	1.3 U	1.1 U	1.3 U	1.3 U	1.2 U	1.1 U	1.1 U	1.2 U	1.2 U
Vanadium	SB[2]	mg/Kg	20.4 J	10 J	17.5 J	18.9 J	12.4 J	12.1 J	12.8 J	9.3 J	20.8 J
Zinc	SB[2]	mg/Kg	61.6 J	27.7 J	39.7 J	39.3 J	28.1 J	32.8 J	32.2 J	28.9 J	50.9 J

Notes:

(1) Soil Cleanup Objectives, NYSDEC TAGM #4046, January 24, 1994.

(2) Where an analyte is not detected in the background sample and the criteria is equal to site background, the criteria is assumed to be equal to one half the detection limit of the background sample.

ft. bgs Feet below ground surface.

U Compound was not detected at or above the quantitation limit shown.

J Detected concentration is estimated.

[box] Concentration exceeds criteria.

TABLE 3.12

SUBSURFACE SOIL ANALYTICAL RESULTS-WET CHEMISTRY
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

	Sample Location:	*GP-7*	*GP-16*	*GP-20*	*GP-20*	*GP-25*	*GP-26*	*GP-32*	*GP-33*	*GP-39*
	Sample Depth (ft. bgs):	*0-4*	*8-12*	*12-16*	*12-16*	*8-12*	*12-14*	*12-16*	*12-16*	*8-12*
	Sample Date:	*4/24/2002*	*5/2/2002*	*5/1/2002*	*5/1/2002*	*4/26/2002*	*4/30/2002*	*4/23/2002*	*4/30/2002*	*4/22/2002*
		Background			*Duplicate*					
Compound	*Units*									
Leachable pH	S.U.	7.97	8.09	7.16	7.08	7.73	7.75	8.25	8.02	7.41
Cyanide - Total	mg/Kg	1.3 U	1.1 U	1.2 U	1.3 U	1.2 U	1.1 U	1.1 U	1.2 U	1.2 U

Notes:
ft. bgs Feet below ground surface.
U Compound was not detected at or above the quantitation limit shown.

TABLE 3.13

SURFACE WATER ANALYTICAL RESULTS-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	Background SW-01	Background SW-02	Background SW-02	SW-03	SW-04	SW-05	SW-05	SW-07	SW-08	SW-09	SW-09	SW-10	OUTFALL
		Sample Date:	5/21/02	5/21/02	5/21/02 Duplicate	5/21/02	5/21/02	5/21/02	11/21/02	5/21/02	5/21/02	5/21/02	11/21/02	11/21/02	11/21/02
Compound	*Criteria* [1]	*Units*													
1,1,1,2-Tetrachloroethane	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
1,1,1-Trichloroethane	NS	µg/L	1 U	1 U	1 U	1 U	1 U	4 U	1 U	5 U	10 U	3.3 J	10 U	1 U	1 U
1,1,2,2-Tetrachloroethane	NS	µg/L	1 U	1 U	1 U	1 U	1 U	4 U	1 U	5 U	10 U	10 U	10 U	1 U	1 U
1,1,2-Trichloroethane	NS	µg/L	1 U	1 U	1 U	1 U	1 U	4 U	1 U	5 U	10 U	10 U	10 U	1 U	1 U
1,1-Dichloroethane	NS	µg/L	1 U	1 U	1 U	0.28 J	0.26 J	4 U	1 U	5 U	10 U	2.2 J	10 U	1 U	1 U
1,1-Dichloroethene	NS	µg/L	1 U	1 U	1 U	1 U	1 U	4 U	1 U	5 U	10 U	10 U	10 U	1 U	1 U
1,1-Dichloropropene	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
1,2,3-Trichlorobenzene	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
1,2,3-Trichloropropane	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
1,2,4-Trichlorobenzene	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
1,2,4-Trimethylbenzene	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
1,2-Dibromo-3-chloropropane (DBCP)	NS	µg/L	---	---	---	---	---	---	1 UJ	---	---	---	10 UJ	1 UJ	1 UJ
1,2-Dibromoethane (EDB)	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
1,2-Dichlorobenzene	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
1,2-Dichloroethane	NS	µg/L	1 U	1 U	1 U	1 U	1 U	4 U	1 U	5 U	10 U	10 U	10 U	1 U	1 U
1,2-Dichloropropane	NS	µg/L	1 U	1 U	1 U	1 U	1 U	4 U	1 U	5 U	10 U	10 U	10 U	1 U	1 U
1,3,5-Trimethylbenzene	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
1,3-Dichlorobenzene	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
1,3-Dichloropropane	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
1,4-Dichlorobenzene	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
2,2-Dichloropropane	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
2-Butanone	NS	µg/L	5 U	5 U	5 U	5 U	5 U	20 U	---	25 U	50 U	50 U	---	---	---
2-Chlorotoluene	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
2-Hexanone	NS	µg/L	5 U	5 U	5 U	5 U	5 U	20 U	---	25 U	50 U	50 U	---	---	---
2-Phenylbutane	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
3-Chlorotoluene	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
4-Chlorotoluene	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
4-Methyl-2-pentanone	NS	µg/L	5 U	5 U	5 U	5 U	5 U	20 U	---	25 U	50 U	50 U	---	---	---
Acetone	NS	µg/L	8.6	4.4 J	5 U	5 U	5 U	20 U	---	25 U	50 U	50 U	---	---	---
Benzene	10	µg/L	1 U	1 U	1 U	1 U	1 U	4 U	1 U	5 U	10 U	10 U	10 U	1 U	1 U
Bromobenzene	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
Bromodichloromethane	NS	µg/L	1 U	1 U	1 U	1 U	1 U	4 U	1 U	5 U	10 U	10 U	10 U	1 U	1 U
Bromoform	NS	µg/L	1 U	1 U	1 U	1 U	1 U	4 U	1 U	5 U	10 U	10 U	10 U	1 U	1 U
Bromomethane	NS	µg/L	1 U	1 U	1 U	1 U	1 U	4 U	1 U	5 U	10 U	10 U	10 U	1 U	1 U
Carbon disulfide	NS	µg/L	1 U	1 U	1 U	1 U	1 U	4 U	---	5 U	10 U	10 U	---	---	---
Carbon tetrachloride	NS	µg/L	1 U	1 U	1 U	1 U	1 U	4 U	1 U	5 U	10 U	10 U	10 U	1 U	1 U
Chlorobenzene	400	µg/L	1 U	1 U	1 U	1 U	1 U	4 U	1 U	5 U	10 U	10 U	10 U	1 U	1 U
Chlorobromomethane	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
Chloroethane	NS	µg/L	1 U	1 U	1 U	1 U	1 U	4 U	1 U	5 U	10 U	10 U	10 U	1 U	1 U

TABLE 3.13

SURFACE WATER ANALYTICAL RESULTS-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

			Background												
		Sample Location:	SW-01	SW-02	SW-02	SW-03	SW-04	SW-05	SW-05	SW-07	SW-08	SW-09	SW-09	SW-10	OUTFALL
		Sample Date:	5/21/02	5/21/02	5/21/02	5/21/02	5/21/02	5/21/02	11/21/02	5/21/02	5/21/02	5/21/02	11/21/02	11/21/02	11/21/02
					Duplicate										
Compound	Criteria [1]	Units													
Chloroform	NS	µg/L	1 U	1 U	1 U	1 U	1 U	4 U	1 U	5 U	10 U	10 U	10 U	1 U	1 U
Chloromethane	NS	µg/L	1 U	1 U	1 U	1 U	1 U	4 U	1 U	5 U	10 U	10 U	10 U	1 U	1 U
cis-1,2-Dichloroethene	NS	µg/L	0.27 J	1 U	1 U	8.8	13	69	22	100	260	530 D	200	28	16
cis-1,3-Dichloropropene	NS	µg/L	1 U	1 U	1 U	1 U	1 U	4 U	1 U	5 U	10 U	10 U	10 U	1 U	1 U
Cymene	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
Dibromochloromethane	NS	µg/L	1 U	1 U	1 U	1 U	1 U	4 U	1 U	5 U	10 U	10 U	10 U	1 U	1 U
Dibromomethane	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
Dichloromonofluoromethane	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
Ethylbenzene	NS	µg/L	1 U	1 U	1 U	1 U	1 U	4 U	1 U	5 U	10 U	10 U	10 U	1 U	1 U
Hexachlorobutadiene	0.01	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
Isopropylbenzene	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
m&p-xylene	NS	µg/L	---	---	---	---	---	---	2 U	---	---	---	20 U	2 U	2 U
Methylene chloride	200	µg/L	2 U	2 U	2 U	2 U	2 U	3.2 J	1 U	2 J	5 J	6 J	10 U	1 U	1 U
Naphthalene	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
n-Butylbenzene	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
n-Propylbenzene	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
o-Xylene	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
Styrene	NS	µg/L	1 U	1 U	1 U	1 U	1 U	4 U	1 U	5 U	10 U	10 U	10 U	1 U	1 U
tert-Butylbenzene	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
Tetrachloroethene	1	µg/L	1 U	1 U	1 U	1 U	1 U	4 U	1 U	5 U	3.9 J	8.7 J	10 U	1 U	1 U
Toluene	6000	µg/L	1 U	1 U	1 U	1 U	1 U	4 U	1 U	5 U	10 U	10 U	10 U	1 U	1 U
trans-1,2-Dichloroethene	NS	µg/L	1 U	1 U	1 U	1 U	1 U	4 U	1 U	5 U	2 J	3.9 J	10 U	1 U	1 U
trans-1,3-Dichloropropene	NS	µg/L	1 U	1 U	1 U	1 U	1 U	4 U	1 U	5 U	10 U	10 U	10 U	1 U	1 U
Trichloroethene	40	µg/L	0.27 J	1 U	1 U	8.4	8.8	6	8.7	1 J	59 B	120 B	75	2.5	7.2
Trichlorofluoromethane (CFC-11)	NS	µg/L	---	---	---	---	---	---	1 U	---	---	---	10 U	1 U	1 U
Vinyl chloride	NS	µg/L	1 U	1 U	1 U	1.8	0.84 J	1.4 J	17	5 U	3.4 J	30	36	8	2.1
Xylene (total)	NS	µg/L	3 U	3 U	3 U	3 U	3 U	12 U	---	15 U	30 U	30 U	---	---	---

Notes:

(1) Ambient Water Quality Standard, Class C fresh surface water, human health.
--- Not analyzed.
J Detected concentration is estimated.
NS No standard.
U Compound was not detected at or above the quantitation limit shown.
[box] Concentration exceeds criteria.

TABLE 3.14

SURFACE WATER ANALYTICAL RESULTS-SEMI-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

			Background								
		Sample Location:	SW-01	SW-02	SW-02	SW-03	SW-04	SW-05	SW-07	SW-08	SW-09
		Sample Date:	5/21/2002	5/21/2002	5/21/2002	5/21/2002	5/21/2002	5/21/2002	5/21/2002	5/21/2002	05/21/02
					Duplicate						
Compound	Criteria (1)	Units									
Acenaphthene	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	1 J	10 U
Benzo(b)fluoranthene	NS	µg/L	10 U	1 J	10 U	10 U	5 J	10 U	10 U	3 J	10 U
Benzo(k)fluoranthene	NS	µg/L	10 U	0.7 J	10 U	10 U	4 J	10 U	10 U	2 J	10 U
Benzo(g,h,i)perylene	NS	µg/L	10 U	0.8 J	10 U	10 U	5 J	10 U	10 U	3 J	10 U
Benzo(a)pyrene	0.0012	µg/L	10 U	0.7 J	10 U	10 U	4 J	10 U	10 U	2 J	10 U
bis(2-Chloroethoxy)methane	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethyl)ether	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroisopropyl)ether	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl phenyl ether	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Butyl benzylphthalate	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chloronaphthalene	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl phenyl ether	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	NS	µg/L	10 U	1 J	10 U	10 U	5 J	10 U	10 U	3 J	10 U
Dibenzo(a,h)anthracene	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	0.6 J	10 U
Dibenzofuran	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	NS	µg/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2,4-Dichlorophenol	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Diethyl phthalate	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	1000	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dimethyl phthalate	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4,6-Dinitro-2-methylphenol	NS	µg/L	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
2,4-Dinitrophenol	400	µg/L	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U

TABLE 3.14

SURFACE WATER ANALYTICAL RESULTS-SEMI-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

			Background								
		Sample Location:	*SW-01*	*SW-02*	*SW-02*	*SW-03*	*SW-04*	*SW-05*	*SW-07*	*SW-08*	*SW-09*
		Sample Date:	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*05/21/02*
					Duplicate						
Compound	*Criteria* [1]	*Units*									
2,4-Dinitrotoluene	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-octyl phthalate	NS	µg/L	10 U	10 U	10 U	3 J	10 U	10 U	10 U	10 U	10 U
Fluoranthene	NS	µg/L	10 U	2 J	10 U	10 U	8 J	10 U	10 U	6 J	10 U
Fluorene	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	0.00003	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	0.01	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	0.6	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	NS	µg/L	10 U	0.7 J	10 U	10 U	4 J	10 U	10 U	2 J	10 U
Isophorone	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methyl naphthalene	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	NS	µg/L	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
3-Nitroaniline	NS	µg/L	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
4-Nitroaniline	NS	µg/L	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Nitrobenzene	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitrophenol	NS	µg/L	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
N-Nitrosodiphenylamine	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
N-Nitrosodi-n-propylamine	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	NS	µg/L	25 U	25 U	25 U	25 U	25 U	25 U	2 J	25 U	25 U
Phenanthrene	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	2 J	10 U
Phenol	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	NS	µg/L	10 U	1 J	10 U	10 U	6 J	10 U	10 U	4 J	10 U
1,2,4-Trichlorobenzene	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	NS	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Notes:

(1) Ambient Water Quality Standard, Class C fresh surface water,

TABLE 3.14

SURFACE WATER ANALYTICAL RESULTS-SEMI-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

			Background								
		Sample Location:	*SW-01*	*SW-02*	*SW-02*	*SW-03*	*SW-04*	*SW-05*	*SW-07*	*SW-08*	*SW-09*
		Sample Date:	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*05/21/02*
					Duplicate						
Compound	*Criteria* [1]	*Units*									

human health

J Detected concentration is estimated.

NS No standard.

U Compound was not detected at or above the quantitation limit.

TABLE 3.15

SURFACE WATER ANALYTICAL RESULTS- PCBs
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

			Background								
		Sample Location:	*SW-01*	*SW-02*	*SW-02*	*SW-03*	*SW-04*	*SW-05*	*SW-07*	*SW-08*	*SW-09*
		Sample Date:	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*
					Duplicate						
Compound	*Criteria* [(1)]	*Units*									
Aroclor 1016	0.000001	ug/L	0.49 U	0.57 U	0.51 U	0.5 U	0.5 U	0.49 U	0.5 U	0.48 U	0.49 U
Aroclor 1221	0.000001	ug/L	0.49 U	0.57 U	0.51 U	0.5 U	0.5 U	0.49 U	0.5 U	0.48 U	0.49 U
Aroclor 1232	0.000001	ug/L	0.49 U	0.57 U	0.51 U	0.5 U	0.5 U	0.49 U	0.5 U	0.48 U	0.49 U
Aroclor 1242	0.000001	ug/L	0.49 U	0.57 U	0.51 U	0.5 U	0.5 U	0.49 U	0.5 U	0.48 U	0.49 U
Aroclor 1248	0.000001	ug/L	0.49 U	0.57 U	0.51 U	0.5 U	0.5 U	0.49 U	0.5 U	0.48 U	0.49 U
Aroclor 1254	0.000001	ug/L	0.49 U	0.57 U	0.51 U	0.5 U	0.5 U	0.49 U	0.5 U	0.48 U	0.49 U
Aroclor 1260	0.000001	ug/L	0.49 U	0.57 U	0.51 U	0.5 U	0.5 U	0.49 U	0.5 U	0.48 U	0.49 U

Notes:
(1) Ambient Water Quality Standard, Class C fresh surface water, human health
PCBs Polychlorinated Biphenyls.
U Compound was not detected at or above the quantitation limit shown.

TABLE 3.16

SURFACE WATER ANALYTICAL RESULTS-PESTICIDES
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

			Background								
		Sample Location:	*SW-01*	*SW-02*	*SW-02*	*SW-03*	*SW-04*	*SW-05*	*SW-07*	*SW-08*	*SW-09*
		Sample Date:	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*
					Duplicate						
Compound	*Criteria* [(1)]	*Units*									
Aldrin	0.001	µg/L	0.05 UJ	0.057 UJ	0.05 UJ	0.047 UJ	0.47 UJ	0.048 UJ	0.05 UJ	0.047 UJ	0.048 UJ
alpha-BHC	NS	µg/L	0.05 UJ	0.057 UJ	0.05 UJ	0.047 UJ	0.47 UJ	0.048 UJ	0.05 UJ	0.047 UJ	0.048 UJ
beta-BHC	NS	µg/L	0.05 UJ	0.057 UJ	0.05 UJ	0.047 UJ	0.47 UJ	0.048 UJ	0.05 UJ	0.047 UJ	0.048 UJ
gamma-BHC (Lindane)	NS	µg/L	0.05 UJ	0.057 UJ	0.05 UJ	0.047 UJ	0.47 UJ	0.048 UJ	0.05 UJ	0.047 UJ	0.048 UJ
delta-BHC	NS	µg/L	0.05 UJ	0.057 UJ	0.05 UJ	0.047 UJ	0.47 UJ	0.048 UJ	0.05 UJ	0.047 UJ	0.048 UJ
Chlordane	0.00002	µg/L	0.05 UJ	0.057 UJ	0.05 UJ	0.047 UJ	0.47 UJ	0.048 UJ	0.05 UJ	0.047 UJ	0.048 UJ
4,4'DDD	0.00008	µg/L	0.05 UJ	0.057 UJ	0.05 UJ	0.047 UJ	0.47 UJ	0.048 UJ	0.05 UJ	0.047 UJ	0.048 UJ
4,4'DDE	0.000007	µg/L	0.05 UJ	0.057 UJ	0.05 UJ	0.047 UJ	0.47 UJ	0.048 UJ	0.05 UJ	0.047 UJ	0.048 UJ
4,4'-DDT	0.00001	µg/L	0.05 UJ	0.057 UJ	0.05 UJ	0.047 UJ	0.47 UJ	0.048 UJ	0.05 UJ	0.047 UJ	0.048 UJ
Dieldrin	0.0000006	µg/L	0.05 UJ	0.057 UJ	0.05 UJ	0.047 UJ	0.47 UJ	0.048 UJ	0.05 UJ	0.047 UJ	0.048 UJ
Endosulfan I	NS	µg/L	0.05 UJ	0.057 UJ	0.05 UJ	0.047 UJ	0.47 UJ	0.048 UJ	0.05 UJ	0.047 UJ	0.048 UJ
Endosulfan II	NS	µg/L	0.05 UJ	0.057 UJ	0.05 UJ	0.047 UJ	0.47 UJ	0.048 UJ	0.05 UJ	0.047 UJ	0.048 UJ
Endosulfan sulfate	NS	µg/L	0.05 UJ	0.057 UJ	0.05 UJ	0.047 UJ	0.47 UJ	0.048 UJ	0.05 UJ	0.047 UJ	0.048 UJ
Endrin	0.002	µg/L	0.05 UJ	0.057 UJ	0.05 UJ	0.047 UJ	0.47 UJ	0.048 UJ	0.05 UJ	0.047 UJ	0.048 UJ
Endrin aldehyde	NS	µg/L	0.05 UJ	0.057 UJ	0.05 UJ	0.047 UJ	0.47 UJ	0.048 UJ	0.05 UJ	0.047 UJ	0.048 UJ
Heptachlor	0.0002	µg/L	0.05 UJ	0.057 UJ	0.05 UJ	0.047 UJ	0.47 UJ	0.048 UJ	0.05 UJ	0.047 UJ	0.048 UJ
Heptachlor epoxide	0.0003	µg/L	0.05 UJ	0.057 UJ	0.05 UJ	0.047 UJ	0.47 UJ	0.048 UJ	0.05 UJ	0.047 UJ	0.048 UJ
Methoxychlor	NS	µg/L	0.05 UJ	0.057 UJ	0.05 UJ	0.047 UJ	0.47 UJ	0.048 UJ	0.05 UJ	0.047 UJ	0.048 UJ
Toxaphene	0.000006	µg/L	0.099 UJ	0.11 UJ	0.1 UJ	0.094 UJ	0.94 UJ	0.097 UJ	0.1 UJ	0.095 UJ	0.097 UJ

Notes:
(1) Ambient Water Quality Standard, Class C fresh surface water, human health
J Detected concentration is estimated.
NS No standard.
U Compound was not detected at or above the quantitation limit shown.

TABLE 3.17

SURFACE WATER ANALYTICAL RESULTS-METALS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

			Background								
		Sample Location:	*SW-01*	*SW-02*	*SW-02*	*SW-03*	*SW-04*	*SW-05*	*SW-07*	*SW-08*	*SW-09*
		Sample Date:	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*
					Duplicate						
Constituent	*Criteria* [1]	*Units*									
Aluminum	100[2]	µg/L	120 B	240	128 B	88.3 B	1950	86.2 B	92.8 B	1020	54.2 B
Antimony	NS	µg/L	3.9 U	3.9 U	3.9 U	3.9 U	4.3 B	3.9 U	3.9 U	3.9 U	3.9 U
Arsenic	150[2]	µg/L	3.9 U	3.9 U	3.9 U	3.9 U	15.6	3.9 U	3.9 U	12.7	7.5 B
Barium	NS	µg/L	91.5 BJ	86.5 BJ	91.9 BJ	132 BJ	333 J	120 BJ	54.2 BJ	395 J	96.4 BJ
Beryllium	11[2]	µg/L	0.3 U	0.3 U	0.3 U	0.3 U	0.3 B	0.36 B	0.3 U	0.3 U	0.3 U
Cadmium	2880[3]	µg/L	0.3 U	0.3 U	0.3 U	0.3 U	0.45 B	0.3 U	0.41 B	0.45 B	0.3 U
Calcium	NS	µg/L	127000 J	109000 J	110000 J	113000 J	126000 J	111000 J	95200 J	111000 J	103000 J
Chromium	2.88[3]	µg/L	1.2 B	0.9 U	0.9 U	0.9 U	7.4 B	0.9 U	0.9 U	6.6 B	1.6 B
Cobalt	5[2]	µg/L	0.7 U	0.7 U	0.7 U	0.7 U	2.9 B	0.7 U	0.7 U	1.7 B	0.7 U
Copper	12660[3]	µg/L	0.7 U	0.7 U	0.7 U	0.7 U	17.9 B	0.7 U	0.7 U	10.7 B	0.7 U
Iron	NS	µg/L	951 J	798 J	605 J	3920 J	39600 J	359 J	192 J	15200 J	1630 J
Lead	8[2]	µg/L	4 J	5.7 J	4.2 J	3.9 J	53	2.4 U	2.6 BJ	32.4	2.4 U
Magnesium	NS	µg/L	22100 J	21500 J	21100 J	19700 J	22200 J	20100 J	14800 J	21400 J	23900 J
Manganese	NS	µg/L	110 J	87.4 J	68.8 J	144 J	1360 J	40.4 J	145 J	1510 J	561 J
Nickel	73290[3]	µg/L	1.6 B	1.3 U	1.3 U	1.3 U	6.6 B	1.3 U	2.5 B	4 B	1.4 B
Potassium	NS	µg/L	7430 J	6270 J	6360 J	5830 J	6890 J	5710 J	2730 BJ	6970 J	8590 J
Selenium	4.6[2]	µg/L	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U
Mercury	0.0007	µg/L	0.092 U	0.092 U	0.092 U	0.092 U	0.092 U	0.092 U	0.092 U	0.092 U	0.092 U
Silver	0.1[2]	µg/L	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U
Sodium	NS	µg/L	59000 J	81600 J	74100 J	66800 J	69000 J	65500 J	31100 J	59800 J	64200 J
Thallium	8[2]	µg/L	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
Vanadium	14[2]	µg/L	0.7 U	0.7 U	0.7 U	0.7 U	7.7 B	0.7 U	0.7 U	5.6 B	0.7 U
Zinc	116630[3]	µg/L	16.6 BJ	25.2 J	17.2 BJ	87.4 J	582	21 J	10.1 BJ	364	36.4 J

Notes:

(1) Ambient Water Quality Standard, Class C fresh surface water, human health

(2) Aquatic standard, no human health standard.

(3) No human health standard, aquatic standard calculated based on hardness of 150 ppm.

B Value greater than or equal to the instrument detection limit.

TABLE 3.17

SURFACE WATER ANALYTICAL RESULTS-METALS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

J	Detected concentration is estimated.
NS	No standard.
U	Compound was not detected at or above the quantitation limit shown.
[ ]	Concentration exceeds criteria.

TABLE 3.18

SURFACE WATER ANALYTICAL RESULTS-WET CHEMISTRY
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Background								
	Sample Location:	*SW-01*	*SW-02*	*SW-02*	*SW-03*	*SW-04*	*SW-05*	*SW-07*	*SW-08*	*SW-09*
	Sample Date:	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*
				Duplicate						
Constituent	*Units*									
Leachable pH	S.U.	7.77	7.88	7.94	7.73	7.91	7.96	7.93	7.70	7.36
Cyanide - Total	µg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U

Note:
U Compound was not detected at or above the quantitation limit shown.

TABLE 3.19

SURFACE SOIL ANALYTICAL RESULTS-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Sample Location:	SED 01 (Background)	SED 02 (Background)	SED 02 (Background)	SED 03	SED 04	SED 05	SED 06	SED 07	SED 08	SED 09	SED 10	SS-01
		Sample Date:	5/21/2002	5/21/2002	5/21/2002 Duplicate	5/21/2002	5/21/2002	5/21/2002	5/21/2002	5/21/2002	5/21/2002	5/21/2002	11/21/2002	5/21/2002
Compound	Criteria [1]	Units												
Acetone	200	µg/Kg	120 UJ	80 UJ	66 UJ	38 UJ	220 UJ	58 UJ	68 UJ	62 UJ	28 UJ	26 UJ	41	14 U
Benzene	60	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	28 UJ	25 UJ	40 UJ	14 U
Bromodichloromethane	NS	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	28 UJ	25 UJ	40 UJ	14 U
Bromoform	NS	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	28 UJ	25 UJ	40 UJ	14 U
Bromomethane	NS	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	28 UJ	25 UJ	40 UJ	14 U
2-Butanone	300	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	28 UJ	25 UJ	40 UJ	14 U
Carbon disulfide	2700	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	28 UJ	4 J	40 UJ	14 UJ
Carbon tetrachloride	600	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	28 UJ	25 UJ	40 UJ	14 U
Chlorobenzene	1700	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	28 UJ	25 UJ	40 UJ	14 U
Chloroethane	1900	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	28 UJ	25 UJ	40 UJ	14 U
Chloroform	300	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	28 UJ	25 UJ	40 UJ	14 U
Chloromethane	NS	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	28 UJ	25 UJ	40 UJ	14 U
Dibromochloromethane	NS	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	28 UJ	25 UJ	40 UJ	14 U
1,1-Dichloroethane	200	µg/Kg	37 UJ	33 UJ	38 UJ	3 J	42 UJ	30 UJ	68 UJ	62 UJ	5 J	4 J	40 UJ	14 U
1,2-Dichloroethane	100	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	28 UJ	25 UJ	40 UJ	14 U
1,1-Dichloroethene	400	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	28 UJ	25 UJ	40 UJ	14 U
cis-1,2-Dichloroethene	NS	µg/Kg	37 UJ	33 UJ	38 UJ	4 J	45 J	37 J	15 J	28 J	990 DJ	1000 DJ	44	14 U
trans-1,2-Dichloroethene	300	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	5 J	6 J	40 UJ	14 U
1,2-Dichloropropane	NS	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	28 UJ	25 UJ	40 UJ	14 U
cis-1,3-Dichloropropene	NS	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	28 UJ	25 UJ	40 UJ	14 U
trans-1,3-Dichloropropene	NS	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	28 UJ	25 UJ	40 UJ	14 U
Ethylbenzene	5500	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	28 UJ	25 UJ	40 UJ	14 U
2-Hexanone	NS	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	28 UJ	25 UJ	40 UJ	14 U
Methylene chloride	100	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	28 UJ	25 UJ	40 UJ	18 U
4-Methyl-2-pentanone	1000	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	28 UJ	25 UJ	40 UJ	14 U
Styrene	NS	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	28 UJ	25 UJ	40 UJ	14 U
1,1,2,2-Tetrachloroethane	600	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	28 UJ	25 UJ	40 UJ	14 U
Tetrachloroethene	1400	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	50 J	13 J	40 UJ	14 U
Toluene	1500	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	28 UJ	25 UJ	40 UJ	14 U
1,1,1-Trichloroethane	800	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	5 J	25 UJ	40 UJ	14 U
1,1,2-Trichloroethane	NS	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	42 UJ	30 UJ	68 UJ	62 UJ	28 UJ	25 UJ	40 UJ	14 U
Trichloroethene	700	µg/Kg	37 UJ	33 UJ	38 UJ	26 UJ	17 J	30 UJ	68 UJ	7 J	230 J	80 J	6 J	14 U
Vinyl chloride	200	µg/Kg	37 UJ	33 UJ	38 UJ	3 J	6 J	30 UJ	68 UJ	62 UJ	19 J	120 J	10 J	14 U
Xylene (total)	1200	µg/Kg	56 UJ	50 UJ	57 UJ	39 UJ	64 UJ	46 UJ	100 UJ	93 UJ	42 UJ	38 UJ	40 UJ	21 U

Notes:

(1) Soil Cleanup Objectives, NYSDEC TAGM #4046, January 24, 1994.

D Compounds identified in an analysis at the secondary dilution factor.

J Detected concentration is estimated.

NS No standard.

U Compound was not detected at or above the quantitation limit shown.

TABLE 3.20

SURFACE SOIL ANALYTICAL RESULTS-SEMI-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

				Background										
			Sample Location	SED 01	SED 02	SED 02	SED 03	SED 04	SED 05	SED 06	SED 07	SED 08	SED 09	SED 10
			Sample Date:	5/21/2002	5/21/2002	5/21/2002 Duplicate	5/21/2002	5/21/2002	5/21/2002	5/21/2002	5/21/2002	5/21/2002	5/21/2002	11/21/2002
Compound	Criteria (1)	Lowest Background	Units											
Acenaphthene	50000	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	1200 J	3100 J	13000 UJ
Acenaphthylene	41000	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
Anthracene	50000	640	µg/Kg	25000 UJ	640 J	25000 UJ	8500 UJ	1900 J	5100 UJ	11000 UJ	10000 UJ	6800 J	16000 J	13000 UJ
Benzo(a)anthracene	224	2100	µg/Kg	2100 J	9500 J	8100 J	650 J	22000 J	270 J	650 J	10000 UJ	55000 J	88000 J	2200 J
Benzo(b)fluoranthene	1100	5800	µg/Kg	5800 J	27000 J	27000 J	1400 J	52000 J	400 J	1400 J	760 J	98000 J	130000 J	3000 J
Benzo(k)fluoranthene	1100	3500	µg/Kg	3500 J	22000 J	15000 J	900 J	33000 J	340 J	700 J	640 J	52000 J	78000 J	1800 J
Benzo(g,h,i)perylene	50000	1300	µg/Kg	1300 J	6800 J	5800 J	8500 UJ	15000 J	5100 UJ	780 J	10000 UJ	30000 J	35000 J	1900 J
Benzo(a)pyrene	61	3400	µg/Kg	3400 J	17000 J	15000 J	850 J	35000 J	330 J	980 J	630 J	67000 J	97000 J	2600 J
Benzyl Alcohol	NS	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
bis(2-Chloroethoxy)methane	NS	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
bis(2-Chloroethyl)ether	NS	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
bis(2-Chloroisopropyl)ether	NS	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
bis(2-Ethylhexyl)phthalate	50000	3300	µg/Kg	5600 J	3300 J	4400 J	2600 J	8800 J	990 J	1000 J	920 J	3000 J	1700 J	13000 UJ
4-Bromophenyl phenyl ether	NS	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
Butyl benzylphthalate	50000	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
4-Chloroaniline	220	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
4-Chloro-3-methylphenol	240	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
2-Chloronaphthalene	NS	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
2-Chlorophenol	800	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
4-Chlorophenyl phenyl ether	NS	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
Chrysene	400	3500	µg/Kg	3500 J	20000 J	17000 J	1100 J	40000 J	360 J	1000 J	660 J	75000 J	100000 J	2900 J
Dibenzo(a,h)anthracene	14	1900	µg/Kg	25000 UJ	2800 J	1900 J	8500 UJ	6000 J	5100 UJ	11000 UJ	10000 UJ	13000 J	16000 J	13000 UJ
Dibenzofuran	6200	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	850 J	1800 J	13000 UJ
Di-n-butylphthalate	8100	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
1,2-Dichlorobenzene	7900	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
1,3-Dichlorobenzene	1600	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
1,4-Dichlorobenzene	8500	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
3,3'-Dichlorobenzidine	NS	U	µg/Kg	49000 UJ	22000 UJ	50000 UJ	17000 UJ	28000 UJ	10000 UJ	22000 UJ	21000 UJ	18000 UJ	34000 UJ	27000 UJ
2,4-Dichlorophenol	400	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
Diethyl phthalate	7100	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
2,4-Dimethylphenol	NS	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
Dimethyl phthalate	2000	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
4,6-Dinitro-2-methylphenol	NS	U	µg/Kg	60000 UJ	26000 UJ	60000 UJ	21000 UJ	33000 UJ	12000 UJ	27000 UJ	25000 UJ	22000 UJ	41000 UJ	65000 UJ
2,4-Dinitrophenol	200	U	µg/Kg	60000 UJ	26000 UJ	60000 UJ	21000 UJ	33000 UJ	12000 UJ	27000 UJ	25000 UJ	22000 UJ	41000 UJ	65000 UJ
2,4-Dinitrotoluene	NS	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
2,6-Dinitrotoluene	1000	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
Di-n-octyl phthalate	50000	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ

TABLE 3.20

SURFACE SOIL ANALYTICAL RESULTS-SEMI-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

			Sample Location	SED 01 (Background)	SED 02 (Background)	SED 02 (Background)	SED 03	SED 04	SED 05	SED 06	SED 07	SED 08	SED 09	SED 10
			Sample Date:	5/21/2002	5/21/2002	5/21/2002 Duplicate	5/21/2002	5/21/2002	5/21/2002	5/21/2002	5/21/2002	5/21/2002	5/21/2002	11/21/2002
Compound	Criteria [1]	Lowest Background	Units											
Fluoranthene	50000	5600	µg/Kg	5600 J	35000 J	28000 J	1700 J	73000 J	600 J	1600 J	1000 J	150000 J	230000 J	6900 J
Fluorene	50000	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	2000 J	4800 J	13000 UJ
Hexachlorobenzene	410	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
Hexachlorobutadiene	NS	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
Hexachlorocyclopentadiene	NS	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
Hexachloroethane	NS	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
Indeno(1,2,3-cd)pyrene	3200	1300	µg/Kg	1300 J	7500 J	6200 J	8500 UJ	16000 J	5100 UJ	670 J	10000 UJ	31000 J	38000 J	1600 J
Isophorone	4400	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
2-Methyl naphthalene	36400	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
2-Methylphenol	100	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
4-Methylphenol	900	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
Naphthalene	13000	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
2-Nitroaniline	430	U	µg/Kg	60000 UJ	26000 UJ	60000 UJ	21000 UJ	33000 UJ	12000 UJ	27000 UJ	25000 UJ	22000 UJ	41000 UJ	65000 UJ
3-Nitroaniline	500	U	µg/Kg	60000 UJ	26000 UJ	60000 UJ	21000 UJ	33000 UJ	12000 UJ	27000 UJ	25000 UJ	22000 UJ	41000 UJ	65000 UJ
4-Nitroaniline	NS	U	µg/Kg	60000 UJ	26000 UJ	60000 UJ	21000 UJ	33000 UJ	12000 UJ	27000 UJ	25000 UJ	22000 UJ	41000 UJ	65000 UJ
Nitrobenzene	200	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
2-Nitrophenol	330	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
4-Nitrophenol	100	U	µg/Kg	60000 UJ	26000 UJ	60000 UJ	21000 UJ	33000 UJ	12000 UJ	27000 UJ	25000 UJ	22000 UJ	41000 UJ	65000 UJ
N-Nitrosodiphenylamine	NS	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
N-Nitrosodi-n-propylamine	NS	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
Pentachlorophenol	1000	U	µg/Kg	60000 UJ	26000 UJ	60000 UJ	21000 UJ	33000 UJ	12000 UJ	27000 UJ	25000 UJ	22000 UJ	41000 UJ	65000 UJ
Phenanthrene	50000	1400	µg/Kg	1400 J	8700 J	7100 J	610 J	24000 J	5100 UJ	11000 UJ	10000 UJ	63000 J	120000 J	2200 J
Phenol	30	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
Pyrene	50000	3400	µg/Kg	3400 J	21000 J	17000 J	1000 J	47000 J	450 J	1300 J	870 J	96000 J	140000 J	4300 J
1,2,4-Trichlorobenzene	3400	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ
2,4,5-Trichlorophenol	100	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	32000 UJ
2,4,6-Trichlorophenol	NS	U	µg/Kg	25000 UJ	11000 UJ	25000 UJ	8500 UJ	14000 UJ	5100 UJ	11000 UJ	10000 UJ	9200 UJ	17000 UJ	13000 UJ

Notes:

(1) Soil Cleanup Objectives, NYSDEC TAGM #4046, January 24, 1994.
J Detected concentration is estimated
NS No standard.
U Compound was not detected at or above the quantitation limit shown.
[box] Concentration exceeds criteria and background.

TABLE 3.20

SURFACE SOIL ANALYTICAL RESULTS-SEMI-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

			Sample Location	*SS-01*
			Sample Date:	*5/21/2002*
Compound	*Criteria* [1]	*Lowest Background*	*Units*	
Acenaphthene	50000	U	µg/Kg	450 U
Acenaphthylene	41000	U	µg/Kg	450 U
Anthracene	50000	640	µg/Kg	450 U
Benzo(a)anthracene	224	2100	µg/Kg	53 J
Benzo(b)fluoranthene	1100	5800	µg/Kg	80 J
Benzo(k)fluoranthene	1100	3500	µg/Kg	60 J
Benzo(g,h,i)perylene	50000	1300	µg/Kg	45 J
Benzo(a)pyrene	61	3400	µg/Kg	70 J
Benzyl Alcohol	NS	U	µg/Kg	450 U
bis(2-Chloroethoxy)methane	NS	U	µg/Kg	450 U
bis(2-Chloroethyl)ether	NS	U	µg/Kg	450 U
bis(2-Chloroisopropyl)ether	NS	U	µg/Kg	450 U
bis(2-Ethylhexyl)phthalate	50000	3300	µg/Kg	130 J
4-Bromophenyl phenyl ether	NS	U	µg/Kg	450 U
Butyl benzylphthalate	50000	U	µg/Kg	450 U
4-Chloroaniline	220	U	µg/Kg	450 U
4-Chloro-3-methylphenol	240	U	µg/Kg	450 U
2-Chloronaphthalene	NS	U	µg/Kg	450 U
2-Chlorophenol	800	U	µg/Kg	450 U
4-Chlorophenyl phenyl ether	NS	U	µg/Kg	450 U
Chrysene	400	3500	µg/Kg	80 J
Dibenzo(a,h)anthracene	14	1900	µg/Kg	450 U
Dibenzofuran	6200	U	µg/Kg	450 U
Di-n-butylphthalate	8100	U	µg/Kg	28 J
1,2-Dichlorobenzene	7900	U	µg/Kg	450 U
1,3-Dichlorobenzene	1600	U	µg/Kg	450 U
1,4-Dichlorobenzene	8500	U	µg/Kg	450 U
3,3'-Dichlorobenzidine	NS	U	µg/Kg	900 U
2,4-Dichlorophenol	400	U	µg/Kg	450 U
Diethyl phthalate	7100	U	µg/Kg	450 U
2,4-Dimethylphenol	NS	U	µg/Kg	450 U
Dimethyl phthalate	2000	U	µg/Kg	450 U
4,6-Dinitro-2-methylphenol	NS	U	µg/Kg	1100 U
2,4-Dinitrophenol	200	U	µg/Kg	1100 U
2,4-Dinitrotoluene	NS	U	µg/Kg	450 U
2,6-Dinitrotoluene	1000	U	µg/Kg	450 U
Di-n-octyl phthalate	50000	U	µg/Kg	41 J

TABLE 3.20

SURFACE SOIL ANALYTICAL RESULTS-SEMI-VOLATILE ORGANIC COMPOUNDS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

			Sample Location	*SS-01*
			Sample Date:	*5/21/2002*
Compound	*Criteria* [1]	*Lowest Background*	*Units*	
Fluoranthene	50000	5600	µg/Kg	110 J
Fluorene	50000	U	µg/Kg	450 U
Hexachlorobenzene	410	U	µg/Kg	450 U
Hexachlorobutadiene	NS	U	µg/Kg	450 U
Hexachlorocyclopentadiene	NS	U	µg/Kg	450 U
Hexachloroethane	NS	U	µg/Kg	450 U
Indeno(1,2,3-cd)pyrene	3200	1300	µg/Kg	43 J
Isophorone	4400	U	µg/Kg	450 U
2-Methyl naphthalene	36400	U	µg/Kg	450 U
2-Methylphenol	100	U	µg/Kg	450 U
4-Methylphenol	900	U	µg/Kg	450 U
Naphthalene	13000	U	µg/Kg	450 U
2-Nitroaniline	430	U	µg/Kg	1100 U
3-Nitroaniline	500	U	µg/Kg	1100 U
4-Nitroaniline	NS	U	µg/Kg	1100 U
Nitrobenzene	200	U	µg/Kg	450 U
2-Nitrophenol	330	U	µg/Kg	450 U
4-Nitrophenol	100	U	µg/Kg	1100 U
N-Nitrosodiphenylamine	NS	U	µg/Kg	450 U
N-Nitrosodi-n-propylamine	NS	U	µg/Kg	450 U
Pentachlorophenol	1000	U	µg/Kg	1100 U
Phenanthrene	50000	1400	µg/Kg	38 J
Phenol	30	U	µg/Kg	450 U
Pyrene	50000	3400	µg/Kg	86 J
1,2,4-Trichlorobenzene	3400	U	µg/Kg	450 U
2,4,5-Trichlorophenol	100	U	µg/Kg	450 U
2,4,6-Trichlorophenol	NS	U	µg/Kg	450 U

Notes:

(1) Soil Cleanup Objectives, NYSDEC TAGM #4046, January 24, 1994.
J Detected concentration is estimated
NS No standard.
U Compound was not detected at or above the quantitation limit shown.
[box] Concentration exceeds criteria and background.

TABLE 3.21

SURFACE SOIL ANALYTICAL RESULTS-PCBS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

			Background					
		Sample Location:	*SED 01*	*SED 02*	*SED 02*	*SED 03*	*SED 04*	*SED 05*
		Sample Date:	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*
					Duplicate			
Compound	*Criteria* [(1)]	*Units*						
Aroclor 1016	1000	µg/Kg	600 UJ	270 UJ	300 UJ	410 UJ	340 UJ	250 UJ
Aroclor 1221	1000	µg/Kg	600 UJ	270 UJ	300 UJ	410 UJ	340 UJ	250 UJ
Aroclor 1232	1000	µg/Kg	600 UJ	270 UJ	300 UJ	410 UJ	340 UJ	250 UJ
Aroclor 1242	1000	µg/Kg	600 UJ	270 UJ	300 UJ	410 UJ	340 UJ	250 UJ
Aroclor 1248	1000	µg/Kg	600 UJ	270 UJ	300 UJ	410 UJ	340 UJ	250 UJ
Aroclor 1254	1000	µg/Kg	1200 UJ	540 UJ	600 UJ	830 UJ	680 UJ	490 UJ
Aroclor 1260	1000	µg/Kg	1200 UJ	540 UJ	600 UJ	830 UJ	71 J	64 J

		Sample Location:	*SED 06*	*SED 07*	*SED 08*	*SED 09*	*SED 10*	*SS-01*
		Sample Date:	*5/21/2002*	*5/21/2002*	*5/21/2002*	*5/21/2002*	*11/21/2002*	*5/21/2002*
Compound	*Criteria* [(1)]	*Units*						
Aroclor 1016	1000	µg/Kg	540 UJ	500 UJ	230 UJ	210 UJ	69 UJ	1100 U
Aroclor 1221	1000	µg/Kg	540 UJ	500 UJ	230 UJ	210 UJ	69 UJ	1100 U
Aroclor 1232	1000	µg/Kg	540 UJ	500 UJ	230 UJ	210 UJ	69 UJ	1100 U
Aroclor 1242	1000	µg/Kg	540 UJ	500 UJ	230 UJ	210 UJ	69 UJ	1100 U
Aroclor 1248	1000	µg/Kg	540 UJ	500 UJ	230 UJ	210 UJ	69 UJ	1100 U
Aroclor 1254	1000	µg/Kg	1100 UJ	1000 UJ	460 UJ	420 UJ	180 J	2200 U
Aroclor 1260	1000	µg/Kg	120 J	120 J	540 J	120 J	69 UJ	2200 U

Notes:

(1) Soil Cleanup Objectives, NYSDEC TAGM #4046, January 24, 1994.
J Concentration is estimated.
U Compound was not detected at or above the quantitation limit shown.

TABLE 3.22

SURFACE SOIL ANALYTICAL RESULTS-PESTICIDES
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

			Background											
		Sample Location:	SED 01	SED 02	SED 02	SED 03	SED 04	SED 05	SED 06	SED 07	SED 08	SED 09	SED 10	SS-01
		Sample Date:	5/21/2002	5/21/2002	5/21/2002 Duplicate	5/21/2002	5/21/2002	5/21/2002	5/21/2002	5/21/2002	5/21/2002	5/21/2002	11/21/2002	5/21/2002
Compound	Criteria [1]	Units												
Aldrin	41	µg/Kg	620 UJ	560 UJ	640 UJ	43 UJ	700 UJ	51 UJ	110 UJ	100 UJ	480 UJ	430 UJ	34 UJ	230 U
alpha-BHC	110	µg/Kg	620 UJ	560 UJ	640 UJ	43 UJ	700 UJ	51 UJ	110 UJ	100 UJ	480 UJ	430 UJ	34 UJ	230 U
beta-BHC	200	µg/Kg	620 UJ	560 UJ	640 UJ	43 UJ	700 UJ	51 UJ	110 UJ	100 UJ	480 UJ	430 UJ	34 UJ	230 U
gamma-BHC (Lindane)	60	µg/Kg	620 UJ	560 UJ	640 UJ	43 UJ	700 UJ	51 UJ	110 UJ	100 UJ	480 UJ	430 UJ	34 UJ	230 U
delta-BHC	300	µg/Kg	620 UJ	560 UJ	640 UJ	43 UJ	700 UJ	51 UJ	110 UJ	100 UJ	480 UJ	430 UJ	34 UJ	230 U
Chlordane	540	µg/Kg	620 UJ	560 UJ	640 UJ	80 UJ	700 UJ	80 UJ	110 UJ	100 UJ	480 UJ	430 UJ	340 UJ	230 U
4,4'DDD	2900	µg/Kg	620 UJ	560 UJ	640 UJ	58 J	700 UJ	51 UJ	110 UJ	100 UJ	480 UJ	430 UJ	34 UJ	480 J
4,4'DDE	2100	µg/Kg	620 UJ	560 UJ	640 UJ	79 J	700 UJ	51 UJ	110 UJ	100 UJ	480 UJ	430 UJ	34 UJ	2100 J
4,4'-DDT	2100	µg/Kg	620 UJ	560 UJ	640 UJ	58 J	700 UJ	51 UJ	110 UJ	100 UJ	480 UJ	430 UJ	34 UJ	370 J
Dieldrin	44	µg/Kg	620 UJ	560 UJ	640 UJ	43 UJ	700 UJ	51 UJ	110 UJ	100 UJ	480 UJ	430 UJ	34 UJ	230 U
Endosulfan I	900	µg/Kg	620 UJ	560 UJ	640 UJ	43 UJ	700 UJ	51 UJ	110 UJ	100 UJ	480 UJ	430 UJ	34 UJ	230 U
Endosulfan II	900	µg/Kg	620 UJ	560 UJ	640 UJ	43 UJ	700 UJ	51 UJ	110 UJ	100 UJ	480 UJ	430 UJ	34 UJ	230 U
Endosulfan sulfate	1000	µg/Kg	620 UJ	560 UJ	640 UJ	43 UJ	700 UJ	51 UJ	110 UJ	100 UJ	480 UJ	430 UJ	34 UJ	230 U
Endrin	100	µg/Kg	620 UJ	560 UJ	640 UJ	43 UJ	700 UJ	51 UJ	110 UJ	100 UJ	480 UJ	430 UJ	34 UJ	230 U
Endrin aldehyde	NS	µg/Kg	620 UJ	560 UJ	640 UJ	43 UJ	700 UJ	51 UJ	110 UJ	100 UJ	480 UJ	430 UJ	34 UJ	230 U
Heptachlor	20	µg/Kg	620 UJ	560 UJ	640 UJ	43 UJ	700 UJ	51 UJ	110 UJ	100 UJ	480 UJ	430 UJ	34 UJ	230 U
Heptachlor epoxide	NS	µg/Kg	620 UJ	560 UJ	640 UJ	43 UJ	700 UJ	51 UJ	110 UJ	100 UJ	480 UJ	430 UJ	34 UJ	230 U
Methoxychlor	NS	µg/Kg	620 UJ	560 UJ	640 UJ	43 UJ	700 UJ	80 UJ	110 UJ	100 UJ	480 UJ	430 UJ	34 UJ	230 U
Toxaphene	NS	µg/Kg	1200 UJ	1100 UJ	1300 UJ	160 UJ	1400 UJ	160 UJ	220 UJ	200 UJ	950 UJ	870 UJ	810 UJ	470 UJ
Endrin ketone	NS	µg/Kg	620 UJ	560 UJ	640 UJ	43 UJ	700 UJ	51 UJ	110 UJ	100 UJ	480 UJ	430 UJ	34 UJ	230 U

Notes:

(1) Soil Cleanup Objectives, NYSDEC TAGM #4046, January 24, 1994.

J Detected concentration is estimated.

NS No standard.

U Detected at or above the quantitation limit shown.

TABLE 3.23

SURFACE SOIL ANALYTICAL RESULTS-METALS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Constituent	Criteria (1)	Lowest Background	Units	SED 01 (Background) 5/21/2002	SED 02 (Background) 5/21/2002	SED 02 (Background) 5/21/2002 Duplicate	SED 03 5/21/2002	SED 04 5/21/2002	SED 05 5/21/2002	SED 06 5/21/2002	SED 07 5/21/2002	SED 08 5/21/2002	SED 09 5/21/2002	SED 10 11/21/2002	SS-01 5/21/2002
Aluminum	SB	1610	mg/Kg	1610 J	6940 J	8360 J	2070 J	3990 J	7910 J	14400 J	10100 J	5690 J	6320 J	6300 J	7530 J
Antimony	SB	0.7	mg/Kg	1.4 UJ	1.8 BJ	2.3 BJ	6.4 BJ	7 BJ	5.5 BJ	33 BJ	25.6 BJ	5 BJ	5.9 BJ	3.7 BJ	1.2 BJ
Arsenic	7.5	6.5	mg/Kg	6.5 J	7.9 J	9.5 J	9.1 J	66.8 J	12.8 J	113 J	102 J	46.7 J	48.2 J	13.1 J	7.5 J
Barium	300	58.4	mg/Kg	58.4 BJ	154 J	182 J	165 J	464 J	136 J	391 J	456 J	433 J	259 J	145 J	32.2 J
Beryllium	0.16	0.11	mg/Kg	0.11 BJ	0.39 BJ	0.49 BJ	0.14 BJ	0.3 BJ	0.39 BJ	0.84 BJ	0.61 BJ	0.41 BJ	0.51 BJ	0.56 BJ	0.24 B
Cadmium	1.5	1.5	mg/Kg	4.5 J	1.5 BJ	1.6 BJ	1.2 BJ	4.9 J	5.5 J	85.7 J	60.1 J	7.4 J	41.1 J	2 J	0.39 BJ
Calcium	SB	26900	mg/Kg	26900 J	43300 J	53700 J	14000 J	28000 J	12500 J	27600 J	22100 J	47300 J	69000 J	75000 J	2560 J
Chromium	SB	21.7	mg/Kg	23 J	21.7 J	26.3 J	8.7 J	59.8 J	70.5 J	209 J	159 J	117 J	95.3 J	31.8 J	6.3 J
Cobalt	30	2.3	mg/Kg	2.3 BJ	5.6 BJ	6.9 BJ	2.8 BJ	8.1 BJ	25.3 J	30.5 BJ	20.2 BJ	12.5 BJ	17.9 J	9.8 BJ	2.5 B
Copper	SB	39.4	mg/Kg	39.4 J	66 J	79.4 J	31.8 J	97.4 J	34.5 J	139 J	103 J	609 J	150 J	125 J	12.7 J
Iron	SB	12200	mg/Kg	12200 J	19600 J	23700 J	37800 J	119000 J	17100 J	45400 J	35700 J	23700 J	26300 J	28100 J	7830
Lead	SB	142	mg/Kg	142 J	289 J	353 J	102 J	156 J	113 J	183 J	134 J	331 J	187 J	203 J	47.1 J
Magnesium	SB	11200	mg/Kg	5310 J	11200 J	13900 J	2880 J	5660 J	5640 J	6060 J	4610 J	12100 J	18700 J	15900 J	1040 J
Manganese	SB	155	mg/Kg	155 J	329 J	407 J	110 J	699 J	1280 J	1640 J	1430 J	536 J	3230 J	915 J	96.9
Nickel	13	11	mg/Kg	11 BJ	16.4 J	20.6 J	14.2 J	31.2 J	74.7 J	78.7 J	58.9 J	61.7 J	60.2 J	23.1 J	5.1 BJ
Potassium	SB	585	mg/Kg	585 BJ	1780 J	2070 J	590 BJ	1110 BJ	1400 BJ	2600 BJ	1890 BJ	1090 BJ	1390 J	1440 BJ	549 B
Selenium	SB	2.3	mg/Kg	2.3 J	2.6 J	3.2 J	2.6 J	5.3 J	1.5 BJ	6.9 J	7.2 J	3 J	2.1 J	4.8 J	0.59 U
Mercury	0.1	0.216	mg/Kg	0.216 J	0.349 J	0.547 J	0.622 J	0.39 J	0.307 J	0.889 J	0.284 J	0.338 J	0.278 J	0.284 J	0.098
Silver	SB	0.16(2)	mg/Kg	0.33 UJ	0.31 UJ	0.35 UJ	0.24 UJ	3.3 BJ	2.2 BJ	6.3 BJ	4.4 BJ	3.5 J	3.4 J	0.46 BJ	0.18 B
Sodium	SB	220(2)	mg/Kg	441 UJ	518 UJ	613 UJ	235 UJ	562 UJ	236 UJ	746 UJ	581 UJ	349 UJ	318 UJ	493 BJ	91.6 U
Thallium	SB	0.9(2)	mg/Kg	2 UJ	1.8 UJ	2 UJ	1.4 UJ	2.2 UJ	1.7 UJ	3.7 UJ	3.3 UJ	1.6 UJ	1.4 UJ	1.6 UJ	0.71 UJ
Vanadium	SB	11.2	mg/Kg	11.3 BJ	21.1 J	25.1 J	7.6 BJ	23.9 J	18.2 J	60.3 J	47.2 J	30.7 J	26.4 J	24.1 J	12.2 J
Zinc	SB	878	mg/Kg	878 J	615 J	725 J	1060 J	1700 J	184 J	812 J	646 J	828 J	802 J	1060 J	54

Notes:

(1) Soil Cleanup Objectives, NYSDEC TAGM #4046, January 24, 1994.

(2) Where an analyte is not detected in the background sample and the criteria is assumed to be equal to one half the detection limit of the background sample.

B Value greater than or equal to the instrument detection limit, but less that the quantitation limit.

J Detected concentration is estimated.

U Compound was not detected at or above the quantitation limit shown.

[box] Concentration exceeds criteria and/or background.

TABLE 3.24

SURFACE SOIL ANALYTICAL DATA-WET CHEMISTRY
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Background											
	Sample Location:	*SED 01*	*SED 02*	*SED 02*	*SED 03*	*SED 04*	*SED 05*	*SED 06*	*SED 07*	*SED 08*	*SED 09*	*SED 10*	*SS-01*
	Sample Date:	5/21/2002	5/21/2002	5/21/2002 *Duplicate*	5/21/2002	5/21/2002	5/21/2002	5/21/2002	5/21/2002	5/21/2002	5/21/2002	11/21/2002	5/21/2002
Constituent	*Units*												
Leachable pH	S.U.	7.27	7.32	7.51	7.47	7.44	7.68	7.44	7.44	7.53	7.52	---	6.62
Cyanide - Total	mg/Kg	1.1 J	3.2 UJ	1.4 J	2.8 J	3.4 J	3.1 UJ	6.6 UJ	5.7 UJ	2.7 UJ	2.2 UJ	2.1 UJ	1.3 UJ

Notes:
- --- Parameter was not analyzed.
- J Concentration is estimated.
- S.U. Standard units.
- U Compound was not detected at or above the quantitation limit shown.

TABLE 3.25

SUB-SLAB SOIL VAPOR ANALYTICAL DATA
FEASIBILITY STUDY
OLD ERIE CANAL
CLYDE, NEW YORK

Sample Location:	GP-5A		GP-6A		SG-1		SG-2		SG-3		SG-4		SG-5		SG-6		SG-7	
Sample Date:	8/3/2004		8/4/2004		8/2/2004		8/2/2004		8/2/2004		8/2/2004		8/2/2004		8/2/2004		8/2/2004	
Units:	ppbv	µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv	µg/m3
Compound																		
Freon TF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	0.5U	--	0.5	--	2U	--	2.5U	--	20U	--	9.8	53	9.6	52	20U	--	2.8	15
1,2-Dibromoethane (EDB)	0.5U	--	0.5U	--	2U	--	2.5U	--	20U	--	2U	--	5U	--	20U	--	2.5U	92
1,2-Dichloroethane	0.5U	--	0.5U	--	2U	--	2.5U	--	20U	--	2U	--	5U	--	20U	--	2.5U	36
1,2-Dichloroethene (total)	1	4	0.77	3.1	7	28	18	71	240	950	41	160	130	520	58	230	2.5U	--
Benzene	18	58	1.4	4.5	2U	--	2.5U	--	20U	--	2U	--	8	26	20U	--	2.5U	--
Carbon tetrachloride	0.5U	--	0.5U	--	2U	--	2.5U	--	20U	--	2U	--	5U	--	20U	--	2.5U	--
Chloroform	0.5U	--	15	73	2U	--	2.5U	--	20U	--	2U	--	5U	--	20U	--	2.5U	--
cis-1,2-Dichloroethene	1.1	4.4	0.84	3.3	7.4	29	13	52	160	630	38	150	120	480	62	350	2.5U	--
Ethylbenzene	15	65	0.81NJ	3.5	2U	--	4.6	20	25NJ	110	2U	--	170	740	160	690	140	610
Methylene chloride	0.5U	--	0.5U	--	35	120	2.5U	--	20U	--	2U	--	5U	--	20U	--	2.5U	--
Tetrachloroethene	0.5U	--	1	6.8	2.1	14	2.5U	--	20U	--	3.7	25	20	140	20U	--	2.5U	--
trans-1,2-Dichloroethene	0.5U	--	0.5U	--	2U	--	5.5	22	79	310	4.8	19	15	59	20U	--	2.5U	--
Trichloroethene	13	70	14	75	130	700	15	81	570	3100	100	540	320	1700	600	3200	63	340

Sample Location:	SG-8		SG-9		SG-10		SG-11		SG-12		SG-13		SG-14		SG-15		SG-16	
Sample Date:	8/3/2004		8/4/2004		8/4/2004		8/4/2004		8/4/2004		8/4/2004		8/4/2004		8/3/2004		8/4/2004	
Units:	ppbv	µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv	µg/m3
Compound																		
Freon TF	33	250	NA	NA	NA	NA	NA	NA	NA	NA	19	150	NA	NA	NA	NA	64	490
1,1,1-Trichloroethane	68	370	200U	--	50	270	5U	--	100U	--	200U	--	20U	--	1.6	8.7	50	270
1,2-Dibromoethane (EDB)	25U	--	200U	--	10U	--	5UJ	--	100U	--	200U	--	20U	--	1U	--	20U	--
1,2-Dichloroethane	25U	--	200U	--	10U	--	5U	--	100U	--	200U	--	20U	--	1U	--	20U	--
1,2-Dichloroethene (total)	300	1200	990	3900	460	1800	71	280	950	3800	700	2800	170	670	2.4	9.5	1400	5600
Benzene	25U	--	200U	--	10U	--	5U	--	100U	--	200U	--	20U	--	1U	--	20U	--
Carbon tetrachloride	25U	--	200U	--	10U	--	5U	--	100U	--	200U	--	20U	--	1.1	6.9	20U	--
Chloroform	25U	--	200U	--	10U	--	5U	--	100U	--	200U	--	20U	--	1U	--	20U	--
cis-1,2-Dichloroethene	320	1300	1100	4400	490	1900	68	270	1000	4000	770	3100	140	550	1.4	5.6	1300	5200
Ethylbenzene	620	2700	200U	--	10U	--	220J	960	180	780	200U	--	180	780	1U	--	20U	--
Methylene chloride	25U	--	200U	--	10U	--	5U	--	100U	--	200U	--	20U	--	1U	--	20U	--
Tetrachloroethene	26	180	200U	--	14	95	17J	120	380	2600	200U	--	20U	--	1U	--	20U	--
trans-1,2-Dichloroethene	25U	--	200U	--	10	40	8.4	33	100U	--	200U	--	34	130	1	4	240	950
Trichloroethene	1500	8100	8600	46000	600	3200	290	1600	3200	17000	6700	36000	1200	6400	49	260	1200	6400

TABLE 3.25

SUB-SLAB SOIL VAPOR ANALYTICAL DATA
FEASIBILITY STUDY
OLD ERIE CANAL
CLYDE, NEW YORK

Sample Location:	*SG-17*		*SG-18*		*SG-19*		*SG-20*		*SG-21*		*SG-22*		*SG-23*		*SG-24*	
Sample Date:	*8/4/2004*		*8/4/2004*		*8/3/2004*		*8/3/2004*		*8/3/2004*		*8/3/2004*		*8/4/2004*		*8/3/2004*	
Units:	*ppbv*	*µg/m3*	*ppbv*	*µg/m3*	*ppbv*	*µg/m3*	*ppbv*	*µg/m3*	*ppbv*	*µg/m3*	*ppbv*	*µg/m3*	*ppbv*	*µg/m3*	*ppbv*	*µg/m3*
Compound																
Freon TF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	1.3	7.1	250U	--	20U	--	5U	--	10U	--	10U	--	13	71	7.9	43
1,2-Dibromoethane (EDB)	1UJ	--	250U	--	20U	--	5U	--	10U	--	10U	--	5UJ	--	5U	--
1,2-Dichloroethane	1U	--	250U	--	20U	--	5U	--	10U	--	10U	--	5U	--	5U	--
1,2-Dichloroethene (total)	6.4	25	7500	7500	350	1400	190	750	42	170	140	560	81	320	5U	--
Benzene	1.4	4.5	250U	--	20U	--	5U	--	10U	--	10U	--	5U	--	5U	--
Carbon tetrachloride	1U	--	250U	--	20U	--	5U	--	10U	--	10U	--	5U	--	5U	--
Chloroform	1U	--	250U	--	20U	--	5U	--	10U	--	10U	--	5U	--	5U	--
cis-1,2-Dichloroethene	4.9	19	2100	8300	370	1500	200	790	20	79	130	520	58	230	5U	--
Ethylbenzene	6.2NJ	27	250U	--	20U	--	10NJ	43	10U	--	10U	--	19NJ	83	5U	--
Methylene chloride	1U	--	250U	--	20U	--	5U	--	10U	--	10U	--	5U	--	5U	--
Tetrachloroethene	1.3J	8.8	250U	--	20U	--	5U	--	10U	--	10U	--	17J	120	5U	--
trans-1,2-Dichloroethene	1.8	7.1	250U	--	20U	--	5U	--	22	87	11	44	25	99	5U	--
Trichloroethene	69	370	10000	54000	730	3900	250	1300	450	2400	650	3500	410	2202	250	1300

Sample Location:	*SG-25*		*SG-26*		*SG-27*	
Sample Date:	*8/4/2004*		*8/3/2004*		*8/3/2004*	
Units:	*ppbv*	*µg/m3*	*ppbv*	*µg/m3*	*ppbv*	*µg/m3*
Compound						
Freon TF	NA	NA	1.8	14	NA	NA
1,1,1-Trichloroethane	1.9	10	20U	--	200U	--
1,2-Dibromoethane (EDB)	0.5UJ	--	20U	--	200U	--
1,2-Dichloroethane	0.5U	--	20U	--	200U	--
1,2-Dichloroethene (total)	0.5U	--	27	110	4400	17000
Benzene	1.7	5.4	20U	--	200U	--
Carbon tetrachloride	0.5U	--	20U	--	200U	--
Chloroform	0.5U	--	20U	--	200U	--
cis-1,2-Dichloroethene	0.5U	--	29	110	4400	17000
Ethylbenzene	4.2J	1.8	20U	--	200U	--
Methylene chloride	0.5U	--	20U	--	200U	--
Tetrachloroethene	2.4J	16	20U	--	200U	--
trans-1,2-Dichloroethene	0.5U	--	20U	--	240	950
Trichloroethene	18	97	1200	6400	14000	75000

Notes:
-- Not detected.
NA No data available.
ppbv Parts per billion per volume.
U Non-detect at associated value.

TABLE 4.1

NEW YORK STATE WATER QUALITY CRITERIA
FOR GROUNDWATER COMPOUNDS OF CONCERN
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Compound	*Class GA Groundwater Criteria [1] (µg/L)*
1,1,2-Trichloroethane	1
1,1-Dichloroethane	5
1,1-Dichloroethene	5
1,1-Dichloropropene	5
1,2,4-Trimethylbenzene	5
1,3,5-Trimethylbenzene	5
Acetone	50
Benzene	1
Chloroform	7
cis-1,2-Dichloroethene	5
Ethylbenzene	5
Isopropyl benzene	5
Methylene chloride	5
n-Propylbenzene	5
Tetrachloroethene	5
Toluene	5
trans-1,2-Dichloroethene	5
Trichloroethene	5
Vinyl chloride	2
Xylenes	5

Notes:

(1) Class GA groundwater is potable, suitable for drinking.

Source: NYSDEC "Ambient Water Quality Standards and Guidance Values," Division of Water, Technical Operational Guidance Series (1.1.1), dated October 22, 1993, reissued June 1998.

TABLE 4.2

NEW YORK STATE RECOMMENDED SOIL CLEANUP OBJECTIVES FOR
SVOCs DETECTED IN SURFACE SOIL
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Compound [(1)]	*Recommended Soil Cleanup Objective (ppm)*
Benzo(a)anthracene	0.224 or MDL
Benzo(a)pyrene	0.061 or MDL
Benzo(b)fluoranthene	1.1
Benzo(k)fluoranthene	1.1
Chrysene	0.4
Dibenzo(a,h)anthracene	0.014 or MDL
Fluoranthene	50.0
Indeno(1,2,3-cd)pyrene	3.2
Phenanthrene	50.0
Pyrene	50.0

Notes:

(1) Total semi-volatiles to be less than 500 ppm; and any individual semi-volatile to be less than 50 ppm.

MDL Method detection limit.

ppm Parts Per Milliion.

Source: Recommended Soil Cleanup Objectives are guidance values only based on the New York State Department of Environmental Conservation, Division of Hazardous Waste Remediation: "Technical and Administrative Guidance Memorandum (TAGM): Determination of Soil Cleanup Objectives and Cleanup Levels," HWR-92-4046 dated January 24, 1994.

TABLE 4.3

NEW YORK STATE AMBIENT AIR GUIDELINE CONCENTRATIONS
FOR COMPOUNDS DETECTED IN SITE GROUNDWATER OR SOIL VAPOR
FEASIBILITY STUDY
OLD ERIE CANAL
CLYDE, NEW YORK

	SGC (1) (*μg/m³*)	*AGC* (2) (*μg/m³*)	*NYSDOH Air Guidance* (*μg/m³*)
Volatile Organic Compounds			
2-Butanone (MEK)	NGC	NGC	NGC
2-Phenylbutane	NGC	NGC	NGC
1,2-Dibromoethane	NGC	0.0045	NGC
1,2-Dibromoethane	NGC	0.038	NGC
1,2-Dichloroethene	NGC	1,900	NGC
1,1,2-Trichloroethane	NGC	1.4	NGC
1,1-Dichloroethane	NGC	0.63	NGC
1,1-Dichloroethene	NGC	NGC	NGC
1,1-Dichloropropene	NGC	NGC	NGC
1,1,1-Trichloroethane	NGC	NGC	NGC
1,2,4-Trimethylbenzene	NGC	290	NGC
1,3,5-Trimethylbenzene	NGC	290	NGC
Acetone	180,000	28,000	NGC
Benzene	1,300	0.13	NGC
Carbon Tetrachloride	1,900	0.067	NGR
Chlorobenzene	NGC	NGC	NGC
Chloroethane	NGC	NGC	NGC
Chloroform	150	0.043	NGC
Cymene	NGC	NGC	NGC
Ethylbenzene	54,000	1,000	NGC
Freon TF	560,000	NGC	NGC
Isopropyl benzene	NGC	NGC	NGC
Methylene chloride	14,000	2	60
n-Propylbenzene	NGC	NGC	NGC
Tetrachloroethene	1,000	1.0	100
Toluene	37,000	400	NGC
trans-1,2-Dichloroethene	NGC	1,900	NGC
Trichloroethene	54,000	0.45	5
Vinyl chloride	180,000	0.11	NGC
Xylenes	4,300	700	NGC
Semi-Volatiles			
2-Methylphenol	NGC	52.0	NGC
4-Methylphenol	NGC	52.0	NGC
bis(2-Ethylhexyl)phthalate	NGC	NGC	NGC
Butyl benzy lphthalate	NGC	12.0	NGC
Di-n-buyl phthalate	NGC	12.0	NGC
Di-n-octyl phthalate	NGC	0.42	NGC
Naphthalene	7,900	3.0	NGC
Phenanthrene	NGC	0.02	NGC
Phenol	5,800	45.0	NGC

TABLE 4.3

NEW YORK STATE AMBIENT AIR GUIDELINE CONCENTRATIONS
FOR COMPOUNDS DETECTED IN SITE GROUNDWATER OR SOIL VAPOR
FEASIBILITY STUDY
OLD ERIE CANAL
CLYDE, NEW YORK

	SGC (1) *(µg/m³)*	*AGC* (2) *(µg/m³)*	*NYSDOH Air Guidance (µg/m³)*
Metals			
Aluminum	NGC	5	NGC
Antimony	NGC	1	NGC
Arsenic	NGC	0.00023	NGC
Barium	NGC	1.2	NGC
Beryllium	1.0	0.00042	NGC
Calcium	NGC	NGC	NGC
Chromium	NGC	1.2	NGC
Cobalt	NGC	0.005	NGC
Copper	100	0.02	NGC
Iron	NGC	NGC	NGC
Magnesium	NGC	NGC	NGC
Manganese	NGC	0.05	NGC
Mercury (inorganic/organic)	1.8	0.3	NGC
Nickel	6.0	0.004	NGC
Sodium	NGC	NGC	NGC
Vanadium	NGC	0.2	NGC
Zinc	NGC	50	NGC

Notes:
AGC Annual Guideline Concentration
NGC No guideline concentration.
SGC Short-Term Guideline Concentration

Sources:
NYSDEC "DAR-1, AGC/SGC Tables," December 2003.
NYSDOH "Guidance for Evaluating Soil Vapor Intrusion in the State of New York," February 2005.

TABLE 4.4

POTENTIAL ACTION-SPECIFIC STANDARDS, CRITERIA AND GUIDELINES
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Activity	*Federal SCGs*			*New York State SCGs*		
	Title	*Subtitle*	*Citation*	*Title*	*Subtitle*	*Citation*
Capping	Standards for owners and operators of hazardous waste treatment, storage and disposal facilities	Closure and post-closure care Post-closure care and use of property	40 CFR 264.310 40 CFR 264.117(c)	Hazardous waste treatment, storage and disposal facility permitting requirements	--	6 NYCRR Subpart 373-1
				Final status standards for owners and operators of hazardous waste treatment, storage and disposal facilities	--	6 NYCRR Subpart 373-2
Container Storage	Standards for owners and operators of hazardous waste treatment, storage and disposal facilities	Condition of containers Compatibility of waste with containers Management of containers Inspections Containment	40 CFR 264.171 40 CFR 264.172 40 CFR 264.173 40 CFR 264.174 40 CFR 264.175	Hazardous waste treatment, storage and disposal facility permitting requirements	--	6 NYCRR Subpart 373-1
Construction of New Landfill on Site	Standards for owners and operators of hazardous waste treatment, storage and disposal facilities	Design and operating requirements Operation and maintenance Closure and post-closure care Groundwater protection	40 CFR 264.301 40 CFR 264.303-304 40 CFR 264.310 40 CFR 264.91-100	Hazardous waste treatment, storage and disposal facility permitting requirements	--	6 NYCRR Subpart 373-1
Discharge of Treatment System Effluent	Administered permit programs: The national pollutant discharge elimination system	Establishing limitations, standards and other permit conditions	40 CFR 122.44 and State regulations approved under 40 CFR 131	Implementation of NPDES program in New York State Technical and Operations Guidance Series Blending policy for use of sources of drinking water	-- -- --	6 NYCRR Part 750-757 -- NYSDOH PWS 68
	Criteria and standards for the national pollutant discharge elimination program	Best management practices Discharge to waters of the U.S.	40 CFR 125.100 40 CFR 125.104	Drinking water supplies Use and protection of waters	-- --	Part 5 of State Sanitary Code 6 NYCRR Part 608
	Guidelines establishing test procedures for the analysis of pollutants	Identification of test procedures and alternate test procedures	40 CFR 136.1-4			
	Effluent guidelines and standards	Organic chemicals plastics and synthetic fibers	40 CFR Part 414			
Excavation	Land disposal restrictions (also see Closure)	Treatment standards	40 CFR 268 (Subpart D)	Hazardous waste treatment, storage and disposal facility permitting requirements	--	6 NYCRR Subpart 376
Incineration Off Site	Standards for owners and operators of hazardous waste treatment, storage and disposal facilities	Waste analysis	40 CFR 264.341			
Land Treatment	Standards for owners and operators of hazardous waste treatment, storage and disposal facilities	Treatment program Design and operating requirements Unsaturated zone monitoring Special requirements for ignitable or reactive waste	40 CFR 264.271 40 CFR 264.273 40 CFR 264.278 40 CFR 264.281	Hazardous waste treatment, storage and disposal facility permitting requirements	--	6 NYCRR Subpart 373-1
				New York air pollution control regulations	General provisions Permits and certificates General prohibitions General process emission sources Incinerators	6 NYCRR Part 200 6 NYCRR Part 201 6 NYCRR Part 211 6 NYCRR Part 212 6 NYCRR Part 219
Placement of Waste in Land Disposal Unit	Land disposal restrictions	Treatment standards	40 CFR 268 (Subpart D)	Hazardous waste treatment, storage and disposal facility permitting requirements	-- Basis for Listing Hazardous Waste	6 NYCRR Subpart 373-1 6 NYCRR Appendix 22

TABLE 4.4

POTENTIAL ACTION-SPECIFIC STANDARDS, CRITERIA AND GUIDELINES
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

	Federal SCGs			*New York State SCGs*		
Activity	*Title*	*Subtitle*	*Citation*	*Title*	*Subtitle*	*Citation*
Surface Water Control	Standards for owners and operators of hazardous waste treatment, storage and disposal facilities	Design and operating requirements for waste piles	40 CFR 264.251(c),(d)	Hazardous waste treatment, storage and disposal facility permitting requirements	--	6 NYCRR Subpart 373-1 6 NYCRR Part 701 and Part 703
		Design and operating requirements for land treatment	40 CFR 264.273(c),(d)			
		Design and operating requirements for landfills	40 CFR 264.301(c),(d)			
Treatment (in a unit)	Standards for owners and operators of hazardous waste treatment, storage and disposal facilities	Design and operating requirements for waste piles	40 CFR 264.251	Hazardous waste treatment, storage and disposal facility permitting requirements	--	6 NYCRR Subpart 373-1
		Design and operating requirements for thermal treatment units	40 CFR 265.373	Interim status standards for owners and operators of hazardous waste facilities	--	6 NYCRR Subpart 373-3
		Design and operating requirements for miscellaneous treatment units	40 CFR 264.601	New York air pollution control regulations	General provisions Permits and certificates General prohibitions General process emission sources	6 NYCRR Part 200 6 NYCRR Part 201 6 NYCRR Part 211 6 NYCRR Part 212
Treatment (when waste will be land disposed)	Land disposal restrictions	Identification of waste Treatment Standards Waste Specific prohibitions - Solvent wastes	40 CFR 268.10-12 40 CFR 268 (Subpart D) 40 CFR 268.30 RCRA Sections 3004 (d) (3), (e) (3) 42 USC 6924 (d) (3), (e) (3)	Hazardous waste treatment, storage and disposal facility permitting requirements Interim status standards for owners and operators of hazardous waste facilities	-- --	6 NYCRR Subpart 373-1 6 NYCRR Subpart 373-3
Waste Pile	Standards for owners and operators of hazardous waste treatment, storage and disposal facilities	Design and operating requirements	40 CFR 264.251	New York air pollution control regulations	General provisions Permits and certificates General prohibitions General process emission sources	6 NYCRR Part 200 6 NYCRR Part 201 6 NYCRR Part 211 6 NYCRR Part 212
				Hazardous waste treatment, storage and disposal facility permitting requirements	--	6 NYCRR Subpart 373-1
				Interim status standards for owners and operators of hazardous waste facilities	--	6 NYCRR Subpart 373-3
Closure with Waste in Place	Standards for owners and operators of hazardous waste treatment, storage and disposal facilities	Closure and post-closure care	40 CFR 264.258			
		Post-closure care and groundwater monitoring	40 CFR 264.310			
Closure of Land Treatment Units	Standards for owners and operators of hazardous waste treatment, storage and disposal facilities	Closure of land treatment units	40 CFR 264.280	Final status standards for owners and operators of hazardous waste facilities	--	6 NYCRR Subpart 373-2
Transporting Hazardous Waste Off Site	Standards applicable to transporters of hazardous waste	--	40 CFR 263	Waste transport permits Hazardous waste manifest system and related standards for generators, transporters and facilities	-- --	5 NYCRR Part 364 6 NYCRR Part 372
Vapor Emissions	Air emissions standards for process vents	--	40 CFR 264 (Subpart AA)	NY air pollution control regulations	General provisions Permits and certificates	6NYCRR Part 200 6NYCRR Part 201

TABLE 5.1

POTENTIAL RESPONSE ACTIONS AND REMEDIAL TECHNOLOGIES
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Medium	*General Response Action*	*Remedial Technology*	*Process Options*	*Description*
Groundwater	No Action	None	Not Applicable	No action. Natural processes are allowed to reduce chemical concentrations to acceptable levels.
	Institutional Control	None	Deed Restrictions	Restrict groundwater usage on Site and in the immediate vicinity of the Site., initiate long-term monitoring, and/or develop and enforce safe work practices.
	Monitored Natural Attenuation	Natural Attenuation	None	Monitor the natural degradation and attenuation of COCs in groundwater through sampling and analysis to document the loss of contaminants over time.
	In Situ Groundwater Treatment	Physical/Chemical Treatment	Chemical Oxidation	Oxidation agent(s) are injected into the saturated zone to break down chemicals.
			Permeable Reactive Barrier	A permeable barrier of reactive substrate is constructed across the groundwater flow path to degrade or retain chemicals present.
			Reductive Dechlorination	Emulsified iron particles are injected into the contaminant plume for reductive dechlorination of COCs.
		Physical Treatment	Air Sparging	Installation of an air injection system to air-strip volatiles from the groundwater.
			In-Well Stripping	In-well air sparging combined with stripping and water circulation to enhance volatilization of chemicals.
		Biological Treatment	Enhanced Biological Degradation	Nutrients are injected into groundwater to stimulate biological degradation by indigenous (native) bacteria. If the indigenous microbial population is inactive or inadequate, can supplement with microbes specifically designed for the treatment. Oxygen or oxygen consuming materials may be added to create aerobic or anaerobic conditions.
	Physical Containment	Barrier Walls	Slurry Wall/Sheet Piling	Construction of a barrier wall downgradient or around the area of concern to restrict off-Site groundwater migration and limit upgradient groundwater flow to the Site.

TABLE 5.1

POTENTIAL RESPONSE ACTIONS AND REMEDIAL TECHNOLOGIES
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Medium	*General Response Action*	*Remedial Technology*	*Process Options*	*Description*
Groundwater (Cont'd)		Surface Barrier	Capping	A permanent surface barrier is placed over the area (in whole or in part) containing contaminated media thus eliminating surface water infiltration.
	Hydraulic Containment	Groundwater Extraction	Groundwater Extraction Well Network	Installation and operation of groundwater extraction wells to provide a hydraulic barrier to groundwater migration through the establishment and maintenance of an inward hydraulic gradient.
			Collection Trenches	Installation of downgradient groundwater collection drains/trenches to achieve a hydraulic barrier that will restrict migration of groundwater off Site.
	Collection	Groundwater Extraction	Groundwater Extraction Well Network	Installation and operation of groundwater extraction well(s) to remove groundwater containing COCs from the source area.
			Collection Trenches	Installation and operation of collection trenches to remove groundwater containing COCs from the source area.
	Ex Situ Treatment	On-site Physical Treatment	Air Stripping	Remove contaminants to vapor phase. Subsequent disposal of treated water. Vapor treatment may be required.
			Activated Carbon	Adsorption of contaminants onto activated carbon. Subsequent disposal of treated water and used carbon.
	Disposal	Off-site Disposal	Off-site Disposal	Transportation of extracted groundwater to a permitted treatment, storage, and disposal facility. Groundwater may or may not be pretreated.
		On-site Disposal	Injection	Extracted, treated groundwater is injected back into the aquifer through on-site points. May also be used to provide hydraulic containment.
			Discharge to POTW	Discharge of extracted, treated groundwater to a municipal treatment works.

TABLE 5.1

POTENTIAL RESPONSE ACTIONS AND REMEDIAL TECHNOLOGIES
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Medium	*General Response Action*	*Remedial Technology*	*Process Options*	*Description*
Surface Soil	No Action	None	Not Applicable	No action. Natural processes are allowed to reduce chemical concentrations to acceptable levels.
	Institutional Control	None	Physical and Deed Restrictions	Restrict exposure to impacted surface soil and/or develop and enforce special procedures for worker protection.
	Containment	Physical Treatment	Capping	A permanent surface barrier is placed over the area containing contaminated soil thus preventing or minimizing physical contact.
	Collection	Excavation	Excavation	Excavate contaminated soil for on-site treatment or off-site disposal. Backfill excavation with treated soil or clean, imported granular fill.
	Ex Situ Treatment	Physical Treatment	Thermal Desorption	Excavated soil is heated to volatilize chemicals. Treated soils may be used as excavation backfill or transported off-site for disposal.
			Incineration	Excavated soil is processed at high temperature to volatilize and combust organic contaminants. Treated soils may be used as excavation backfill or transported off-site for disposal.
	Disposal	On-site Disposal	Backfilling	Treated excavated soil is returned to the original excavation as backfill.
		Off-site Disposal	Off-site Disposal	Treated or untreated excavated soil is transported to a permitted treatment, storage, and disposal facility.
Sub-Slab Soil Gas/ Indoor Air	No Action	None	Not Applicable	No action. Natural processes are allowed to reduce chemical concentrations to acceptable levels.
	Engineered Controls	Sub-Surface Ventilation	Sub-slab venting	A passive or active ventilation system is installed around the foundation of the building or directly beneath the floor slab for venting of vapors to ambient air.
		Floor Sealing	Coating	The building floor is sealed to reduce intrusion of vapors.
		Positive Pressure	Industrial Ventilation	An active building ventilation system is installed to maintain positive pressure thus preventing the migration of vapors into indoor air.

TABLE 5.1

POTENTIAL RESPONSE ACTIONS AND REMEDIAL TECHNOLOGIES
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Medium	*General Response Action*	*Remedial Technology*	*Process Options*	*Description*
Sub-Slab Soil Gas/ Indoor Air	Collection	Physical Treatment	Soil Vapor Extraction	A vacuum is applied to the soil beneath or surrounding the building through soil vapor extraction wells and soil vapors are removed.
(Cont'd)	Ex Situ Treatment	Physical/Chemical Treatment	Activated Carbon Treatment	Adsorption of contaminants in extracted vapors onto activated carbon. Subsequent discharge of treated vapors to ambient air. Used carbon is disposed at a permitted TSDF.
			Catalytic Oxidation	VOCs are thermally destroyed using heat and a solid catalyst. Periodic catalyst replacement is required.

TABLE 6.1

SCREENING OF IDENTIFIED REMEDIAL ALTERNATIVES FOR GROUNDWATER
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

General Response Action	*Description*	*Effectiveness*	*Implementability*
NO ACTION	No measures are taken to improve Site environmental conditions with respect to groundwater. All contaminants remain on Site. Environmental risks and potential exposure pathways are not addressed by any remedial activities.	- Not effective in meeting all RAOs - No additional risk during implementation	- Readily implemented.
INSTITUTIONAL CONTROL			
Deed Restrictions	Implementation of institutional controls, such as deed restrictions, to reduce potential exposure to Site related chemicals, restrict installation of on-Site water supply wells, and restrict future use of on-Site groundwater. Specific health & safety procedures may be developed and enforced for worker protection.	- Effectiveness is dependant on future enforcement of restrictions and procedures. - No reduction of volume, toxicity, or mobility of COCs. - Effective in reducing potential for human exposure to COCs.	- Readily implemented.
MONITORED NATURAL ATTENUATION			
Natural Attenuation	COCs are allowed to naturally attenuate.	- Reduction in volume and toxicity of COCs will be achieved over time. - Demonstrated effective at the Site.	- Readily implemented. - Groundwater monitoring will be required to track restoration of groundwater.
IN SITU TREATMENT			
Chemical Oxidation	Delivery of oxidizing agent to impacted groundwater to destroy COCs or convert them into less toxic or harmless compounds. May be used in conjunction with other technologies or in situ treatment methods.	- Reduction in volume and toxicity of COCs will be achieved. - Effective in reducing potential for human exposure to COCs.	- Oxidizing agent commercially available and easy to handle. - Permeability of shallow overburden soils is low resulting in difficulty in distribution of oxidant. - Site-specific treatability study demonstrated high natural oxidant demand. - Off-gassing of oxygen poses safety concerns.
Permeable Reactive Barrier	Construction of permeable wall across the groundwater flow pathways. Wall is filled with zero-valent iron to treat COCs in groundwater migrating through it.	- Effectiveness is dependant upon the life of the barrier. Fouling may occur and replacement may be required. - Effective in reducing potential for human exposure to COCs on off-site properties. - Reduction in volume, toxicity and mobility of COCs will be achieved over time.	- Implementable with moderate concern regarding need for future replacement. - Access to off-site properties required for construction and maintenance.
Air Sparging	Pressurized aeration of groundwater to vaporize VOCs and transport into the vadose zone.	- Reduction in volume and toxicity of COCs in groundwater will be achieved. - Potential for transport of COCs through soil vapor migration may be increased. - Potential for detrimental impact on natural anaerobic conditions.	- Implementable with concern regarding transport of COCs in soil vapor and impact on anaerobic natural attenuation processes. - May need to be combined with SVE.
In Well Stripping	Air is injected into double-screened wells installed to the bottom of the contaminated interval lifting the water in the well and forcing it out through the upper screen. VOCs are transferred from the dissolved to the vapor phase and subsequently	- Reduction in volume, toxicity, and mobility of COCs will be achieved. - Effective in reducing potential for human exposure to COCs if migration of soil vapors is	- Implementable with concern regarding transport of COCs in soil vapor and impact on anaerobic natural attenuation processes. - Thickness of saturated interval may limit

TABLE 6.1

SCREENING OF IDENTIFIED REMEDIAL ALTERNATIVES FOR GROUNDWATER
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

General Response Action	*Description*	*Effectiveness*	*Implementability*
	extracted and treated.	controlled.	implementation and effectiveness.
IN SITU TREATMENT (Cont'd)			
In Well Stripping (Cont'd)		- Not recommended for areas containing NAPL or high concentrations of COCs. - Potential for detrimental impact on natural anaerobic conditions. - Potential for fouling of well screens with metals precipitates and bacteria may limit effectiveness.	- Moderate concern regarding maintenance of well screens.
Enhanced Biodegradation	Delivery of nutrients to stimulate biological degradation by indigenous (native) bacteria. May be used in hotspots to accelerate natural attenuation.	- Proven effective in treating COCs in site-specific treatability studies. - Reduction in volume and toxicity of COCs will be achieved. - Effective in reducing potential for human exposure to COCs.	- Implementable with moderate concern regarding effectiveness in bedrock. - Technically feasible. - Nutrients commercially available and easy to handle.
	Delivery of iron particles to impacted groundwater to destroy COCs through reductive dechlorination. May be used in hotspots to accelerate natural attenuation.	- May enhance natural biodegradation of COCs. - Reduction in volume and toxicity of COCs will be achieved. - Effective in reducing potential for human exposure to COCs.	- Implementable with concern regarding distribution into the groundwater regime.
CONTAINMENT AND COLLECTION			
Physical Containment			
Vertical Barrier	Slurry or sheet pile barrier walls are constructed around the downgradient perimeter of the COC plume to prevent further migration.	- No reduction of volume or toxicity of COCs. - Effective in reducing off-site potential for human exposure to COCs. - Hydraulic control upgradient of barrier may be required to prevent groundwater flow around the ends of the wall(s).	- Implementable with concern regarding hydraulic control.
Hydraulic Containment and/or Source Removal			
Extraction Wells	Installation and operation of groundwater extraction wells at the source of contamination and/or downgradient to induce an inward gradient.	- May be effective for collection of groundwater and provision of hydraulic containment. - Reduces mobility of contaminants. - No reduction of volume or toxicity of COCs without treatment. - Potential for fouling of well screens with metals precipitates and bacteria may limit effectiveness.	- Implementable in overburden and bedrock. - Technically feasible. - Requires routine inspection and maintenance. - Required unobstructed access to wells may cause interference with Site use. - Long term access to off-site properties may be required. - Moderate concern regarding maintenance of well screens.
Collection Trenches	Installation of downgradient groundwater collection drains/trenches to achieve a hydraulic barrier restricting migration of groundwater off Site.	- Effective and proven for collection of groundwater from shallow aquifers with a lower confining layer. - Reduces mobility of contaminants. - No reduction of volume or toxicity of COCs without	- Not readily implementable in bedrock. - Requires routine inspection and maintenance. - Would cause disruption of area use. - Long term access to off-site properties may be required.

TABLE 6.1

SCREENING OF IDENTIFIED REMEDIAL ALTERNATIVES FOR GROUNDWATER
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

General Response Action	*Description*	*Effectiveness*	*Implementability*
		treatment.	
EX SITU TREATMENT			
Air Stripping	Contaminants (VOCs) are removed from the water using an air purging system. Product vapor may need treatment prior to discharge.	- Effective in reducing VOC concentrations.	- Readily implemented. - Technically feasible. - Requires routine maintenance. - May require vapor treatment. - Air permitting may be required.
Activated Carbon	Water is passed through activated carbon and VOCs are removed by being adsorbed to the carbon.	- Generally effective in reducing VOC concentrations.	- Not technically feasible due to potential high concentrations of metals and vinyl chloride in influent stream.
DISPOSAL			
Discharge to POTW	Discharge of pre-treated or untreated groundwater directly into municipal sewer for subsequent treatment at POTW.	- Eliminates potential for human exposure to Site chemicals in groundwater. - Reduces volume, toxicity, and mobility of Site contaminants.	- Implementable with concern regarding permitting. - Pre-treatment prior to discharge may be required. - Technically feasible.
Discharge to surface water	Permitted discharge of treated groundwater directly to surface water.	- Eliminates potential for human exposure to Site chemicals in groundwater. - Reduces volume, toxicity, and mobility of Site contaminants.	- Implementable with concern regarding permitting. - Pre-treatment prior to discharge may be required. - Technically feasible.

Notes:
COCs Compounds of Concern.
POTW Publicly Owned Treatment Works.
RAOs Remedial Action Objectives.
VOC Volatile Organic Compound

TABLE 6.2

SCREENING OF IDENTIFIED REMEDIAL ALTERNATIVES FOR SURFACE SOIL
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

General Response Action	*Description*	*Effectiveness*	*Implementability*
NO FURTHER ACTION	No additional measures are taken to improve Site environmental conditions with respect to surface soil. All contaminants remain on Site. Environmental risks and potential exposure pathways are not directly addressed by any activities.	- Not effective in meeting all RAOs. - No reduction of volume, toxicity, or mobility of Site contaminants. - No additional risk during implementation.	- Readily implemented.
INSTITUTIONAL CONTROLS			
Physical and Deed Restrictions	Implementation of institutional controls, such as deed restrictions, safe work practices, or physical barriers such as fencing to reduce potential exposure to Site related chemicals in surface soil.	- Effectiveness is dependant on future enforcement of restrictions. - No reduction of volume, toxicity, or mobility of COCs. - Effective in reducing potential for human exposure to COCs.	- Readily implemented.
PHYSICAL CONTAINMENT			
Capping	Areas of Site containing surface soil exhibiting chemical concentrations exceeding potential soil cleanup goals are regraded if necessary to promote drainage and covered with compacted, clean, granular fill.	- Effective in reducing the potential for human exposure to Site chemicals in the soil. - Does not reduce the volume, toxicity, or mobility of COCs.	- Readily implemented. - Technically feasible. - Requires routine inspection and maintenance.
COLLECTION			
Excavation	Removal of impacted surface soil.	- Effectively reduces the volume, toxicity, and mobility of contaminants.	- Implementable. - Scope of work highly dependent upon results of confirmatory sample analyses.
EX SITU TREATMENT AND DISPOSAL			
Thermal Desorption	Excavated soil is treated on-site utilizing high temperature thermal desorption. Treated soil is used as backfill or transported off-Site for disposal.	- Does not reduce the volume, toxicity, or mobility of COCs without vapor treatment.	- Not technically feasible for on-site use.
Incineration	Chemical presence in excavated soil is treated through volatilization and combustion. Treated soil is used as backfill or transported off-Site for disposal.	- Effectively reduces the volume, toxicity, and mobility of contaminants.	- Not technically feasible for on-site use.
DISPOSAL			
Off-Site Treatment & Disposal	Transport soil to a permitted waste treatment, storage, and disposal facility.	- Eliminates potential for exposure to chemicals in the surface soil. - Reduces volume, toxicity, or mobility of Site contaminants.	- Readily implemented. - Technically feasible. - Disposal as a hazardous waste may be required.

Notes:
COCs Compounds of Concern.
RAOs Remedial Action Objectives.

TABLE 6.3

SCREENING OF IDENTIFIED REMEDIAL ALTERNATIVES FOR SUB-SLAB SOIL GAS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

General Response Action	*Description*	*Effectiveness*	*Implementability*
NO ACTION	No measures are taken to improve Site environmental conditions with respect to sub-slab soil gas. All contaminants remain on Site. Environmental risks and potential exposure pathways are not addressed by any activities.	- Not effective in meeting all RAOs - No additional risk during implementation	- Readily implemented.
ENGINEERED CONTROLS			
Sub-Slab Ventilation	Active or passive sub-slab ventilation is provided through installation of venting system around building foundation or through building floor.	- Will not reduce volume or toxicity of COCs in soil vapor. - Will reduce mobility of COCs in soil vapor to indoor air.	- Difficulty of implementation dependent upon building construction. - Technically feasible. - Treatment of vented vapors may be required.
Positive Pressure	Industrial ventilation system provides positive pressure within the manufacturing building to reduce potential for intrusion of soil vapor to indoor air.	- Will not reduce volume or toxicity of COCs in soil vapor. - No additional risk during implementation	- Difficult to implement in portions of the building with individual small rooms (e.g., offices). - Technically feasible in open portions of building (e.g., manufacturing area).
CONTAINMENT			
Floor Sealing	Floors are sealed with impermeable or low permeability material which provides a barrier to intrusion of soil vapor to indoor air.	- Not effective in meeting all RAOs - No additional risk during implementation	- Difficult to implement in finished portions of the building containing drywall, carpetting, etc. - Not technically feasible without significant disruption of operational activities.
COLLECTION			
Soil Vapor Extraction	Installation and operation of soil vapor extraction wells within and/or surrounding the building to collect sub-slab soil vapors and create and maintain an outward gradient of vapor migration.	- Reduces volume and mobility of Site VOCs in soil gas. - Potential for detrimental impact on natural anaerobic conditions.	- Implementable with concern regarding interference with facility operations and/or development and impact on natural anaerbic natural attenutation processes. - Technically feasible.
TREATMENT OF COLLECTED VAPORS			
Activated Carbon	Vapor is passed through activated carbon and VOCs are removed by being adsorbed to the carbon.	- Effective in reducing VOC concentrations.	- Readily implemented. - Technically feasible. - Requires routine maintenance.
Catalytic Oxidation	Vapor is heated and then passed through a bed of solid catalyst. VOCs are oxidized in the catalytic reaction.	- Effective in reducing VOC concentrations.	- Readily implemented. - Technically feasible. - Periodic catalyst replacement is required.

Notes:
COCs Compounds of Concern.
POTW Publicly Owned Treatment Works.
RAOs Remedial Action Objectives.
VOC Volatile Organic Compound.

TABLE 6.4

SUMMARY OF DEVELOPMENT AND SCREENING OF REMEDIAL TECHNOLOGIES FOR GROUNDWATER
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

				In Situ Treatment			
	No Action	*Institutional Control*	*Monitored Natural Attenuation*	*Chemical Oxidation*	*Permeable Reactive Barrier*	*Air Sparging*	*In-Well Stripping*
Effectiveness							
• Further reduces toxicity, mobility, and volume of COCs	No	No	Yes	Yes	Yes	Yes	Yes
• Further minimizes residual risk and affords additional long-term protection	No	Yes	Yes	Yes	Yes	Yes	Yes
Implementability	Readily implemented	Readily implemented	Readily implemented	High concern	Moderate concern	Moderate concern	Moderate concern
Relative Cost							
• Capital	None	Low	None	High	High	Moderate	Moderate
• O&M (30 years)	None	Low	Moderate	Moderate	Low to Moderate	Moderate	Moderate
Recommendation	Required for detailed analysis	Retained for detailed analysis	Retained for detailed analysis	Eliminated from further consideration	Retained for detailed analysis	Eliminated from further consideration	Retained for detailed analysis

TABLE 6.4

SUMMARY OF DEVELOPMENT AND SCREENING OF REMEDIAL TECHNOLOGIES FOR GROUNDWATER
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

	In Situ Treatment (Cont'd)		*Physical Containment*	*Hydraulic Containment & Collection*		*Treatment of Collected Groundwater*	
	Enhanced Biodegradation						
	Reductive Dechlorination	*Nutrient/ Carbon*	*Barrier Wall*	*Extraction Wells*	*Collection Trenches*	*Air Stripping*	*Activated Carbon*
Effectiveness							
• Further reduces toxicity, mobility, and volume of COCs	Yes	Yes	No	Yes	Yes	Yes	Yes
• Further minimizes residual risk and affords additional long-term protection	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Implementability	Low	Implementable	Moderate concerns	Implementable with concern.	Moderate concerns	Implementable with concern.	Difficult to implement
Relative Cost							
• Capital	Moderate	Moderate	High	Moderate	High	Moderate	Moderate
• O&M (30 years)	Low	Moderate	Low	High	High	Moderate	High
Recommendation	Eliminated from further consideration	Retained for detailed analysis	Eliminated from further consideration	Retained for detailed analysis	Eliminated from further consideration	Retained for detailed analysis	Eliminated from further consideration

TABLE 6.4

SUMMARY OF DEVELOPMENT AND SCREENING OF REMEDIAL TECHNOLOGIES FOR GROUNDWATER
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

	Disposal	
	Discharge to Sewer	*Discharge to Surface Water*
Effectiveness		
• Further reduces toxicity, mobility, and volume of COCs	No	No
• Further minimizes residual risk and affords additional long-term protection	Yes	Yes
Implementability	Readily implemented	Readily implemented
Relative Cost		
• Capital	Low	Low
• O&M (30 years)	Low	Low
Recommendation	Eliminated from further consideration	Retained for detailed analysis

TABLE 6.5

SUMMARY OF DEVELOPMENT AND SCREENING OF REMEDIAL ALTERNATIVES FOR SURFACE SOIL
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

			Physical Containment	*Collection*	*Ex Situ Treatment and Disposal*		
	No Further Action	*Institutional Controls*	*Granular Cover*	*Excavation*	*Thermal Destruction*	*Incineration*	*Off-Site*
Effectiveness							
• Further reduces toxicity, mobility, and volume of COCs	No	No	No	Yes	No	Yes	Yes
• Further minimizes residual risk and affords additional long-term protection	No	Yes	Yes	Yes	Yes	Yes	Yes
Implementability	Readily implemented	Readily implemented	Implementable	Implementable	Not Implementable	Not Implementable	Readily implemented
Relative Cost							
• Capital	None	Low	Moderate	High	High	High	Moderate
• O&M (30 years)	None	Low	Moderate	Low	None	None	None
Recommendation	Required for detailed analysis	Retained for detailed analysis	Retained for detailed analysis	Retained for detailed analysis	Eliminated from further consideration	Eliminated from further consideration	Retained for detailed analysis

CRA 035048 (2)

TABLE 6.6

SUMMARY OF DEVELOPMENT AND SCREENING OF REMEDIAL ALTERNATIVES FOR SUB-SLAB SOIL GAS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Engineered Controls		*Containment*	*Collection*	*Ex Situ Treatment*
	No Action	*Sub-Slab Ventilation*	*Positive Pressure*	*Floor Sealing*	*Extraction Wells*	*Activated Carbon*
Effectiveness						
• Further reduces toxicity, mobility, and volume of COCs	No	No	No	No	Yes	Yes
• Further minimizes residual risk and affords additional long-term protection	No	Yes	Yes	Yes	Yes	Yes
Implementability	Readily implemented	Implementable	Questionable	Questionable	Moderate Concern	Readily Implemented
Relative Cost						
• Capital	None	Moderate	High	Moderate	High	Moderate
• O&M (30 years)	None	Moderate	Moderate	Low	High	High
Recommendation	Required for detailed analysis	Retained for detailed analysis	Eliminated from further consideration	Eliminated from further consideration	Retained for detailed analysis	Retained for detailed analysis

TABLE 7.1

COST ANALYSIS SUMMARY
GROUNDWATER ALTERNATIVE 1 - NO ACTION
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

	Item	*Estimated Cost*
A.	Remedial Actions, Institutional Control, Monitoring (no action for any of these)	$0
	TOTAL ESTIMATED COST - GW ALTERNATIVE 1:	$0

TABLE 7.2

COST ANALYSIS SUMMARY
GROUNDWATER ALTERNATIVE 2 - MONITORED NATURAL ATTENUATION
AND INSTITUTIONAL CONTROL
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Item		*Estimated Cost*
A.		Administrative Cost		
	i)	Institutional Control		$10,000
			Sub-Total, Administrative Cost:	$10,000
B.		Direct Capital Cost		
	i)	Monitoring Well Installation & Development		$19,000
	ii)	Waste Disposal		$2,000
C.		Indirect Capital Cost		$13,000
			Sub-Total, Capital Cost:	$34,000
D.		Contingency		$4,000
			Total Capital Cost - GW Alternative 2:	$48,000

			Estimated Annual Cost	*Present Worth* [1]
E.		Annual Operation & Maintenance		
	i)	Years 1 through 5 (Quarterly Monitoring)	$66,000	$271,000
	ii)	Years 6 through 30 (Semi-annual Monitoring)	$35,000	$290,000
			Sub-Total, Operation & Maintenance:	$561,000
			TOTAL ESTIMATED COST - GW ALTERNATIVE 2:	$609,000

Notes:

(1) Present worth calculated using a 7% interest rate.
Estimates are rounded to the nearest $1,000.

TABLE 7.3

COST ANALYSIS SUMMARY
GROUNDWATER ALTERNATIVE 3 - ENHANCED BIOLOGICAL DEGRADATION
WITH MONITORED NATURAL ATTENUATION AND INSTITUTIONAL CONTROL
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Item		*Estimated Cost*
A.		Administrative Cost		
	i)	Institutional Control		$10,000
			Sub-Total, Administrative Cost:	$10,000
B.		Pre-Design Pilot Study		$50,000
			Sub-Total, Pre-Design:	$50,000
C.		Direct Capital Cost		
	i)	Monitoring Well Installation		$19,000
	ii)	In Situ Treatment		$123,000
	iii)	Waste Disposal		$2,000
D.		Indirect Capital Cost		$82,000
			Sub-Total, Capital Cost:	$226,000
E.		Contingency		$29,000
			Total Capital Cost - GW Alternative 3:	$315,000

			Estimated Annual Cost	*Present Worth* (1)
F.		Annual Operation & Maintenance		
	i)	Years 1 through 5 (Quarterly Monitoring)	$66,000	$271,000
	ii)	Years 6 through 30 (Semi-annual Monitoring)	$35,000	$290,000
			Sub-Total, Operation & Maintenance:	$561,000
			TOTAL ESTIMATED COST - GW ALTERNATIVE 3:	$876,000

Notes:
(1) Present worth calculated using a 7% interest rate.
Estimates are rounded to the nearest $1,000.

TABLE 7.4

COST ANALYSIS SUMMARY
GROUNDWATER ALTERNATIVE 4 - PERMEABLE REACTIVE BARRIER WITH
ENHANCED BIOLOGICAL DEGRADATION,
MONITORED NATURAL ATTENUATION, & INSTITUTIONAL CONTROL
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Item		*Estimated Cost*
A.		Administrative Cost		
	i)	Institutional Control		$10,000
			Sub-Total, Administrative Cost:	$10,000
B.		Pre-Design Geotechnical Study		$10,000
			Sub-Total, Pre-Design:	$10,000
C.		Direct Capital Cost		
	i)	PRB Construction		$640,000
	ii)	Enhanced Biological Degradation in Building Hotspots		
	iii)	Monitoring Well Installation & Development		$19,000
	iv)	Waste Disposal		$10,000
D.		Indirect Capital Cost		$165,000
			Sub-Total, Capital Cost:	$834,000
E.		Contingency		$140,000
			Total Capital Cost - GW Alternative 4:	$994,000

			Estimated Annual Cost	*Present Worth* [1]
F.		Annual Operation & Maintenance	$20,000	$248,000
			Sub-Total, Operation & Maintenance:	$248,000
G.		Annual Monitoring		
	i)	Years 1 through 5 (Quarterly Monitoring)	$74,000	$303,000
	ii)	Years 6 through 30 (Semi-annual Monitoring)	$38,500	$320,000
			Sub-Total, Monitoring:	$623,000
			TOTAL ESTIMATED COST - GW ALTERNATIVE 4:	$1,865,000

Notes:
(1) Present worth calculated using a 7% interest rate.
. Estimates are rounded to the nearest $1,000.

TABLE 7.5

COST ANALYSIS SUMMARY
GROUNDWATER ALTERNATIVE 5 - IN-WELL AIR STRIPPING WITH
ENHANCED BIOLOGICAL DEGRADATION AND INSTITUTIONAL CONTROL
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Item		*Estimated Cost*
A.		Administrative Cost		
	i)	Institutional Control		$10,000
			Sub-Total, Administrative Cost:	$10,000
B.		Pre-Design Pumping/Pilot Tests		$20,000
			Sub-Total, Pre-Design:	$20,000
C.		Direct Capital Cost		
	i)	Insurance/Mobilization/Demobilization		$10,000
	ii)	Installation of Well System (incl. piping)		$71,000
	iii)	Vapor Treatment System		$155,000
	iv)	Treatment Bldg & Mechanical/Electrical		$192,000
	v)	Instrumentation		$25,000
	v)	Enhanced Biological Degradation in Building Hotspots		$33,000
	vi)	Monitoring Well Installation & Development		$19,000
	vii)	Waste Disposal		$10,000
D.		Indirect Capital Cost		$182,000
			Sub-Total, Capital Cost:	$697,000
E.		Contingency		$103,000
			Total Capital Cost - GW Alternative 5:	$830,000

			Estimated Annual Cost	*Present Worth* [1]
F.		Annual Operation & Maintenance	$89,700	$1,113,000
			Sub-Total, Operation & Maintenance:	$1,113,000
G.		Annual Monitoring		
	i)	Years 1 through 5 (Quarterly Monitoring)	$66,000	$271,000
	ii)	Years 6 through 30 (Semi-annual Monitoring)	$35,000	$290,000
			Sub-Total, Monitoring:	$561,000
			TOTAL ESTIMATED COST - GW ALTERNATIVE 5:	$2,504,000

Notes:

(1) Present worth calculated using a 7% interest rate.
Estimates are rounded to the nearest $1,000.

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TABLE 7.6

COST ANALYSIS SUMMARY
GROUNDWATER ALTERNATIVE 6 - HYDRAULIC CONTAINMENT/COLLECTION
WITH ON-SITE TREATMENT AND DISPOSAL
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Item		*Estimated Cost*
A.		Administrative Cost		
	i)	Institutional Control		$10,000
			Sub-Total, Administrative Cost:	$10,000
B.		Pre-Design Pumping/Pilot Tests		$20,000
			Sub-Total, Pre-Design:	$20,000
C.		Direct Capital Cost		
	i)	Insurance/Mobilization/Demobilization		$10,000
	ii)	Installation of Well System (incl. pumps & piping)		$68,000
	iii)	Groundwater Treatment System		$248,000
	iv)	Instrumentation		$40,000
	v)	Treatment Bldg & Mechanical/Electrical		$290,000
	vi)	Monitoring Well Installation & Development		$19,000
	vii)	Waste Disposal		$10,000
D.		Indirect Capital Cost		$213,000
			Sub-Total, Capital Cost:	$898,000
E.		Contingency		$137,000
			Total Capital Cost - GW Alternative 6:	$1,065,000

			Estimated Annual Cost	*Present Worth*[1]
F.		Annual Operation & Maintenance	$110,000	$1,365,000
			Sub-Total, Operation & Maintenance:	$1,365,000
G.		Annual Monitoring		
	i)	Years 1 through 5 (Quarterly Monitoring)	$66,000	$271,000
	ii)	Years 6 through 30 (Semi-annual Monitoring)	$35,000	$290,000
			Sub-Total, Monitoring:	$561,000
			TOTAL ESTIMATED COST - GW ALTERNATIVE 6:	$2,991,000

Notes:

(1) Present worth calculated using a 7% interest rate.

Estimates are rounded to the nearest $1,000.

TABLE 7.7

COST ANALYSIS SUMMARY
SURFACE SOIL ALTERNATIVE 1 - NO ACTION
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

	Item	*Estimated Cost*
A.	Remedial Actions, Institutional Control, Monitoring (no action for any of these)	$0
	TOTAL ESTIMATED COST - SS ALTERNATIVE 1:	$0

TABLE 7.8

COST ANALYSIS SUMMARY
SURFACE SOIL ALTERNATIVE 2 -
INSTITUTIONAL CONTROL AND FENCING
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Item		*Estimated Cost*
A.		Administrative Cost		
	i)	Institutional Control		$10,000
			Sub-Total, Administrative Cost:	$10,000
B.		Direct Capital Cost		
	i)	Insurance/Mobilization/Demobilization		$1,500
	ii)	Fencing		$10,000
C.		Indirect Capital Cost		$5,000
			Sub-Total, Capital Cost:	$16,500
E.		Contingency		$3,000
			Total Capital Cost - SS Alternative 2:	$29,500

		Estimated Annual Cost	*Present Worth*[1]
F.	Annual Operation & Maintenance	$2,000	$25,000
		Sub-Total, Operation & Maintenance:	$25,000
		TOTAL ESTIMATED COST - SS ALTERNATIVE 2:	$54,500

Notes:
(1) Present worth calculated using a 7% interest rate.
Estimates are rounded to the nearest $500.

TABLE 7.9

COST ANALYSIS SUMMARY
SURFACE SOIL ALTERNATIVE 3 -
CAPPING WITH INSTITUTIONAL CONTROL
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Item		*Estimated Cost*
A.		Administrative Cost		
	i)	Institutional Control		$10,000
			Sub-Total, Administrative Cost:	$10,000
B.		Direct Capital Cost		
	i)	Insurance/Mobilization/Demobilization		$2,000
	ii)	Capping		$9,500
	iii)	Survey		$5,000
	iv)	Waste Disposal		$5,000
C.		Indirect Capital Cost		$10,000
			Sub-Total, Capital Cost:	$31,500
E.		Contingency		$11,000
			Total Capital Cost - SS Alternative 3:	$52,500
			Estimated Annual Cost	***Present Worth***[(1)]
F.		Annual Operation & Maintenance	$1,700	$21,000
			Sub-Total, Operation & Maintenance:	$21,000
			TOTAL ESTIMATED COST - SS ALTERNATIVE 3:	$73,500

Notes:

(1) Present worth calculated using a 7% interest rate.

Estimates are rounded to the nearest $500.

TABLE 7.10

COST ANALYSIS SUMMARY
SURFACE SOIL ALTERNATIVE 4 -
SURFACE SOIL EXCAVATION AND DISPOSAL
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Item		*Estimated Cost*
A.		Administrative Cost		
	i)	Institutional Control		$10,000
			Sub-Total, Administrative Cost:	$10,000
B.		Direct Capital Cost		
	i)	Insurance/Mobilization/Demobilization		$5,000
	ii)	Excavation & Restoration		$8,000
	iii)	Transportation and Disposal		$30,000
	iv)	Survey		$5,000
C.		Indirect Capital Cost		$12,000
			Sub-Total, Capital Cost:	$60,000
E.		Contingency		$24,000
			Total Capital Cost - SS Alternative 4:	$94,000

			Estimated Annual Cost	*Present Worth*[(1)]
F.		Annual Operation & Maintenance	$1,700	$21,000
			Sub-Total, Operation & Maintenance:	$21,000
			TOTAL ESTIMATED COST - SS ALTERNATIVE 4:	$115,000

Notes:

(1) Present worth calculated using a 7% interest rate.
Estimates are rounded to the nearest $500.

TABLE 7.11

COST ANALYSIS SUMMARY
SOIL GAS ALTERNATIVE 1 - NO ACTION
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

	Item	*Estimated Cost*
A.	Remedial Actions, Institutional Control, Monitoring (no action for any of these)	$0
	TOTAL ESTIMATED COST - SG ALTERNATIVE 1:	$0

TABLE 7.12

COST ANALYSIS SUMMARY
SOIL GAS ALTERNATIVE 2 - SUB-SLAB VENTILATION
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Item		*Estimated Cost*
A.		Administrative Cost		
	i)	Institutional Control		$10,000
			Sub-Total, Administrative Cost:	$10,000
B.		Confirmatory Testing		$10,000
			Sub-Total, Pre-Design:	$10,000
C.		Direct Capital Cost		
	i)	Insurance/Mobilization/Demobilization		$5,000
	ii)	Installation of Well System (incl. piping)		$13,000
	iii)	Vapor Treatment System		$7,000
	iv)	Instrumentation		$2,000
	v)	Equipment Bldg & Mechanical/Electrical		$12,000
	vi)	Waste Disposal		$2,000
D.		Indirect Capital Cost		$30,000
			Sub-Total, Capital Cost:	$71,000
E.		Contingency		$8,000
			Total Capital Cost - SG Alternative 2:	$99,000
			Estimated Annual Cost	***Present Worth*** [(1)]
F.		Annual Operation & Maintenance	$4,500	$56,000
			Sub-Total, Operation & Maintenance:	$56,000
			TOTAL ESTIMATED COST - SG ALTERNATIVE 2:	$155,000

Notes:
(1) Present worth calculated using a 7% interest rate.
Estimates are rounded to the nearest $1,000.

TABLE 7.13

COST ANALYSIS SUMMARY
SOIL GAS ALTERNATIVE 3 - SOIL VAPOR EXTRACTION
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Item		*Estimated Cost*
A.		Administrative Cost		
	i)	Institutional Control		$10,000
			Sub-Total, Administrative Cost:	$10,000
B.		Confirmatory Testing		$10,000
			Sub-Total, Pre-Design:	$10,000
C.		Direct Capital Cost		
	i)	Insurance/Mobilization/Demobilization		$5,000
	ii)	Installation of Well System (incl. piping)		$21,000
	iii)	Vapor Treatment System		$19,000
	iv)	Instrumentation		$4,000
	v)	Equipment Bldg & Mechanical/Electrical		$16,000
	vi)	Waste Disposal		$5,000
D.		Indirect Capital Cost		$38,000
			Sub-Total, Capital Cost:	$108,000
E.		Contingency		$14,000
			Total Capital Cost - GW Alternative 6:	$142,000
			Estimated Annual Cost	***Present Worth***[1]
F.		Annual Operation & Maintenance	$39,800	$494,000
			Sub-Total, Operation & Maintenance:	$494,000
G.		Monitoring	$11,400	$141,000
			Sub-Total, Monitoring:	$141,000
			TOTAL ESTIMATED COST - GW ALTERNATIVE 6:	$777,000

Notes:
(1) Present worth calculated using a 7% interest rate.
Estimates are rounded to the nearest $1,000.

TABLE 8.1

COMPARATIVE RANKING OF GROUNDWATER REMEDIAL ALTERNATIVES
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

	Groundwater Alternative					
	1 *No Action*	2 *MNA with Institutional Control*	3 *Enhanced Biodegradation with MNA and Institutional Control*	4 *PRB with Enhanced Bidegradation and Institutional Control*	5 *In-Well Air Stripping Enhanced Biodegradation and Institutional Control*	6 *Hydraulic Containment/ Collection with On-Site Treatment and Disposal*
Overall Protection of Human Health	6	5	1	3	2	4
Compliance with SCGs	6	1	1	1	1	1
Reduction of Toxicity, Mobility, and Volume	6	5	3	1	4	2
Short-Term Effectiveness	1	2	3	6	4	5
Long-Term Effectiveness and Permanence	6	5	1	2	4	3
Implementability	1	2	3	6	4	5
Net Present Worth Cost*	$0	$609,000	$876,000	$1,898,000	$2,504,000	$2,991,000

Note:
* Present worth calculated using a 7 percent interest rate.

TABLE 8.2

COMPARATIVE RANKING OF SURFACE SOIL REMEDIAL ALTERNATIVES
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

	Surface Soil Alternative			
	1 *No Action*	*2* *Institutional Control and Fencing*	*3* *Capping with Institutional Control*	*4* *Excavation and Disposal*
Overall Protection of Human Health	4	3	2	1
Compliance with SCGs	3*	3*	2	1
Reduction of Toxicity, Mobility, and Volume	3*	3*	2	1
Short-Term Effectiveness	1	2	3	4
Long-Term Effectiveness and Permanence	4	3	2	1
Implementability	1	2	3	4
Net Present Worth Cost**	$0	$54,500	$73,500	$115,000

Notes:
* Alternatives of same ranking are equally effective.
** Present worth calculated using a 7 percent interest rate.

TABLE 8.3

COMPARATIVE RANKING OF SUB-SLAB SOIL VAPOR REMEDIAL ALTERNATIVES
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

	Sub-Surface Soil Vapor Alternative		
	1	*2*	*3*
	No Action	*Sub-Slab Ventilation*	*Soil Vapor Extraction*
Overall Protection of Human Health	3	1	2
Compliance with SCGs	3	2	1
Reduction of Toxicity, Mobility, and Volume	3	2	1
Short-Term Effectiveness	1	2	3
Long-Term Effectiveness and Permanence	3	2	1
Implementability	1	2	3
Net Present Worth Cost**	$0	$155,000	$777,000

Notes:

* Alternatives of same ranking are equally effective.

** Present worth calculated using a 7 percent interest rate.

APPENDIX A

ESTIMATION OF GROUNDWATER PUMPING RATE

TABLE OF CONTENTS

Page

1.0 INTRODUCTION

Groundwater Alternative 6 (GW Alternative 6) - Hydraulic Containment/Collection with On-Site Treatment and Disposal includes seven extraction wells placed along the axis of the glacial channel on the western portion of the former Barge Turnaround. These extraction wells will pump impacted groundwater from the shallow unconsolidated unit. Site investigations have shown that groundwater flow in the shallow unconsolidated unit converges in this channel from the east, north, and west. Therefore, the glacial channel is the optimum location to extract groundwater and prevent groundwater discharge to the Clyde River.

In order to complete the evaluation of remedial alternatives for the Feasibility Study, an estimation of the total extraction well pumping rate required for hydraulic containment and chemical mass reduction was required. The methods used to calculate the pumping rate from the extraction system are presented in the following discussions.

2.0 METHODOLOGY

The volume of natural groundwater flow through the shallow unconsolidated unit was calculated using the following form of Darcy's Law:

$$Q = (K)(I)(A) \qquad (1)$$

Where:

Q = groundwater flow volume (ft^3/day);
K = hydraulic conductivity (ft^2/day);
I = hydraulic gradient (ft/ft); and
A = cross-sectional area of aquifer (ft^2).

Using the groundwater contours for August 3, 2004 presented in the Remedial Investigation Report (RI Report), the area around the channel was divided into three components (east, north, and west). The five sets of contours presented in the RI and SGI Reports show very little difference in the general pattern of groundwater flow. Therefore, the use of the August 3, 2004 contours is appropriate.

The east component was delineated as the areas between MW-3S and MW-1S. East of MW-3S, groundwater flow is toward the Clyde River and not the channel. The north component was represented as the flow that occurs between MW-1S and MW-9S. Finally, the west component was represented by the area between MW-9S and MW-5S.

The length (L) of each flow component was measured from Figure A.1. The average thickness of the shallow unconsolidated unit was determined from the available cross-sections and hydrogeologic data.

The hydraulic gradient across each component was calculated using the August 3, 2004 groundwater contours.

An average hydraulic conductivity of 4.8 feet per day (ft/day), determined from testing conducted during the RI, was used in the calculation. The use of the average value is appropriate because the shallow unconsolidated unit consists of both fill and glacio material ranging from back swamp material to sand and gravel. The use of maximum values was not appropriate with this variation in lithology.

3.0 RESULTS

The results of the calculations are summarized in the following table.

Parameter	*Unit*	*East Component*	*North Component*	*West Component*
K	ft/day	4.8	4.8	4.8
I	ft/ft	0.04	0.012	0.013
Length (L)	ft	569	170	338
Thickness (b)	ft	10	20	10
Flow (Q)	ft^3/day	1090	196	211

Based on the above, the total groundwater flow (Q_T) into the channel is:

$$Q_T = Q_E + Q_N + Q_W = 1500 \text{ ft}^3/\text{day} \quad (2)$$

The estimated total flow rate is 1500 ft^3/day (approximately 8 gallons per minute [gpm]). It is typically required to pump in excess of this natural flow rate to achieve hydraulic containment. For cost estimating purposes, it was assumed that a combined pumping rate of 20 gpm is required in GW Alternative 6. This higher pumping rate is sufficiently conservative to account for variations in aquifer properties, hydraulic gradients, and influences of the Clyde River.

APPENDIX B

MICROCOSM STUDY REPORT

Microcosm Study Report
Old Erie Canal Site

Abstract

The Old Erie Microcosm study was designed to determine if the complete reductive dechlorination of TCE to ethene could be stimulated at the Old Erie Canal site. A study was set up with four electron donors (lactate, ethanol, SC-80 chitin, and soybean oil) added to 120 mL bottles containing soil and groundwater obtained from the a primary source area at the site. Reduced anaerobic mineral media (RAMM) was added to selected bottles in order to determine if nutrients were required to further encourage microbial activity. A set of positive controls, containing an actively dechlorinating microbial population, was included in the study to determine if bioaugmentation would be beneficial to enhance the degradation rate. Unamended and killed controls were also included in each study. TCE was added to the killed control and donor amended bottles at a concentration of approximately 50 mg/L at the beginning of the study. Two sets of unamended control bottles were amended with 5 mg/L and 50 mg/L of TCE.

The overall conclusions that are based on an analysis of variance (ANOVA) statistical analysis are listed below:

- Enhanced bioremediation is a feasible remedial option at this site. All of the electron donors supported complete reductive dechlorination of TCE to ethene within the course of the experiment. The addition of electron donors promoted a two to three fold increase in the overall biodegradation rate over the comparable unamended control. TCE was biodegraded very rapidly in all the amended bottles. Lactate, chitin, and soybean oil promoted the fastest biodegradation of cis-dichloroethene (cis-DCE). Chitin and soybean oil promoted the fastest biodegradation of vinyl chloride (VC). In these cases, VC was biodegraded almost as fast as it was formed, so that very little was measured in the bottles. The choice of electron donor for use in a potential field application would depend on site conditions and stratigraphy.

- Complete reductive dechlorination of TCE to ethene was observed in both the unamended controls at both concentration levels. It is unusual to observe this level of activity at such a high TCE concentration and indicates robust intrinsic biological activity is currently operative at the site. This suggests that monitored natural attenuation should be an important part of the remedial strategy at this site.

- The addition of supplemental nutrients in the form of RAMM did not have a substantial positive effect on the rate or extent of TCE dechlorination. Bioaugmentation also did not have a significant effect on the results observed. These results indicate that neither supplemental nutrients nor bacteria would be required to promote the rapid biodegradation of TCE at this site.

Introduction

Accelerated anaerobic biodegradation of chlorinated solvent source areas may represent a reasonable remedial option when natural attenuation processes alone are not sufficient to mitigate risk to human health and the environment. Accelerated biodegradation involves the addition of simple and safe sources of carbon and nutrients to the subsurface in order to stimulate anaerobic bacteria capable of reductively dechlorinating chlorinated solvents like tetrachloroethene (PCE) and trichloroethene (TCE) to innocuous byproducts like ethene and ethane. Reductive dechlorination involves the step-wise replacement of individual chlorine atoms with hydrogen atoms, such that

$$\text{TCE} \rightarrow \text{cDCE} \rightarrow \text{VC} \rightarrow \text{Ethene}$$

where cDCE and VC are cis-1,2-dichloroethene and vinyl chloride, respectively.

Over a decade ago, the biological conversion of PCE and TCE to ethene or ethane by anaerobic reductive dechlorination was demonstrated both in the laboratory and in the field (Freedman & Gossett, 1989; Major, et al., 1991; de Bruin, et al., 1992). In these processes, the chlorinated compounds act as an electron acceptor, while an electron donor is required to provide energy (McCarty, 1994). Hydrogen is generally considered to be the direct electron donor for reductive dechlorination, but is typically produced from the anaerobic oxidation of other carbon substrates, such as sugars, organic acids, or alcohols (Maymo-Gatell, et al., 1995).

Complete dechlorination of chlorinated aliphatics to ethene or ethane has been demonstrated to occur at many sites impacted by chlorinated solvents. However, this extensive dechlorination does not occur at all sites (Ellis, 1997). In rare instances, no dechlorination is observed. More commonly, partial dechlorination is observed, where the process stops at an intermediate product like cDCE, rather than proceeding all the way to ethene or ethane. This may occur for one or more of the following reasons:

- Carbon sources (electron donors), which provide energy for the dechlorinating microorganisms, are not present or are not present in sufficient quantity;
- Other important nutrients, such a nitrogen or phosphate, are lacking; and.
- The proper dechlorinating microorganisms are not present.

There are many carbon sources suitable for promoting reductive dechlorination of chlorinated aliphatics by anaerobic bacteria. Among these, sugars (e.g., molasses), organic acids (e.g.,, lactic acid or its sodium salt), and alcohols (e.g., methanol, ethanol) have been most widely used in enhanced biodegradation applications to date. Because these substrates are soluble in water and highly biodegradable, they may need to be added periodically, in continuous or batch mode. Substrate addition and maintenance of the injection system is typically the most expensive aspect of this remedial approach (Harkness, 2000).

More recently, water insoluble carbon sources have seen increasing application in enhanced biodegradation. These carbon sources biodegrade slowly over time and include substances like lactic acid polymers, soybean oil, chitin, and wood chips. Unlike water soluble substrates, these materials do not require continuous or batch additions in order to maintain their effectiveness and therefore can be cheaper to apply due to reduced substrate addition and system maintenance costs. However, in some cases the cost of these materials can be prohibitive (Harkness, 2000).

Bacteria also require basic nutrients like nitrogen and phosphorus in order to grow. These nutrients are often present in sufficient quantities in soil and groundwater, but can be limiting in some cases. In the same way, dechlorinating bacteria are generally present in the environment, particularly those capable of dechlorinating PCE and TCE to cDCE. However, the bacteria responsible for dechlorinating cDCE through VC to ethene are more sensitive to environmental conditions, and are not present at all sites. In this case, they can be added via bioaugmentation and will grow and proliferate in the subsurface under favorable conditions (Harkness, et al., 1999, Ellis, et al., 2000).

The purpose of this study was to determine whether the complete reductive dechlorination of TCE could be stimulated in soil and groundwater from near a source area at the Old Erie Canal Site, located in the village of Clyde, NY. The study was designed to determine if an optimal carbon source (e.g., sodium lactate, ethanol, chitin, or soybean oil) exists for stimulating dechlorination at this site, and whether other nutrients (e.g., nitrogen, phosphate, or trace minerals) must also be added to promote optimal biodegradation. Finally, the study determined whether bioaugmentation (e.g., the addition of non-native dechlorinating bacteria) was necessary or beneficial to the biodegradation process. The study was performed at the General Electric Company's (GE's) Global Research Center (GRC) in Schenectady, New York, in accordance with standard practices developed in GE's partnership in the Remedial Technology Development Forum's (RTDF's) Bioremediation of Chlorinated Solvents Consortium. The microcosm work lasted for about five months.

Materials and Methods

The soil used in this study was obtained from the saturated soil strata in the former barge turn-around area of the site, where high VOC concentrations were measured in the groundwater. The samples were obtained next to boring points GW-GP-20 and GW-GP-25. Groundwater samples obtained from GW-GP-20 in April 2002 contained 0.1 mg/L of TCE, 44 mg/L of

DCE, and 44 mg/L VC, while those from GW-GP-25 contained 71 mg/L of TCE, 170 mg/L of DCE, and 22 mg/L VC. The soil sample consisted of 2 to 3 kilograms (kg) of soil collected using a direct push rig and 2-inch diameter acetate sleeves. The acetate sleeves were capped and sealed with wax immediately upon retrieval, then packed in iced coolers and sent by overnight courier to GE GRC. Upon arrival, the soil was transferred from the sleeves to glass jars in order to limit diffusion of air through the tubes and stored under anaerobic conditions prior to use. In order to reduce variability in the experiment, all of the soil was sifted through ¼" screens to homogenize the soil and remove any larger rocks that were present. This ensured that any residual chlorinated solvents, as well as the microbial population, were evenly distributed throughout the soil.

In addition, approximately 8 Liters (L) of groundwater were obtained from well MW-6S, located in the same area as GW-GP-20 and GW-GP-25. The groundwater samples were collected in 1 L plastic or glass containers, filled to the brim with groundwater, capped, packed in iced coolers and shipped by overnight courier to GE GRC. The groundwater was stored at $4^{o}C$ prior to use.

The microcosm study was performed in sterile 120 milliliter (mL) serum bottles. Fifty (50) grams (g) of soil was weighed out and dispensed into each bottle in an anaerobic glove box containing an atmosphere of approximately 5 percent (%) hydrogen in nitrogen. Each serum bottle was then filled with 75 mL of non-sterile, filtered ground water that was sparged with nitrogen to remove any pre-existing solvents.

Four electron donors (sodium lactate, ethanol, chitin and soybean oil), supplemental nutrients in the form of yeast extract (YE) and reduced anaerobic mineral media (RAMM), and dechlorinating microorganisms were added to the microcosms alone and in combination to determine the optimum conditions for carrying out the reductive dechlorination of TCE. The study design is outlined in Table 1. The design consists of two sets of unamended microcosms (treatments 1 & 2) and multiple sets of microcosms where the individual electron donors are added alone (treatments 3-6) and in combination with supplemental nutrients (treatments 7-10). One of the unamended sets was spiked with 5 mg/L TCE to test the natural attenuation capacity of the system under low TCE loadings. All other bottles were spiked with 50 mg/L TCE. This design allowed the efficacy of different electron donors to be assessed and the necessity of supplemental nutrients to be determined. In addition, one set of microcosms was amended with sodium lactate, yeast extract, supplemental nutrients and was bioaugmented with an active TCE-dechlorinating culture to act as positive controls, which ensured that there were dechlorinating bacteria available to biodegrade the solvent (treatments 11). Finally, there was also a killed control (treatment 12) to monitor non-biological losses from the bottles.

For each treatment, microcosms were set up in triplicate (Wilson, et al., 1997). The bottles were sealed with Teflon™-coated septa and aluminum crimp seals and incubated upside-down in the dark at room temperature.

Treatment	Donor	YE	RAMM	Pinellas	TCE-low	TCE - hi
1. Unamended						X
2. Unamended					X	
3. Lactate	Lactate					X
4. Ethanol	Ethanol					X
5. Chitin	SC-40					X
6. Soybean Oil	EOS					X
7. Lactate + RAMM	Lactate	X	X			X
8. Ethanol + RAMM	Ethanol	X	X			X
9. Chitin + RAMM	SC-40	X	X			X
10. SB Oil + RAMM	EOS	X	X			X
11. Positive Control	Lactate	X	X	X		X
12. Killed Control						X

Table 1 Treatments used during the microcosm study

Sodium lactate and ethanol are water-soluble substrates and were added to the microcosms each week as concentrated solutions using a gas-tight syringe. Lactate was added as 1.0 mL of 0.5 molar (M) sodium lactate solution in water, resulting in a final concentration of 5 millimolar (mM) in the microcosms. Ethanol was added as 1.0 mL of 0.75 molar (M) ethanol solution in water, resulting in a final concentration of 7.5 millimolar (mM) in the microcosms.

Chitin and soybean oil are not water-soluble substrates, and were added only at the beginning of the study. The chitin used was SC-40 (JRW bioremediation Products), a commercial bioremediation grade material consisting of 30-40 percent chitin with a calcium carbonate residual. One gram of this material was added to each bottle in a glovebox under anaerobic conditions. The soybean oil used was EOS (EOS Remediation, Inc.), a commercial emulsified soybean oil product that also contains small amounts of sodium lactate and yeast extract. In this case 0.50 g of the EOS substrate was added.

Yeast extract and RAMM was added once to designated bottles at the beginning of the study. Yeast extract was added as a concentrated solution [0.1 mL of 30 grams per liter (g/L) yeast extract], resulting in a final concentration of 30 mg/L in each microcosm. RAMM consists of a phosphate buffer, potassium and ammonium salts, and trace metals (Shelton & Tiedje, 1984) and was also added as a concentrated solution.

The positive control was bioaugmented with the Pinellas consortium, which contains bacteria able to completely dechlorinate TCE to ethane (Flanagan, et al., 1995). The Pinellas consortium was recently used to bioaugment a field test at Dover Air Force Base, resulting in the first successful use of bioaugmentation to promote the complete dechlorination of TCE to ethene in the field (Harkness, et al., 1999, Ellis, et al., 2000). Bioaugmentation took place two to three weeks after the beginning of the study, to ensure anaerobic conditions were established in the microcosms. The Pinellas consortium was added by replacing 5% of the liquid volume in the microcosms with active Pinellas bacteria growing in a low-density liquid culture containing $1x10^7$ to $1x10^8$ cells per milliliter (cells/mL). The TCE concentration in the Pinellas culture medium was monitored to ensure that all of the TCE had been degraded to ethene prior to bioaugmentation.

The killed controls was autoclaved twice and amended with mercuric chloride using a gas-tight syringe. The mercuric chloride was added as a concentrated solution (3.0 mL of 6% mercuric chloride in deionized water), resulting in a final concentration of 180 mg/L in each microcosm. The unamended controls did not receive any electron donor or nutrient amendments. Resazurin, a redox-sensitive color indicator for anaerobic conditions, was added to all the bottles at the beginning of the experiment. No reducing agents were used in this experiment.

TCE was spiked into the microcosms at the beginning of the study using a gas-tight syringe. TCE was added from neat or saturated stock solutions to target concentrations of 50 mg/L (high dosage) for most of the bottles and 5 mg/L (low dosage) for one of the unamended controls.

VOC Analysis

VOC samples were obtained by removing 1.0 mL of liquid from the bottles using glass, gas-tight syringes. The microcosms were sampled at the start and at two-week intervals throughout the study. PCE, TCE, TCA, 11-DCE, cDCE, 11-DCA, VC, CA, and ethene/ethane were measured using a Tekmar 2016 Purge and Trap Autosampler, a Tekmar 300 Concentrator, and a Hewlett Packard 5890 Series II Gas Chromatograph (GC) equipped with a flame ionization detector (FID) and a HP-624 [30 meter (m) by 0.53 millimeter (mm) inner diameter] fused silica capillary column. Chlorinated aliphatics and ethene/ethane were quantified by comparing peak areas to standard calibration curves generated using water dilutions of a standard mixture containing TCE, cDCE, and VC obtained from Supelco, Inc., or by direct injection of known amounts of a standard gas mixture containing ethene.

Other Biological Indicators

In addition to VOC analysis, other indicators of biological activity were monitored during the study. Resazurin is a redox-sensitive color indicator for anaerobic conditions. Resazurin is blue under oxidizing conditions, pink under mildly reduced conditions, and clear under more strongly reduced conditions (e.g. –100 mV). Therefore, the color of the water in the bottles was monitored, especially early in the experiment.

Biologically mediated sulfate reduction produces hydrogen sulfide, which reacts readily with soluble (ferrous) iron in solution to form a distinctive black precipitate. Given that sulfate and iron are present in the groundwater, this precipitate is a clear indication that sulfate-reducing conditions are present in the bottles. Sulfate reduction is an indicator that strongly reducing conditions are present in the microcosms. Excessive sulfide-reduction can be inhibitory to dechlorinating activity, but this has typically only been observed where sulfate levels are very high in the groundwater.

Under the most highly reduced conditions, carbon dioxide is reduced to methane gas by methanogenic bacteria. This activity is significant because reductive dechlorination of cDCE and VC to ethene and ethane typically occurs under these most highly reduced conditions. Therefore, any gas produced in the microcosm bottles was collected and measured on a weekly basis during the study.

Results and Discussion

Biological activity was observed in the bottles throughout the duration of the experiment. The indicator in all of the bottles went from pink to clear within the first two days of the experiment. Significant gas production was observed in the majority of the bottles. The black precipitate indicative of sulfate reduction was observed in all of the lactate, chitin, and soybean oil-amended bottles during the course of the study.

Time Course Analysis

The graphs of the VOC results over time are provided in Figures 1-5. TCE was completely dechlorinated to cis-DCE prior to the first sampling point (three days) in all bottles, except the killed control (Figure 1c). The killed control bottles were the only set that did not achieve complete reductive dechlorination of TCE to ethene during the course of the experiment. The majority of the bottles went to completion within the first 67 days of the study. The exception to this was the unamended control containing 50 mg/L TCE, which required 124 days to reach complete dechlorination to ethene.

Most of the cis-DCE was dechlorinated to VC as of day 30 in the lactate amended bottles (Figure 2a). Complete dechlorination of VC to ethene was observed by day 47 in two of the bottles. The remaining bottle went to only ethene as of day 67. Cis-DCE and VC were completely dechlorinated to ethene in 47 days in both the lactate and RAMM amended bottles (Figure 2b) and bioaugmented controls (Figure 2c).

Complete dechlorination of cis-DCE and VC to ethene was observed as of the 67-day sampling period in both the ethanol amended bottles (Figure 3a) and bottles containing ethanol and RAMM (Figure 3b).

The time to complete dechlorination to ethene observed for the three bottles amended with chitin ranged from 30 to 67 days (Figure 4a). Very little VC production was observed in these bottles during the experiment. Complete dechlorination of cis-DCE and VC to ethene was observed as of the 47-day sampling period in the chitin amended bottles with RAMM present (Figure 4b). In this case a small amount of VC was observed.

Complete dechlorination of cis-DCE and VC to ethene was observed in the soybean oil amended bottles as of day 47 of the study (Figure 5a). Similar results were observed when nutrient were present (Figure 5b), with one bottle reaching completion as early as day 30.

In the unamended control containing 5 mg/L TCE, cis-DCE was completely dechlorinated to VC in all bottles by day 47 of the study (Figure 1a). The VC in one bottle in this set was completely reduced to ethene by day 47 of the study, while the other two bottles went to completion by day 67. Cis-DCE went completely to VC in the unamended control with 50 mg/L TCE (Figure 1b) by day 95 of the study. The VC is these bottles was completely reduced to ethene as of day 124. . It is unusual to observe this level of activity in unamended controls, particularly at such a high TCE concentrations. These results indicate that substantial intrinsic biodegradation of TCE and its daughter products is currently operative at the site and suggest that monitored natural attenuation should play an important role in the remedial strategy at this site.

Finally, a reduction in TCE with a subsequent increase in cis-DCE and VC was observed in the killed control bottles during the first 30 days of the study, suggesting even autoclaving and the addition of mercuric chloride was not sufficient to completely kill off this robust dechlorinating population. However, bioactivity ceased after this point and the TCE and cis-DCE levels remained approximately constant throughout the duration of the study.

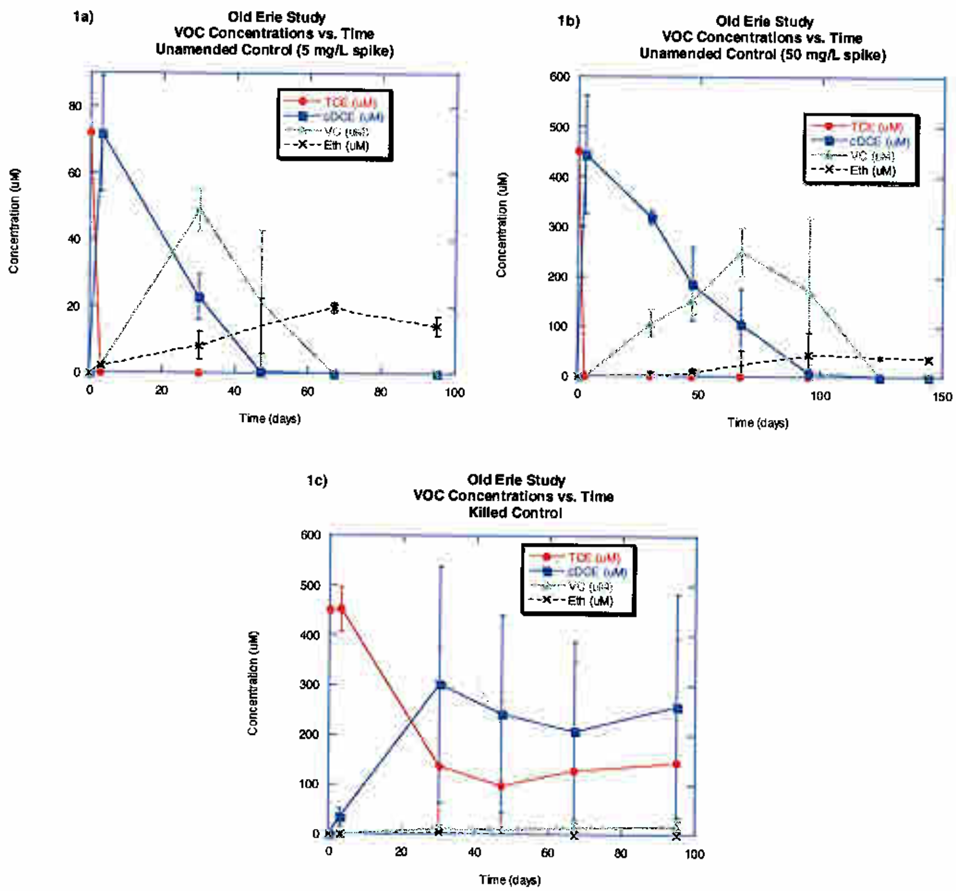
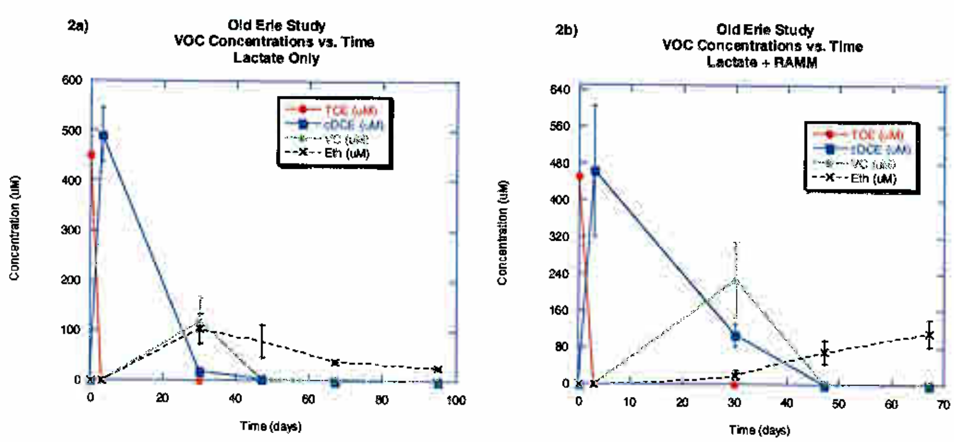


Figure 1 VOC results for **a)** Unamended control (5 mg/L) **b)** Unamended Control (50 mg/L) **c)** Killed Control



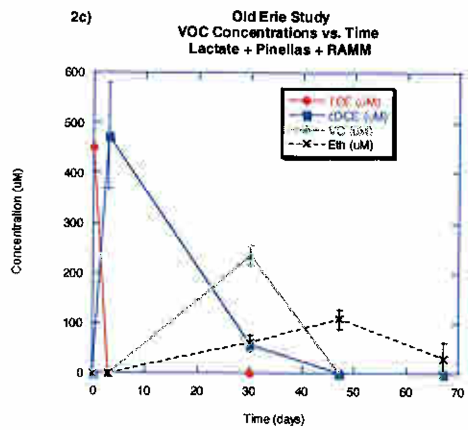
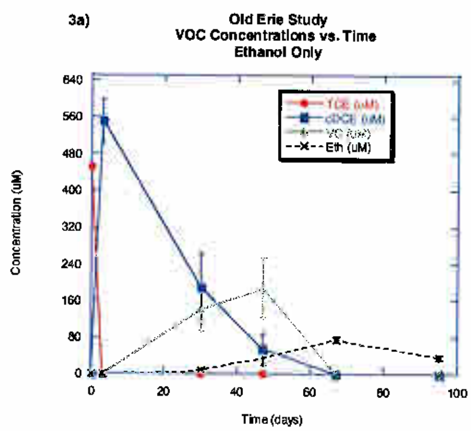


Figure 2 VOC results for **a)** Lactate **b)** Lactate + RAMM **c)** Lactate + Pinellas + RAMM



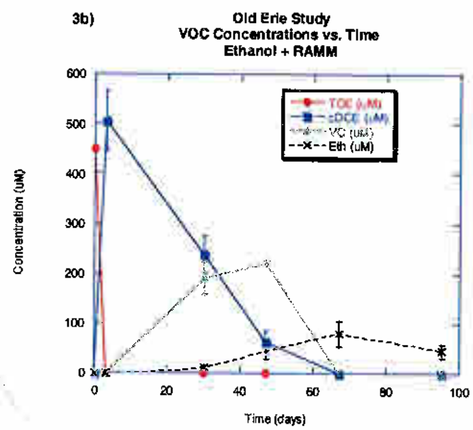
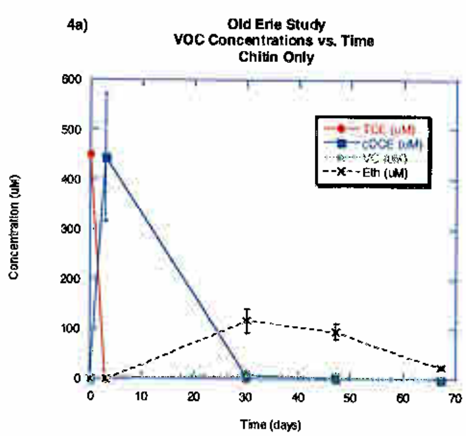


Figure 3 VOC results for **a)** Ethanol **b)** Ethanol + RAMM



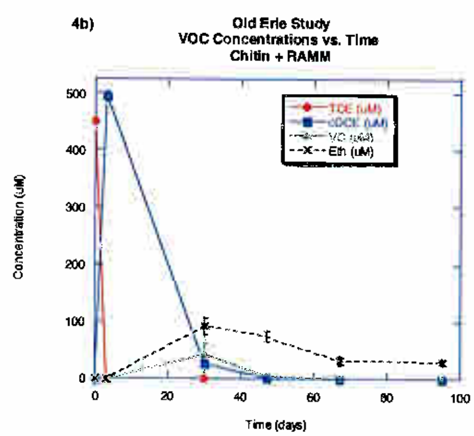


Figure 4 VOC results for **a)** Chitin **b)** Chitin + RAMM

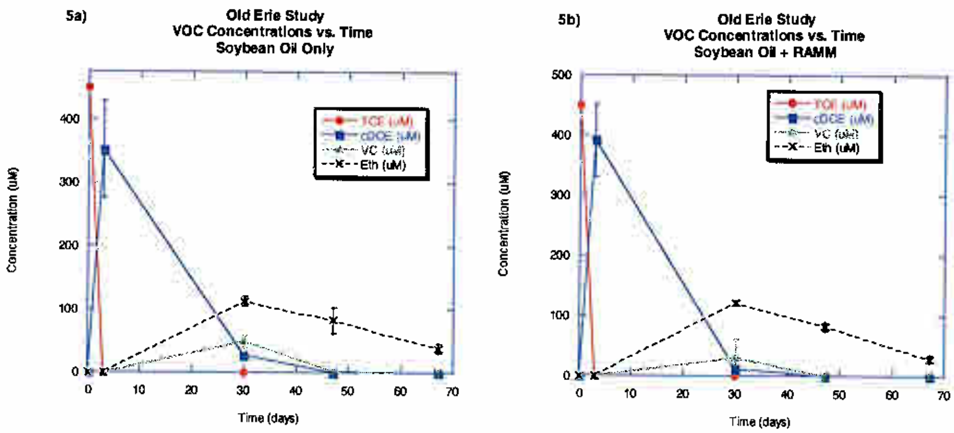
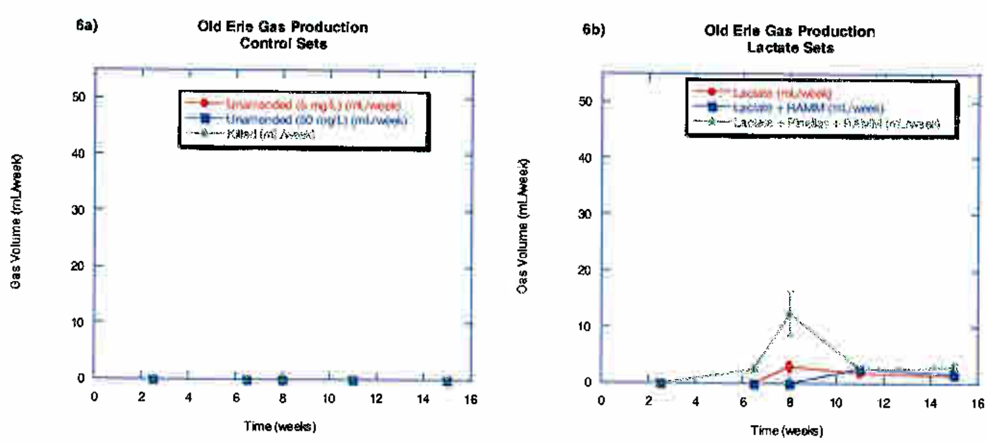


Figure 5 VOC results for a) Soybean Oil b) Soybean Oil + RAMM

Gas Production

In addition to measuring the levels of VOCs present in the bottles, the production of gas over time was measured periodically by venting the headspace of each of the bottles. The results are shown in the graphs in Figure 6. The greatest amount of gas production was observed in the soybean oil-amended sets (Figure 6e), with the maximum production observed around week 11 of the experiment. Gas production in the other amended sets peaked between weeks 8 and 11 and continued throughout the experiment (Figures 6b, 6c, 6d). No measurable gas was produced in the controls (Figure 6a) during the course of the experiment. The gas volumes observed throughout the study further support the observation that the site is extremely biologically active.



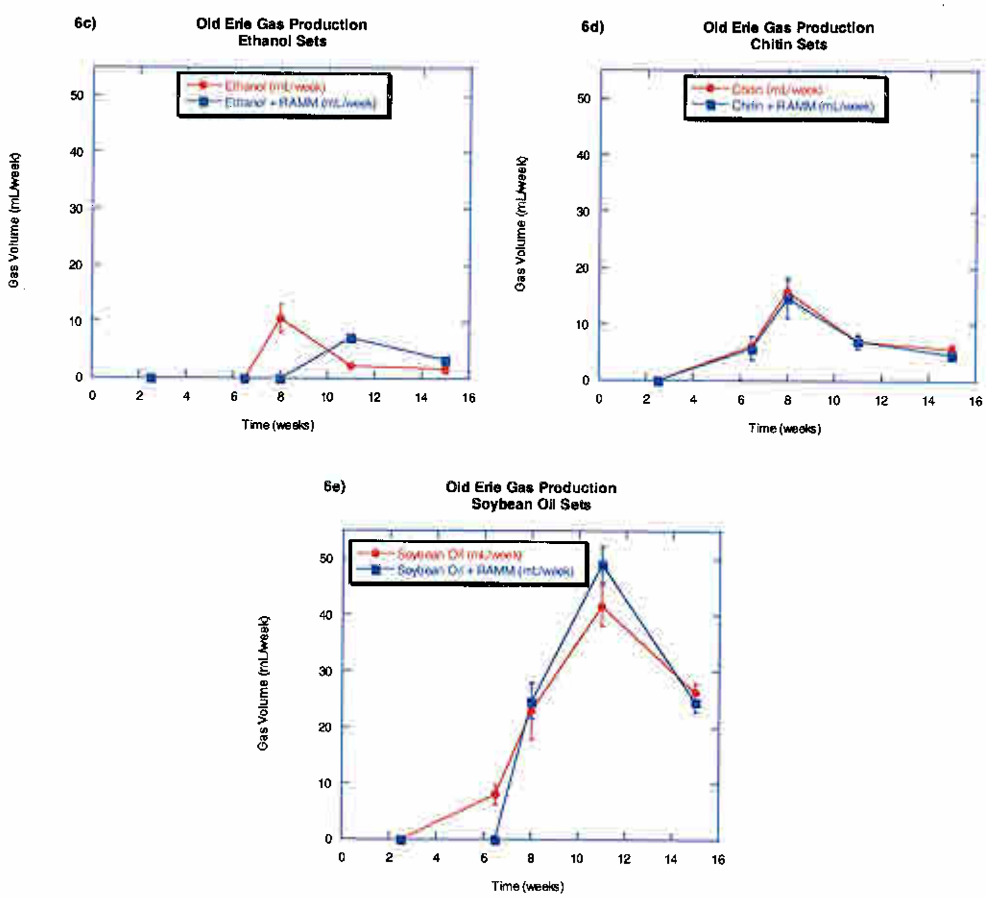


Figure 6 Gas Production for **a)** Controls **b)** Lactate sets **c)** Ethanol sets **d)** Chitin sets **e)** Soybean oil sets

CVOC Ratio Analysis

The following molar ratio was used to measure the performance of the microcosms:

$$\frac{\text{Total moles CVOC at day } i}{\text{Total moles CVOC at day } 0}$$

where *i* represents the day of sampling for which the ratio was being determined and Total CVOC represents the total concentration of CVOCs at the given point in time. All CVOC concentrations were in uM. Using this ratio, the most successful bottles were those where the ratio approached zero by the end of the experiment, indicating that all the VOCs were degraded and only ethene remained.

Graphs of the CVOC ratio results over time are provided in Figures 7-11. The graphs clearly support the observation that all of the treatments were effective, with the exception of the killed control, since they all went to zero during the course of the experiment. Each graph shows the CVOC ratio in each bottle, as well as the average of each set, so that bottle-to-bottle variability can be seen. In general, the bottle-to-bottle consistency in this study was quite good.

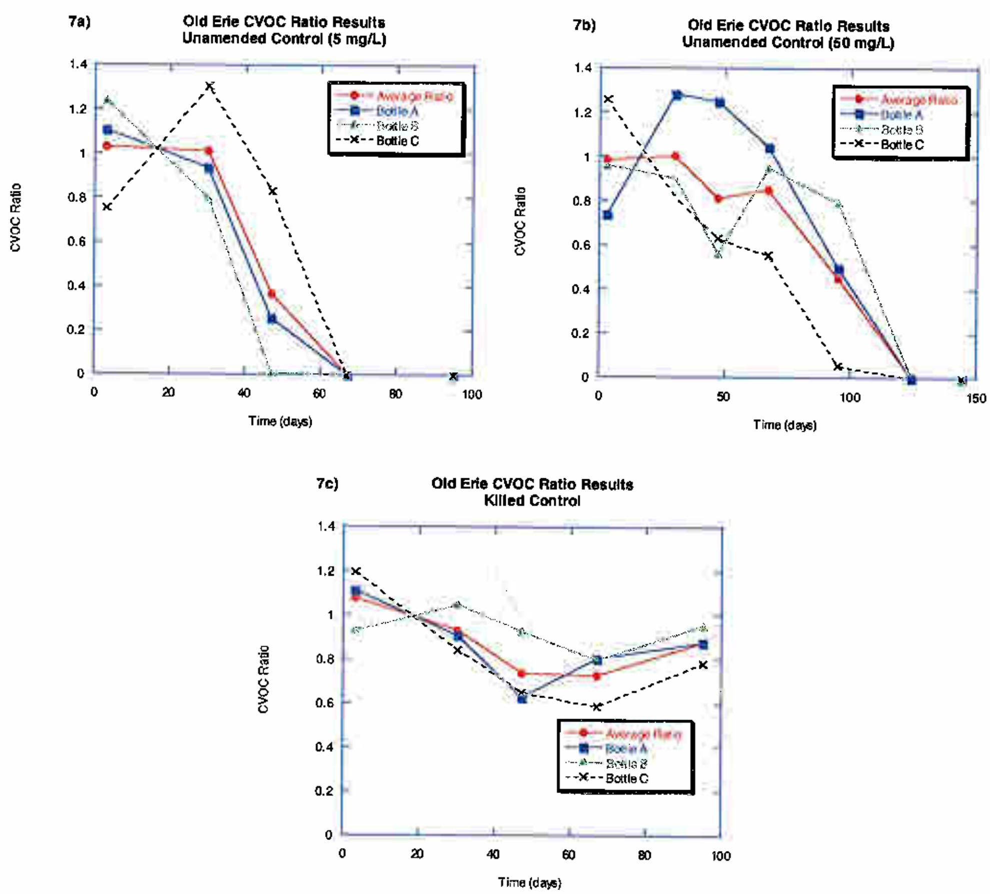


Figure 7 CVOC ratio results for **a)** Unamended Control (5 mg/L) **b)** Unamended Control (50 mg/L) **c)** Killed Control

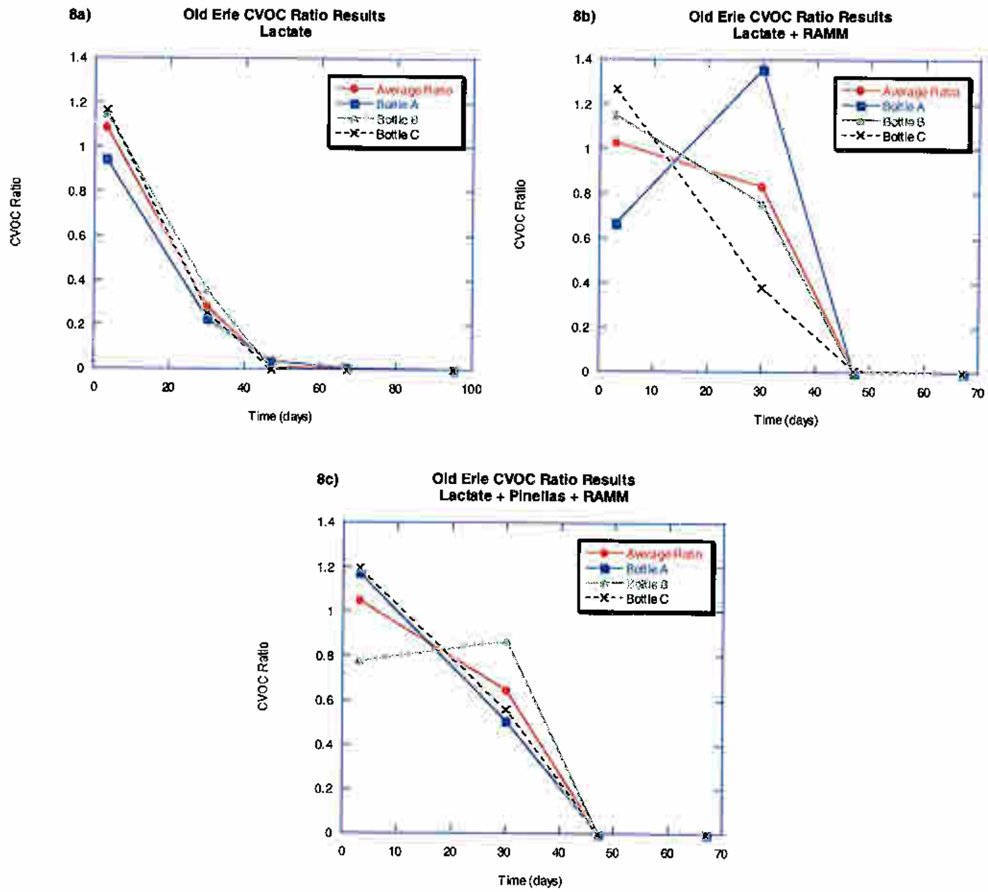


Figure 8 CVOC ratio results for **a)** Lactate **b)** Lactate + RAMM **c)** Lactate + Pinellas + RAMM

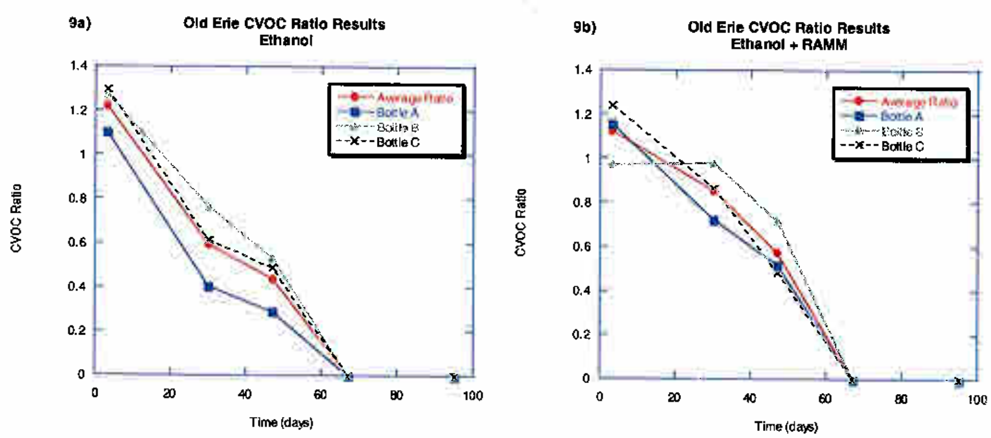


Figure 9 CVOC ratio results for **a)** Ethanol **b)** Ethanol + RAMM

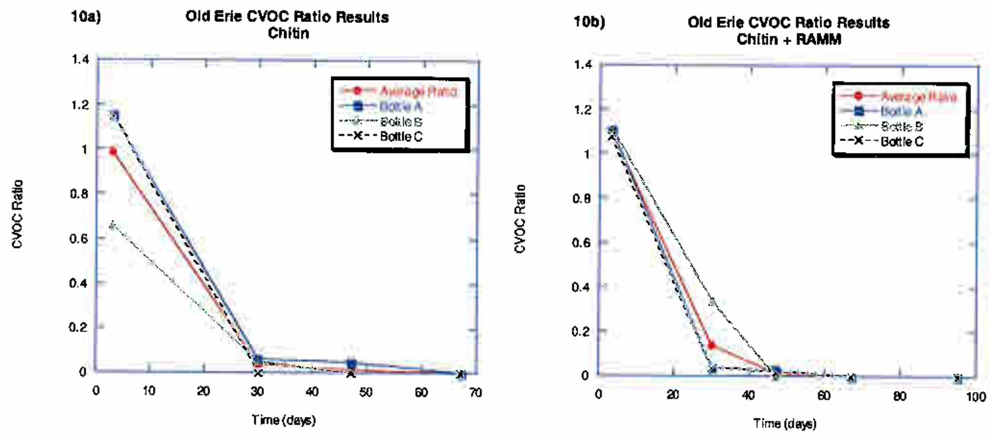


Figure 10 CVOC ratio results for **a)** Chitin **b)** Chitin + RAMM

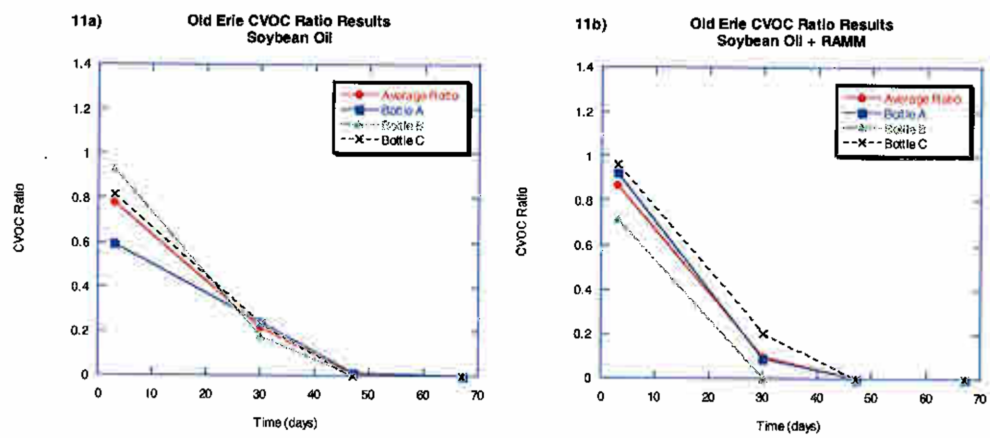


Figure 11 CVOC ratio results for **a)** Soybean Oil **b)** Soybean Oil + RAMM

Statistical analysis

Two metrics were used to subject the data to statistical analysis. The CVOC ratio calculated at the end of the study is a measure of the extent or completeness of degradation in each treatment. The time required to reach the zero endpoint in the CVOC ratio is a relative measure of degradation rate. After the CVOC ratio and time to zero endpoint (>97% CVOC removal) were determined for each set, a statistical analysis of each study was performed in Minitab in order to determine the statistical significance of the donor and RAMM terms and the first-order interaction between donor and RAMM. A confidence level of 95% was used to determine the statistical significance of a given factor. The design-of-experiment (DOE) set-up is shown in Table 2.

The results of the statistical analysis of the DOE are shown in the Appendix. The DOE was analyzed according to the two response variables, the CVOC ratio and the time to zero endpoint. None of the terms (donor, RAMM, donor-RAMM interaction) were found to be statistically significant when using the CVOC ratio for the analysis (Table A-1). This is reasonable, since all the bottle sets went to completion during the course of the study, and indicates all conditions were effective in promoting complete dechlorination of TCE to ethene.

However, when the results were analyzed according to the time to endpoint (Table A-2), the donor term was found to be statistically significant (p-value = 0.001). This is primarily due to the fact that all of the ethanol bottles went to completion at day 67, which was longer than the average time to endpoint observed for the other donor treatments. This is evident from both the endpoint values in Table 2 and from the graphs of the interaction effects provided for each analysis in the Appendix (Figures A-1 and A-2). Both show that the time to complete dechlorination was slightly slower using ethanol as the electron donor. However, since this rate difference was relatively small and all of the electron donors were effective in encouraging the complete reductive dechlorination of TCE to ethene, the choice of electron donor for use in a potential field application would depend primarily on site conditions and stratigraphy.

The RAMM term and the donor-RAMM interaction term were not statistically significant in either analysis, indicating that supplemental nutrients did not have a significant effect on the rate or extent of dechlorination. Therefore additional nutrients should not be required at this site.

Donor	RAMM	CVOC ratio at endpoint	Time to endpoint
Lactate	No	0.0082	67
Lactate	No	0.0051	47
Lactate	No	0	47
Lactate	Yes	0	47
Lactate	Yes	0	47
Lactate	Yes	0.012	47
Ethanol	No	0	67
Ethanol	No	0	67

Ethanol	No	0	67
Ethanol	Yes	0	67
Ethanol	Yes	0	67
Ethanol	Yes	0	67
Chitin	No	0	67
Chitin	No	0	47
Chitin	No	0	30
Chitin	Yes	0.026	47
Chitin	Yes	0	47
Chitin	Yes	0.02	47
Soybean Oil	No	0.012	47
Soybean Oil	No	0	47
Soybean Oil	No	0	47
Soybean Oil	Yes	0	47
Soybean Oil	Yes	0	47
Soybean Oil	Yes	0	47

Table 2 DOE set-up for Old Erie study

Effect of bioaugmentation

In order to determine if the addition of Pinellas bacteria to the positive controls was a statistically significant factor in the experiments, t-tests were run between the lactate + RAMM and lactate + Pinellas + RAMM bottle sets. The tests were run using both the CVOC ratio and the time to zero endpoint as response variables. The results of these analyses are shown in the Appendix. Neither analysis showed a statistically significant difference between the two sets in terms of the rate or extent of dechlorination observed. This indicates that bioaugmentation would not be required at this site.

Rate constant analysis

In order to compare the performance of the unamended and amended sets, rate constants for cis-DCE degradation were calculated using Scientist, which is a computer program capable of solving differential equations. The computation was performed assuming the contaminants biodegrade according to first order kinetics. The following equations were used to determine the first order rate constants:

$$Equation\ 1:\ d[TCE]/dT = -K_{TCE}*[TCE]$$

$$Equation\ 2:\ d[cis\text{-}DCE]/dT = K_{TCE}*[TCE] - K_{cis\text{-}DCE}*[cis\text{-}DCE]$$

$$Equation\ 3:\ d[VC]/dT = K_{cis\text{-}DCE}*[cis\text{-}DCE] - K_{VC}*[VC]$$

Where [TCE], [cis-DCE] and [VC] are the concentrations of the contaminants at a given point in time, T represents time and K_{TCE}, $K_{cis\text{-}DCE}$ and K_{VC} are the first order rate constants for the three contaminants. The data from the microcosm experiments and initial estimates for the rate constants were required for Scientist to perform the first order rate constant calculations.

The results are in Tables 3 and 4, which show the rate constants in units of day^{-1}. The rate constants for TCE are not reported. The results for these rate constants were not meaningful because the biodegradation of TCE was too rapid to measure accurately.. The comparison between the amended and unamended rate constants and the half-life, in days, for cis-DCE and VC in each set are included. The rate constant for the unamended control with 50 mg/L was used for the comparison to the amended sets. The rate constant for the killed control set was not evaluated because very little dechlorination was observed during the course of the experiment.

The rate constant for cis-DCE biodegradation in the unamended control with 50 mg/L was 0.02 day^{-1}, which corresponded to a half-life of about 35 days. The cis-DCE biodegradation rates observed in the amended bottles were about two to three times greater, with half-lives ranging from 10 to 20 days. In general, the lactate, chitin, and soybean oil promoted the fastest cis-DCE biodegradation. The biodegradation promoted by ethanol was somewhat slower. These rate data are very consistent with the time to overall degradation shown in Table 2.

The rate constant for cis-DCE biodegradation in the unamended control with 50 mg/L was also 0.02 day^{-1}, corresponding to a half-life of about 33 days. The rate constants for VC biodegradation ranged from two to several hundred fold faster in the amended microcosms than in the comparable unamended control. Biodegradation of VC was particularly rapid in the chitin and soybean oil microcosms. In these bottles it was biodegraded almost as fast as it was formed. Biodegradation of VC in the lactate and ethanol amended microcosms proceeded about twice as fast as the unamended control.

Set	$K_{cis\text{-}DCE}$ (day^{-1})	$K_{cis\text{-}DCE}$ Amended/ $K_{cis\text{-}DCE}$ Unamended	Half Life for cis-DCE (days)
Unamended – 5	0.045	--	15.40
Unamended – 50	0.02	--	34.66
Lactate	0.068	3.40	10.19
Ethanol	0.04	2.00	17.33
Chitin (SC-40)	0.07	3.50	9.90
Soybean Oil	0.064	3.20	10.83
Lactate + RAMM	0.051	2.55	13.59
Ethanol + RAMM	0.034	1.70	20.39
Chitin + RAMM	0.066	3.30	10.50
Soybean Oil + RAMM	0.069	3.45	10.05
Lactate + Pinellas + RAMM	0.06	3.00	11.55
Killed Control	--	--	--

Table 3 Rate constant analysis for cis-DCE

Set	K_{VC}	K_{VC} Amended/ K_{VC} Unamended	Half Life for VC (days)
Unamended - 5	0.037	--	18.73
Unamended - 50	0.021	--	33.01
Lactate	0.096	4.57	7.22
Ethanol	0.055	2.62	12.60
Chitin (SC-40)	16.1	766.67	0.04
Soybean Oil	2.2	104.76	0.32
Lactate + RAMM	0.061	2.90	11.36
Ethanol + RAMM	0.043	2.05	16.12
Chitin + RAMM	3.64	173.33	0.19
Soybean Oil + RAMM	4.78	227.62	0.15
Lactate + Pinellas + RAMM	0.06	2.86	11.55
Killed Control	--	--	--

Table 4 Rate constant analysis for VC

Conclusion

The primary objective of the Old Erie study was to determine the feasibility of enhanced bioremediation in reductively dechlorinating TCE to ethene. The experiments studied the effects of the addition of four different electron donors (lactate, ethanol, chitin, and soybean oil), supplemental nutrients (RAMM), and bioaugmentation with bacteria.

Enhanced bioremediation is a feasible remedial option at this site. All of the electron donors tested in the study supported the complete biodegradation of TCE to ethene during the course of the experiment. The addition of electron donors promoted a two to three fold increase in the overall biodegradation rate over the comparable unamended control. Lactate, chitin, and soybean oil promoted the fastest biodegradation of cis-DCE. Chitin and soybean oil promoted the fastest biodegradation of vinyl chloride (VC). In these cases, VC was biodegraded almost as fast as it was formed, so that very little was measured in the bottles. The electron donor selected for use in a field application would depend on the site conditions and stratigraphy.

The rate and extent of TCE dechlorination was not positively affected by the addition of either RAMM or Pinellas bacteria. Both unamended control sets went to completion during the course of the study, indicating robust intrinsic biodegradation activity is currently operative at the site. Therefore, monitored natural attenuation should be integral part of the remedial strategy at this site.

References

de Bruin, W.P., M.J.J. Kotterman, M.A. Posthumus, G. Schraa, A.J.B. Zehnder, "Complete Biological Reductive Dechlorination of Tetrachloroethene to Ethane", *Appl. Environ. Microbiol.*, **1992**, 58:1996-2000.

DeWeerd, K.A., W.P. Flanagan, M.J. Brennan, J.M. Principe, J.L. Spivack, "Biodegradation of Trichloroethylene and Methylene Chloride in Contaminated Soil and Groundwater", Bioremediation J., **1998**, 2:29-42.

Ellis, D.E., "Intrinsic Remediation in the Industrial Marketplace", in Proceedings of the Symposium on Natural Attenuation of Chlorinated Organics in Ground Water, EPA/540/R-97/504, United States Environmental Protection Agency, Washington, DC, **1997**, pp. 129-132.

Ellis, D.E., E.J. Lutz, J.M. Odom, R.J. Buchanan Jr., M.D. Lee, C.L. Bartlett, M.R. Harkness, K.A. Deweerd, "Bioaugmentation for Accelerated In Situ Anaerobic Bioremediation," *Environ. Sci. Technol.*, **2000**, 34:2254-2260.

Freedman, D.L. and J.M. Gossett, "Biological Deductive Dechlorination of Tetrachloroethylene and Trichloroethylene to Ethylene under Methanogenic Conditions" *Appl. Environ. Microbiol.*, **1989**, 55:2144-2151.

Harkness, M.R., "Economic Considerations in Enhanced Anaerobic Biodegradation" In *Bioremediation and Phytoremediation of Chlorinated and Recalcitrant Compounds*, Wickramananyake, G.B., Gavaskar, A.R., Alleman, B.C., Magar, V.S. (Editors), **2000**, pp. 9-14.

Harkness, M.R., Bracco, A.A., Brennan, M.J. Jr., DeWeerd, K.A., Spivack, J.L., "Use of Bioaugmentation to Stimulate Complete Reductive Dechlorination of Trichloroethene in Dover Soil Columns", *Environ. Sci. Technol.*, **1999**, 33:1100-1109.

Major, D.W., E.H. Hodgins, B.H. Butler, "Field and Laboratory Evidence of In Situ Biotransformation of Tetrachloroethene to Ethene and Ethane at a Chemical Transfer Facility in North Toronto", in *In Situ and On Site Bioreclamation*, R.E. Hinchee and R. Olfenbuttel, Eds., Buttersworth-Heineman, Stoneham, MA, **1991**.

Maymo-Gatell, X., V. Tandoi, J.M. Gossett, S.H. Zinder, "Characterization of an H_2-Utilizing Enrichment Culture that Reductively Dechlorinates Tetrachloroethene to Vinyl Chloride and Ethene in the Absence of Methanogenesis and Acetogenesis", *Appl. Environ. Microbiol.*, **1995**, 61:3928-3933.

McCarty, P.L., "An Overview of Anaerobic Transformation of Chlorinated Solvents", *Symposium on Intrinsic Bioremediation of Ground Water*, EPA/540/R-94/515, US Environmental Protection Agency, **1994**, pp. 135-142.

Shelton, D.R. and J.M. Tiedje, "General Method for Determining Anaerobic Biodegradation Potential", *Appl. Environ. Microbiol.*, **1984**, 47:850-857.

U.S. Department of Energy, *Corrective Measures Study Report: Northeast site, Pinellas Plant, Largo, Florida*, Department of Energy, Albequerque Field Office, Draft report, **1993**.

Wilson, B.H., J.T. Wilson, D. Luce, "Design and Interpretation of Microcosm Studies for Chlorinated Compounds", in Proceedings of the Symposium on Natural Attenuation of Chlorinated Organics in Ground Water, EPA/540/R-97/504, United States Environmental Protection Agency, Washington, DC, **1997**, pp. 23-30.

Appendix

General Linear Model

Factor	Type	Levels	Values
Donor	fixed	4	1 2 3 4
RAMM	fixed	2	1 2

Analysis of Variance for CVOC rat, using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Donor	3	0.0001978	0.0001978	0.0000659	1.74	0.200
RAMM	1	0.0000447	0.0000447	0.0000447	1.18	0.294
Donor*RAMM	3	0.0003411	0.0003411	0.0001137	3.00	0.062
Error	16	0.0006070	0.0006070	0.0000379		
Total	23	0.0011907				

Table A-1 DOE analysis according to CVOC ratio

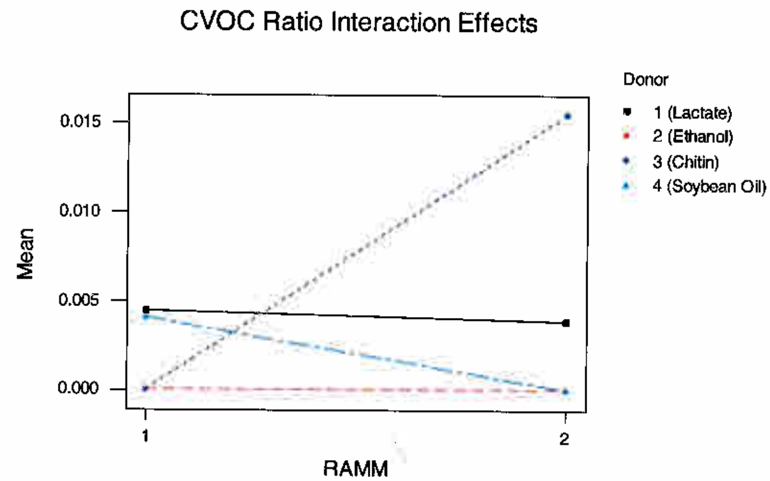


Figure A-1 Interaction effects according to CVOC ratio

General Linear Model

Factor	Type	Levels	Values
Donor	fixed	4	1 2 3 4
RAMM	fixed	2	1 2

Analysis of Variance for Time to, using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Donor	3	1854.83	1854.83	618.28	8.64	0.001
RAMM	1	66.67	66.67	66.67	0.93	0.349
Donor*RAMM	3	49.67	49.67	16.56	0.23	0.873
Error	16	1145.33	1145.33	71.58		
Total	23	3116.50				

Table A-2 DOE analysis according to the time to endpoint

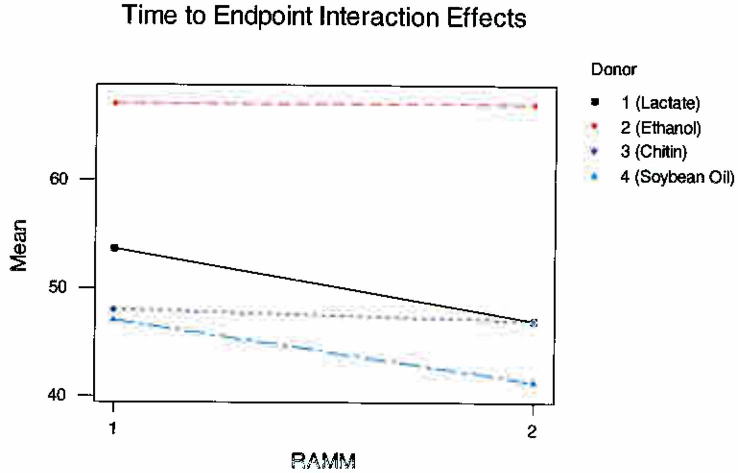


Figure A-2 Interaction effects according to time to endpoint

Two Sample T-Test and Confidence Interval

```
Two sample T for lr cvoc vs lpr cvoc

           N       Mean      StDev    SE Mean
lr cvoc    3    0.00391    0.00678     0.0039
lpr cvoc   33.3333E-095.7735E-093.3333E-09

95% CI for mu lr cvoc - mu lpr cvoc: ( -0.0129,  0.0207555675)
T-Test mu lr cvoc = mu lpr cvoc (vs not =): T = 1.00  P = 0.42  DF = 2
```

Table A-3 T-test between lactate + RAMM and lactate + Pinellas + RAMM according to CVOC ratio

Two Sample T-Test and Confidence Interval

```
Two sample T for lr end vs lpr end

          N      Mean     StDev   SE Mean
lr end    3     47.00      1.00      0.58
lpr end   3     47.00      1.00      0.58

95% CI for mu lr end - mu lpr end: ( -2.27,  2.27)
T-Test mu lr end = mu lpr end (vs not =): T = 0.00  P = 1.0  DF = 4
```

Table A-4 T-test between lactate + RAMM and lactate + Pinellas + RAMM according to time to endpoint

APPENDIX C

IN SITU CHEMICAL OXIDATION BENCH SCALE
TREATABILITY STUDY REPORT

TABLE OF CONTENTS

Page

<u>LIST OF TABLES</u>
(Following Appendix)

1.0 INTRODUCTION

The GE Old Erie Canal site (Site) is located in Clyde New York. As part of an evaluation of remedial alternatives for the Feasibility Study (FS) being conducted for the Site it was proposed to perform laboratory treatability studies to determine the effectiveness of in situ chemical oxidation (ISCO) and enhanced bioremediation for treatment of the contaminants present at the Site. Conestoga-Rovers & Associates (CRA) were requested to perform an ISCO treatability study at their laboratory in Niagara Falls, New York. The following report describes the results of the ISCO laboratory treatability study and makes recommendations regarding application of the technology at the Site.

The results of the enhanced bioremediation studies are presented in Appendix B of the FS. Descriptions of the Site conditions and nature and extent of chemical presence are presented in Section 3 of the FS.

1.1 DESCRIPTION OF ISCO

ISCO is an effective technology for destroying a wide range of volatile organic compounds (VOCs), including those present at the Site (trichloroethene [TCE], cis-1,2-dichloroethene [cis-1,2-DCE], and vinyl chloride [VC]). The technology is based on the use of strong oxidizing agents to completely oxidize the VOCs within relatively short periods. In a chemical oxidation reaction, the oxidizing agent breaks the double carbon bonds in chlorinated compounds such as TCE, cis 1,2-DCE, and VC and converts them within hours into non-toxic compounds, primarily carbon dioxide and water.

The oxidizing agents most commonly used include:

i) potassium permanganate [$KMnO_4$];
ii) Fenton's Reagent (Fenton's, a solution of hydrogen peroxide and ferrous sulfate);
iii) ozone; and
iv) sodium persulfate ($Na_2S_2O_8$).

$KMnO_4$, Fenton's, and ozone are the most commonly used oxidants. $Na_2S_2O_8$ is emerging as a promising oxidizing reagent but is still in the developmental stage. $KMnO_4$ is preferred because it is demonstrated to be effective and is easier to handle than Fenton's, which is pH-dependent and requires the use of ferrous salt as a catalyst for optimum performance. The application involves simple methods and does not require the sophisticated equipment used in ozone treatment.

These oxidizing reagents react relatively quickly with chlorinated ethenes, including TCE, cis 1,2-DCE, and VC, through a series of chemical reactions, completely mineralizing them into neutral end products such as manganese dioxide (MnO_2), chloride ions, water, and carbon dioxide.

ISCO is typically a site-specific and successful treatment technology. However, its effectiveness is often a function of the effectiveness of the delivery system (being able to deliver sufficient amounts of oxidant to the impacted soil and groundwater and making sufficient "contact") and subsequent transport of the oxidant within the aquifer. The treatment performance is dependent to a great extent on the soil and groundwater chemistry.

A critical factor in the evaluation of ISCO treatment is determining the dosages of oxidant that are required to effectively oxidize the contaminants present (referred to as "stoichiometric demand") and overcome competing reactions. Competing reactions are typically caused by the presence of non-target compounds, natural organic materials such as humates and fulvates as well as reduced metal species. The consumption of oxidants by these non-target compounds is defined as natural oxidant demand (NOD). In order to determine the optimum dosage of oxidant required to effectively oxidize the contaminants present, treatability studies are required.

2.0 TREATABILITY STUDY OBJECTIVES

The primary objective of this laboratory study was to gather the data necessary to:

i) assess the effectiveness of $KMnO_4$ for treatment of the compounds of concern (VOC, primarily TCE, cis-1,2-DCE, and VC) in representative soil and groundwater samples from the Site;

ii) assess the variability of the natural oxidant demand in the treatment areas; and

iii) determine the effective concentration/dosage of oxidant required to complete treatment as expeditiously as possible.

3.0 BENCH SCALE TREATABILITY STUDY

3.1 TASK 1: INITIAL CHARACTERIZATION

Samples were received from the Old Erie Canal Site on May 5, 2004. The groundwater samples were analyzed for:

i) pH; and
ii) VOCs.

Soil samples were removed from soil core liners and homogenized in glass jars. A sub-sample of soil was collected from each homogenized soil sample and analyzed for the following parameters:

i) pH;
ii) percent moisture;
iii) total organic carbon (TOC); and
iv) VOCs.

The results of the groundwater analyses are shown in Table 1 and the results of the soil analyses are shown in Table 2. Cis-1,2-DCE and VC exhibited the highest concentrations in the groundwater samples. Cis-1,2-DCE concentrations were 60.4 milligrams per liter (mg/L) and 50.2 mg/L in samples GW-6S and GW-4B respectively. VC was present at 32.7 mg/L and 21.2 mg/L in samples GW-6S and GW-4B, respectively. Toluene, ethylbenzene, and xylenes were also present in the samples at lower concentrations. Tetrachloroethene (PCE) was not detected in either groundwater sample. All soil samples contained TCE and cis-1,2-DCE at concentrations ranging from 26.4 milligrams per kilogram (mg/Kg) to 0.171 mg/Kg for TCE and 58.9 mg/Kg to 0.052 mg/Kg for cis-1,2-DCE. The concentrations of toluene, ethylbenzene, and xylenes were generally lower than the chlorinated ethene concentrations. The sample from the area in which boring GP-20 was located had the highest concentrations of VOCs, including toluene, TCE, cis-1,2-DCE, and VC at 31.6 mg/Kg, 3.8 mg/Kg, 58.9 mg/Kg, and 27.1 mg/Kg, respectively. Total organic matter (TOM) varied from 0.37 to 4.66 percent and percent moisture varied from 5.62 to 22.1. The major contributor to the TOM in sample GP-25-1 appeared to be petroleum hydrocarbons.

Based on the VOC results from the initial analyses, two soil samples (GP-20-1 and GP-25-1) were chosen for treatability testing. Both groundwater samples (GW-6S and GW-4B were selected for treatability study testing.

3.2 TASK 2: MICROCOSM TESTS

A series of microcosm tests were conducted. The groundwater microcosms were performed using the two water samples. The soil microcosm tests were performed using 100 gram (g) soil samples from the two soil samples. The tests were conducted to assess the effectiveness of the selected chemical oxidizing agents for treatment of the VOCs in the soils and to determine the optimum concentration range of the chemical oxidizing agent solution, which would be required for field treatment. Based on the specific VOC that was present at the Site, the following three chemical oxidizing agents were selected for bench-scale testing:

i) potassium permanganate ($KMnO_4$);

ii) Fenton's Reagent (Fenton's); and

iii) sodium persulfate ($Na_2S_2O_8$).

The groundwater microcosm tests consisted of placing 110 milliliters (mL) of composite groundwater in 125 mL serum bottles and injecting with 10 mL of $KMnO_4$, hydrogen peroxide (H_2O_2), or $Na_2S_2O_8$ solutions at varying concentrations. The bottles were injected with:

i) 10 mL of varying concentrations of $KMnO_4$ solution (0.05, 0.1, 0.5, and 1 percent, wet weight [w/w]);

ii) 10 mL of varying concentrations of $Na_2S_2O_8$ solution (0.5, 1, and 3 percent, w/w) catalyzed with 0.4 g of hydrogen peroxide; and

iii) 10 mL of varying concentrations of H_2O_2 (1, 5, and 10 percent, w/w) catalyzed with 200 parts per million (ppm) iron (Fe) as ferrous sulfate.

Control tests were prepared similarly but received 10 mL of water rather than oxidant solution. The bottles were sealed to prevent the loss of VOCs through volatilization and incubated at laboratory temperature, inverted, in the dark for 2 weeks. At the end of the incubation period, the water microcosms were sampled and analyzed for residual VOCs. The results of these analyses are shown in Tables 3 through 8.

The soil microcosm tests consisted of placing 100 g of soil in 4 ounce glass jars and mixing with $KMnO_4$, H_2O_2, or $Na_2S_2O_8$ solutions at varying concentrations. The samples were injected with:

i) 25 mL of varying concentrations of $KMnO_4$ solution (0.1, 0.5, 1, and 3 percent, w/w);

ii) 25 mL of varying concentrations of $Na_2S_2O_8$ solution (1, 3, and 5 percent, w/w) catalyzed with 1 g of H_2O_2; and

iii) 25 mL of varying concentrations of H_2O_2 (5, 15, and 30 percent, w/w) catalyzed with 200 ppm Fe as ferrous sulfate.

Control tests were prepared similarly but received 25 mL of water rather than oxidant solution. The jars were sealed immediately to prevent the loss of VOCs through volatilization and incubated in the dark at lab temperature for 2 weeks. After 2 days it was noticed that the purple color of the $KMnO_4$ was no longer visible even in the treatments that had received the highest $KMnO_4$ dose. Therefore, an additional dose of oxidant equal to the first dose was administered to all samples. After another 2 days the $KMnO_4$ color was no longer visible once again; therefore, a further dose of oxidant was administered to all samples. Two weeks after the first dose of oxidant, the microcosms were sacrificed and analyzed for residual VOCs. The results of these analyses are shown in Tables 9 through 14.

The results for groundwater sample GW-4B showed that all of the VOCs except toluene and xylene were removed to below the detection limit of 50 micrograms per liter (µg/L) by 1 percent $KMnO_4$ which corresponds to a loading rate of 0.8 g $KMnO_4$ per liter (/L) of groundwater. Fifty percent of the toluene was removed and 70 percent of the xylene was removed. Treatment with 3 percent $Na_2S_2O_8$ (2.4 g $Na_2S_2O_8$/L of groundwater) removed between 50 percent and 80 percent of the total VOCs. Treatment with Fenton's showed the highest removal rates in this groundwater sample. One percent H_2O_2 (0.8 g H_2O_2/L groundwater) removed between 67 percent and 99 percent of the total VOCs; 5 percent H_2O_2 (4 g H_2O_2/L groundwater) removed greater than 96 percent of the total VOCs; and 10 percent H_2O_2 (8 g H_2O_2/L groundwater) removed greater than 98 percent of the total VOCs.

For groundwater sample GW-6S, all the VOCs except toluene and xylene were removed to below the detection limit by 1 percent $KMnO_4$, which corresponded to a loading rate of 0.8 g $KMnO_4$/L of groundwater. Sixty percent of the toluene was removed and 66 percent of the xylene was removed. Treatment with 3 percent $Na_2S_2O_8$ (2.4 g $Na_2S_2O_8$/L of groundwater) removed between 56 percent and 99 percent of the VOCs with the exception of trans-1,2-DCE, of which only 3 percent was removed. Treatment with Fenton's also showed the highest removal rates in this groundwater sample. One percent H_2O_2 (0.8 g H_2O_2/L groundwater) removed between 63 percent and 86 percent of the total VOCs; 5 percent H_2O_2 (4 g H_2O_2/L groundwater) removed greater than 96 percent of total VOCs; and 10 percent H_2O_2 (8 g H_2O_2/L groundwater) removed greater than 95 percent of the VOCs.

For soil sample GP-20-1, VOC removal with $KMnO_4$ was poor. Only VC and trans-1,2-DCE were effectively removed from the soil. Treatment with $Na_2S_2O_8$ was somewhat better. One percent $Na_2S_2O_8$ (7.5 g $Na_2S_2O_8$ per kilogram [/Kg] of soil) removed between 77 percent and 99 percent of the total VOCs. Treatment with Fenton's containing 30 percent H_2O_2 (225 g H_2O_2/Kg soil) removed between 59 percent and 99 percent of the total VOCs.

For soil sample GP-25-1, removal with $KMnO_4$ was again poor. Only cis-1,2-DCE and TCE were effectively removed from the soil. Treatment with $Na_2S_2O_8$ was again better. One percent $Na_2S_2O_8$ (7.5 g $Na_2S_2O_8$/Kg of soil) removed between 53 percent and 99 percent of the VOCs with the exception of m/p-xylene, which was not removed. Treatment with Fenton's showed good treatment of cis-1,2-DCE and TCE. However, toluene and xylene were not removed by the treatment, and appeared to increase in concentration. The increase may be because the H_2O_2 broke down the clay matrix of the soil resulting in release of additional toluene and xylene that was previously bound to the clay.

3.3 TASK 3: NATURAL OXIDANT DEMAND

The NOD of the soil samples was assessed by placing 50 g of each original homogenized soil sample in an 8 ounce jar and adding 100 mL of 1 percent $KMnO_4$. The initial $KMnO_4$ concentration was recorded by measuring the absorbance at 525 nanometers (nm) and comparing to a standard curve. Each week the jar was sampled and the $KMnO_4$ concentration was recorded.

The NOD of the groundwater sample was assessed by placing 100 mL of the composite soil in a four ounce jar and dissolving 1 g of solid $KMnO_4$ in it. The initial $KMnO_4$ concentration was recorded. Each week the jar was sampled and the $KMnO_4$ concentration was recorded.

The NOD test was run for 5 weeks. Each week the jars were analyzed for residual $KMnO_4$. For soil samples GP-16-1 and GP-25-1, all of the $KMnO_4$ added was consumed and additional quantities of $KMnO_4$ were added until the $KMnO_4$ was no longer consumed. After 5 weeks, soil sample GP-16-1 had consumed 41.6 g of $KMnO_4$/Kg soil; soil sample GP-20-1 had consumed 19.2 g of $KMnO_4$/Kg soil; soil sample GP-25-1 had consumed 45.5 g of $KMnO_4$/Kg soil; soil sample GP-32-1 had consumed 18.9 g of $KMnO_4$/Kg soil; and soil sample GP-36-1 had consumed 19.7 g of $KMnO_4$/Kg soil.

After 5 weeks, groundwater sample GW-6S had consumed 7.5 g of $KMnO_4$/L of groundwater and groundwater sample GW-4B had consumed 6.6 g of $KMnO_4$/L of groundwater. Neither groundwater sample consumed all of the $KMnO_4$, therefore the subsequent addition of $KMnO_4$ was not necessary.

The high NOD in the soil samples may be explained by the presence of petroleum hydrocarbons in the soil. The $KMnO_4$ does not appear to have completely penetrated the clay matrix; therefore the NOD data obtained using $KMnO_4$ does not reflect the true NOD of the soil. The dose rates found in the microcosms treated with Fenton's are a better reflection of the amounts needed to treat the soil.

4.0 CONCLUSIONS

Based on the results of the ISCO bench-scale treatability studies undertaken, the following conclusions are drawn:

i) the NOD of all five of the soil samples is relatively high, which is likely due to the presence of petroleum hydrocarbons. The NOD of the two water samples is considerably lower that that of the soil samples;

ii) potassium permanganate:

- potassium permanganate was effective in treating all the VOCs, except toluene and xylene in the two groundwater samples, and
- potassium permanganate was effective in treating cis and trans-1,2-DCE and TCE in the soil samples, however it did not remove any of the other VOCs present;

iii) sodium persulfate:

- sodium persulfate removed between 50 and 99 percent of the VOC in the two groundwater samples, and
- sodium persulfate removed between 53 and 99 percent of the VOC in the two soil samples; and

iv) Fenton's Reagent:

- Fenton's Reagent was effective in removing over 96 percent of the VOCs in the two groundwater samples using a dose rate of 4 g H_2O_2/L of groundwater,
- Fenton's Reagent achieved the best treatment of the VOCs in the soil samples treating between 59 and 99 percent of vinyl chloride, cis- and trans-1,2-DCE, TCE, and ethylbenzene, however toluene and xylenes were not effectively removed and in some cases increased,
- the breakdown of the clay matrix may have caused the release of previously bound VOCs from the soil, and
- the optimum dose rate for the soils was 225 g H_2O_2/Kg of soil for sample GP-25-1 and 113 g H_2O_2/Kg of soil for sample GP-20-1.

5.0 RECOMMENDATIONS

Based on the results of the ISCO treatability studies, the NOD of the Site soil is too high for ISCO to be a cost-effective treatment. However, ISCO be could be used to effect an initial decrease VOC levels. The residual concentrations of VOCs remaining in the soil could then be treated by natural attenuation or enhanced natural attenuation. If initial treatment with ISCO is selected as a component of the Site remedy, Fenton's Reagent is recommended for use as the oxidizing agent. The recommended dose rate for ISCO using Fenton's Reagent is 113-225 g H_2O_2/Kg of soil. Whether 113 g or 225 g is used will depend on the area to be treated.

APPENDIX C

TABLES

TABLE 1

INITIAL ANALYSIS OF GROUNDWATER SAMPLES
OLD ERIE CANAL CHEMICAL OXIDATION STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Sample ID	*Units*	*GW-6S*	*GW-4B*
pH	S.U.	7.6	7.7
Vinyl Chloride	µg/L	32700	21200
Cis-1,2-Dichloroethylene	µg/L	60400	50200
Trichloroethylene	µg/L	ND (2)	857
Toluene	µg/L	6770	202
Perchloroethylene	µg/L	ND (2)	ND (2)
Ethylbenzene	µg/L	20.1	24.5
m/p-Xylene	µg/L	116	43.8
o-Xylene	µg/L	25.8	16.1

Notes:
S.U. Standard Units

TABLE 2

INITIAL ANALYSIS OF SOIL SAMPLES
OLD ERIE CANAL CHEMICAL OXIDATION STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Sample ID	*Units*	*S-GP-16-1*	*S-GP-20-1*	*S-GP-25-1*	*S-GP-32-1*	*S-GP-36-1*
pH	S.U.	7.8	8.1	7.9	7.7	8.0
Percent Moisture	%	22.1	15.1	27.8	5.62	18.8
Total Organic Matter (TOM)	%	4.66	0.37	2.08	1.13	0.46
Vinyl Chloride	µg/kg	ND (4)	27100	ND (4)	ND (4)	ND (4)
Cis-1,2-Dichloroethylene	µg/kg	1410	58900	11900	778	50.2
Trichloroethylene	µg/kg	8940	3780	26400	196	171
Toluene	µg/kg	ND (2)	31600	2690	91.7	ND (2)
Perchloroethylene	µg/kg	356	ND (2)	ND (2)	59.9	64.6
Ethylbenzene	µg/kg	ND (2)	215	71.7	ND (2)	ND (2)
m/p-Xylene	µg/kg	ND (2)	1130	214	150	ND (2)
o-Xylene	µg/kg	ND (2)	351	ND (2)	48.5	ND (2)

Notes:
S.U. Standard Units

TABLE 3

CHEMICAL OXIDATION OF GROUNDWATER GW-4B WITH $KMnO_4$
OLD ERIE CANAL CHEMICAL OXIDATION STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Sample ID	*Units*	*Control*	*0.05% $KMnO_4$*	*0.1% $KMnO_4$*	*0.5% $KMnO_4$*	*1.0% $KMnO_4$*
Loading Rate	g/L	0	0.04	0.08	0.4	0.8
Vinyl Chloride	µg/L	30100/22600	4410/2860	781/769	ND(2)/ND (2)	ND(2)/ND (2)
1,1-Dichloroethylene	µg/L	20.7/16.6	20.1/20.5	14.6/14.9	ND(2)/ND (2)	ND(2)/ND (2)
Trans-1,2-Dichloroethylene	µg/L	50.4/43.0	12.3/11.8	ND(2)/ND (2)	ND(2)/ND (2)	ND(2)/ND (2)
Cis-1,2-Dichloroethylene	µg/L	39400/55700	24200/40200	37700/37700	15.1/18.9	ND(2)/ND (2)
Trichloroethylene	µg/L	552/495	555/500	469/468	4.95/5.80	ND(2)/ND (2)
Toluene	µg/L	86.6/83.5	104/80.3	93.6/84.1	103/96.1	47.2/39.4
Ethylbenzene	µg/L	16.9/14.8	17.0/13.9	15.9/16.6	14.2/13.7	ND(2)/ND (2)
m/p-Xylene	µg/L	7.97/15.5	30.2/11.9	27.4/29.1	27.9/27.9	3.83/3.55
o-Xylene	µg/L	9.24/8.72	12.1/6.80	11.0/11.6	11.2/11.2	ND(2)/ND (2)
% Vinyl chloride removed	%	-	86.2	97.1	>99	>99
% 1,1-DCE removed	%	-	<1	20.9	>99	>99
% Trans-1,2-DCE removed	%	-	74.2	>99	>99	>99
% Cis-1,2-DCE removed	%	-	32.3	20.7	>99	>99
% TCE removed	%	-	<1	10.5	>99	>99
% Toluene removed	%	-	<1	<1	<1	49.1
% Ethylbenzene removed	%	-	2.40	<1	12.0	>99
% m/p-Xylene removed	%	-	<1	<1	<1	68.6
% o-Xylene removed	%	-	<1	<1	<1	>99

Notes:
Duplicate samples separated by "/"

TABLE 4

CHEMICAL OXIDATION OF GROUNDWATER GW-4B WITH $Na_2S_2O_8$
OLD ERIE CANAL CHEMICAL OXIDATION STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Sample ID	*Units*	*Control*	*0.5% $Na_2S_2O_8$*	*1.0% $Na_2S_2O_8$*	*3.0% $Na_2S_2O_8$*
Loading Rate	g/L	0	0.4	0.8	2.4
Vinyl Chloride	µg/L	30100/22600	6510/6990	6250/6030	6050/6140
1,1-Dichloroethylene	µg/L	20.7/16.6	10.2/8.48	7.66/8.13	3.94/3.51
Trans-1,2-Dichloroethylene	µg/L	50.4/43.0	32.5/30.8	31.0/31.0	26.1/26.5
Cis-1,2-Dichloroethylene	µg/L	39400/55700	19200/29200	29600/31000	15600/22300
Trichloroethylene	µg/L	552/495	355/318	289/293	222/190
Toluene	µg/L	86.6/83.5	44.5/35.4	31.0/33.4	15.9/13.7
Ethylbenzene	µg/L	16.9/14.8	7.43/7.10	6.17/6.35	2.92/3.12
m/p-Xylene	µg/L	7.97/15.5	13.7/12.4	11.1/11.8	5.56/5.54
o-Xylene	µg/L	9.24/8.72	6.37/5.80	5.17/5.20	2.35/2.95
% Vinyl chloride removed	%	-	74.4	76.7	76.9
% 1,1-DCE removed	%	-	49.9	57.7	80.0
% Trans-1,2-DCE removed	%	-	32.2	33.6	43.7
% Cis-1,2-DCE removed	%	-	49.1	36.3	60.1
% TCE removed	%	-	35.7	44.4	60.6
% Toluene removed	%	-	53.0	62.1	82.6
% Ethylbenzene removed	%	-	54.2	60.5	80.9
% m/p-Xylene removed	%	-	<1	2.43	52.7
% o-Xylene removed	%	-	32.2	42.3	70.5

Notes:
Duplicate samples separated by "/"

TABLE 5

CHEMICAL OXIDATION OF GROUNDWATER GW-4B WITH FENTON'S REAGENT
OLD ERIE CANAL CHEMICAL OXIDATION STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Sample ID	*Units*	*Control*	*1.0% H2O2*	*5.0% H2O2*	*10.0% H2O2*
Loading Rate	g/L	0	0.8	4.0	8.0
Vinyl Chloride	µg/L	30100/22600	1350/108	29.5/79.2	ND(2)/ND (2)
1,1-Dichloroethylene	µg/L	20.7/16.6	6.24/5.92	ND(2)/ND (2)	ND(2)/ND (2)
Trans-1,2-Dichloroethylene	µg/L	50.4/43.0	7.90/5.75	1.73/2.86	ND(2)/ND (2)
Cis-1,2-Dichloroethylene	µg/L	39400/55700	6270/3440	484/773	151/408
Trichloroethylene	µg/L	552/495	126/86.2	16.8/23.3	7.18/11.6
Toluene	µg/L	86.6/83.5	7.03/4.06	ND(2)/ND (2)	ND(2)/ND (2)
Ethylbenzene	µg/L	16.9/14.8	ND(2)/ND (2)	ND(2)/ND (2)	ND(2)/ND (2)
m/p-Xylene	µg/L	7.97/15.5	ND(2)/ND (2)	ND(2)/ND (2)	ND(2)/ND (2)
o-Xylene	µg/L	9.24/8.72	ND(2)/ND (2)	ND(2)/ND (2)	ND(2)/ND (2)
% Vinyl chloride removed	%	-	97.2	99.8	>99
% 1,1-DCE removed	%	-	67.4	>99	>99
% Trans-1,2-DCE removed	%	-	85.4	95.1	>99
% Cis-1,2-DCE removed	%	-	89.8	98.7	99.4
% TCE removed	%	-	79.7	96.2	98.2
% Toluene removed	%	-	93.5	>99	>99
% Ethylbenzene removed	%	-	>99	>99	>99
% m/p-Xylene removed	%	-	>99	>99	>99
% o-Xylene removed	%	-	>99	>99	>99

Notes:
Duplicate samples separated by "/"

TABLE 6

CHEMICAL OXIDATION OF GROUNDWATER GW-6S WITH $KMnO_4$
OLD ERIE CANAL CHEMICAL OXIDATION STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Sample ID	*Units*	*Control*	*0.05% $KMnO_4$*	*0.1% $KMnO_4$*	*0.5% $KMnO_4$*	*1.0% $KMnO_4$*
Loading Rate	g/L	0	0.04	0.08	0.4	0.8
Vinyl Chloride	µg/L	14300/36900	24000/13700	16900/15900	ND(2)/ND (2)	ND(2)/ND (2)
1,1-Dichloroethylene	µg/L	11.4/11.0	11.2/8.15	10.8/11.1	4.38/ND (2)	ND(2)/ND (2)
Trans-1,2-Dichloroethylene	µg/L	32.1/43.4	23.2/18.5	15.6/16.2	ND(2)/ND (2)	ND(2)/ND (2)
Cis-1,2-Dichloroethylene	µg/L	39400/64300	39900/42800	41900/41600	3990/4100	ND(2)/ND (2)
Trichloroethylene	µg/L	8.44/10.8	14.6/8.94	9.23/7.57	4.64/4.18	ND(2)/ND (2)
Toluene	µg/L	4320/5880	4210/2780	4260/4100	4030/3580	1560/2600
Ethylbenzene	µg/L	9.96/10.7	9.51/8.74	8.92/8.67	12.5/11.4	ND(2)/ND (2)
m/p-Xylene	µg/L	56.0/60.0	74.1/71.5	68.7/71.9	72.6/71.8	24.9/24.7
o-Xylene	µg/L	13.6/14.7	17.1/16.9	15.7/16.5	16.3/16.0	4.81/4.82
% Vinyl chloride removed	%	-	26.4	35.9	>99	>99
% 1,1-DCE removed	%	-	13.6	2.23	>99	>99
% Trans-1,2-DCE removed	%	-	44.8	57.9	>99	>99
% Cis-1,2-DCE removed	%	-	20.3	19.5	92.2	>99
% TCE removed	%	-	<1	12.5	54.1	>99
% Toluene removed	%	-	31.5	18.0	25.4	59.2
% Ethylbenzene removed	%	-	11.7	14.9	<1	>99
% m/p-Xylene removed	%	-	<1	<1	<1	57.2
% o-Xylene removed	%	-	<1	<1	<1	65.9

Notes:
Duplicate samples separated by "/"

TABLE 7

CHEMICAL OXIDATION OF GROUNDWATER GW-6S WITH $Na_2S_2O_8$
OLD ERIE CANAL CHEMICAL OXIDATION STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Sample ID	*Units*	*Control*	*0.5% $Na_2S_2O_8$*	*1.0% $Na_2S_2O_8$*	*3.0% $Na_2S_2O_8$*
Loading Rate	g/L	0	0.4	0.8	2.4
Vinyl Chloride	μg/L	14300/36900	2960/3330	2170/1990	ND(2)/ND (2)
1,1-Dichloroethylene	μg/L	11.4/11.0	6.05/6.52	5.12/5.28	3.52/2.17
Trans-1,2-Dichloroethylene	μg/L	32.1/43.4	35.5/34.7	33.7/34.5	36.3/36.8
Cis-1,2-Dichloroethylene	μg/L	39400/64300	23100/23300	22100/21800	17900/16600
Trichloroethylene	μg/L	8.44/10.8	5.49/5.75	5.13/4.90	4.40/4.06
Toluene	μg/L	4320/5880	677/693	314/366	171/138
Ethylbenzene	μg/L	9.96/10.7	4.43/4.39	3.53/3.45	ND(2)/ND (2)
m/p-Xylene	μg/L	56.0/60.0	10.2/9.62	7.07/6.78	ND(2)/ND (2)
o-Xylene	μg/L	13.6/14.7	3.23/4.00	3.27/2.54	ND(2)/ND (2)
% Vinyl chloride removed	%	-	87.7	91.9	>99
% 1,1-DCE removed	%	-	43.9	53.6	74.6
% Trans-1,2-DCE removed	%	-	7.02	9.67	3.18
% Cis-1,2-DCE removed	%	-	55.3	57.7	66.7
% TCE removed	%	-	41.5	47.8	56.0
% Toluene removed	%	-	86.6	93.3	97.0
% Ethylbenzene removed	%	-	57.3	66.2	>99
% m/p-Xylene removed	%	-	82.9	88.1	>99
% o-Xylene removed	%	-	74.4	79.4	>99

Notes:
Duplicate samples separated by "/"

TABLE 8

CHEMICAL OXIDATION OF GROUNDWATER GW-6S WITH FENTON'S REAGENT
OLD ERIE CANAL CHEMICAL OXIDATION STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Sample ID	*Units*	*Control*	*1.0% H2O2*	*5.0% H2O2*	*10.0% H2O2*
Loading Rate	g/L	0	0.8	4.0	8.0
Vinyl Chloride	µg/L	14300/36900	3310/3840	423/592	296/203
1,1-Dichloroethylene	µg/L	11.4/11.0	2.88/5.34	ND(2)/ND (2)	ND(2)/ND (2)
Trans-1,2-Dichloroethylene	µg/L	32.1/43.4	6.54/8.02	ND(2)/ND (2)	ND(2)/ND (2)
Cis-1,2-Dichloroethylene	µg/L	39400/64300	8110/9020	1150/2500	2990/1580
Trichloroethylene	µg/L	8.44/10.8	3.87/2.96	ND(2)/ND (2)	ND(2)/ND (2)
Toluene	µg/L	4320/5880	650/762	70.7/93.1	102/52.3
Ethylbenzene	µg/L	9.96/10.7	3.13/3.84	ND(2)/ND (2)	ND(2)/ND (2)
m/p-Xylene	µg/L	56.0/60.0	13.5/15.7	ND(2)/ND (2)	ND(2)/ND (2)
o-Xylene	µg/L	13.6/14.7	2.92/3.49	ND(2)/ND (2)	ND(2)/ND (2)
% Vinyl chloride removed	%	-	86.0	98.0	99.0
% 1,1-DCE removed	%	-	63.3	>99	>99
% Trans-1,2-DCE removed	%	-	80.7	>99	>99
% Cis-1,2-DCE removed	%	-	83.5	96.5	95.6
% TCE removed	%	-	64.4	>99	>99
% Toluene removed	%	-	86.2	98.4	98.5
% Ethylbenzene removed	%	-	66.3	>99	>99
% m/p-Xylene removed	%	-	74.8	>99	>99
% o-Xylene removed	%	-	77.3	>99	>99

Notes:
Duplicate samples separated by "/"

TABLE 9

CHEMICAL OXIDATION OF SOIL GP-20-1 WITH $KMnO_4$
OLD ERIE CANAL CHEMICAL OXIDATION STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Sample ID	*Units*	*Control*	*0.1% $KMnO_4$*	*0.5% $KMnO_4$*	*1.0% $KMnO_4$*	*3.0% $KMnO_4$*
Loading Rate	g/kg	0	0.75	3.75	7.5	22.5
Vinyl Chloride	µg/kg	4410/6260	ND(50)/ND (50)	ND(50)/ND (50)	407/ND (50)	7290/4210
1,1-Dichloroethylene	µg/kg	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)
Trans-1,2-Dichloroethylene	µg/kg	23.4/57.6	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)
Cis-1,2-Dichloroethylene	µg/kg	27400/26900	670/1010	9450/10800	2310/467	19600/15800
Trichloroethylene	µg/kg	1810/1700	657/952	2530/3090	868/296	3370/1440
Toluene	µg/kg	9480/9320	2520/3230	8180/15600	10300/2600	41000/33100
Ethylbenzene	µg/kg	174/157	101/134	123/238	127/73.4	347/243
m/p-Xylene	µg/kg	1170/965	606/861	676/1260	1080/425	2870/2110
o-Xylene	µg/kg	299/273	124/135	161/289	269/96.6	1060/960
% Vinyl chloride removed	%	-	>99	>99	>99	<1
% 1,1-DCE removed	%	-	n/a	n/a	n/a	n/a
% Trans-1,2-DCE removed	%	-	>99	>99	>99	>99
% Cis-1,2-DCE removed	%	-	96.9	62.7	94.9	34.8
% TCE removed	%	-	54.2	<1	66.8	<1
% Toluene removed	%	-	69.4	<1	31.4	<1
% Ethylbenzene removed	%	-	28.7	<1	39.2	<1
% m/p-Xylene removed	%	-	31.3	9.3	29.5	<1
% o-Xylene removed	%	-	54.6	21.3	36.1	<1

Notes:
Duplicate samples separated by "/"
n/a Compound not present in control samples

TABLE 10

CHEMICAL OXIDATION OF SOIL GP-20-1 WITH $Na_2S_2O_8$
OLD ERIE CANAL CHEMICAL OXIDATION STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Sample ID	*Units*	*Control*	*1.0% $Na_2S_2O_8$*	*3.0% $Na_2S_2O_8$*	*5.0% $Na_2S_2O_8$*
Loading Rate	g/kg	0	7.5	22.5	37.5
Vinyl Chloride	µg/kg	4410/6260	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)
1,1-Dichloroethylene	µg/kg	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)
Trans-1,2-Dichloroethylene	µg/kg	23.4/57.6	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)
Cis-1,2-Dichloroethylene	µg/kg	27400/26900	682/127	254/2520	814/205
Trichloroethylene	µg/kg	1810/1700	577/236	327/1380	644/290
Toluene	µg/kg	9480/9320	2090/319	760/4950	2470/379
Ethylbenzene	µg/kg	174/157	70.2/ND (50)	58.9/114	81.9/62.8
m/p-Xylene	µg/kg	1170/965	284/166	177.3/580	320/231
o-Xylene	µg/kg	299/273	74.3/59.2	56/148	77.1/54.2
% Vinyl chloride removed	%	-	>99	>99	>99
% 1,1-DCE removed	%	-	n/a	n/a	n/a
% Trans-1,2-DCE removed	%	-	>99	>99	>99
% Cis-1,2-DCE removed	%	-	98.5	94.9	98.1
% TCE removed	%	-	76.8	51.4	73.4
% Toluene removed	%	-	87.2	69.6	84.8
% Ethylbenzene removed	%	-	>99	47.5	56.2
% m/p-Xylene removed	%	-	78.9	64.5	74.2
% o-Xylene removed	%	-	76.7	64.3	77.1

Notes:
Duplicate samples separated by "/"
n/a Compound not present in control samples

TABLE 11

CHEMICAL OXIDATION OF SOIL GP-20-1 WITH FENTON'S REAGENT
OLD ERIE CANAL CHEMICAL OXIDATION STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Sample ID	*Units*	*Control*	*5.0% H2O2*	*15.0% H2O2*	*30.0% H2O2*
Loading Rate	g/kg	0	37.5	112.5	225
Vinyl Chloride	µg/kg	4410/6260	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)
1,1-Dichloroethylene	µg/kg	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)
Trans-1,2-Dichloroethylene	µg/kg	23.4/57.6	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)
Cis-1,2-Dichloroethylene	µg/kg	27400/26900	2290/216	1090/1980	1680/1220
Trichloroethylene	µg/kg	1810/1700	941/511	838/737	780/662
Toluene	µg/kg	9480/9320	4700/791	1860/1930	1700/1010
Ethylbenzene	µg/kg	174/157	104/78.8	67.8/66.9	64.0/ND (50)
m/p-Xylene	µg/kg	1170/965	455/381	212/210	182/153
o-Xylene	µg/kg	299/273	121/73.6	58.1/64.1	56.5/47.4
% Vinyl chloride removed	%	-	>99	>99	>99
% 1,1-DCE removed	%	-	n/a	n/a	n/a
% Trans-1,2-DCE removed	%	-	>99	>99	>99
% Cis-1,2-DCE removed	%	-	95.4	94.3	94.7
% TCE removed	%	-	58.6	55.1	58.9
% Toluene removed	%	-	70.8	79.8	85.6
% Ethylbenzene removed	%	-	44.6	59.2	>99
% m/p-Xylene removed	%	-	60.9	80.2	84.3
% o-Xylene removed	%	-	66.0	78.6	81.8

Notes:
Duplicate samples separated by "/"
n/a Compound not present in control samples

TABLE 12

CHEMICAL OXIDATION OF SOIL GP-25-1 WITH $KMnO_4$
OLD ERIE CANAL CHEMICAL OXIDATION STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Sample ID	*Units*	*Control*	*0.1% $KMnO_4$*	*0.5% $KMnO_4$*	*1.0% $KMnO_4$*	*3.0% $KMnO_4$*
Loading Rate	g/kg	0	0.75	3.75	7.5	22.5
Vinyl Chloride	µg/kg	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)
1,1-Dichloroethylene	µg/kg	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)
Trans-1,2-Dichloroethylene	µg/kg	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)
Cis-1,2-Dichloroethylene	µg/kg	3500/8430	429/202	467/364	218/40	608/388
Trichloroethylene	µg/kg	3180/25410	738/1880	1060/1090	659/213	1450/980
Toluene	µg/kg	267/359	285/488	218/138	257/114	290/165
Ethylbenzene	µg/kg	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)
m/p-Xylene	µg/kg	49.9/69.7	120/197	85.3/81.9	94.6/65.2	88.6/66.4
o-Xylene	µg/kg	25.0/26.5	40.8/48.8	40.2/42.8	43.2/39.8	40.2/39.6
% Vinyl chloride removed	%	-	n/a	n/a	n/a	n/a
% 1,1-DCE removed	%	-	n/a	n/a	n/a	n/a
% Trans-1,2-DCE removed	%	-	n/a	n/a	n/a	n/a
% Cis-1,2-DCE removed	%	-	94.7	93.0	97.8	91.6
% TCE removed	%	-	90.8	92.5	96.9	91.5
% Toluene removed	%	-	<1	43.1	40.7	27.3
% Ethylbenzene removed	%	-	n/a	n/a	n/a	n/a
% m/p-Xylene removed	%	-	<1	<1	<1	<1
% o-Xylene removed	%	-	<1	<1	<1	<1

Notes:
Duplicate samples separated by "/"
n/a Compound not present in control samples

TABLE 13

CHEMICAL OXIDATION OF SOIL GP-25-1 WITH $Na_2S_2O_8$
OLD ERIE CANAL CHEMICAL OXIDATION STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Sample ID	*Units*	*Control*	*1.0% $Na_2S_2O_8$*	*3.0% $Na_2S_2O_8$*	*5.0% $Na_2S_2O_8$*
Loading Rate	g/kg	0	7.5	22.5	37.5
Vinyl Chloride	µg/kg	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)
1,1-Dichloroethylene	µg/kg	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)
Trans-1,2-Dichloroethylene	µg/kg	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)
Cis-1,2-Dichloroethylene	µg/kg	3500/8430	580/49.3	63.0/341	201/1140
Trichloroethylene	µg/kg	3180/25410	1420/389	141/1060	513/2720
Toluene	µg/kg	267/359	183/111	94.5/195	108/367
Ethylbenzene	µg/kg	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)
m/p-Xylene	µg/kg	49.9/69.7	81.3/98.6	73.5/70.6	71.6/89.8
o-Xylene	µg/kg	25.0/26.5	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)
% Vinyl chloride removed	%	-	n/a	n/a	n/a
% 1,1-DCE removed	%	-	n/a	n/a	n/a
% Trans-1,2-DCE removed	%	-	n/a	n/a	n/a
% Cis-1,2-DCE removed	%	-	94.7	96.6	88.8
% TCE removed	%	-	68.2	78.9	43.2
% Toluene removed	%	-	53.1	53.8	24.2
% Ethylbenzene removed	%	-	n/a	n/a	n/a
% m/p-Xylene removed	%	-	<1	<1	<1
% o-Xylene removed	%	-	>99	>99	>99

Notes:
Duplicate samples separated by "/"
n/a Compound not present in control samples

TABLE 14

CHEMICAL OXIDATION OF SOIL GP-25-1 WITH FENTON'S REAGENT
OLD ERIE CANAL CHEMICAL OXIDATION STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Sample ID	*Units*	*Control*	*5.0% H2O2*	*15.0% H2O2*	*30.0% H2O2*
Loading Rate	g/kg	0	37.5	112.5	225
Vinyl Chloride	µg/kg	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)
1,1-Dichloroethylene	µg/kg	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)
Trans-1,2-Dichloroethylene	µg/kg	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)
Cis-1,2-Dichloroethylene	µg/kg	3500/8430	89.3/233	1190/1140	872/1000
Trichloroethylene	µg/kg	3180/25410	672/525	1230/537	704/791
Toluene	µg/kg	267/359	207/317	1390/377	1010/1090
Ethylbenzene	µg/kg	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)	ND(50)/ND (50)
m/p-Xylene	µg/kg	49.9/69.7	115/110	159/114	139/138
o-Xylene	µg/kg	25.0/26.5	40.7/39.9	50.9/46.0	49.5/47.9
% Vinyl chloride removed	%	-	n/a	n/a	n/a
% 1,1-DCE removed	%	-	n/a	n/a	n/a
% Trans-1,2-DCE removed	%	-	n/a	n/a	n/a
% Cis-1,2-DCE removed	%	-	97.3	80.5	84.3
% TCE removed	%	-	79.0	69.0	73.7
% Toluene removed	%	-	16.3	<1	<1
% Ethylbenzene removed	%	-	n/a	n/a	n/a
% m/p-Xylene removed	%	-	<1	<1	<1
% o-Xylene removed	%	-	<1	<1	<1

Notes:
Duplicate samples separated by "/"
n/a Compound not present in control samples

TABLE 15

ANALYSIS OF NATURAL OXIDANT DEMAND
OLD ERIE CANAL CHEMICAL OXIDATION STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Parameters	*Units*	*Soil*					*Groundwater*	
		GP-16-1	*GP-20-1*	*GP-25-1*	*GP-32-1*	*GP-36-1*	*GW-6S*	*GW-4B*
Permanganate concentration at T=0	%	1.39	1.55	1.36	1.65	2.19	1.64	1.62
Permanganate concentration at T=1 week	%	0.0842	1.09	0.121	1.34	2.00	1.30	1.31
Permanganate concentration at T=2 weeks	%	ND (0.000255)	1.04	ND (0.000255)	1.29	1.97	1.51	1.55
Permanganate concentration at T=3 weeks	%	0.0253	0.637	0.0853	0.789	1.24	0.968	1.00
Permanganate concentration at T=4 weeks	%	ND (0.000255)	0.610	ND (0.000255)	0.757	1.21	0.959	0.993
Permanganate concentration at T=5 weeks	%	0.00190	0.59	0.000437	0.704	1.20	0.894	0.961
Amount of Permanganate Added at T=0	g	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Amount of Permanganate Added after T=2 w	g	0.25	0	0.50	0	0	0	0
Amount of Permanganate Added after T=4 w	g	0.25	0	0.25	0	0	0	0
Total Permanganate Added	g	1.5	1.0	1.75	1	1	1	1
Amount of permanganate consumed by NOD per kg of soil after 5 weeks	g/kg	41.6	19.2	47.5	18.9	19.7		
Amount of permanganate consumed by NOD per L of groundwater after 5 weeks	g/L						7.5	6.6

Notes:
g Grams.
g/kg Grams per Kilogram.
g/L Grams per Liter.

APPENDIX D

MONITORED NATURAL ATTENUATION EVALUATION

TABLE OF CONTENTS

Page

<u>LIST OF FIGURES</u>
(Following Appendix D)

LIST OF TABLES
(Following Appendix D)

1.0 INTRODUCTION

An evaluation of Monitored Natural Attenuation (MNA) as a remedial alternative was conducted for the Old Erie Canal Site located in Clyde, New York (Site). The evaluation was conducted on behalf of Parker-Hannifin Corporation (P-H) and the General Electric Company (GE) in association with the performance of the Feasibility Study for the Site. The MNA evaluation was completed to determine the subsurface geochemical conditions and evaluate the significance of biodegradation of chlorinated volatile organic compounds (CVOCs) in groundwater at and in the vicinity of the Site as a result of naturally occurring biological activity. The findings were utilized to support the conclusions of the Feasibility Study (FS) and selection of remedial technologies.

The MNA evaluation was performed in accordance with the protocols outlined in the United States Environmental Protection Agency (USEPA) documents entitled *"Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites"* (USEPA OSWER Directive 9200.4-17P, April 1999) and *"Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water"*, (USEPA, September 1998).

This report presents the results of the MNA evaluation.

2.0 GEOLOGY AND HYDROGEOLOGY

Detailed descriptions of the Site geology and hydrogeology are presented in Section 3.1 of the FS. For ease of review, a summary of the key points pertaining to this MNA evaluation are presented in this section.

2.1 SITE GEOLOGY

The Site is located on the Lake Ontario plain within the Finger Lakes physiographic region of New York State. The soils at the Site consist of the following in descending order:

i) fill

ii) glaciofluvial deposits;

iii) glacial till; and

iv) bedrock.

Fill

Fill material is present across the majority of the Site, including on the property owned by the Village of Clyde located west of the P-H property. Fill thicknesses range up to 12 feet east of the manufacturing building. The fill on the P-H property is not contiguous with the fill on the Village of Clyde property.

The Site fill generally consists of sand, gravel, and silt mixed with cinders, ash, slag, brick, and glass. The volumes of fill are greatest in the Old Erie Canal along the southern Site boundary, along the eastern portion of the former Barge Turnaround, and in the vicinity of the manufacturing building.

Glaciofluvial Deposits

Glaciofluvial deposits consisting of channel silt, sand and gravel, sand, and gravel are present across the majority of the Site. Where the till is absent in the channel near the former Barge Turnaround, the glaciofluvial deposits directly overlie the bedrock. The maximum observed thickness of the glaciofluvial deposits is 23 feet at boring GP-36 located in the southern portion of the Site. The thickness of the glaciofluvial deposits is less east of the manufacturing building and in the southeast parking lot than it is in the center of the Site. Interbedded silt and clay, referred to in the Remedial Investigation

(RI) report as "backswamp deposits," is present overlying the channel materials in the former Barge Turnaround area.

Glacial Till

The till beneath the Site is a Lodgment Till consisting of a poorly sorted mixture of red-brown clayey silt with some coarse to fine sand and little gravel. The till is present across the majority of the Site, ranging in thickness between 3.5 and 27.2 feet. The till is thickest at MW-7B, west of the former Barge Turnaround. As shown on the cross-sections, the till is thin or absent along an apparent channel in the vicinity of the former Barge Turnaround. Where present, the till acts as an aquitard separating the fill and glaciofluvial deposits from the bedrock unit.

Bedrock

The bedrock beneath the Site consists of shale and dolomitic limestone of the Late Silurian Syracuse-Camillus Formation. Based on the lithologic descriptions of the bedrock cores presented in the RI Report, the bedrock is gray to dark greenish-gray, fine-grained, moderately fractured shale and thinly bedded gray dolomitic limestone which is also moderately fractured.

During the Site investigations, the bedrock was encountered at depths ranging between 16.5 and 31 feet below grade. The bedrock surface generally slopes with a uniform gradient from the northeast to the southwest.

2.2 SITE HYDROGEOLOGY

The geologic units identified in the previous section were grouped into two major hydrogeologic units as follows:

- shallow unconsolidated unit; and
- shallow bedrock unit.

Each of these hydrogeologic units is described below.

Shallow Unconsolidated Unit

The shallow unconsolidated unit consists of the fill and glaciofluvial geologic units. This unit ranges in thickness from 1.0 to 29.2 feet, and is thickest within the glacial channel west of the facility. Based on testing conducted during the Site investigations, the hydraulic conductivity ranges from 0.33 feet per day (ft/day) (MW-9S) to 38.12 ft/day (TMW-2). The geometric mean hydraulic conductivity was determined to be 4.75 ft/day.

Water level measurements were collected during the Site investigations on five occasions. The general pattern of groundwater flow exhibited by the five sets of groundwater contours was consistent. The glacial channel acts as a local groundwater drainage point where groundwater flow from the east, north, and west converges. Groundwater flow from the east and central portions of the facility is westward towards the gravel-filled channel. Groundwater flow from the remainder of the facility is southward, directly to the Clyde River. The horizontal hydraulic gradients within the shallow unconsolidated unit are variable. In general, steeper gradients (i.e., on the order of 0.02 feet per feet [ft/ft]) occur at the limits of the glacial channel. Within the channel, the hydraulic gradients are much smaller, due to the fact that the unit here consists principally of glaciofluvial sand and gravel.

The groundwater flow volume that flows into the glacial channel was estimated using the units hydraulic conductivity and hydraulic gradient. The flow into the channel was divided into three components (east, north, and west) based on the August 3, 2004 groundwater contours. The calculations show that the total groundwater flow into the channel is on the order of 1500 ft^3/day (8 gpm).

Over most of the Site, the shallow unconsolidated unit is separated from the shallow bedrock unit by a low hydraulic conductivity, dense glacial till. The only area where the till is thin or absent occurs within the glacial channel. Within the facility property, vertical hydraulic gradients are downward from the shallow unconsolidated unit to the shallow bedrock unit. This indicates a potential from groundwater migration from the unconsolidated unit to the bedrock. The intervening till unit mitigates this potential groundwater flow is path. There is a potential connection between the unconsolidated unit and the bedrock along the axis of the glacial channel. This connection is manifested by the presence of Site-related chemicals in the bedrock monitoring well MW-6B.

The groundwater contours and surface water measurements collected confirm that the groundwater in the unconsolidated unit discharges to the Clyde River. There is also a small potential for shallow groundwater to migrate to the shallow bedrock, where the till is absent.

Shallow Bedrock Unit

The shallow bedrock unit is part of the Syracuse-Camillus Formation and consists of interbedded shale and limestone. Groundwater flow in this unit will occur principally through secondary porosity features (e.g., bedding plane fractures and joints). The hydraulic conductivity of the shallow bedrock is directly related to the frequency and degree of interconnection of the secondary porosity features. The geometric mean hydraulic conductivity of the shallow bedrock unit, based on testing conducted during the Site investigations, is 0.05 ft/day. The bedrock unit is much less permeable than the shallow unconsolidated unit.

Groundwater flow in the shallow bedrock beneath the Site is southwesterly. The data collected from the bedrock monitoring wells located south of the river suggests that flow from the south is to the northeast.

2.3 GROUNDWATER MIGRATION PATHWAYS AND RECEPTORS

An important aspect of the FS MNA evaluation is to include consideration of the current and future receptors of chemicals of concern in the groundwater. The details of the groundwater migration pathways and receptors are presented in Section 3.3 of the FS. For ease of review, the key findings of the groundwater migration pathways and receptors evaluation are repeated below.

- The Site and the Town of Clyde are serviced by a municipal water supply, the source of which is a well located more than a mile northwest of the Site. Thus, the Site cannot impact the source water.
- Given the availability of the municipal water supply system, there is little probability of the future use of groundwater for potable purpose at the Site. The future use of groundwater on the Site can be restricted through deed restrictions preventing future use of groundwater beneath the properties.
- An inventory of residential wells conducted during the RI noted that there were seven wells within a 1/2-mile radius of the Site. Four of these seven wells are not currently used for potable purposes, and the homes are supplied by the municipal

system. The three wells used as potable water supply are located north and west of the Site. Thus, there are no current users of groundwater downgradient of the Site.

- There are currently no regional restrictions on the use of groundwater for potable or other water needs. Therefore, there is potential for future use of groundwater as a water supply in areas downgradient of the Site.
- The primary receptors of CVOCs in the shallow unconsolidated unit groundwater are:
  - the Clyde River;
  - the Shallow Bedrock; and
  - ambient and indoor air.

The flow of shallow groundwater toward the Clyde River in effect limits the migration of chemicals in groundwater (i.e., the extent of chemical presence is mature and cannot expand further). Also, chemical migration in the bedrock is limited. There are no current groundwater users at risk and the potential for future use of groundwater on the Site is limited.

3.0 OVERVIEW OF BIODEGRADATION

Important naturally occurring processes in groundwater are biologically mediated oxidation and reduction reactions. Naturally occurring reductive dechlorination (also called reductive biodegradation) is a biologically mediated degradation process that is effective for the destruction of CVOCs. Reductive dechlorination can result in the complete reduction of trichloroethene (TCE) through dichloroethene (DCE) and vinyl chloride (VC) to non-toxic end products such as ethane and ethene, provided sufficient primary substrate (organic carbon) is available.

Reductive biodegradation involves microbes that utilize carbon from an organic compound (the substrate) for microbial cell growth. As part of the biodegradation process, electrons are transferred from the organic substrate (electron donor) to an available electron acceptor. This transfer of electrons is defined as an oxidation-reduction (redox) reaction. Energy derived from this transfer of electrons is utilized by soil microorganisms for cellular respiration.

Reductive biodegradation will only occur if suitable quantities of the organic substrate and electron acceptors are available for the necessary redox reactions. Certain forms of organic matter; such as naturally existing organic matter, fuel hydrocarbons, and landfill leachate, are readily utilized as primary growth substrates during microbial biodegradation. The biodegradation of a primary substrate often will result in the cometabolic biodegradation of a secondary substrate, an organic compound that does not undergo direct biodegradation but is fortuitously degraded as a secondary reaction.

Typical electron acceptors available in groundwater, in the order of those that release the greatest energy to those that release the least energy, are dissolved oxygen, nitrate, manganese and iron coatings on soil, dissolved sulfate, and carbon dioxide. The sequential use of these electron acceptors occurs as groundwater redox potential becomes increasingly reducing during the biodegradation of organic compounds.

When groundwater becomes depleted of dissolved oxygen and nitrate, the conditions are conducive to the reduction and subsequent dissolution of iron and manganese oxides. Ferric iron (Fe^{3+}) typically exists as an oxide coating on soil and is relatively insoluble in groundwater. Ferric iron is used as an electron acceptor during microbial biodegradation where it is reduced to Fe^{2+}, which exists primarily in the dissolved phase. Manganese oxides are similarly utilized as electron acceptors under the appropriate redox conditions, and are reduced from the relatively insoluble Mn^{4+} form to dissolved manganese (Mn^{2+}). The mobilization of manganese will begin prior to that of iron because Mn^{2+} is stable over a larger range of redox conditions than Fe^{2+}.

However, the concentration of dissolved iron in groundwater is often higher than that of manganese because soils typically consist of a higher iron content (Hem 1985). Increased concentrations of dissolved iron in groundwater are indicative of sufficiently reducing conditions for the reductive dechlorination of CVOCs. Reductive degradation of CVOCs can proceed under iron-reducing conditions, but is most effective under sulfate-reducing and methanogenic conditions. Under sulfate-reducing conditions, sulfate concentrations decrease as sulfate is transformed to sulfide. Under methanogenic conditions, carbon dioxide is used as the electron acceptor and methane is produced. Methanogenic conditions represent the most strongly reduced subsurface conditions and are most optimal for reductive dechlorination. Changes in the concentrations of the geochemical parameters listed above can be used as evidence of changes in biological activity in the groundwater.

Other processes that can control CVOC concentrations in groundwater include:

i) dispersion – lateral movement of compounds perpendicular to groundwater flow and the centerline of the source;

ii) diffusion – movement of dissolved compounds within the aquifer from a region of higher to regions of lower concentration;

iii) dilution - mixing of groundwater along the flow path;

iv) adsorption – binding of a compound to aquifer soil material; and

v) volatilization – mass transfer from the dissolved phase to the vapor phase in the vadose zone.

4.0 SITE-SPECIFIC BIODEGRADATION EVALUATION

4.1 DATA COLLECTED

Groundwater samples collected in June 2002, May 2003, August 2005, and November 2006 were analyzed for the following MNA parameters:

- volatile organic compounds (VOCs);
- dissolved gases (methane, ethane and ethene);
- total alkalinity;
- chloride;
- dissolved organic carbon (DOC);
- nitrate;
- sulfate; and
- sulfide.

Groundwater samples were collected by conventional purge and sample techniques or, for VOCs only, using Passive Diffusion Bags (PDBs). These groundwater chemistry results are useful in evaluating if groundwater conditions are favorable for biological activity and to determine if biodegradation indicators are present.

Each of the monitoring wells used in the MNA evaluation was purged of three well volumes and allowed to recover prior to collection of samples using conventional methods. Following purging, the following field parameters were measured using field instruments:

i) temperature;
ii) dissolved oxygen (DO);
iii) oxidation-reduction potential (ORP);
iv) hydrogen ion activity (pH);
v) dissolved iron; and
vi) turbidity.

Analytical results collected during the MNA evaluation are presented in the FS tables as follows:

i) Table 3.1 - VOC groundwater analytical results; and

ii) Table 3.6 - wet chemistry (i.e., geochemical parameters) groundwater analytical results (including geochemical, dissolved gas, and field parameters).

4.2 MNA EVALUATION METHODOLOGY

During the MNA evaluation groundwater samples were collected and analyzed and the results were evaluated for the following evidence or indicators of natural biological activity in groundwater:

i) CVOC concentrations over time and space;

ii) geochemical parameters that indicate strong reducing conditions;

iii) presence of CVOC daughter products; and

iv) microbial evidence of biodegradation potential.

CVOC Concentrations Over Time and Space

Evaluation of CVOC concentrations over time provides information regarding relative increases, steady state or decreases in CVOCs that result from both destructive and non-destructive natural attenuation processes over time. Four rounds of CVOC data were collected between June 2002 and November 2006 Most of the CVOC data was collected using low-flow sampling techniques. However, the 2003 round of CVOC data was collected using passive bag samplers. In general, there was not good correlation between the low flow and passive bag CVOC results, probably due to the discrete nature of the passive bag samples. Therefore the passive bag samples could not be used to evaluate CVOC concentrations over time.

CVOC concentrations over time are presented for six wells on Figures -17 through 22. These wells are MW-1S, MW-4S, MW-6S, MW-7S, EMW-2, and MW-4B. The graphs typically contain four points spread over 5 years, which is not sufficient to determine the statistical significance of any observed trends. However, the number of points and time period is sufficient to provide a general measure of the stability of the contaminant levels at the Site.

In cases where data such as these are lacking, microcosm studies are recommended to provide supplemental information for MNA evaluation (USEPA 1998). Microcosm studies were completed for the Site. The results of the microcosm studies are presented in Appendix B of the FS and are discussed further in this MNA evaluation.

The spatial distribution of samples collected between June 2002 and November 2006 includes background monitoring wells, source area wells, lateral wells and downgradient wells. This provides a general picture of the baseline CVOC distribution, which has resulted from the combined actions of the physical, chemical and biological factors that govern CVOC fate and transport in the subsurface.

<u>Groundwater Geochemical Parameters that Indicate Reducing Conditions</u>

The evaluation of redox indicators was conducted to determine whether conditions in the aquifer are conducive to biodegradation of TCE. This also involves evaluation of other geochemical parameters that are indicative of biodegradation processes, such as the presence of degradation and metabolic byproducts. In order for TCE to be used as an electron acceptor by the microorganisms in the subsurface, the concentrations of more energetically favorable electron acceptors (e.g., oxygen, nitrate) must be depleted. The optimal range for reductive degradation of CVOCs is sulfate-reducing and methanogenic, although, in general, "sufficiently reducing" means that conditions in the aquifer must be in the iron-reducing range.

The following conditions are indicative of iron-reducing conditions (after Wiedemeier et al., 1999):

i) DO concentrations below 0.5 milligrams per liter (mg/L);

ii) nitrate concentrations below 10 mg/L;

iii) dissolved iron and manganese concentrations above 1 mg/L;

iv) decreased sulfate and increased sulfide concentrations relative to background conditions; and

v) ORP values below 50 mV.

Under these conditions, iron and manganese oxide coatings on soil grains are reduced, releasing dissolved iron and dissolved manganese into the groundwater. Sulfate in the groundwater is likewise reduced, the concentrations of sulfate decrease, and the concentrations of sulfide increase.

Additionally, if significant biodegradation is occurring, the alkalinity and the concentrations of chloride, calcium, magnesium, and hardness could be higher in the source area relative to concentrations in upgradient wells. Chloride is produced from the degradation of TCE and its daughter products, and the increase in alkalinity is due to interactions of carbon dioxide with the aquifer material (Wiedemeier et al., 1999). The increases in calcium, magnesium, and hardness may indicate dissolution of carbonate minerals from the reaction with acids formed in the biodegradation of TCE.

Background wells are considered representative of conditions not affected by Site activities. Background conditions are represented by overburden monitoring well MW-2S and bedrock monitoring well MW-2B, which are located at the eastern boundary of the Site, adjacent to Elm Street. Groundwater samples collected from the background wells and from the wells within the source area were analyzed for DO, nitrate, dissolved iron, sulfate, methane, chloride, and total alkalinity. The results from each area were compared to determine if concentrations of each analyte within the source area are significantly greater than concentrations observed in the background wells.

<u>Presence of CVOC Daughter Products</u>

TCE is presumed to be the parent compound originally used at the site. The progress of reductive dechlorination can be readily assessed by comparing the prevalence of parent compound to daughter product (e.g. DCE, VC, ethene, and ethane) present in the subsurface at the site.

There are three DCE isomers: 1,1-DCE, cis-1,2-DCE (cDCE), and trans-1,2-DCE (tDCE). When DCE is produced through biodegradation of TCE, the production of the cDCE isomer is favored over tDCE and 1,1-DCE (Wiedemeier et al. 1999; and USEPA 1998). Therefore, if cDCE is the most abundant isomer (80 percent of total mass), then it can be assumed that the DCE was produced via anaerobic biodegradation.

<u>Microbial Evidence of Biodegradation Potential</u>

Additionally, a laboratory microcosm Study was conducted by GE (Microcosm Study Report GE, July 2004) to determine whether TCE and its degradation products could be completely degraded to ethene via natural reductive biodegradation at the Site. Microcosm experiments were conducted using soil from the Site and the ability of different organic carbon sources (i.e., lactate, ethanol, chitin and soybean oil) to support the reductive dechlorination of TCE was evaluated. Controls were also constructed to measure the natural (unamended) rate of biodegradation. Nutrients and/or supplemental bacterial culture were also added to several of the microcosm bottles to determine if their addition would be required to enhance natural reductive biodegradations.

Estimation of Mass Destroyed by Biodegradation

In some situations it is possible to do a mass balance to estimate the total amount of TCE destroyed due to biodegradation processes. To do the calculation, it is necessary to be able to measure a conservative end product of biodegradation and know the groundwater flux through the reactive zone. Both conditions are satisfied at this Site. In this case, chloride appears to be a reliable end product of the reductive dechlorination of TCE. In addition, the groundwater flow volume that flows into the glacial channel was estimated using the unit's hydraulic conductivity and hydraulic gradient. The calculations show that the total groundwater flow into the channel is on the order of 1500 ft^3/day (8 gpm).

5.0 MNA EVALUATION FINDINGS

5.1 CVOC CONCENTRATIONS OVER SPACE AND TIME

The spatial distribution of VOCs at the site is presented on Figures 1 to 5, inclusive. These Figures show the distribution of TCE, cDCE, VC, and benzene, toluene, ethylbenzene, and xylene (BTEX) across the site, utilizing 2002/2003 data from groundwater monitoring well and geoprobe sampling events and 2005 data from soil borings performed underneath the manufacturing building. The data were obtained from both overburden and bedrock locations. The spatial distribution of ethene and ethane are shown on Figure 5. These data were only collected in monitoring wells during the 2002/2003 sampling events, so the number of points is significantly fewer than for the VOCs.

Groundwater flow in the overburden aquifer ranges from a south-southwesterly to westerly direction. Figures 1 to 4 shows that VOCs were generally not detected in the overburden or bedrock wells upgradient or side-gradient from the Site. The concentrations of TCE, cDCE, VC, and ethane/ethene were highest in the barge turnaround area, with more isolated hotspots present underneath the building. Concentrations of BTEX compounds were roughly an order of magnitude lower than the chlorinated VOCs and were highest in the barge turnaround area. No VOCs were observed in the bedrock monitoring wells located across the Clyde River.

The spatial distribution of the CVOCs in the overburden and bedrock aquifer as shown on Figures 1 to 4 is consistent with the conclusion that the aquifer VOCs expansion is limited by ongoing natural attenuation and discharge to the Clyde River. This is evident by the absence of VOCs in the monitoring wells located across the Clyde River. There are no current groundwater users at risk.

CVOC concentrations over time are presented for six wells on Figures -17 through 22. These wells are MW-1S, MW-4S, MW-6S, MW-7S, EMW-2, and MW-4B. In general, CVOC concentrations in the wells are stable and in some cases appear to be declining over time. Concentrations are highest in MW-1S, MW-6S, and MW-4B. Of these, concentrations in MW-1S and MW-4B are stable, while concentrations in MW-6S exhibit some variability. MW-6S is located in the center of the barge turnaround area, where CVOC concentrations are highest. Wells MW-7S and EMW-2 are located on the sides of the barge turnaround in lower concentration areas. While the data are too sparse to infer statistical significance, the CVOC concentrations appear to be declining over time in these areas. A similar CVOC trend is observed in well MW-4S, located at the downgradient edge of the barge turnaround area.

5.2 GROUNDWATER GEOCHEMICAL PARAMETERS

The following sections describe the evaluation of the geochemical conditions in and downgradient of the Site for evidence of natural biodegradation. Groundwater samples were collected for geochemical indicator parameters from monitoring wells upgradient, within and downgradient of the Site during sampling events in both 2002 and 2003. The results were very comparable. These are presented on Figures 9 to 16 for DO, ORP, dissolved iron, sulfate, methane, alkalinity, and dissolved organic carbon, respectively. As was the case previously, data from overburden and bedrock wells are combined in these analyses.

5.2.1 REDOX INDICATOR PARAMETERS

The data for DO and ORP are shown on Figures 9 and 10 and indicate that most of the groundwater at the Site is reduced, as indicated by low (<0.5 mg/L) DO and neutral or negative ORP values. The reduction appears to be strongest in the barge turnaround area, but is generally consistent throughout the site. There are a few locations on the Site where the DO and ORP data do not agree. These include wells MW-1S, MW-7S, MW-12S, and MW-12B. These disagreements can occur due to sampling errors or equipment problems with the DO and ORP probes used to take the measurements. In these cases it can be helpful to consult the dissolved iron data. If dissolved iron is present, the groundwater must be anaerobic. Using this criterion, it is safe to say that the groundwater found in most of these wells is reduced.

Nitrate did not appear in any monitoring wells on the site and so was not included in the figures. Dissolved iron in shown on Figure 11 and is present in all on-Site monitoring wells except well MW-1S, indicating the iron reduction was occurring. Iron concentrations are highest in the barge turn-around area and along the former Erie Canal. The sulfate concentrations are shown on Figure 12 and are clearly higher in the bedrock wells than in the overburden wells. Sulfate appears to be reduced in the groundwater in the barge turnaround area and along the former canal relative to other overburden wells on the Site, suggesting that sulfate reduction is occurring. Sulfate levels in bedrock well MW-4B also appears to be reduced relative to other bedrock wells, but it is difficult to determine if these differences are significant. The methane data is shown on Figure 13 and indicate methanogenic conditions are prevalent in the overburden in the barge turnaround area and along the former canal, particularly in the vicinity of monitoring wells EMW-2, MW-6, EMW-4, EMW-3, and EMW-5. Methane production at bedrock well MW-4B is also substantial. The presence of methane indicates that groundwater conditions are strongly reduced and highly supportive of reductive dechlorination in those areas.

Chloride data is shown on Figure 14 and indicate there are elevated levels of chloride over background in the barge turnaround area, particularly at monitoring wells MW-6S and MW-4B. These concentrations range from 200-300 mg/L and are substantially higher than chloride concentrations in monitoring wells outside of this area, which range from 30-90 mg/L. Chloride is an end-product of reductive dechlorination. The correlation of high chloride concentrations with active biodegradation in the barge turnaround area suggests that reductive dechlorination of TCE and its daughter products is the source of the elevated chloride.

This correlation is strengthened when the chloride data is combined with sodium data. The most common non-biological source of free chloride is road salt. However, if this is the source of the chloride in the aquifer, the molar chloride to sodium ratio should be 1:1. The sodium and chloride balances were performed for all on-site monitoring wells with sodium and chloride concentrations greater than 10 mg/L. The results were tabulated using data from 2002 and 2003 in Table D.1 and using the November 2006 data in Table D.2. There is very good agreement between the two data sets.

The only monitoring wells on site that exhibit significant amounts of excess chloride are those in the bioactive area of the barge turnaround area. This includes MW-1S and MW-13S, which are upgradient of the bioactive zone, MW-6S, which is right in the center of the bioactive zone, MW-15S, which is downgradient in the bioactive zone, and MW-4B and MW-6B, which are in bedrock in the center and downgradient edge of the bioactive zone. The more limited excess chloride in MW-4B and MW-6B should be viewed in the context of the other on-site bedrock wells, which exhibit substantial deficits of chloride. This suggests there may be some natural source of sodium in the bedrock formation.

The sodium and chloride concentrations in well MW-8S is reflective of road salt, where the sodium and chloride concentrations are almost perfectly in balance. Given the high degree of transformation of TCE observed in the bioactive zone, the excess chloride observed there is most certainly derived from biological breakdown of TCE and its daughter products.

TABLE D.1

SODIUM AND CHLORIDE BALANCE AT OLD ERIE CANAL SITE (2002-2003 DATA)

Well ID	*Sodium (mg/L)*	*Chloride (mg/L)*	*Excess/Deficit Chloride*
MW-1S *	60.8	124.2	+ 30.4 %
MW-2S	43.3	26.3	- 40.5 %
MW-6S *	93.6	252.2	+108.0 %
MW-7S *	50.2	79.1	+ 1.6 %
MW-8S	215	329	- 2.8 %
MW-9S	56.3	87.7	+ 0.8 %
EMW-2	90.1	49.4	- 89.7 %
EMW-3	28.3	34	- 3.9 %
EMW-4	28.3	34	- 9.7 %
EMW-5	57.0	77.9	- 10.1 %
MW-2B	138.0	60.7	- 152.3 %
MW-4B *	126.0	205.5	+ 11.2 %
MW-7B	76.7	33.1	- 85.3 %

Note – Sodium and chloride data obtained for June 2002 sampling data. (*) indicates chloride data from June 2002 and May 2003 were averaged to obtain the values shown in the table.

TABLE D.2

SODIUM AND CHLORIDE BALANCE AT
OLD ERIE CANAL SITE (2006 DATA)

Well ID	*Sodium (mg/L)*	*Chloride (mg/L)*	*Excess/Deficit Chloride*
MW-1S	103	182	+14.5 %
MW-2S	61.8	21.5	- 54.5 %
MW-6S	67.8	236	+125.5 %
MW-7S	37.7	74.2	+ 27.5 %
MW-8S	158	248	+ 1.6 %
MW-9S	58.9	77.2	- 39.0 %
MW-13S	93.8	163	+12.5 %
MW-14S	90.4	141	+ 1.1 %
MW-15S	68.2	122	+ 15.9%
EMW-2	65.6	108	+ 6.7 %
EMW-3	30.9	38.3	- 19.7 %
EMW-4	59.2	70.9	- 22.5 %
EMW-5	55.0	77.2	- 9.1 %
MW-2B	70.6	57.4	-47.3 %
MW-3B	192	104	- 65.0 %
MW-4B	95.2	187	+ 27.3 %
MW-6B	73.6	144	+ 26.7 %
MW-5B	166	123	-52.0 %
MW-7B	90.6	40.6	- 71.0 %
MW-4C	244	253	- 32.9 %

Trends over time in chloride concentration for selected wells where data are available are also shown on Figure 23. These include wells MW-1S, MW-4S, MW-6S, MW-7S, EMW-2, and MW-4B. The concentrations of chloride in these wells appear to be stable over time, suggesting that the production of chloride is being sustained at the Site and providing another line of evidence that the biological processes continue to be active in reducing TCE and its daughter products.

Alkalinity data is shown on Figure 15 and indicate there are also elevated concentrations of alkalinity in the barge turnaround area and along the old Erie Canal. Alkalinity is derived from carbon dioxide, produced by the oxidation of organic material. Elevated levels of alkalinity in the barge turnaround area suggest the BTEX compounds are being biodegraded and supporting the reductive dechlorination observed. However, alkalinity is a non-specific indicator and could result from the biodegradation of other forms of organic carbon as well. This may be the case for the elevated levels of alkalinity observed in the wells located along the old Erie Canal and across the Clyde River in wells MW-12S and MW-12B.

Taken in total, these data strongly suggest that redox conditions and concomitant microbial activity are fully supportive of the reductive dechlorination of TCE and its daughter products to innocuous end products at the Site.

5.2.2 PRESENCE OF DEGRADATION/DAUGHTER PRODUCTS

As shown on Figures 1 to 3, the parent compound TCE is largely depleted across the site relative to its daughter products. This is illustrated for selected locations on Figures 6 to 8. These graphs show column plots of VOC concentrations from monitoring well, geoprobe, and soil boring data. With the exception of geoprobe point GP-25 and soil boring SSB-7, c-DCE and VC dominate in the groundwater and TCE is a minor component of the VOCs present at each location. In some cases TCE makes up less than 1 percent of the total VOCs in the groundwater. This indicates that reductive dechlorination is highly advanced in the most highly contaminated areas of the Site. This is supported by the presence of ethane and ethene at those locations, as shown on Figure 5, indicating that the dechlorination is proceeding all the way to non-hazardous end-products. The relative abundance of ethane and ethene in the graphs of Figures 6 to 8 may be misleading, because ethane and ethene are gases and are not readily retained in the groundwater in the subsurface.

Furthermore, the ratios of cDCE to tDCE and 1,1-DCE provide unequivocal evidence that the presence of cDCE is biogenic. The analytical data presented in Table 1 show that, where detected in both the overburden and bedrock aquifers, the concentrations of cDCE are greater than those of tDCE or 1,1-DCE, with the cDCE abundance ratio ranging from 0.93 to 1.00. Thus the DCE in the groundwater at the Site originates from the biodegradation of TCE.

Ethane and ethene concentrations are the ultimate end products of the reductive dechlorination of TCE. The presence of these innocuous end products is highly supportive of extensive reductive dechlorination of both TCE and its daughter products at the Site. Combined ethene + ethane concentrations of up to 6400 micrograms per liter (µg/L) and 1600 µg/L were measured in wells MW-6S and MW-4B, respectively. Ethane and ethene are gases and are highly subject to volatilization and biodegradation losses. As an example, molar balances of ethene in the aqueous phase of the microcosm study were typically only 10-20 percent of the starting TCE concentration. Therefore, it is reasonable to assume that the amount of ethane and ethene generated in the aquifer is substantially higher than the levels measured.

Trends over time in ethene and ethane concentrations are also shown on Figures -17 through 22 for wells MW-1S, MW-4S, MW-6S, MW-7S, EMW-2, and MW-4B. Concentrations of these end products of the reductive dechlorination process also appear to be stable over time, indicating that the biological processes active at the site continue to support dechlorination of TCE and its daughter products all the way to an innocuous end point.

The higher concentrations of BTEX in the groundwater are generally correlated to locations showing high concentrations of c-DCE and VC. This suggests that BTEX may be an important electron donor fueling the reductive dechlorination of TCE at those locations.

5.2.3 AVAILABILITY OF ORGANIC SUBSTRATE TO SUSTAIN MICROBIAL ACTIVITY

The spatial distribution of dissolved organic carbon (DOC) across the Site is shown on Figure 16. Concentrations of DOC ranged from 1.6 to 37.7 mg/L in the overburden aquifer and from not detected at 1 mg/L to 7.23 mg/L in the bedrock. The highest consistent concentrations of DOC are observed in the barge turnaround area, particularly at monitoring well MW-6S, where 37.7 mg/L DOC was measured. These DOC concentrations are providing electron donors for the reductive dechlorination observed at the Site. As previously mentioned, BTEX concentrations are also highest in the barge turnaround area, suggesting that BTEX may be an important component of this DOC. However, given the swampy nature of the barge turnaround area and the past use of that area by the Town of Clyde for sewage disposal, natural DOC in the form of humic materials will also be present and will likely also contribute to the support of reductive dechlorination. DOC at 33 mg/L is also measured in well MW-12S, located across the Clyde River. This is also most likely a naturally occurring form of DOC, because no contaminants have been measured in that well.

Trends over time in DOC for selected wells where data are available are also shown on Figure 24. These include wells MW-1S, MW-4S, MW-6S, MW-7S, EMW-2, and MW-4B. The concentrations of DOC in these wells appear to be stable over time, suggesting that the DOC at the site is being sustained and is continuing to provide a source of carbon and energy for the dechlorinating bacteria.

5.3 MICROCOSM STUDY RESULTS

A laboratory microcosm study was conducted by GE (Microcosm Study Report GE, July 2004) to determine whether TCE and its degradation products could be completely degraded via natural reductive biodegradation at the Site. Microcosm experiments were conducted using soil from the Site and different organic carbon sources were evaluated (i.e., lactate, ethanol, chitin and soybean oil). Controls were also constructed to measure the natural (unamended) rate of biodegradation. Nutrients and/or supplemental bacterial culture were also added to several of the microcosm bottles to determine if their addition would be required to enhance natural reductive biodegradations.

Complete reductive dechlorination of TCE to ethene was observed in both substrate-amended and unamended sample groups. Notably, the unamended controls were spiked with 5 and 50 mg/L TCE and in both cases completely reduced the TCE to ethene during the course of the study. It is unusual to observe this level of intrinsic activity at such high TCE concentrations. This supports the field data in demonstrating that robust intrinsic biological activity is currently operative at the Site. TCE in particular was dechlorinated very rapidly in the microcosm bottles. Rapid depletion of TCE is also observed in the field data.

All of the electron donors used in the study also supported complete reductive dechlorination of TCE to ethene. The addition of electron donors promoted a two to three fold increase in the overall biodegradation rate over the comparable unamended controls. TCE was biodegraded very rapidly in all the amended bottles. Lactate, chitin, and soybean oil promoted the fastest biodegradation of cDCE. Chitin and soybean oil promoted the fastest biodegradation of VC. In these cases, VC was biodegraded almost as fast as it was formed, so that very little was measured in the bottles.

Supplemental nutrient addition and bioaugmentation did not have a significant effect on the rate or extent of dechlorination. Therefore, neither supplemental nutrients nor bacteria are required to enhance biodegradation at the Site.

5.4 ESTIMATION OF MASS DESTROYED BY BIODEGRADATION

As discussed in Section 4.2, it is possible to estimate the amount of mass destroyed or transformed at the site by measuring the production of end products such as chloride, ethane, and ethene. As previously described, chloride concentrations are significantly elevated in the barge turnaround area relative to surrounding groundwater. Chloride concentrations in monitoring well MW-6S and MW-6B range from 200-300 mg/L, whereas chloride concentrations in the surrounding groundwater range from 30-90 mg/L. Chloride is a conservative end product of TCE reductive dechlorination, such that

$$TCE \rightarrow Ethane/Ethene + 3\ Chloride$$

Thus, every mole of TCE that is reduced to ethane or ethene produces three moles of chloride. The differential between chloride concentration inside and outside the bioactive area can be conservatively estimated to be 100 mg/L. In this case, 123.5 mg/L TCE need to destroyed (on a mass basis) to produce 100 mg/L chloride. The calculation is valid as long as there are no other sources of chloride unique to the bioactive area. The sodium balances performed in Section 5.2.1 provide conclusive proof the source of the excess chloride in the barge turnaround area is not road salt.

The total mass of TCE destroyed can be estimated if the groundwater flux through the reactive zone is known. In this case, calculations show that the total groundwater flow through the bioactive channel is on the order of 1500 ft^3/day (8 gpm). If the groundwater flux is multiplied by the chloride concentration, the amount of chloride produced and TCE destroyed can be calculated. By this method, it is estimated that 6 kg/day of chloride is produced at the Site from the destruction of 7.4 kg/day of TCE. This represents a TCE destruction rate of 5000 lbs/year.

The other significant end products of reductive dechlorination present at the site are ethene and ethane. Because these are unique products of the dechlorination process, these end products are even more conclusive than the chloride data. As previously stated, combined ethene + ethane concentrations of up to 6400 μg/L and 1600 μg/L were measured in wells MW-6S and MW-4B, respectively. These levels of ethene and ethane are subject to both biodegradation and volatilization losses. If we conservatively assume that 2500 μg/L ethane + ethene is generated in the subsurface due to reductive dechlorination of TCE, then the total TCE destroyed is equivalent to 550 lbs/year.

Thus the destruction and complete transformation of TCE at the site is strongly supported by both the chloride and ethane and ethene data. While there is uncertainty in the number, there is no question that substantial destruction of TCE and its daughter products is occurring. A destruction rate of 500-5000 lb/year is quite supportable using the available data. This number can be further refined if additional data is collected during subsequent sampling rounds.

6.0 CONCLUSIONS

- Analysis of CVOC concentrations over time on six monitoring wells indicate the CVOC concentrations are stable in the barge turnaround area and declining on the fringes. There is not yet sufficient data to infer statistical significance to these trends.
- Geochemical parameters collected from groundwater indicate that the overburden and bedrock aquifers at the Site are reducing. These geochemical conditions are favorable for the reductive biodegradation of TCE, cDCE and vinyl chloride and the production of ethene and ethane. Conditions become more oxidizing in both aquifers downgradient of the Site.
- With a few exceptions, the parent compound TCE is much diminished at the Site relative to its reductive chlorination daughter products cDCE, VC, and ethene/ethane. In some cases TCE made up less than 1% of the total VOCs in the groundwater. This indicates that reductive dechlorination is highly advanced in the most highly contaminated areas of the site. This is supported by the presence of ethane and ethene at those locations, indicating that the dechlorination is proceeding all the way to non-hazardous endproducts. Ethene and ethane concentrations appear to be stable over time.
- Chloride is highly elevated in the barge turnaround area. Molar balances performed using sodium data indicate an excess of chloride exists here, eliminating road salt as the source of the excess chloride. The excess chloride is most likely coming from the reductive dechlorination of TCE and its daughter products.
- BTEX compounds are also present in the barge turnaround area, suggesting that BTEX may be an important electron donor in supporting the reductive dechlorination of TCE and its daughter products. However, given the swampy nature of the area, natural DOC in the form of humic materials is also present and will likely contribute to the support of reductive dechlorination. Trend analysis over time indicate the levels of DOC in the groundwater are stable and sufficient to continue to support the ongoing reductive dechlorination of TCE and its daughter products.
- The results of microcosm studies show that the biodegradation capacity of Site soil is very strong, resulting in complete TCE degradation to ethene in both unamended and substrate-amended samples. In unamended controls spiked with 5 and 50 mg/L TCE, TCE was completely reduced to ethene during the course of the study. It is unusual to observe this level of intrinsic activity at such high TCE concentrations. This supports the field data in demonstrating that robust intrinsic biological activity is currently operative at the Site. The addition of electron donors promoted a two to three fold increase in the overall biodegradation rate over the comparable

unamended controls. Neither nutrient supplements nor supplemental biocultures improved biodegradation rates.

- The results of the MNA evaluation show that substantial natural biodegradation by reductive dechlorination is occurring at Site. Calculations based on chloride and ethane and ethene concentrations and groundwater flux through the bioactive zone suggest that 500-5000 lbs/year of TCE are being destroyed due to ongoing biodegradation processes. This analysis, coupled with discharge of overburden aquifer groundwater to the Clyde River and the limited migration of CVOCs in the bedrock aquifer indicate that the CVOCs are attenuating sufficiently such that there is no threat to groundwater users.

7.0 REFERENCES

- General Electric Company Global Research Center. 2004. Microcosm Study Report.
- Hem, J.D. 1985. Study and Interpretation of the Chemical Characteristics of Natural Water, U.S.G.S. Water-Supply paper 2254.
- USEPA, September 1998. Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents In Ground Water, EPA/600/R-98/128.
- USEPA, April 1999. Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites, USEPA OSWER Directive 9200.4-17P.
- Wiedemeier, T.H., H.S. Rifai, C.J. Newell, J.T. Wilson. 1999. Natural Attenuation of Fuels and Chlorinated Solvents in the Subsurface. John Wiley & Sons, Inc., New York.

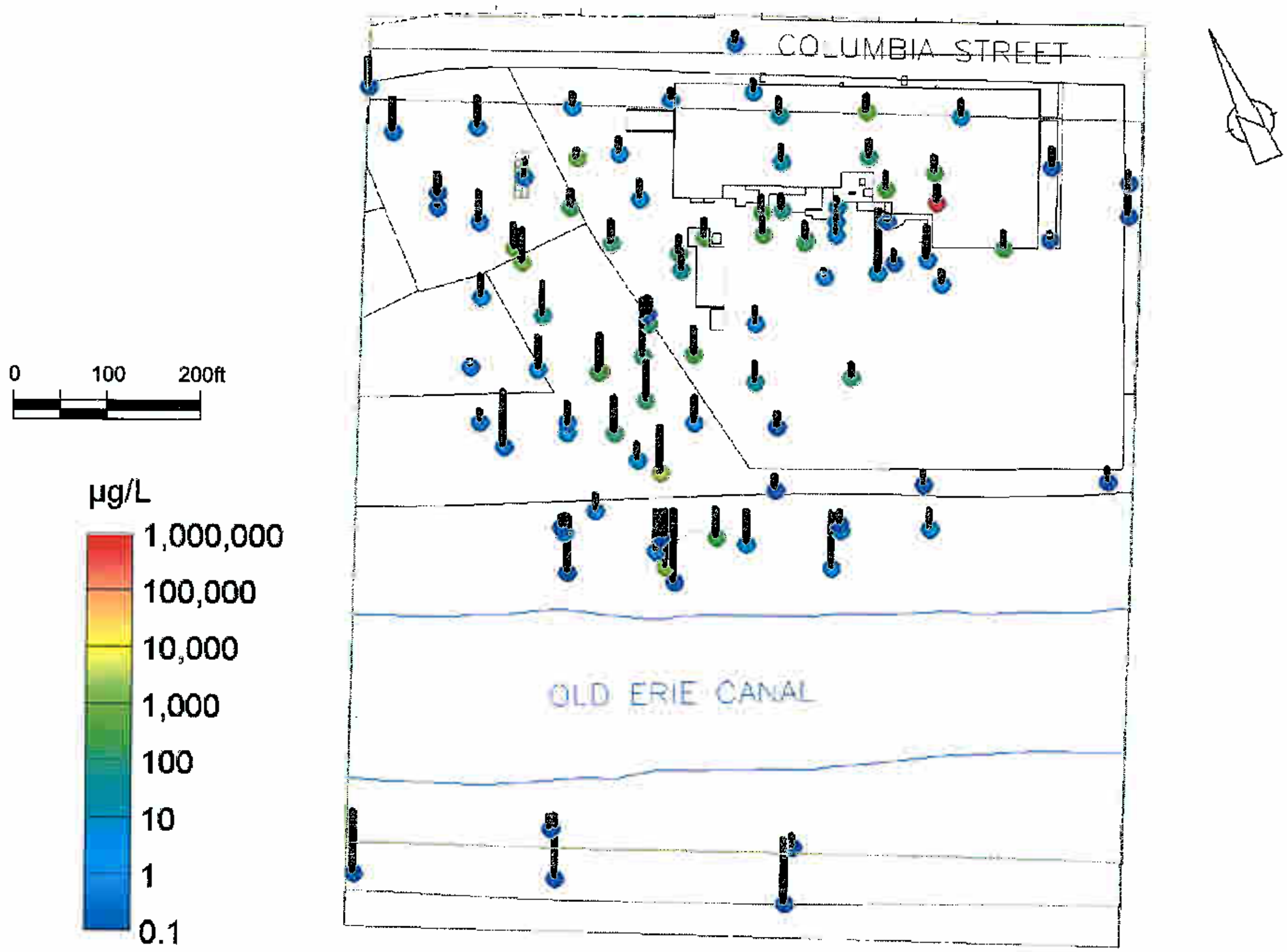


figure 1

TCE CONCENTRATIONS IN GROUNDWATER
OLD ERIE CANAL SITE
Clyde, New York

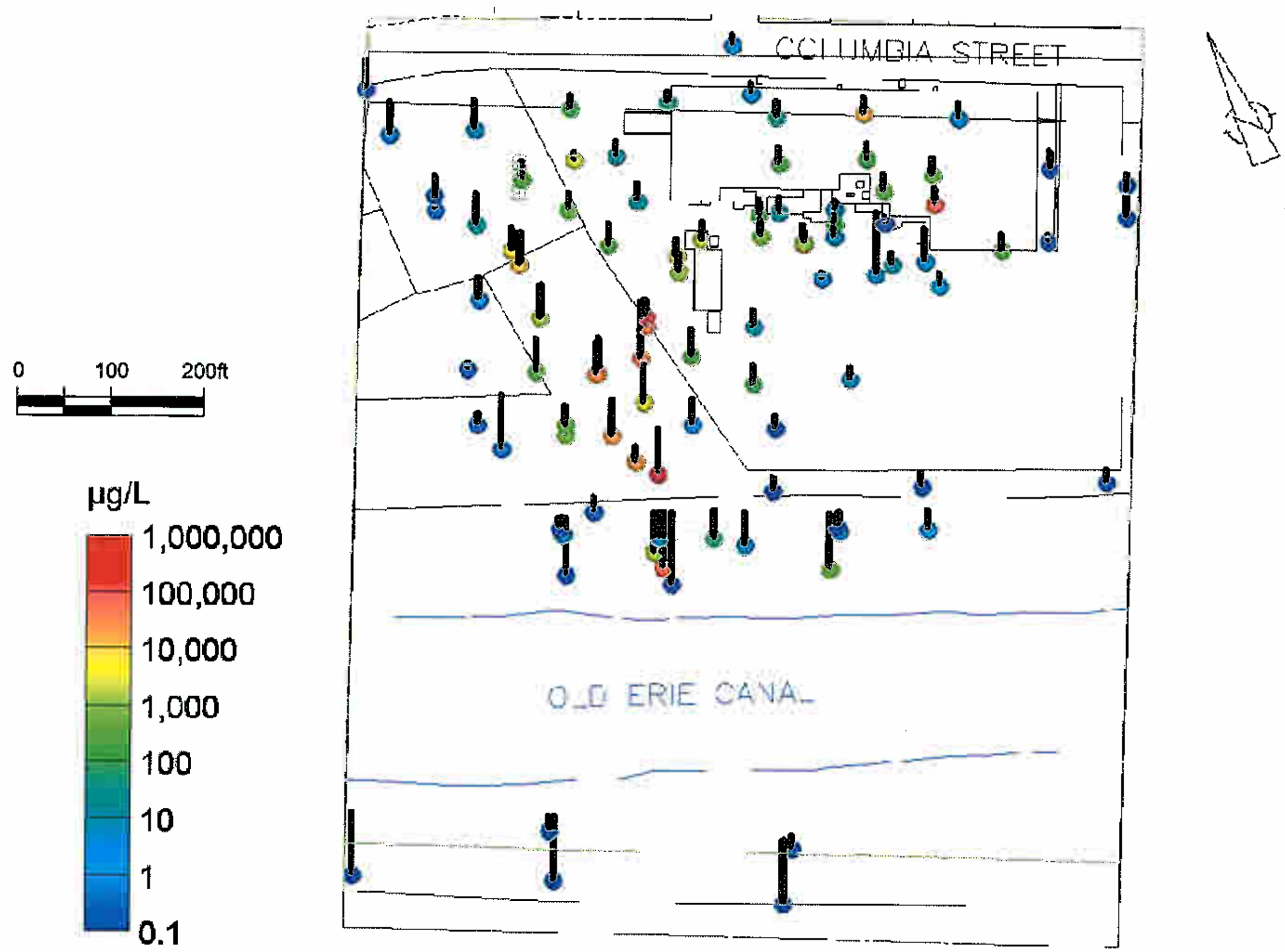


figure 2

CIS-DCE CONCENTRATIONS
IN GROUNDWATER
OLD ERIE CANAL SITE
Clyde, New York

35048-01(002)GN-BE025 APP D MAR 29/2007

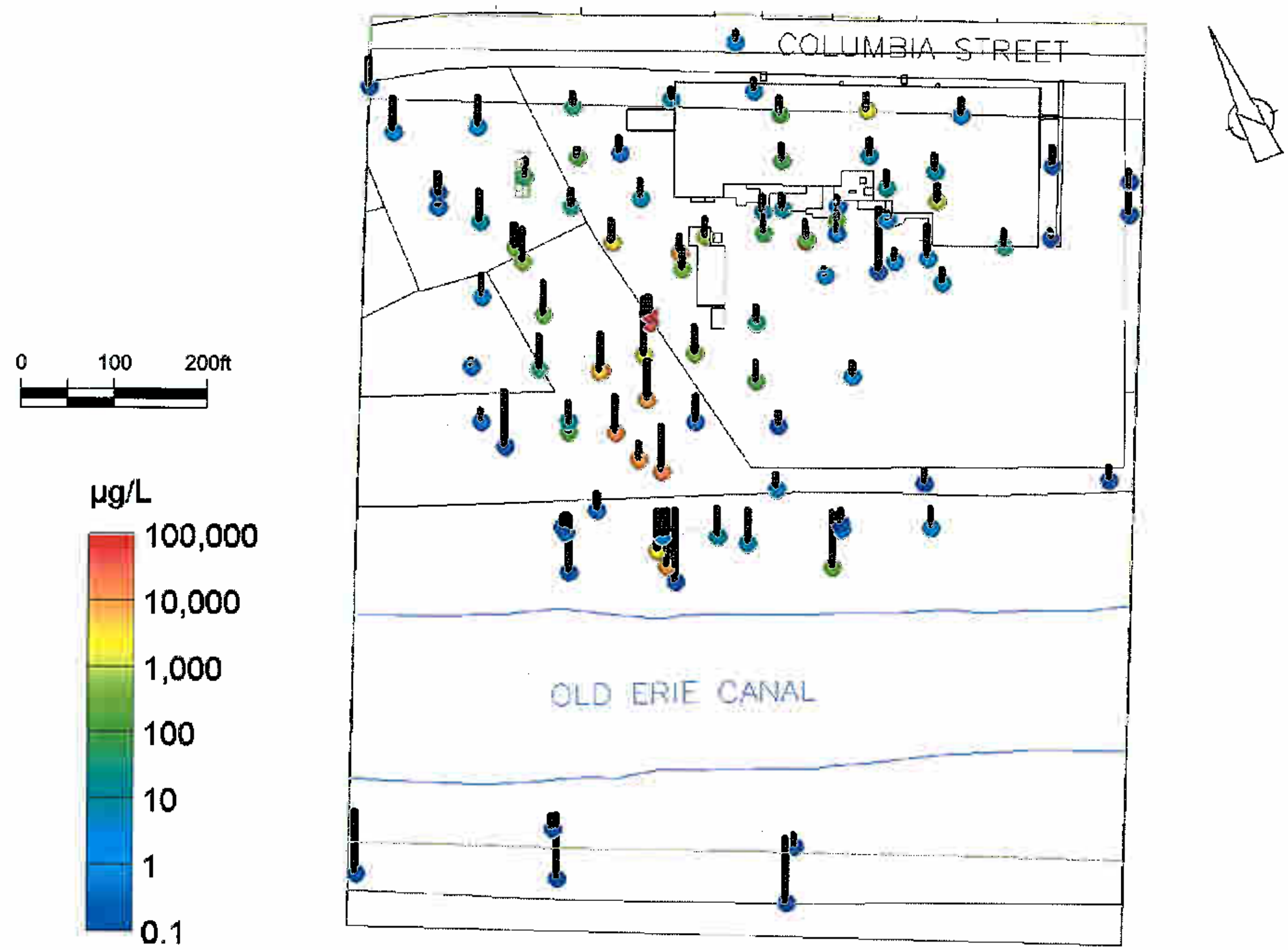


figure 3

VC CONCENTRATIONS
IN GROUNDWATER
OLD ERIE CANAL SITE
Clyde, New York

35048-01(002)GN-BE026 APP D MAR 29/2007

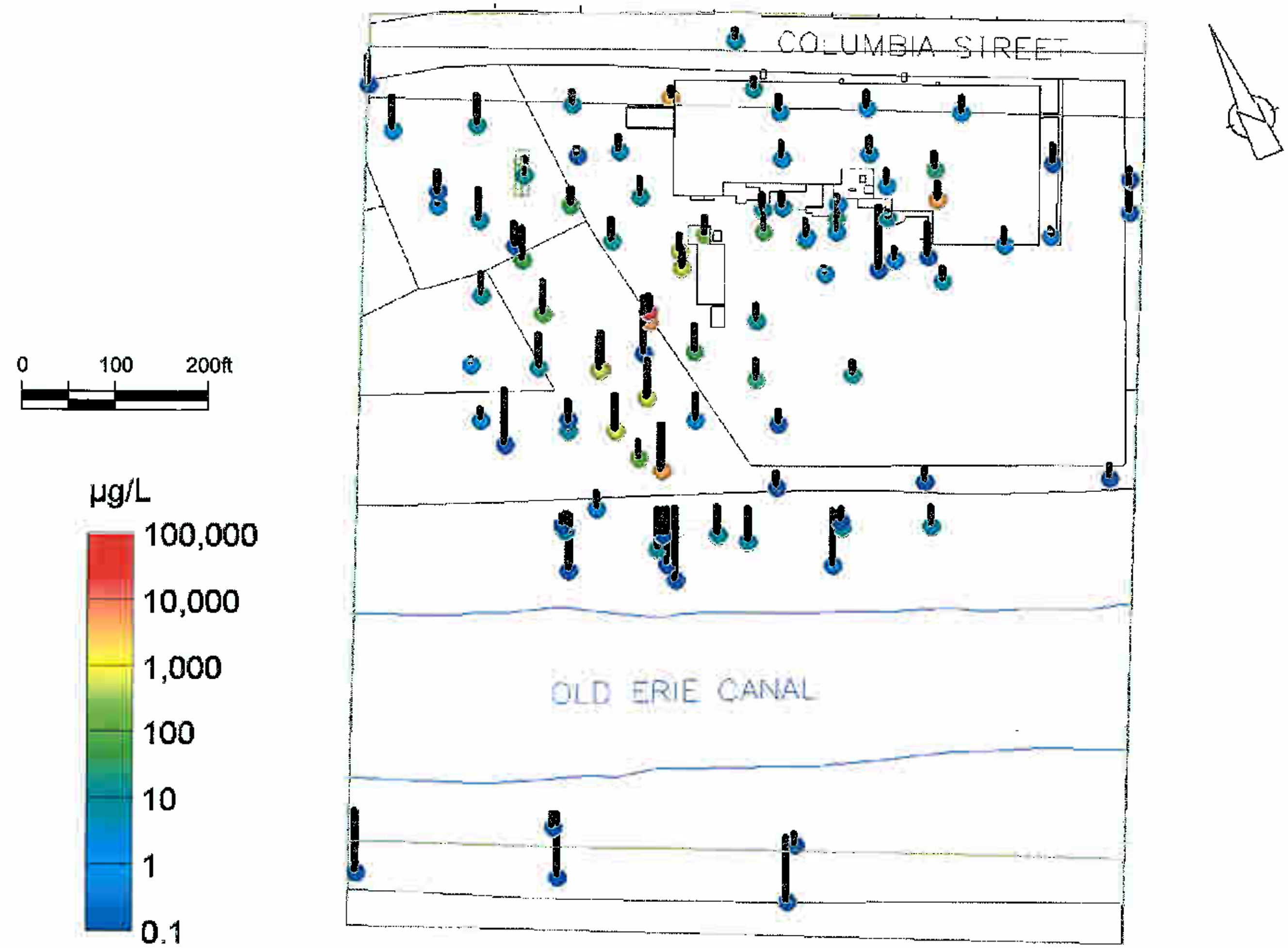


figure 4

BTEX CONCENTRATIONS IN GROUNDWATER
OLD ERIE CANAL SITE
Clyde, New York

35048-01(002)GN-BE027 APP D MAR 29/2007

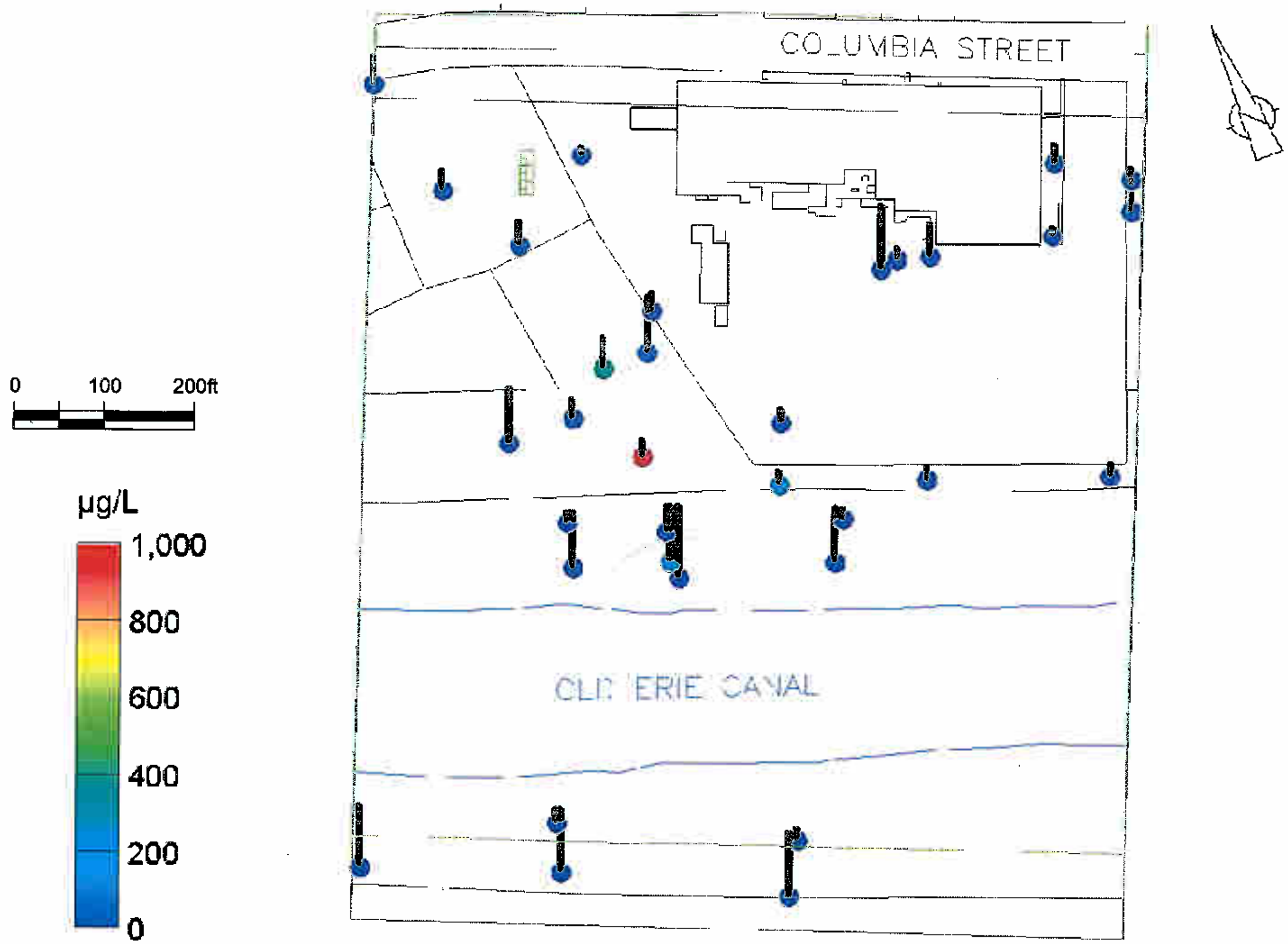


figure 5

ETHANE+ETHENE CONCENTRATIONS
IN GROUNDWATER
OLD ERIE CANAL SITE
Clyde, New York

35048-01(002)GN-BE028 APP D MAR 29/2007

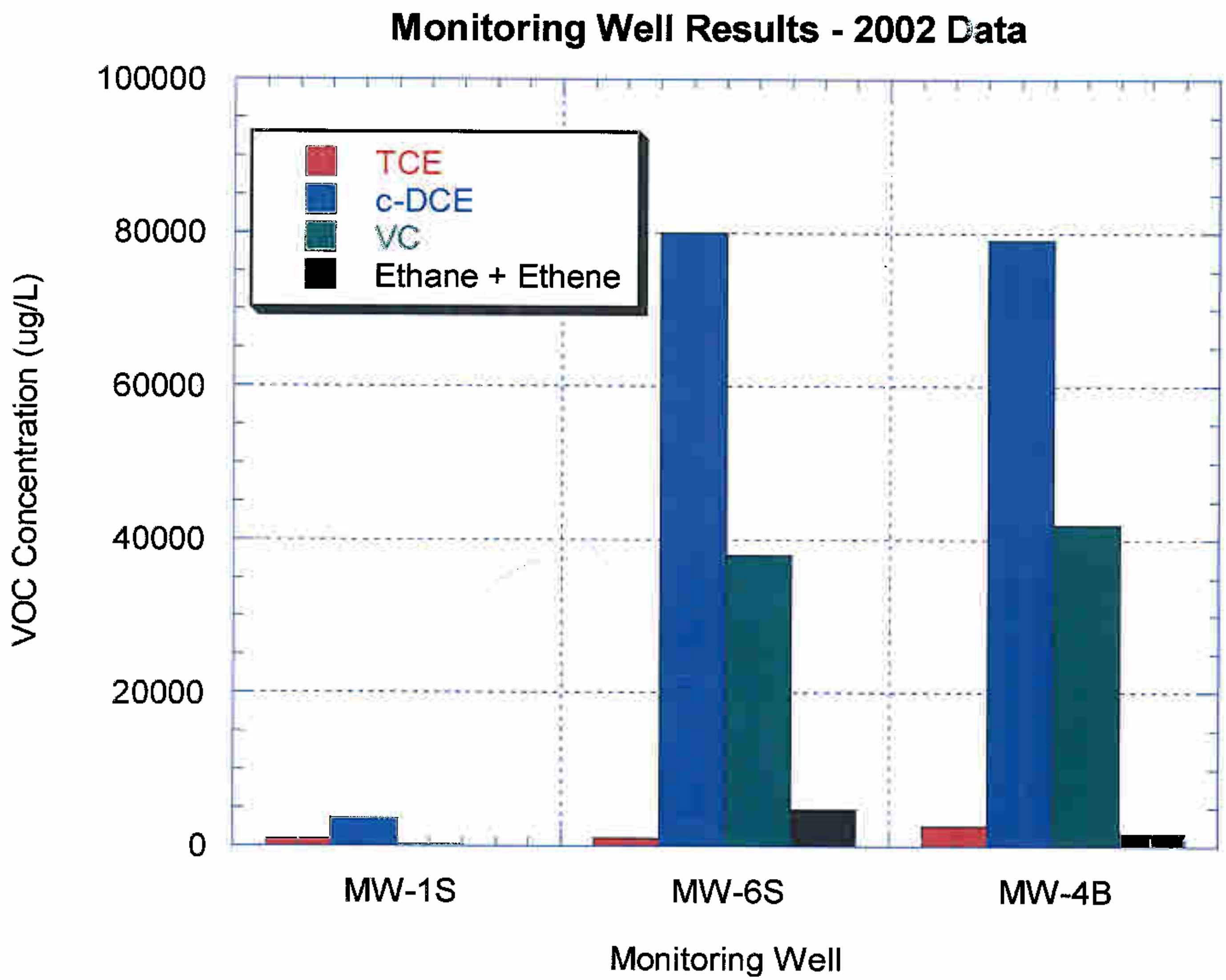


figure 6

VOCS IN GROUNDWATER FROM
SELECTED MONITORING WELLS
OLD ERIE CANAL SITE
Clyde, New York

35048-01(002)GN-BE029 APP D MAR 20/2007

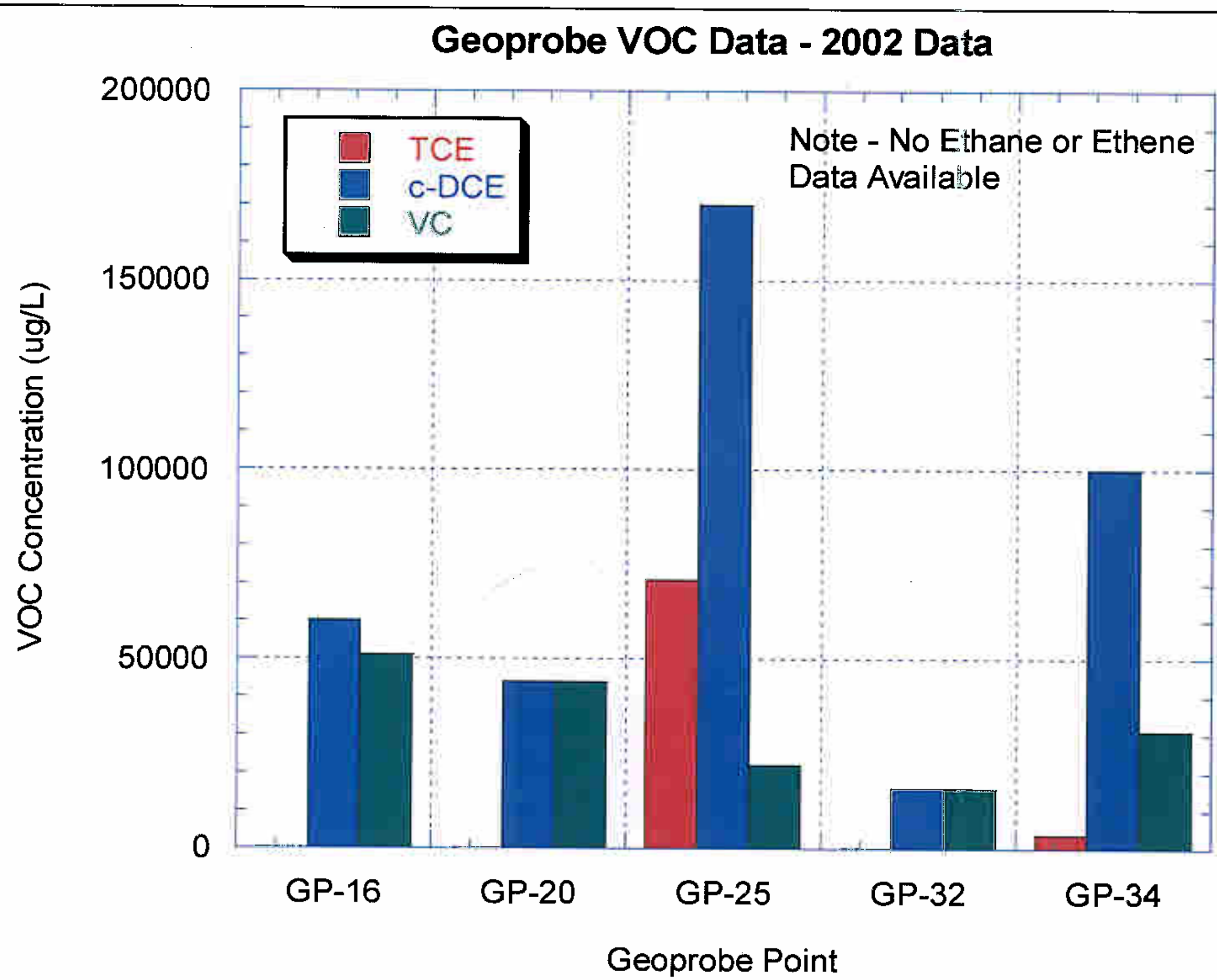


figure 7

VOCS IN GROUNDWATER FROM
SELECTED GEOPROBE POINTS
OLD ERIE CANAL SITE
Clyde, New York

35048-01(002)GN-BE030 APP D MAR 20/2007

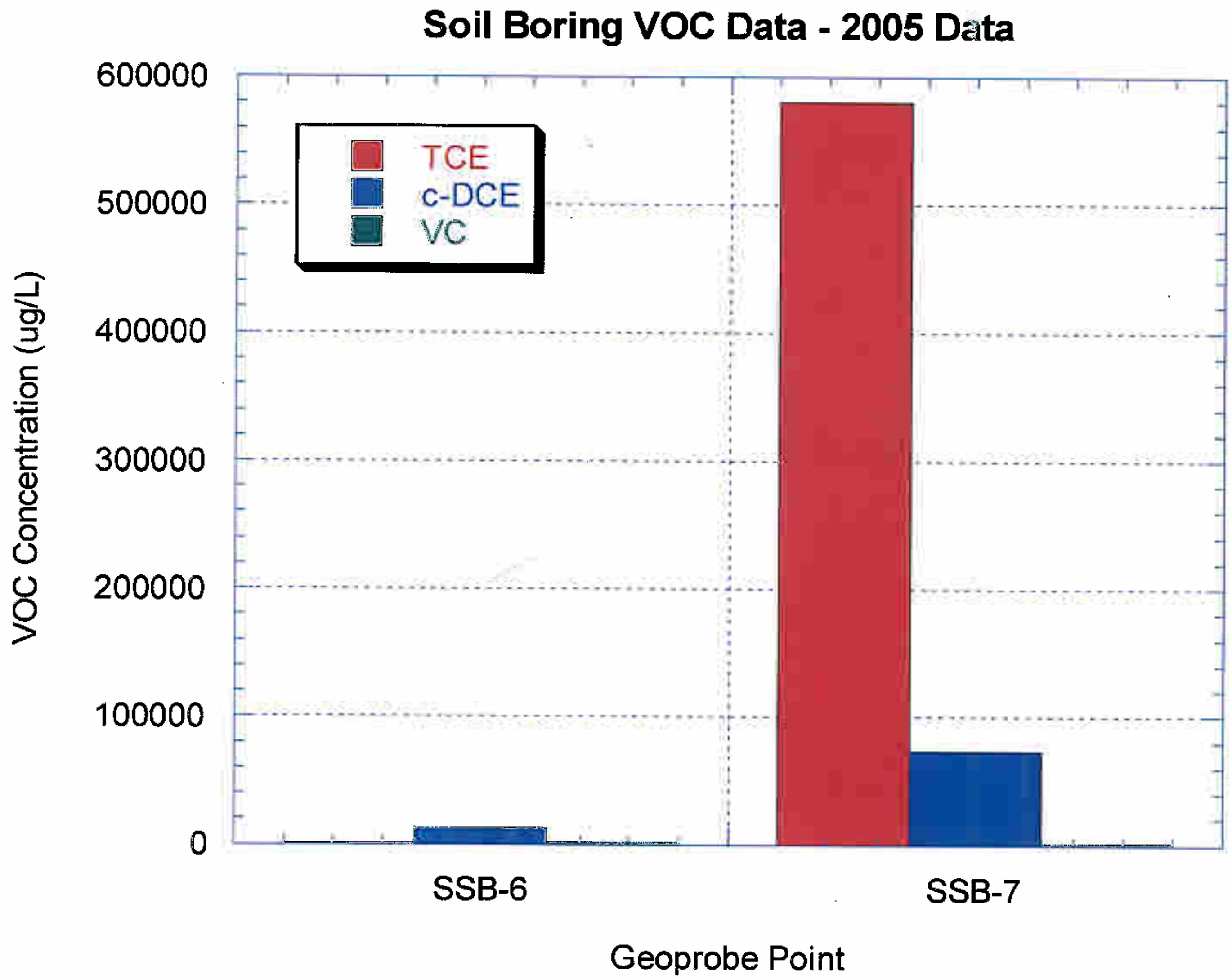


figure 8

VOCS IN GROUNDWATER FROM
SELECTED SOIL BORING LOCATIONS
OLD ERIE CANAL SITE
Clyde, New York

35048-01(002)GN-BE031 APP D MAR 20/2007

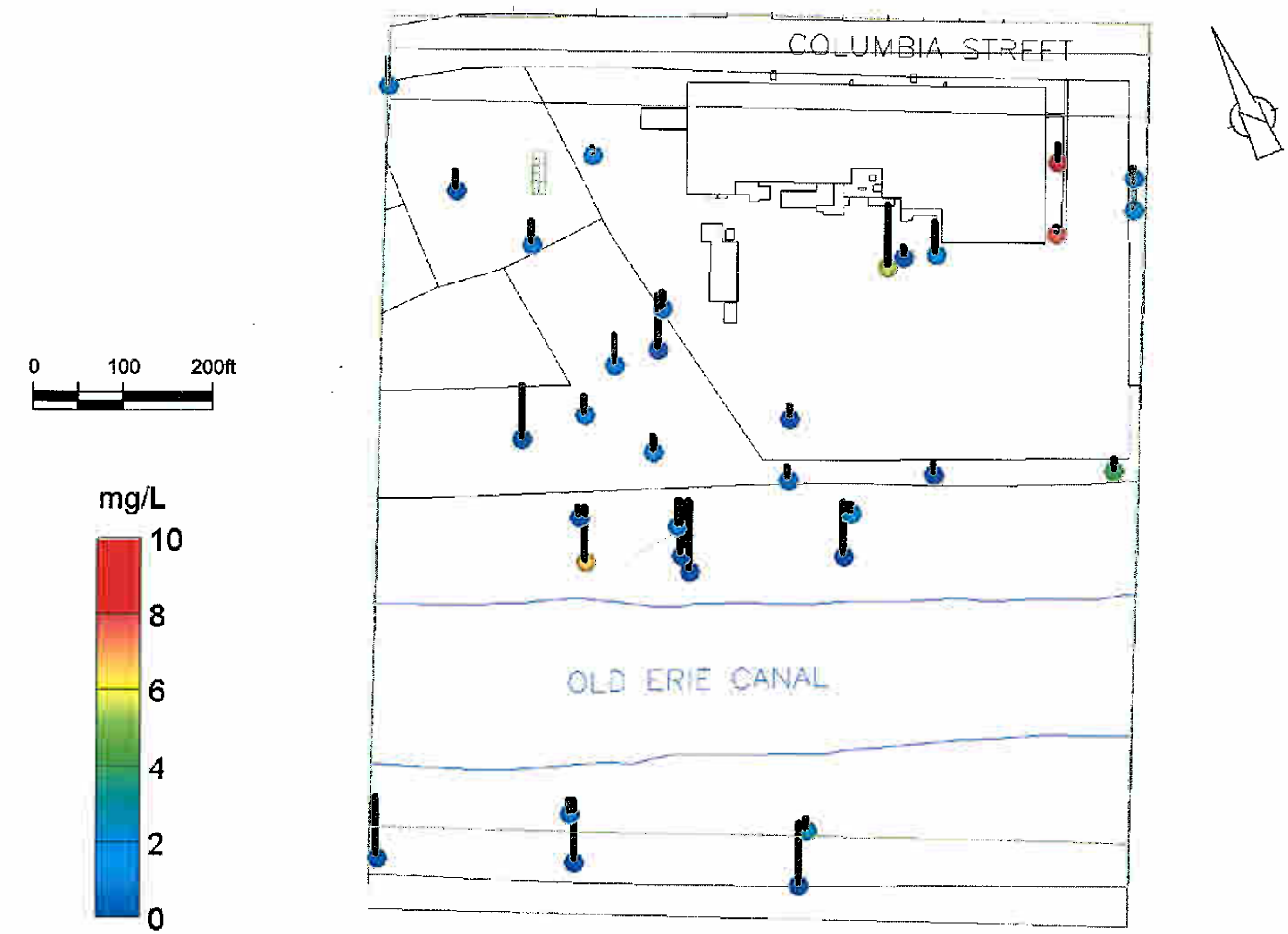


figure 9

DO CONCENTRATIONS
IN GROUNDWATER
OLD ERIE CANAL SITE
Clyde, New York

35048-01(002)GN-BE032 APP D MAR 29/2007

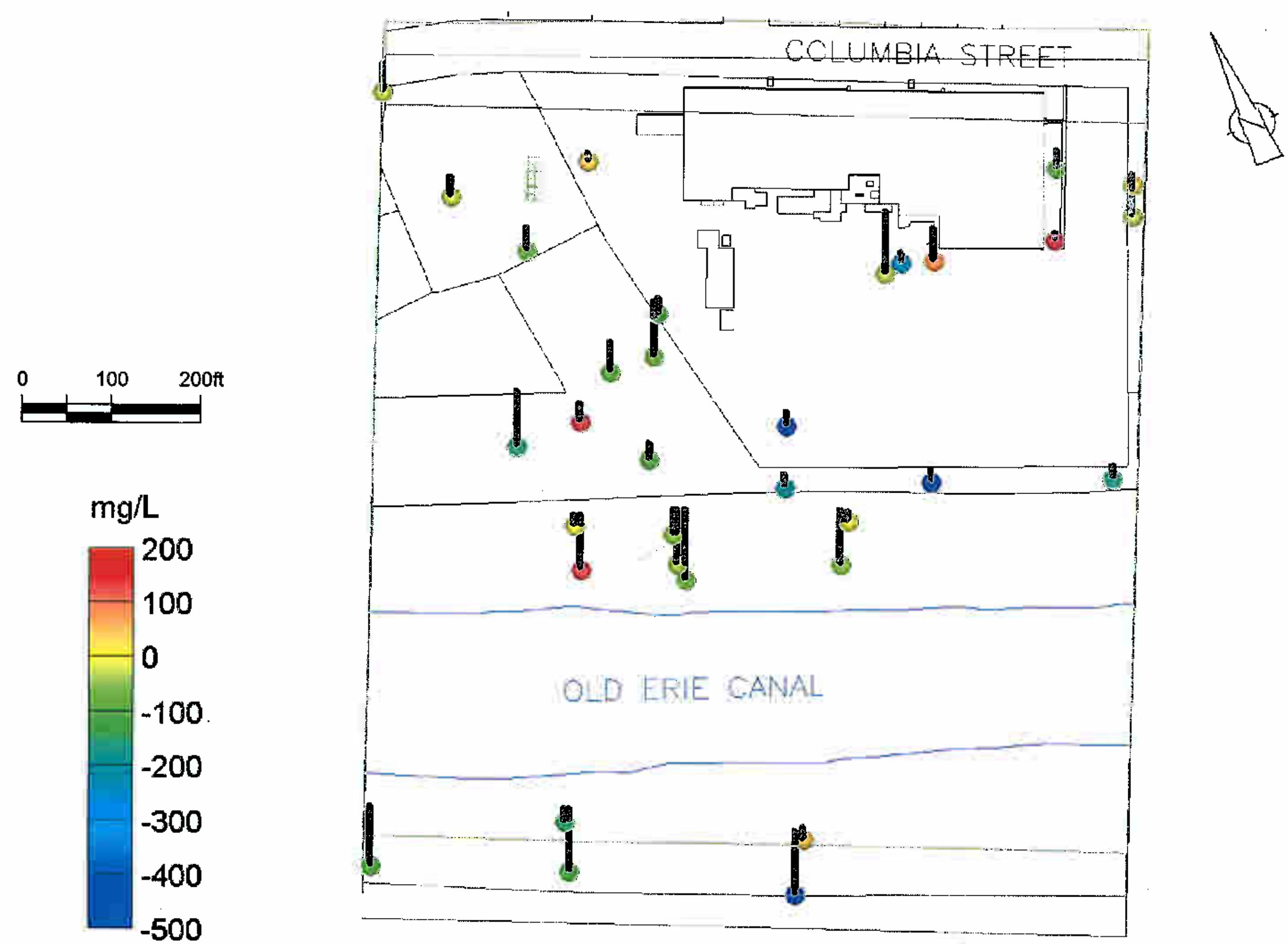


figure 10

ORP CONCENTRATIONS
IN GROUNDWATER
OLD ERIE CANAL SITE
Clyde, New York

35048-01(002)GN-BE033 APP D MAR 29/2007

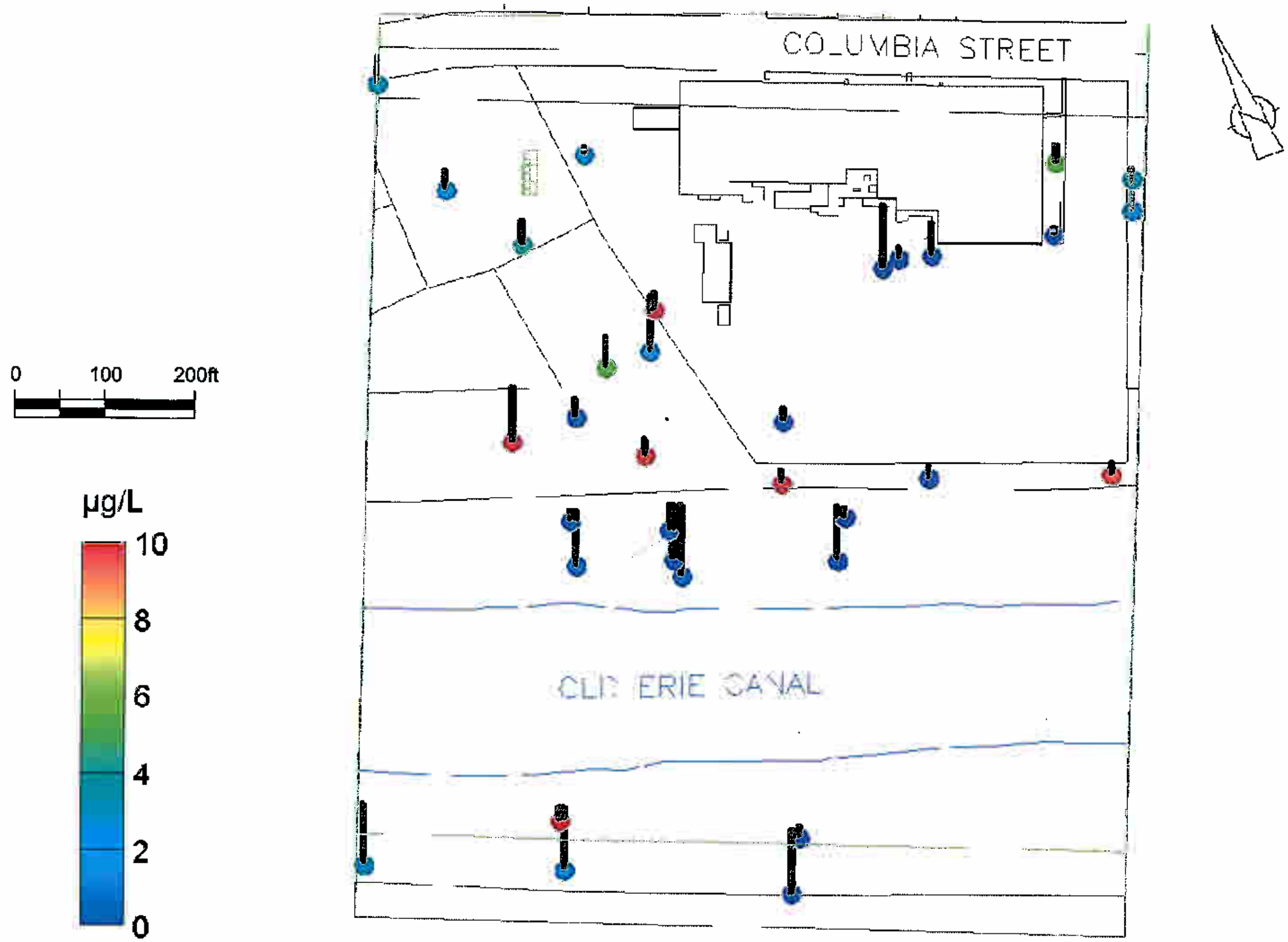


figure 11

DISSOLVED IRON CONCENTRATIONS IN GROUNDWATER
OLD ERIE CANAL SITE
Clyde, New York

35048-01(002)GN-BE034 APP D MAR 29/2007

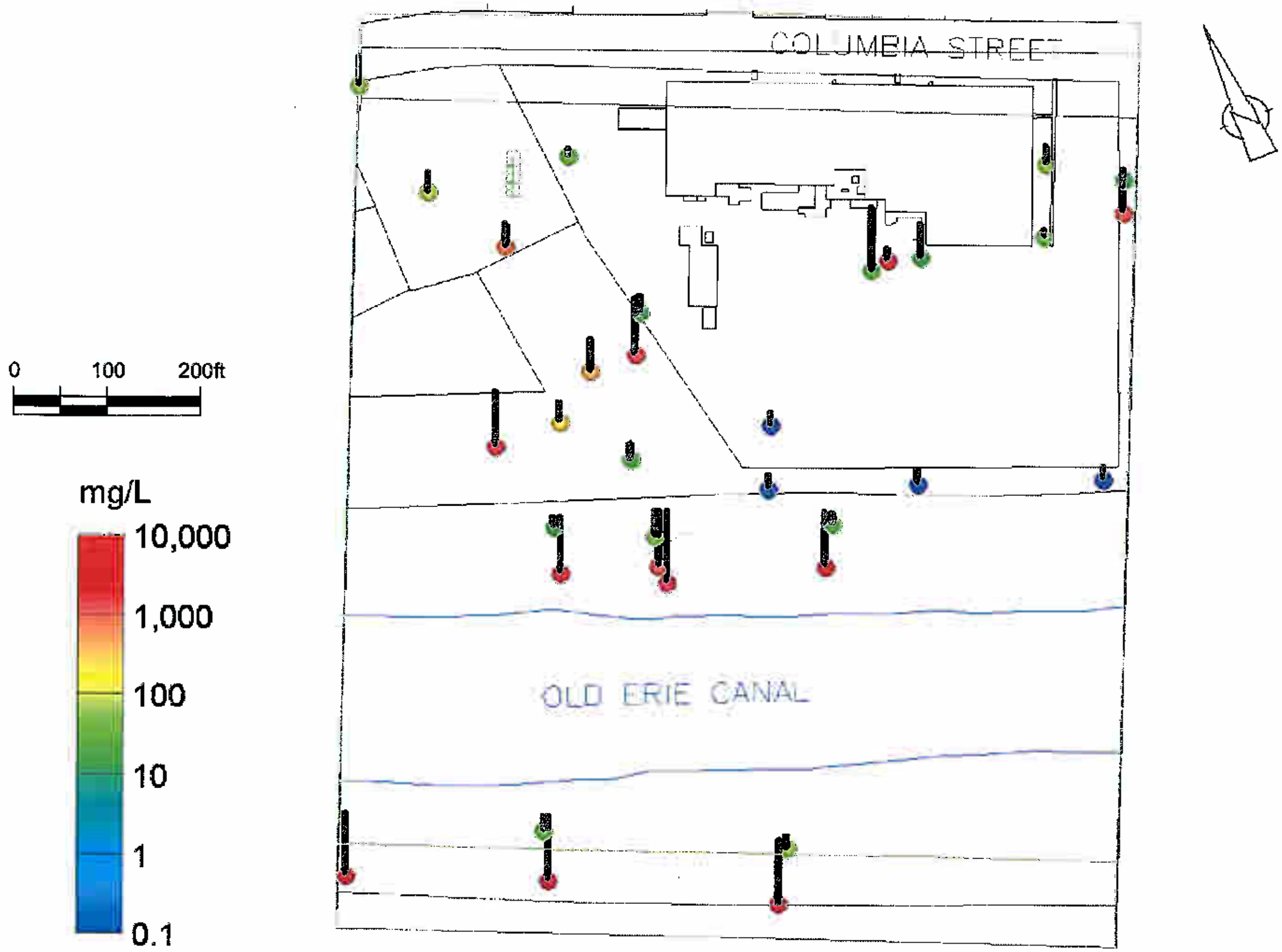


figure 12

SULFATE CONCENTRATIONS IN GROUNDWATER
OLD ERIE CANAL SITE
Clyde, New York

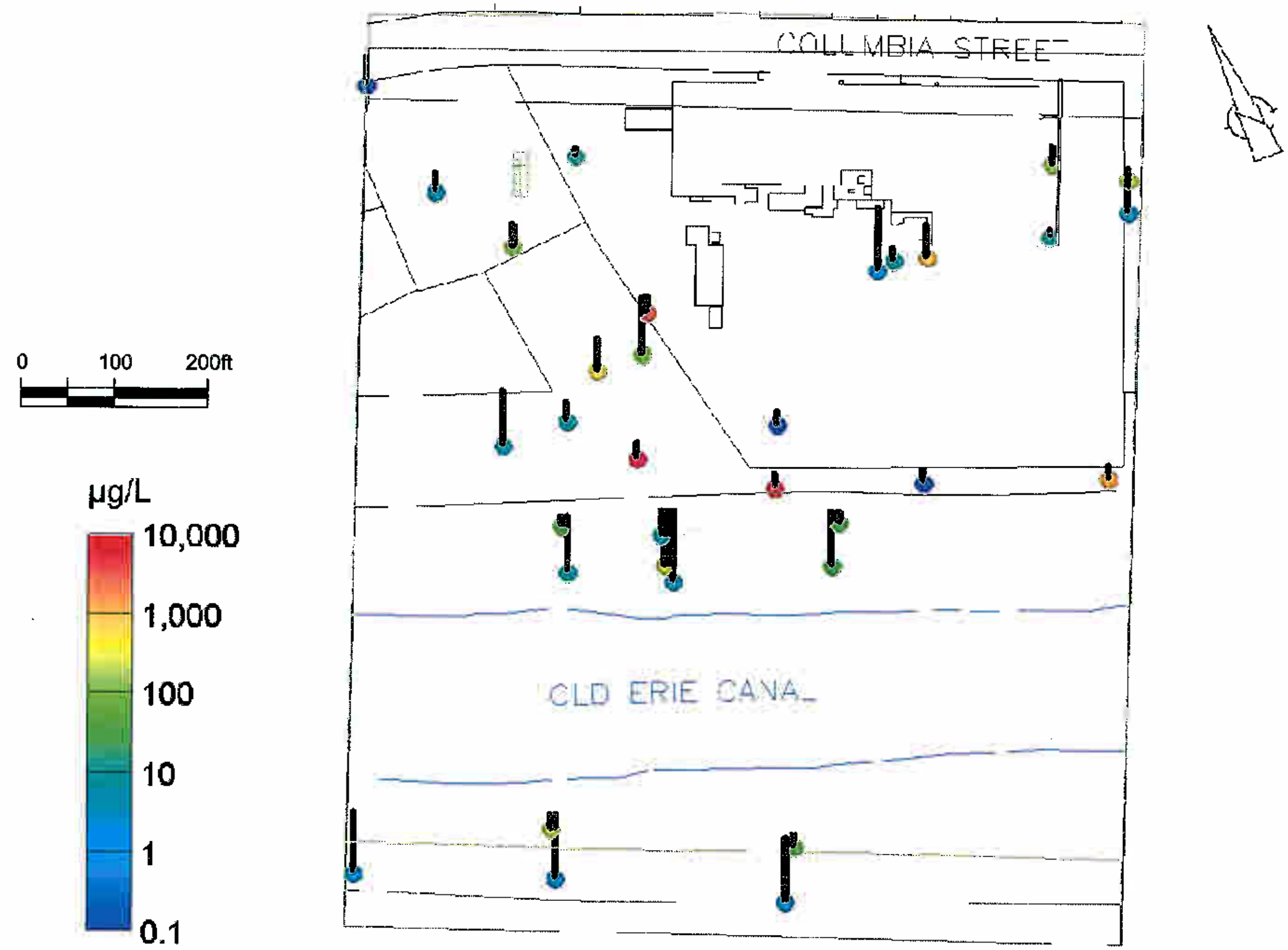


figure 13

METHANE CONCENTRATIONS
IN GROUNDWATER
OLD ERIE CANAL SITE
Clyde, New York

35048-01(002)GN-BE036 APP D MAR 29/2007

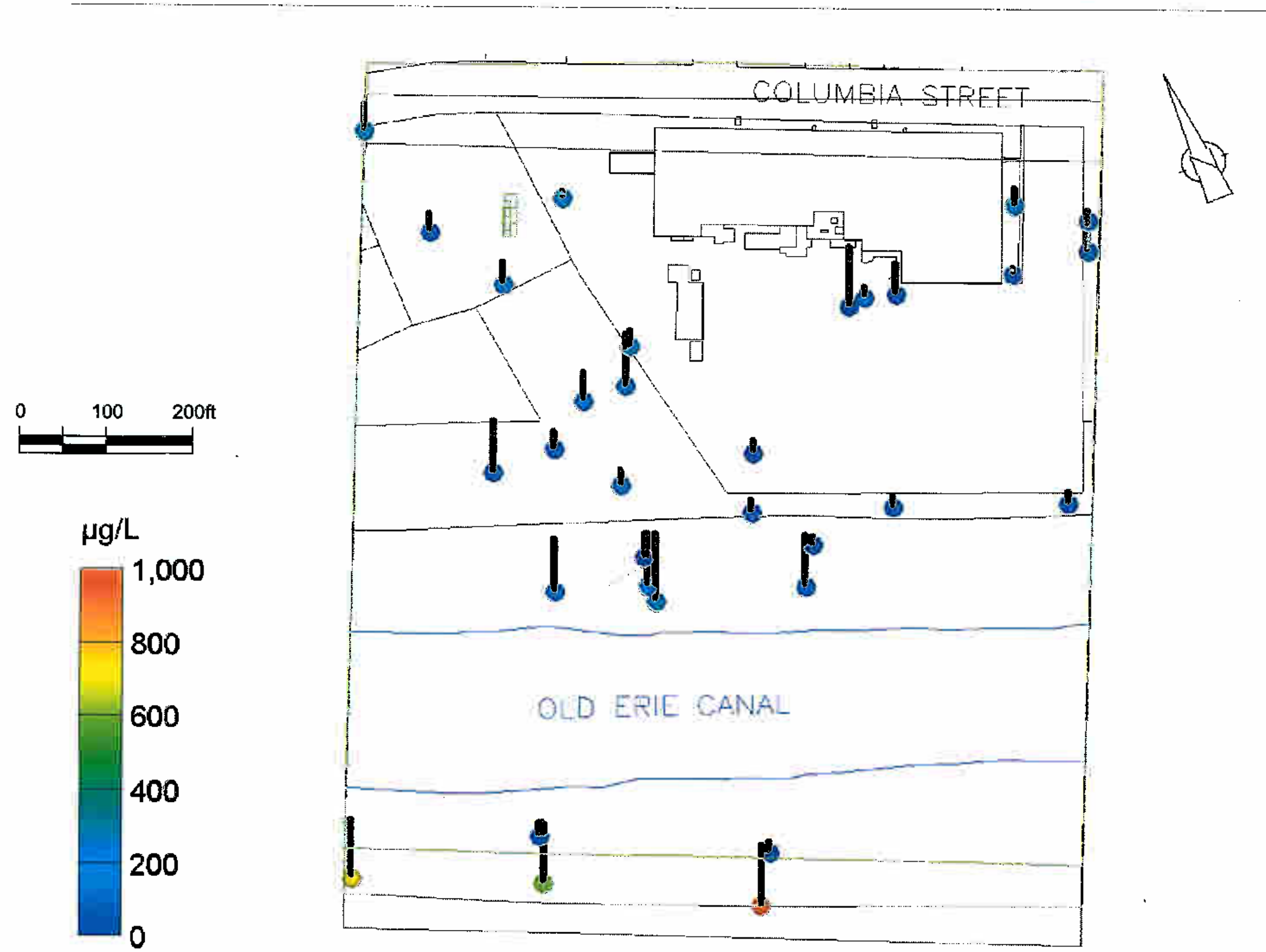


figure 14

CHLORIDE CONCENTRATIONS IN GROUNDWATER
OLD ERIE CANAL SITE
Clyde, New York

35048-01(002)GN-BE037 MAR 26/2007

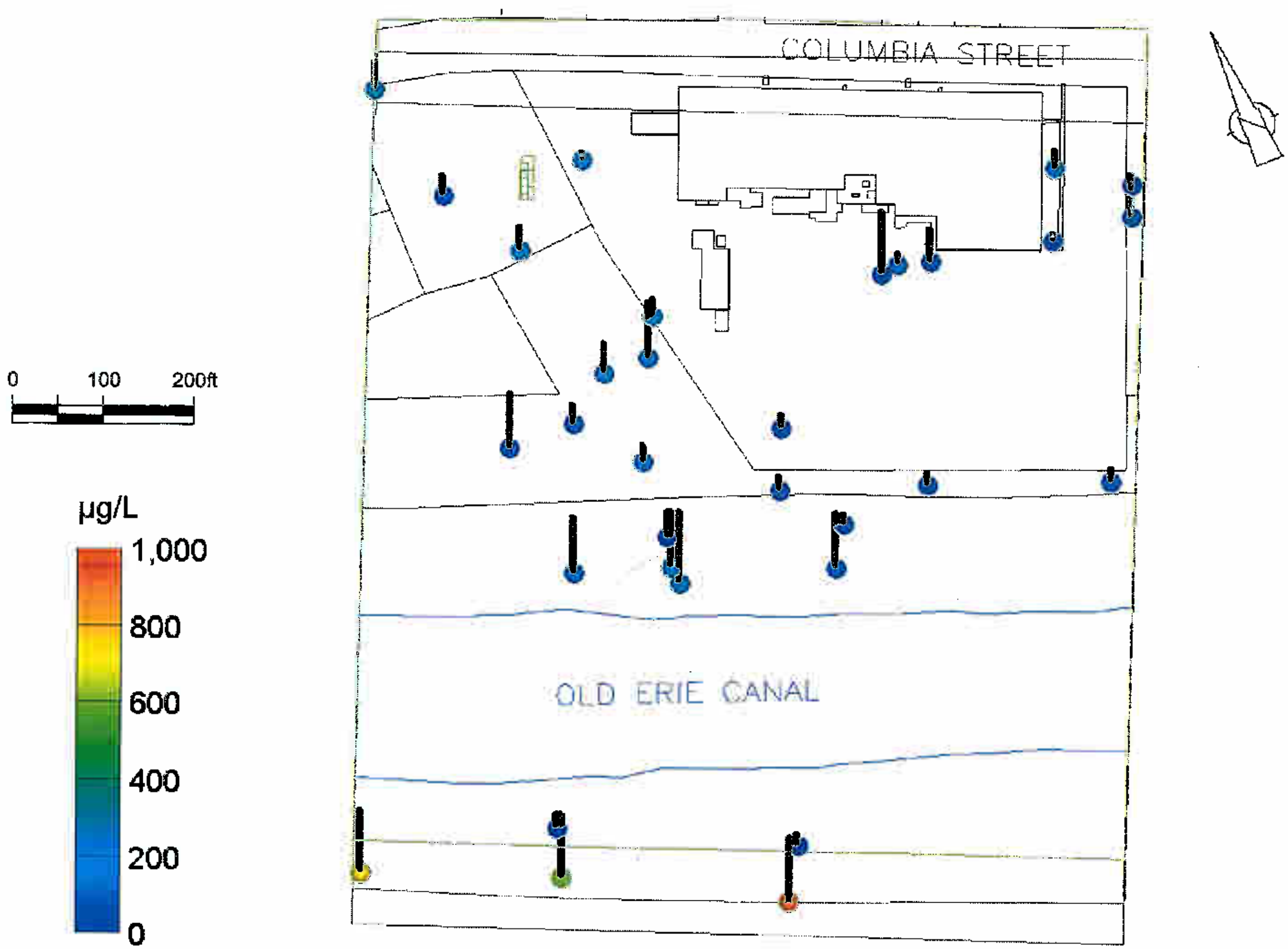


figure 15

ALKALINITY CONCENTRATIONS
IN GROUNDWATER
OLD ERIE CANAL SITE
Clyde, New York

35048-01(002)GN-BE038 MAR 26/2007

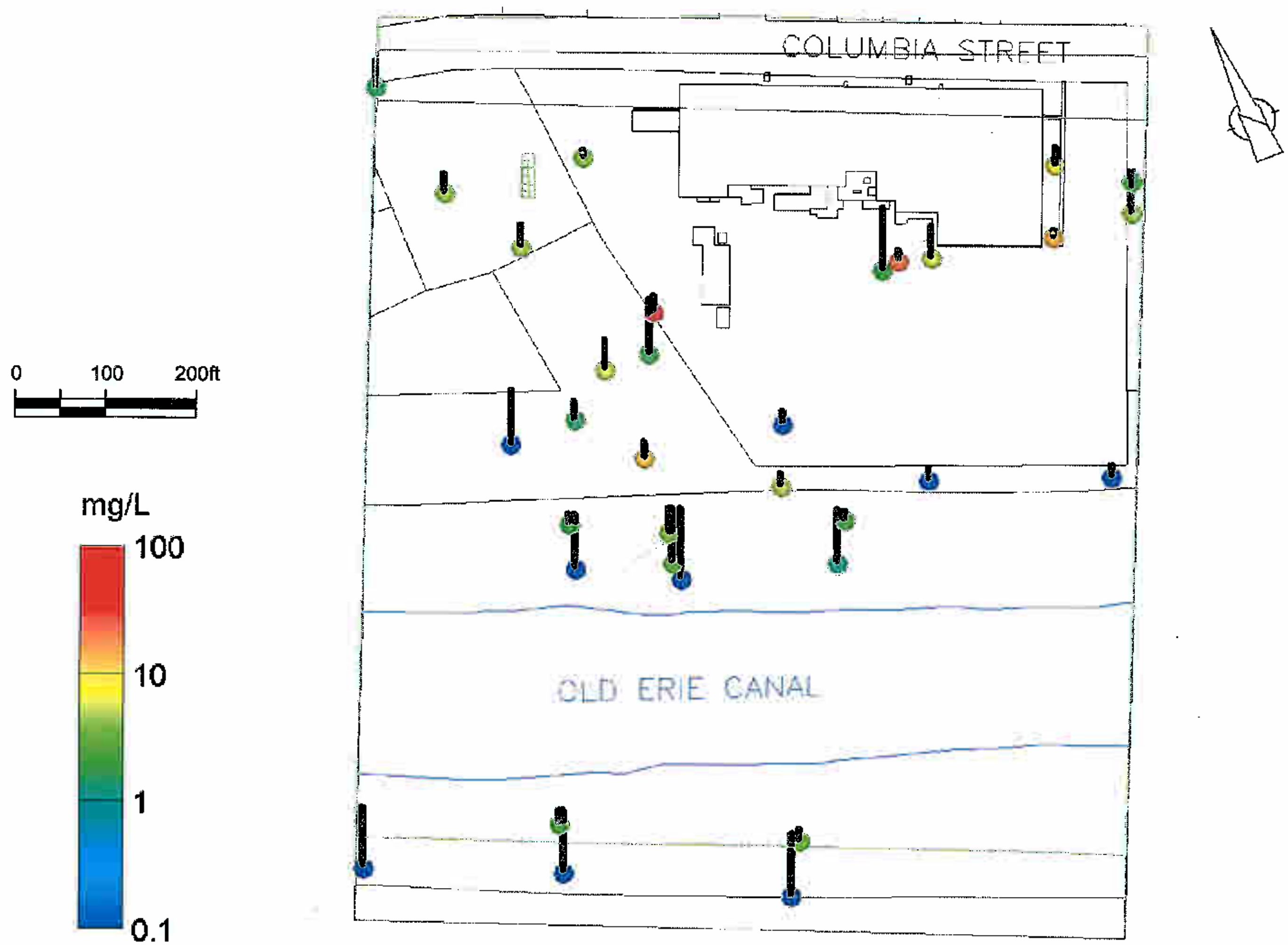


figure 16

DOC CONCENTRATIONS
IN GROUNDWATER
OLD ERIE CANAL SITE
Clyde, New York

35048-01(002)GN-BE039 APP D MAR 29/2007

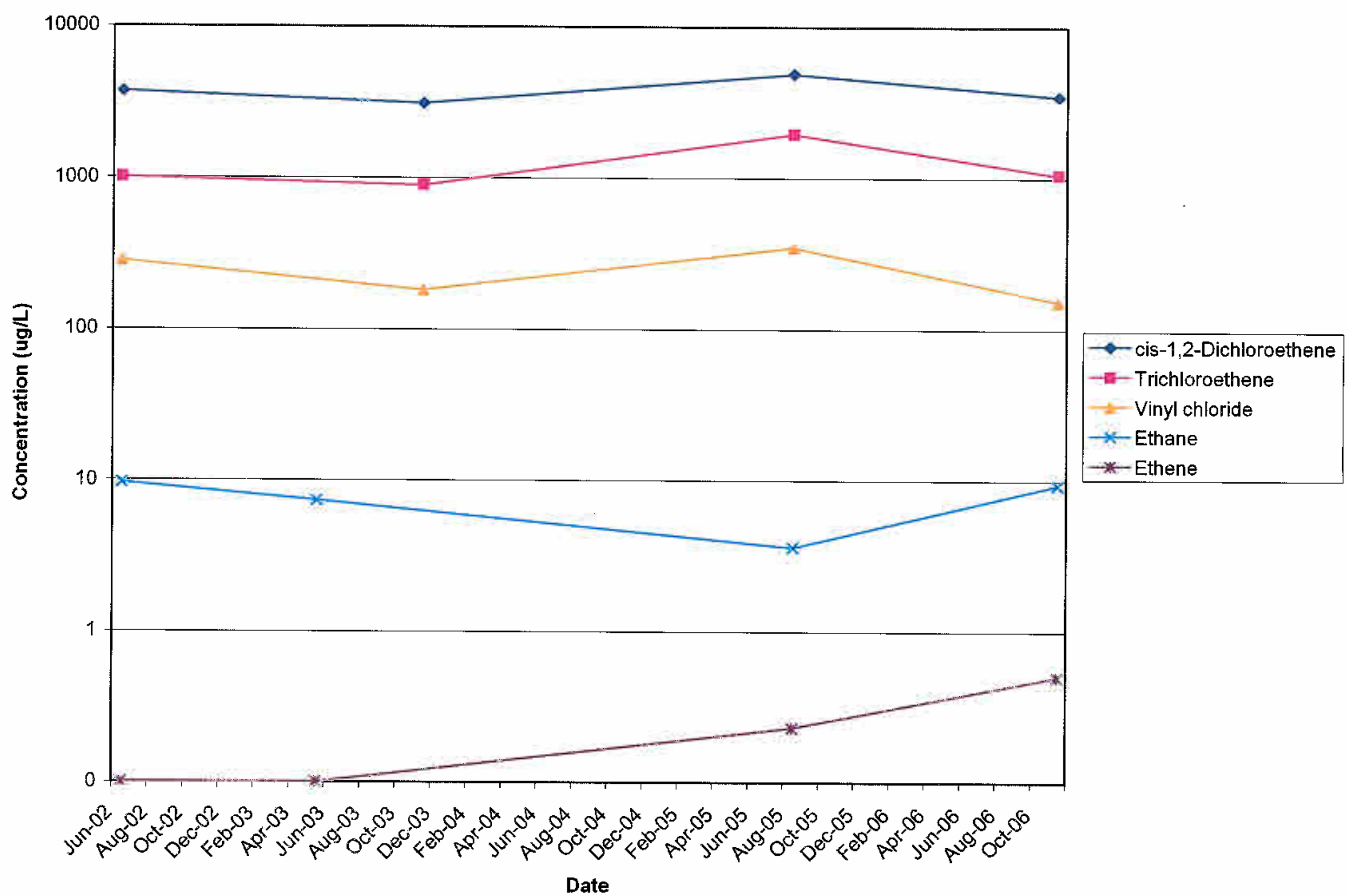


figure 17
MW-1S TCE & DEGRADATION PRODUCTS VS. TIME
OLD ERIE CANAL SITE
Clyde, New York

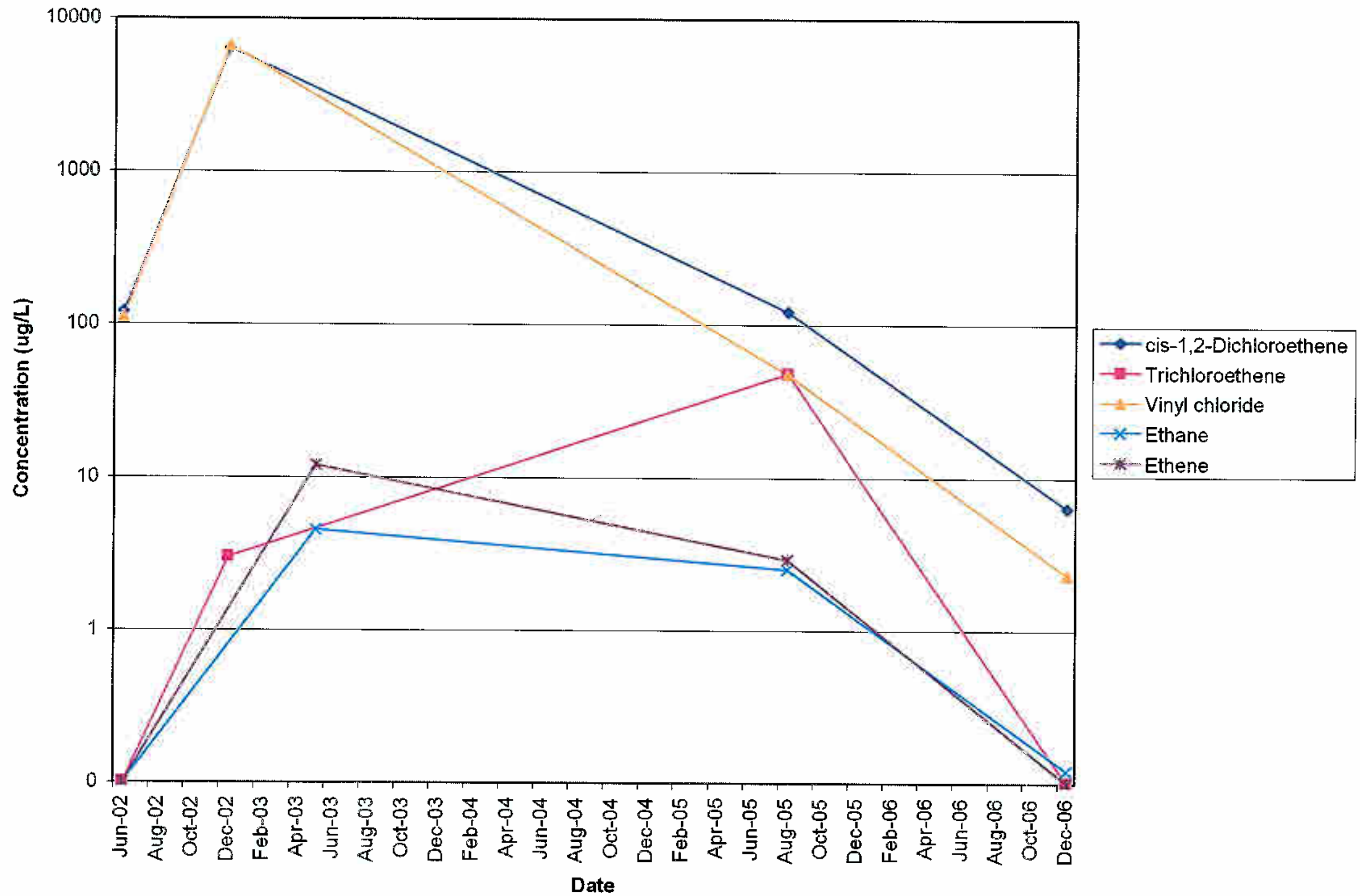


figure 18
MW-4S TCE & DEGRADATION PRODUCTS VS. TIME
OLD ERIE CANAL SITE
Clyde, New York

CRA

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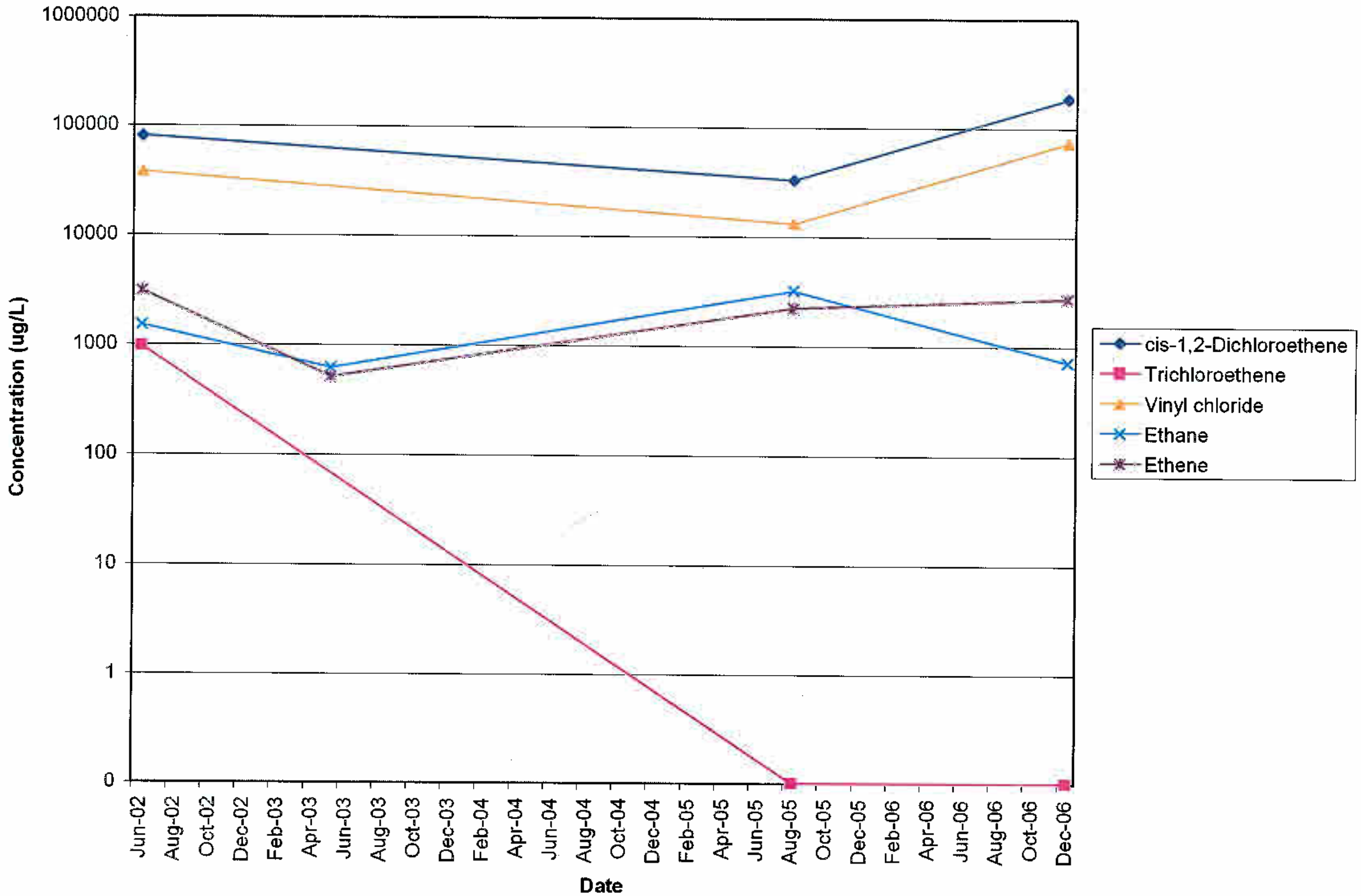

figure 19
MW-6S TCE & DEGRADATION PRODUCTS VS. TIME
OLD ERIE CANAL SITE
Clyde, New York

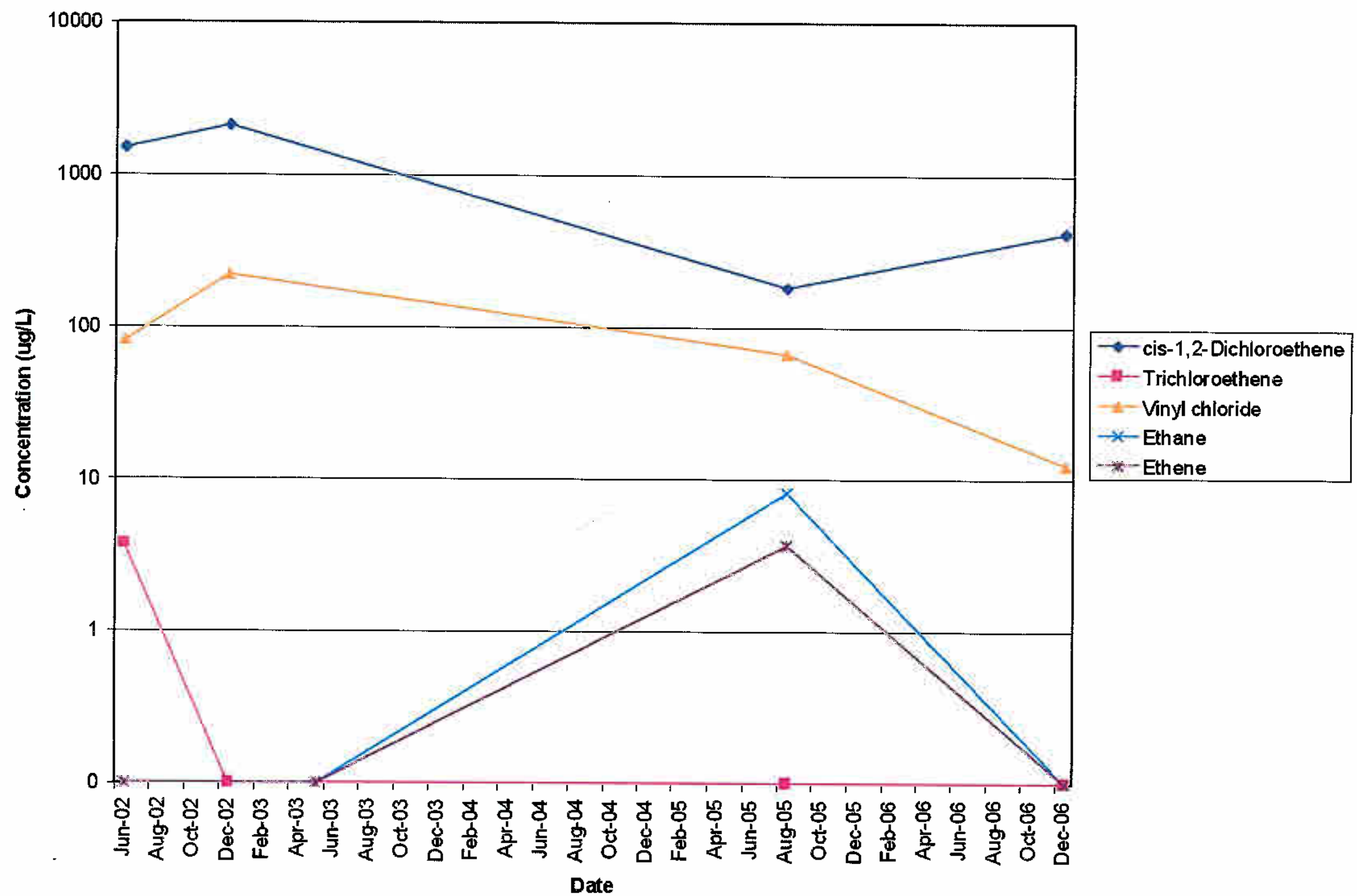

figure 20

MW-7S TCE & DEGRADATION PRODUCTS VS. TIME
OLD ERIE CANAL SITE
Clyde, New York

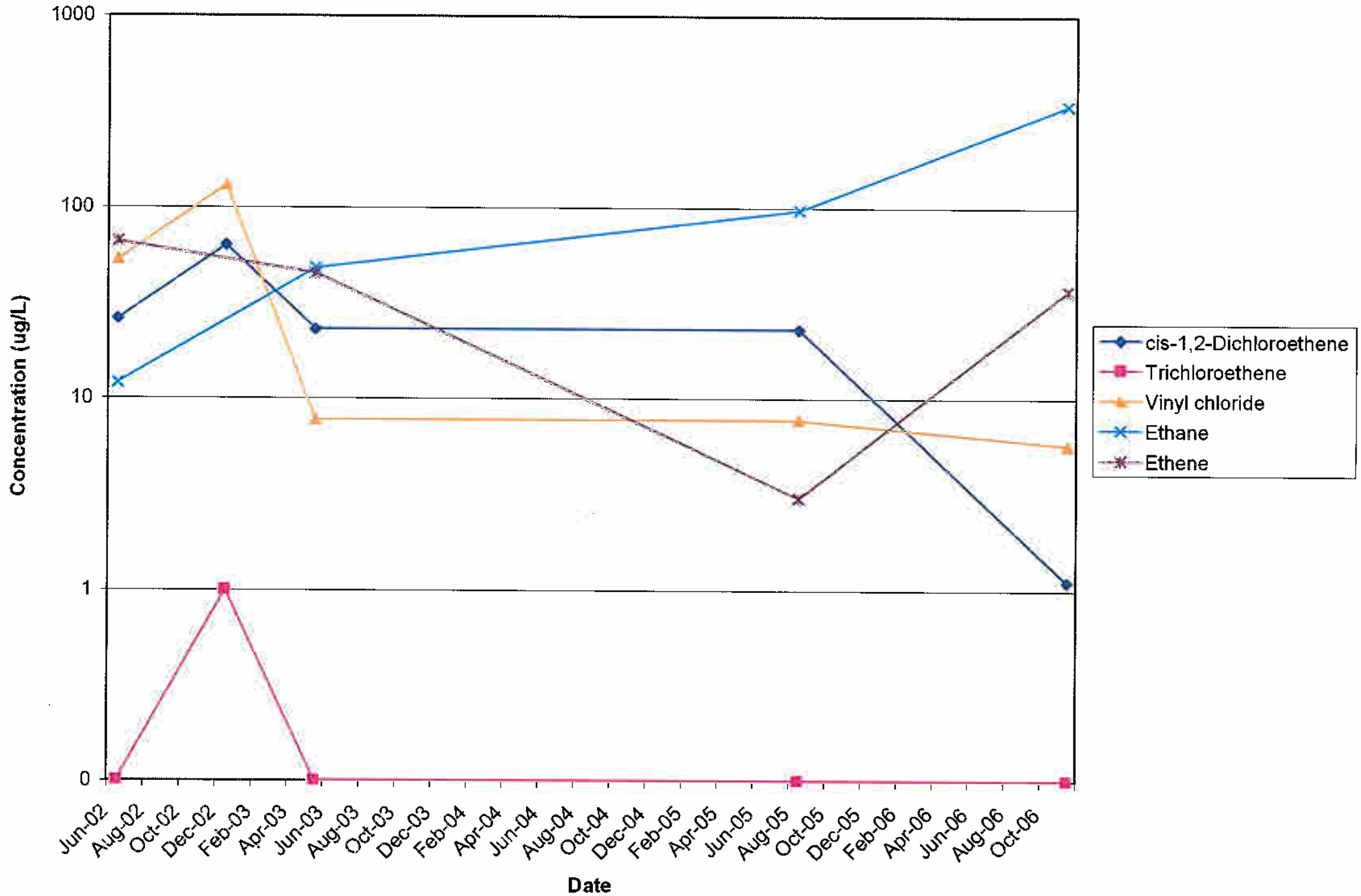

figure 21

EMW-2 TCE & DEGRADATION PRODUCTS VS. TIME
OLD ERIE CANAL SITE
Clyde, New York

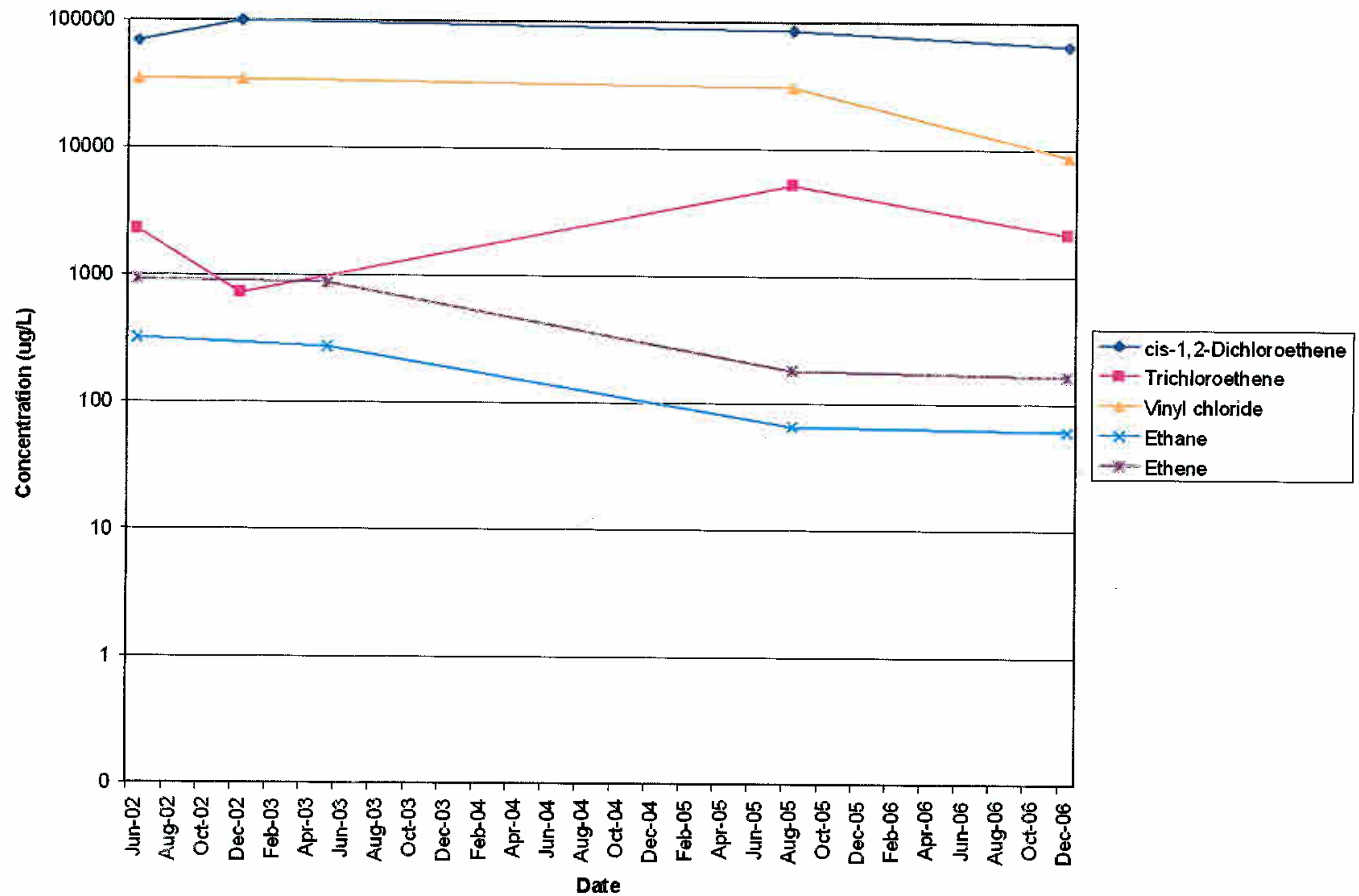

figure 22
MW-4B TCE & DEGRADATION PRODUCTS VS. TIME
OLD ERIE CANAL SITE
Clyde, New York

35048-00(002)GN-BE049 APP D MAR 20/2007

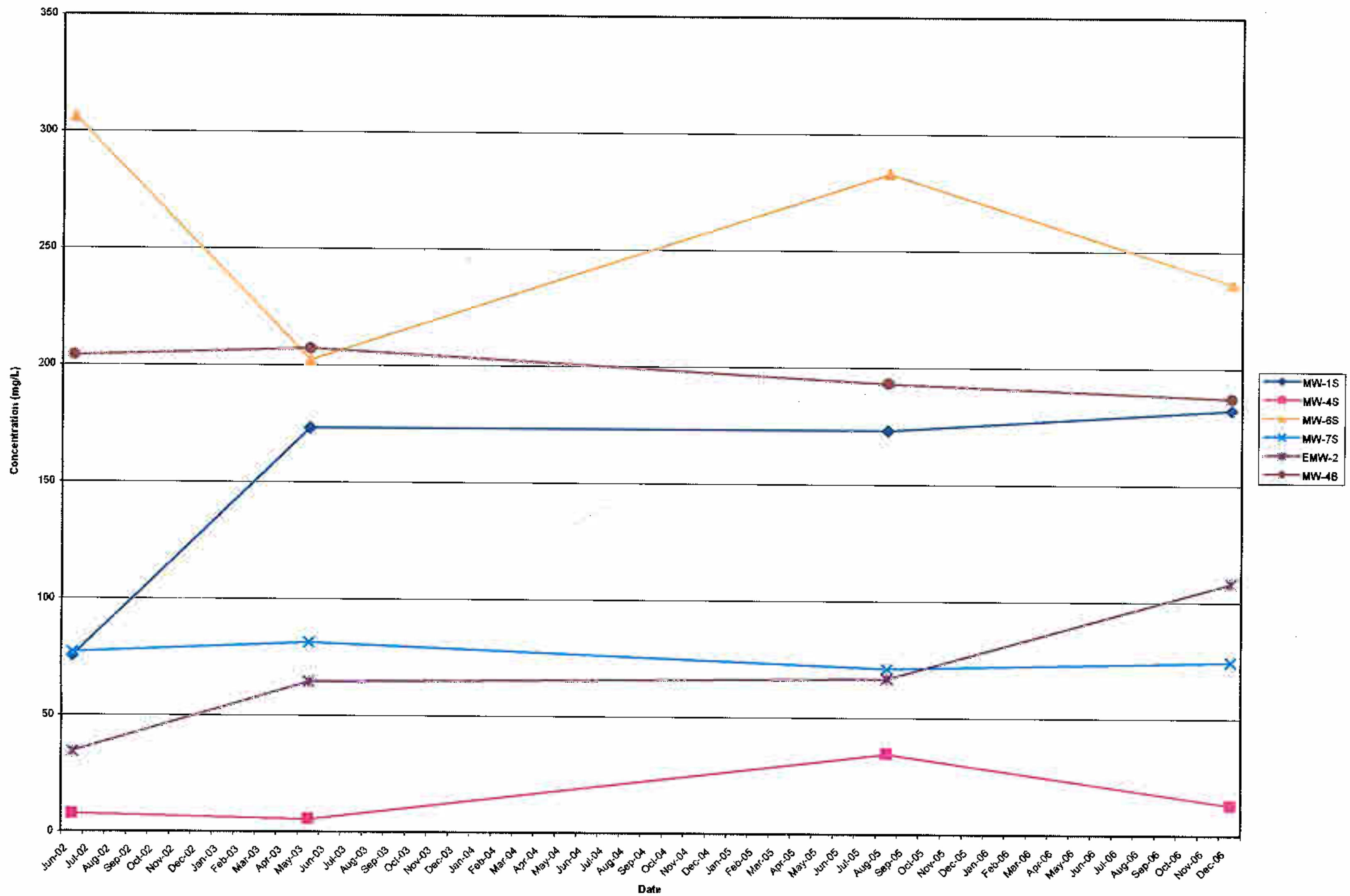

figure 23

CHLORIDE CONCENTRATION VS. TIME
OLD ERIE CANAL SITE
Clyde, New York

35048-00(002)GN-BE050 APP D MAR 20/2007

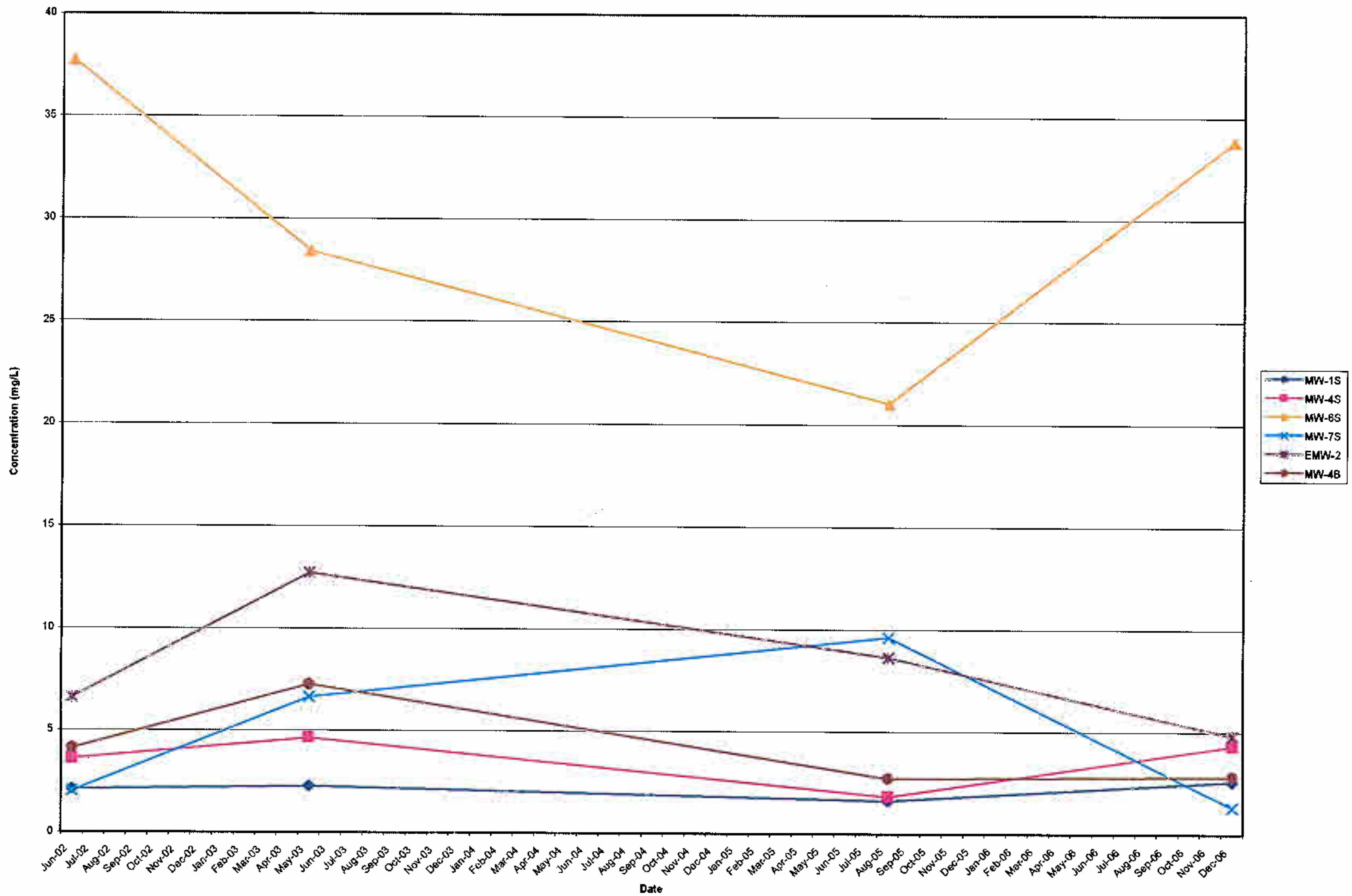

figure 24
DISSOLVED ORGANIC CARBON VS. TIME
OLD ERIE CANAL SITE
Clyde, New York

35048-00(002)GN-BE051 APP D MAR 20/2007

TABLE D.1

cis-1,2-DCE ABUNDANCE
MNA EVALUATION
OLD ERIE CANAL SITE
CLYDE, NEW YORK

	Sample Location:	*EMW-2*	*EMW-2*	*EMW-2*	*EMW-2*	*EMW-2*	*EMW-2*	*EMW-2*	*EMW-2*	*EMW-2*	*EMW-3*	*EMW-4*	*EMW-4*
	Sample Date:	*6/26/2002*	*12/19/2002*	*5/27/2003*	*5/27/2003*	*11/4/2003*	*11/4/2003*	*8/25/2005*	*8/25/2005*	*11/30/2006*	*6/26/2002*	*6/26/2002*	*12/19/2002*
				PB	*PB-Duplicate*	*PB*	*PB-Duplicate*		*Duplicate*				
1,1-Dichloroethene	µg/L	0	0	0	0	0	0	0	0	0	0	0	0
cis-1,2-Dichloroethene	µg/L	26	63	15	16	1.7	1.5	21.6	24.2	1.1	0.51	1.1	0.76
trans-1,2-Dichloroethene	µg/L	0.54	0	0	0	0	0	0	0	0	0	0	0
cis-DCE Abundance Ratio		**0.98**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**

	Sample Location:	*EMW-4*	*MW-1*	*MW-1*	*MW-1*	*MW-1S*	*MW-1S*	*MW-1S*	*MW-1S*	*MW-1S*	*MW-3S*	*MW-3B*	*MW-4S*
	Sample Date:	*8/25/2005*	*6/25/2002*	*5/28/2003*	*12/6/2006*	*6/26/2002*	*11/4/2003*	*8/24/2005*	*11/29/2006*	*11/29/2006*	*8/24/2005*	*12/5/2006*	*6/25/2002*
				PB						*Duplicate*			
1,1-Dichloroethene	µg/L	0	0	0	0	0	7.5	0	0	6.9	0	0	0
cis-1,2-Dichloroethene	µg/L	7.2	3.4	4.7	2.2	3700	3100	4880	3690	3240	57.1	351	120
trans-1,2-Dichloroethene	µg/L	0	0	0	0	32	35	50.6	32.4	34.2	0.68	5.9	0.76
cis-DCE Abundance Ratio		**1.00**	**1.00**	**1.00**	**1.00**	**0.99**	**0.99**	**0.99**	**0.99**	**0.99**	**0.99**	**0.98**	**0.99**

	Sample Location:	*MW-4S*	*MW-4S*	*MW-4S*	*MW-4S*	*MW-4S*	*MW-4S*	*MW-4S*	*MW-4S*	*MW-4S*	*MW-4S*	*MW-4B*	*MW-4B*
	Sample Date:	*12/19/2002*	*4/24/2003*	*4/24/2003*	*5/28/2003*	*5/28/2003*	*7/2/2003*	*7/2/2003*	*11/4/2003*	*8/24/2005*	*12/5/2006*	*6/25/2002*	*6/25/2002*
			PB-Top	*PB-Bottom*	*PB-Top*	*PB-Bottom*	*PB-Top*	*PB-Bottom*	*PB-Bottom*				*Duplicate*
1,1-Dichloroethene	µg/L	5.4	0	0	0	0	0	0	0	0	0	0	0
cis-1,2-Dichloroethene	µg/L	6400	8.7	3.9	1.6	3.2	2.9	2.3	7.9	121	6.3	58000	79000
trans-1,2-Dichloroethene	µg/L	37	0	0	0	0	0	0	0	1.2	0	0	0
cis-DCE Abundance Ratio		**0.99**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**0.99**	**1.00**	**1.00**	**1.00**

	Sample Location:	*MW-4B*	*MW-4B*	*MW-4B*	*MW-4B*	*MW-4B*	*MW-4B*	*MW-5S*	*MW-6S*	*MW-6S*	*MW-6S*	*MW-6S*	*MW-6S*
	Sample Date:	*12/19/2002*	*12/19/2002*	*5/28/2003*	*11/4/2003*	*8/24/2005*	*12/5/2006*	*8/25/2005*	*6/26/2002*	*5/28/2003*	*5/28/2003*	*11/4/2003*	*8/24/2005*
			Duplicate	*PB*	*PB*					*PB-Top*	*PB-Bottom*	*PB-Bottom*	
1,1-Dichloroethene	µg/L	0	0	0	20	105	0	0	0	0	0	0	0
cis-1,2-Dichloroethene	µg/L	100000	100000	32000	31000	84500	64800	15.1	80000	1500	9500	480	33100
trans-1,2-Dichloroethene	µg/L	0	0	0	20	345	130	0	0	0	0	0	65.5
cis-DCE Abundance Ratio		**1.00**	**1.00**	**1.00**	**1.00**	**0.99**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**

TABLE D.1

cis-1,2-DCE ABUNDANCE
MNA EVALUATION
OLD ERIE CANAL SITE
CLYDE, NEW YORK

Sample Location:		*MW-6S*	*MW-6B*	*MW-7S*	*MW-7S*	*MW-7S*	*MW-7S*	*MW-7S*	*MW-7S*	*MW-7S*	*MW-7B*	*MW-7B*	*MW-7B*
Sample Date:		*12/6/2006*	*12/6/2006*	*6/24/2002*	*12/18/2002*	*5/27/2003*	*5/27/2003*	*11/4/2003*	*8/26/2005*	*12/4/2006*	*5/27/2003*	*11/4/2003*	*8/26/2005*
						PB	*PB-Duplicate*	*PB*			*PB*	*PB*	
1,1-Dichloroethene	µg/L	0	59.3	1.2	0	0	0	0	0	0.62	0	0	0
cis-1,2-Dichloroethene	µg/L	186000	50400	1500	2100	140	130	140	180	414	10	3	1.9
trans-1,2-Dichloroethene	µg/L	478	119	14	0	0	0	0	0.6	2.5	0	0	0
cis-DCE Abundance Ratio		1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00

Sample Location:		*MW-7B*	*MW-8S*	*MW-9S*	*MW-8S*	*MW-9S*	*MW-13S*	*MW-14S*	*MW-15S*	*MW-16S*	*MW-16B*	*GP-2*	*GP-4*
Sample Date:		*12/4/2006*	*6/24/2002*	*6/24/2002*	*8/24/2005*	*8/24/2005*	*11/30/2006*	*12/6/2006*	*12/7/2006*	*12/6/2006*	*12/6/2006*	*4/25/2002*	*4/24/2002*
1,1-Dichloroethene	µg/L	0	0	0	0	0	0	51.8	13.7	0	0	0	0
cis-1,2-Dichloroethene	µg/L	0.58	2.6	0.55	1.9	0.83	6870	28200	20800	5.7	16	2.9	8.7
trans-1,2-Dichloroethene	µg/L	0	0	0	0	0	0	80	30.8	0	0	0.23	0
cis-DCE Abundance Ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.93	1.00

Sample Location:		*GP-5*	*GP-6*	*GP-8*	*GP-9*	*GP-10*	*GP-11*	*GP-12*	*GP-13*	*GP-14*	*GP-15*	*GP-16*	*GP-17*
Sample Date:		*4/25/2002*	*4/26/2002*	*4/24/2002*	*4/26/2002*	*4/24/2002*	*4/30/2002*	*4/26/2002*	*4/30/2002*	*4/26/2002*	*4/26/2002*	*4/25/2002*	*4/25/2002*
1,1-Dichloroethene	µg/L	0	0	0.37	0	0	0	0	22	0	0	70	0
cis-1,2-Dichloroethene	µg/L	170	30	230	14	22	420	21	9100	180	3200	60000	0.27
trans-1,2-Dichloroethene	µg/L	0.46	0	1	0	0	4.1	0	40	0	53	310	0
cis-DCE Abundance Ratio		1.00	1.00	0.99	1.00	1.00	0.99	1.00	0.99	1.00	0.98	0.99	1.00

Sample Location:		*GP-18*	*GP-19*	*GP-20*	*GP-22*	*GP-23*	*GP-24*	*GP-25*	*GP-25*	*GP-26*	*GP-27*	*GP-28*	*GP-29*
Sample Date:		*4/24/2002*	*5/1/2002*	*5/2/2002*	*4/25/2002*	*4/25/2002*	*4/24/2002*	*4/30/2002*	*4/30/2002*	*5/1/2002*	*4/26/2002*	*5/1/2002*	*4/26/2002*
									Duplicate				
1,1-Dichloroethene	µg/L	0	5.4	27	0	0	0.52	210	220	0	0.21	4.1	0
cis-1,2-Dichloroethene	µg/L	0.82	1500	44000	1.5	4.2	310	170000	180000	120	17	3700	110
trans-1,2-Dichloroethene	µg/L	0	9.9	170	0	0	0.68	0	0	0	0.43	15	0
cis-DCE Abundance Ratio		1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.96	0.99	1.00

TABLE D.1

cis-1,2-DCE ABUNDANCE
MNA EVALUATION
OLD ERIE CANAL SITE
CLYDE, NEW YORK

	Sample Location:	*GP-30*	*GP-31*	*GP-32*	*GP-33*	*GP-34*	*GP-34*	*GP-36*	*GP-37*	*GP-40*	*GP-41*	*GP-42*	*GP-43*
	Sample Date:	*4/26/2002*	*4/24/2002*	*4/24/2002*	*5/1/2002*	*5/2/2002*	*5/2/2002 Duplicate*	*4/23/2002*	*4/23/2002*	*5/2/2002*	*5/2/2002*	*5/2/2002*	*5/2/2002*
1,1-Dichloroethene	µg/L	0	1.3	0	0	160	170	0.88	0	0	0	0	0
cis-1,2-Dichloroethene	µg/L	5	500	16000	0.98	100000	200000	1900	5.2	0.4	0.35	0.46	0.69
trans-1,2-Dichloroethene	µg/L	0	3.4	93	0	400	420	3.1	0	0	0	0	0
cis-DCE Abundance Ratio		**1.00**	**0.99**	**0.99**	**1.00**	**0.99**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**

	Sample Location:	*GP-43*	*GP-45*	*GP-46*	*GP-47*	*GP-49*	*GP-50*	*GP-51*	*GP-53*	*GP-54*	*GP-56*	*GP-59*	*GP-60*
	Sample Date:	*5/2/2002 Duplicate*	*11/21/2002*	*11/21/2002*	*11/21/2002*	*11/21/2002*	*11/21/2002*	*11/21/2002*	*11/21/2002*	*11/21/2002*	*11/21/2002*	*11/21/2002*	*11/21/2002*
1,1-Dichloroethene	µg/L	0	0	0	0	0	0	0	0	0	0	0	0
cis-1,2-Dichloroethene	µg/L	0.59	160	11	6	600	120	6000	1300	7.1	1400	0.31	46
trans-1,2-Dichloroethene	µg/L	0	4.6	0.83	0	6.4	0	0	0	0	11	0	0
cis-DCE Abundance Ratio		**1.00**	**0.97**	**0.93**	**1.00**	**0.99**	**1.00**	**1.00**	**1.00**	**1.00**	**0.99**	**1.00**	**1.00**

	Sample Location:	*SSB-3*	*SSB-3*	*SSB-4*	*SSB-5*	*SSB-6*	*SSB-7*	*SSB-8*	*SSB-9*	*SSB-10*	*SSB-11*
	Sample Date:	*1/14/2005*	*1/14/2005 Duplicate*	*1/14/2005*	*1/14/2005*	*1/14/2005*	*1/13/2005*	*1/13/2005*	*1/13/2005*	*1/14/2005*	*1/14/2005*
1,1-Dichloroethene	µg/L	0.62	0.67	0	0	34	0	2.5	0	3.6	0.96
cis-1,2-Dichloroethene	µg/L	200	210	31	110	13000	73000	320	1.8	210	260
trans-1,2-Dichloroethene	µg/L	5.1	5.6	0	5.6	35	0	3.7	0	2.6	3.9
cis-DCE Abundance Ratio		**0.97**	**0.97**	**1.00**	**0.95**	**0.99**	**1.00**	**0.98**	**1.00**	**0.97**	**0.98**

APPENDIX E

COST ESTIMATE DETAIL

TABLE E.1

ESTIMATED COSTS - GROUNDWATER ALTERNATIVE 2
MONITORED NATURAL ATTENUATION & INSTITUTIONAL CONTROL
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

			Estimated Quantity	Unit	Unit Cost	Total
Administrative Cost						
1		Administrative Cost to Implement Deed Restrictions	1	L.S.	$ 10,000	$ 10,000
				Sub-Total, Administrative Cost:		$ 10,000
Direct Capital Costs						
1		Install monitoring wells				
	a.	Insurance, Mobilization/Demobilization	1	L.S.	$ 5,000	$ 5,000
	b.	Overburden	45	V.F.	$ 45	$ 2,025
	c.	Bedrock				
	i)	overburden casing	50	V.F.	$ 60	$ 3,000
	ii)	bedrock coring	70	V.F.	$ 60	$ 4,200
	d.	Curb Boxes/Bollards	5	Each	$ 150	$ 750
3		Well Development/Redevelopment	40	Hour	$ 100	$ 4,000 *
4		Waste Disposal	1	LS	$ 2,000	$ 2,000
				Sub-Total, Direct Capital Cost:		$ 20,975
Indirect Capital Costs						
1		Oversight of well installation & development (12 days)				$ 10,000
2		Engineering (assume 15% of capital cost)				$ 3,146
3		Contingency Allowance (assume 20% of capital cost)				$ 4,195
				Sub-Total, Indirect Capital Costs:		$ 17,341
			Total Capital Cost - MNA & Institutional Control:			$ 48,316
Annual Monitoring						
		Years 1 through 5				
1		Hydraulic Monitoring & Sampling	4	Each	$ 5,000	$ 20,000
2		Sample Analyses	110	Each	$ 300	$ 33,000
3		Monitoring Well Maintenance & Repair	1	L.S.	$ 3,000	$ 3,000
4		Reporting	1	L.S.	$ 10,000	$ 10,000
				Total, Annual O&M Years 1 through 5:		$ 66,000
		Years 6 through 30				
1		Hydraulic Monitoring & Sampling	2	Each	$ 5,000	$ 10,000
2		Sample Analyses	55	Each	$ 300	$ 16,500
3		Monitoring Well Maintenance & Repair	1	L.S.	$ 3,000	$ 3,000
4		Reporting	1	L.S.	$ 5,000	$ 5,000
				Total, Annual O&M Years 6 through 30:		$ 34,500

Notes:
Costs are in total present value.
* Assumes 50% of existing wells require redevelopment.

TABLE E.2

ESTIMATED COSTS - GROUNDWATER ALTERNATIVE 3
ENHANCED BIOLOGICAL DEGRADATION WITH MONITORED NATURAL
ATTENUATION AND INSTITUTIONAL CONTROLS
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Estimated Quantity	*Unit*	*Unit Cost*	*Total*
Administrative Cost					
1	Administrative Cost to Implement Deed Restrictions	1	L.S.	$ 10,000	$ 10,000
		Sub-Total, Administrative Cost:			$ 10,000
Pre-Design Cost					
1	Pilot study	1	L.S.	$ 50,000	$ 50,000
		Sub-Total, Pre-Design Cost:			$ 50,000
Direct Capital Costs					
1	Install monitoring wells				
a.	Insurance, Mobilization/Demobilization	1	L.S.	$ 5,000	$ 5,000
b.	Overburden	45	V.F.	$ 45	$ 2,025
c.	Bedrock				
	i) overburden casing	50	V.F.	$ 60	$ 3,000
	ii) bedrock coring	70	V.F.	$ 60	$ 4,200
d.	Curb Boxes/Bollards	5	Each	$ 150	$ 750
2	Well Development/Redevelopment	40	Hour	$ 100	$ 4,000 *
3	In situ treatment				
a.	Mobilization/Demobilization	1	L.S.	$ 5,000	$ 5,000
b.	Install injection points	15	Day	$ 2,500	$ 37,500
c.	Substrate	1	LS	$ 40,000	$ 40,000
d.	Application of substrate	4	Event	$ 10,000	$ 40,000
4	Waste Disposal	1	LS	$ 2,000	$ 2,000
		Sub-Total, Direct Capital Cost:			$ 143,475
Indirect Capital Costs					
1	Oversight of field activities	60	Manday	$ 1,000	$ 60,000
2	Engineering (assume 15% of capital cost)				$ 21,521
3	Contingency Allowance (assume 20% of capital cost)				$ 28,695
		Sub-Total, Indirect Capital Costs:			$ 110,216
	Total Capital Cost - MNA with Inst. Control & Enhanced Bio:				$ 313,691
Annual Monitoring					
	Years 1 through 5				
1	Hydraulic Monitoring & Sampling	4	Each	$ 5,000	$ 20,000
2	Sample Analyses	110	Each	$ 300	$ 33,000
3	Monitoring Well Maintenance & Repair	1	L.S.	$ 3,000	$ 3,000
4	Reporting	1	L.S.	$ 10,000	$ 10,000
		Total, Annual O&M Years 1 through 5:			$ 66,000
	Years 6 through 30				
1	Hydraulic Monitoring & Sampling	2	Each	$ 5,000	$ 10,000
2	Sample Analyses	55	Each	$ 300	$ 16,500
3	Monitoring Well Maintenance & Repair	1	L.S.	$ 3,000	$ 3,000
4	Reporting	1	L.S.	$ 5,000	$ 5,000
		Total, Annual O&M Years 6 through 30:			$ 34,500

Notes:

Costs are in total present value.

* Assumes 50% of existing wells require redevelopment.

TABLE E.3

ESTIMATED COSTS - GROUNDWATER ALTERNATIVE 4
PERMEABLE REACTIVE BARRIER WITH ENHANCED BIODEGRADATION,
MONITORED NATURAL ATTENUATION, AND INSTITUTIONAL CONTROL
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Estimated Quantity	*Unit*	*Unit Cost*	*Total*
Administrative Cost					
1	Administrative Cost to Implement Deed Restrictions	1	L.S.	$ 10,000	$ 10,000
			Sub-Total, Administrative Cost:		$ 10,000
Pre-Design Cost					
1	Geotechnical Investigation	1	L.S.	$ 10,000	$ 10,000
			Sub-Total, Pre-Design Cost:		$ 10,000
Direct Capital Costs					
1	PRB Construction				
a.	Insurance, Mobilization/Demobilization	1	L.S.	$ 10,000	$ 10,000
b.	PRB Construction	700	L.F.	$ 900	$ 630,000
2	In situ treatment - Bldg. Hotspots				
a.	Mobilization/Demobilization	1	L.S.	$ 2,000	$ 2,000
b.	Install injection points	8	Day	$ 2,000	$ 16,000
c.	Substrate	1	L.S.	$ 10,000	$ 10,000
d.	Application of substrate	1	L.S.	$ 5,000	$ 5,000
3	Install monitoring wells				
a.	Insurance, Mobilization/Demobilization	1	L.S.	$ 5,000	$ 5,000
b.	Overburden	45	V.F.	$ 45	$ 2,025
c.	Bedrock				
	i) overburden casing	50	V.F.	$ 60	$ 3,000
	ii) bedrock coring	70	V.F.	$ 60	$ 4,200
d.	Curb Boxes/Bollards	5	Each	$ 150	$ 750
4	Well Development/Redevelopment	40	Hour	$ 100	$ 4,000 *
5	Waste Disposal	1	LS	$ 10,000	$ 10,000
			Sub-Total, Direct Capital Cost:		$ 701,975
Indirect Capital Costs					
1	Oversight of field activities	60	Manday	$ 1,000	$ 60,000
2	Engineering (assume 15% of capital cost)				$ 105,296
3	Contingency Allowance (assume 20% of capital cost)				$ 140,395
			Sub-Total, Indirect Capital Costs:		$ 305,691
		Total Capital Cost - PRB with MNA & Enhanced Bio:			$ 1,027,666

TABLE E.3

ESTIMATED COSTS - GROUNDWATER ALTERNATIVE 4
PERMEABLE REACTIVE BARRIER WITH ENHANCED BIODEGRADATION,
MONITORED NATURAL ATTENUATION, AND INSTITUTIONAL CONTROL
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Estimated Quantity	*Unit*	*Unit Cost*	*Total*	
Annual Operation & Maintenance						
1	Wall replacement	1	L.S.	$ 20,000	$ 20,000	**
Annual Monitoring						
	Years 1 through 5					
1	Hydraulic Monitoring & Sampling	4	Each	$ 5,000	$ 20,000	
2	Sample Analyses	130	Each	$ 300	$ 39,000	
3	Monitoring Well Maintenance & Repair	1	L.S.	$ 3,000	$ 3,000	
4	Reporting	1	L.S.	$ 12,000	$ 12,000	
		Total, Annual O&M Years 1 through 5:			$ 74,000	
	Years 6 through 30					
1	Hydraulic Monitoring & Sampling	2	Each	$ 5,000	$ 10,000	
2	Sample Analyses	65	Each	$ 300	$ 19,500	
3	Monitoring Well Maintenance & Repair	1	L.S.	$ 3,000	$ 3,000	
4	Reporting	1	L.S.	$ 6,000	$ 6,000	
		Total, Annual O&M Years 6 through 30:			$ 38,500	

Notes:
Costs are in total present value.
* Assumes 50% of existing wells require redevelopment.
** 1 wall replacement averaged over 30 years.

TABLE E.4

ESTIMATED COSTS - GROUNDWATER ALTERNATIVE 5
IN-WELL AIR STRIPPING WITH ENHANCED BIODEGRADATION
AND INSTITUTIONAL CONTROL
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Estimated Quantity	*Unit*	*Unit Cost*	*Total*
Administrative Cost					
1	Administrative Cost to Implement Deed Restrictions	1	L.S.	$ 10,000	$ 10,000
			Sub-Total, Administrative Cost:		$ 10,000
Pre-Design Cost					
1	Pumping/Pilot Tests	1	L.S.	$ 20,000	$ 20,000
			Sub-Total, Pre-Design Cost:		$ 20,000
Direct Capital Costs					
1	Insurance, Mobilization/ Demobilization	1	L.S.	$ 10,000	$ 10,000
2	Installation of Stripping Wells				
a.	Drilling and development	7	Each	$ 3,500	$ 24,500
b.	Above-Ground Completion	7	Each	$ 1,500	$ 10,500
3	Vapor Treatment System				
a.	Catalytic Oxidizer	1	L.S.	$ 80,000	$ 80,000
b.	Scrubber	1	L.S.	$ 60,000	$ 60,000
c.	Heat Exchanger	1	L.S.	$ 5,000	$ 5,000
d.	Blower/Vacuum	1	L.S.	$ 10,000	$ 10,000
4	Mechanical				
a.	Trenching & Piping	600	L.F.	$ 60	$ 36,000
b.	In Building	1	L.S.	$ 80,000	$ 80,000
5	Treatment Building	1	L.S.	$ 50,000	$ 50,000
6	Electrical	1	L.S.	$ 62,000	$ 62,000
7	Instrumentation	1	L.S.	$ 25,000	$ 25,000
8	In situ treatment - Bldg. Hotspots				
a.	Mobilization/Demobilization	1	L.S.	$ 2,000	$ 2,000
b.	Install injection points	8	Day	$ 2,000	$ 16,000
c.	Substrate	1	L.S.	$ 10,000	$ 10,000
d.	Application of substrate	1	L.S.	$ 5,000	$ 5,000
9	Install monitoring wells				
a.	Insurance, Mobilization/Demobilization	1	L.S.	$ 5,000	$ 5,000
b.	Overburden	45	V.F.	$ 45	$ 2,025
c.	Bedrock				
	i) overburden casing	50	V.F.	$ 60	$ 3,000
	ii) bedrock coring	70	V.F.	$ 60	$ 4,200
d.	Curb Boxes/Bollards	5	Each	$ 150	$ 750
10	Well Development/Redevelopment	40	Hour	$ 100	$ 4,000 *
11	Waste Disposal	1	LS	$ 10,000	$ 10,000
			Sub-Total, Direct Capital Cost:		$ 514,975

TABLE E.4

ESTIMATED COSTS - GROUNDWATER ALTERNATIVE 5
IN-WELL AIR STRIPPING WITH ENHANCED BIODEGRADATION
AND INSTITUTIONAL CONTROL
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Estimated Quantity	*Unit*	*Unit Cost*	*Total*
Indirect Capital Costs					
1	Oversight of construction activities	90	Manday	$ 1,000	$ 90,000
2	Extraction & treatment system startup	1	LS	$ 15,000	$ 15,000
3	Engineering				
	(assume 15% of capital cost)				$ 77,246
4	Contingency Allowance				
	(assume 20% of capital cost)				$ 102,995
				Sub-Total, Indirect Capital Costs:	$ 285,241
				Total Capital Cost - In-Well Stripping with Enhanced Bio:	$ 830,216
Annual Operation & Maintenance					
1	Stripping Well Maintenance	7	Each	$ 500	$ 3,500
2	Treatment System				
	a. Operator	416	Hour	$ 75	$ 31,200
	b. Utilities	1	L.S.	$ 45,000	$ 45,000
	c. O&M	1	L.S.	$ 10,000	$ 10,000
				Total, Annual O&M:	$ 89,700
Annual Monitoring					
	Years 1 through 5				
1	Hydraulic Monitoring & Sampling	4	Each	$ 5,000	$ 20,000
2	Sample Analyses	110	Each	$ 300	$ 33,000
3	Monitoring Well Maintenance & Repair	1	L.S.	$ 3,000	$ 3,000
4	Reporting	1	L.S.	$ 10,000	$ 10,000
				Total, Annual O&M Years 1 through 5:	$ 66,000
	Years 6 through 30				
1	Hydraulic Monitoring & Sampling	2	Each	$ 5,000	$ 10,000
2	Sample Analyses	55	Each	$ 300	$ 16,500
3	Monitoring Well Maintenance & Repair	1	L.S.	$ 3,000	$ 3,000
4	Reporting	1	L.S.	$ 5,000	$ 5,000
				Total, Annual O&M Years 6 through 30:	$ 34,500

Notes:
Costs are in total present value.
* Assumes 50% of existing wells require redevelopment.

TABLE E.5

ESTIMATED COSTS - GROUNDWATER ALTERNATIVE 6
HYDRAULIC CONTAINMENT/COLLECTION WITH
ON-SITE TREATMENT AND DISPOSAL
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

			Estimated Quantity	*Unit*	*Unit Cost*	*Total*
Administrative Cost						
1		Administrative Cost to Implement Deed Restrictions	1	L.S.	$ 10,000	$ 10,000
				Sub-Total, Administrative Cost:		$ 10,000
Pre-Design Cost						
1		Pumping/Pilot Tests	1	L.S.	$ 20,000	$ 20,000
				Sub-Total, Pre-Design Cost:		$ 20,000
Direct Capital Costs						
1		Insurance, Mobilization/ Demobilization	1	L.S.	$ 10,000	$ 10,000
2		Installation of Extraction Wells				
	a.	Drilling and development	7	Each	$ 1,500	$ 10,500
	b.	Above-Ground Completion	7	Each	$ 1,500	$ 10,500
	c.	Pump	7	Each	$ 1,500	$ 10,500
3		Groundwater Treatment System				
	a.	Air Stripper	1	L.S.	$ 27,000	$ 27,000
	b.	Tanks & pumps	1	L.S.	$ 8,000	$ 8,000
	d.	Catalytic Oxidizer	1	L.S.	$ 120,000	$ 120,000
	e.	Scrubber	1	L.S.	$ 90,000	$ 90,000
	f.	Bag Filters	2	Each	$ 1,500	$ 3,000
4		Mechanical				
	a.	Trenching & Piping	600	L.F.	$ 60	$ 36,000
	b.	Treatment systems	1	L.S.	$ 80,000	$ 80,000
5		Treatment Building	1	L.S.	$ 90,000	$ 90,000
6		Electrical	1	L.S.	$ 120,000	$ 120,000
7		Instrumentation	1	L.S.	$ 40,000	$ 40,000
8		Install monitoring wells				
	a.	Insurance, Mobilization/Demobilization	1	L.S.	$ 5,000	$ 5,000
	b.	Overburden	45	V.F.	$ 45	$ 2,025
	c.	Bedrock				
		i) overburden casing	50	V.F.	$ 60	$ 3,000
		ii) bedrock coring	70	V.F.	$ 60	$ 4,200
	d.	Curb Boxes/Bollards	5	Each	$ 150	$ 750
9		Well Development/Redevelopment	40	Hour	$ 100	$ 4,000 *
10		Waste Disposal	1	LS	$ 10,000	$ 10,000
				Sub-Total, Direct Capital Cost:		$ 684,475

TABLE E.5

ESTIMATED COSTS - GROUNDWATER ALTERNATIVE 6
HYDRAULIC CONTAINMENT/COLLECTION WITH
ON-SITE TREATMENT AND DISPOSAL
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Estimated Quantity	*Unit*	*Unit Cost*	*Total*
Indirect Capital Costs					
1	Oversight of construction & well installation & development	90	Day	$ 1,000	$ 90,000
2	Extraction & treatment system startup	1	LS	$ 20,000	$ 20,000
3	Engineering (assume 15% of capital cost)				$ 102,671
4	Contingency Allowance (assume 20% of capital cost)				$ 136,895
			Sub-Total, Indirect Capital Costs:		$ 349,566
		Total Capital Cost - Hydraulic Containment/Collection:			$ 1,064,041
Annual Operation & Maintenance					
1	Extraction Well Maintenance	7	Each	$ 500	$ 3,500
2	Treatment System				
a.	Operator	416	Hour	$ 75	$ 31,200
b.	Utilities	1	L.S.	$ 60,000	$ 60,000
c.	Treatment monitoring, repairs, materials & supplies	1	L.S.	$ 15,000	$ 15,000
			Total, Annual O&M:		$ 109,700
Annual Monitoring					
	Years 1 through 5				
1	Hydraulic Monitoring & Sampling	4	Each	$ 5,000	$ 20,000
2	Sample Analyses	110	Each	$ 300	$ 33,000
3	Monitoring Well Maintenance & Repair	1	L.S.	$ 3,000	$ 3,000
4	Reporting	1	L.S.	$ 8,000	$ 8,000
		Total, Annual Monitoring Years 1 through 5:			$ 64,000
	Years 6 through 30				
1	Hydraulic Monitoring & Sampling	2	Each	$ 5,000	$ 10,000
2	Sample Analyses	55	Each	$ 300	$ 16,500
3	Monitoring Well Maintenance & Repair	1	L.S.	$ 3,000	$ 3,000
4	Reporting	1	L.S.	$ 5,000	$ 5,000
		Total, Annual Monitoring Years 6 through 30:			$ 34,500

Notes:
Costs are in total present value.
* Assumes 50% of existing wells require redevelopment.
**Assumes no additional manpower required.

TABLE E.6

ESTIMATED COSTS - SURFACE SOIL ALTERNATIVE 2
INSTITUTIONAL CONTROL AND FENCING
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Estimated Quantity	*Unit*	*Unit Cost*	*Total*	
Administrative Cost						
1	Administrative Cost to Implement Deed Restrictions	1	L.S.	$ 10,000	$ 10,000	
			Sub-Total, Administrative Cost:		$ 10,000	
Direct Capital Costs						
1	Insurance, Mobilization/ Demobilization	1	L.S.	$ 1,500	$ 1,500	
2	Supply & install fencing	300	L.F.	$ 32	$ 9,600	
			Sub-Total, Direct Capital Cost:		$ 11,100	
Indirect Capital Costs						
1	Design & Engineering	1	L.S.	$ 5,000	$ 5,000	
2	Contingency Allowance (assume 30% of capital cost)				$ 3,330	
			Sub-Total, Indirect Capital Costs:		$ 8,330	
		Total Capital Cost - Institutional Control			$ 29,430	
Annual Operation & Maintenance						
1	Monthly inspections	12	Each	$ 100	$ 1,200	
2	Fence replacement (@15 years)	1	L.S.	$ 640	$ 640	*
		Total Annual Operation & Maintenance			$ 1,840	

Notes:
Costs are in total present value.
*Assumes fencing is replaced twice, averaged over 30 years.

TABLE E.7

ESTIMATED COSTS - SURFACE SOIL ALTERNATIVE 3
CAPPING WITH INSTITUTIONAL CONTROL
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Estimated Quantity	*Unit*	*Unit Cost*	*Total*
Administrative Cost					
1	Administrative Cost to Implement Deed Restrictions	1	L.S.	$ 10,000	$ 10,000
			Sub-Total, Administrative Cost:		$ 10,000
Direct Capital Costs					
1	Insurance, Mobilization/Demobilization	1	L.S.	$ 2,000	$ 2,000
2	Area preparation (incl. filter fabric)	1	L.S.	$ 5,000	$ 5,000
3	Supply & place imported backfill	100	c.y.	$ 30	$ 3,000
4	Supply & place topsoil	30	c.y.	$ 35	$ 1,050
5	Seed & vegetate	1	L.S.	$ 500	$ 500
6	Survey	1	L.S.	$ 5,000	$ 5,000
7	Waste Disposal	1	L.S.	$ 5,000	$ 5,000
			Sub-Total, Direct Capital Cost:		$ 21,550
Indirect Capital Costs					
1	Design, Engineering, & Reporting	1	L.S.	$ 10,000	$ 10,000
2	Contingency Allowance (assume 50% of capital cost)				$ 10,775
			Sub-Total, Indirect Capital Costs:		$ 20,775
		Total Capital Cost - Capping & Institutional Control			$ 52,325
Annual Operation & Maintenance					
1	Monthly inspections	12	Each	$ 100	$ 1,200
2	Maintenance & Repair	1	L.S.	$ 500	$ 500
			Total Annual Operation & Maintenance		$ 1,700

Notes:
Costs are in total present value.
Assume area is 80 feet x 30 feet

TABLE E.8

ESTIMATED COSTS - SURFACE SOIL ALTERNATIVE 4
SURFACE SEDIMENT EXCAVATION & DISPOSAL
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Estimated Quantity	*Unit*	*Unit Cost*	*Total*	
Administrative Cost						
1	Administrative Cost to Implement Deed Restrictions	1	L.S.	$ 10,000	$ 10,000	
			Sub-Total, Administrative Cost:		$ 10,000	
Direct Capital Costs						
	Excavate & Restore (100 c.y.)					
1	Insurance, Mobilization/Eemobilization	1	L.S.	$ 5,000	$ 5,000	
2	Excavate & load soil	100	c.y.	$ 30	$ 3,000	
4	Supply & place filter fabric	300	yd^2	$ 1.20	$ 360	
5	Supply & place imported backfill	100	c.y.	$ 30	$ 3,000	
6	Supply & place topsoil	30	c.y.	$ 35	$ 1,050	
7	Seed & vegetate	1	L.S.	$ 500	$ 500	
8	Survey	1	L.S.	$ 5,000	$ 5,000	
					$ 17,910	
	Transportation & Disposal (100 c.y.)/170 ton)					
1	Transportation and disposal	170	ton	$ 175	$ 29,750	*
			Sub-Total, Direct Capital Cost:		$ 47,660	
Indirect Capital Costs						
1	Design & Engineering (assume 25% of capital cost)				$ 11,915	
2	Contingency Allowance (assume 50% of capital cost)				$ 23,830	
			Sub-Total, Indirect Capital Costs:		$ 35,745	
			Total Capital Cost - Excavation & Disposal		$ 93,405	
Annual Operation & Maintenance						
1	Monthly inspections	12	Each	$ 100	$ 1,200	
2	Maintenance & Repair	1	L.S.	$ 500	$ 500	
			Total Annual Operation & Maintenance		$ 1,700	

Notes:
Costs are in total present value.
Assume area is 80 feet x 30 feet, excavated to 1 foot bgs.
*Assumes hazardous.

TABLE E.9

ESTIMATED COSTS - SOIL GAS ALTERNATIVE 2
SUB-SLAB VENTILATION
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Estimated Quantity	*Unit*	*Unit Cost*	*Total*
Administrative Cost					
1	Administrative Cost to Implement Deed Restrictions	1	L.S.	$ 10,000	$ 10,000
			Sub-Total, Administrative Cost:		$ 10,000
Pre-Design Cost					
1	Confirmatory Testing	1	L.S.	$ 10,000	$ 10,000
			Sub-Total, Pre-Design Cost:		$ 10,000
Direct Capital Costs					
1	Insurance, Mobilization/ Demobilization	1	L.S.	$ 5,000	$ 5,000
2	Installation of Well Points	6	Each	$ 1,200	$ 7,200
3	Treatment System				
a.	SVE Skid	1	L.S.	$ 5,000	$ 5,000
b.	Vapor Carbon System	1	L.S.	$ 2,000	$ 2,000
4	Mechanical				
a.	Collection Piping	600	L.F.	$ 10	$ 6,000 *
b.	System Installation	1	L.S.	$ 3,500	$ 3,500
5	Equipment Building	1	L.S.	$ 4,000	$ 4,000
6	Electrical	1	L.S.	$ 4,800	$ 4,800
7	Instrumentation/Controls	1	L.S.	$ 2,000	$ 2,000
8	Waste Disposal	1	L.S.	$ 2,000	$ 2,000
			Sub-Total, Direct Capital Cost:		$ 41,500
Indirect Capital Costs					
1	Oversight of construction	15	Day	$ 1,000	$ 15,000
2	System startup	1	LS	$ 5,000	$ 5,000
3	Design, Engineering, & Reporting	1	LS	$ 10,000	$ 10,000
4	Contingency Allowance (assume 20% of capital cost)				$ 8,300
			Sub-Total, Indirect Capital Costs:		$ 38,300
		Total Capital Cost - Sub-Slab Ventilation:			$ 99,800
Annual Operation & Maintenance					
1	Treatment System				
a.	Carbon Utilization	1	L.S.	$ 500	$ 500
b.	Utilities	1	L.S.	$ 2,000	$ 2,000
c.	Maintenance & Repairs	1	L.S.	$ 2,000	$ 2,000
			Total, Annual O&M:		$ 4,500

Notes:
Costs are in total present value.
* Assumes all piping is overhead.

TABLE E.10

ESTIMATED COSTS - SOIL GAS ALTERNATIVE 3
SOIL VAPOR EXTRACTION WITH CARBON TREATMENT
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Estimated Quantity	*Unit*	*Unit Cost*	*Total*
Administrative Cost					
1	Administrative Cost to Implement Deed Restrictions	1	L.S.	$ 10,000	$ 10,000
			Sub-Total, Administrative Cost:		$ 10,000
Pre-Design Cost					
1	Confirmatory Testing	1	L.S.	$ 10,000	$ 10,000
			Sub-Total, Pre-Design Cost:		$ 10,000
Direct Capital Costs					
1	Insurance, Mobilization/ Demobilization	1	L.S.	$ 5,000	$ 5,000
2	Installation of Extraction Wells	9	Each	$ 1,200	$ 10,800
3	Treatment System				
	a. SVE Skid	1	L.S.	$ 15,000	$ 15,000
	d. Vapor Carbon System	1	L.S.	$ 4,000	$ 4,000
4	Mechanical				
	a. Collection Piping	1000	L.F.	$ 10	$ 10,000 *
	b. System Installation	1	L.S.	$ 3,500	$ 3,500
5	Civil/Structural (Building)	1	L.S.	$ 8,000	$ 8,000
6	Electrical	1	L.S.	$ 4,800	$ 4,800
7	Instrumentation/Controls	1	L.S.	$ 4,000	$ 4,000
8	Waste Disposal	1	L.S.	$ 5,000	$ 5,000
			Sub-Total, Direct Capital Cost:		$ 70,100
Indirect Capital Costs					
1	Oversight of construction & well installation	20	Day	$ 1,000	$ 20,000
2	Extraction & treatment system startup	1	LS	$ 8,000	$ 8,000
3	Design, Engineering, & Reporting	1	LS	$ 10,000	$ 10,000
4	Contingency Allowance (assume 20% of capital cost)				$ 14,020
			Sub-Total, Indirect Capital Costs:		$ 52,020
			Total Capital Cost - SVE under Building:		$ 142,120

TABLE E.10

ESTIMATED COSTS - SOIL GAS ALTERNATIVE 3
SOIL VAPOR EXTRACTION WITH CARBON TREATMENT
FEASIBILITY STUDY
OLD ERIE CANAL SITE
CLYDE, NEW YORK

		Estimated Quantity	*Unit*	*Unit Cost*	*Total*	
Annual Operation & Maintenance						
1	Treatment System					
	a. Operator	384	Hour	$ 75	$ 28,800	
	b. Carbon Utilization	1	L.S.	$ 2,000	$ 2,000	
	c. Utilities	1	L.S.	$ 7,000	$ 7,000	
	d. Maintenance & Repairs	1	L.S.	$ 2,000	$ 2,000	
				Total, Annual O&M:	$ 39,800	**
Annual Monitoring						
1	Monitoring & Sampling	12	Each	$ 100	$ 1,200	
2	Sample Analyses	12	Each	$ 350	$ 4,200	
4	Reporting	4	L.S.	$ 1,500	$ 6,000	
				Total, Annual Monitoring :	$ 11,400	

Notes:
Costs are in total present value.
* Assumes all piping is overhead.
**Assumes no additional manpower required.

APPENDIX F

REPORT OF BUILDING SURVEY, VISUAL INSPECTION, AND DIAGNOSTIC COMMUNICATION TESTING

5.4. Building survey, visual inspection and diagnostic communication testing

5.4.1. Visual inspection/building survey

The results of the building inspection and building survey indicate that with the exception of a few minor items, the general construction of the structure should not present significant design limitations in the event a remedial measure is required to address the concentration of VOCs under the building.

Features identified that may need to be addressed include the building wall construction and a few localized areas that have the potential to contain asbestos containing material. The building walls are mainly constructed of open-top concrete blocks. The walls may allow vapor entry and will need to be sealed if a sub-slab depressurization system is to be installed.

5.4.2. Diagnostic communication testing results

The results of the diagnostic communication testing were documented on a communication test data form. This documentation also included a qualitative assessment of good, marginal, or poor sub-slab communication.

The qualitative assessment is based on the criteria presented on the following table.

Qualitative communication	Micro-manometer depressurization reading
Good	-0.016" or more wg
Marginal	-0.008" to <-0.016" wg
Poor	-0.004" to <-0.008" wg
Unacceptable	<-0.004" wg

Source: O'Brien & Gere Engineers, Inc.

The communication test results are shown in Table 5-6. The relative quality of communication between vacuum and measurement points is shown graphically on Figure 5-1; arced borders represent approximate vacuum influence boundaries. CTSH holes that could not penetrate the concrete are included to show areas where the concrete thickness is greater than one foot or three feet as noted.

An approximate breakdown of the total building area as it relates to communication results is:

48,369 sq.ft.	Acceptable communication
2,919 sq.ft.	Unknown communication
5,938 sq.ft.	Poor communication

As shown above, approximately 85% of the building floor space has acceptable communication, and approximately 10 % of the building floor space has poor communication. The areas with poor communication include the packaging area, the cafeteria and office areas. Additional investigation in these areas may result in an increase in the amount of area with acceptable communication.

As shown on the above table, approximately 5% of the building were not evaluated. These areas include the shipping and receiving overhead door area, the product support trailer to the south, the transformer / electrical controls room south of the center of the building, and the restrooms south of the center of the building (south of columns 7D & 8D). These areas either do not support occupancy for extended periods or were not evaluated to avoid drilling into sub-slab utilities. In the case of the product support trailer, a crawlspace exists under the trailer and would not be subject to sub-slab depressurization.

In addition to the diagnostic communication testing, winter heating conditions and the influence of the HVAC system were also evaluated during the diagnostic testing process. To accomplish this, CTSH 5 and CTSH 6 were used to test the influence of the HVAC system. Results are shown in the table below.

Test Location	HVAC Off	HVAC On Max Pressure
CTSH 5	-0.013" w.g.	-0.019" w.g.
CTSH 6	-0.002" w.g.	-0.004" w.g.

The results of this test indicate that operation of the HVAC system does not significantly influence the differential pressure between the sub-slab and indoor air space.

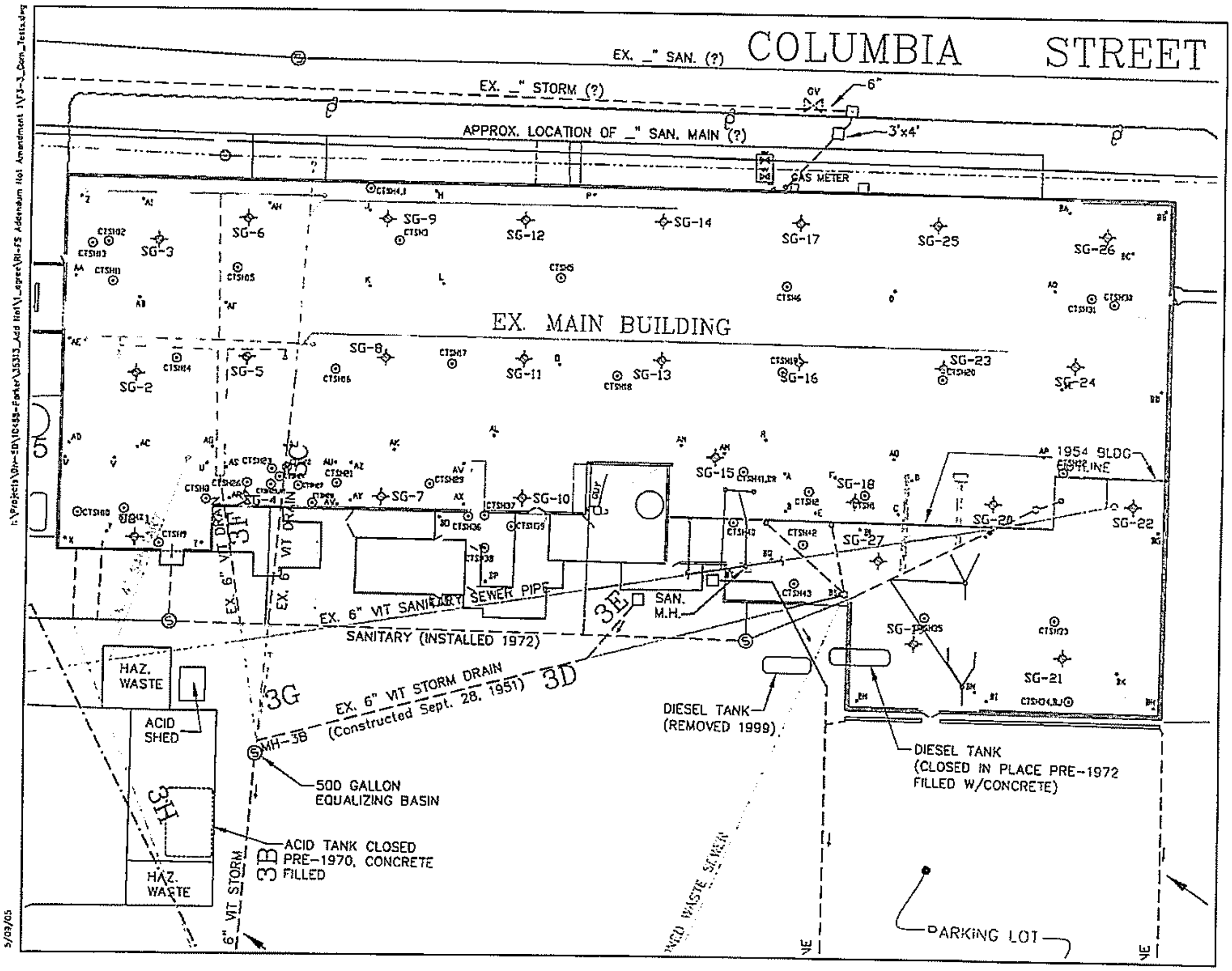

FIGURE 3-3

LEGEND

- PROPERTY BOUNDARY
- CANAL BLUE LINE
- STORM SEWER
- 48-INCH CMP
- SG-1 EXISTING SOIL GAS SAMPLE LOCATION
- COMMUNICATION TEST SUCTION HOLE
- COMMUNICATION TEST SUCTION HOLE AND SYSTEM SUCTION POINT
- SYSTEM SUCTION POINT
- COMMUNICATION TEST POINT

OLD ERIE CANAL SITE
CLYDE, NEW YORK

COMMUNICATION TEST LOCATIONS

40 0 40

FEBRUARY 2005
35212

OBRIEN & GERE ENGINEERS INC.

5/03/05

Table 5-6

Parker Hannifin Communication Results						
		Monometer Reading (inches w.g.)				
CTSH	CTP	Vacuum Off	Vacuum On	Differential	Smoke	Comments
1	A	-0.002	-0.002	0.000	Into hole	
	B	-0.002	-0.002	0.000	Into hole	
	C	0.002	-0.042	-0.044	Into hole	
	D	0.000	-0.008	-0.008	Into hole	
	E	-0.002	-0.002	0.000	No movement	
2						
	A	0.000	-0.029	-0.029	Into hole	
	B	0.000	-0.020	-0.020	Into hole	
	E	0.000	-0.014	-0.014	Into hole	
	CTSH 1	0.000	0.000	0.000	No movement	
	F	-0.002	-0.002	0.000	Into hole	Smoke enters well
3						
	H	0.004	0.004	0.000	Out of hole	
	G	0.001	-0.550	-0.551	Into hole	
	I	0.005	0.004	-0.001	Out of hole	
	J	0.000	-0.117	-0.117	Into hole	
	K	0.000	-0.108	-0.108	Into hole	
	L	-0.009	-0.131	-0.122	Into hole	
4	=CTP I					
	J	0.002	-0.006	-0.008	Into hole	
	H	0.010	-0.012	-0.022	Into hole	
5						
	L	0.000	-0.073	-0.073	Into hole	
	M	-0.006	-0.217	-0.211	Into hole	
	N	-0.002	-0.067	-0.065	Into hole	
	O	-0.043	-0.248	-0.205	Into hole	
	P	0.010	-0.036	-0.046	Into hole	
6	=CTP N					
	Q	0.010	-0.124	-0.134	Into hole	
	R	0.001	0.001	0.000	No movement	
	S	-0.004	-0.192	-0.188	Into hole	
7						
	T	0.010	0.010	0.000	Out of hole	
8						
	T	0.004	0.000	-0.004	No movement	
	U	-0.002	-0.028	-0.026	Into hole	
9						Could not drill through concrete.

Table 5-6

Parker Hannifin
Communication Results

CTSH	CTP	Monometer Reading (inches w.g.) Vacuum Off	Vacuum On	Differential	Smoke	Comments
10						
	V	0.000	-0.563	-0.563	Into hole	
	W	0.000	-0.419	-0.419	Into hole	
	X	0.000	-0.002	-0.002	Into hole	
	Y	0.000	-0.019	-0.019	Into hole	
11						Water encountered
12						
	Z	0.018	0.018	0.000	Out of hole	
	AA	0.020	0.010	-0.010	Out of hole	
13						
	AA	0.020	0.002	-0.018	No movement	
	Z	0.013	0.001	-0.012	No movement	
14						
	AB	0.004	-0.105	-0.109	Into hole	
	AC	0.007	-0.006	-0.013	Into hole	
	AD	0.012	0.006	-0.006	No movement	
	AE	0.015	0.000	-0.015	No movement	
	AF	0.001	-0.092	-0.093	Into hole	
	AG	0.003	-0.012	-0.015	Into hole	
15						
	AB	0.012	-0.316	-0.328	Into hole	
	AF	0.003	-0.460	-0.463	Into hole	
	AH	0.004	0.000	-0.004	No movement	
	AI	0.010	-0.067	-0.077	Into hole	
16						
	AF	0.000	-0.018	-0.018	Into hole	
	AJ	0.000	-0.022	-0.022	Into hole	
	L	-0.006	-0.049	-0.043	Into hole	
	AK	-0.030	-0.075	-0.045	Into hole	
17						
	AK	-0.030	-0.120	-0.090	Into hole	
	AL	-0.096	-0.278	-0.182	Into hole	
	L	-0.006	-0.072	-0.066	Into hole	
	CTSH 5	-0.016	-0.129	-0.113	Into hole	
18						
	AL	-0.095	-0.186	-0.091	Into hole	
	AM	-0.001	-0.001	0.000	No movement	
	AN	0.000	-0.008	-0.008	Into hole	
	M	-0.008	-0.074	-0.066	Into hole	

Table 5-6

Parker Hannifin
Communication Results

CTSH	CTP	Monometer Reading (inches w.g.) Vacuum Off	Vacuum On	Differential	Smoke	Comments
19	=CTP S					
	AN	0.000	-0.025	-0.025	Into hole	
	M	-0.014	-0.351	-0.337	Into hole	
	Q	0.004	-0.196	-0.200	Into hole	
	AO	0.000	-0.010	-0.010	Into hole	
20						
	AO	0.000	-0.010	-0.010	Into hole	
	AP	0.004	-0.004	-0.008	Into hole	Smoke enters well
	AQ	0.006	-0.034	-0.040	Into hole	
	Q	0.004	-0.270	-0.274	Into hole	
21						
	AR	0.002	0.002	0.000	No movement	
	AS	0.000	0.000	0.000	No movement	1/2"x3' used in this area
22						Could not drill through concrete.
23						Could not drill through concrete.
24						Could not drill through concrete.
25						Could not drill through concrete.
26						
	AR	0.001	-0.060	-0.061	Into hole	
	AS	0.000	-0.009	-0.009	Into hole	
	AT	0.000	-0.021	-0.021	Into hole	Redrilled CTSH 25 with 1/2"x3' bit
27						Could not drill through concrete. 3'
28						
	AU	-0.020	-0.020	0.000	Into hole	
	AV	-0.001	-0.001	0.000	No movement	
29						
	AW	-0.066	-0.206	-0.140	Into hole	
	AX	-0.096	-0.197	-0.101	Into hole	
	AY	-0.016	-0.061	-0.045	Into hole	
	AZ	-0.037	-0.151	-0.114	Into hole	
30						Could not drill through concrete.

Table 5-6

Parker Hannifin
Communication Results

CTSH	CTP	Monometer Reading (inches w.g.) Vacuum Off	Vacuum On	Differential	Smoke	Comments
31						
	BA	0.006	-0.011	-0.017	Into hole	
	BB	0.006	0.006	0.000	No movement	
	BC	0.006	-0.013	-0.019	Into hole	
	BD	0.005	0.002	-0.003	No movement	
	BE	-0.003	-0.069	-0.066	Into hole	
32						
	BE	0.005	-0.042	-0.047	Into hole	
	BD	0.008	0.000	-0.008	Into hole	
	BF	0.008	-0.037	-0.045	Into hole	
	BG	0.010	0.001	-0.009	No movement	
33						
	BG	0.008	0.000	-0.008	Into hole	Smoke slightly into hole
	BF	0.006	-0.052	-0.058	Into hole	
	BH	0.013	0.012	-0.001	No movement	
	BI	0.013	0.003	-0.010	No movement	
	BJ	0.015	0.008	-0.007	Out of hole	
	BK	0.012	-0.079	-0.091	Into hole	
34	=CTP BJ					
	BI	0.010	0.009	-0.001	Out of hole	
	BH	0.013	-0.013	-0.026	Into hole	
35						
	BL	0.001	0.001	0.000	No movement	
	BM	0.016	0.016	0.000	Out of hole	
	BN	0.006	0.006	0.000	Out of hole	
	BF	0.007	0.007	0.000	Out of hole	
36						Could not drill through concrete.
37						Could not drill through concrete.
38						Could not drill through concrete.
39						
	BO	-0.017	-0.021	-0.004	Into hole	
	BP	0.000	0.000	0.000	No movement	Meter jumping from +5 to -5
40						Many control joints need filling
	BQ	0.001	-0.015	-0.016	Into hole	
	BR	0.001	0.001	0.000	No movement	

Table 5-6

Parker Hannifin
Communication Results

		Monometer Reading (inches w.g.)				
CTSH	CTP	Vacuum Off	Vacuum On	Differential	Smoke	Comments
41						
	A	0.000	-0.016	-0.016	Into hole	
	B	0.000	-0.004	-0.004	Into hole	
42						Many control joints need filling
	BS	0.004	-0.002	-0.006	Into hole	
	BQ	-0.001	-0.100	-0.099	No movement	
	B	0.000	-0.004	-0.004	Into hole	
	BT	0.004	0.004	0.000	No movement	
	BL	0.000	-0.013	-0.013	Into hole	
43						Many control joints need filling
	BS	0.003	-0.033	-0.036	Into hole	
	BT	0.000	-0.012	-0.012	Into hole	

APPENDIX G

SUPPLEMENTAL GROUNDWATER INVESTIGATION SUMMARY REPORT

FINAL REPORT

Supplemental Ground Water Investigation Summary Report

Old Erie Canal Site
Clyde, New York

Parker Hannifin Corporation
Cleveland, Ohio

General Electric Company
Albany, New York

March 29, 2007

O'BRIEN & GERE

Job No. 02109/39892

FINAL REPORT

Supplemental Ground Water Investigation Summary Report

Old Erie Canal Site
Clyde, New York

Parker Hannifin Corporation
Cleveland, Ohio

General Electric Company
Albany, New York

Ralph E. Morse, C.P.G., Managing Scientist
O'Brien & Gere Engineers, Inc.

March 29, 2007

O'BRIEN & GERE

435 New Karner Road
Albany, New York 12205

TABLE OF CONTENTS

List of Tables

List of Figures

List of Appendices

1. Introduction

1.1. General

This Supplemental Ground Water Investigation Summary Report (Summary Report) has been developed by O'Brien & Gere on behalf of the Parker Hannifin Corporation (Parker-Hannifin) and the General Electric Company (GE) for the Old Erie Canal Site (Site) in Clyde, New York. This summary report presents the results of additional investigations performed in response to comments of the New York State Department of Environmental Conservation (NYSDEC) dated March 1, 2006, regarding the "Feasibility Study (FS), Old Erie Canal Site, Clyde, New York," dated November 2005. This Supplemental Ground Water Investigation was conducted in accordance with the NYSDEC-approved Supplemental Ground Water Investigation Work Plan prepared by Conestoga-Rovers & Associates dated June 2006. This Work Plan was approved by the NYSDEC in an electronic mail correspondence dated October 16, 2006.

1.2. Project objectives and scope

The objective of the Supplemental Ground Water Investigation was to gather additional data to further define the nature and extent of Site-related chemical presence in the ground water beneath the Site to the extent necessary to complete the FS. The scope of work for this additional investigation is described in the Supplemental Ground Water Investigation Work Plan prepared by Conestoga-Rovers & Associates dated June 2006 and included the following:

- Installation of eleven soil borings, nine permanent monitoring wells and two temporary monitoring wells to further define the nature and extent of ground water impact at the Site. and,

- Completion of one round of ground water sampling following completion of the installation and development of the additional monitoring wells. Samples were collected from all new and existing monitoring wells.

- Collection of one soil sample for laboratory analysis for volatile organic compounds (VOCs).

A complete description of the investigation methodology is included as Section 2.

2. Supplemental ground water investigation

2.1. General

This section describes the procedures followed while performing the tasks associated with the Supplemental Ground Water Investigation. Field investigation procedures were conducted in accordance with the NYSDEC-approved Remedial Investigation (RI) Sampling and Analysis Plan (SAP) prepared by O'Brien & Gere, dated February 2000.

2.2. Drilling and well installation program

To further evaluate the hydrogeologic setting at the Site, a monitoring well installation program was implemented. Between November 2 and November 17, a total of four permanent overburden groundwater monitoring wells, two temporary overburden groundwater monitoring wells and five permanent bedrock groundwater monitoring wells, four shallow and one intermediate, were installed on the Site. The monitoring well locations are shown on Figure 1. Parratt-Wolff, Inc. of East Syracuse, New York preformed the drilling and well installation activities under the supervision of an O'Brien & Gere geologist.

2.2.1. Shallow unconsolidated unit drilling procedures

Soil borings were advanced through the unconsolidated deposits to the top of the glacial till unit using 4¼-inch ID hollow stem auger drilling techniques. Continuous split-barrel soil samples were collected at two foot intervals in accordance with American Society for Testing and Materials (ASTM) Method D-1586 during well installation from depth intervals where no previous soil borings existed or samples collected during previously completed phases of the Site investigation.

Following advancement of the hollow-stem auger to the appropriate sampling depth, the split barrel sampler was lowered to the bottom of the boring and driven into the undisturbed soil using a 140-pound hammer with a 30-in drop. A representative sample of the split-spoon was then transferred to a clear glass container, sealed with aluminum foil, and capped for later headspace analysis with a PID for total VOCs.

Upon recovery, soil samples were classified in the field by a supervising geologist using the Modified Burmister and Unified Classification Systems. In addition to logging the geologic descriptions, observations including soil sample texture, composition, color, consistency, moisture content, sample recovery, and the observance of noticeable odors or stains were recorded by the geologist. Samples with a sustained PID reading above 100 parts per million (ppm) were field screened for the presence of NAPL using UV fluorescence and a soil jar shake test.

Table 1 is a summary of the soil boring information, including ground surface elevations, top of till and top of bedrock data. For detailed information, refer to the soil boring logs presented in Appendix A.

2.2.2. Shallow bedrock drilling procedures

Shallow bedrock monitoring wells were installed by initially advancing the soil boring to the top of the bedrock unit using 4¼-inch ID hollow stem augers followed by the installation of a 6-inch temporary casing. The borehole was further advanced a minimum of three feet into the bedrock unit, creating a rock socket, by advancing the augers into the top of the weathered zone or by utilizing rotary drilling techniques. The top of bedrock was identified by split-barrel sampler refusal and/or hollow stem auger refusal. At intermediate bedrock monitoring well MW-4C, the rock socket extended 13.0 feet into the top of bedrock to seal off the shallow bedrock zone prior to drilling and installation of the intermediate bedrock well.

A four-inch ID casing was lowered into the borehole and tapped into place to seat the casing into the bedrock socket. A cement-bentonite grout was tremied into the annulus between the outside of the casing and the borehole. As the grout was pumped into the annulus, the tremie pipe was kept within the grout as it was placed so that a continuous annular seal was achieved. The cement grout was allowed to cure overnight. The shallow bedrock wells were drilled within the four-inch ID casing using a 3-⅞-inch outside diameter (OD) diamond core bit (HX).

Test boring and rock coring logs that describe the subsurface materials encountered in each boring were prepared by the supervising geologist for each of the bedrock wells. Information for these boreholes are presented on the soil boring and core logs in Appendix A.

2.2.3. Well installation

Monitoring wells were constructed of 2-inch ID, flush joint, schedule 40 PVC riser pipe with either a five or ten-foot length of 0.010-in slot PVC well screen. Each new shallow unconsolidated unit monitoring well (MW-13S, MW-14S, MW-15S and MW-16S) has five feet of well screen and was constructed such that the base of the well screen was set just above the top of the glacial till unit. Each new shallow bedrock monitoring well (MW-3B, MW-5B, MW-6B and MW-16B) was completed with ten feet of well screen set from approximately three to thirteen feet below the top of the bedrock surface. Intermediate bedrock monitoring well MW-4C has ten feet of well screen set from approximately 12.7 to 22.7 feet below the top of the bedrock surface. Temporary monitoring wells (TMW-1 and TMW-2) were constructed of either 1-inch or 2-inch ID, flush joint, Schedule 40 PVC riser pipe with a two foot length of 0.010-inch slot well screen set just above the top of the glacial till unit.

A threaded PVC bottom plug was installed at the base of each ground water monitoring well and a vented, non-threaded, locking J-Plug was installed at the top of each riser pipe. A designated measuring point was notched into the top of the PVC riser pipe in each well to provide a permanent reference point for subsequent total depth and depth to water measurements.

After installing the PVC well materials within each borehole, sand was gradually introduced inside the augers to fill the annular space between the well screen and the borehole. The sand pack extended from the bottom of the boring to approximately two-feet above the top of the screen. The sand pack consists of a clean, well-graded, silica sand with grain size distribution matched to the slot size of the screen. A Morie Grade 0 sand was used.

In the permanent monitoring wells, a bentonite seal was placed above the sand pack to form a seal at least two feet thick. A cement-bentonite grout extended from the top of the bentonite seal to the ground surface. The grout material consisted of Type I Portland cement mixed with either a powdered or granular bentonite prepared in accordance with ASTM D 5092-90. The grout was placed via a tremie pipe that was kept within the grout as it was placed so that a continuous annular seal was achieved. Each of the temporary monitoring wells were backfilled with overburden soils from the top of the sand pack to ground surface.

In most areas, it was necessary to provide flush mounted casings on the monitoring wells. Monitoring wells MW-6B, MW-13S, MW-14S and MW-15S have a steel casing equipped with a locking cap placed over the monitoring well. The protective casing extended at least two feet below ground surface (bgs) and was cemented in place. The shallow bedrock monitoring wells have a lockable cap installed on top of the four-inch casing grouted into place initially. Table 2 is a summary of the monitoring well construction and survey data, including ground surface and measuring point elevations, screened intervals, and sand pack intervals. For detailed information, refer to the well completion logs provided in Appendix B.

2.2.4. Decontamination procedures

During the drilling program, decontamination procedures as described in the SAP were followed so that potential contaminants were not introduced into the borehole or transferred across the Site. A temporary decontamination pad was constructed at a location approved by Parker-Hannifin. Prior to drilling the first boring, the equipment used for drilling and well installation was steam cleaned to remove possible contaminants that may have been encountered during mobilization of drilling equipment to the Site. Equipment which came into contact with Site soil, as well as drilling tools, augers, drilling rod, hoses, and the rear of the drill rig underwent the initial steam cleaning process. While working at the Site, all drilling equipment coming in contact with soil was decontaminated between drilling locations. At the conclusion of the drilling program, the drilling equipment was decontaminated a final time prior to leaving the Site.

All well construction materials were transported to the Site in factory-sealed plastic. If well construction materials were not sealed, they were decontaminated and maintained in plastic sheeting on-site.

The cleaning process involved the use of a high-pressure steam cleaner. Potable water was used for decontamination and drilling procedures. Decontamination water was collected and stored for subsequent characterization and off-site disposal in accordance with the SAP.

2.2.5. Well development

Following the completion of the monitoring well installation program, each monitoring well was developed prior to ground water sampling. Each newly-constructed monitoring well was developed to:

- Remove fine-grained materials from the sand pack and formation;
- Reduce the turbidity of ground water samples; and
- Increase the yield of the well to ensure a sufficient volume of water was available during ground water sampling.

The monitoring wells were developed as soon as possible, but not less than 24 hours after installation. All ground water and solids produced during well development were managed as described in the SAP. The wells were developed using the procedures presented in the SAP.

Well development included the removal of ground water from the well to remove residual drilling materials and establish an effective hydraulic connection between the screened interval and the formation. The goals for development was to obtain ground water in which the pH, temperature and specific conductivity had stabilized and exhibited a turbidity of less than or equal to 50 Nephelometric Turbidity Units (NTUs). Independent of the field parameters, a minimum of five well volumes was removed during well development. Due to the required management of Site ground water, if the aforementioned field parameters could not be obtained, well development continued until an amount of ground water equivalent to ten well volumes was removed.

2.3. Soil and ground water sampling

As requested by NYSDEC, one soil sample was collected from boring MW-6B using an encore sampler. The sample was collected from the unsaturated zone from a depth of four to six feet below grade and submitted to the laboratory for VOC analysis using USEPA SW-846 8260B.

Ground water samples were collected between November 28 and December 7, 2006 from each of the accessible monitoring wells in accordance with the RI SAP. Prior to the collection of ground water samples, static water levels were measured to the nearest 0.01-ft in each monitoring well. Care was taken to disturb only the upper portion of the water column to avoid re-suspending settled solids in the wells. Water level measurements were performed as described in Section 2.4 .

Ground water samples were collected using low-flow well purging techniques in accordance with the RI SAP. The ground water samples were analyzed for VOCs using USEPA SW-846 8260B. In addition, the following natural attenuation parameters were also analyzed: methane, ethane, ethene, dissolved organic carbon, alkalinity, chloride, nitrate, nitrite, nitrogen, sodium, sulfate and sulfide. The following field parameters were measured at the time of sample collection and recorded on the field data sheets: iron II (Fe^{+2}); redox potential; temperature; turbidity; dissolved oxygen; and, pH. New nitrile gloves were donned prior to collection of each ground water sample. Chain-of-custody documentation was maintained daily following procedures outlined in the NYSDEC-approved SAP.

The purge water was transferred from each well in 55-gallon steel drums and subsequently containerized in a 1000-gallon polyethylene tank and staged at the Site. The sample containers were labeled with the sample identification, date, time, project identification, and required laboratory analysis. The same information was recorded on the field data sheets. Each ground water sample was then placed in a cooler containing wet ice immediately after sampling.

The ground water samples were submitted to Accutest Laboratories of Dayton New Jersey for analysis. Field QA/QC procedures included the collection of blind field duplicate and MS/MSD samples at a rate of one per twenty environmental samples. Trip blanks were included with each cooler that contained samples for VOC analysis.

2.4. Water level monitoring

As discussed above, a synoptic water level round was collected from each of the Site's monitoring wells and staff gauges on November 28, 2006 prior to the ground water sampling event. The water level elevation data are presented in Table 3.

Water level measurements were obtained with an electronic water level indicator. The electronic water level measurement method involves lowering a probe into a well, which, upon contact with the water, completes an electric circuit. At the instant the circuit is closed, the water level indicator provides an audible and/or visual alarm, which indicates that the water has been contacted. The depth to water was measured to the nearest 0.01foot, using the marked measuring point on the monitoring well riser pipe or casing as a reference. Depth to water measurements were recorded on the field form. Nitrile gloves were worn during water level measurement activities.

2.5. Hydraulic conductivity testing

In-situ hydraulic conductivity tests were performed on the newly installed monitoring wells to estimate the hydraulic conductivity of the geologic materials immediately surrounding each well. These tests, commonly referred to as slug tests, involved monitoring the recovery of water levels toward an equilibrium level after an initial perturbation. The perturbation was either a sudden rise or fall in the water level that corresponded to either the addition or removal of a physical slug respectively. During the slug test, either a five foot inert rod or a volume of deionized water was rapidly introduced into the well causing the water level to rise (falling head test). During a rising head test, a five foot inert rod was rapidly removed from the well causing the water level to drop.

Prior to conducting the tests, background water levels were collected manually and digitally using an In-Situ, Inc. mini-troll down-hole pressure transducer equipped with a data logger. The instruments were lowered into the well five to ten feet below the ground water surface and secured by attaching the transducer cable to the well casing using a stainless steel clamp. Since the addition of the data logger displaced water in the 2-in diameter monitoring wells, the water level in each well was allowed to re-equilibrate to static conditions prior to starting the test. Once the ground water recovered to the pre-disturbed level, the data logger was programmed to record the water levels on a logarithmic scale. The hydraulic conductivity tests were not considered complete until a minimum of 90% recovery was achieved. Equipment lowered into the monitoring wells was decontaminated prior to each test using a phosphate-free detergent, distilled water wash and a distilled water rinse.

Interpretation of the slug test data was performed using the Bouwer and Rice (1976) method. The principle behind the Bouwer and Rice method is that a plot of recovery data (So-St) versus time (t) theoretically follows a straight line on a semi-log plot. Horizontal hydraulic conductivity (K) is then calculated as follows:

K = [In(so)-In(st)]r2ceIn(re/r w)/2Lt

where:

K	=	hydraulic conductivity;
L	=	length of well screen/sand pack (intake);
t	=	time since initial displacement;

so	=	initial displacement in well;
st	=	displacement at time t;
re	=	equivalent radius over which head loss occurs;
rc	=	well casing radius;
rw	=	well radius (borehole);and,

rce = [rc2+n(rw2- rc2)]½

The Bouwer and Rice method assumes that the aquifer being evaluated is unconfined, homogeneous and isotropic. This method is most appropriate for shallow wells screened in well sorted sand below the water table, but it is also applicable to aquifers that are not in strict accordance with the assumptions stated above. Additionally, application of the above equations to bedrock wells assumes that sufficient joints and bedding planes intersect the screened interval so as to behave like a porous medium with Darcian flow. Bouwer and Rice recommend computing an equivalent casing radius (rce) to correct for the porosity of the gravel pack when the height of the static water column in the well is less than the screen length.

Table 4 summarizes the results of the hydraulic conductivity testing program. Additional details on data acquisition and analysis are presented in Appendix C.

2.6. Handling of Investigation Derived Waste

The supplemental RI activities produced Investigation Derived Materials (IDM) that required appropriate management procedures. The various IDM included drill cuttings, ground water, drilling and sampling equipment decontamination fluids, sediments, and personnel protective equipment (PPE). The handling procedures for the IDM are discussed below.

2.4.1. Drill Cuttings

Drill cuttings derived from the overburden and bedrock drilling were placed in 55-gallons steel drums. Each drum was labeled with the appropriate borehole identification(s), the dates on which the cuttings were generated, and a description of the type of waste (i.e., drill cuttings). In accordance with the NYSDEC-approved RI/FS Work Plan, Parker-Hannifin arranged for or will be arranging for the off-site disposal of the drill cuttings at a permitted facility.

2.4.2. Ground Water

Ground water produced during purging and sampling activities was containerized in 1000-gallon polyethylene tank located on-site. Based on the analytical results from the investigation, Parker-Hannifin arranged for or will be arranging for the final disposal of the ground water in accordance with the NYSDEC-approved RI/FS Work Plan.

2.4.3. Decontamination Fluids, Sediment, PPE and Associated Debris

Liquid/solid mixtures generated during the field investigation were temporarily stored in 55-gallon drums until solids had settled. The water was then transferred into the 1000-gallon polyethylene tank located on Site. The settled solids were also transferred into drums containing similar materials, labeled and temporarily stored on Site. In accordance with the NYSDEC-approved RI/FS Work Plan, Parker-Hannifin arranged for or will be arranging for the characterization and subsequent off-site disposal of this IDM.

Used PPE and other associated debris (polyethylene sheeting, sample tubing, etc.) were containerized in 55-gallon steel drums, labeled and temporarily stored on-site. In accordance with NYSDEC-approved RI/FS Work Plan, Parker-Hannifin performed characterization and subsequent off-site disposal of these materials.

3. Geology and hydrogeology

3.1. Geologic conditions

With the exception of fill, unconsolidated deposits of glacial origin overlie the bedrock throughout most of the Site. Based on the soil borings completed during the RI and subsequent supplemental investigations, the combined maximum thickness of the unconsolidated deposits is approximately 31 feet. Three types of unconsolidated deposits have been identified at the Site. These consist of, in descending order: artificial fill material, glaciofluvial channel deposits, and glacial till. The fill material was encountered across the majority of the Site and ranged in thickness from 0.5 to 9 feet. The maximum thickness of the glaciofluvial deposits is 23 feet at location GP-36 which is located near the southern portion of the Site and appears to pinch-out in the area surrounding the manufacturing building and in the southeastern parking lot. The thickness of the glacial till deposit ranges from 3.5 to 27.2 feet across the majority of the Site and is thickest at location MW-7B which is located west of the former Barge Canal turnaround. The glacial till unit appears to be absent beneath the glaciofluvial channel at locations MW-8S, GP-13, GP-25 and GP-34, which are located along the western portion of the Site. The glacial till unit is observed again along the westernmost property boundary. The depths to bedrock observed during the RI and subsequent supplemental investigations ranged from 16.5 to 31 feet bgs.

The three geologic cross-sections previously presented in the RI Report (O'Brien & Gere, November 24, 2003) have been updated based on the results of the supplemental investigations performed at the Site to illustrate the relationship between the unconsolidated glacial deposits and the underlying bedrock. The location and orientation of the cross-sections are shown on Figure 2. Figure 3 illustrates cross-section (A-A') starting at well pair MW-12, located on the south side of the Clyde River, extending north to monitoring well MW-8S located northwest of the manufacturing building. Figure 4 shows cross-section (B-B') starting at soil boring GP-42/monitoring well MW-9S, located in the northwestern portion of the Site, running eastward to monitoring well MW-2S/2B located just east of the manufacturing building. Cross-section (C-C') starting at soil boring GP-35/monitoring well pair MW-5, located in the southwestern portion of the Site, continuing eastward along the southern property line to well EMW-5 is illustrated on Figure 5.

A summary of the stratigraphic information generated during the RI and supplemental investigations at the Site is presented in Table 1. The top of low permeability unit and the top of bedrock unit contour maps have been updated to include the additional stratigraphic information and are presented as Figures 6 and 7, respectively.

3.2. Hydrogeologic conditions

A conceptual hydrogeologic model for the Site has been developed and includes two hydrogeologic units: the shallow unconsolidated unit and the shallow bedrock unit. The shallow unconsolidated unit is composed of fill material and glaciofluvial deposits and has a thickness ranging from 1.0 to 29.2 feet. The shallow bedrock hydrogeologic unit at the Site is part of the Syracuse-Camillus Formation and consists of interbedded shale and limestone. The depth to the top of the shallow bedrock hydrogeologic unit ranges from 16.5 to 31 feet bgs.

As discussed in Section 2.4, prior to the ground water sampling event, ground water and surface water elevation data were obtained from all accessible monitoring locations. Based on the ground water elevation data obtained on November 28, 2006, contour maps of the potentiometric surface in the overburden and shallow bedrock units have been prepared to confirm the general ground water flow direction at the Site. As shown on Figure 8, ground water flow in the western and central portions of the Site is generally to the west toward a buried channel deposit and to the south toward the Clyde River. Ground water in the southeastern margin of the Site flows to the south-southwest toward the Clyde River and does not appear to be influenced by the buried channel. As shown on Figure 9, in the areas north of the Clyde River, ground water flow within the shallow bedrock unit is generally to the southwest and occurs principally through secondary porosity features such as fractures, joints and bedding planes. South of the Clyde River, shallow bedrock ground water flow is generally to the northeast. These ground water flow directions are consistent with historical data presented in previous reports.

4. Results

The analytical results for the soil sample and ground water samples collected during this supplemental investigation are presented in the following sections.

4.1. Soil Sampling Results

As discussed in Section 2.3, one soil sample, designated as SB6B(4-6), was collected from boring MW-6B using an encore sampler on November 15, 2006. The sample was collected from the unsaturated zone at a depth of 4 to 6 feet below grade and submitted to the laboratory for VOC analysis.

Table 5 presents the results of the laboratory analysis of soil sample SB6B(4-6). As shown on Table 5, VOCs detected in this sample include cis-1,2-DCE at an estimated concentration of 83.0J ug/kg, and toluene at a concentration of 71.5 ug/kg. No other VOCs were detected in the sample obtained from this location. The laboratory reporting forms for the soil analyses are provided in Appendix D.

4.2. Ground Water Sampling Results

Ground water samples were collected from twenty-two overburden monitoring wells (twenty permanent and two temporary wells) and eleven bedrock monitoring wells between November 28 and December 7, 2006 and analyzed for VOCs using USEPA Method SW-846 8260B. Ground water samples were also collected and analyzed for the following natural attenuation parameters and inorganic parameters: methane; ethane; ethene; dissolved organic carbon; alkalinity; chloride; nitrate; nitrite; nitrogen; sodium; sulfate; and, sulfide. The following field parameters were also measured at the time of sample collection and recorded on the field data sheets: iron II (Fe+2); redox potential; temperature; turbidity; dissolved oxygen; and, pH.

The results of the laboratory analyzed ground water samples for VOCs and MNA and inorganic parameters are presented on Tables 6 and 7, respectively. The field parameters measured at the time of sample collection are summarized on Table 8. Laboratory reporting forms from the ground water quality analyses are provided in Appendix E.

The results of the ground water sampling conducted at the Site confirm the findings of the RI and support the conclusion that the extent of the dissolved phase VOC contamination has been defined. As shown on Table 6, very low or non-detectable concentrations of VOCs were detected in ground water samples obtained from background locations east of the manufacturing building (MW-2S, MW-2B, TMW-1 and TMW-2), in the southeastern portion of the Site (EMW-3, EMW-5 and MW-3S), in the northwestern portion of the Site (MW-8S and MW-9S) and in the area located west and southwest of the barge canal turnaround (MW-5S, MW-5B, MW-7S and MW-7B). In addition, no contaminants of concern were detected in any of the samples collected from the wells located on the south side of the Clyde River (MW-10B, MW-11S, MW-11B, MW-12S and MW-12B).

Very low concentrations of VOCs were detected in ground water samples obtained from wells located in the area south of the manufacturing building (MW-1, MW-16S and MW-16B). Elevated concentrations of VOCs occur in the areas west of the manufacturing building (MW-1S and MW-13S) and southwest of the manufacturing building, near the acid shed and the former acid tank (MW-

6S and MW-6B), and the filled in portion of the former barge turnaround (MW-14S and MW-15S). Elevated concentrations of VOCs were also detected in shallow bedrock wells MW-3B and MW-4B, located just south of the former barge canal. The vertical extent of VOC concentrations in bedrock were also defined. As shown on Table 6, no contaminants of concern were detected in the ground water sample collected from intermediate bedrock well MW-4C. The highest VOC concentrations were generally detected in the overburden located in the vicinity of the former barge turnaround and in shallow bedrock near the confluence with the Old Erie Canal.

The VOCs most often detected at the Site are cis-1,2-DCE and vinyl chloride. Given that cis-1,2-DCE and vinyl chloride are known biodegradation products of TCE, this data indicates that natural attenuation is actively occurring at the Site. In addition, the concentrations of these degradation products are typically much greater than those of TCE indicating that much of the parent product has already been biodegraded.

5. Summary

The Old Erie Canal Site supplemental ground water investigation was implemented to address comments to the FS Report for the Old Erie Canal Site provided by the NYSDEC in a March 1, 2006 letter.

The results of the soil sampling conducted at location MW-6B indicate that low level concentrations of VOCs were detected in shallow unconsolidated soils. However, these data and the results of DNAPL field screening performed during the drilling program indicate that no DNAPL source areas were identified.

The results of the ground water sampling conducted at the Site are consistent with historical sampling events indicating that the primary VOCs detected at the Site are TCE and its degradation products (i.e., cis-1,2-DCE and vinyl chloride), toluene, and xylenes. Other VOCs detected during the RI and supplemental investigations were generally detected at the same locations as the primary VOCs and at lower concentrations.

The results of the supplemental investigation support the conclusions of the RI that the extent of the dissolved phase VOC contamination has been defined and that the lateral migration of VOCs at the Site appears to be controlled by the surface topography of the glacial till unit. Very low or non-detectable concentrations of VOCs were detected in ground water samples obtained from background locations east of the manufacturing building, in the southeastern portion of the Site, in the northwestern portion of the Site and in the area located west and southwest of the barge canal turnaround. In addition, no contaminants of concern were detected in any of the samples collected from the wells located on the south side of the Clyde River.

Very low concentrations of VOCs were detected in ground water samples obtained from wells located in the area south of the manufacturing building. Elevated concentrations of VOCs occur in the areas west and southwest of the manufacturing building, near the acid shed and the former acid tank area and in the filled in portion of the former barge turnaround. Elevated concentrations of VOCs were also detected in two of the three shallow bedrock wells located just south of the former barge canal. The vertical extent of VOCs in bedrock were defined based on the ground water results from intermediate bedrock well MW-4C in which no contaminants of concern were detected. Consistent with historical results, the highest VOC concentrations are observed in the vicinity of the former barge turnaround and its confluence with the Old Erie Canal.

The results of the MNA and inorganic parameter analyses continue to indicate that natural processes are attenuating the VOCs in groundwater at the Site. The primary pathway for natural attenuation appears to be biodegradation. The biological processes involve the transformation of higher chlorinated organic compounds to less chlorinated organic compounds (daughter products) and ultimately to innocuous end products (e.g. ethane and ethene) via reductive dechlorination. In addition, physical processes including advection, dispersion, sorption, and volatilization may also be contributing to the overall attenuation.

Evidence of microbial mediated degradation is supported by the presence of both daughter products and end products. TCE concentrations at the Site are generally low in comparison to the concentrations of DCE and vinyl chloride and ethene and ethane are present in groundwater at the Site.

Geochemical evidence that indicates subsurface conditions amenable for microbially mediated degradation include the following:

- An abundance of dissolved TOC that can be utilized as a carbon source (electron donor) by microbes.
- Depleted dissolved oxygen and nitrate levels and elevated ferrous iron concentrations, indicating that anaerobic conditions exist across the Site.
- The presence of methane, suggesting that highly reducing conditions are present, supportive of the reductive dechlorination of TCE and its daughter compounds to innocuous end products.

References

Conestoga-Rovers & Associates (CRA). 2005. *Feasibility Study. Old Erie Canal Site, Clyde, New York.* Prepared for: Parker Hannifin Corporation, Cleveland, Ohio and General Electric Company, Albany, New York.

Conestoga-Rovers & Associates (CRA). 2006. *Draft Supplemental Ground Water Investigation Work Plan. Old Erie Canal Site, Clyde, New York.* Prepared for: Parker Hannifin Corporation, Cleveland, Ohio and General Electric Company, Albany, New York.

O'Brien & Gere Engineers, Inc. (O'Brien & Gere). 2004. *Remedial Investigation/Feasibility Study Work Plan Addendum No.1. Old Erie Canal Site, Clyde, New York.* Prepared for: Parker Hannifin Corporation, Cleveland, Ohio and General Electric Company, Albany, New York.

O'Brien & Gere Engineers, Inc. (O'Brien & Gere). 2001. *Remedial Investigation/Feasibility Study Work Plan. Old Erie Canal Site, Clyde, New York.* Prepared for: Parker Hannifin Corporation, Cleveland, Ohio and General Electric Company, Albany, New York. December 16, 1999; Last Revised November 27, 2001.

O'Brien & Gere Engineers, Inc. (O'Brien & Gere). 2003. *Remedial Investigation Report. Old Erie Canal Site, Clyde, New York.* Prepared for: Parker Hannifin Corporation, Cleveland, Ohio and General Electric Company, Albany, New York. November 24. 2003.

TABLES

Table 1
Soil Boring Summary

Old Erie Canal Site
Clyde, New York

Boring No.	Date Completed	Ground Elevation	Boring Depth	End of Boring Elevation	Depth To Glacial Till	Top of Glacial Till Elevation	Depth To Bedrock	Top of Bedrock Elevation
MW-1S	05/30/02	394.6	8.0	386.6	7.0	387.6	----	----
MW-2S	05/21/02	398.5	11.7	386.8	---	---	----	----
MW-2B	05/29/02	398.4	28.5	369.9	12.3	386.1	16.5	381.9
MW-3S	05/21/02	394.0	11.5	382.5	10.5	383.5	----	----
MW-3B	11/16/06	394.2	39.0	355.2	10.5	383.7	25.0	369.2
MW-4S	05/22/02	393.3	20.3	373.0	20.0	373.3	----	----
MW-4B	05/28/02	393.3	38.9	354.4	20.0	373.3	26.0	367.3
MW-4C	11/17/06	393.3	50.0	343.3	20.0	373.3	26.0	367.3
MW-5S	05/21/02	393.1	11.4	381.7	10.0	383.1	----	----
MW-5B	11/16/06	393.2	39.0	354.2	10.0	383.2	25.9	367.3
MW-6S	05/30/02	395.0	15.0	380.0	15.0	380.0	----	----
MW-6B	11/15/06	395.1	39.0	356.1	10.0	385.1	25.9	369.2
MW-7S	05/24/02	394.9	17.0	377.9	16.3	378.6	----	----
MW-7B	05/28/02	397.4	39.5	357.9	1.0	396.4	28.2	369.2
MW-8S	05/29/02	390.3	22.0	368.3	----	----	21.5	368.8
MW-9S	05/22/02	391.8	17.5	374.3	17.0	374.8	----	----
MW-10B	11/25/02	391.2	42.7	348.5	17.5	373.7	29.0	362.2
MW-11S	11/20/02	390.4	12.0	378.4	11.0	379.4	----	----
MW-11B	11/25/02	389.8	44.0	345.8	11.0	378.8	30.8	359.0
MW-12S	11/22/02	391.1	10.0	381.1	10.0	381.1	----	----
MW-12B	11/22/02	391.4	45.0	346.4	10.0	381.4	31.0	360.4
MW-13S	11/02/06	389.7	20.0	369.7	17.5	372.2	----	----
MW-14S	11/06/06	389.3	22.5	366.8	22.5	366.8	----	----
MW-15S	11/07/06	388.4	14.0	374.4	14.0	374.4	----	----
MW-16S	11/02/06	398.0	10.0	388.0	4.0	394.0	----	----
MW-16B	11/15/06	398.2	44.0	354.2	9.0	389.2	31.0	367.2
EMW-1	10/14/94	394.6	32.0	362.6	10.0	384.6	25.2	369.4
EMW-2	10/17/94	395.0	12.0	383.0	8.0	387.0	----	----
EMW-3	10/14/94	394.2	12.3	381.9	----	----	----	----
EMW-4	10/18/94	392.9	12.0	380.9	8.5	384.4	----	----
EMW-5	10/17/94	393.0	12.0	381.0	10.5	382.5	----	----

Notes:

1. All depths in feet below ground surface.
2. All elevations in feet above mean sea level and measured in NGVD 1929.
3. NE indicates not encountered.

Table 1
Soil Boring Summary

Old Erie Canal Site
Clyde, New York

Boring No.	Date Completed	Ground Elevation	Boring Depth	End of Boring Elevation	Depth To Glacial Till	Top of Glacial Till Elevation	Depth To Bedrock	Top of Bedrock Elevation
GP-1	04/24/02	397.6	6.5	391.1	5.0	392.6	----	----
GP-2	04/24/02	397.7	6.5	391.2	6.3	391.5	----	----
GP-3	04/24/02	397.7	4.0	393.7	3.5	394.2	----	----
GP-4	04/23/02	391.7	18.0	373.7	17.0	374.7	----	----
GP-5	04/24/02	393.7	8.0	385.7	7.0	386.7	----	----
GP-6	04/24/02	396.2	6.0	390.2	5.0	391.2	----	----
GP-7	04/24/02	397.9	4.0	393.9	3.5	394.4	----	----
GP-8	04/23/02	389.5	10.5	379.0	9.8	379.7	----	----
GP-9	04/25/02	395.6	9.0	386.6	6.0	389.6	----	----
GP-10	04/23/02	389.7	18.5	371.2	17.5	372.2	----	----
GP-11	04/26/02	390.5	10.0	380.5	7.5	383.0	----	----
GP-12	04/25/02	396.0	11.0	385.0	7.0	389.0	----	----
GP-13	04/29/02	389.3	20.0	369.3	----	----	19.0	370.3
GP-14	04/25/02	394.6	13.5	381.1	10.5	384.1	----	----
GP-15	04/24/02	396.8	11.0	385.8	7.0	389.8	----	----
GP-16	04/24/02	398.2	12.0	386.2	7.8	390.4	----	----
GP-17	04/24/02	398.0	4.0	394.0	3.5	394.5	----	----
GP-18	04/23/02	391.1	13.0	378.1	12.0	379.1	----	----
GP-19	04/29/02	389.3	20.0	369.3	15.5	373.8	19.0	370.3
GP-20	05/01/02	395.0	16.0	379.0	15.0	380.0	----	----
GP-21	04/25/02	397.4	10.5	386.9	6.0	391.4	----	----
GP-22	04/24/02	397.8	4.0	393.8	3.8	394.0	----	----
GP-23	04/24/02	398.1	8.0	390.1	7.0	391.1	----	----
GP-24	04/23/02	393.7	20.0	373.7	19.0	374.7	----	----
GP-25	04/26/02	389.2	22.0	367.2	----	----	21.0	368.2
GP-26	04/26/02	395.4	16.0	379.4	13.0	382.4	----	----
GP-27	04/25/02	396.6	10.0	386.6	6.5	390.1	----	----
GP-28	04/30/02	394.2	24.0	370.2	22.5	371.7	----	----
GP-29	04/25/02	395.8	12.0	383.8	9.5	386.3	----	----
GP-30	04/25/02	396.9	8.0	388.9	3.7	393.2	----	----
GP-31	04/23/02	394.9	17.0	377.9	16.5	378.4	----	----
GP-32	04/23/02	389.4	22.0	367.4	21.5	367.9	----	----
GP-33	04/30/02	394.4	16.0	378.4	15.0	379.4	----	----
GP-34	05/01/02	395.2	29.2	366.0	----	----	29.2	366.0
GP-35	05/22/02	393.3	11.0	382.3	10.0	383.3	----	----

Notes:

1. All depths in feet below ground surface.
2. All elevations in feet above mean sea level and measured in NGVD 1929.
3. NE indicates not encountered.

Table 1
Soil Boring Summary

Old Erie Canal Site
Clyde, New York

Boring No.	Date Completed	Ground Elevation	Boring Depth	End of Boring Elevation	Depth To Glacial Till	Top of Glacial Till Elevation	Depth To Bedrock	Top of Bedrock Elevation
GP-36	04/22/02	393.2	24.0	369.2	23.0	370.2	----	----
GP-37	04/22/02	393.8	20.0	373.8	16.5	377.3	----	----
GP-38	04/22/02	394.1	12.0	382.1	11.0	383.1	----	----
GP-39	04/22/02	393.5	12.0	381.5	10.2	383.3	----	----
GP-40	05/01/02	398.2	7.0	391.2	3.0	395.2	----	----
GP-41	05/01/02	398.1	4.0	394.1	2.0	396.1	----	----
GP-42	05/01/02	391.8	20.0	371.8	17.0	374.8	----	----
GP-43	05/02/02	391.0	20.5	370.5	----	----	20.5	370.5
GP-44	05/02/02	395.4	8.0	387.4	3.0	392.4	----	----
GP-45	11/19/02	398.0	9.0	389.0	8.6	389.4	----	----
GP-46	11/19/02	398.1	8.5	389.6	8.5	389.6	----	----
GP-47	11/19/02	398.5	5.0	393.5	4.6	393.9	----	----
GP-48	11/20/02	396.2	10.2	386.0	6.5	389.7	----	----
GP-49	11/19/02	397.9	10.5	387.4	5.0	392.9	----	----
GP-50	11/19/02	398.3	6.0	392.3	6.0	392.3	----	----
GP-51	11/20/02	396.2	10.1	386.1	8.0	388.2	----	----
GP-52	11/19/02	397.9	10.5	387.4	4.0	393.9	----	----
GP-53	11/19/02	398.1	7.0	391.1	7.0	391.1	----	----
GP-54	11/19/02	398.0	6.0	392.0	6.0	392.0	----	----
GP-55	11/19/02	398.1	8.2	389.9	4.7	393.4	----	----
GP-56	11/20/02	396.2	12.6	383.6	9.5	386.7	----	----
GP-57	11/20/02	397.7	6.0	391.7	4.0	393.7	----	----
GP-58	11/20/02	398.2	7.5	390.7	5.2	393.0	----	----
GP-59	11/20/02	393.1	10.0	383.1	8.0	385.1	----	----
GP-60	11/20/02	393.3	17.0	376.3	16.8	376.5	----	----
GP-61	11/20/02	393.7	11.5	382.2	6.0	387.7	----	----
GP-1A	08/02/04	390.0	20.0	370.0	15.0	375.0	----	----
GP-2A	08/02/04	391.8	20.0	371.8	----	----	----	----
GP-3A	08/02/04	391.0	12.0	379.0	----	----	----	----
GP-4A	08/02/04	391.7	8.0	383.7	5.0	386.7	----	----
GP-5A	08/02/04	395.4	5.0	390.4	2.0	393.4	----	----
GP-6A	08/02/04	397.6	7.0	390.6	5.5	392.1	----	----
GP-7A	08/02/04	397.7	8.0	389.7	7.8	389.9	----	----

Notes:

1. All depths in feet below ground surface.
2. All elevations in feet above mean sea level and measured in NGVD 1929.
3. NE indicates not encountered.

Table 1
Soil Boring Summary

Old Erie Canal Site
Clyde, New York

Boring No.	Date Completed	Ground Elevation	Boring Depth	End of Boring Elevation	Depth To Glacial Till	Top of Glacial Till Elevation	Depth To Bedrock	Top of Bedrock Elevation
SSB-1	1/14/2005	398.11	6	392.1	4.1	394.0	----	----
SSB-2	1/14/2005	398.11	5.7	392.4	4.3	393.8	----	----
SSB-3	1/14/2005	398.11	7.9	390.2	7.9	390.2	----	----
SSB-4	1/14/2005	398.11	5.8	392.3	5.8	392.3	----	----
SSB-5	1/14/2005	398.11	7.3	390.8	4.5	393.6	----	----
SSB-6	1/13/2005	398.11	7.8	390.3	7.1	391.0	----	----
SSB-7	1/12/2005	398.11	9.3	388.8	9.3	388.8	----	----
SSB-8	1/13/2005	398.11	9.3	388.8	9.3	388.8	----	----
SSB-9	1/13/2005	398.11	6.2	391.9	5	393.1	----	----
SSB-10	1/13/2005	398.11	6.8	391.3	4.2	393.9	----	----
SSB-11	1/13/2005	398.11	5.8	392.3	4.2	393.9	----	----
TMW-1	11/3/2006	398.09	14.0	384.1	13.0	385.1	----	----
TMW-2	11/3/2006	398.82	6.0	392.8	5.5	393.3	----	----

Notes:
1. All depths in feet below ground surface.
2. All elevations in feet above mean sea level and measured in NGVD 1929.
3. "---" indicates not encountered.

Table 2
Monitoring Well Construction Details

Old Erie Canal Site
Clyde, New York

Well No.	Date Completed	PVC Measuring Point Elev.	Ground Elevation	Screen Length	Screen Depth Top	Screen Depth Bottom	Screen Elevation Top	Screen Elevation Bottom	Sand Pack Depth Top	Sand Pack Depth Bottom	Sand Pack Elevation Top	Sand Pack Elevation Bottom
MW-1S	05/30/02	394.16	394.6	5.0	2.3	7.3	392.3	387.3	2.1	8.0	392.5	386.6
MW-2S	05/21/02	397.91	398.5	10.0	1.6	11.6	396.9	386.9	1.6	11.7	396.9	386.8
MW-2B	05/29/02	398.08	398.4	10.0	18.5	28.5	379.9	369.9	16.0	28.5	382.4	369.9
MW-3S	05/21/02	393.64	394.0	10.0	1.3	11.3	392.7	382.7	1.3	11.5	392.7	382.5
MW-3B	11/16/06	393.91	394.2	10.0	28.8	38.8	365.4	355.4	27.0	39.0	367.2	355.2
MW-4S	05/22/02	393.02	393.3	10.0	10.3	20.3	383.0	373.0	8.3	20.3	385.0	373.0
MW-4B	05/28/02	392.97	393.3	10.0	28.9	38.9	364.4	354.4	26.9	38.9	366.4	354.4
MW-4C	11/17/06	392.81	393.3	10.0	38.7	48.7	354.6	344.6	38.0	50.0	355.3	343.3
MW-5S	05/21/02	392.86	393.1	10.0	1.2	11.2	391.9	381.9	1.1	38.9	392.0	354.2
MW-5B	11/16/06	392.85	393.2	10.0	29.3	39.3	363.9	353.9	27.0	39.0	366.2	354.2
MW-6S	05/30/02	394.66	395.0	10.0	5.0	15.0	390.0	380.0	3.0	15.0	392.0	380.0
MW-6B	11/15/06	396.99	395.1	10.0	29.4	39.4	365.7	355.7	27.0	39.4	368.1	355.7
MW-7S	05/24/02	396.92	394.9	10.0	6.5	16.5	388.4	378.4	5.0	17.5	389.9	377.4
MW-7B	05/28/02	399.10	397.4	10.0	28.9	38.9	368.5	358.5	26.9	38.9	370.5	358.5
MW-8S	05/29/02	389.91	390.3	10.0	12.0	22.0	378.3	368.3	10.0	22.0	380.3	368.3
MW-9S	05/22/02	391.39	391.8	10.0	7.4	17.4	384.4	374.4	5.4	17.5	386.4	374.3

Notes:
1. All depths in feet below ground surface.
2. All elevations in feet above mean sea level and measured in NGVD 1929.

Table 2
Monitoring Well Construction Details

Old Erie Canal Site
Clyde, New York

Well No.	Date Completed	PVC Measuring Point Elev.	Ground Elevation	Screen Length	Screen Depth		Screen Elevation		Sand Pack Depth		Sand Pack Elevation	
					Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom
MW-10B	11/25/02	390.99	391.2	10.0	32.7	42.7	358.5	348.5	30.2	42.7	361.0	348.5
MW-11S	11/20/02	390.04	390.4	7.0	5.0	12.0	385.4	378.4	4.0	12.0	386.4	378.4
MW-11B	11/25/02	389.75	389.8	10.0	34.0	44.0	355.8	345.8	31.0	44.0	358.8	345.8
MW-12S	11/22/02	390.43	391.1	5.0	5.0	10.0	386.1	381.1	4.0	10.0	387.1	381.1
MW-12B	11/22/02	391.32	391.4	10.0	34.0	44.0	357.4	347.4	31.0	44.0	360.4	347.4
MW-13S	11/02/06	391.53	389.7	5.0	11.9	16.9	377.8	372.8	11.0	17.5	378.7	372.2
MW-14S	11/06/06	391.39	389.3	5.0	16.4	21.4	372.8	367.8	15.0	22.5	374.3	366.8
MW-15S	11/07/06	390.12	388.4	5.0	7.7	12.7	380.7	375.7	6.0	14.0	382.4	374.4
MW-16S	11/02/06	397.30	398.0	5.0	4.6	9.6	393.4	388.4	3.5	10.0	394.5	388.0
MW-16B	11/15/06	397.69	398.2	10.0	33.6	43.6	364.6	354.6	32.0	44.0	366.2	354.2
EMW-1	10/14/94	394.30	394.6	10.0	8.0	18.0	386.6	376.6	6.0	18.5	388.6	376.1
EMW-2	10/17/94	394.72	395.0	5.0	6.0	11.0	389.0	384.0	5.0	12.0	390.0	383.0
EMW-3	10/14/94	396.94	394.2	5.0	6.0	11.0	388.2	383.2	4.0	12.3	390.2	381.9
EMW-4	10/18/94	395.51	392.9	5.0	6.0	11.0	386.9	381.9	5.0	12.0	387.9	380.9
EMW-5	10/17/94	395.53	393.0	5.0	6.0	11.0	387.0	382.0	5.0	12.0	388.0	381.0
TMW-1	11/3/2006	399.11	398.1	2.0	10.1	12.1	388.0	386.0	8.0	14.0	390.1	384.1
TMW-2	11/3/2006	399.91	398.8	2.0	3.8	5.8	395.1	393.1	----	----	----	----

Notes:
1. All depths in feet below ground surface.
2. All elevations in feet above mean sea level and measured in NGVD 1929.

Table 3
Water Level Elevation Data
November 28, 2006

Old Erie Canal Site
Clyde, New York

Well No.	Measuring Point	Depth to Water	Water Elevation
MW-1	401.43	6.86	394.57
MW-1S	394.16	4.42	389.74
MW-2S	397.91	2.93	394.98
MW-2B	398.08	3.82	394.26
MW-3S	393.64	4.34	389.30
MW-3B	393.91	8.19	385.72
MW-4S	393.02	5.20	387.82
MW-4B	392.97	6.52	386.45
MW-4C	392.81	-1.06	393.87
MW-5S	392.86	4.35	388.51
MW-5B	392.85	27.46	365.39
MW-6S	394.66	4.57	390.09
MW-6B	396.99	9.00	387.99
MW-7S	396.92	9.09	387.83
MW-7B	399.10	10.66	388.44
MW-8S	389.91	0.50	389.41
MW-9S	391.39	2.60	388.79
MW-10B	390.99	-1.16	392.15
MW-11S	390.04	3.90	386.14
MW-11B	389.75	-1.37	391.12
MW-12S	390.43	2.42	388.01
MW-12B	391.32	-1.06	392.38
MW-13S	391.53	3.12	388.41
MW-14S	391.39	3.40	387.99
MW-15S	390.12	2.19	387.93
MW-16S	397.30	2.94	394.36
MW-16B	397.69	3.88	393.81

Notes:
1. Water level depths in feet below ground surface.
2. All elevations in feet above mean sea level.
3. Measuring point measured in NGVD 1929.

Table 3
Water Level Elevation Data
November 28, 2006

Old Erie Canal Site
Clyde, New York

EMW-1	394.30	Well decommissioned in 2002	
EMW-2	394.72	2.14	392.58
EMW-3	396.94	7.67	389.27
EMW-4	395.51	6.55	388.96
EMW-5	395.53	5.24	390.29
TMW-1	399.11	4.71	394.4
TMW-2	399.91	4.70	395.21
SG-1	390.21	0.30	389.91
SG-2	387.46	0.50	386.96
SG-3	387.99	7.91	380.08
SG-3A	391.04	7.84	383.2

Notes:

1. Water level depths in feet below ground surface.
2. All elevations in feet above mean sea level.
3. Measuring point measured in NGVD 1929.

Table 4
Hydraulic Conductivity Testing Results
Groundwater Monitoring

Old Erie Canal Site
Clyde, New York

Well Identification	Bouwer and Rice K Estimate (cm/sec)	Arithmetic Mean (cm/sec)	Arithmetic Mean (ft/day)
Unconsolidated Monitoring Wells			
MW-2S	3.04E-04	2.29E-03	6.48
	4.27E-03		
MW-3S	3.84E-04	5.08E-04	1.44
	6.31E-04		
MW-4S	2.59E-03	2.81E-03	7.96
	3.03E-03		
MW-5S	1.94E-03	6.92E-03	19.62
	1.20E-02		
	6.83E-03		
MW-6S	3.54E-04	3.49E-04	0.99
	3.43E-04		
MW-7S	7.22E-03	6.64E-03	18.82
	6.06E-03		
MW-8S	1.07E-03	1.07E-03	3.03
MW-9S	1.15E-04	1.15E-04	0.33
MW-11S	3.29E-03	3.29E-03	9.32
	3.29E-03		
	3.29E-03		
MW-12S	NA	NA	NA
MW-13S	4.02E-03	3.03E-03	8.59
	2.86E-03		
	2.21E-03		
MW-14S	5.35E-04	4.29E-04	1.22
	3.91E-04		
	3.62E-04		
MW-15S	1.03E-02	9.47E-03	26.84
	9.15E-03		
	8.98E-03		
MW-16S	1.69E-02	1.10E-02	31.08
	7.30E-03		
	8.72E-03		
EMW-2	1.55E-04	1.52E-04	0.43
	1.49E-04		

Table 4
Hydraulic Conductivity Testing Results
Groundwater Monitoring

Old Erie Canal Site
Clyde, New York

Well Identification	Bouwer and Rice K Estimate (cm/sec)	Arithmetic Mean (cm/sec)	Arithmetic Mean (ft/day)
Unconsolidated Monitoring Wells (Continued)			
EMW-3	2.86E-03	2.67E-03	7.55
	2.47E-03		
EMW-4	5.39E-04	6.56E-04	1.86
	7.72E-04		
EMW-5	3.29E-03	3.29E-03	9.32
	3.29E-03		
TMW-1	7.88E-04	7.29E-04	2.07
	6.71E-04		
TMW-2	1.60E-02	1.35E-02	38.12
	1.09E-02		
Bedrock Monitoring Wells			
MW-2B	3.79E-06	3.79E-06	0.01
MW-3B	5.54E-06	6.33E-06	0.02
	9.03E-06		
	4.43E-06		
MW-4B	2.65E-04	3.01E-04	0.85
	3.36E-04		
MW-4C	2.35E-05	2.39E-05	0.07
	2.43E-05		
MW-5B	NA	NA	NA
MW-6B	3.07E-04	3.03E-04	0.86
	3.02E-04		
	2.99E-04		
MW-10B	1.49E-05	1.49E-05	0.04
MW-11B	1.33E-04	1.33E-04	0.38
MW-12B	NA	NA	NA
MW-16B	1.89E-07	1.89E-07	0.001

Notes:
1. The geometric mean hydraulic conductivity of the unconsolidated monitoring wells at the Site is 1.70E-03 (4.82 ft/day).
2. The geometric mean hydraulic conductivity of the bedrock monitoring wells at the Site is 1.93E-05 (0.05 ft/day).

Table 5
Soil Sampling Results

Old Erie Canal Site
Clyde, New York

CAS No	Chemical Name	Sample Date	11/15/2006
		Sample ID	SB6B(4-6)111506
		Sample Matrix	SO
		Unit	
71-55-6	1,1,1-Trichloroethane	ug/kg	200 UJ
79-34-5	1,1,2,2-Tetrachloroethane	ug/kg	200 UJ
79-00-5	1,1,2-Trichloroethane	ug/kg	200 UJ
75-34-3	1,1-Dichloroethane	ug/kg	200 UJ
75-35-4	1,1-Dichloroethene	ug/kg	200 UJ
107-06-2	1,2-Dichloroethane	ug/kg	40 UJ
78-87-5	1,2-Dichloropropane	ug/kg	200 UJ
108-10-1	4-Methyl-2-pentanone	ug/kg	200 UJ
67-64-1	Acetone	ug/kg	400 UJ
71-43-2	Benzene	ug/kg	40 UJ
75-27-4	Bromodichloromethane	ug/kg	200 UJ
75-25-2	Bromoform	ug/kg	200 UJ
74-83-9	Bromomethane	ug/kg	200 UJ
75-15-0	Carbon disulfide	ug/kg	200 UJ
56-23-5	Carbon tetrachloride	ug/kg	200 UJ
108-90-7	Chlorobenzene	ug/kg	200 UJ
75-00-3	Chloroethane	ug/kg	200 UJ
67-66-3	Chloroform	ug/kg	200 UJ
74-87-3	Chloromethane	ug/kg	200 UJ
156-59-2	cis-1,2-Dichloroethene	ug/kg	**83.0 J**
10061-01-5	cis-1,3-Dichloropropene	ug/kg	200 UJ
124-48-1	Dibromochloromethane	ug/kg	200 UJ
100-41-4	Ethylbenzene	ug/kg	40 UJ
591-78-6	Methyl Butyl Ketone	ug/kg	200 UJ
78-93-3	Methyl Ethyl Ketone	ug/kg	400 UJ
75-09-2	Methylene chloride	ug/kg	200 UJ
100-42-5	Styrene	ug/kg	200 UJ
127-18-4	Tetrachloroethene	ug/kg	200 UJ
108-88-3	Toluene	ug/kg	**71.5 J**
156-60-5	trans-1,2-Dichloroethene	ug/kg	200 UJ
10061-02-6	trans-1,3-Dichloropropene	ug/kg	200 UJ
79-01-6	Trichloroethene	ug/kg	200 UJ
75-01-4	Vinyl chloride	ug/kg	200 UJ
1330-20-7	Xylene (total)	ug/kg	79 UJ

Notes:
1. Units expressed in ug/kg.
2. Analyses performed by Accutest Laboratories of Dayton, NJ.
3. Volatile organic compounds quantitated by EPA SW-846 Method 8260B.
4. "U" indicates a compound not detected.
5. "J" indicates an estimated value.

Table 6
Ground Water Sampling Results
VOCs

Old Erie Canal Site
Clyde, New York

	11/30/2006	12/1/2006	12/6/2006	12/1/2006
	GW-EMW-2-113006	GW-EMW-3-120106	GW-EMW-4-120606	GW-EMW-5-120106
Acetone	5.0 UR	5.0 UR	5.0 U	5.0 UR
Benzene	**0.37 J**	1.0 U	1.0 U	1.0 U
Bromodichloromethane	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK)	5.0 UR	5.0 UR	5.0 U	5.0 UR
Carbon disulfide	1.0 U	1.0 U	1.0 UJ	1.0 U
Carbon tetrachloride	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	1.0 U	1.0 U	**1.4**	1.0 U
Chloroform	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	1.0 U	1.0 U	**0.71 J**	1.0 U
1,2-Dichloroethane	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	**1.1**	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-pentanone (MIBK)	5.0 U	5.0 U	5.0 U	5.0 U
Methylene chloride	2.0 U	2.0 U	2.0 U	2.0 U
Styrene	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	**5.7**	1.0 U	**2.2**	1.0 U
Xylene (total)	**0.57 J**	1.0 U	1.0 U	1.0 U
Methane	**1440**	**598**	**5140**	**1140**
Ethane	**340**	**0.56**	**226**	**0.25**
Ethene	**36.4**	0.10 U	0.10 U	0.10 U

Notes:
1. Units expressed in ug/L.
2. VOCs quantified using EPA Method 8260B.
3. Methane, ethane and ethene were quantified using EPA Method 8015.
3. Analyses performed by Accutest Laboratories of Dayton, NJ.
4. "U" indicates a compound not detected.
5. "J" indicates an estimated value.
6. "R" indicates that the result is rejected due to low response factor in the calibration standard..

Table 6
Ground Water Sampling Results
VOCs

Old Erie Canal Site
Clyde, New York

	11/29/2006	11/29/2006	12/6/2006	11/29/2006
	GW-MW-1S-112906	GW-X-1-112906 Duplicate of MW-1S	GW-MW-1-120606	GW-MW-2S-112906
Acetone	130 UR	50 U	5.0 U	5.0 U
Benzene	25 U	10 U	1.0 U	1.0 U
Bromodichloromethane	25 U	10 U	1.0 U	1.0 U
Bromoform	25 U	10 U	1.0 U	1.0 U
Bromomethane	25 U	10 U	1.0 U	1.0 U
2-Butanone (MEK)	130 UR	50 UR	5.0 U	5.0 UR
Carbon disulfide	25 U	10 U	1.0 UJ	1.0 U
Carbon tetrachloride	25 U	10 U	1.0 U	1.0 U
Chlorobenzene	25 U	10 U	1.0 U	1.0 U
Chloroethane	25 U	10 U	1.0 U	1.0 U
Chloroform	25 U	10 U	1.0 U	1.0 U
Chloromethane	25 U	10 U	1.0 U	1.0 U
Dibromochloromethane	25 U	10 U	1.0 U	1.0 U
1,1-Dichloroethane	25 U	10 U	1.0 U	1.0 U
1,2-Dichloroethane	25 U	10 U	1.0 U	1.0 U
1,1-Dichloroethene	25 U	**6.9 J**	1.0 U	1.0 U
cis-1,2-Dichloroethene	**3690**	**3240**	**2.2**	1.0 U
trans-1,2-Dichloroethene	**32.4**	**34.2**	1.0 U	1.0 U
1,2-Dichloropropane	25 U	10 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	25 U	10 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	25 U	10 U	1.0 U	1.0 U
Ethylbenzene	25 U	10 U	1.0 U	1.0 U
2-Hexanone	130 U	50 U	5.0 U	5.0 U
4-Methyl-2-pentanone (MIBK)	130 U	50 U	5.0 U	5.0 U
Methylene chloride	50 U	20 U	2.0 U	2.0 U
Styrene	25 U	10 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	25 U	10 U	1.0 U	1.0 U
Tetrachloroethene	**11.0 J**	**10.6**	1.0 U	1.0 U
Toluene	25 U	10 U	1.0 U	1.0 U
1,1,1-Trichloroethane	25 U	10 U	1.0 U	1.0 U
1,1,2-Trichloroethane	25 U	10 U	1.0 U	1.0 U
Trichloroethene	**1110**	**988**	**0.58 J**	1.0 U
Vinyl chloride	**147**	**155**	**3.3**	1.0 U
Xylene (total)	25 U	10 U	1.0 U	1.0 U
Methane	**6.88**	**9.54**	**897**	**206**
Ethane	**7.69**	**11.0**	**10.4**	0.10 U
Ethene	**0.38**	**0.46**	**0.10 U**	0.10 U

Notes:
1. Units expressed in ug/L.
2. VOCs quantified using EPA Method 8260B.
3. Methane, ethane and ethene were quantified using EPA Method 8015.
3. Analyses performed by Accutest Laboratories of Dayton, NJ.
4. "U" indicates a compound not detected.
5. "J" indicates an estimated value.
6. "R" indicates that the result is rejected due to low response factor in the calibration standard..

Table 6
Ground Water Sampling Results
VOCs

Old Erie Canal Site
Clyde, New York

	11/29/2006	12/5/2006	12/5/2006	12/5/2006
	GW-MW-2B-112906	GW-MW-3S-120506	GW-MW-3B-120506	GW-MW-4S-120506
Acetone	5.0 UR	5.0 U	5.0 U	5.0 U
Benzene	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK)	5.0 UR	5.0 UR	5.0 UR	5.0 UR
Carbon disulfide	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	1.0 U	1.0 U	**351**	**6.3**
trans-1,2-Dichloroethene	1.0 U	1.0 U	**5.9**	1.0 U
1,2-Dichloropropane	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-pentanone (MIBK)	5.0 U	5.0 U	5.0 U	5.0 U
Methylene chloride	2.0 U	2.0 U	2.0 U	2.0 U
Styrene	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	1.0 U	1.0 U	**0.48 J**	1.0 U
1,1,1-Trichloroethane	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	1.0 U	1.0 U	**1.4**	1.0 U
Vinyl chloride	1.0 U	1.0 U	**237**	**2.3**
Xylene (total)	1.0 U	1.0 U	1.0 U	1.0 U
Methane	2.98U	**6.12**	**24.4**	**6.43**
Ethane	**0.13**	0.10 U	**2.3**	**0.12**
Ethene	0.10 U	0.10 U	**16.2**	0.10 U

Notes:
1. Units expressed in ug/L.
2. VOCs quantified using EPA Method 8260B.
3. Methane, ethane and ethene were quantified using EPA Method 8015.
3. Analyses performed by Accutest Laboratories of Dayton, NJ.
4. "U" indicates a compound not detected.
5. "J" indicates an estimated value.
6. "R" indicates that the result is rejected due to low response factor in the calibration standard..

Table 6
Ground Water Sampling Results
VOCs

Old Erie Canal Site
Clyde, New York

	12/5/2006	12/5/2006	12/5/2006	12/5/2006
	GW-MW-4B-120506	GW-MW-4C-120506	GW-X-2-120506 Duplicate of MW-4C	GW-MW-5S-120506
Acetone	500 U	5.0 U	5.0 UJ	5.0 U
Benzene	100 U	1.0 U	1.0 UJ	1.0 U
Bromodichloromethane	100 U	1.0 U	1.0 UJ	1.0 U
Bromoform	100 U	1.0 U	1.0 UJ	1.0 U
Bromomethane	100 U	1.0 U	1.0 UJ	1.0 U
2-Butanone (MEK)	500 UR	5.0 UR	5.0 UR	5.0 UR
Carbon disulfide	100 U	1.0 U	1.0 UJ	1.0 U
Carbon tetrachloride	100 U	1.0 U	1.0 UJ	1.0 U
Chlorobenzene	100 U	1.0 U	1.0 UJ	1.0 U
Chloroethane	100 U	1.0 U	1.0 UJ	1.0 U
Chloroform	100 U	1.0 U	1.0 UJ	1.0 U
Chloromethane	100 U	1.0 U	1.0 UJ	1.0 U
Dibromochloromethane	100 U	1.0 U	1.0 UJ	1.0 U
1,1-Dichloroethane	100 U	1.0 U	1.0 UJ	1.0 U
1,2-Dichloroethane	100 U	1.0 U	1.0 UJ	1.0 U
1,1-Dichloroethene	100 U	1.0 U	1.0 UJ	1.0 U
cis-1,2-Dichloroethene	**64800**	1.0 U	1.0 UJ	1.0 U
trans-1,2-Dichloroethene	**130**	1.0 U	1.0 UJ	1.0 U
1,2-Dichloropropane	100 U	1.0 U	1.0 UJ	1.0 U
cis-1,3-Dichloropropene	100 U	1.0 U	1.0 UJ	1.0 U
trans-1,3-Dichloropropene	100 U	1.0 U	1.0 UJ	1.0 U
Ethylbenzene	100 U	1.0 U	1.0 UJ	1.0 U
2-Hexanone	500 U	5.0 U	5.0 UJ	5.0 U
4-Methyl-2-pentanone (MIBK)	500 U	5.0 U	5.0 UJ	5.0 U
Methylene chloride	200 U	2.0 U	2.0 UJ	2.0 U
Styrene	100 U	1.0 U	1.0 UJ	1.0 U
1,1,2,2-Tetrachloroethane	100 U	1.0 U	1.0 UJ	1.0 U
Tetrachloroethene	100 U	1.0 U	1.0 UJ	1.0 U
Toluene	100 U	1.0 U	1.0 UJ	1.0 U
1,1,1-Trichloroethane	100 U	1.0 U	1.0 UJ	1.0 U
1,1,2-Trichloroethane	100 U	1.0 U	1.0 UJ	1.0 U
Trichloroethene	**2130**	1.0 U	1.0 UJ	1.0 U
Vinyl chloride	**8740**	1.0 U	1.0 UJ	1.0 U
Xylene (total)	100 U	1.0 U	1.0 UJ	1.0 U
Methane	**287**	**4.16**	**4.46J**	**21.8**
Ethane	**60.0**	**0.12**	**0.14J**	0.10 U
Ethene	**163**	0.10 U	0.10 UJ	0.10 U

Notes:
1. Units expressed in ug/L.
2. VOCs quantified using EPA Method 8260B.
3. Methane, ethane and ethene were quantified using EPA Method 8015.
3. Analyses performed by Accutest Laboratories of Dayton, NJ.
4. "U" indicates a compound not detected.
5. "J" indicates an estimated value.
6. "R" indicates that the result is rejected due to low response factor in the calibration standard..

Table 6
Ground Water Sampling Results
VOCs

Old Erie Canal Site
Clyde, New York

	12/6/2006	12/6/2006	12/6/2006	12/4/2006
	GW-MW-5B-120606	GW-MW-6S-120606	GW-MW-6B-120606	GW-MW-7S-120406
Acetone	**4.7 J**	2500 UJ	500 U	5.0 U
Benzene	1.0 U	500 UJ	100 U	1.0 U
Bromodichloromethane	1.0 U	500 UJ	100 U	1.0 U
Bromoform	1.0 U	500 UJ	100 U	1.0 U
Bromomethane	1.0 U	500 UJ	100 U	1.0 U
2-Butanone (MEK)	5.0 U	2500 UR	500 UR	5.0 U
Carbon disulfide	1.0 UJ	500 UJ	100 UJ	1.0 UJ
Carbon tetrachloride	1.0 U	500 UJ	100 U	1.0 U
Chlorobenzene	1.0 U	500 UJ	100 U	1.0 U
Chloroethane	1.0 U	500 UJ	100 U	1.0 U
Chloroform	1.0 U	500 UJ	100 U	1.0 U
Chloromethane	1.0 U	500 UJ	100 U	1.0 U
Dibromochloromethane	1.0 U	500 UJ	100 U	1.0 U
1,1-Dichloroethane	1.0 U	500 UJ	100 U	1.0 U
1,2-Dichloroethane	1.0 U	500 UJ	100 U	1.0 U
1,1-Dichloroethene	1.0 U	500 UJ	**59.3 J**	**0.62 J**
cis-1,2-Dichloroethene	1.0 U	**186000J**	**50400**	**414 J**
trans-1,2-Dichloroethene	1.0 U	**478 J**	**119**	**2.5**
1,2-Dichloropropane	1.0 U	500 UJ	100 U	1.0 U
cis-1,3-Dichloropropene	1.0 U	500 UJ	100 U	1.0 U
trans-1,3-Dichloropropene	1.0 U	500 UJ	100 U	1.0 U
Ethylbenzene	1.0 U	500 UJ	100 U	1.0 U
2-Hexanone	5.0 U	2500 UJ	500 U	5.0 U
4-Methyl-2-pentanone (MIBK)	5.0 U	2500 UJ	500 U	5.0 U
Methylene chloride	2.0 U	1000 UJ	200 U	2.0 U
Styrene	1.0 U	500 UJ	100 U	1.0 U
1,1,2,2-Tetrachloroethane	1.0 U	500 UJ	100 U	1.0 U
Tetrachloroethene	1.0 U	500 UJ	100 U	1.0 U
Toluene	1.0 U	**24900J**	100 U	1.0 U
1,1,1-Trichloroethane	1.0 U	500 UJ	100 U	1.0 U
1,1,2-Trichloroethane	1.0 U	500 UJ	100 U	1.0 U
Trichloroethene	1.0 U	500 UJ	**95.5 J**	**0.46 J**
Vinyl chloride	1.0 U	**73200J**	**1750**	**12.4**
Xylene (total)	1.0 U	**854J**	100 U	1.0 U
Methane	**6.97**	**3520J**	**93.0**	**6.28**
Ethane	**0.70**	**718J**	**2.0**	0.10 U
Ethene	**0.35**	**2710J**	**41.3**	0.10 U

Notes:
1. Units expressed in ug/L.
2. VOCs quantified using EPA Method 8260B.
3. Methane, ethane and ethene were quantified using EPA Method 8015.
3. Analyses performed by Accutest Laboratories of Dayton, NJ.
4. "U" indicates a compound not detected.
5. "J" indicates an estimated value.
6. "R" indicates that the result is rejected due to low response factor in the calibration standard..

Table 6
Ground Water Sampling Results
VOCs

Old Erie Canal Site
Clyde, New York

	12/4/2006	11/30/2006	11/30/2006	11/30/2006
	GW-MW-7B-120406	GW-MW-8S-113006	GW-MW-9S-113006	GW-MW-10B-113006
Acetone	5.0 U	5.0 UR	5.0 UR	5.0 UR
Benzene	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK)	5.0 U	5.0 UR	5.0 UR	5.0 UR
Carbon disulfide	1.0 U	1.0 U	**0.55 J**	1.0 U
Carbon tetrachloride	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	**0.58 J**	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-pentanone (MIBK)	5.0 U	5.0 U	5.0 U	5.0 U
Methylene chloride	2.0 U	2.0 U	2.0 U	2.0 U
Styrene	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	**0.35 J**	1.0 U	1.0 U	1.0 U
Vinyl chloride	1.0 U	1.0 U	1.0 U	1.0 U
Xylene (total)	1.0 U	1.0 U	1.0 U	1.0 U
Methane	**7.1**	**0.13**	**4.00**	**2.27**
Ethane	**0.30**	0.10 U	**0.11**	0.10 U
Ethene	**0.62**	0.10 U	0.10 U	0.10 U

Notes:
1. Units expressed in ug/L.
2. VOCs quantified using EPA Method 8260B.
3. Methane, ethane and ethene were quantified using EPA Method 8015.
3. Analyses performed by Accutest Laboratories of Dayton, NJ.
4. "U" indicates a compound not detected.
5. "J" indicates an estimated value.
6. "R" indicates that the result is rejected due to low response factor in the calibration standard..

Table 6
Ground Water Sampling Results
VOCs

Old Erie Canal Site
Clyde, New York

	11/30/2006	11/30/2006	11/30/2006	11/30/2006
	GW-MW-11S-113006	GW-MW-11B-113006	GW-MW-12S-113006	GW-MW-12B-113006
Acetone	5.0 UR	5.0 UR	5.0 UR	5.0 UR
Benzene	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK)	5.0 UR	5.0 UR	5.0 UR	5.0 UR
Carbon disulfide	1.0 U	1.0 U	1.0 U	**1.0**
Carbon tetrachloride	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-pentanone (MIBK)	5.0 U	5.0 U	5.0 U	5.0 U
Methylene chloride	2.0 U	2.0 U	2.0 U	2.0 U
Styrene	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	1.0 U	1.0 U	1.0 U	1.0 U
Xylene (total)	1.0 U	1.0 U	1.0 U	1.0 U
Methane	**218**	**2.87**	**34.3**	**2.53**
Ethane	0.10 U	0.10 U	0.10 U	**0.89**
Ethene	0.10 U	0.10 U	0.10 U	**0.36**

Notes:
1. Units expressed in ug/L.
2. VOCs quantified using EPA Method 8260B.
3. Methane, ethane and ethene were quantified using EPA Method 8015.
3. Analyses performed by Accutest Laboratories of Dayton, NJ.
4. "U" indicates a compound not detected.
5. "J" indicates an estimated value.
6. "R" indicates that the result is rejected due to low response factor in the calibration standard..

Table 6
Ground Water Sampling Results
VOCs

Old Erie Canal Site
Clyde, New York

	11/30/2006	12/6/2006	12/7/2006	12/6/2006
	GW-MW-13S-113006	GW-MW-14S-120606	GW-MW-15S-120706	GW-MW-16S-120606
Acetone	200 UR	250 U	130 U	5.0 U
Benzene	40 U	50 U	25 U	1.0 U
Bromodichloromethane	40 U	50 U	25 U	1.0 U
Bromoform	40 U	50 U	25 U	1.0 U
Bromomethane	40 U	50 U	25 U	1.0 U
2-Butanone (MEK)	200 UR	250 UR	130 U	5.0 UR
Carbon disulfide	40 U	50 UJ	25 U	1.0 UJ
Carbon tetrachloride	40 U	50 U	25 U	1.0 U
Chlorobenzene	40 U	50 U	25 U	1.0 U
Chloroethane	40 U	50 U	25 U	1.0 U
Chloroform	.40 U	50 U	25 U	1.0 U
Chloromethane	40 U	50 U	25 U	1.0 U
Dibromochloromethane	40 U	50 U	25 U	1.0 U
1,1-Dichloroethane	40 U	50 U	25 U	1.0 U
1,2-Dichloroethane	40 U	50 U	25 U	1.0 U
1,1-Dichloroethene	40 U	**51.8**	**13.7 J**	1.0 U
cis-1,2-Dichloroethene	**6870**	**28200**	**20800**	**5.7**
trans-1,2-Dichloroethene	40 U	**80.0**	**30.8**	1.0 U
1,2-Dichloropropane	40 U	50 U	25 U	1.0 U
cis-1,3-Dichloropropene	40 U	50 U	25 U	1.0 U
trans-1,3-Dichloropropene	40 U	50 U	25 U	1.0 U
Ethylbenzene	40 U	50 U	25 U	1.0 U
2-Hexanone	200 U	250 U	130 U	5.0 U
4-Methyl-2-pentanone (MIBK)	200 U	250 U	130 U	5.0 U
Methylene chloride	80 U	100 U	50 U	2.0 U
Styrene	40 U	50 U	25 U	1.0 U
1,1,2,2-Tetrachloroethane	40 U	50 U	25 U	1.0 U
Tetrachloroethene	40 U	50 U	25 U	1.0 U
Toluene	40 U	**639**	**98.9**	1.0 U
1,1,1-Trichloroethane	40 U	50 U	25 U	1.0 U
1,1,2-Trichloroethane	40 U	50 U	25 U	1.0 U
Trichloroethene	**845**	**254**	**5.6 J**	**8.4**
Vinyl chloride	**348**	**4610**	**9040**	1.0 U
Xylene (total)	40 U	50 U	25 U	1.0 U
Methane	**115**	**588**	**6660**	**2.07**
Ethane	**13.2**	**151**	**426**	**0.35**
Ethene	**22.9**	**215**	**512**	**0.13**

Notes:
1. Units expressed in ug/L.
2. VOCs quantified using EPA Method 8260B.
3. Methane, ethane and ethene were quantified using EPA Method 8015.
3. Analyses performed by Accutest Laboratories of Dayton, NJ.
4. "U" indicates a compound not detected.
5. "J" indicates an estimated value.
6. "R" indicates that the result is rejected due to low response factor in the calibration standard..

Table 6
Ground Water Sampling Results
VOCs

Old Erie Canal Site
Clyde, New York

	12/6/2006	11/28/2006	11/29/2006
	GW-MW-16B-120606	GW-TMW-1-112806	GW-TMW-2-112906
Acetone	5.0 U	5.0 UR	5.0 UR
Benzene	1.0 U	1.0 U	1.0 U
Bromodichloromethane	1.0 U	1.0 U	1.0 U
Bromoform	1.0 U	1.0 U	1.0 U
Bromomethane	1.0 U	1.0 U	1.0 U
2-Butanone (MEK)	5.0 UR	5.0 UR	5.0 UR
Carbon disulfide	1.0 UJ	1.0 U	1.0 U
Carbon tetrachloride	1.0 U	1.0 U	1.0 U
Chlorobenzene	1.0 U	1.0 U	1.0 U
Chloroethane	1.0 U	1.0 U	1.0 U
Chloroform	1.0 U	1.0 U	1.0 U
Chloromethane	1.0 U	1.0 U	1.0 U
Dibromochloromethane	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	**16.0**	1.0 U	1.0 U
trans-1,2-Dichloroethene	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	1.0 U	1.0 U	1.0 U
Ethylbenzene	1.0 U	1.0 U	1.0 U
2-Hexanone	5.0 U	5.0 U	5.0 U
4-Methyl-2-pentanone (MIBK)	5.0 U	5.0 U	5.0 U
Methylene chloride	2.0 U	2.0 U	2.0 U
Styrene	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	1.0 U	1.0 U	1.0 U
Tetrachloroethene	1.0 U	1.0 U	1.0 U
Toluene	**0.72 J**	1.0 U	**0.51 J**
1,1,1-Trichloroethane	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	1.0 U	1.0 U	1.0 U
Trichloroethene	1.0 U	1.0 U	1.0 U
Vinyl chloride	**1.2**	1.0 U	1.0 U
Xylene (total)	1.0 U	1.0 U	1.0 U
Methane	**6.70**	**152**	**8.97**
Ethane	**0.60**	**1.7**	**1.2**
Ethene	**0.72**	**0.53**	**0.10 U**

Notes:
1. Units expressed in ug/L.
2. VOCs quantified using EPA Method 8260B.
3. Methane, ethane and ethene were quantified using EPA Method 8015.
3. Analyses performed by Accutest Laboratories of Dayton, NJ.
4. "U" indicates a compound not detected.
5. "J" indicates an estimated value.
6. "R" indicates that the result is rejected due to low response factor in the calibration standard..

Table 7
Ground Water Sampling Results
MNA, Inorganics

Old Erie Canal Site
Clyde, New York

	11/30/2006	12/1/2006	12/6/2006	12/1/2006	11/29/2006
	GW-EMW-2-113006	GW-EMW-3-120106	GW-EMW-4-120606	GW-EMW-5-120106	GW-MW-1S-112906
Alkalinity, Total(As CaCO3)	**559**	**453**	**425**	**477**	**374**
Chloride	**108**	**38.3**	**70.9**	**77.2**	**182**
Dissolved Organic Carbon (DOC)	**4.8**	**3.6**	**5.6**	1.0 U	1.0 UJ
Nitrate (as N)	0.11 U	**0.66**	0.11 U	0.11 U	0.11 U
Nitrogen, Nitrate + Nitrite	0.10 U	**0.66**	0.10 U	0.10 U	0.10 U
Nitrogen, Nitrite	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U
Sodium	**65600**	**30900**	**59200**	**55000**	**103000**
Sulfate	**11.8**	10 U	10 U	10 U	**34.9**
Sulfide	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

Notes:
1. Units expressed in mg/L, with the exception of sodium, which is expressed in ug/L.
2. Analyses performed by Accutest Laboratories of Dayton, NJ.
3. "U" indicates a compound not detected.
4. "J" indicates an estimated value.

Table 7
Ground Water Sampling Results
MNA, Inorganics

Old Erie Canal Site
Clyde, New York

	11/29/2006	12/6/2006	11/29/2006	11/29/2006	12/5/2006
	GW-X-1-112906 Duplicate of MW-1S	GW-MW-1-120606	GW-MW-2S-112906	GW-MW-2B-112906	GW-MW-3S-120506
Alkalinity, Total(As CaCO3)	**460**	**275**	**441**	**128**	**462**
Chloride	**182**	**24.3**	**21.5**	**57.4**	**10.4**
Dissolved Organic Carbon (DOC)	**4.6 J**	**6.4**	**2.2**	**5.1**	**2.1**
Nitrate (as N)	0.11 U	0.11 U	**0.33**	0.11 U	**0.35**
Nitrogen, Nitrate + Nitrite	0.10 U	0.10 U	**0.33**	0.10 U	**0.35**
Nitrogen, Nitrite	**0.011**	0.010 U	0.010 U	0.010 U	0.010 U
Sodium	**103000**	**21400**	**61800**	**70600**	**11200**
Sulfate	**35.1**	**12.7**	**10.4**	**1140**	**21.3**
Sulfide	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

Notes:
1. Units expressed in mg/L, with the exception of sodium, which is expressed in ug/L.
2. Analyses performed by Accutest Laboratories of Dayton, NJ.
3. "U" indicates a compound not detected.
4. "J" indicates an estimated value.

Table 7
Ground Water Sampling Results
MNA, Inorganics

Old Erie Canal Site
Clyde, New York

	12/5/2006	12/5/2006	12/5/2006	12/5/2006	12/5/2006
	GW-MW-3B-120506	GW-MW-4S-120506	GW-MW-4B-120506	GW-MW-4C-120506	GW-X-2-120506 Duplicate of MW-4C
Alkalinity, Total(As CaCO3)	**63.4**	**393**	**361**	**188**	**159**
Chloride	**104**	**12.8**	**187**	**253**	**256**
Dissolved Organic Carbon (DOC)	**1.1**	**4.3**	**2.8**	1.0 U	1.0 U
Nitrate (as N)	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U
Nitrogen, Nitrate + Nitrite	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Nitrogen, Nitrite	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U
Sodium	**192000**	10000 U	**95200**	**244000**	**239000**
Sulfate	**2090**	**42.2**	**1150**	**1710**	**1790**
Sulfide	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

Notes:
1. Units expressed in mg/L, with the exception of sodium, which is expressed in ug/L.
2. Analyses performed by Accutest Laboratories of Dayton, NJ.
3. "U" indicates a compound not detected.
4. "J" indicates an estimated value.

Table 7
Ground Water Sampling Results
MNA, Inorganics

Old Erie Canal Site
Clyde, New York

	12/5/2006	12/6/2006	12/6/2006	12/6/2006	12/4/2006
	GW-MW-5S-120506	GW-MW-5B-120606	GW-MW-6S-120606	GW-MW-6B-120606	GW-MW-7S-120406
Alkalinity, Total(As CaCO3)	**739**	**105**	**439**	**256**	**352**
Chloride	2.0 U	**123**	**236**	**144**	**74.2**
Dissolved Organic Carbon (DOC)	**1.9**	1.0 U	**33.8**	**1.5**	**1.3**
Nitrate (as N)	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U
Nitrogen, Nitrate + Nitrite	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Nitrogen, Nitrite	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U
Sodium	10000 U	**166000**	**67800**	**73600**	**37700**
Sulfate	**12.3**	**1840**	**10.4**	**1420**	**231**
Sulfide	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

Notes:
1. Units expressed in mg/L, with the exception of sodium, which is expressed in ug/L.
2. Analyses performed by Accutest Laboratories of Dayton, NJ.
3. "U" indicates a compound not detected.
4. "J" indicates an estimated value.

Table 7
Ground Water Sampling Results
MNA, Inorganics

Old Erie Canal Site
Clyde, New York

	12/4/2006	11/30/2006	11/30/2006	11/30/2006	11/30/2006
	GW-MW-7B-120406	GW-MW-8S-113006	GW-MW-9S-113006	GW-MW-10B-113006	GW-MW-11S-113006
Alkalinity, Total(As CaCO3)	**16.1**	**409**	**340**	**152**	**442**
Chloride	**40.6**	**248**	**55.5**	**751 J**	**10.1**
Dissolved Organic Carbon (DOC)	5.0 U	**1.4**	**5.1**	1.0 U	**2.5**
Nitrate (as N)	**0.19**	**0.17**	0.11 U	0.11 U	0.11 U
Nitrogen, Nitrate + Nitrite	**0.19**	**0.17**	0.10 U	0.10 U	0.10 U
Nitrogen, Nitrite	0.010 U	0.010 U	0.010 U	**0.025**	0.010 U
Sodium	**90600**	**158000**	**58900**	**568000**	**10900**
Sulfate	**1740**	**67.3**	**96.3**	**1970 J**	**24.3**
Sulfide	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

Notes:
1. Units expressed in mg/L, with the exception of sodium, which is expressed in ug/L.
2. Analyses performed by Accutest Laboratories of Dayton, NJ.
3. "U" indicates a compound not detected.
4. "J" indicates an estimated value.

Table 7
Ground Water Sampling Results
MNA, Inorganics

Old Erie Canal Site
Clyde, New York

	11/30/2006	11/30/2006	11/30/2006	11/30/2006	12/6/2006
	GW-MW-11B-113006	GW-MW-12S-113006	GW-MW-12B-113006	GW-MW-13S-113006	GW-MW-14S-120606
Alkalinity, Total(As CaCO3)	**159**	**629**	**59.7**	**289**	**371**
Chloride	**613 J**	**3.0**	**964 J**	**163**	**141**
Dissolved Organic Carbon (DOC)	1.0 U	**3.8**	1.0 U	**5.4**	**6.7**
Nitrate (as N)	0.11 U	**5.3**	0.11 U	0.11 U	0.11 U
Nitrogen, Nitrate + Nitrite	0.10 U	**5.3**	0.10 U	0.10 U	0.10 U
Nitrogen, Nitrite	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U
Sodium	**477000**	10000 U	**778000**	**93800**	**90400**
Sulfate	**1930 J**	**72.4**	**2130 J**	**878**	**355**
Sulfide	2.0 U	2.0 U	**3.0**	2.0 U	2.0 U

Notes:
1. Units expressed in mg/L, with the exception of sodium, which is expressed in ug/L.
2. Analyses performed by Accutest Laboratories of Dayton, NJ.
3. "U" indicates a compound not detected.
4. "J" indicates an estimated value.

Table 7
Ground Water Sampling Results
MNA, Inorganics

Old Erie Canal Site
Clyde, New York

	12/7/2006	12/6/2006	12/6/2006	11/28/2006	11/29/2006
	GW-MW-15S-120706	GW-MW-16S-120606	GW-MW-16B-120606	GW-TMW-1-112806	GW-TMW-2-112906
Alkalinity, Total(As CaCO3)	**550**	**134**	**37.6**	**840**	**586**
Chloride	**122**	**13.1**	**128**	**223**	**19.4**
Dissolved Organic Carbon (DOC)	**11.7**	**1.7**	**21.4**	**8.5**	**12.7**
Nitrate (as N)	0.11 U	**2.0**	0.11 U	0.11 U	0.11 U
Nitrogen, Nitrate + Nitrite	0.10 U	**2.0**	0.10 U	0.10 U	0.10 U
Nitrogen, Nitrite	0.010 U	0.010 U	0.010 U	0.010 UJ	0.010 U
Sodium	**68200**	**20000**	**153000**	**111000**	**12700**
Sulfate	**18.3**	**19.2**	**1690**	**72.0**	**35.0**
Sulfide	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

Notes:
1. Units expressed in mg/L, with the exception of sodium, which is expressed in ug/L.
2. Analyses performed by Accutest Laboratories of Dayton, NJ.
3. "U" indicates a compound not detected.
4. "J" indicates an estimated value.

Table 8
Ground Water Quality Data Field Parameters

Old Erie Canal Site
Clyde, New York

	EMW-2 11/30/06	EMW-3 12/1/06	EMW-4 12/6/06	EMW-5 12/1/06	MW-1 12/6/06	MW-1S 11/29/06	MW-2S 11/29/06	MW-2B 11/29/06	MW-3S 12/5/06
Field Tested									
Redox Potential (mV)	-114	-85	-201	-178	76	31	21	-20	-5
Temperature (^oC)	13.01	11.72	12.11	10.11	14.26	14.58	15.86	17.84	11.19
Dissolved Oxygen (mg/L)	1.06	0.00	0.90	3.88	1.59	1.19	1.00	2.07	1.91
pH (standard units)	10.14	7.20	12.47	7.37	7.78	7.90	8.02	7.36	9.13
Turbidity (NTU)	21.0	0.0	0.0	41.4	0.0	4.8	10.0	264.0	0.0
Specific Conductivity (uS/cm)	1150	940	1110	1080	588	1330	914	-20	942
Field Test Kits									
Iron II (mg/L)	10.0	1.0	10.0	9.5	0.0	2.5	3.0	1.5	<1

Notes:
1. Measurements and analyses performed by O'Brien & Gere personel.
2. Iron II analyses performed using a Hach test kit Model # IR-18C.

Table 8
Ground Water Quality Data Field Parameters

Old Erie Canal Site
Clyde, New York

	MW-3B 12/5/06	MW-4S 12/5/06	MW-4B 12/5/06	MW-4C 12/5/06	MW-5S 12/5/06	MW-5B 12/5/06	MW-6S 12/6/06	MW-6B 12/6/06	MW-7S 12/4/06
Field Tested									
Redox Potential (mV)	-53	-46	-43	-83	10	128	-121	-95	151
Temperature (^{o}C)	11.24	12.60	11.90	9.59	9.83	11.43	13.10	12.88	12.06
Dissolved Oxygen (mg/L)	0.00	1.20	0.00	0.00	0.00	6.63	1.03	0.00	1.35
pH (standard units)	7.61	9.84	6.67	7.14	6.75	8.49	10.96	6.82	6.09
Turbidity (NTU)	62	0.0	0.0	0.0	0.0	>999	0.0	0.0	0.0
Specific Conductivity (uS/cm)	3540	831	2760	3660	900	3290	1650	3090	1310
Field Test Kits									
Iron II (mg/L)	<1	0.5	0.5	1.0	0.5	1.0	10.0	1.5	<1

Notes:
1. Measurements and analyses performed by O'Brien & Gere personel.
2. Iron II analyses performed using a Hach test kit Model # IR-18C.

Table 8
Ground Water Quality Data Field Parameters

Old Erie Canal Site
Clyde, New York

	MW-7B 12/4/06	MW-8S 11/30/06	MW-9S 11/30/06	MW-10B 11/30/06	MW-11S 11/30/06	MW-11B 11/30/06	MW-12S 11/30/06	MW-12B 11/30/06	MW-13S 11/30/06
Field Tested									
Redox Potential (mV)	-172	-11	-12	-106	-156	-121	46	-412	-93
Temperature (°C)	12.50	12.64	14.50	13.75	13.41	13.11	10.39	11.63	13.26
Dissolved Oxygen (mg/L)	0.00	1.04	0.00	0.00	0.95	0.00	2.37	0.00	0.99
pH (standard units)	7.52	8.68	6.90	7.38	10.85	7.33	7.39	9.40	10.17
Turbidity (NTU)	89.0	52.1	156.0	324.0	5.9	120.0	60	231.0	>999
Specific Conductivity (uS/cm)	3020	1600	950	5320	890	4750	1250	6050	2270
Field Test Kits									
Iron II (mg/L)	10.0	3.0	2.5	3.0	10.0	1.5	<1	0.0	4.0

Notes:
1. Measurements and analyses performed by O'Brien & Gere personel.
2. Iron II analyses performed using a Hach test kit Model # IR-18C.

Table 8
Ground Water Quality Data Field Parameters

Old Erie Canal Site
Clyde, New York

	MW-14S 12/6/06	MW-15S 12/7/06	MW-16S 12/6/06	MW-16B 12/6/06	TMW-1 11/28/06	TMW-2 11/29/06
Field Tested						
Redox Potential (mV)	-94	-111	-27	-236	-90	136
Temperature (°C)	11.08	7.64	14.44	15.85	16.49	14.16
Dissolved Oxygen (mg/L)	1.02	1.12	5.73	0.00	8.21	7.63
pH (standard units)	10.54	10.84	9.73	10.57	9.50	6.31
Turbidity (NTU)	68.0	339.0	683.0	0.0	107.0	>999
Specific Conductivity (uS/cm)	1770	1330	352	3130	2200	1090
Field Test Kits						
Iron II (mg/L)	5.5	10.0	<1	0.0	5.5	0.0

Notes:
1. Measurements and analyses performed by O'Brien & Gere personel.
2. Iron II analyses performed using a Hach test kit Model # IR-18C.

FIGURES

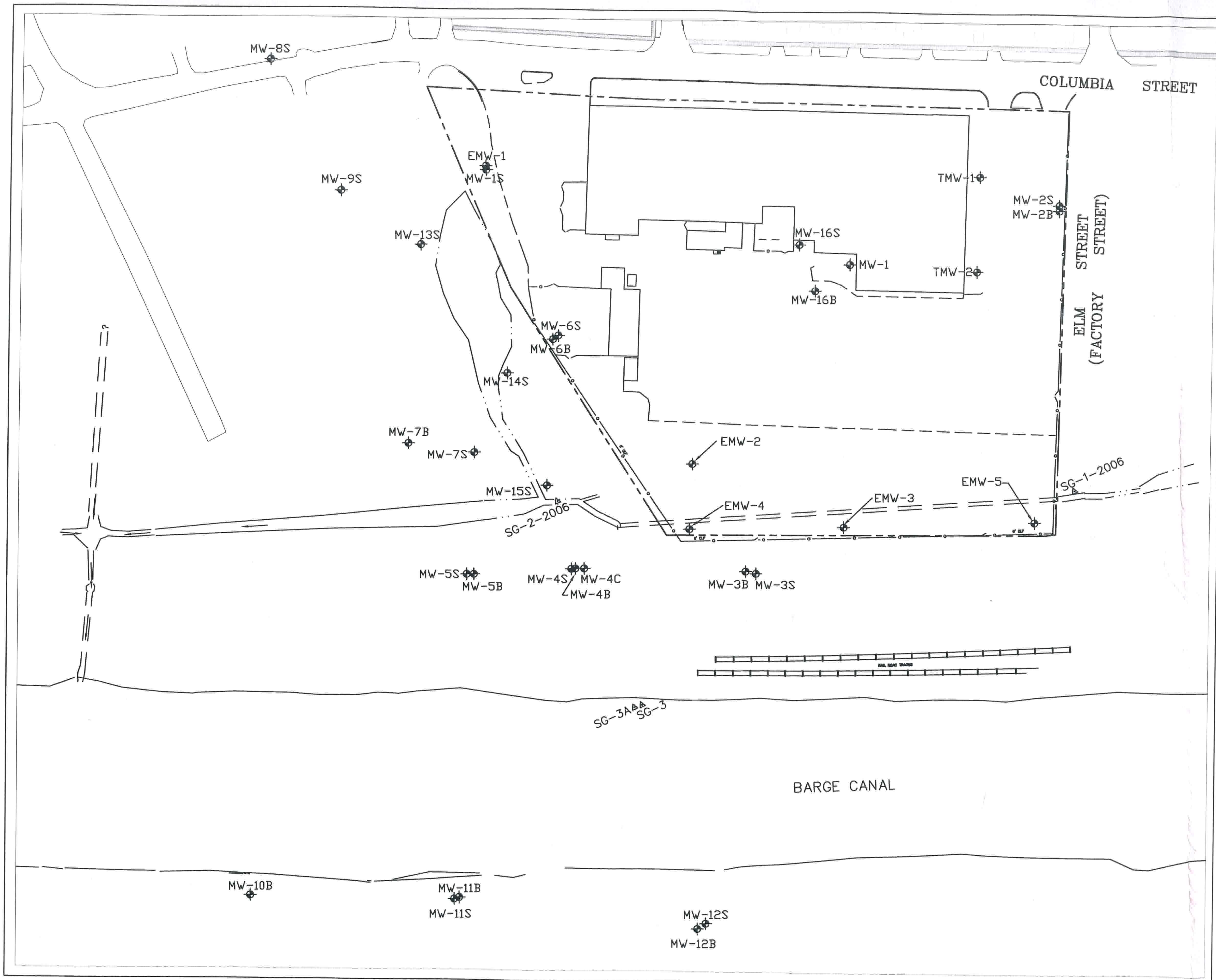

FIGURE 1

LEGEND

PROPERTY BOUNDARY

MW-3B MONITORING WELL

SG-3 STAFF GAUGE

OLD ERIE CANAL SITE
CLYDE, NEW YORK

MONITORING WELL
LOCATION MAP

1"=100' 100 0 100

FILE NO. 10488.39892
JANUARY 2007

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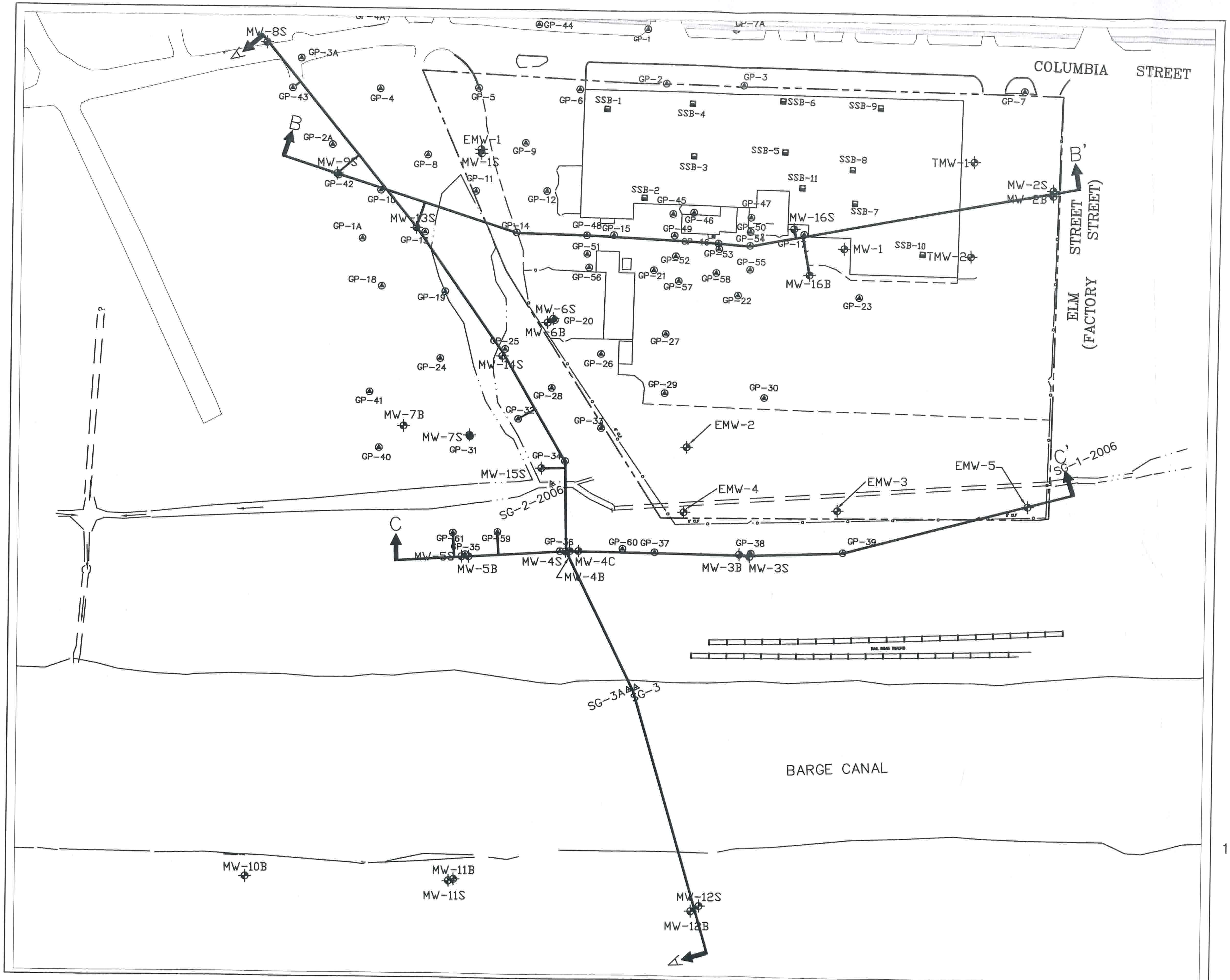
FIGURE 2



LEGEND

———	PROPERTY BOUNDARY
MW-3B	OVERBURDEN MONITORING WELL
SG-3	STAFF GAUGE
GP-23	DIRECT PUSH SAMPLE LOCATION

OLD ERIE CANAL SITE
CLYDE, NEW YORK

CROSS-SECTION LOCATION MAP

1"=100' 100 0 100

FILE NO. 10488.39892
JANUARY 2007

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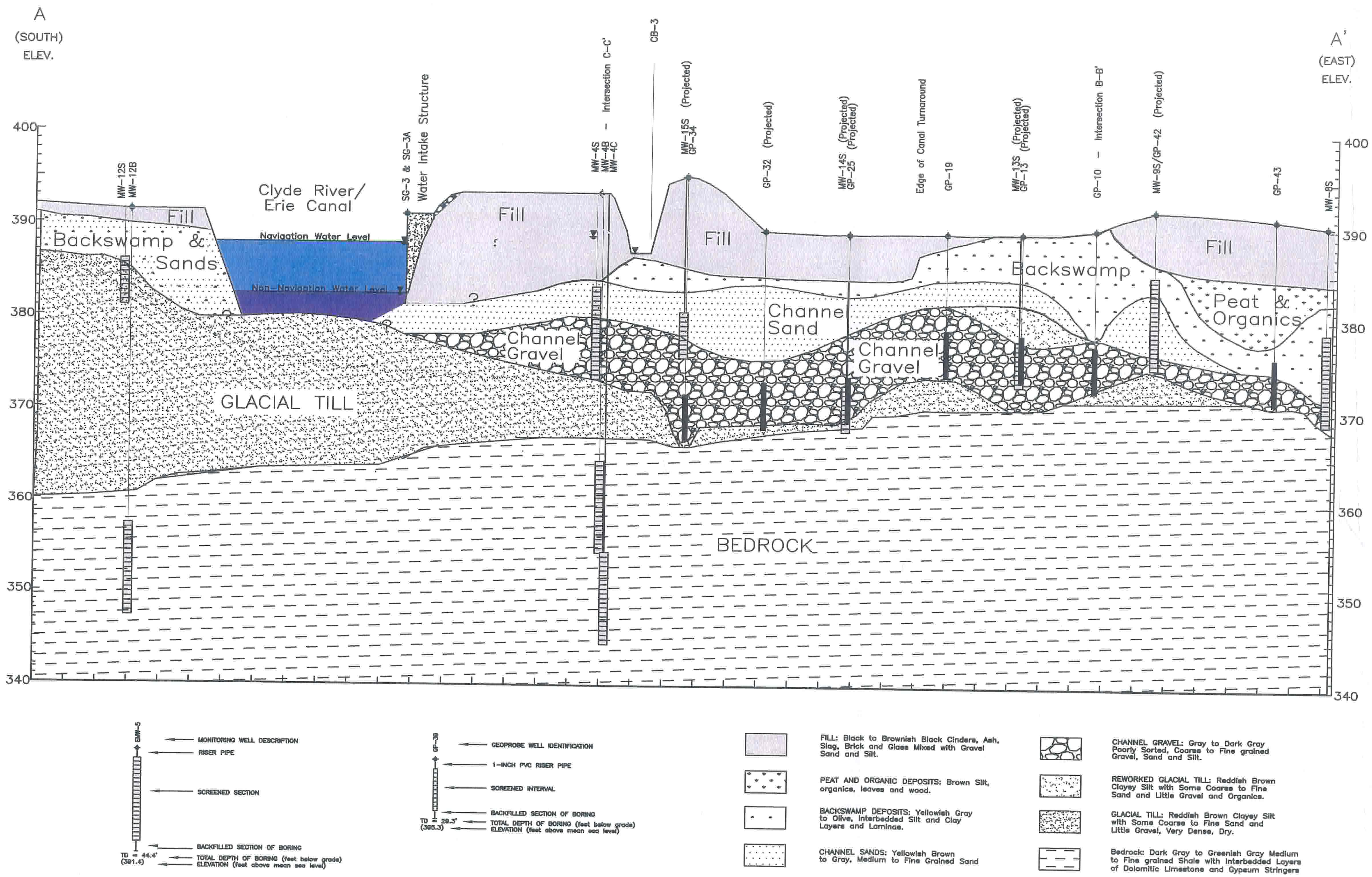
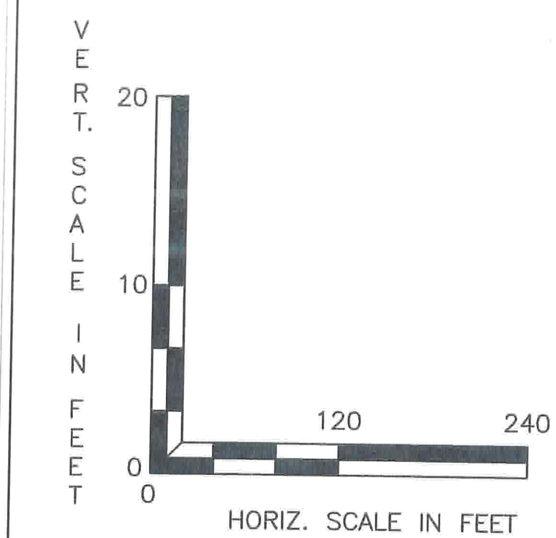
FIGURE 3





OLD ERIE CANAL SITE
CLYDE, NEW YORK

GEOLOGIC CROSS SECTION
LINE A–A' SHOWING
NORTH–SOUTH
STRATIGRAPHY

JANUARY 2007
31117.006.601

O'BRIEN & GERE ENGINEERS INC.

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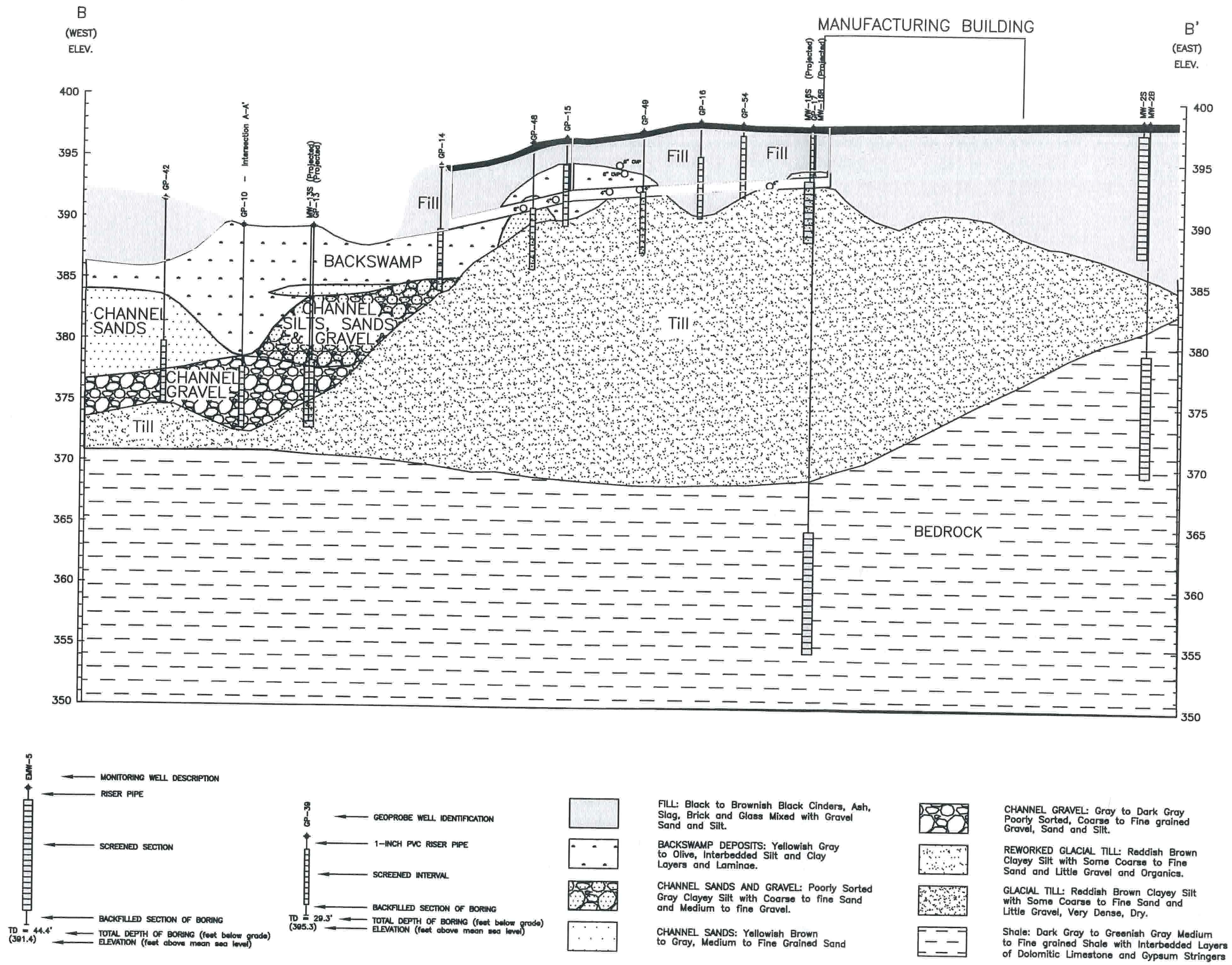
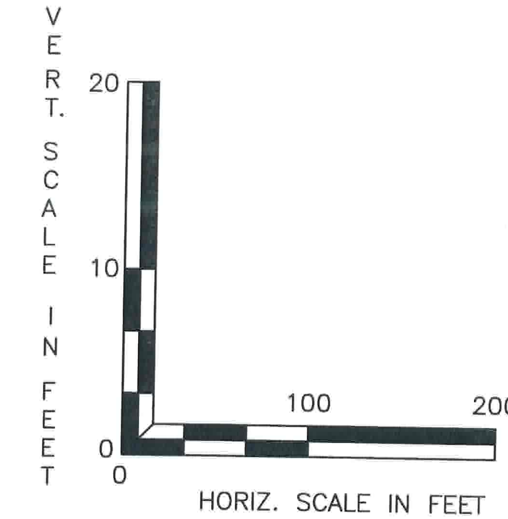
1/24/07

FIGURE 4





OLD ERIE CANAL SITE
CLYDE NEW YORK

GEOLOGIC CROSS SECTION
LINE B–B' SHOWING
EAST–WEST STRATIGRAPHY
MANUFACTURING BUILDING

JANUARY 2007
31117.006.601

O'BRIEN & GERE ENGINEERS INC.

1/24/07

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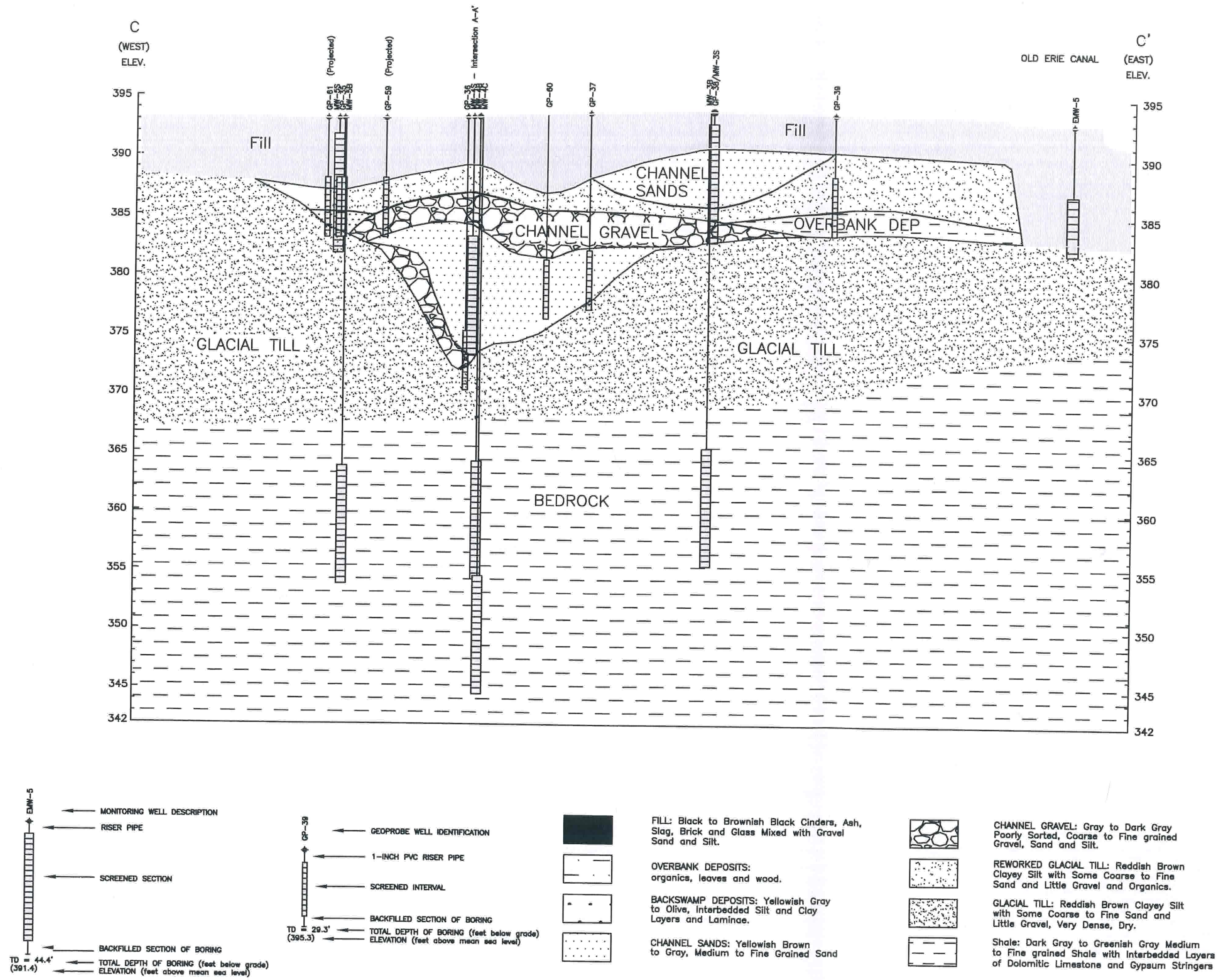
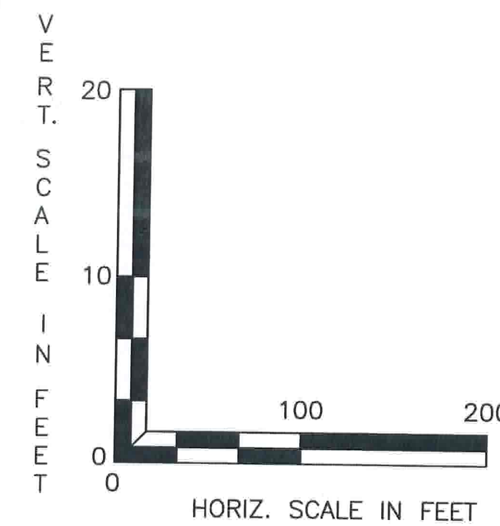
FIGURE 5





OLD ERIE CANAL SITE
CLYDE, NEW YORK

GEOLOGIC CROSS SECTION
LINE C–C' SHOWING
EAST–WEST STRATIGRAPHY

JANUARY 2007

31117.006.601

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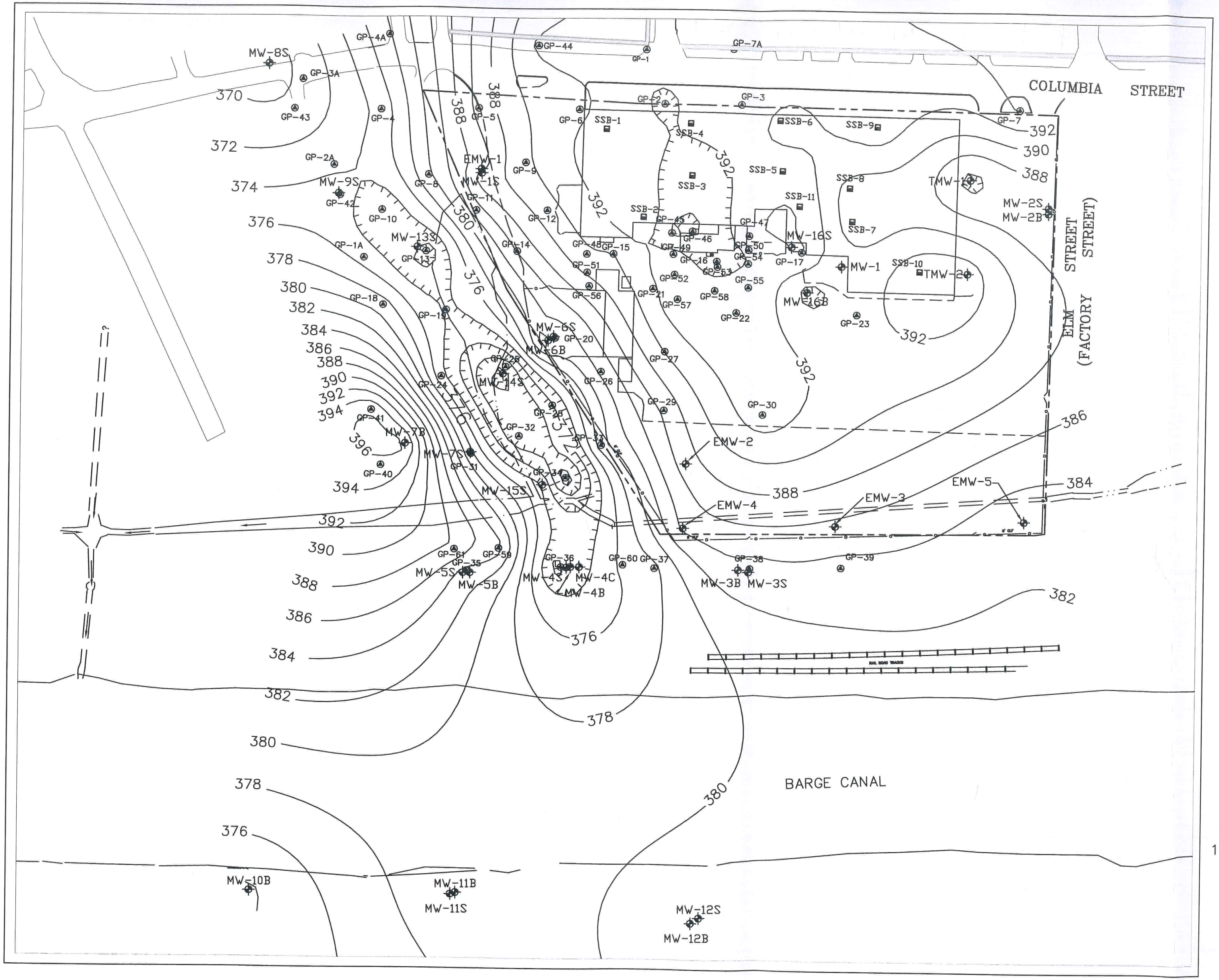
1/23/07

FIGURE 6



LEGEND

———	PROPERTY BOUNDARY
MW-3B	OVERBURDEN MONITORING WELL
SG-3	STAFF GAUGE
GP-23	DIRECT PUSH SAMPLE LOCATION
—380—	CONTOUR LINES

OLD ERIE CANAL SITE
CLYDE, NEW YORK

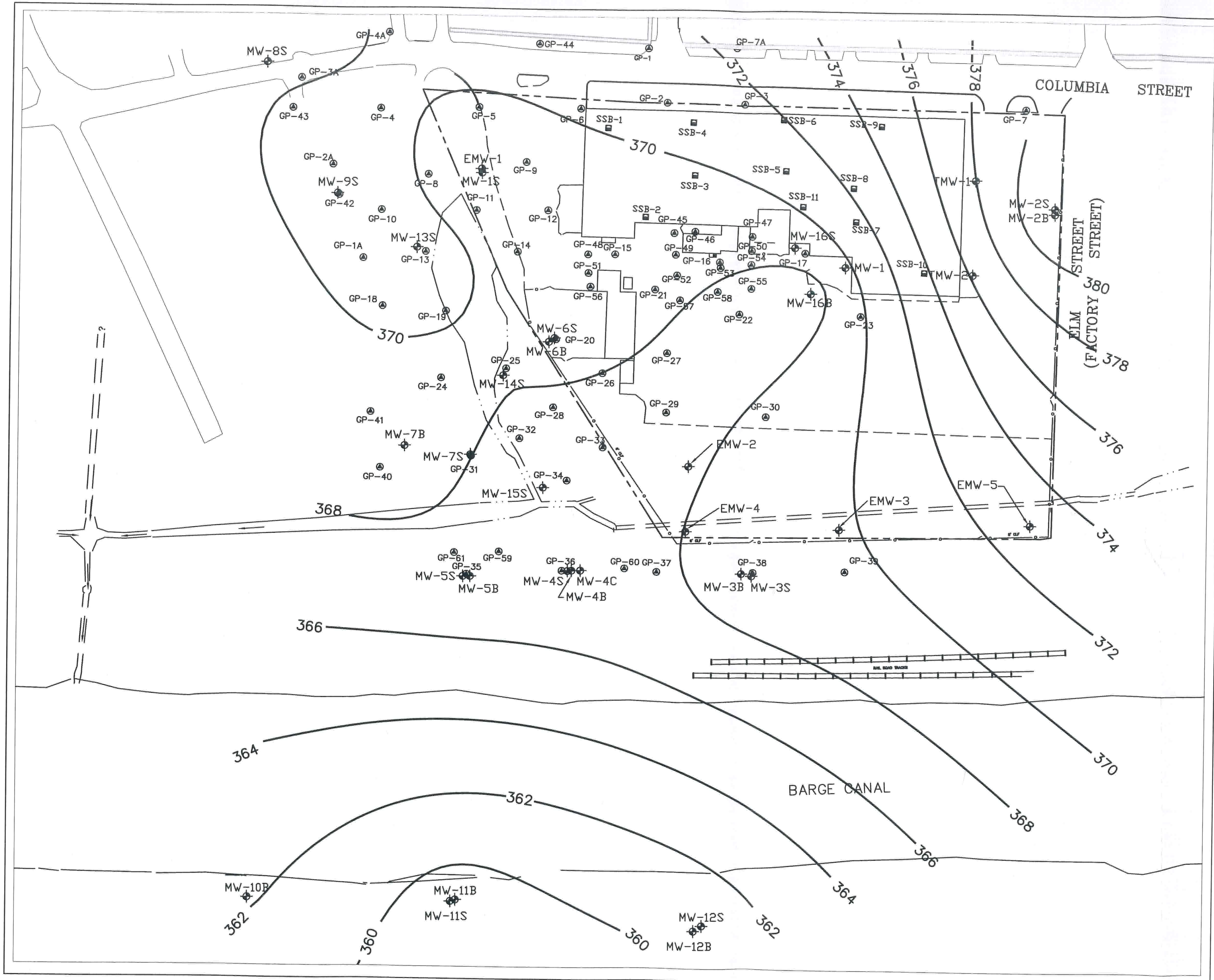
TOP OF LOW PERMEABILITY UNIT CONTOUR MAP

1"=100' 100 0 100

FILE NO. 10488.39892
JANUARY 2007

O'BRIEN & GERE

FIGURE 7



LEGEND

PROPERTY BOUNDARY

MW-3B OVERBURDEN MONITORING WELL

SG-3 STAFF GAUGE

GP-23 DIRECT PUSH SAMPLE LOCATION

—366— CONTOUR LINES

OLD ERIE CANAL SITE
CLYDE, NEW YORK

TOP OF BEDROCK
CONTOUR MAP

1"=100' 100 0 100

FILE NO. 10488.39892
JANUARY 2007

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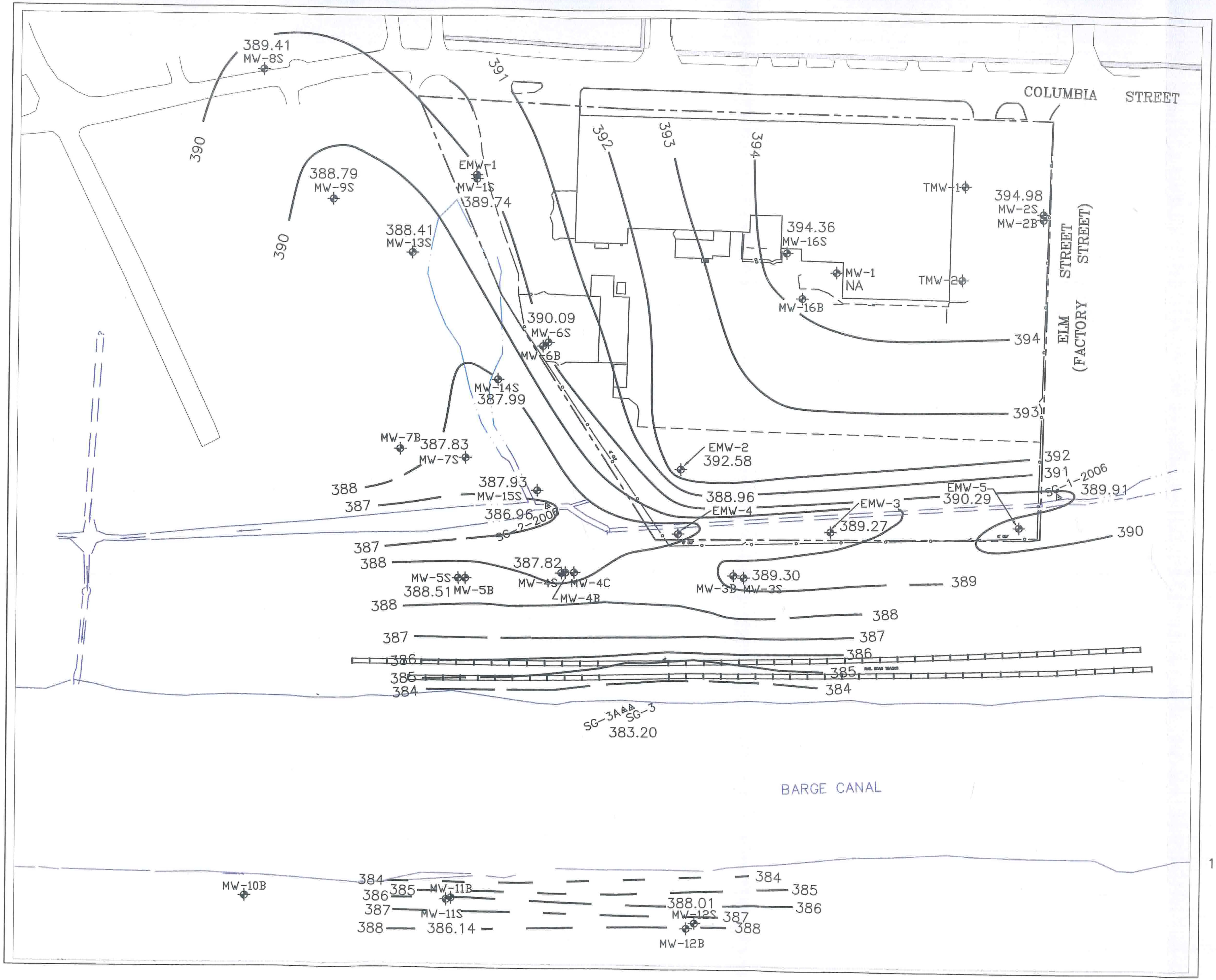
FIGURE 8



LEGEND

PROPERTY BOUNDARY

MW-3B OVERBURDEN MONITORING WELL

SG-3 STAFF GAUGE

OLD ERIE CANAL SITE
CLYDE, NEW YORK

POTENTIOMETRIC MAP FOR THE OVERBURDEN GROUND WATER ON NOVEMBER 28, 2006

1"=100'   100   0   100

FILE NO. 10488.39892
JANUARY 2007

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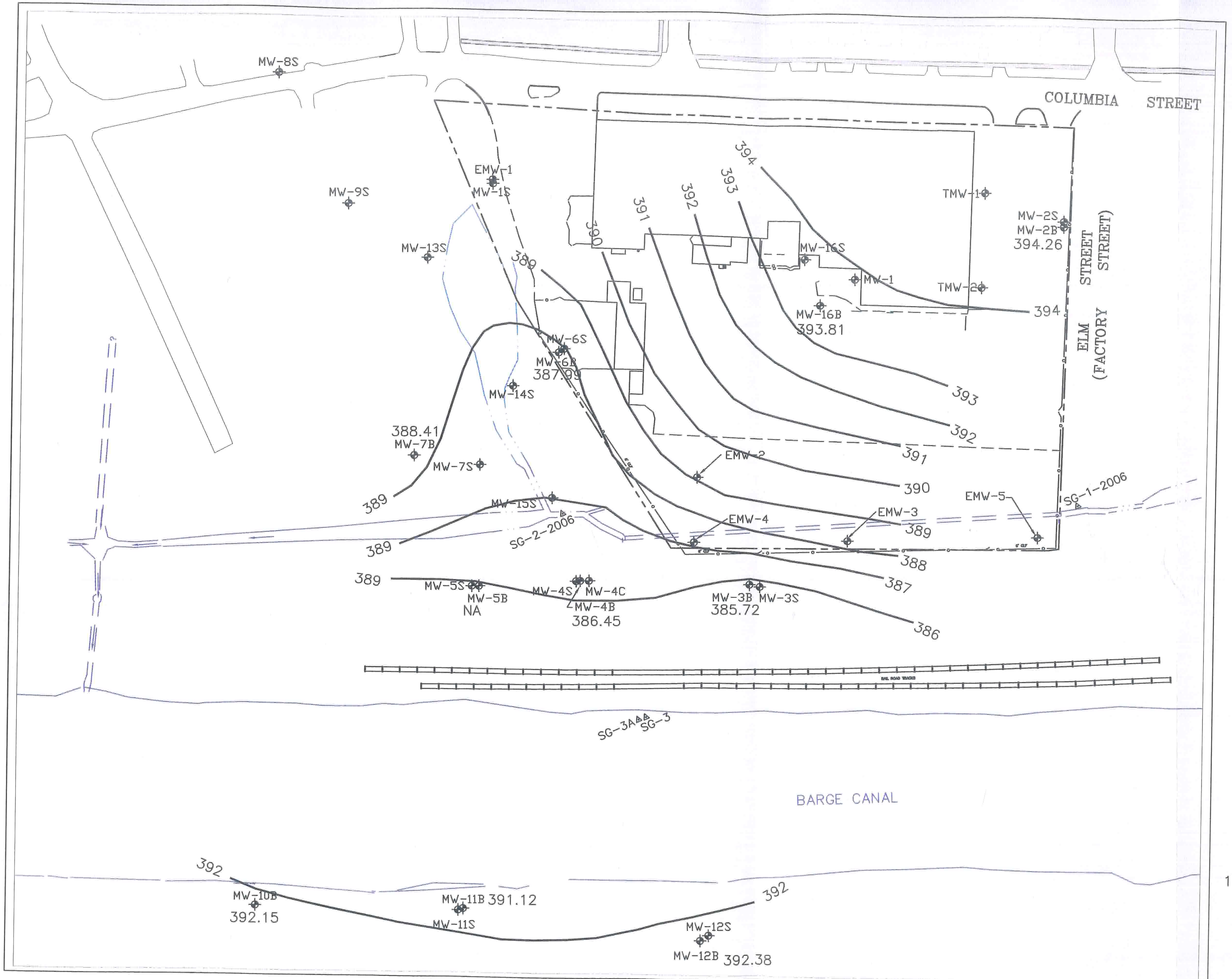
FIGURE 9



LEGEND

PROPERTY BOUNDARY

MW-3B MONITORING WELL

SG-3 STAFF GAUGE

OLD ERIE CANAL SITE
CLYDE, NEW YORK

POTENTIOMETRIC MAP FOR THE BEDROCK GROUND WATER ON NOVEMBER 28, 2006

1"=100' 100 0 100

FILE NO. 10488.39892
JANUARY 2007

O'BRIEN & GERE

APPENDICIES

APPENDIX A

Soil Boring Logs

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	BORING NO. MW-3B

PROJECT: Old Erie Canal Supplemental FS				SHEET 1 OF 3
CLIENT: General Electric Company / Parker Hannifin Corporation				JOB NO. 39892.001.102
DRILLING CONTRACTOR: Parratt Wolff Inc.				MEAS. PT. ELEV. 393.91 NGVD 29
PURPOSE: Bedrock Well Installation				GROUND ELEV. 394.15
DRILLING METHOD: Hollow Stem Auger	SAMPLE	CORE	CASING	DATUM Ground Surface
DRILL RIG TYPE: CME 75 / TYPE	Split Spoon	NA	Steel	DATE STARTED 11/10/06
GROUND WATER DEPTH: / DIA.	1.5"	NA	4"	DATE FINISHED 11/16/06
MEASURING POINT: TOC / WEIGHT	140 lbs.			DRILLER JOE PERCY
DATE OF MEASUREMENT: / FALL	30"			INSPECTOR P. D'Annibale

Depth Ft.	Sample Number	Blows on Sample Spoon per 6"	Penetration Recovery	Unified Classi-fication	GEOLOGIC DESCRIPTION	REMARKS
					SEE BORING LOG FOR MW-3S 0-12' bg	
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	BORING NO. MW-3B
PROJECT: Old Erie Canal Supplemental FS		SHEET 2 OF 3
CLIENT: General Electric Company / Parker Hannifin Corporation		JOB NO. 39892.001.102

Depth Ft.	Sample Number	Blows on Sample Spoon per 6"	Penetration/ Recovery	Unified Classification	GEOLOGIC DESCRIPTION	REMARKS
11						
12					12.0	
12–13	S1	20	1.5/1.5	CL	Rd Br $Cy a s cmf G Reddish-brown silty CLAY and some coarse medium fine Gravel	PID 0.0 DRY COMPACT
13		35				
		50				NO ODOR
		—			NO RECOVERY	
14					14.0	
14–15	S2	20	1/1	CL	Rd Br $Cy a s cmf G	PID 0.0 DRY COMPACT
		50			15.0	
15		—			NO RECOVERY	NO ODOR
		—			16.0	
16	S3	36	1/20	CL	Rd Br $Cy a s cmf G	PID 0.0 DRY COMPACT
		50				NO ODOR
17		—				
		—			18.0	
18	S4	36	1/1	CL	Rd Br $Cy a s cmf G	PID 0.8 DRY COMP.
		50			19.0	NO ODOR
19		—			NO RECOVERY	
		—			20.0	
20		30	2/2	CL	Rd Br $Cy a s cmf G	PID 0.0
		60				DRY COMP.
21		80				NO ODOR
		75			22.0	
22						

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

BORING NO. MW-3B

PROJECT: Old Erie Canal Supplemental FS | SHEET 3 OF 3

CLIENT: General Electric Company / Parker Hannifin Corporation | JOB NO. 39892.001.102

Depth Ft.	Sample Number	Blows on Sample Spoon per 6"	Penetration/ Recovery	Unified Classi- fication	GEOLOGIC DESCRIPTION	REMARKS
		75	0.5/0.75	CL	Rd Br $Cy a s cmf G	PID 0.0 DRY COMPACT NO ODOR
23		45				
		50				
		—			24.0	
24		50	1/1	CL	Rd Br $Cy a s cmf G Reddish-brown silty CLAY and some coarse medium fine Gravel 25.0	PID 0.0 DRY COMPACT NO ODOR BEDROCK @ 25' bg EOB 25.0' bg
		125				
25		—				
		—				
26						
27						
28						
29						
30						
31						
32						
33						

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

BORING NO. MW-4C

PROJECT: Old Erie Canal Supplemental FS				SHEET 1 OF 1
CLIENT: General Electric Company / Parker Hannifin Corporation				JOB NO. 39892.001.102
DRILLING CONTRACTOR: Parratt Wolff Inc.				MEAS. PT. ELEV. 392.81 NGVD 29
PURPOSE: Bedrock Well Installation				GROUND ELEV. 393.27
DRILLING METHOD: Hollow Stem Auger		SAMPLE	CORE	CASING	DATUM Ground Surface
DRILL RIG TYPE: CME 75	TYPE	Split Spoon	NA	Steel	DATE STARTED 11/8/06
GROUND WATER DEPTH:	DIA.	1.5"	NA	4"	DATE FINISHED ~~11/9/06~~ 11/17/06
MEASURING POINT: TOC	WEIGHT	140 lbs.			DRILLER JOE PERCY
DATE OF MEASUREMENT:	FALL	30"			INSPECTOR P. D'Annibale

Depth Ft.	Sample Number	Blows on Sample Spoon per 6"	Penetration Recovery	Unified Classification	GEOLOGIC DESCRIPTION	REMARKS
					SEE BORING LOG MW-4B 0-40' bg	
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

BORING NO. MW-5B

PROJECT: Old Erie Canal Supplemental FS					SHEET 1 OF 3
CLIENT: General Electric Company / Parker Hannifin Corporation					JOB NO. 39892.001.102
DRILLING CONTRACTOR: Parratt Wolff Inc.					MEAS. PT. ELEV. 392.85 NGVD 29
PURPOSE: Bedrock Well Installation					GROUND ELEV. 393.19
DRILLING METHOD: Hollow Stem Auger		SAMPLE	CORE	CASING	DATUM Ground Surface
DRILL RIG TYPE: CME 75	TYPE	Split Spoon	NA	Steel	DATE STARTED 11/9/06
GROUND WATER DEPTH:	DIA.	1.5"	NA	4"	DATE FINISHED 11/17/06
MEASURING POINT: TOC	WEIGHT	140 lbs.			DRILLER JOE PERCY
DATE OF MEASUREMENT:	FALL	30"			INSPECTOR P. D'Annibale

Depth Ft.	Sample Number	Blows on Sample Spoon per 6"	Penetration Recovery	Unified Classification	GEOLOGIC DESCRIPTION	REMARKS
					SEE BORING LOG FOR MW-5S 0-12' bg	
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	BORING NO. MW-5B
PROJECT: Old Erie Canal Supplemental FS		SHEET 2 OF 3
CLIENT: General Electric Company / Parker Hannifin Corporation		JOB NO. 39892.001.102

Depth Ft.	Sample Number	Blows on Sample Spoon per 6"	Penetration/ Recovery	Unified Classification	GEOLOGIC DESCRIPTION	REMARKS
					SEE BORING LOG MW-5S	
11						
12					12.0	
		12			RdBr $Cy a s cmfG	PID 0.0
13	S1	29	1/2	CL	Reddish-brown silty CLAY and some coarse medium fine Gravel	SATURATED COMPACT NO ODOR
		29				
		38			14.0	
14		33			RdBr $Cy a s cmG	PID 7.0
15	S2	35	1.5/2	CL		SAT. COMPACT NO ODOR
		35				
		39			16.0	
16	S3	50	0.5/0.5	CL	RdBr $Cy a s cmG	PID 0.0 SAT. COMPACT NO ODOR
17					NO RECOVERY	
18					18.0	
	S4	25	0.5/1	CL	RdBr $Cy a s cmG	PID 5.7 ppm SAT. COMPACT NO ODOR SOME BEDROCK FRAG
		50				
19					NO RECOVERY	
20					20.0	
		8			RdBr $Cy a l mfG	PID 0.0
21	S5	18	2/2	CL		SAT. COMPACT NO ODOR
		34				
22		40			22.0	

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

BORING NO. MW-5B

PROJECT: Old Erie Canal Supplemental FS

SHEET 3 OF 3

CLIENT: General Electric Company / Parker Hannifin Corporation

JOB NO. 39892.001.102

Depth Ft.	Sample Number	Blows on Sample Spoon per 6"	Penetration/ Recovery	Unified Classi-fication	GEOLOGIC DESCRIPTION	REMARKS
		30			RdBr $Cy a l mfG	PID 0.0
23	S6	28	1/2	CL		SAT, COMPACT
		30				NO ODOR
		35			24.0	
24		30			RdBr $Cy a lmfG	PID 0.0
	S7	34	1.5/2	CL	Reddish-brown silty CLAY and little medium fine Gravel	SAT, COMPACT
25		35				NO ODOR
		50			26.0	BEDROCK @ 25.9'
26						EOB 26' bg
27						
28						
29						
30						
31						
32						
33						
34						

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	BORING NO. MW - 6B

PROJECT: Old Erie Canal Supplemental FS				SHEET 1 OF 3
CLIENT: General Electric Company / Parker Hannifin Corporation				JOB NO. 39892.001.102
DRILLING CONTRACTOR: Parratt Wolff Inc.				MEAS. PT. ELEV. 396.99 NGVD 29
PURPOSE: Bedrock Well Installation				GROUND ELEV. 395.09
DRILLING METHOD: Hollow Stem Auger		SAMPLE	CORE	CASING	DATUM Ground Surface
DRILL RIG TYPE: CME 75	TYPE	Split Spoon	NA	Steel	DATE STARTED 11/13/06
GROUND WATER DEPTH:	DIA.	1.5"	NA	4"	DATE FINISHED 11/15/06
MEASURING POINT: TOC	WEIGHT	140 lbs.			DRILLER Joe Percy
DATE OF MEASUREMENT:	FALL	30"			INSPECTOR P. D'Annibale

Depth Ft.	Sample Number	Blows on Sample Spoon per 6"	Penetration / Recovery	Unified Classification	GEOLOGIC DESCRIPTION	REMARKS
	S1	3	2/2	SP	Br mfS a $, o, rts Brown medium fine SAND and Silt, organic roots	PID 1.7 ppm DRY SOFT NO ODOR
1		10				
		10				
		6			2.0	
2	S2	8	0.5/2	SP	Br mf S a $, o	PID 0.8 ppm DRY SOFT NO ODOR
3		5				
		7				
		7			4.0	
4		0				NO RECOVERY
5		0				
		0				
		1			6.0	
6	S3	4	1/2	SP	Br-GyBr mf S a $, l Cy, t cmf G Brown to grayish-brown medium fine SAND and Silt, little clay, trace coarse medium fine gravel	PID 0.0 ppm MOIST - SATURATED SOFT NO ODOR
7		7				
		13				
		13			8.0	
8		2				NO RECOV.
9		1				
		2				
		2				
10						

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

BORING NO. MW-6B

PROJECT: Old Erie Canal Supplemental FS | SHEET 2 OF 3

CLIENT: General Electric Company / Parker Hannifin Corporation | JOB NO. 39892.001.102

Depth Ft.	Sample Number	Blows on Sample Spoon per 6"	Penetration/ Recovery	Unified Classi-fication	GEOLOGIC DESCRIPTION	REMARKS
11	S4	2 / 2 / 3 / 3	0.25/2	CL	GyBr $Cy, t cG Grayish-brown silty CLAY, trace coarse Gravel 12.0	PID 0.0 ppm MOIST SOFT NO ODOR
12–13	S5	4 / 3 / 4 / 4	0.25/2	CL	GyBr $Cy, tcG 14.0	PID 7.4 SATURATED SOFT NO ODOR
14–15	S6	0 / – / – / –	1.5/2	CL	Gy $Cy, t cG 16.0	PID 333 ppm SATURATED SOFT SLIGHT ODOR (SAMPLE)
16–17	S7	25 / 45 / 50 / –	1.5/1.5	CL	GyBr $Cy, t cG 17.0	PID 724 (SAMPLE) SAT SOFT SLIGHT ODOR
				CL	RdBr $Cy a cmf G Reddish-brown silty CLAY and coarse medium fine Gravel 18.0	PID 234 SAT. COMPACT NO ODOR TILL
18–19	S8	50 / 50 / – / –	1/1	CL	RdBr $Cy a cmf G 20.0	PID 8.2 SAT. COMPACT NO ODOR
20–21	S9	40 / 50 / – / –	0.5/1	CL	RdBr $Cy a cmf G 22.0	PID 14.2 SATURATED COMPACT NO ODOR
22						

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

BORING NO. MW-6B

PROJECT: Old Erie Canal Supplemental FS

SHEET 3 OF 3

CLIENT: General Electric Company / Parker Hannifin Corporation

JOB NO. 39892.001.102

Depth Ft.	Sample Number	Blows on Sample Spoon per 6"	Penetration/ Recovery	Unified Classification	GEOLOGIC DESCRIPTION	REMARKS
		50	1.5/1.5	CL	RdBr $Cy - cmfG	PID 4.0 ppm
23		65				SATURATED
	S10	100				COMPACT
		100			24.0	NO ODOR
24		45	1.5/2	CL	Rd Br $Cy a cmfG	PID 5.1 ppm
		62			Reddish-brown silty CLAY and coarse	SAT.
25	S11	85			medium fine Gravel	COMPACT
						NO ODOR
		100			26.0	BEDROCK @ 25.9' bg
26						EOB 26' bg
27						
28						
29						
30						
31						
32						
33						
34						

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

BORING NO. MW-13S

PROJECT: Old Erie Canal Supplemental FS				SHEET 1 OF 2
CLIENT: General Electric Company / Parker Hannifin Corporation				JOB NO. 39892.001.102
DRILLING CONTRACTOR: Parratt Wolff Inc.				MEAS. PT. ELEV. 391.53 NGVD 29
PURPOSE: Overburden Well Installation				GROUND ELEV. 389.67
DRILLING METHOD: Hollow Stem Auger		SAMPLE	CORE	CASING	DATUM Ground Surface
DRILL RIG TYPE: ~~CME~~ D50	TYPE	Split Spoon	NA	NA	DATE STARTED 11/2/06
GROUND WATER DEPTH: 3.05	DIA.	1.5"	NA	NA	DATE FINISHED 11/2/06
MEASURING POINT: TOC	WEIGHT	140 lbs.			DRILLER MARK EAVES
DATE OF MEASUREMENT: 11/8/06	FALL	30"			INSPECTOR P. D'Annibale

Depth Ft.	Sample Number	Blows on Sample Spoon per 6"	Penetration Recovery	Unified Classification	GEOLOGIC DESCRIPTION	REMARKS
	S-1	2	1.0/2.0	CL	Br $Cy o s rts Brown silty CLAY, organic some roots	PID = 0.0 ppm
1		4				Moist
		8				SEMI-COMPACT
		8			2.0	
2	S-2	4	1.75/2	CL	Br $Cy o s roots	PID = 0.0 ppm
		6				MOIST
3		11			3.5	SEMI-COMPACT
		8		CL	Gy-RdBr Cy Gray to Reddish-Brown CLAY 4.0	PID = 0.0 ppm MOIST COMPACT
4		3	0/2		NO RECOVERY	
		4				
5		6				
		6			6.0	
6		3	0/2		NO RECOVERY	SATURATED
7						
					8.0	
8	S-3	19	1.75/2	CL	Gy-RdBr Cy	PID = 0.0 ppm
9		14			9.0	SATURATED COMPACT
		18		GP	Gy cm $G s Cy Gray coarse, medium silty GRAVEL, some Clay	
10		20				

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

BORING NO. MW-13S

PROJECT: Old Erie Canal Supplemental FS

SHEET 2 OF 2

CLIENT: General Electric Company / Parker Hannifin Corporation

JOB NO. 39892.001.102

Depth Ft.	Sample Number	Blows on Sample Spoon per 6"	Penetration/ Recovery	Unified Classi- fication	GEOLOGIC DESCRIPTION	REMARKS
		19			Gy cm G l $Cy	PID = 0.0 ppm
11	S-4	20	1.0/2.0	GP		SATURATED LOOSE
		24				
		17			12.0	
12		16			Gy cmf G l $Cy	PID = 0.0 ppm
13	S-5	16	1.5/2.0	GP		SATURATED LOOSE
		12				
		11			14.0	
14		47			Gy cmf G l $Cy	PID = 0.0 ppm
15	S-6	24	0.5/2	GP		SATURATED LOOSE
		20				
		19			16.0	
16		6			Gy cmf G l $Cy	PID = 0.0 ppm
17	S-7	9	0.5/2.0	GP		SATURATED
		9			17.5	LOOSE
		8		CL	RdBr $Cy Reddish-brown silty CLAY 18.0	TOP OF TILL @ 17.5' bg
18					No RECOVERY	
19	S-8					
						BEDROCK @ 19.8' bg
20					20.0	EOB 20' bg
21						
22						

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

BORING NO. MW-14S

PROJECT: Old Erie Canal Supplemental FS					SHEET 1 OF 3
CLIENT: General Electric Company / Parker Hannifin Corporation					JOB NO. 39892.001.102
DRILLING CONTRACTOR: Parratt Wolff Inc.					MEAS. PT. ELEV. 391.39 NGVD 29
PURPOSE: Overburden Well Installation					GROUND ELEV. 389.27
DRILLING METHOD: Hollow Stem Auger		SAMPLE	CORE	CASING	DATUM Ground Surface
DRILL RIG TYPE: TRACK	TYPE	Split Spoon	NA	NA	DATE STARTED 11/6/06
GROUND WATER DEPTH: 5.51	DIA.	1.5"	NA	NA	DATE FINISHED 11/6/06
MEASURING POINT: TOC	WEIGHT	140 lbs.			DRILLER JOE PERCY
DATE OF MEASUREMENT: 11/8/06	FALL	30"			INSPECTOR P. D'Annibale

Depth Ft.	Sample Number	Blows on Sample Spoon per 6"	Penetration / Recovery	Unified Classification	GEOLOGIC DESCRIPTION	REMARKS
0–2	S1	1, 4, 3, 3	2/2	~~SC~~ CL	Br-Tn Cy$, o, s rts Brown to tan clayey SILT, organic, some roots 2.0	PID 0.0 ppm MOIST COMPACT NO ODOR
2–4	S2	5, 3, 2, 2	0.5/2	~~SC~~ CL	Br-Tn Cy$, o, s rts 4.0	PID 0.0 ppm MOIST COMPACT NO ODOR
4–6	S3	12, 7, 3, 3	0.5/2	CL	Gy Cy Gray CLAY 6.0	PID 0.0 ppm MOIST COMPACT NO ODOR
6–7.5	S4	4, 7, 3	2/2	CL	Gy Cy 7.5'	PID 0.0 ppm MOIST COMPACT NO ODOR
7.5–8		7		CL	Gy Cy $ Gray clayey SILT 8.0	PID 0.0 ppm SAT. COMPACT NO ODOR
8–10	S5	5, 6, 8, 8	0.5/2	CL	Gy Cy $ 10.0	PID 3.1 ppm MOIST - SAT. COMPACT NO ODOR

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

BORING NO. MW-145

PROJECT: Old Erie Canal Supplemental FS

SHEET 2 OF 3

CLIENT: General Electric Company / Parker Hannifin Corporation

JOB NO. 39892.001.102

Depth Ft.	Sample Number	Blows on Sample Spoon per 6"	Penetration/ Recovery	Unified Classi- fication	GEOLOGIC DESCRIPTION	REMARKS
11	S6	3 6 12 33	1/2	GP	Gy cmf G a $, s Gy$ Gray coarse, medium, fine GRAVEL and Silt, some clayey silt 12.0	PID: 103 ppm SATURATED LOOSE ODOR COLLECT SAMPLE
12 13	S7	11 12 16 20	2/2	GP	Gy cmf G a $ 14.0	PID 374 ppm SAT. LOOSE ODOR COLLECT SAMPLE
14 15	S8	2 5 5 9	0.5/2	GP	Gy cmf G a $ 16.0	PID 28.7 ppm SATURATED LOOSE SLIGHT ODOR
16 17	S9	20 17 20 30	2.0/2	GP	Gy cmf G a $ 18.0	PID 12.8 ppm SATURATED LOOSE NO ODOR
18 19	S10	21 15 12 6	2/2	GP	Gy cmf G a $ 20.0	PID 203 ppm SAT. LOOSE ODOR SAMPLE COLLECTED
20 21	S11	10 13 20 6	1.75/2	GP	Gy cmf G a $ 22.0	PID 117 ppm SAT. LOOSE ODOR SAMPLE COLLECTED
22						

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	BORING NO. MW-145
PROJECT: Old Erie Canal Supplemental FS		SHEET 3 OF 3
CLIENT: General Electric Company / Parker Hannifin Corporation		JOB NO. 39892.001.102

Depth Ft.	Sample Number	Blows on Sample Spoon per 6"	Penetration/ Recovery	Unified Classi- fication	GEOLOGIC DESCRIPTION	REMARKS
	S12	50	0.5/2	CL	Gy-RdGy Cy$ s mfG Gray to Reddish-gray clayey SILT, some medium fine Gravel	COMPACT 0.0 PID NO ODOR
					Glacial Till	EOB 22.5' bg
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

BORING NO. MW-15S

PROJECT: Old Erie Canal Supplemental FS	SHEET 1 OF 2
CLIENT: General Electric Company / Parker Hannifin Corporation	JOB NO. 39892.001.102
DRILLING CONTRACTOR: Parratt Wolff Inc.	MEAS. PT. ELEV. 390.12 NAVD 29
PURPOSE: Overburden Well Installation	GROUND ELEV. 388.40
DRILLING METHOD: Hollow Stem Auger	DATUM Ground Surface
DRILL RIG TYPE: TRACK	DATE STARTED 11/7/06
GROUND WATER DEPTH: 2.19	DATE FINISHED 11/7/06
MEASURING POINT: TOC	DRILLER JOE PERCY
DATE OF MEASUREMENT: 11/8/06	INSPECTOR P. D'Annibale

	SAMPLE	CORE	CASING
TYPE	Split Spoon	NA	NA
DIA.	1.5"	NA	NA
WEIGHT	140 lbs.		
FALL	30"		

Depth Ft.	Sample Number	Blows on Sample Spoon per 6"	Penetration Recovery	Unified Classification	GEOLOGIC DESCRIPTION	REMARKS
0–2	S1	0, 0, 0, 1	1/2.0	CL	DK Br - Gy Cy $, O, s rts Dark Brown to gray clayey SILT, organic, some roots 2.0	PID 0.0 VERY MOIST SOFT NO ODOR ~~NO RECOVERY~~
2–4	S2	0, 0, 7, 3	2/2	CL	DK Br - Gy Cy $, O 4.0	PID 0.0 SATURATED SOFT NO ODOR
4–6	S3	3, 1, 2, 3	0.5/2	GP	DK Gy cmf G a $ Dark gray coarse medium fine GRAVEL and Silt 6.0	PID 0.0 SAT. LOOSE NO ODOR
6–8	S4	3, 5, 5, 6	1/2	GP CL	DK Gy cmf G a $ RdBr $Cy ? 8.0	PID 0.0 ppm SAT. loose NO ODOR
8–10	S5	14, 20, 20, 15	1/2	GP	DK Gy - RdGy cmf G a s$	PID 1.2 ppm SAT. ~~LOOSE~~ COMPACT NO ODOR

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	BORING NO. MW-15S
PROJECT: Old Erie Canal Supplemental FS		SHEET 2 OF 2
CLIENT: General Electric Company / Parker Hannifin Corporation		JOB NO. 39892.001.102

Depth Ft.	Sample Number	Blows on Sample Spoon per 6"	Penetration/ Recovery	Unified Classi-fication	GEOLOGIC DESCRIPTION	REMARKS
		22			DK Gy - Rd Gy cmf G a s $	PID 2.0
11	S6	18	1.75/2	GP		SAT.
		28				COMPACT
		28			12.0	NO ODOR
12		16		GP	DK Gy cmf G a s $	PID 0.0
		23	1.5/2.0			SAT
13	S7				13.0	COMPACT No odor
		33		CL	Gy Rd $Cy a l G	PID 2.6
		41			Grayish-red silty CLAY and little Gravel 14.0	SAT. COMPACT No ODOR
14						EOB ~~18'~~ 14.0' bg
15						
16						
17						
18						
19						
20						
21						
22						

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

BORING NO. MW-16S

PROJECT: Old Erie Canal Supplemental FS	SHEET 1 OF 1
CLIENT: General Electric Company / Parker Hannifin Corporation	JOB NO. 39892.001.102
DRILLING CONTRACTOR: Parratt Wolff Inc.	MEAS. PT. ELEV. 397.30 NGVD 29
PURPOSE: Overburden Well Installation	GROUND ELEV. 398.01
DRILLING METHOD: Hollow Stem Auger	DATUM Ground Surface
DRILL RIG TYPE: ~~CME~~ D50	DATE STARTED 11/2/06
GROUND WATER DEPTH: 2.97	DATE FINISHED 11/2/06
MEASURING POINT: TOC	DRILLER MARK EAVES
DATE OF MEASUREMENT: 11/8/06	INSPECTOR P. D'Annibale

	SAMPLE	CORE	CASING
TYPE	Split Spoon	NA	NA
DIA.	1.5"	NA	NA
WEIGHT	140 lbs.		
FALL	30"		

Depth Ft.	Sample Number	Blows on Sample Spoon per 6"	Penetration / Recovery	Unified Classification	GEOLOGIC DESCRIPTION	REMARKS
0					ASPHALT	
1	S-1	3, 4, 50	0.5/2	CL	RdBr $Cy	0.0 PID, DRY, COMPACT
2–4			NA	NA	CONCRETE & REBAR	
4–6	S-2	10, 10, 22, 25	1/2	CL	RdBr $Cy s cm G	12.5 PID, MOIST TO SATURATED, COMPACT, WATER TABLE AT ~4' bg
6–8		30, 36, 36, 38	1/2	CL	RdBr $Cy s cm G	0.0 PID, SATURATED, COMPACT
8–10		12, 12, 33, 40	1.5/2	CL	RdBr $Cy s cm G (GLACIAL TILL)	0.4 PID, SATURATED, COMPACT, EOB 10' bg

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

BORING NO. MW-16B

PROJECT: Old Erie Canal Supplemental FS					SHEET 1 OF 3
CLIENT: General Electric Company / Parker Hannifin Corporation					JOB NO. 39892.001.102
DRILLING CONTRACTOR: Parratt Wolff Inc.					MEAS. PT. ELEV. 397.69 NGVD 29
PURPOSE: Bedrock Well Installation					GROUND ELEV. 398.18
DRILLING METHOD: Hollow Stem Auger		SAMPLE	CORE	CASING	DATUM Ground Surface
DRILL RIG TYPE: CME 75	TYPE	Split Spoon	NA	Steel	DATE STARTED 11/14/06
GROUND WATER DEPTH:	DIA.	1.5"	NA	4"	DATE FINISHED 11/15/06
MEASURING POINT: TOC	WEIGHT	140 lbs.			DRILLER Joe Percy
DATE OF MEASUREMENT:	FALL	30"			INSPECTOR P. D'Annibale

Depth Ft.	Sample Number	Blows on Sample Spoon per 6"	Penetration Recovery	Unified Classification	GEOLOGIC DESCRIPTION	REMARKS
0	—	—	—	—	ASPHALT SEE BORING LOG MW-16S 0-9' bg	—
1–5						
6			1/1	CL	6.0 Rd Br $Cy a cmf G Reddish-brown silty CLAY and coarse medium fine Gravel 7.0	
7	S1	27	1/2	CL	Rd Br $Cy a cmf G	COMPACT DRY
8		60				NO ODOR
9	S2	21	1/2	CL	9.0 Rd Br $ Cy a cmf G	PID 4.5 ppm COMPACT
10		72				DRY NO ODOR

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	BORING NO. MW-16B

PROJECT: Old Erie Canal Supplemental FS — SHEET 2 OF 3

CLIENT: General Electric Company / Parker Hannifin Corporation — JOB NO. 39892.001.102

Depth Ft.	Sample Number	Blows on Sample Spoon per 6"	Penetration/ Recovery	Unified Classification	GEOLOGIC DESCRIPTION	REMARKS
		-				
		-				
11		37	1/R	CL	RdBr $Cy a cmf G (11.0)	PID 0.0 DRY COMPACT NO ODOR
12	S3	50				
		-				
		-				
13		50	0.5/2.0	CL	RdBr $Cy a cmf G (13.0)	P.D 0.9 DRY COMPACT NO ODOR
14	S4	-				
		-				
		-				
15		7	1/1.5	CL	Rd Br $Cy a cmf G (15.0)	PID 0.0 DRY COMPACT NO ODOR
16	S5	40				
		50				
		-				
17		47	0.75/1.5	CL	RdBr $Cy a cmf G (17.0)	PID 0.0 DRY COMPACT NO ODOR
18	S6	90				
		50				
		-				
19		31	2/2	CL	RdBr $Cy a cmf G (19.0)	PID 0.0 DRY - SLIGHTLY MOIST COMPACT NO ODOR
20	S7	50				
		61				
		50				
21		20	1.5/1.5	CL	RdBr $Cy a cmf G (21.0)	PID 0.0 MOIST COMPACT NO ODOR
22	S8	56				

OBRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	BORING NO. MW-16B
PROJECT: Old Erie Canal Supplemental FS		SHEET 3 OF 3
CLIENT: General Electric Company / Parker Hannifin Corporation		JOB NO. 39892.001.102

Depth Ft.	Sample Number	Blows on Sample Spoon per 6"	Penetration/ Recovery	Unified Classi-fication	GEOLOGIC DESCRIPTION	REMARKS
		75				
		—			23.0	
23		45			RdBr $Cy a cmf G	PID 1.2
		50				MOIST
24	S9	95	1/1.5	CL		COMPACT
		—			25.0	NO ODOR
25		60			RdBr $Cy a cmf G	PID 0.0
26	S10	60	2/2	CL		MOIST
		65				COMPACT
		65			27.0	NO ODOR
27		27			Rd Br $Cy a cmf G	PID 0.0
28	S11	40	2/2	CL		MOIST
		42				COMPACT
		45			29.0	NO ODOR
29		50			Rd Br $Cy a cmf G	PID 0.0
30	S12	80	0.5/1	CL		MOIST
		—				COMPACT
		—			31.0	NO ODOR
31		110			Rd Br $Cy a cmf G Reddish-brown silty CLAY and coarse medium fine Gravel	PID 0.0
32	S13	—	0.25/0.5	CL		MOIST
		—				COMPACT NO ODOR
		—			33.0	BEDROCK @ 31' bg
33						EOB 31' bg
34						

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	BORING NO. TMW - 1

PROJECT: Old Erie Canal Supplemental FS					SHEET 1 OF 2
CLIENT: General Electric Company / Parker Hannifin Corporation					JOB NO. 39892.001.102
DRILLING CONTRACTOR: Parratt Wolff Inc.					MEAS. PT. ELEV. 399.11 NGVD 29
PURPOSE: Overburden Well Installation					GROUND ELEV. 398.09
DRILLING METHOD: Hollow Stem Auger		SAMPLE	CORE	CASING	DATUM Ground Surface
DRILL RIG TYPE: D50	TYPE	Split Spoon	NA	NA	DATE STARTED 11/3/06
GROUND WATER DEPTH: 3.93	DIA.	1.5"	NA	NA	DATE FINISHED 11/3/06
MEASURING POINT: TOC	WEIGHT	140 lbs.			DRILLER MARK EAVES
DATE OF MEASUREMENT: 11/8/06	FALL	30"			INSPECTOR P. D'Annibale

Depth Ft.	Sample Number	Blows on Sample Spoon per 6"	Penetration / Recovery	Unified Classi-fication	GEOLOGIC DESCRIPTION	REMARKS
	S1	2	1.0/2	SP	Br - Tn mf S, o Brown to tan medium fine SAND	DRY COMPACT
1		2		SP	Bl-Gy cmf G, s $ Black to gray coarse medium fine GRAVEL, some Silt	0.0 PID
		4				DRY
		4			2.0	COMPACT
2	S2	1	0.5/2	SP	Bl-Gy cmf G, s $	0.0 PID
3		2				SATURATED
		1				LOOSE
		3			4.0	
4	S3	2	1.0/2.0	SP	Bl-Gy cmf G, s $	0.0 PID SATURATED
5		4			5.0	LOOSE
		6		CL	Gy - Tn Cy Gray to tan CLAY	SATURATED
		6			6.0	COMPACT
6	S4	6	1.0/2.0	SP	Bl-Gy cmf G, s $ Black to gray coarse medium fine GRAVEL, some Silt	0.0 PID
7		8			7.0	LOOSE
		6		CL	Gy - Tn Cy Gray to tan CLAY	SATURATED
		10			8.0	
8	S5	10	2/2	SP	Bl-Gy cmf G, s $	0.0 PID
9		14			9.0	LOOSE
		19		CL	Gy-Tn Cy	SATURATED
		21			10.0	
10						

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

BORING NO. TMW-1

PROJECT: Old Erie Canal Supplemental FS

SHEET 2 OF 2

CLIENT: General Electric Company / Parker Hannifin Corporation

JOB NO. 39892.001.102

Depth Ft.	Sample Number	Blows on Sample Spoon per 6"	Penetration/ Recovery	Unified Classification	GEOLOGIC DESCRIPTION	REMARKS
		27		GP	Bl-Gy cmf G 10.5	0.0 PID
11	S6	39	2/2	CL	Gy-Tn Cy 11.0	SAT.
		50		GP	Bl-Gy cmf G 11.5	LOOSE
				CL	Gy-Tn Cy 12.0	
12		38		CL	Gy-Tn Cy	0.0 PID
	S7	50	1/2		13.0	SATURATED LOOSE
13				CL	Rd Gy $Cy Reddish-gray silty CLAY 14.0	0.0 PID DRY - COMPACT
14						EOB 14' bg
15						
16						
17						
18						
19						
20						
21						
22						

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

BORING NO. TMW-2

PROJECT: Old Erie Canal Supplemental FS	SHEET 1 OF 1
CLIENT: General Electric Company / Parker Hannifin Corporation	JOB NO. 39892.001.102
DRILLING CONTRACTOR: Parratt Wolff Inc.	MEAS. PT. ELEV. 399.91 NGVD 29
PURPOSE: Overburden Well Installation	GROUND ELEV. 398.82
DRILLING METHOD: Hollow Stem Auger	DATUM Ground Surface
DRILL RIG TYPE: D50	DATE STARTED 11/3/06
GROUND WATER DEPTH: 4.48	DATE FINISHED 11/3/06
MEASURING POINT: TOC	DRILLER MARK EAVES
DATE OF MEASUREMENT: 11/8/06	INSPECTOR P. D'Annibale

	SAMPLE	CORE	CASING
TYPE	Split Spoon	NA	NA
DIA.	1.5"	NA	NA
WEIGHT	140 lbs.		
FALL	30"		

Depth Ft.	Sample Number	Blows on Sample Spoon per 6"	Penetration / Recovery	Unified Classification	GEOLOGIC DESCRIPTION	REMARKS
0–2 (1)	S1	2, 5, 10, 6	1.0 / 2.0	SP	Br-Tn mfS, O Brown to tan medium fine SAND, organic 2.0	0.0 PID DRY COMPACT
2–4 (2, 3)	/	11	/		No Recovery 4.0	GRAVEL IN SPLIT SPOON
4–5 (4)	S2	6, 10	1.75 / 2.0	GP	Gy cmf G Gray coarse medium fine GRAVEL 5.0	
5–6 (5)		11, 12		CL	RdBr $Cy Reddish-brown silty CLAY 6.0	0.0 PID MOIST COMPACT EOB: 6' bg
7						
8						
9						
10						

O'BRIEN & GERE ENGINEERS, INC.
435 New Karner Road
Albany, New York 12205

CORE LOG

Hole No.: MW-3B	Sheet 1 of 1	Job No.: 39892.001.102
Project: Old Erie Canal Supplemental FS	Drilling Contractor: Parratt Wolff Inc.	Date Started: 11/16/06
		Date Finished: 11/16/06
Client: General Electric Company / Parker Hannifin	Driller: Joe Percy	Total Depth: 39'
Purpose: Bedrock Well Installation	Geologist: P. D'Annibale	Ground Elev.: 394.15 NGVD 1929
Location: Clyde, New York	Length of Casing: 29.0'	S.W.L.:
Hole Location: S of facility along walk path (near R…	Casing Size: ~~6"~~ 4" / Core Size: 3 3/4"	Inclination/Bearing:

Formation / Member / Unit	Run No. / Time: Start/Stop	Pen. Rate (min. per foot)	Depth Scale	Lithologic Description (include in order: ROCK TYPE, color, grain size, texture, bedding, fracture & minerals.)	Core Recovery Length	Core Recovery Percent	RQD
Upper Silurian				Boring advanced through overburden utilizing 4 1/4" HSA. Top of bedrock at 25.0' bgs. Set 4" steel casing to 29.0' bgs. See soil boring log MW-3B for soil description.			
	1 (1035 / 1128)	10.6	29.0' / 30.0'	Greenish-gray shale, fine to medium grained, horizontal bedding, occasional horizontal fractures, few vertical fractures	4.9	98	86.7%
	2 (1148 / 1218)	6	35.0'	Gray to dark gray shale, fine to medium grained, horizontal bedding, some horizontal fractures.	5.0	100	97%
				Greenish-gray to gray shale, fine to medium grained, horizontal bedding, frequent horizontal fractures and occasional gypsum partings and stringers			
			40.0'	End of core @ 39.0' bgs.			

O'BRIEN & GERE ENGINEERS, INC.
435 New Karner Road
Albany, New York 12205

CORE LOG

Hole No.: MW-4C | Job No.: 39892.001.102
Sheet 1 of 1 | Date Started: 11/17/06

Project: Old Erie Canal Supplemental FS	Drilling Contractor: Parratt Wolff Inc.	Date Finished: 11/17/06
Client: General Electric Company / Parker Hannifin	Driller: Joe Percy	Total Depth: 50'
Purpose: Bedrock Well Installation	Geologist: P. D'Annibale	Ground Elev.: 393.27 NGVD 1929
Location: Clyde, New York	Length of Casing: 40'	S.W.L.:
Hole Location: S of facility along walkpath	Casing Size: ~~6"~~ 4" / Core Size: 3 3/4"	Inclination/Bearing:

Formation	Member	Unit	Run No. Time: Start/Stop	Pen. Rate (min. per foot)	Depth Scale	Lithologic Description (include in order: ROCK TYPE, color, grain size, texture, bedding, fracture & minerals.)	Core Recovery Length	Core Recovery Percent	RQD
Upper Silurian						Boring advanced through overburden utilizing 4 1/4" HSA. Top of bedrock at 26.0' bgs. Set 4" steel casing to 40.0' bgs. See soil boring log MW-4C for soil description.			
			1022 / 1 / 1033	2.2	40.0'	Greenish-gray shale, fine grained, horizontal bedding, frequent horizontal fractures, some gypsum partings and stringers	2.4	48	17%
			1050 / 2 / 1130	8	45.0'	Gray shale, fine-grained, horizontal bedding. Frequent horizontal fractures Greenish gray shale, fine grained, horizontal bedding, numerous fractures with bedding	4.9	98	21%
					50.0'	End of coring at 50.0' bgs			

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Albany, New York 12205

CORE LOG

Hole No.: MW-5B	Sheet 1 of 1
Job No.: 39892.001.102	Date Started: 11/16/06
Project: Old Erie Canal Supplemental FS	Drilling Contractor: Parratt Wolff Inc.
Date Finished: 11/17/06	Client: General Electric Company / Parker Hannifin
Driller: Joe Percy	Total Depth: 39.2'
Purpose: Bedrock Well Installation	Geologist: P. D'Annibale
Ground Elev.: 393.19' NGVD 1929	Location: Clyde, New York
Length of Casing: 39.0'	S.W.L.:
Hole Location: S of facility along walk path	Casing Size: ~~6"~~ 4"
Core Size: 3 3/4"	Inclination/Bearing:

Formation	Member	Unit	Run No. Time: Start/Stop	Pen. Rate (min. per foot)	Depth Scale	Lithologic Description (include in order: ROCK TYPE, color, grain size, texture, bedding, fracture & minerals.)	Core Recovery Length	Core Recovery Percent	RQD
Upper Silurian						Boring advanced through overburden utilizing 4¼" HSA. Top of bedrock at 25.9' bgs. Set 4" steel casing ~~to~~ 29.0' bgs. See soil boring log MW-5B for soil description.			
			1348 / 1 / 1420	6.4	29.0' 30.0'	Greenish gray shale, fine grained, horizontal bedding, highly fractured with bedding, few to some gypsum partings	2	40	0%
			1440 / 2 / 1500	4.0	35.0'	Greenish gray shale, fine grained, horizontal bedding, highly fractured with bedding	2	40	0%
					39.0'	End of coring at 39.2' bgs			

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CORE LOG

Project: Old Erie Canal Supplemental FS	Drilling Contractor: Parratt Wolff Inc.	Hole No.: MW-6B	Job No.: 39892.001.102
		Sheet 1 of 1	Date Started: 11/15/06
Client: General Electric Company / Parker Hannifin	Driller: Joe Percy		Date Finished: 11/15/06
Purpose: Bedrock Well Installation	Geologist: P. D'Annibale		Total Depth: 39.4'
Location: Clyde, New York	Length of Casing: 39.4'		Ground Elev.: 395.09 NGVD 1929
Hole Location: Near hydrogen tank, SW of facility	Casing Size: 6" 4"	Core Size: 3 3/4"	S.W.L.:
			Inclination/Bearing:

Formation / Member / Unit	Run No. / Time: Start/Stop	Pen. Rate (min. per foot)	Depth Scale	Lithologic Description (include in order: ROCK TYPE, color, grain size, texture, bedding, fracture & minerals.)	Core Recovery Length	Core Recovery Percent	RQD
Upper Silurian				Boring advanced through overburden utilizing 4 1/4" HSA. Top of bedrock at 25.9' bgs. Set 4" steel casing to 29.0' bgs. See soil boring log MW-6B for soil description.			
	1 (1321 / 1418)	11.4	29.0' 30.0'	Greenish gray to gray shale, fine grained, horizontal bedding, frequent horizontal fractures. gypsum stringers	5	100	82.1%
	2 (1434 / 1458)	4.8	35.0'	Greenish gray to gray shale, fine grained, horizontal bedding, occasional horizontal fractures	5	100	29.6%
			39.0'	End of coring at 39.4' bgs.			

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Albany, New York 12205

CORE LOG

Hole No.: MW-16B	Sheet 1 of 1	Job No.: 39892.001.102
		Date Started: 11/15/06
Project: Old Erie Canal Supplemental FS	Drilling Contractor: Parratt Wolff Inc.	Date Finished: 11/15/06
Client: General Electric Company / Parker Hannifin	Driller: Joe Percy	Total Depth: 44.0'
Purpose: Bedrock Well Installation	Geologist: P. D'Annibale	Ground Elev.: 398.18 NGVD 1929
Location: Clyde, New York	Length of Casing: 44.1'	S.W.L.:
Hole Location: ~50' SSW of Facility	Casing Size: 6" 4" / Core Size: 3 3/4"	Inclination/Bearing:

Formation Member Unit	Run No. Time: Start/ Stop	Pen. Rate (min. per foot)	Depth Scale	Lithologic Description (include in order: ROCK TYPE, color, grain size, texture, bedding, fracture & minerals.)	Core Recovery Length	Core Recovery Percent	RQD
				Boring advanced through overburden utilizing 4 1/4" HSA, Top of bedrock at 31.0' bgs. Set 4" steel casing to 34.0' bgs. See soil boring log MW-16B for soil description.			
	0847 1 1034	9.4	34.5' 35.5'	Greenish gray shale, fine grained, horizontal bedding, numerous fractures with bedding. Vertical fractures from 36.5 to 37.0 and from 37.58 to 37.83.	4.75	95	52.9%
	1048 2 1124	7.4	40.5'	Greenish gray shale, fine grained, horizontal bedding, numerous fractures with bedding	4.5	100	42.5%
				Dark gray shale, fine grained, horizontal bedding, numerous horizontal fractures			
				End of coring at 44.0' bgs			

APPENDIX B

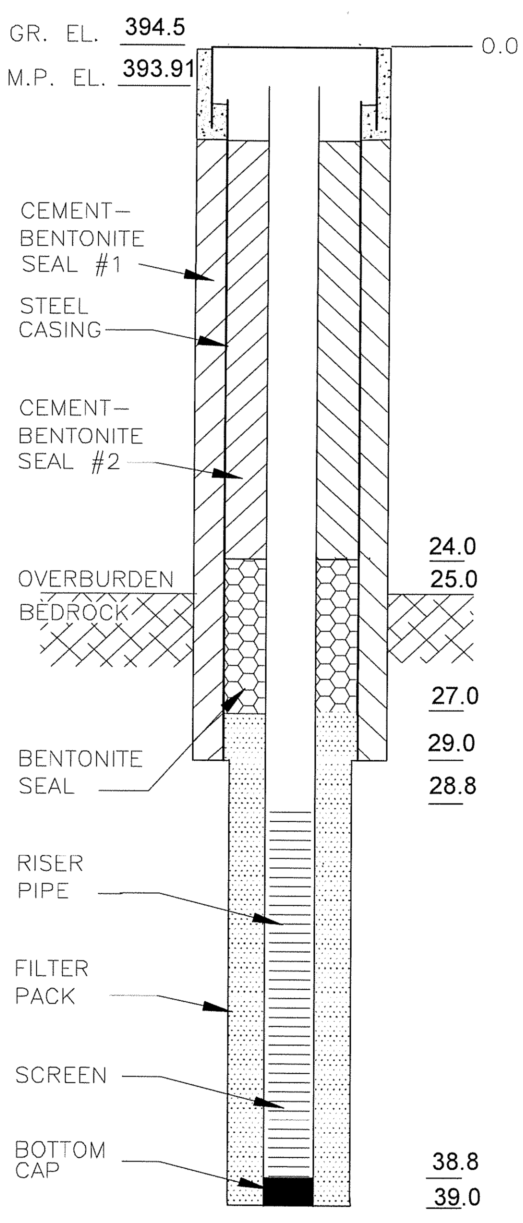
Monitoring Well Completion Logs

WELL COMPLETION LOG

Well ID: MW-3B

Project:	Old Erie Canal Supplemental FS	**Client:**	Parker-Hannifin
Location:	Clyde, New York	**Date Drilled:**	11/16/2006
Project No.:	39892.001.102	**Date Developed:**	11/17 - 21/06

WELL CONSTRUCTION DETAIL



NOT TO SCALE

Form-040

Inspection Notes:

Inspector: P. D'Annibale
Drilling Contractor: Parratt-Wolff, Inc.
Type of Well: Monitoring Well

Static Water Level (ft bmp): 8.19 Date: 11/28/06
Measuring Point: TOC
Total Depth of Well (ft bmp): 38.54

Drilling Method - Overburden:
Type: HSA Diameter: 4 1/4" ID
Casing: 4" Steel

Sampling Method - Overburden:
Type: Split Spoon Diameter: 2" OD
Weight: 140 # Fall: 30"
Interval: 12.0' - 26.0'

Drilling Method - Bedrock:
Type: HX diamond bit Diameter: 3 3/4" OD
Casing: NA

Sampling Method - Bedrock:
Type: HX Core Diameter: 3 3/4" OD
Interval: 29.0' - 39.0'

Riser Pipe Left in Place:
Material: Sch. 40 PVC Diameter: 2" ID
Length: 28.5' Joint Type: Flush Thread

Screen:
Material: Sch. 40 PVC Diameter: 2" ID
Slot Size: 0.010 Joint Type: Flush Thread

Filter Pack:
Type: Sand Grade: # 0 Morie
Interval: 27.0' - 39.0'

Seal(s):
Type: Cement-Bentonite Seal #1 Interval: 0.0' - 29.0'
Type: Bentonite Seal Interval: 24.0'-27.0'
Type: Interval:

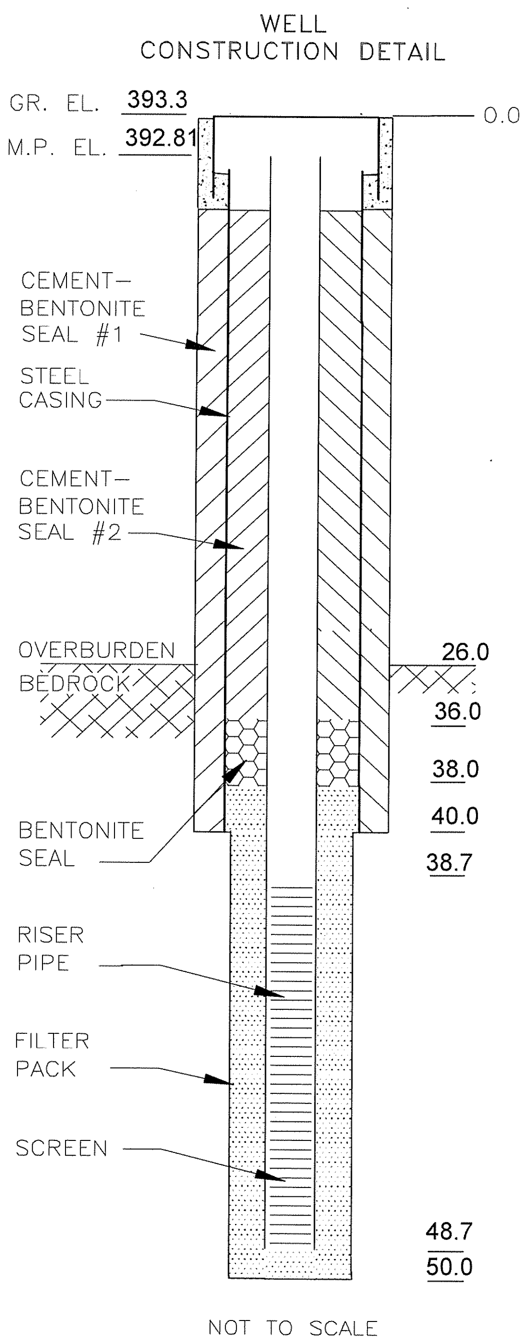
Locking Casing: [X] Yes [ ] No

O'BRIEN & GERE ENGINEERS, INC.

WELL COMPLETION LOG

Well ID: MW-4C

Project: Old Erie Canal Supplemental FS
Location: Clyde, New York
Project No.: 39892.001.102
Client: Parker-Hannifin
Date Drilled: 11/17/2006
Date Developed: 11/20/2006



Form-042

Inspection Notes:

Inspector: P. D'Annibale
Drilling Contractor: Parratt-Wolff, Inc.
Type of Well: Monitoring Well

Static Water Level (ft bmp): -1.06 Date: 11/28/06
Measuring Point: TOC
Total Depth of Well (ft bmp): 48.23

Drilling Method - Overburden:
Type: HSA Diameter: 4 1/4" ID
Casing: 4" Steel

Sampling Method - Overburden:
Type: NA Diameter: NA
Weight: NA Fall: NA
Interval: NA

Drilling Method - Bedrock:
Type: HX diamond bit Diameter: 3 3/4" OD
Casing: NA

Sampling Method - Bedrock:
Type: HX Core Diameter: 3 3/4" OD
Interval: 40.0' - 50.0'

Riser Pipe Left in Place:
Material: Sch. 40 PVC Diameter: 2" ID
Length: 38.2' Joint Type: Flush Thread

Screen:
Material: Sch. 40 PVC Diameter: 2" ID
Slot Size: 0.010 Joint Type: Flush Thread

Filter Pack:
Type: Sand Grade: # 0 Morie
Interval: 38.0 - 50.0'

Seal(s):
Type: Cement-Bentonite Seal #1 Interval: 0.0' - 40.0'
Type: Bentonite Seal Interval: 36.0'-38.0'
Type: Interval:

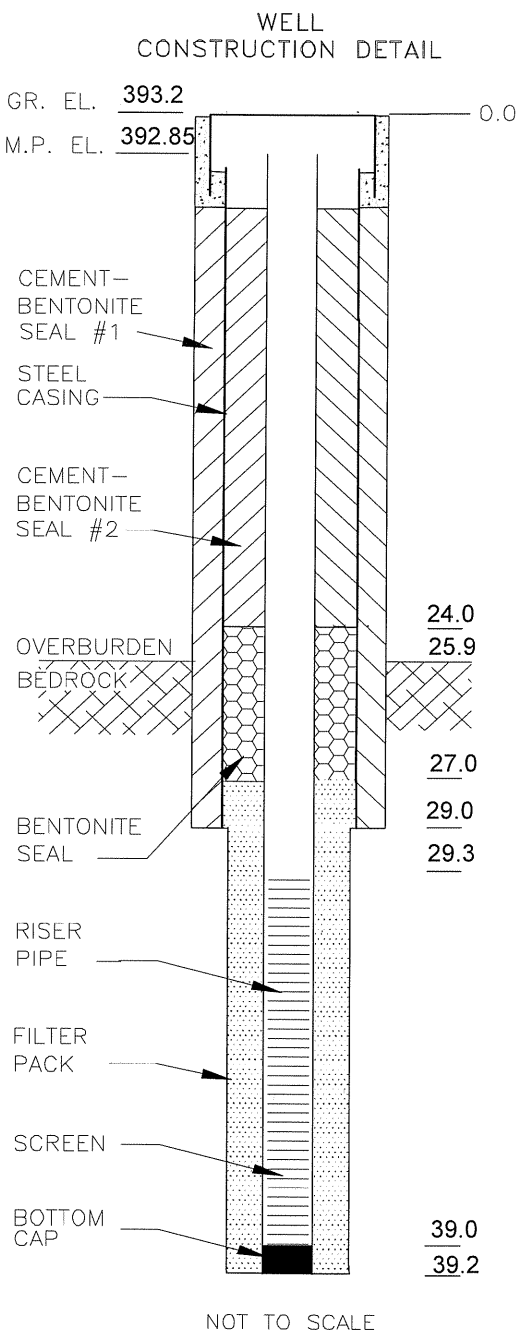
Locking Casing: [X] Yes [ ] No

O'BRIEN & GERE ENGINEERS, INC.

WELL COMPLETION LOG

Well ID: **MW-5B**

Project:	Old Erie Canal Supplemental FS	**Client:**	Parker-Hannifin
Location:	Clyde, New York	**Date Drilled:**	11/16/2006
Project No.:	39892.001.102	**Date Developed:**	11/20 - 21/06



Form-040

Inspection Notes:

Inspector: P. D'Annibale
Drilling Contractor: Parratt-Wolff, Inc.
Type of Well: Monitoring Well

Static Water Level (ft bmp): NA Date:
Measuring Point: TOC
Total Depth of Well (ft bmp): 38.91

Drilling Method - Overburden:

Type: HSA Diameter: 4 1/4" ID
Casing: 4" Steel

Sampling Method - Overburden:

Type: Split Spoon Diameter: 2" OD
Weight: 140 # Fall: 30"
Interval: 12.0' - 26.0'

Drilling Method - Bedrock:

Type: HX diamond bit Diameter: 3 3/4" OD
Casing: NA

Sampling Method - Bedrock:

Type: HX Core Diameter: 3 3/4" OD
Interval: 29.0' - 39.2'

Riser Pipe Left in Place:

Material: Sch. 40 PVC Diameter: 2" ID
Length: 28.9' Joint Type: Flush Thread

Screen:

Material: Sch. 40 PVC Diameter: 2" ID
Slot Size: 0.010 Joint Type: Flush Thread

Filter Pack:

Type: Sand Grade: # 0 Morie
Interval: 27.0' - 39.2'

Seal(s):

Type: Cement-Bentonite Seal #1 Interval: 0.0' - 29.0'
Type: Bentonite Seal Interval: 24.0'-27.0'
Type: Interval:

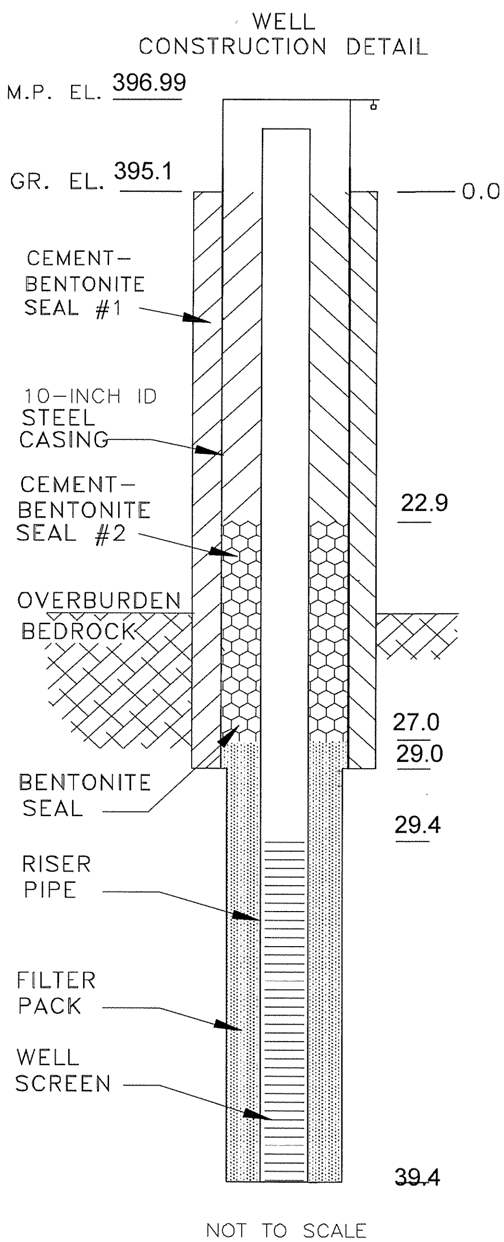
Locking Casing: [X] Yes [ ] No

O'BRIEN & GERE ENGINEERS, INC.

WELL COMPLETION LOG

Well ID: MW-6B

Project:	Old Erie Canal Supplemental FS	**Client:**	Parker-Hannifin
Location:	Clyde, New York	**Date Drilled:**	11/15/2006
Project No.:	39892.001.102	**Date Developed:**	11/16/2006



Form-033

Inspection Notes:

Inspector:	P. D'Annibale
Drilling Contractor:	Parratt- Wolff, Inc.
Type of Well:	Monitoring Well

Static Water Level (ft bmp):	9.00	Date:	11/28/06
Measuring Point:	TOC		
Total Depth of Well (ft bmp):	41.26		

Drilling Method - Overburden:

Type:	HSA	Diameter:	4 1/4" ID
Casing:	4" Steel		

Sampling Method - Overburden:

Type:	Split Spoon	Diameter:	2" OD
Weight:	140 #	Fall:	30"
Interval:	0.0' - 26.0'		

Drilling Method - Bedrock:

Type:	HX diamond bit	Diameter:	3 3/4" OD
Casing:	NA		

Sampling Method - Bedrock:

Type:	HX Core	Diameter:	3 3/4" OD
Interval:	29.0' - 39.4'		

Riser Pipe Left in Place:

Material:	Sch 40 PVC	Diameter:	2" ID
Length:	31.3'	Joint Type:	Flush Thread

Screen:

Material:	Sch 40 PVC	Diameter:	2" ID
Slot Size:	0.010	Joint Type:	Flush Thread

Filter Pack:

Type:	Sand	Grade:	# 0 Morie
Interval:	27.0' - 39.3'		

Seal(s):

Type:	Cement-Bentonite Seal #1	Interval:	0.0'-29.0'
Type:	Bentonite Seal	Interval:	22.9'-27.0'
Type:		Interval:	

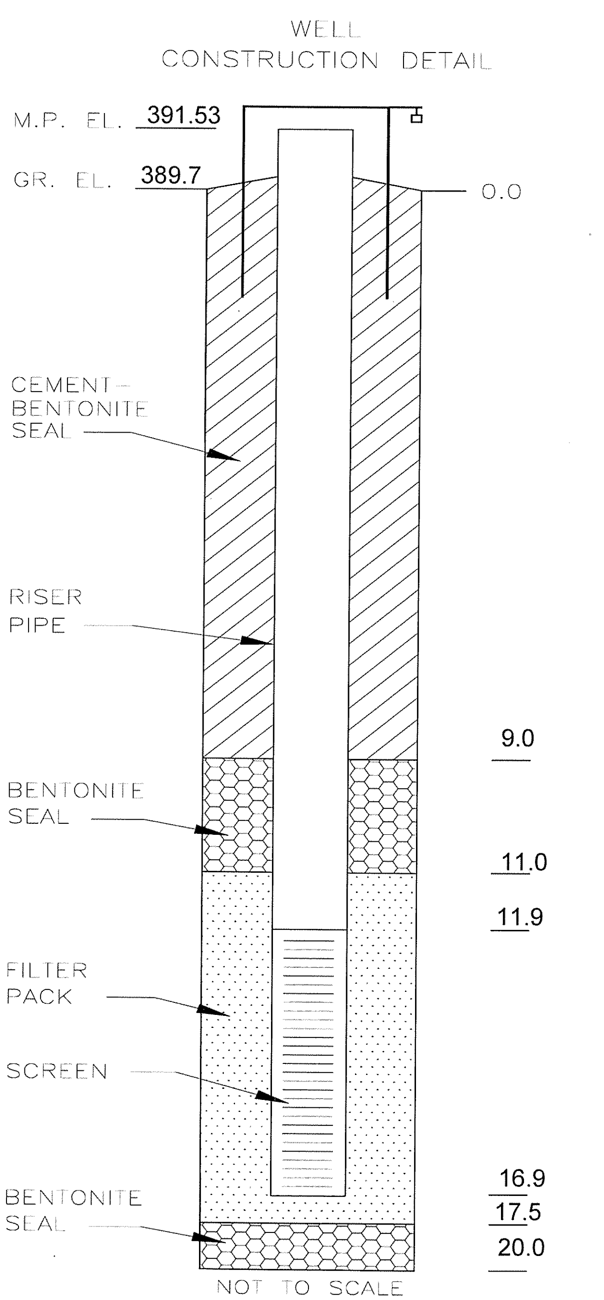
Locking Casing: [X] Yes [ ] No

O'BRIEN & GERE ENGINEERS, INC.

WELL COMPLETION LOG

Well ID: **MW-13S**

Project:	Old Erie Canal Supplemental GW	**Client:**	Parker-Hannifin
Location:	Clyde, New York	**Date Drilled:**	11/2/2006
Project No.:	39892.001.102	**Date Developed:**	11/14/2006



Inspection Notes:

Inspector: P. D'Annibale
Drilling Contractor: Parratt-Wolff, Inc
Type of Well: Monitoring Well

Static Water Level (ft bmp): 3.05 Date: 11/8/06
Measuring Point: Top of PVC
Total Depth of Well (ft bmp): 18.71

Drilling Method - Overburden:

Type: HSA Diameter: 4 1/4 " ID
Casing: NA

Sampling Method - Overburden:

Type: Split-Spoon Diameter: 2" OD
Weight: 140 # Fall: 30"
Interval: 0.0'-20.0'

Riser Pipe Left in Place:

Material: Sch 40 PVC Diameter: 2" ID
Length: 13.7' Joint Type: Flush Thread

Screen:

Material: Sch 40 PVC Diameter: 2" ID
Slot Size: 0.010 Joint Type: Flush Thread

Filter Pack:

Type: Sand Grade: # 0 Morie
Interval: 11.0'-17.5'

Seal(s):

Type		Interval	
Type:	Cement-Bentonite	Interval:	0.0'-2.5'
Type:	Bentonite Pellets	Interval:	9.0'-11.0'
Type:	Bentonite Pellets	Interval:	17.5'-20.0'

Locking Casing: [X] Yes [ ] No

O'BRIEN & GERE ENGINEERS, INC.

Form 002

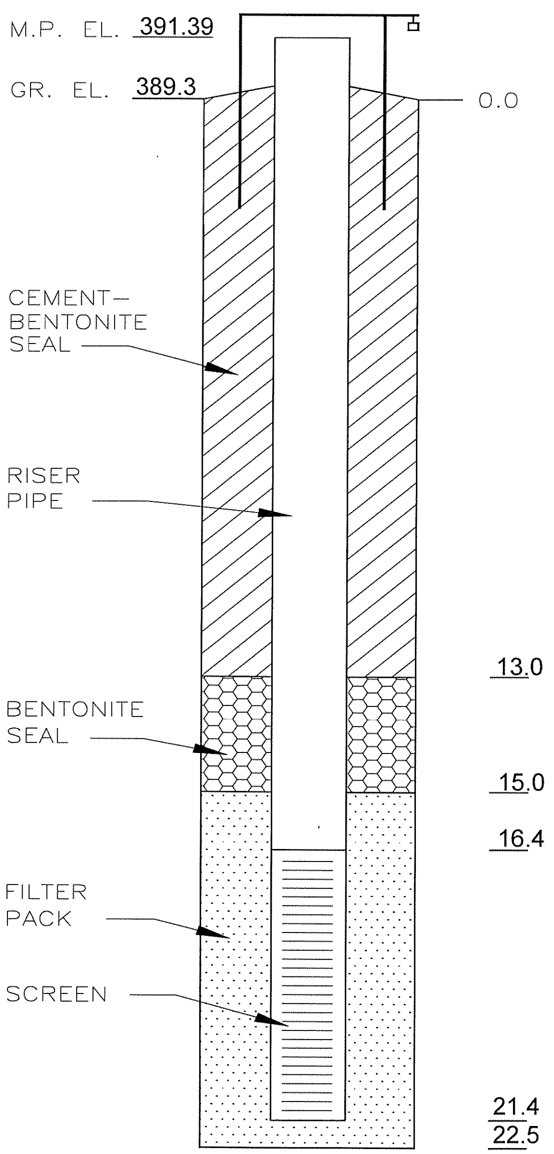
WELL COMPLETION LOG

Well ID: MW-14S

Project: Old Erie Canal Supplemental GW
Location: Clyde, New York
Project No.: 39892.001.102

Client: Parker-Hannifin
Date Drilled: 11/6/2006
Date Developed: 11/15/2006

WELL
CONSTRUCTION DETAIL



NOT TO SCALE

Inspection Notes:

Inspector: P. D'Annibale
Drilling Contractor: Parratt-Wolff, Inc.
Type of Well: Monitoring Well

Static Water Level (ft bmp): 5.51 Date: 11/8/06
Measuring Point: Top of PVC
Total Depth of Well (ft bmp): 23.55

Drilling Method - Overburden:
Type: HSA Diameter: 4¼" ID
Casing: NA

Sampling Method - Overburden:
Type: Split-Spoon Diameter: 2" OD
Weight: 140 # Fall: 30"
Interval: 0.0'-22.5'

Riser Pipe Left in Place:
Material: Sch 40 PVC Diameter: 2" ID
Length: 18.5' Joint Type Flush Thread

Screen:
Material: Sch 40 PVC Diameter: 2" ID
Slot Size: 0.010 Joint Type Flush Thread

Filter Pack:
Type: Sand Grade: #0 Morie
Interval: 15.0'-22.5'

Seal(s):
Type: Cement-Bentonite Interval: 0.0'-13.0'
Type: Bentonite Pellets Interval: 13.0'-15.0'
Type: Interval:

Locking Casing: [X] Yes [ ] No

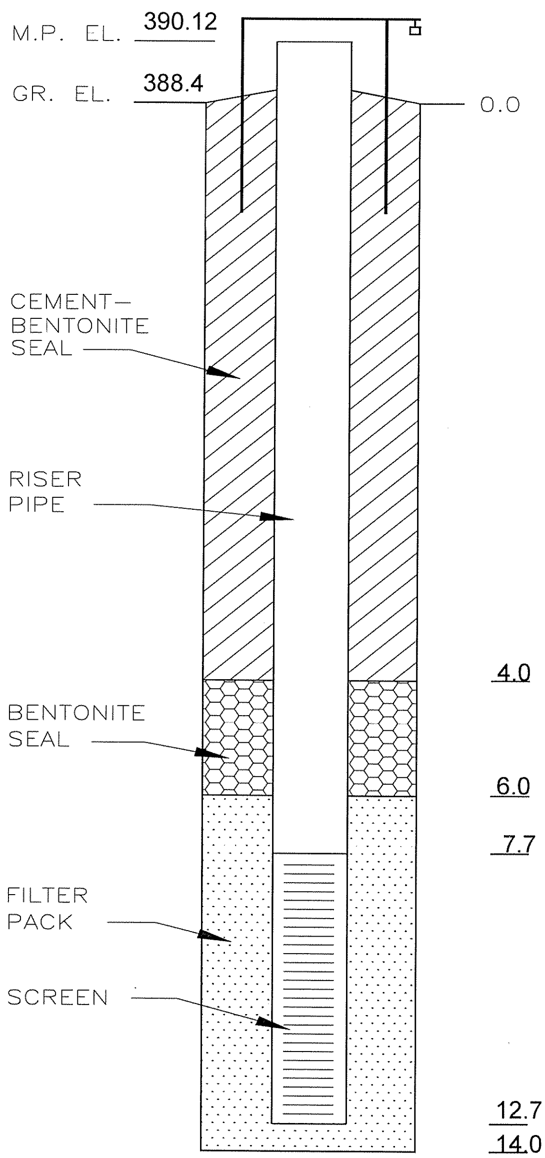
O'BRIEN & GERE ENGINEERS, INC.

Form 001

WELL COMPLETION LOG

Well ID: **MW-15S**

Project:	Old Erie Canal Supplemental GW	**Client:**	Parker-Hannifin
Location:	Clyde, New York	**Date Drilled:**	11/7/2006
Project No.:	39892.001.102	**Date Developed:**	11/15/2006



Inspection Notes:

Inspector: P. D'Annibale
Drilling Contractor: Parratt-Wolff, Inc.
Type of Well: Monitoring Well

Static Water Level (ft bmp): 2.19 Date: 11/8/06
Measuring Point: Top of PVC
Total Depth of Well (ft bmp): 14.42

Drilling Method - Overburden:

Type: HSA Diameter: 4¼" ID
Casing: NA

Sampling Method - Overburden:

Type: Split-Spoon Diameter: 2" OD
Weight: 140 # Fall: 30"
Interval: 0.0'-14.0'

Riser Pipe Left in Place:

Material: Sch 40 PVC Diameter: 2" ID
Length: 9.4' Joint Type Flush Thread

Screen:

Material: Sch 40 PVC Diameter: 2" ID
Slot Size: 0.010 Joint Type Flush Thread

Filter Pack:

Type: Sand Grade: #0 Morie
Interval: 6.0'-14.0'

Seal(s):

Type: Cement-Bentonite Interval: 0.0' - 4.0'
Type: Bentonite Pellets Interval: 4.0' - 6.0'
Type: Interval:

Locking Casing: [X] Yes [ ] No

O'BRIEN & GERE ENGINEERS, INC.

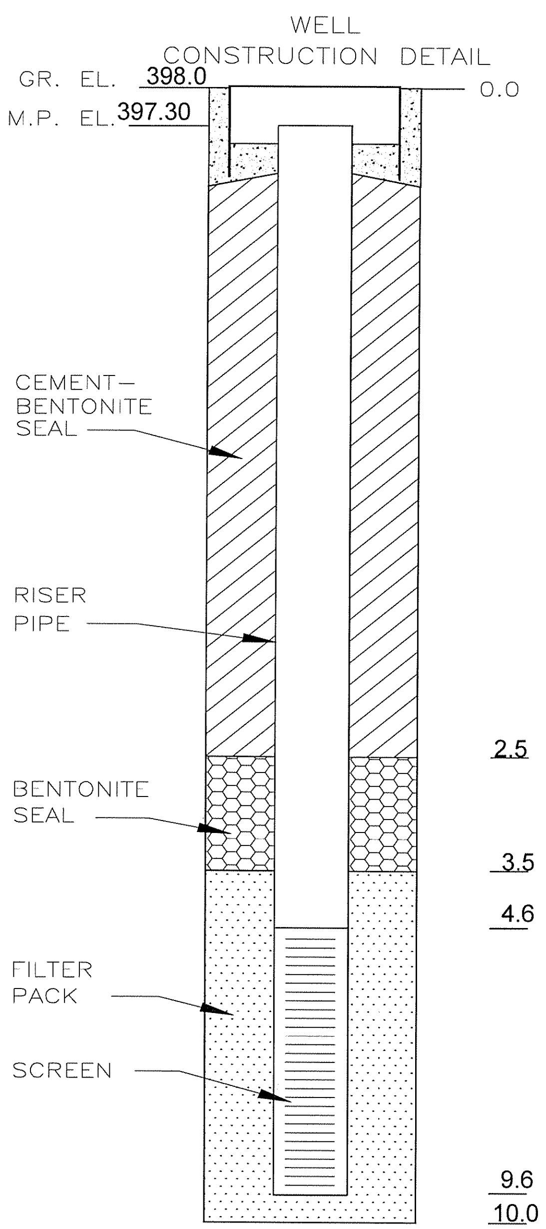
Form 001

WELL COMPLETION LOG

Well ID: MW-16S

Project: Old Erie Canal Supplemental GW
Location: Clyde, New York
Project No.: 39892.001.102

Client: Parker-Hannifin
Date Drilled: 11/2/2006
Date Developed: 11/14/2006



Inspection Notes:

Inspector: P. D'Annibale
Drilling Contractor: Parratt-Wolff, Inc.
Type of Well: Monitoring Well

Static Water Level (ft bmp): 2.97 Date: 11/8/06
Measuring Point: Top of PVC
Total Depth of Well (ft bmp): 8.92

Drilling Method - Overburden:

Type: HSA Diameter: 4 1/4 " ID
Casing: NA

Sampling Method - Overburden:

Type: Split-Spoon Diameter: 2" OD
Weight: 140 # Fall: 30"
Interval: 0.0'-10.0'

Riser Pipe Left in Place:

Material: Sch 40 PVC Diameter: 2" ID
Length: 3.9' Joint Type: Flush Thread

Screen:

Material: Sch 40 PVC Diameter: 2" ID
Slot Size: 0.010 Joint Type: Flush Thread

Filter Pack:

Type: Sand Grade: # 0 Morie
Interval: 3.5'-10.0'

Seal(s):

Type: Cement-Bentonite Interval: 0.0' - 2.5'
Type: Bentonite Pellets Interval: 2.5' - 3.5'
Type: Interval:

Locking Casing: [X] Yes [ ] No

O'BRIEN & GERE ENGINEERS, INC.

Form 005

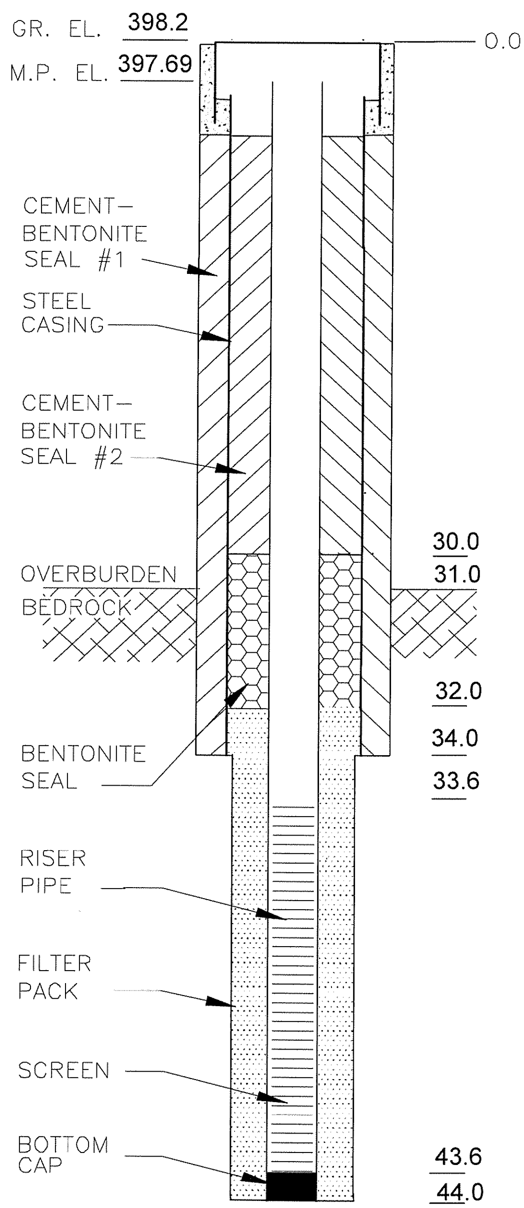
WELL COMPLETION LOG

Well ID: MW-16B

Project: Old Erie Canal Supplemental FS
Location: Clyde, New York
Project No.: 39892.001.102

Client: Parker-Hannifin
Date Drilled: 11/15/2006
Date Developed: 11/16, 21/06

WELL
CONSTRUCTION DETAIL



NOT TO SCALE

Form-040

Inspection Notes:

Inspector: P. D'Annibale
Drilling Contractor: Parratt-Wolff, Inc.
Type of Well: Monitoring Well

Static Water Level (ft bmp): 3.88 Date: 11/28/06
Measuring Point: TOC
Total Depth of Well (ft bmp): 43.13

Drilling Method - Overburden:
Type: HSA Diameter: 4 1/4" ID
Casing: 4" Steel

Sampling Method - Overburden:
Type: Split Spoon Diameter: 2" OD
Weight: 140 # Fall: 30"
Interval: 9.0' - 31.0'

Drilling Method - Bedrock:
Type: HX diamond bit Diameter: 3 3/4" OD
Casing: NA

Sampling Method - Bedrock:
Type: HX Core Diameter: 3 3/4" OD
Interval: 34.0' - 44.0'

Riser Pipe Left in Place:
Material: Sch. 40 PVC Diameter: 2" ID
Length: 33.1' Joint Type: Flush Thread

Screen:
Material: Sch. 40 PVC Diameter: 2" ID
Slot Size: 0.010 Joint Type: Flush Thread

Filter Pack:
Type: Sand Grade: # 0 Morie
Interval: 32.0' - 44.0'

Seal(s):
Type: Cement-Bentonite Seal #1 Interval: 0.0' - 34.0'
Type: Bentonite Seal Interval: 30.0'-32.0'
Type: Interval:

Locking Casing: [X] Yes [ ] No

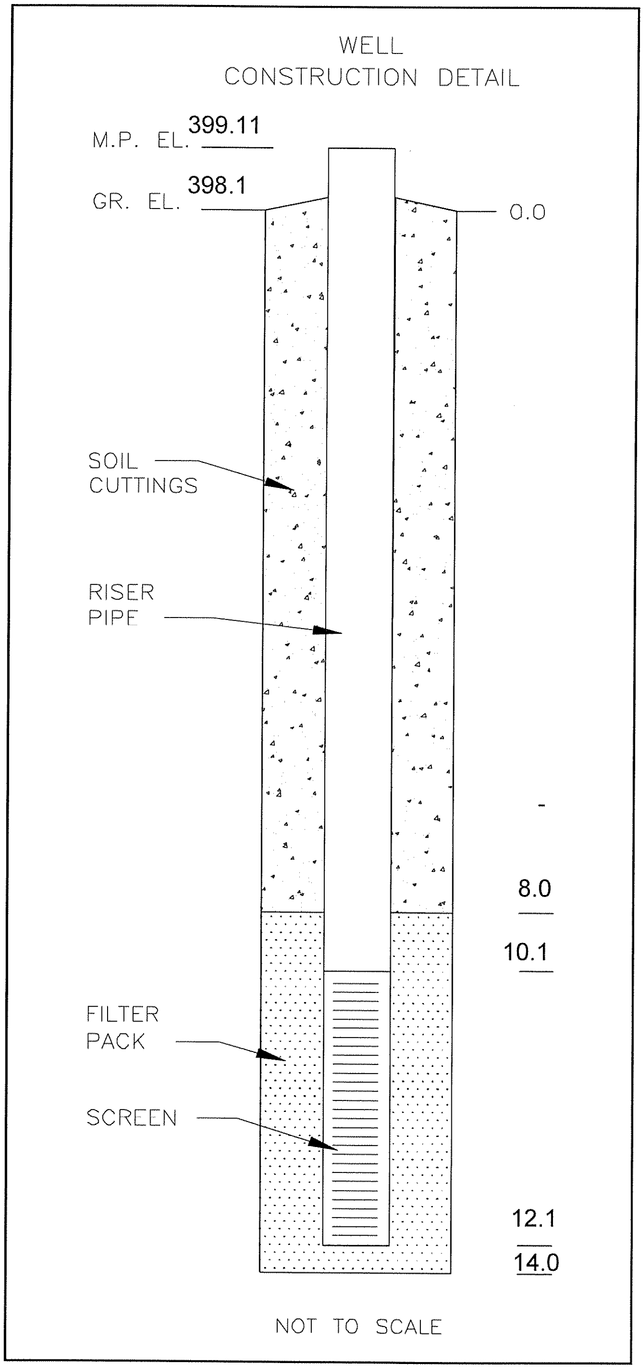
O'BRIEN & GERE ENGINEERS, INC.

WELL COMPLETION LOG

Well ID: TMW-1

Project: Old Erie Canal Supplemental GW
Location: Clyde, New York
Project No.: 39892.001.102

Client: Parker-Hannifin
Date Drilled: 11/3/2006
Date Developed: 11/14, 20/2006



Inspection Notes:

Inspector: P. D'Annibale
Drilling Contractor: Parratt-Wolff, Inc
Type of Well: Temporary Monitoring Well

Static Water Level (ft bmp): 3.93 Date: 11/8/06
Measuring Point: Top of PVC
Total Depth of Well (ft bmp): 13.09

Drilling Method - Overburden:

Type: HSA Diameter: 4 1/4 " ID
Casing: NA

Sampling Method - Overburden:

Type: Split-Spoon Diameter: 2" OD
Weight: 140 # Fall: 30"
Interval: 0.0'-14.0'

Riser Pipe Left in Place:

Material: Sch 40 PVC Diameter: 2" ID
Length: 11.1' Joint Type Flush Thread

Screen:

Material: Sch 40 PVC Diameter: 2" ID
Slot Size: 0.010 Joint Type Flush Thread

Filter Pack:

Type: Sand Grade: # 0 Morie
Interval: 8.0'-14.0'

Seal(s):

Type: Cement-Bentonite Interval: NA
Type: Bentonite Pellets Interval: NA
Type: Interval:

Locking Casing: ☐ Yes ☒ No

O'BRIEN & GERE ENGINEERS, INC.

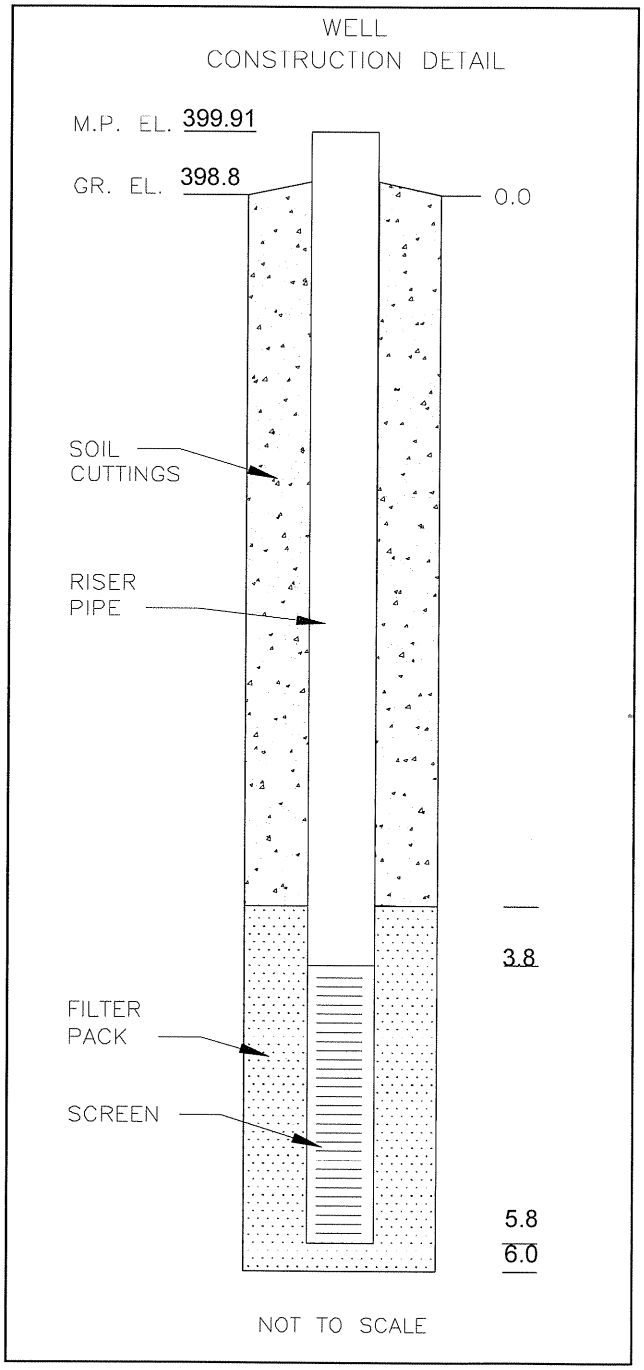
Form 003

WELL COMPLETION LOG

Well ID: TMW-2

Project: Old Erie Canal Supplemental GW
Location: Clyde, New York
Project No.: 39892.001.102

Client: Parker-Hannifin
Date Drilled: 11/3/2006
Date Developed: 11/14/2006



Inspection Notes:

Inspector: P. D'Annibale
Drilling Contractor: Parratt-Wolff, Inc
Type of Well: Temporary Monitoring Well

Static Water Level (ft bmp): 4.48 Date: 11/8/06
Measuring Point: Top of PVC
Total Depth of Well (ft bmp): 6.86

Drilling Method - Overburden:

Type: HSA Diameter: 4 1/4 " ID
Casing: NA

Sampling Method - Overburden:

Type: Split-Spoon Diameter: 2" OD
Weight: 140 # Fall: 30"
Interval: 0.0'-6.0'

Riser Pipe Left in Place:

Material: Sch 40 PVC Diameter: 1" ID
Length: 4.9' Joint Type Flush Thread

Screen:

Material: Sch 40 PVC Diameter: 1" ID
Slot Size: 0.010 Joint Type Flush Thread

Filter Pack:

Type: Backfill Grade:
Interval: 0.0'-6.0'

Seal(s):

Type: Interval:
Type: Interval:
Type: Interval:

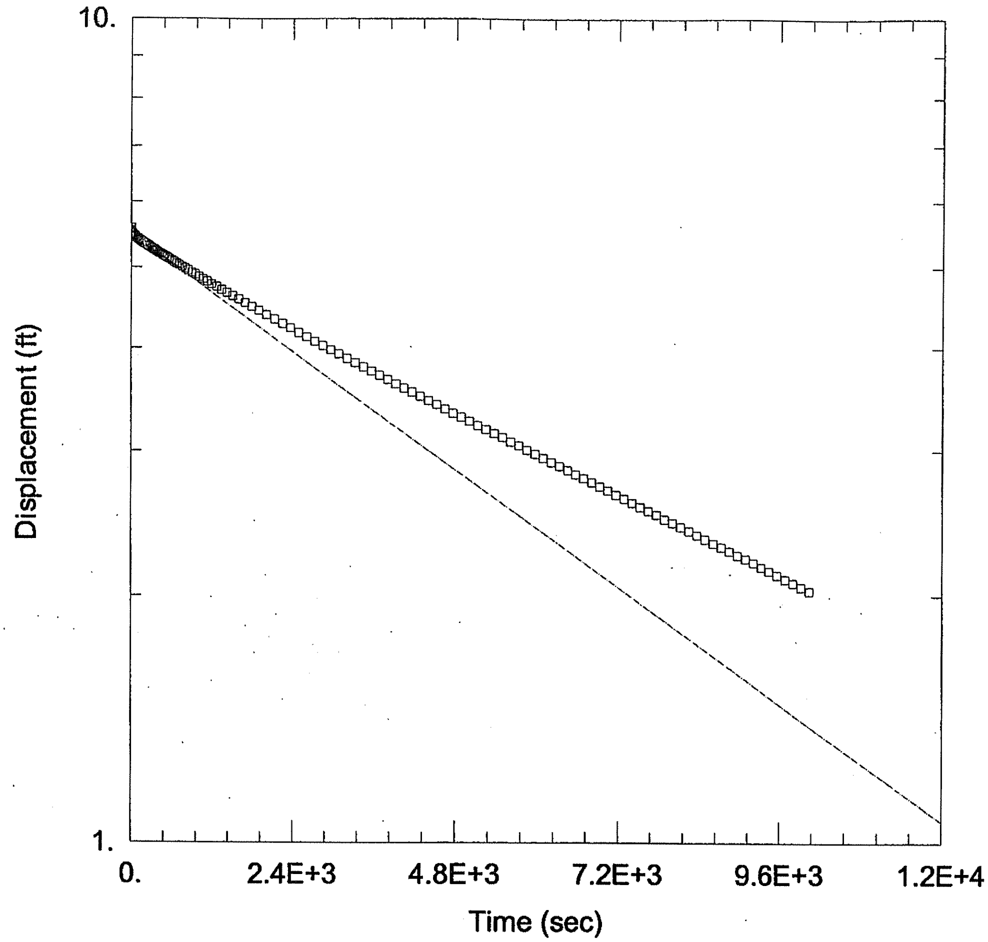
Locking Casing: ☐ Yes ☒ No

O'BRIEN & GERE ENGINEERS, INC.

Form 003

APPENDIX C

Hydraulic Conductivity
Test Results



WELL TEST ANALYSIS

Data Set: I:\...\MW-3B test1.aqt
Date: 03/23/07 Time: 13:17:15

PROJECT INFORMATION

Company: OBG
Client: Parker Hannifin
Project: 39892.001.104
Location: Clyde NY
Test Well: MW-3B
Test Date: 12/7/06

AQUIFER DATA

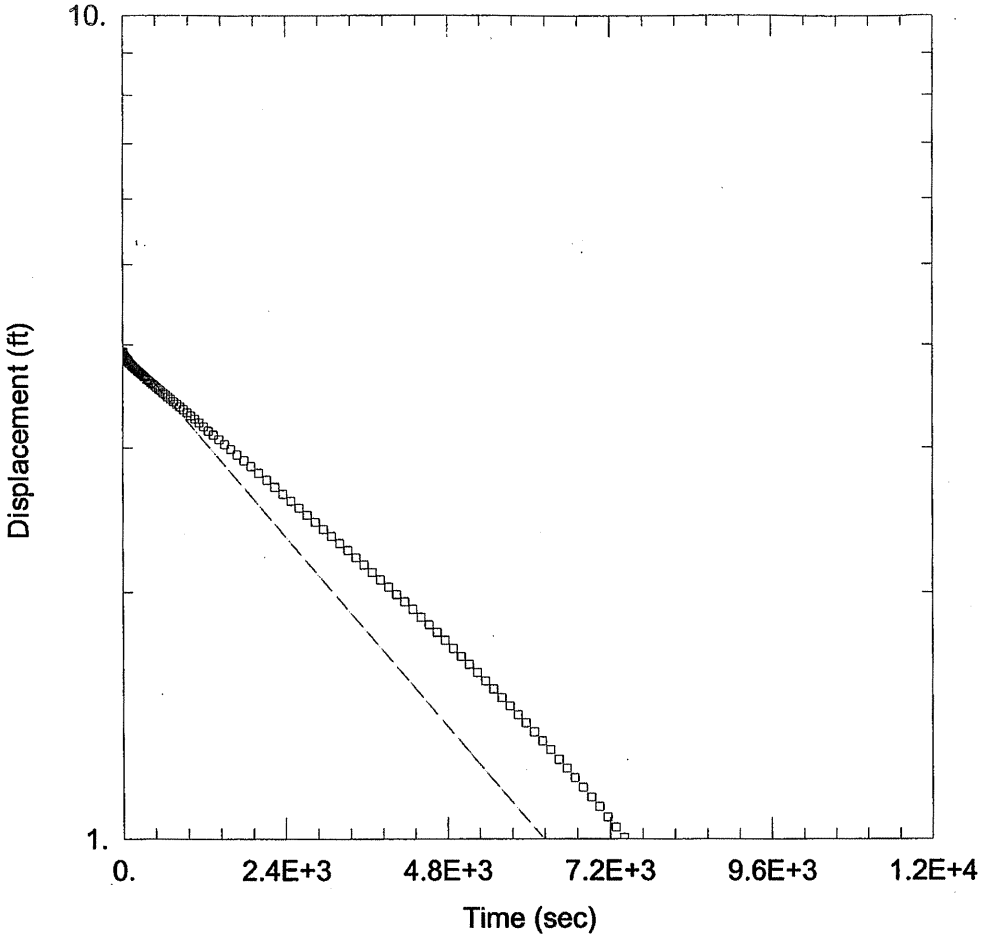
Saturated Thickness: 29.63 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-3B test1)

Initial Displacement: 5.576 ft
Total Well Penetration Depth: 29.63 ft
Casing Radius: 0.083 ft
Static Water Column Height: 29.63 ft
Screen Length: 10. ft
Wellbore Radius: 0.16 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 5.538E-6 cm/sec
y0 = 5.496 ft



WELL TEST ANALYSIS

Data Set: I:\...\MW-3B test2.aqt
Date: 03/23/07 Time: 13:17:12

PROJECT INFORMATION

Company: OBG
Client: Parker Hannifin
Project: 39892.001.104
Location: Clyde NY
Test Well: MW-3B
Test Date: 12/7/06

AQUIFER DATA

Saturated Thickness: 30.78 ft Anisotropy Ratio (Kz/Kr): 1.

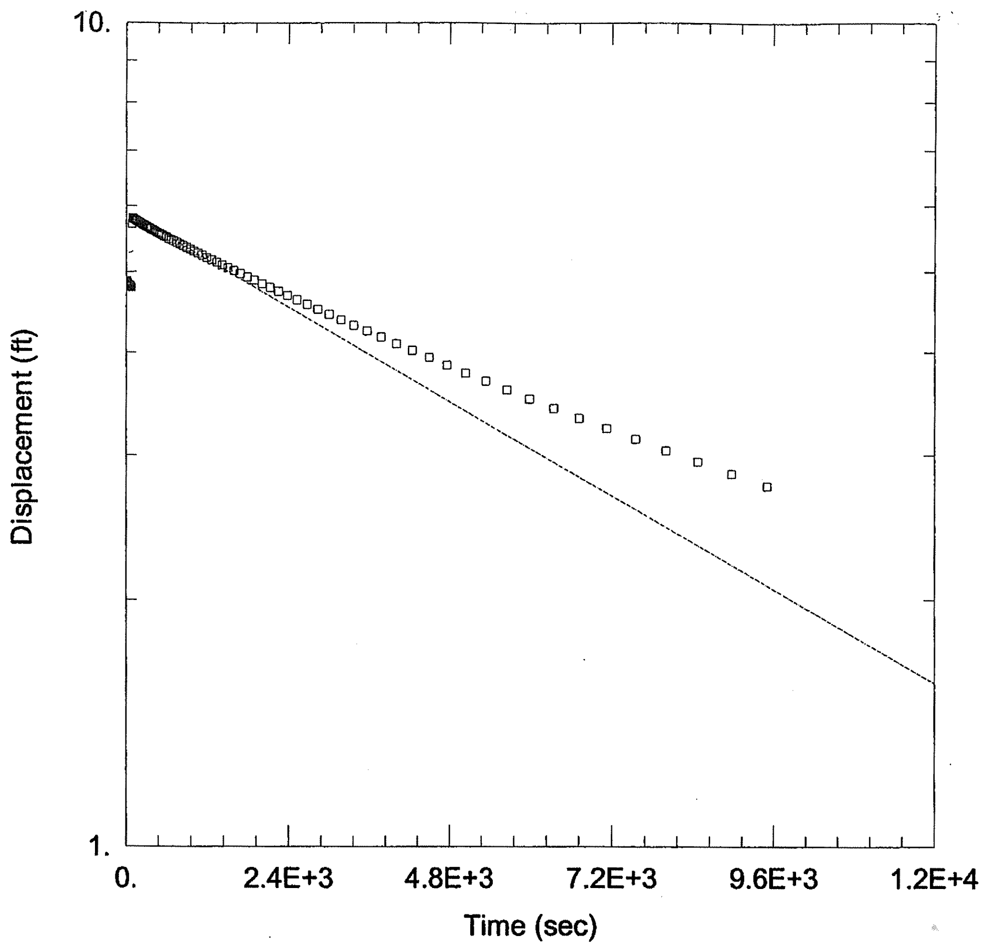
WELL DATA (MW-3B test2)

Initial Displacement: 3.923 ft
Total Well Penetration Depth: 30.78 ft
Casing Radius: 0.083 ft
Static Water Column Height: 30.78 ft
Screen Length: 10. ft
Wellbore Radius: 0.16 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 9.029E-6 cm/sec
y0 = 3.989 ft



WELL TEST ANALYSIS

Data Set: I:\...\MW-3B test3.aqt
Date: 03/23/07 Time: 13:17:08

PROJECT INFORMATION

Company: OBG
Client: Parker Hannifin
Project: 39892.001.104
Location: Clyde NY
Test Well: MW-3B
Test Date: 12/7/06

AQUIFER DATA

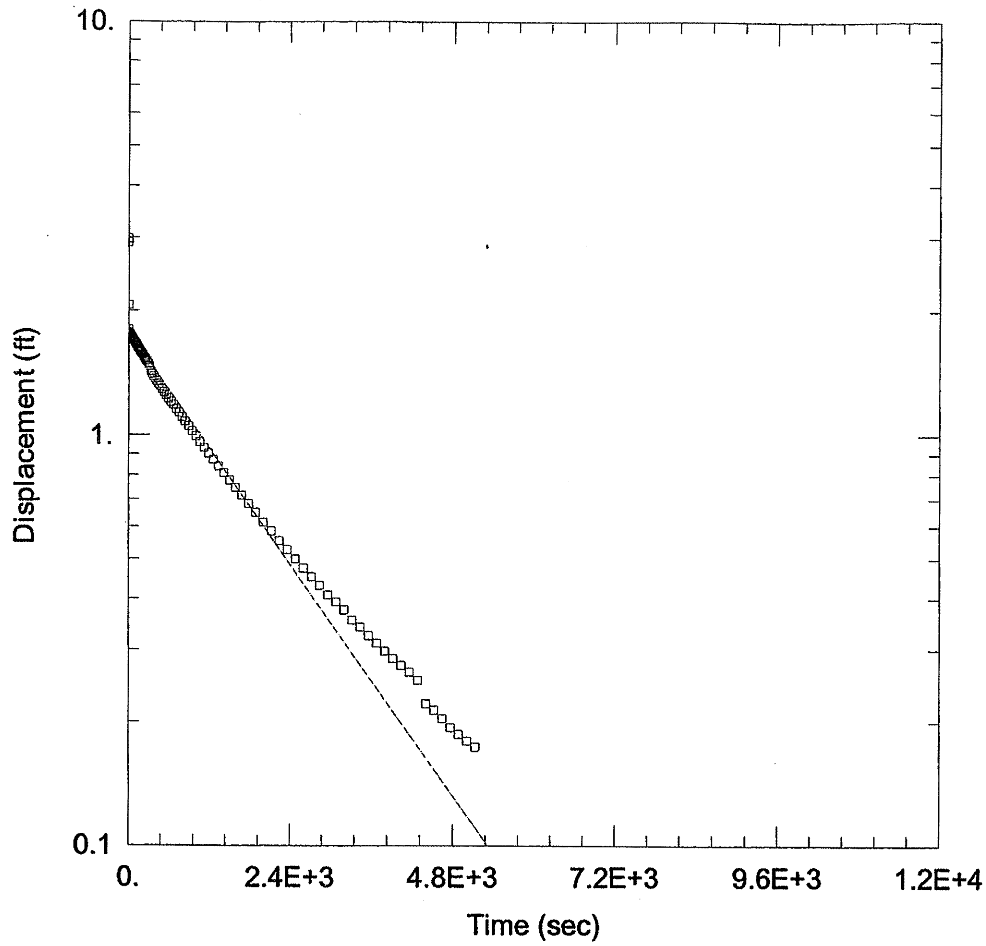
Saturated Thickness: 29.63 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-3B test3)

Initial Displacement: 4.877 ft
Total Well Penetration Depth: 29.63 ft
Casing Radius: 0.083 ft
Static Water Column Height: 29.63 ft
Screen Length: 10. ft
Wellbore Radius: 0.16 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 4.43E-6 cm/sec
y0 = 5.899 ft



WELL TEST ANALYSIS

Data Set: I:\...\MW-4C test1.aqt
Date: 03/23/07 Time: 13:17:04

PROJECT INFORMATION

Company: OBG
Client: Parker Hannifin
Project: 39892.001.104
Location: Clyde NY
Test Well: MW-4C
Test Date: 12/7/06

AQUIFER DATA

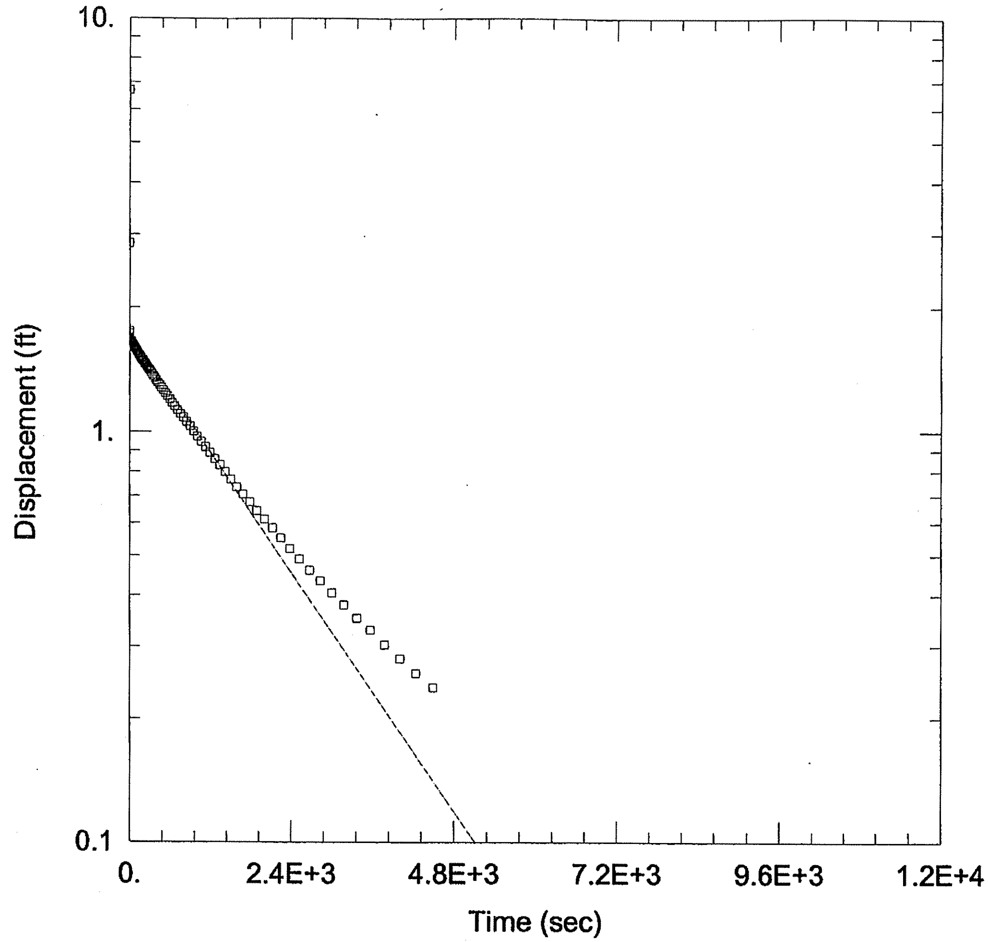
Saturated Thickness: 48.23 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-4C test1)

Initial Displacement: 2.982 ft
Total Well Penetration Depth: 48.23 ft
Casing Radius: 0.083 ft
Static Water Column Height: 48.23 ft
Screen Length: 10. ft
Wellbore Radius: 0.16 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 2.353E-5 cm/sec y0 = 1.784 ft



WELL TEST ANALYSIS

Data Set: I:\...\MW-4C test2.aqt
Date: 03/23/07 Time: 13:17:00

PROJECT INFORMATION

Company: OBG
Client: Parker Hannifin
Project: 39892.001.104
Location: Clyde NY
Test Well: MW-4C
Test Date: 12/7/06

AQUIFER DATA

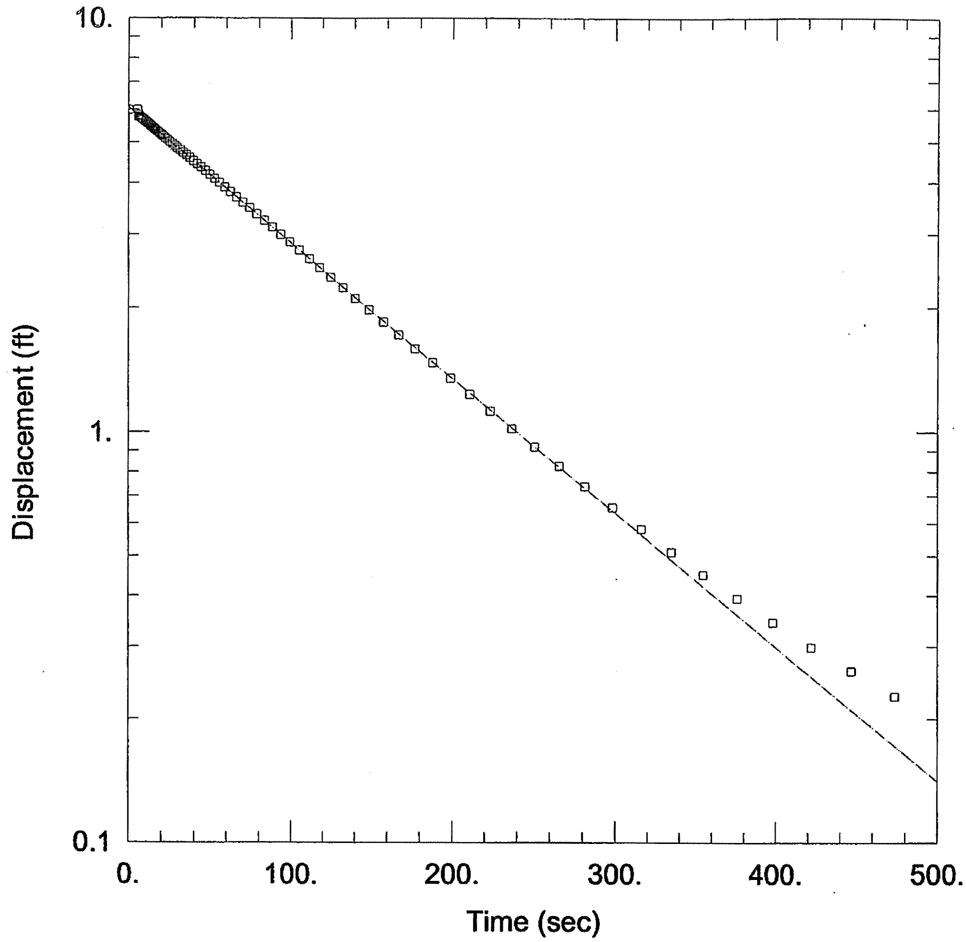
Saturated Thickness: 48.08 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-4C test2)

Initial Displacement: 6.692 ft
Total Well Penetration Depth: 48.08 ft
Casing Radius: 0.083 ft
Static Water Column Height: 48.08 ft
Screen Length: 10. ft
Wellbore Radius: 0.16 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.426E-5 cm/sec
y0 = 1.74 ft



WELL TEST ANALYSIS

Data Set: I:\...\MW-6B test1.aqt
Date: 03/23/07 Time: 13:16:57

PROJECT INFORMATION

Company: OBG
Client: Parker Hannifin
Project: 39892.001.104
Location: Clyde NY
Test Well: MW-6B
Test Date: 12/7/06

AQUIFER DATA

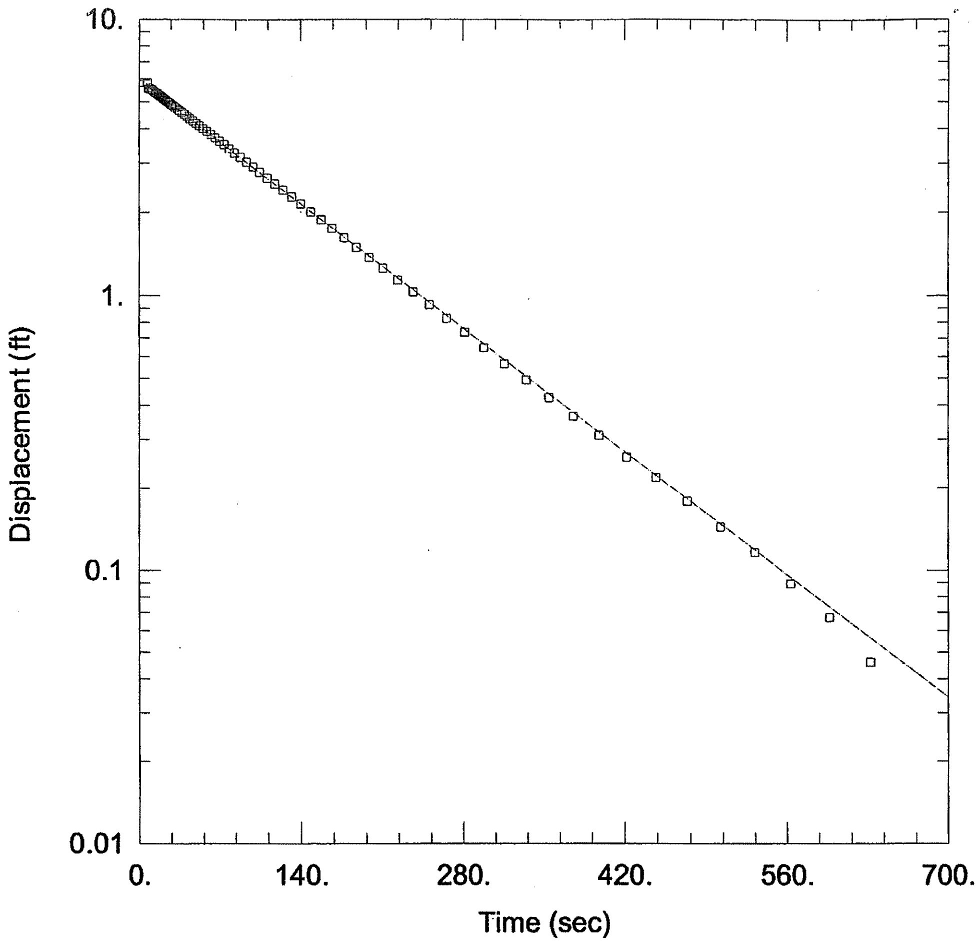
Saturated Thickness: 31.78 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-6B test1)

Initial Displacement: 5.991 ft
Total Well Penetration Depth: 31.78 ft
Casing Radius: 0.083 ft
Static Water Column Height: 31.78 ft
Screen Length: 10. ft
Wellbore Radius: 0.16 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0003073 cm/sec
y0 = 6.077 ft



WELL TEST ANALYSIS

Data Set: I:\...\MW-6B test2.aqt
Date: 03/23/07 Time: 13:16:54

PROJECT INFORMATION

Company: OBG
Client: Parker Hannifin
Project: 39892.001.104
Location: Clyde NY
Test Well: MW-6B
Test Date: 12/7/06

AQUIFER DATA

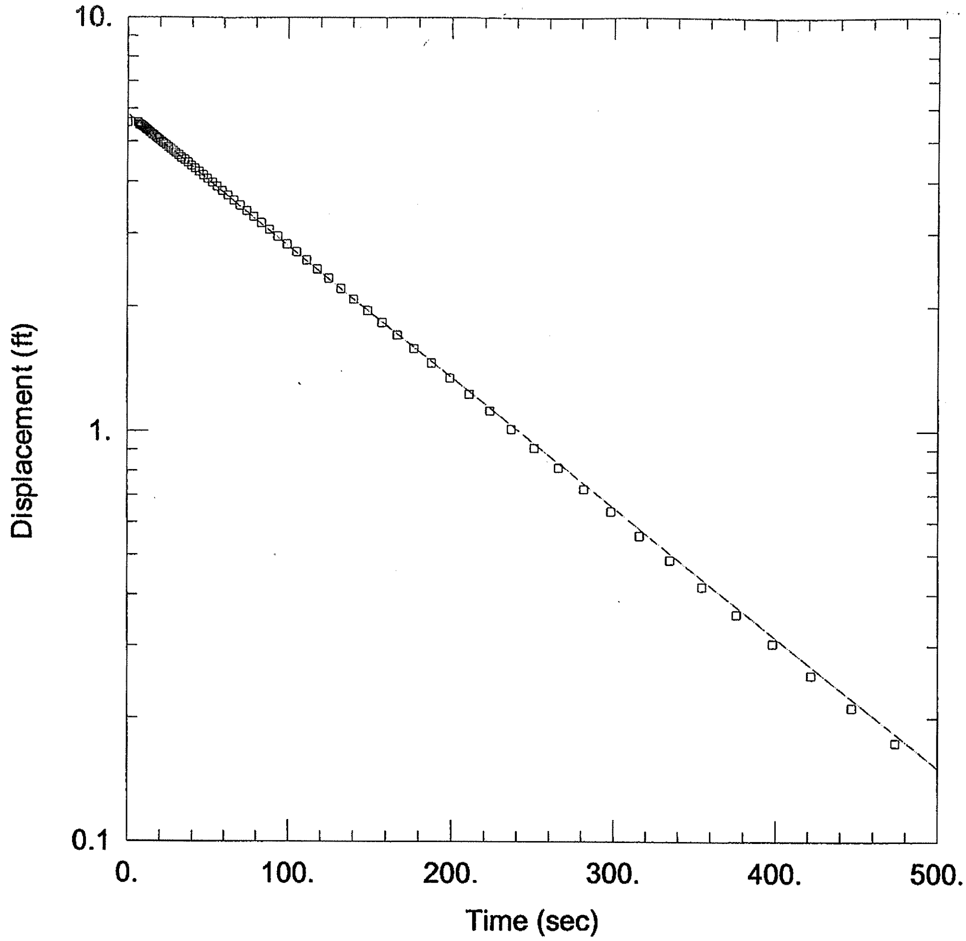
Saturated Thickness: 31.78 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-6B test2)

Initial Displacement: 5.882 ft
Total Well Penetration Depth: 31.78 ft
Casing Radius: 0.083 ft
Static Water Column Height: 31.78 ft
Screen Length: 10. ft
Wellbore Radius: 0.16 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0003016 cm/sec
y0 = 6.03 ft



WELL TEST ANALYSIS

Data Set: I:\...\MW-6B test3.aqt
Date: 03/23/07 Time: 13:16:50

PROJECT INFORMATION

Company: OBG
Client: Parker Hannifin
Project: 39892.001.104
Location: Clyde NY
Test Well: MW-6B
Test Date: 12/7/06

AQUIFER DATA

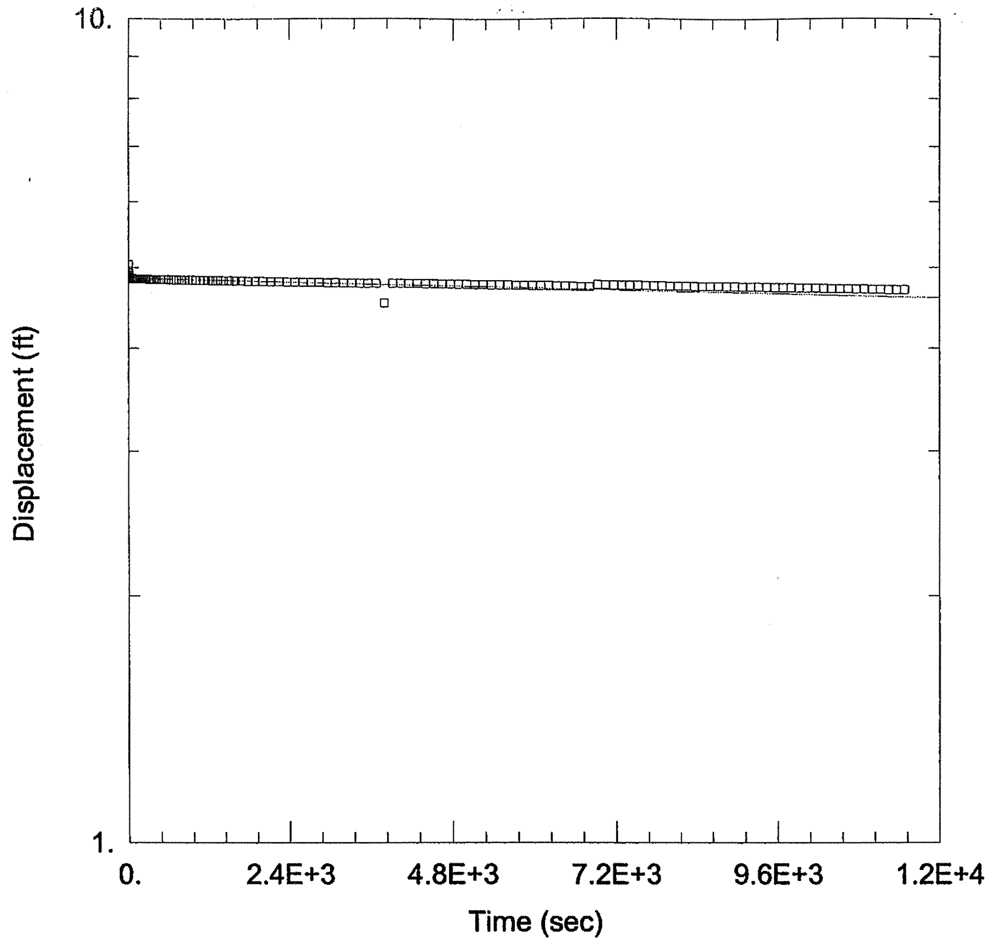
Saturated Thickness: 32.45 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-6B test3)

Initial Displacement: 5.552 ft
Total Well Penetration Depth: 32.45 ft
Casing Radius: 0.083 ft
Static Water Column Height: 32.45 ft
Screen Length: 10. ft
Wellbore Radius: 0.16 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0002993 cm/sec
y0 = 5.83 ft



WELL TEST ANALYSIS

Data Set: I:\...\MW-16B test1.aqt
Date: 03/23/07 Time: 13:16:12

PROJECT INFORMATION

Company: OBG
Client: Parker Hannifin
Project: 39892.001.104
Location: Clyde NY
Test Well: MW-16B
Test Date: 12/7/06

AQUIFER DATA

Saturated Thickness: 36.57 ft Anisotropy Ratio (Kz/Kr): 1.

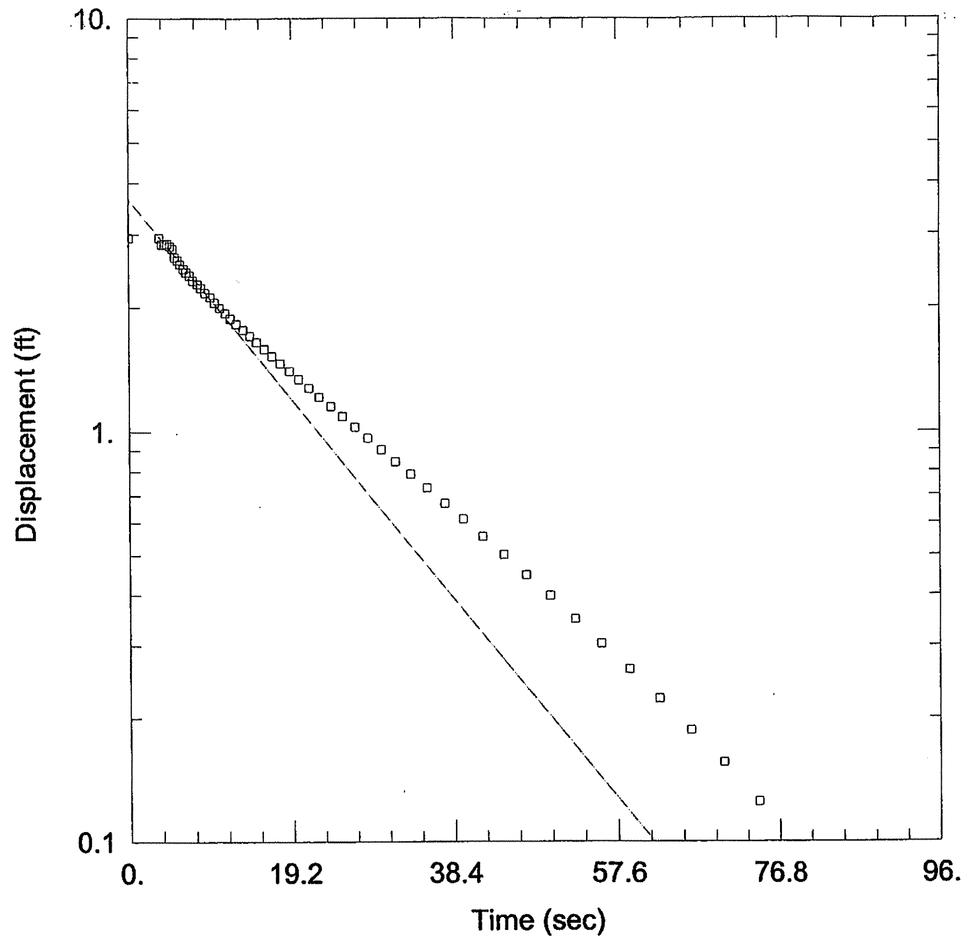
WELL DATA (MW-16B test1)

Initial Displacement: 5.05 ft
Total Well Penetration Depth: 36.57 ft
Casing Radius: 0.083 ft
Static Water Column Height: 36.57 ft
Screen Length: 10. ft
Wellbore Radius: 0.16 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 1.885E-7 cm/sec y0 = 4.859 ft



WELL TEST ANALYSIS

Data Set: I:\...\MW-13S test1.aqt
Date: 03/23/07 Time: 13:16:47

PROJECT INFORMATION

Company: OBG
Client: Parker Hannifin
Project: 39892.001.104
Location: Clyde NY
Test Well: MW-13S
Test Date: 12/8/06

AQUIFER DATA

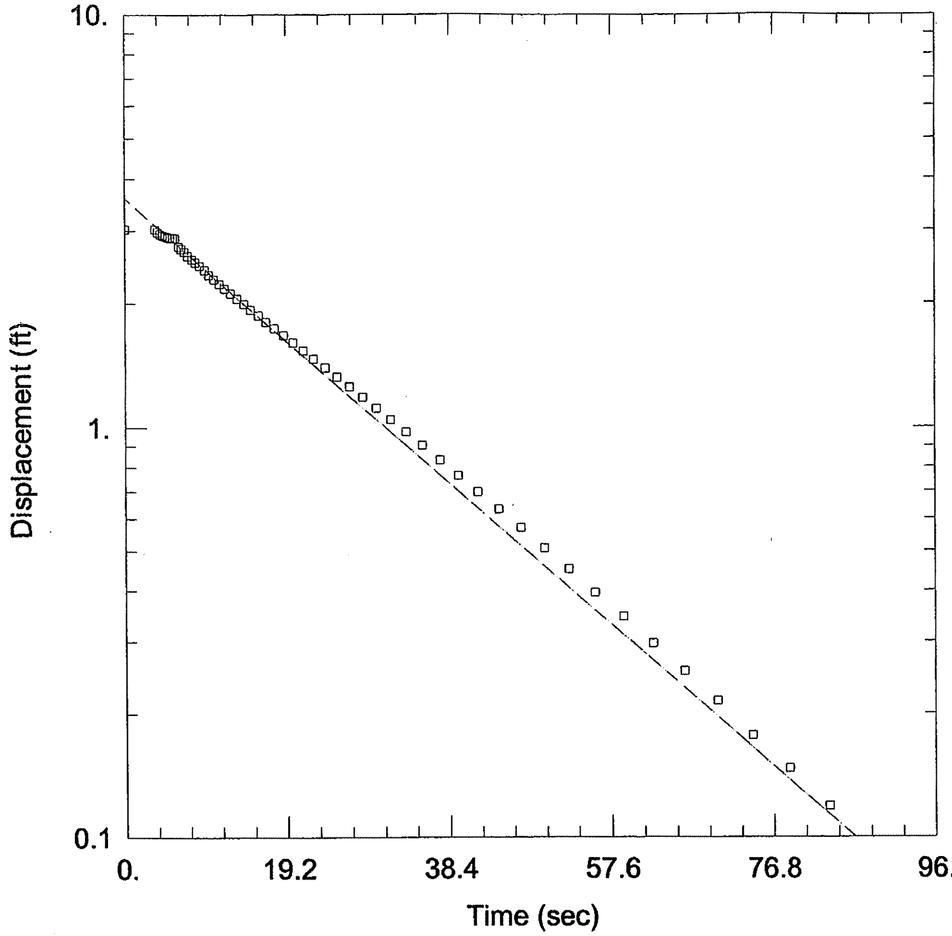
Saturated Thickness: 15.67 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-13S test1)

Initial Displacement: 2.944 ft
Total Well Penetration Depth: 15.67 ft
Casing Radius: 0.083 ft
Static Water Column Height: 15.67 ft
Screen Length: 5. ft
Wellbore Radius: 0.16 ft

SOLUTION

Aquifer Model: Unconfined
K = 0.004021 cm/sec
Solution Method: Bouwer-Rice
y0 = 3.654 ft



WELL TEST ANALYSIS

Data Set: I:\...\MW-13S test2.aqt
Date: 03/23/07 Time: 13:16:43

PROJECT INFORMATION

Company: OBG
Client: Parker Hannifin
Project: 39892.001.104
Location: Clyde NY
Test Well: MW-13S
Test Date: 12/8/06

AQUIFER DATA

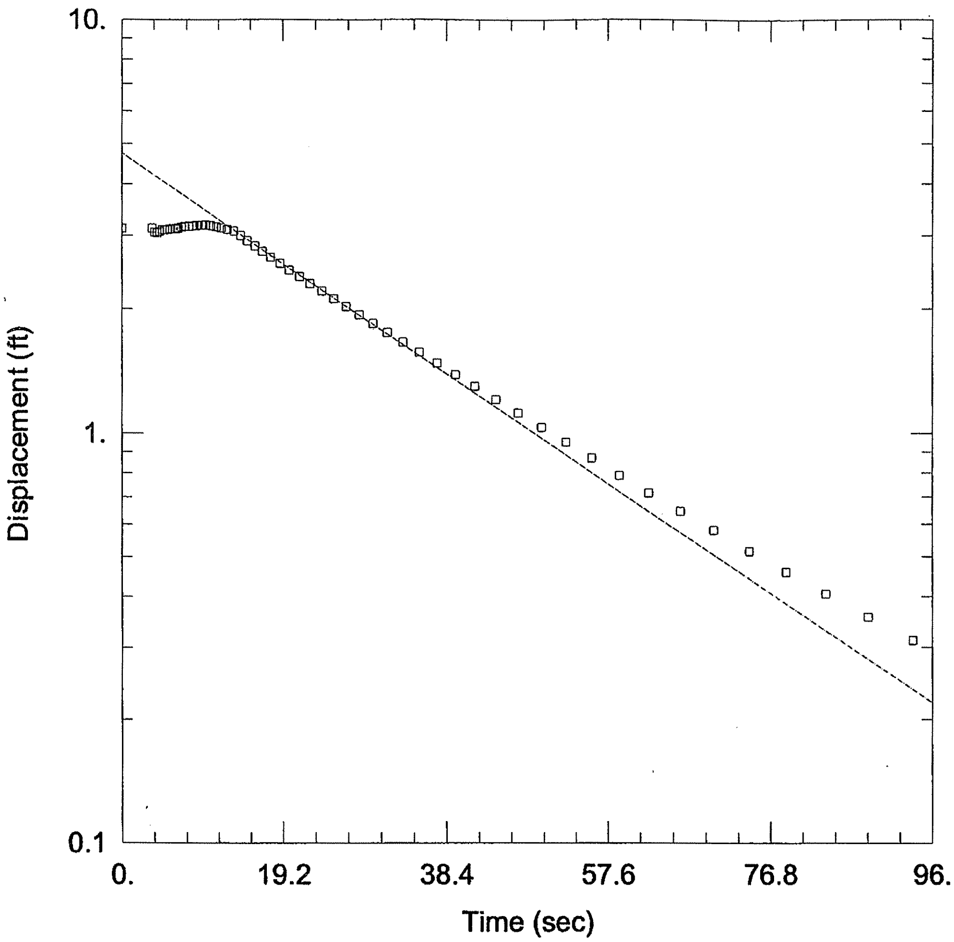
Saturated Thickness: 15.67 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-13S test2)

Initial Displacement: 3.02 ft
Total Well Penetration Depth: 15.67 ft
Casing Radius: 0.083 ft
Static Water Column Height: 15.67 ft
Screen Length: 5. ft
Wellbore Radius: 0.16 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.00286 cm/sec
y0 = 3.59 ft



WELL TEST ANALYSIS

Data Set: I:\...\MW-13S test3.aqt
Date: 03/23/07 Time: 13:16:40

PROJECT INFORMATION

Company: OBG
Client: Parker Hannifin
Project: 39892.001.104
Location: Clyde NY
Test Well: MW-13S
Test Date: 12/8/06

AQUIFER DATA

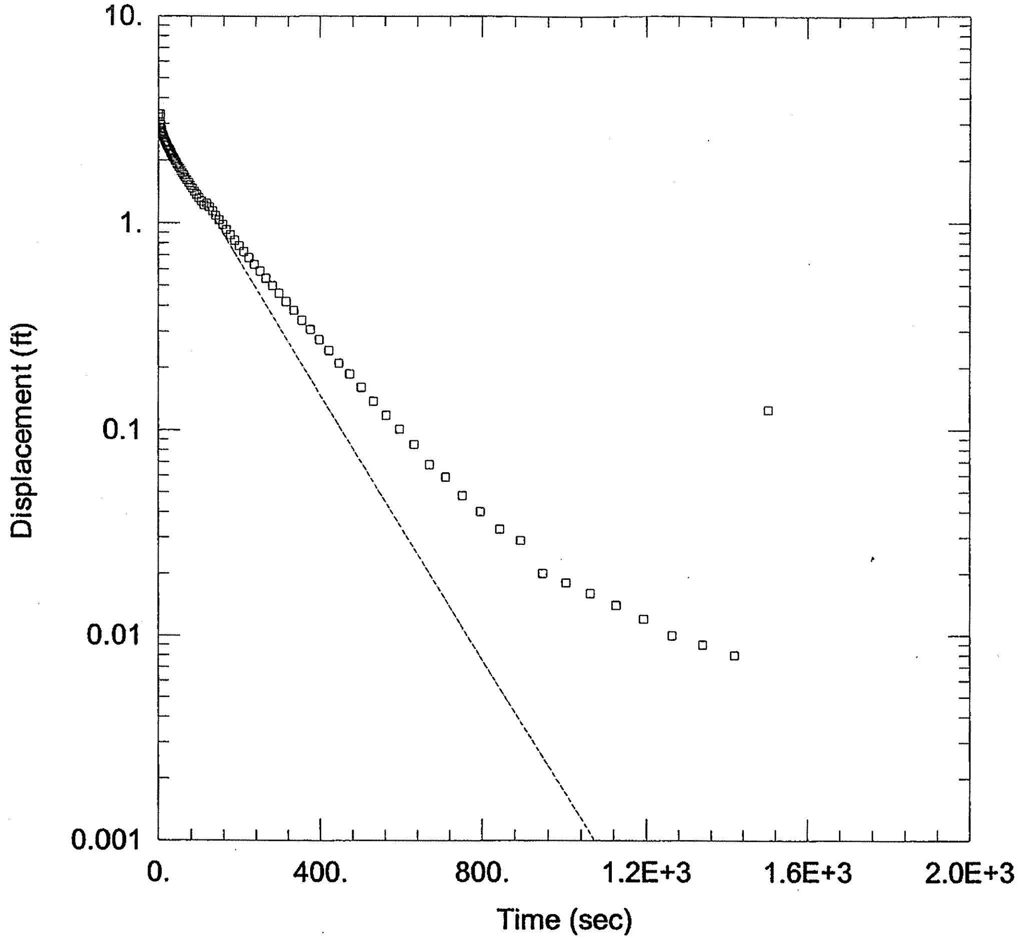
Saturated Thickness: 15.67 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-13S test3)

Initial Displacement: 3.128 ft
Total Well Penetration Depth: 15.67 ft
Casing Radius: 0.083 ft
Static Water Column Height: 15.67 ft
Screen Length: 5. ft
Wellbore Radius: 0.16 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.002208 cm/sec
y0 = 4.751 ft



WELL TEST ANALYSIS

Data Set: I:\...\MW-14S test1.aqt
Date: 03/23/07 Time: 13:16:36

PROJECT INFORMATION

Company: OBG
Client: Parker Hannifin
Project: 39892.001.104
Location: Clyde NY
Test Well: MW-14S
Test Date: 12/7/06

AQUIFER DATA

Saturated Thickness: 20.21 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-14S test1)

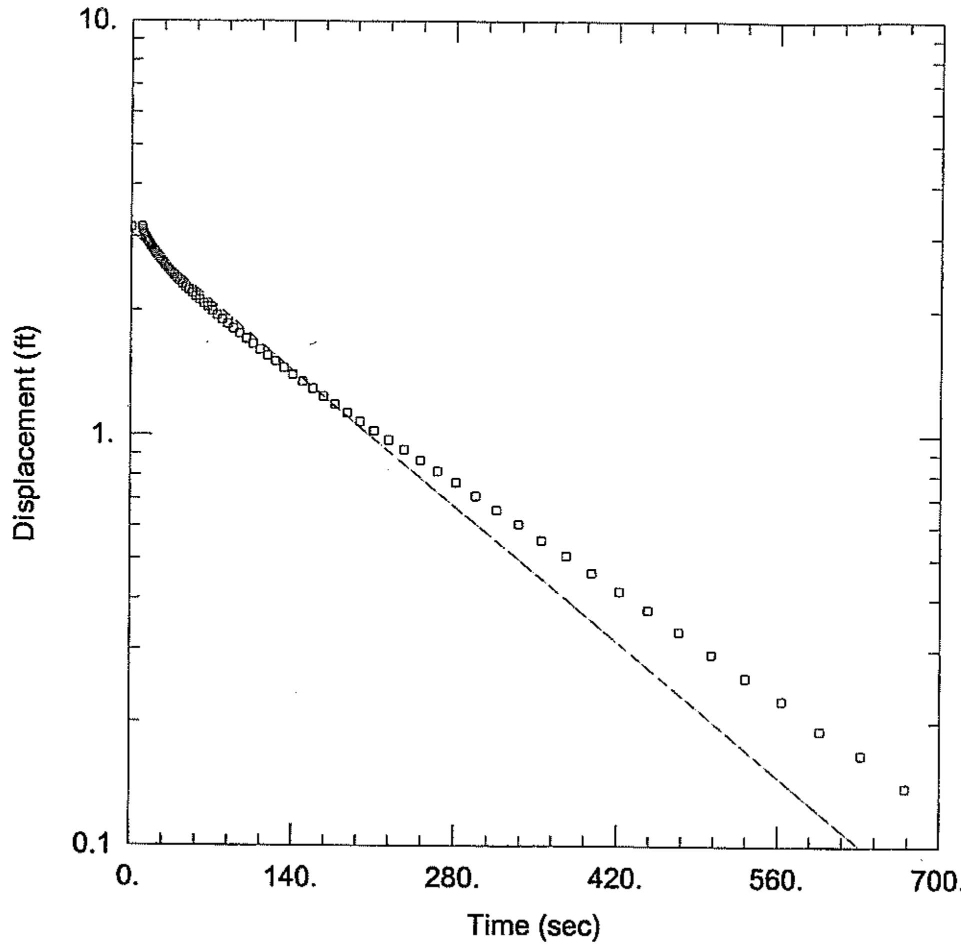
Initial Displacement: 3.342 ft
Total Well Penetration Depth: 20.21 ft
Casing Radius: 0.083 ft

Static Water Column Height: 20.21 ft
Screen Length: 5. ft
Wellbore Radius: 0.16 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0005346 cm/sec y0 = 2.889 ft



WELL TEST ANALYSIS

Data Set: I:\...\MW-14S test2.aqt
Date: 03/23/07 Time: 13:16:31

PROJECT INFORMATION

Company: OBG
Client: Parker Hannifin
Project: 39892.001.104
Location: Clyde NY
Test Well: MW-14S
Test Date: 12/7/06

AQUIFER DATA

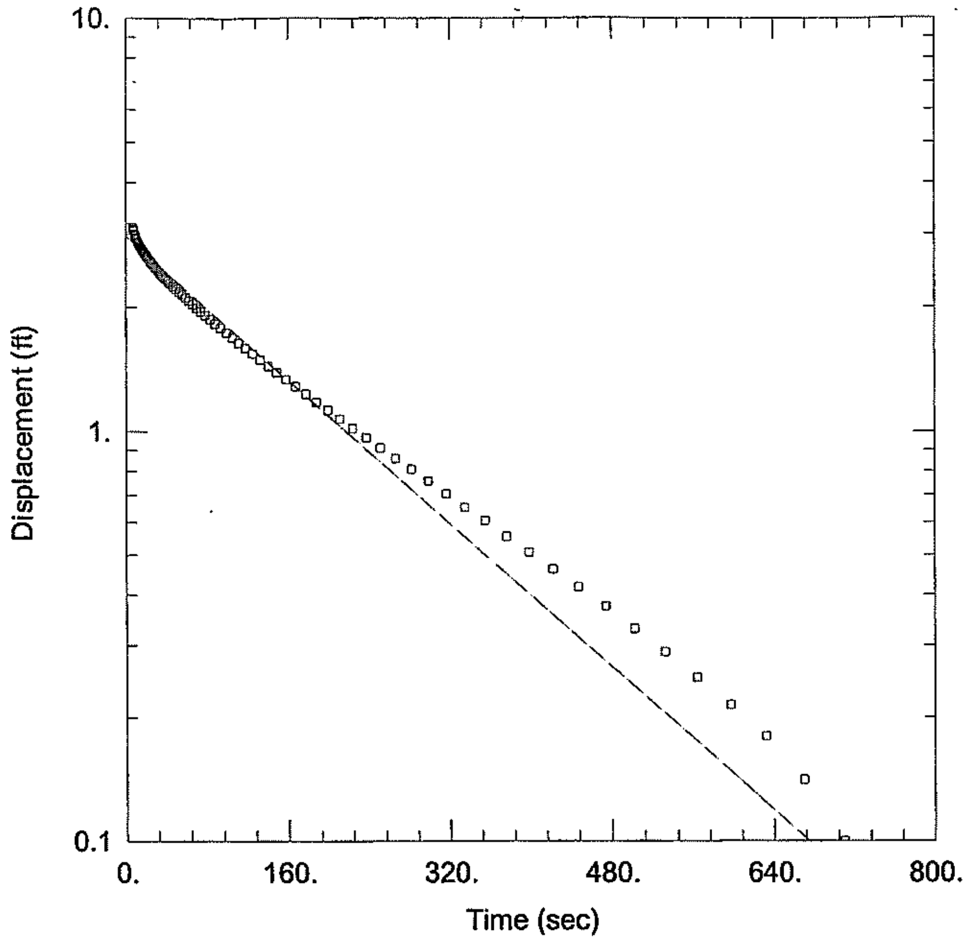
Saturated Thickness: 20.21 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-14S test2)

Initial Displacement: 3.163 ft
Total Well Penetration Depth: 20.21 ft
Casing Radius: 0.083 ft
Static Water Column Height: 20.21 ft
Screen Length: 5. ft
Wellbore Radius: 0.16 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0003905 cm/sec
y0 = 3.069 ft



WELL TEST ANALYSIS

Data Set: I:\...\MW-14S test3.aqt
Date: 03/23/07
Time: 13:16:27

PROJECT INFORMATION

Company: OBG
Client: Parker Hannifin
Project: 39892.001.104
Location: Clyde NY
Test Well: MW-14S
Test Date: 12/7/06

AQUIFER DATA

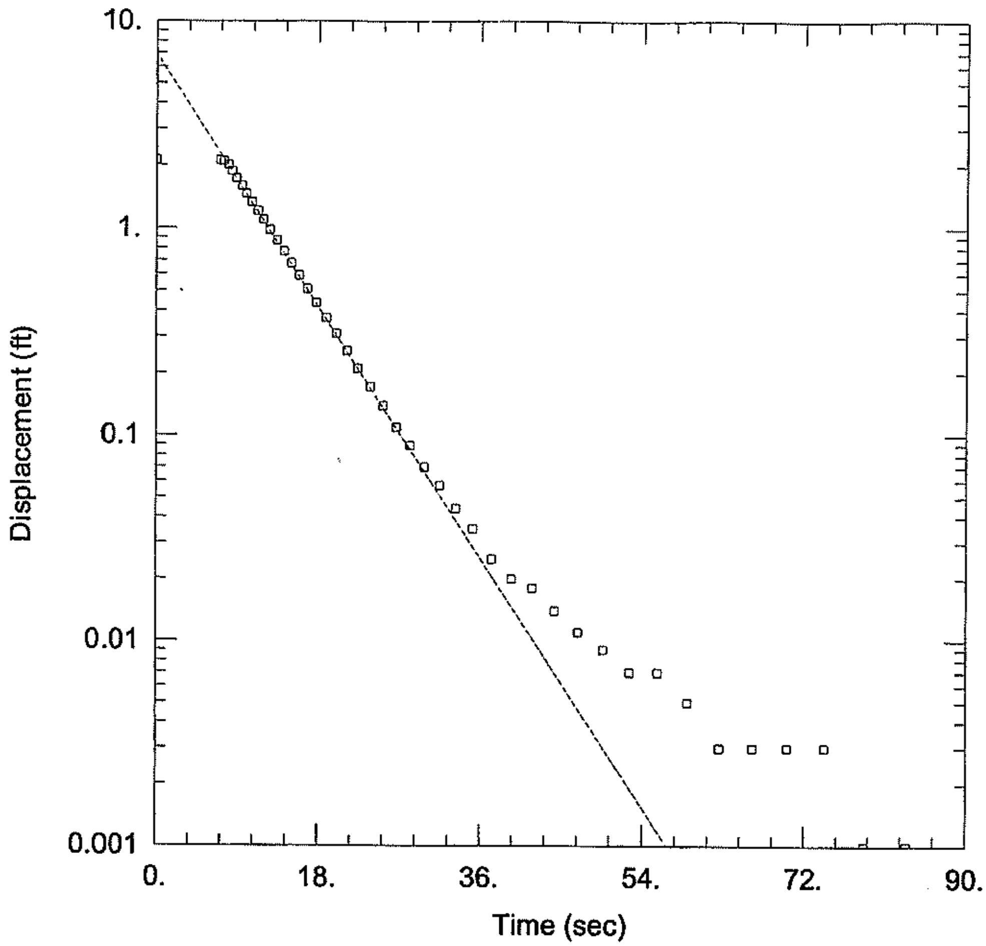
Saturated Thickness: 20.21 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-14S test3)

Initial Displacement: 3.111 ft
Total Well Penetration Depth: 20.21 ft
Casing Radius: 0.083 ft
Static Water Column Height: 20.21 ft
Screen Length: 5. ft
Wellbore Radius: 0.16 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0003619 cm/sec
y0 = 2.97 ft



WELL TEST ANALYSIS

Data Set: I:\...\MW-15S test1.aqt
Date: 03/23/07 Time: 13:16:23

PROJECT INFORMATION

Company: OBG
Client: Parker Hannifin
Project: 39892.001.104
Location: Clyde NY
Test Well: MW-15S
Test Date: 12/7/06

AQUIFER DATA

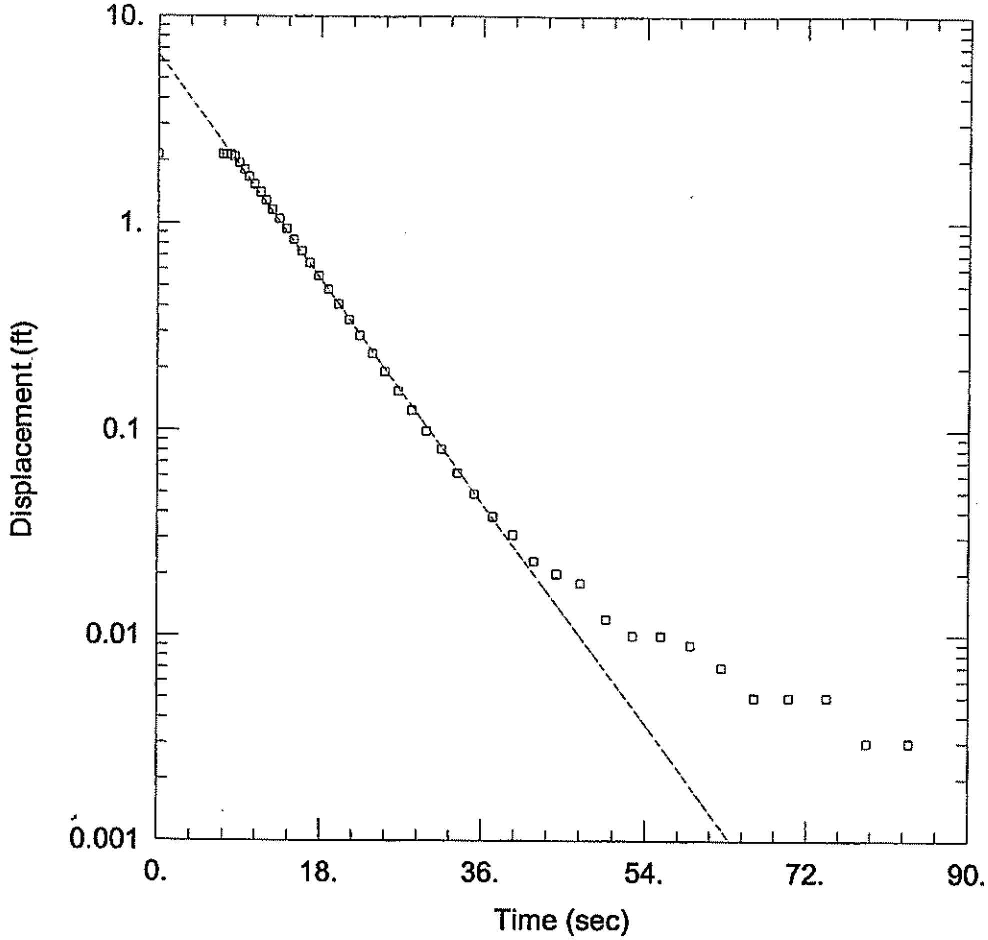
Saturated Thickness: 12.25 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-15S test1)

Initial Displacement: 2.112 ft
Total Well Penetration Depth: 12.25 ft
Casing Radius: 0.083 ft
Static Water Column Height: 12.25 ft
Screen Length: 5. ft
Wellbore Radius: 0.16 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.01028 cm/sec
y0 = 6.869 ft



WELL TEST ANALYSIS

Data Set: I:\...\MW-15S test2.aqt
Date: 03/23/07 Time: 13:16:20

PROJECT INFORMATION

Company: OBG
Client: Parker Hannifin
Project: 39892.001.104
Location: Clyde NY
Test Well: MW-15S
Test Date: 12/7/06

AQUIFER DATA

Saturated Thickness: 12.25 ft
Anisotropy Ratio (Kz/Kr): 1.

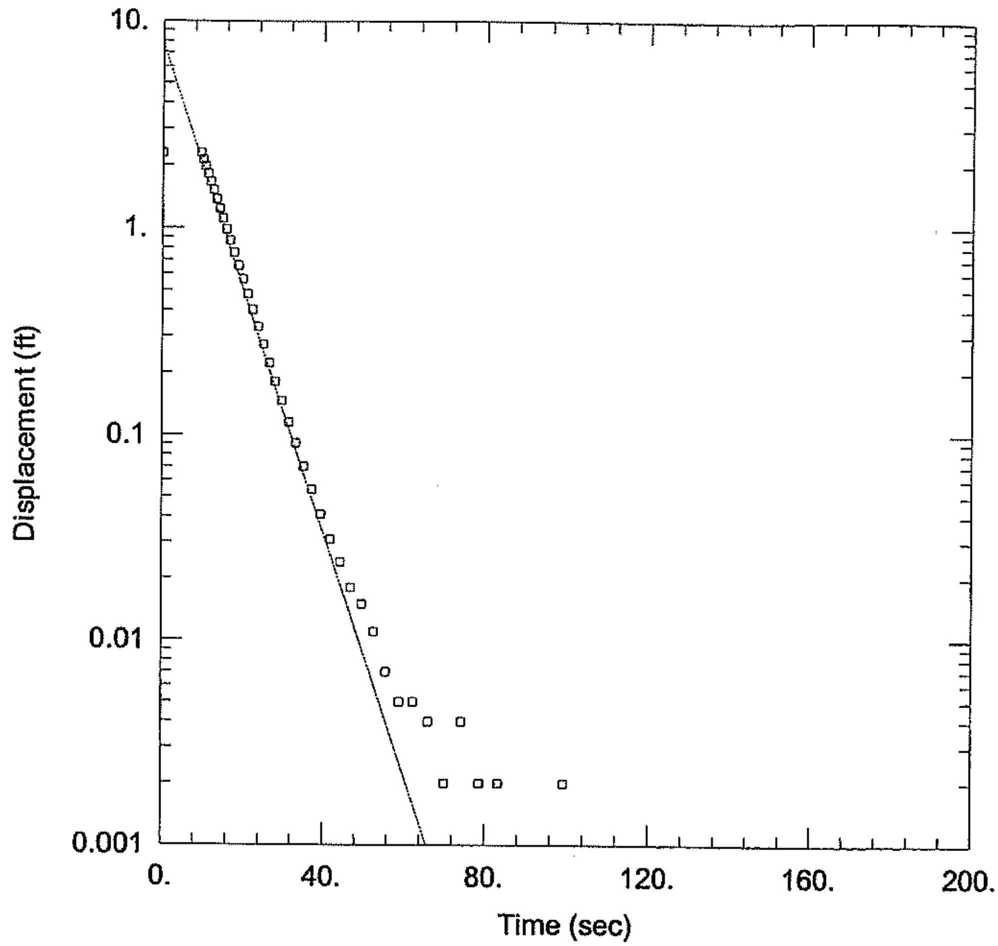
WELL DATA (MW-15S test2)

Initial Displacement: 2.141 ft
Total Well Penetration Depth: 12.25 ft
Casing Radius: 0.083 ft
Static Water Column Height: 12.25 ft
Screen Length: 5. ft
Wellbore Radius: 0.16 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.009148 cm/sec
y0 = 6.537 ft



WELL TEST ANALYSIS

Data Set: I:\...\MW-15S test3.aqt
Date: 03/23/07 Time: 13:16:16

PROJECT INFORMATION

Company: OBG
Client: Parker Hannifin
Project: 39892.001.104
Location: Clyde NY
Test Well: MW-15S
Test Date: 12/7/06

AQUIFER DATA

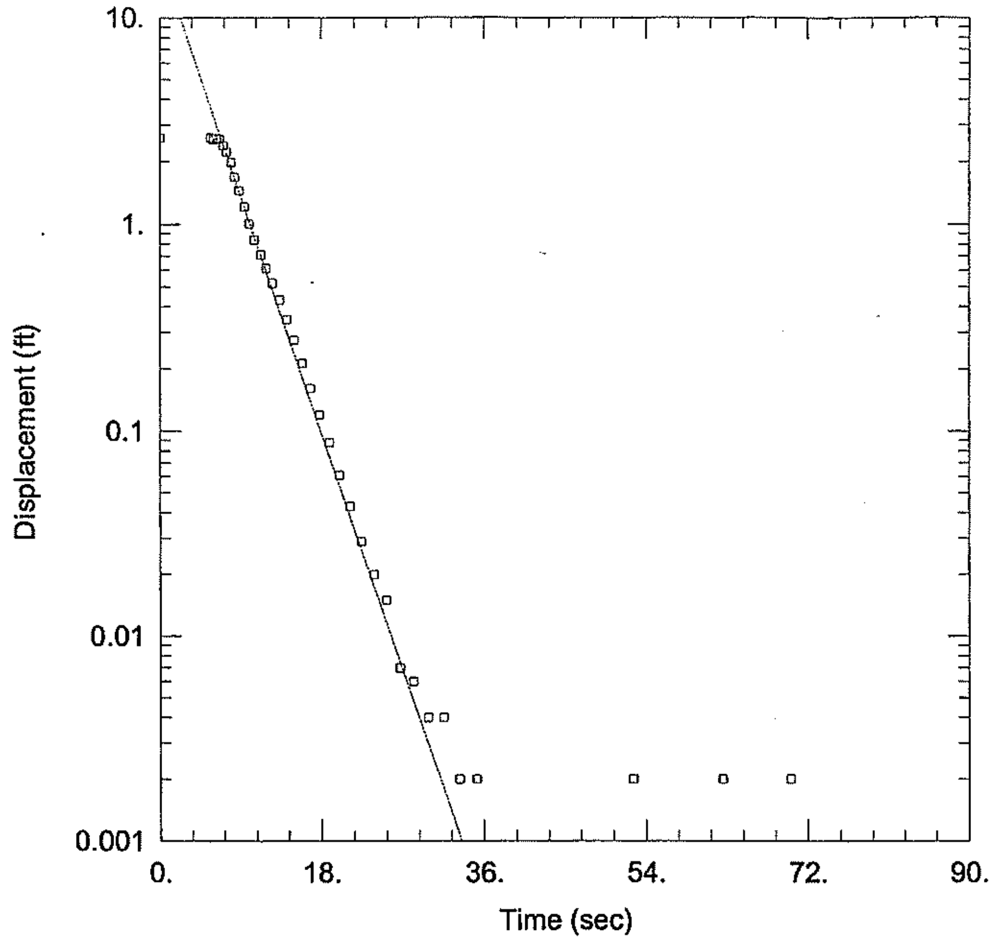
Saturated Thickness: 12.25 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-15S test3)

Initial Displacement: 2.289 ft
Total Well Penetration Depth: 12.25 ft
Casing Radius: 0.083 ft
Static Water Column Height: 12.25 ft
Screen Length: 5. ft
Wellbore Radius: 0.16 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.008984 cm/sec
y0 = 7.716 ft



WELL TEST ANALYSIS

Data Set: I:\...\MW-16S test1.aqt
Date: 03/23/07 Time: 13:16:08

PROJECT INFORMATION

Company: OBG
Client: Parker Hannifin
Project: 39892.001.104
Location: Clyde NY
Test Well: MW-16S
Test Date: 12/8/06

AQUIFER DATA

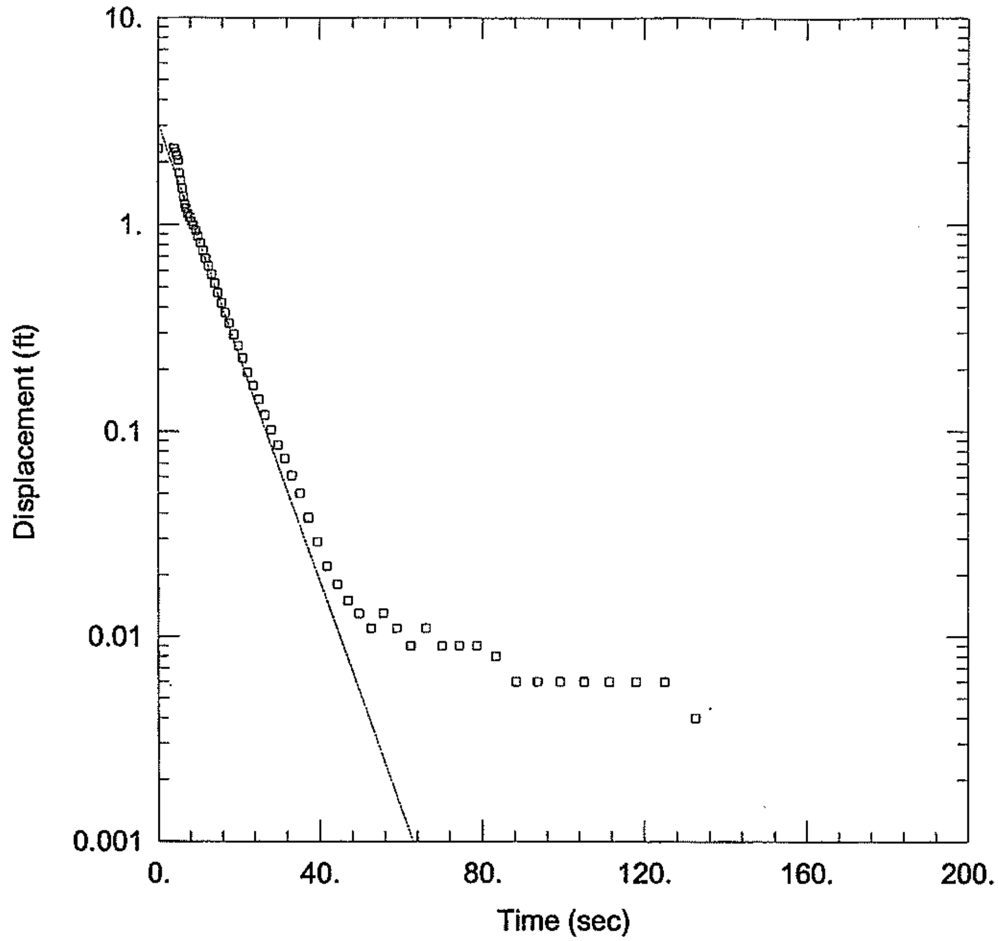
Saturated Thickness: 6.08 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-16S test1)

Initial Displacement: 2.606 ft
Total Well Penetration Depth: 6.08 ft
Casing Radius: 0.083 ft
Static Water Column Height: 6.08 ft
Screen Length: 5. ft
Wellbore Radius: 0.16 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.01688 cm/sec
y0 = 19.72 ft



WELL TEST ANALYSIS

Data Set: I:\...\MW-16S test2.aqt
Date: 03/23/07 Time: 13:16:04

PROJECT INFORMATION

Company: OBG
Client: Parker Hannifin
Project: 39892.001.104
Location: Clyde NY
Test Well: MW-16S
Test Date: 12/8/06

AQUIFER DATA

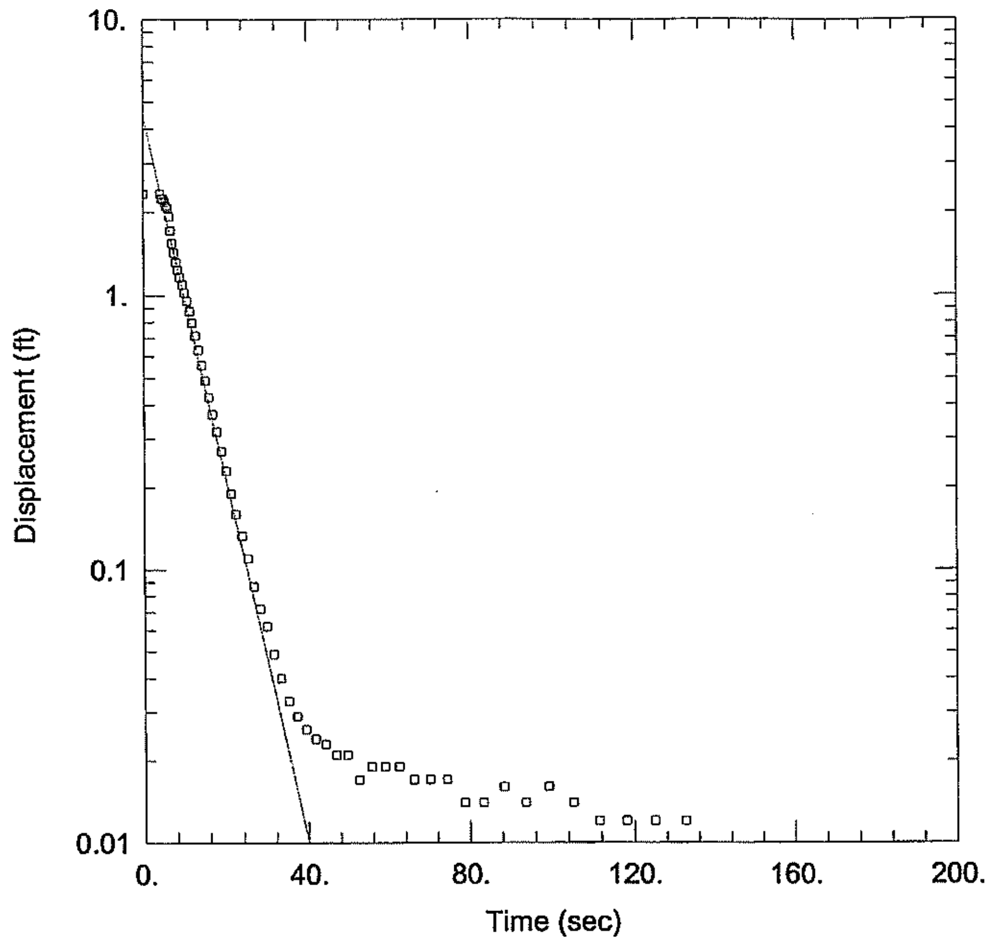
Saturated Thickness: 6.08 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-16S test2)

Initial Displacement: 2.327 ft
Total Well Penetration Depth: 6.08 ft
Casing Radius: 0.083 ft
Static Water Column Height: 6.08 ft
Screen Length: 5. ft
Wellbore Radius: 0.16 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.007301 cm/sec
y0 = 3.087 ft



WELL TEST ANALYSIS

Data Set: I:\...\MW-16S test3.aqt
Date: 03/23/07 Time: 13:15:59

PROJECT INFORMATION

Company: OBG
Client: Parker Hannifin
Project: 39892.001.104
Location: Clyde NY
Test Well: MW-16S
Test Date: 12/8/06

AQUIFER DATA

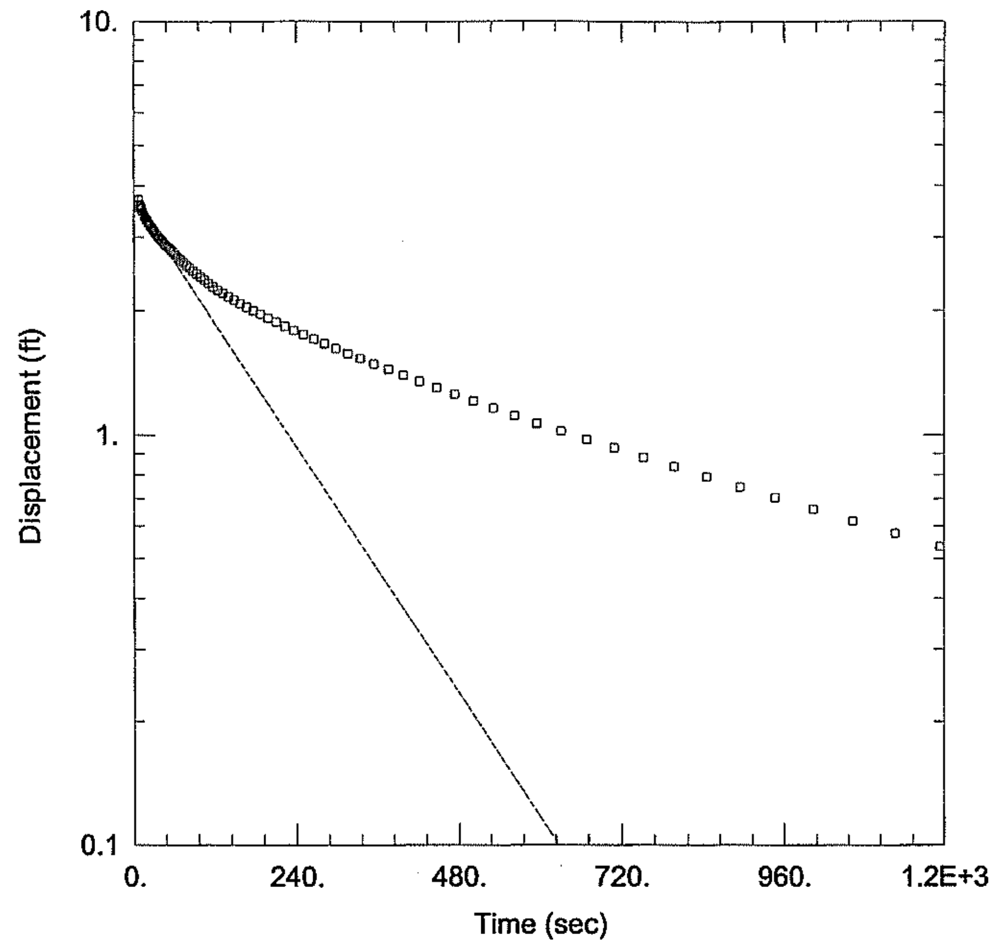
Saturated Thickness: 6.08 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-16S test3)

Initial Displacement: 2.327 ft
Total Well Penetration Depth: 6.08 ft
Casing Radius: 0.083 ft
Static Water Column Height: 6.08 ft
Screen Length: 5. ft
Wellbore Radius: 0.16 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.008719 cm/sec
y0 = 4.489 ft



WELL TEST ANALYSIS

Data Set: I:\...\TMW-1 test1.aqt
Date: 03/23/07 Time: 13:15:50

PROJECT INFORMATION

Company: OBG
Client: Parker Hannifin
Project: 39892.001.104
Location: Clyde NY
Test Well: TMW-1
Test Date: 12/7/06

AQUIFER DATA

Saturated Thickness: 9.2 ft
Anisotropy Ratio (Kz/Kr): 1.

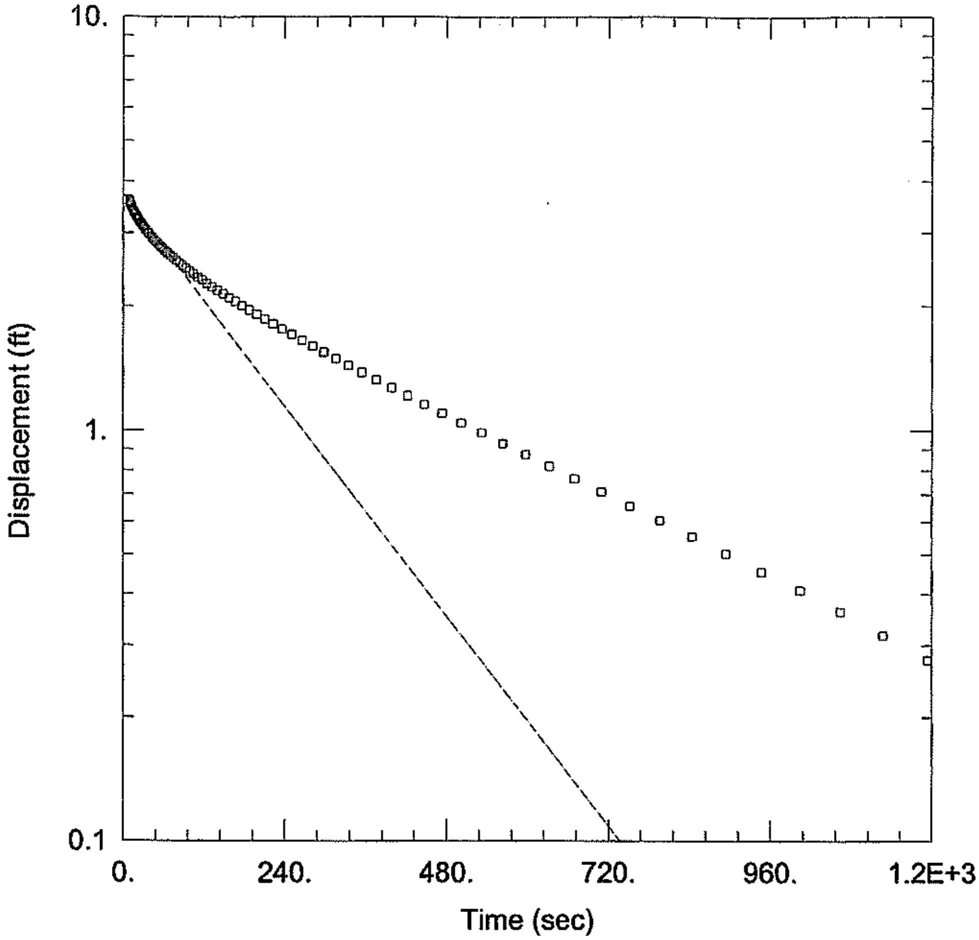
WELL DATA (TMW-1 test1)

Initial Displacement: 3.71 ft
Total Well Penetration Depth: 9.2 ft
Casing Radius: 0.083 ft
Static Water Column Height: 9.2 ft
Screen Length: 2. ft
Wellbore Radius: 0.16 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.0007877 cm/sec
y0 = 3.73 ft



WELL TEST ANALYSIS

Data Set: I:\...\TMW-1 test2.aqt
Date: 03/23/07 Time: 13:17:25

PROJECT INFORMATION

Company: OBG
Client: Parker Hannifin
Project: 39892.001.104
Location: Clyde NY
Test Well: TMW-1
Test Date: 12/7/06

AQUIFER DATA

Saturated Thickness: 9.2 ft Anisotropy Ratio (Kz/Kr): 1.

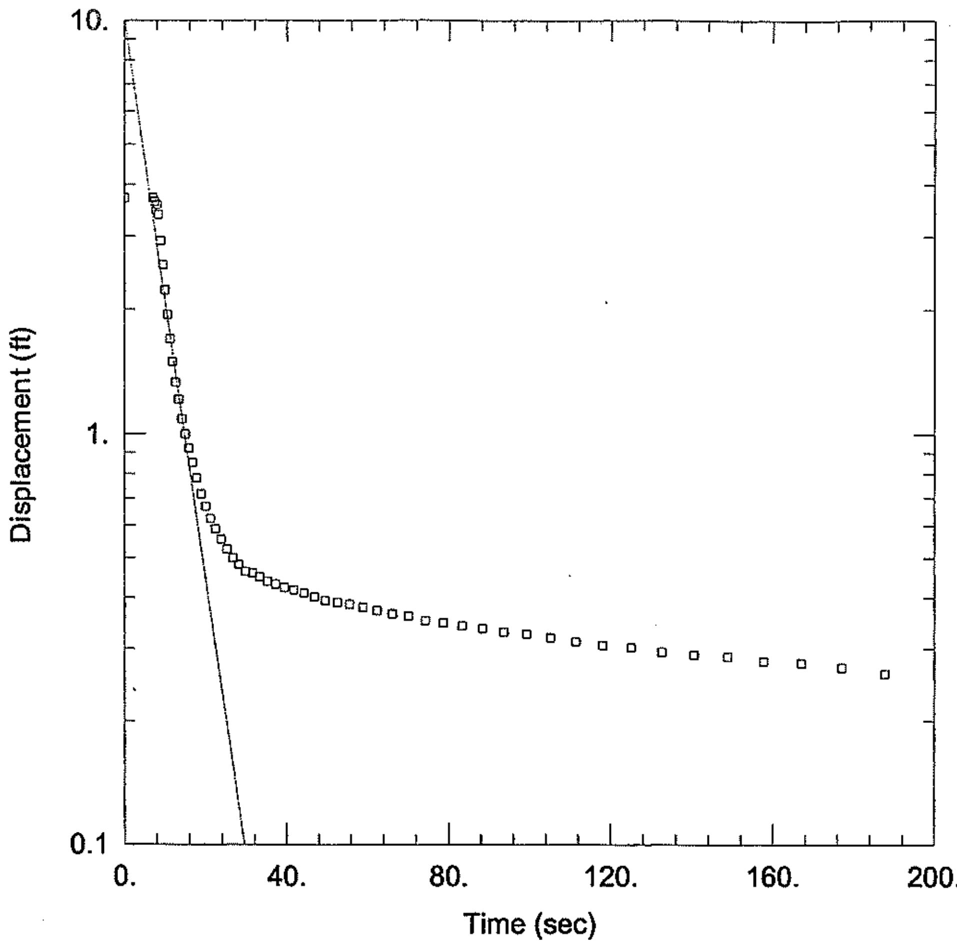
WELL DATA (TMW-1 test2)

Initial Displacement: 3.598 ft
Total Well Penetration Depth: 9.2 ft
Casing Radius: 0.083 ft
Static Water Column Height: 9.2 ft
Screen Length: 2. ft
Wellbore Radius: 0.16 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.000671 cm/sec y0 = 3.716 ft



WELL TEST ANALYSIS

Data Set: I:\...\TMW-2 test1.aqt
Date: 03/23/07 Time: 13:17:22

PROJECT INFORMATION

Company: OBG
Client: Parker Hannifin
Project: 39892.001.104
Location: Clyde NY
Test Well: TMW-2
Test Date: 12/7/06

AQUIFER DATA

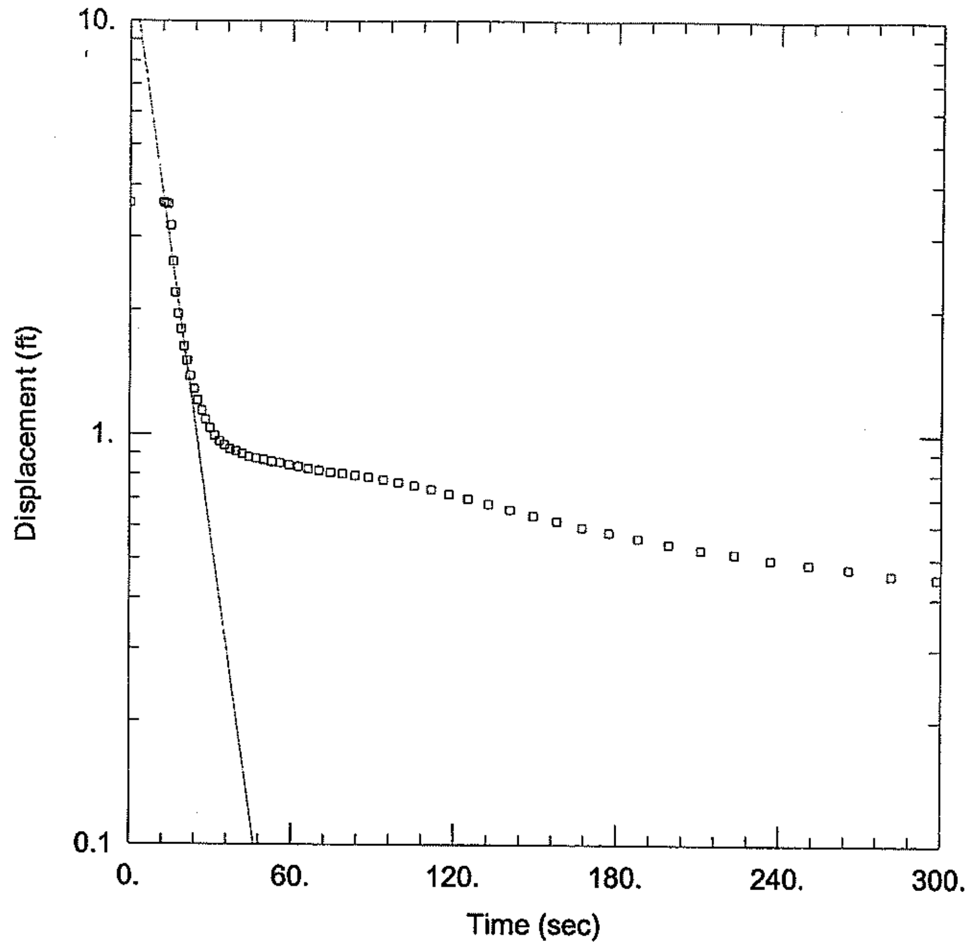
Saturated Thickness: 2.51 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (TMW-2 test1)

Initial Displacement: 3.716 ft
Total Well Penetration Depth: 2.51 ft
Casing Radius: 0.083 ft
Static Water Column Height: 2.51 ft
Screen Length: 2. ft
Wellbore Radius: 0.16 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.01597 cm/sec
y0 = 9.967 ft



WELL TEST ANALYSIS

Data Set: I:\...\TMW-2 test2.aqt
Date: 03/23/07 Time: 13:17:18

PROJECT INFORMATION

Company: OBG
Client: Parker Hannifin
Project: 39892.001.104
Location: Clyde NY
Test Well: TMW-2
Test Date: 12/7/06

AQUIFER DATA

Saturated Thickness: 2.51 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (TMW-2 test2)

Initial Displacement: 3.626 ft
Total Well Penetration Depth: 2.51 ft
Casing Radius: 0.083 ft
Static Water Column Height: 2.51 ft
Screen Length: 2. ft
Wellbore Radius: 0.16 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.01093 cm/sec
y0 = 14.04 ft

APPENDIX D

Soil Sampling
Laboratory Data

Accutest Laboratories

Report of Analysis

Client Sample ID:	SB6B(4-6)111506		
Lab Sample ID:	J46767-1	Date Sampled:	11/15/06
Matrix:	SO - Soil	Date Received:	11/17/06
Method:	SW846 8260B SW846 5035	Percent Solids:	n/a [a]
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	S95340.D	1	11/22/06	NDJ	11/17/06 12:00	n/a	VS3677
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	6.3 g	5.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND J	400	110	ug/kg	
71-43-2	Benzene	ND	40	19	ug/kg	
75-27-4	Bromodichloromethane	ND	200	18	ug/kg	
75-25-2	Bromoform	ND	200	17	ug/kg	
74-83-9	Bromomethane	ND	200	15	ug/kg	
78-93-3	2-Butanone (MEK)	ND	400	110	ug/kg	
75-15-0	Carbon disulfide	ND	200	22	ug/kg	
56-23-5	Carbon tetrachloride	ND	200	38	ug/kg	
108-90-7	Chlorobenzene	ND	200	17	ug/kg	
75-00-3	Chloroethane	ND	200	69	ug/kg	
67-66-3	Chloroform	ND	200	23	ug/kg	
74-87-3	Chloromethane	ND	200	18	ug/kg	
124-48-1	Dibromochloromethane	ND	200	22	ug/kg	
75-34-3	1,1-Dichloroethane	ND	200	19	ug/kg	
107-06-2	1,2-Dichloroethane	ND	40	22	ug/kg	
75-35-4	1,1-Dichloroethene	ND	200	27	ug/kg	
156-59-2	cis-1,2-Dichloroethene	83.0	200	27	ug/kg	J
156-60-5	trans-1,2-Dichloroethene	ND	200	27	ug/kg	
78-87-5	1,2-Dichloropropane	ND	200	22	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	200	16	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	200	16	ug/kg	
100-41-4	Ethylbenzene	ND	40	18	ug/kg	
591-78-6	2-Hexanone	ND	200	54	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	200	79	ug/kg	
75-09-2	Methylene chloride	ND	200	27	ug/kg	
100-42-5	Styrene	ND	200	13	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	200	23	ug/kg	
127-18-4	Tetrachloroethene	ND	200	33	ug/kg	
108-88-3	Toluene	71.5	40	22	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	200	23	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	200	21	ug/kg	
79-01-6	Trichloroethene	ND	200	21	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB6B(4-6)111506		
Lab Sample ID:	J46767-1	Date Sampled:	11/15/06
Matrix:	SO - Soil	Date Received:	11/17/06
Method:	SW846 8260B SW846 5035	Percent Solids:	n/a [a]
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND J	200	26	ug/kg	
1330-20-7	Xylene (total)	ND ↓	79	20	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		70-120%
17060-07-0	1,2-Dichloroethane-D4	111%		61-133%
2037-26-5	Toluene-D8	105%		75-123%
460-00-4	4-Bromofluorobenzene	117%		65-142%

(a) Percent solids not analyzed due to sample matrix. Results reported on wet weight basis.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

APPENDIX E

Ground Water Sampling
Laboratory Data

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-EMW-2-113006		
Lab Sample ID:	J47958-6	Date Sampled:	11/30/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	D120645.D	1	12/06/06	YL	n/a	n/a	VD4809
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0 R	4.6	ug/l	
71-43-2	Benzene	0.37	1.0	0.37	ug/l	J
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	1.0	0.52	ug/l	
74-83-9	Bromomethane	ND	1.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0 R	1.4	ug/l	
75-15-0	Carbon disulfide	ND	1.0	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.74	ug/l	
75-00-3	Chloroethane	ND	1.0	0.65	ug/l	
67-66-3	Chloroform	ND	1.0	0.18	ug/l	
74-87-3	Chloromethane	ND	1.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	1.1	1.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	1.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.15	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.16	ug/l	

ND = Not detected   MDL - Method Detection Limit   J = Indicates an estimated value
RL = Reporting Limit   B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range   N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-EMW-2-113006			
Lab Sample ID:	J47958-6		Date Sampled:	11/30/06
Matrix:	AQ - Ground Water		Date Received:	12/02/06
Method:	SW846 8260B		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	5.7	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	0.57	1.0	0.34	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		77-121%
17060-07-0	1,2-Dichloroethane-D4	110%		65-133%
2037-26-5	Toluene-D8	96%		80-117%
460-00-4	4-Bromofluorobenzene	107%		79-124%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-EMW-2-113006		
Lab Sample ID:	J47958-6	Date Sampled:	11/30/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
Method:	SW846 8015	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33490.D	1	12/08/06	HSC	n/a	n/a	GII1676
Run #2	II33491.D	2.5	12/08/06	HSC	n/a	n/a	GII1676

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	1440	0.10	0.066	ug/l	
74-84-0	Ethane	340 [a]	0.25	0.14	ug/l	
74-85-1	Ethene	36.4	0.10	0.075	ug/l	

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-EMW-2-113006		
Lab Sample ID:	J47958-6	Date Sampled:	11/30/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	65600	10000	ug/l	1	12/18/06	12/19/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18522
(2) Prep QC Batch: MP37272

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-EMW-2-113006			
Lab Sample ID:	J47958-6		Date Sampled:	11/30/06
Matrix:	AQ - Ground Water		Date Received:	12/02/06
			Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	559	13	mg/l	1	12/14/06	ST	EPA 310.1
Chloride	108	2.0	mg/l	1	12/28/06 01:39	JH	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	< 0.11	0.11	mg/l	1	12/21/06 15:04	NR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	12/21/06 15:04	NR	EPA 353.2/LACHAT
Nitrogen, Nitrite [b]	< 0.010	0.010	mg/l	1	12/02/06 14:00	HF	SM19 4500NO2B
Sulfate	11.8	10	mg/l	1	12/28/06 01:39	JH	EPA 300/SW846 9056
Sulfide	< 2.0	2.0	mg/l	1	12/06/06	ST	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)
(b) Analysis done out of holding time.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-EMW-2-113006			
Lab Sample ID:	J47958-6F		Date Sampled:	11/30/06
Matrix:	AQ - Groundwater Filtered		Date Received:	12/02/06
			Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	4.8	1.0	mg/l	1	12/26/06 18:41	MO	EPA415.1/SW8469060M

RL = Reporting Limit

Acculest Laboratories

Report of Analysis

Client Sample ID:	GW-EMW-3-120106			
Lab Sample ID:	J47958-8		Date Sampled:	12/01/06
Matrix:	AQ - Ground Water		Date Received:	12/02/06
Method:	SW846 8260B		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	D120647.D	1	12/06/06	YL	n/a	n/a	VD4809
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0 R	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	1.0	0.52	ug/l	
74-83-9	Bromomethane	ND	1.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0 R	1.4	ug/l	
75-15-0	Carbon disulfide	ND	1.0	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.74	ug/l	
75-00-3	Chloroethane	ND	1.0	0.65	ug/l	
67-66-3	Chloroform	ND	1.0	0.18	ug/l	
74-87-3	Chloromethane	ND	1.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	1.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.15	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.16	ug/l	

ND = Not detected   MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-EMW-3-120106		
Lab Sample ID:	J47958-8	Date Sampled:	12/01/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		77-121%
17060-07-0	1,2-Dichloroethane-D4	112%		65-133%
2037-26-5	Toluene-D8	97%		80-117%
460-00-4	4-Bromofluorobenzene	109%		79-124%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-EMW-3-120106		
Lab Sample ID:	J47958-8	Date Sampled:	12/01/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
Method:	SW846 8015	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33493.D	1	12/08/06	HSC	n/a	n/a	GII1676
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	598	0.10	0.066	ug/l	
74-84-0	Ethane	0.56	0.10	0.056	ug/l	
74-85-1	Ethene	ND	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-EMW-3-120106		
Lab Sample ID:	J47958-8	Date Sampled:	12/01/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	30900	10000	ug/l	1	12/18/06	12/19/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18522
(2) Prep QC Batch: MP37272

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-EMW-3-120106		
Lab Sample ID:	J47958-8	Date Sampled:	12/01/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	453	13	mg/l	1	12/14/06	ST	EPA 310.1
Chloride	38.3	2.0	mg/l	1	12/28/06 02:15	JH	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	0.66	0.11	mg/l	1	12/21/06 15:08	NR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.66	0.10	mg/l	1	12/21/06 15:08	NR	EPA 353.2/LACHAT
Nitrogen, Nitrite [b]	<0.010	0.010	mg/l	1	12/02/06 14:00	HF	SM19 4500NO2B
Sulfate	<10	10	mg/l	1	12/28/06 02:15	JH	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	12/06/06	ST	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)
(b) Analysis done out of holding time.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-EMW-3-120106			
Lab Sample ID:	J47958-8F		Date Sampled:	12/01/06
Matrix:	AQ - Groundwater Filtered		Date Received:	12/02/06
			Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	3.6	1.0	mg/l	1	12/26/06 19:18	MO	EPA415.1/SW8469060M

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-EMW-4-120606			
Lab Sample ID:	J48443-6		Date Sampled:	12/06/06
Matrix:	AQ - Ground Water		Date Received:	12/07/06
Method:	SW846 8260B		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A45519.D	1	12/18/06	PWC	n/a	n/a	V1A1947
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	1.0	0.52	ug/l	
74-83-9	Bromomethane	ND	1.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	1.4	ug/l	
75-15-0	Carbon disulfide	ND	1.0 J	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.74	ug/l	
75-00-3	Chloroethane	1.4	1.0	0.65	ug/l	
67-66-3	Chloroform	ND	1.0	0.18	ug/l	
74-87-3	Chloromethane	ND	1.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	0.71	1.0	0.089	ug/l	J
107-06-2	1,2-Dichloroethane	ND	1.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	1.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.15	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.16	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-EMW-4-120606		
Lab Sample ID:	J48443-6	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	2.2	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		77-121%
17060-07-0	1,2-Dichloroethane-D4	125%		65-133%
2037-26-5	Toluene-D8	94%		80-117%
460-00-4	4-Bromofluorobenzene	89%		79-124%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-EMW-4-120606		
Lab Sample ID:	J48443-6	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
Method:	SW846 8015	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33583.D	1	12/13/06	HSC	n/a	n/a	GII1679
Run #2	II33584.D	5	12/13/06	HSC	n/a	n/a	GII1679

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	5140 [a]	0.50	0.33	ug/l	
74-84-0	Ethane	226	0.10	0.056	ug/l	
74-85-1	Ethene	ND	0.10	0.075	ug/l	

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-EMW-4-120606		
Lab Sample ID:	J48443-6	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	59200	10000	ug/l	1	12/26/06	12/26/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18554
(2) Prep QC Batch: MP37400

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-EMW-4-120606		
Lab Sample ID:	J48443-6	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	425	17	mg/l	1	12/20/06	JA	EPA 310.1
Chloride	70.9	2.0	mg/l	1	01/03/07 01:37	JH	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	< 0.11	0.11	mg/l	1	12/30/06 13:40	MR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	12/30/06 13:40	MR	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	12/07/06 18:00	MET	SM19 4500NO2B
Sulfate	< 10	10	mg/l	1	01/03/07 01:37	JH	EPA 300/SW846 9056
Sulfide	< 2.0	2.0	mg/l	1	12/12/06	JA	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Page 1 of 1

3.12

3

Client Sample ID:	GW-EMW-4-120606		
Lab Sample ID:	J48443-6F	Date Sampled:	12/06/06
Matrix:	AQ - Groundwater Filtered	Date Received:	12/07/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	5.6	1.0	mg/l	1	12/29/06 01:38	ESJ	EPA415.1/SW8469060M

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-EMW-5-120106		
Lab Sample ID:	J47958-7	Date Sampled:	12/01/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	D120646.D	1	12/06/06	YL	n/a	n/a	VD4809
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0 R	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	1.0	0.52	ug/l	
74-83-9	Bromomethane	ND	1.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0 R	1.4	ug/l	
75-15-0	Carbon disulfide	ND	1.0	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.74	ug/l	
75-00-3	Chloroethane	ND	1.0	0.65	ug/l	
67-66-3	Chloroform	ND	1.0	0.18	ug/l	
74-87-3	Chloromethane	ND	1.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	1.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.15	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.16	ug/l	

ND = Not detected   MDL - Method Detection Limit   J = Indicates an estimated value
RL = Reporting Limit   B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range   N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-EMW-5-120106		
Lab Sample ID:	J47958-7	Date Sampled:	12/01/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		77-121%
17060-07-0	1,2-Dichloroethane-D4	113%		65-133%
2037-26-5	Toluene-D8	96%		80-117%
460-00-4	4-Bromofluorobenzene	108%		79-124%

ND = Not detected   MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	GW-EMW-5-120106		
Lab Sample ID:	J47958-7	Date Sampled:	12/01/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
Method:	SW846 8015	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33492.D	1	12/08/06	HSC	n/a	n/a	GII1676
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	1140	0.10	0.066	ug/l	
74-84-0	Ethane	0.25	0.10	0.056	ug/l	
74-85-1	Ethene	ND	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-EMW-5-120106		
Lab Sample ID:	J47958-7	Date Sampled:	12/01/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	55000	10000	ug/l	1	12/18/06	12/19/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18522
(2) Prep QC Batch: MP37272

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-EMW-5-120106		
Lab Sample ID:	J47958-7	Date Sampled:	12/01/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	477	13	mg/l	1	12/14/06	ST	EPA 310.1
Chloride	77.2	2.0	mg/l	1	12/28/06 01:57	JH	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	< 0.11	0.11	mg/l	1	12/21/06 15:07	NR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	12/21/06 15:07	NR	EPA 353.2/LACHAT
Nitrogen, Nitrite [b]	< 0.010	0.010	mg/l	1	12/02/06 14:00	HF	SM19 4500NO2B
Sulfate	< 10	10	mg/l	1	12/28/06 01:57	JH	EPA 300/SW846 9056
Sulfide	< 2.0	2.0	mg/l	1	12/06/06	ST	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)
(b) Analysis done out of holding time.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-EMW-5-120106			
Lab Sample ID:	J47958-7F		Date Sampled:	12/01/06
Matrix:	AQ - Groundwater Filtered		Date Received:	12/02/06
			Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	< 1.0	1.0	mg/l	1	12/26/06 19:10	MO	EPA415.1/SW8469060M

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-1S-112906		
Lab Sample ID:	J47796-2	Date Sampled:	11/29/06
Matrix:	AQ - Ground Water	Date Received:	12/01/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	D120653.D	25	12/06/06	YL	n/a	n/a	VD4809
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	~~ND~~	130 R	120	ug/l	
71-43-2	Benzene	ND	25	9.3	ug/l	
75-27-4	Bromodichloromethane	ND	25	3.4	ug/l	
75-25-2	Bromoform	ND	25	13	ug/l	
74-83-9	Bromomethane	ND	25	9.6	ug/l	
78-93-3	2-Butanone (MEK)	~~ND~~	130 R	36	ug/l	
75-15-0	Carbon disulfide	ND	25	9.5	ug/l	
56-23-5	Carbon tetrachloride	ND	25	13	ug/l	
108-90-7	Chlorobenzene	ND	25	18	ug/l	
75-00-3	Chloroethane	ND	25	16	ug/l	
67-66-3	Chloroform	ND	25	4.6	ug/l	
74-87-3	Chloromethane	ND	25	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	25	4.2	ug/l	
75-34-3	1,1-Dichloroethane	ND	25	2.2	ug/l	
107-06-2	1,2-Dichloroethane	ND	25	14	ug/l	
75-35-4	1,1-Dichloroethene	ND	25	12	ug/l	
156-59-2	cis-1,2-Dichloroethene	3690	25	4.5	ug/l	
156-60-5	trans-1,2-Dichloroethene	32.4	25	4.6	ug/l	
78-87-5	1,2-Dichloropropane	ND	25	13	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	25	14	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	25	3.8	ug/l	
100-41-4	Ethylbenzene	ND	25	11	ug/l	
591-78-6	2-Hexanone	ND	130	8.8	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	130	13	ug/l	
75-09-2	Methylene chloride	ND	50	13	ug/l	
100-42-5	Styrene	ND	25	1.7	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	25	2.7	ug/l	
127-18-4	Tetrachloroethene	11.0	25	9.7	ug/l	J
108-88-3	Toluene	ND	25	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	25	2.4	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	25	3.8	ug/l	
79-01-6	Trichloroethene	1110	25	4.0	ug/l	

ND = Not detected MDL - Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-1S-112906		
Lab Sample ID:	J47796-2	**Date Sampled:**	11/29/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	147	25	19	ug/l	
1330-20-7	Xylene (total)	ND	25	8.6	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		77-121%
17060-07-0	1,2-Dichloroethane-D4	115%		65-133%
2037-26-5	Toluene-D8	96%		80-117%
460-00-4	4-Bromofluorobenzene	108%		79-124%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-1S-112906		
Lab Sample ID:	J47796-2	**Date Sampled:**	11/29/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
Method:	SW846 8015	**Percent Solids:**	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33499.D	1	12/08/06	HSC	n/a	n/a	GII1676
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	6.88	0.10	0.066	ug/l	
74-84-0	Ethane	7.69	0.10	0.056	ug/l	
74-85-1	Ethene	0.38	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-1S-112906		
Lab Sample ID:	J47796-2	**Date Sampled:**	11/29/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Sodium	103000	20000	ug/l	2	12/18/06	12/19/06 LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18529
(2) Prep QC Batch: MP37272

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-1S-112906		
Lab Sample ID:	J47796-2	**Date Sampled:**	11/29/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	374	13	mg/l	1	12/12/06	ST	EPA 310.1
Chloride	182	2.0	mg/l	1	12/21/06 01:32	JH	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	<0.11	0.11	mg/l	1	12/21/06 14:51	NR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	<0.10	0.10	mg/l	1	12/21/06 14:51	NR	EPA 353.2/LACHAT
Nitrogen, Nitrite	<0.010	0.010	mg/l	1	12/01/06 15:50	ST	SM19 4500NO2B
Sulfate	34.9	2.0	mg/l	1	12/21/06 01:32	JH	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	12/06/06	ST	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-1S-112906		
Lab Sample ID:	J47796-2F	**Date Sampled:**	11/29/06
Matrix:	AQ - Groundwater Filtered	**Date Received:**	12/01/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	< 1.0	1.0 J	mg/l	1	12/22/06 00:14	ESJ	EPA415.1/SW8469060M

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-X-1-112906		
Lab Sample ID:	J47796-7	**Date Sampled:**	11/29/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A45181.D	10	12/08/06	PWC	n/a	n/a	V1A1932
Run #2	1A45182.D	50	12/08/06	PWC	n/a	n/a	V1A1932

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	46	ug/l	
71-43-2	Benzene	ND	10	3.7	ug/l	
75-27-4	Bromodichloromethane	ND	10	1.4	ug/l	
75-25-2	Bromoform	ND	10	5.2	ug/l	
74-83-9	Bromomethane	ND	10	3.9	ug/l	
78-93-3	2-Butanone (MEK)	~~ND~~	~~50~~ - R	14	ug/l	
75-15-0	Carbon disulfide	ND	10	3.8	ug/l	
56-23-5	Carbon tetrachloride	ND	10	5.3	ug/l	
108-90-7	Chlorobenzene	ND	10	7.4	ug/l	
75-00-3	Chloroethane	ND	10	6.5	ug/l	
67-66-3	Chloroform	ND	10	1.8	ug/l	
74-87-3	Chloromethane	ND	10	2.0	ug/l	
124-48-1	Dibromochloromethane	ND	10	1.7	ug/l	
75-34-3	1,1-Dichloroethane	ND	10	0.89	ug/l	
107-06-2	1,2-Dichloroethane	ND	10	5.7	ug/l	
75-35-4	1,1-Dichloroethene	6.9	10	4.9	ug/l	J
156-59-2	cis-1,2-Dichloroethene	3240 [a]	50	8.9	ug/l	
156-60-5	trans-1,2-Dichloroethene	34.2	10	1.8	ug/l	
78-87-5	1,2-Dichloropropane	ND	10	5.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	10	5.6	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	10	1.5	ug/l	
100-41-4	Ethylbenzene	ND	10	4.4	ug/l	
591-78-6	2-Hexanone	ND	50	3.5	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	50	5.0	ug/l	
75-09-2	Methylene chloride	ND	20	5.3	ug/l	
100-42-5	Styrene	ND	10	0.69	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	10	1.1	ug/l	
127-18-4	Tetrachloroethene	10.6	10	3.9	ug/l	
108-88-3	Toluene	ND	10	4.1	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	10	0.94	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	10	1.5	ug/l	
79-01-6	Trichloroethene	988	10	1.6	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-X-1-112906		
Lab Sample ID:	J47796-7	**Date Sampled:**	11/29/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	155	10	7.7	ug/l	
1330-20-7	Xylene (total)	ND	10	3.4	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%	97%	77-121%
17060-07-0	1,2-Dichloroethane-D4	106%	108%	65-133%
2037-26-5	Toluene-D8	98%	98%	80-117%
460-00-4	4-Bromofluorobenzene	89%	90%	79-124%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-X-1-112906		
Lab Sample ID:	J47796-7	**Date Sampled:**	11/29/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
Method:	SW846 8015	**Percent Solids:**	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33506.D	1	12/08/06	HSC	n/a	n/a	GH1676
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	9.54	0.10	0.066	ug/l	
74-84-0	Ethane	11.0	0.10	0.056	ug/l	
74-85-1	Ethene	0.46	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-X-1-112906		
Lab Sample ID:	J47796-7	**Date Sampled:**	11/29/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	103000	20000	ug/l	2	12/18/06	12/19/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18529
(2) Prep QC Batch: MP37272

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-X-1-112906		
Lab Sample ID:	J47796-7	**Date Sampled:**	11/29/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	460	13	mg/l	1	12/12/06	ST	EPA 310.1
Chloride	182	2.0	mg/l	1	12/21/06 02:46	JH	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	<0.11	0.11	mg/l	1	12/21/06 14:57	NR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	<0.10	0.10	mg/l	1	12/21/06 14:57	NR	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.011	0.010	mg/l	1	12/01/06 14:45	ST	SM19 4500NO2B
Sulfate	35.1	2.0	mg/l	1	12/21/06 02:46	JH	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	12/06/06	ST	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-X-1-112906		
Lab Sample ID:	J47796-7F	**Date Sampled:**	11/29/06
Matrix:	AQ - Groundwater Filtered	**Date Received:**	12/01/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	4.6	1.0 J	mg/l	1	12/22/06 01:19	ESJ	EPA415.1/SW8469060M

RL = Reporting Limit

Raw Data: 1A45518.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-1-120606		
Lab Sample ID:	J48443-5	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A45518.D	1	12/18/06	PWC	n/a	n/a	V1A1947
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	1.0	0.52	ug/l	
74-83-9	Bromomethane	ND	1.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	1.4	ug/l	
75-15-0	Carbon disulfide	ND	1.0 J	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.74	ug/l	
75-00-3	Chloroethane	ND	1.0	0.65	ug/l	
67-66-3	Chloroform	ND	1.0	0.18	ug/l	
74-87-3	Chloromethane	ND	1.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	2.2	1.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	1.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.15	ug/l	
79-01-6	Trichloroethene	0.58	1.0	0.16	ug/l	J

ND = Not detected   MDL - Method Detection Limit   J = Indicates an estimated value
RL = Reporting Limit   B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range   N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-1-120606			
Lab Sample ID:	J48443-5		Date Sampled:	12/06/06
Matrix:	AQ - Ground Water		Date Received:	12/07/06
Method:	SW846 8260B		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	3.3	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		77-121%
17060-07-0	1,2-Dichloroethane-D4	122%		65-133%
2037-26-5	Toluene-D8	97%		80-117%
460-00-4	4-Bromofluorobenzene	88%		79-124%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-1-120606		
Lab Sample ID:	J48443-5	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
Method:	SW846 8015	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33582.D	1	12/13/06	HSC	n/a	n/a	GII1679
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	897	0.10	0.066	ug/l	
74-84-0	Ethane	10.4	0.10	0.056	ug/l	
74-85-1	Ethene	ND	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-1-120606		
Lab Sample ID:	J48443-5	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	21400	10000	ug/l	1	12/26/06	12/26/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18554
(2) Prep QC Batch: MP37400

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-1-120606			
Lab Sample ID:	J48443-5		Date Sampled:	12/06/06
Matrix:	AQ - Ground Water		Date Received:	12/07/06
			Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	275	5.0	mg/l	1	12/20/06	JA	EPA 310.1
Chloride	24.3	2.0	mg/l	1	01/03/07 01:19	JH	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	< 0.11	0.11	mg/l	1	12/30/06 13:39	MR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	12/30/06 13:39	MR	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	12/07/06 18:00	MET	SM19 4500NO2B
Sulfate	12.7	10	mg/l	1	01/03/07 01:19	JH	EPA 300/SW846 9056
Sulfide	< 2.0	2.0	mg/l	1	12/12/06	JA	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-1-120606		
Lab Sample ID:	J48443-5F	Date Sampled:	12/06/06
Matrix:	AQ - Groundwater Filtered	Date Received:	12/07/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	6.4	1.0	mg/l	1	12/29/06 01:31	ESJ	EPA415.1/SW8469060M

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-2S-112906		
Lab Sample ID:	J47796-1	Date Sampled:	11/29/06
Matrix:	AQ - Ground Water	Date Received:	12/01/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	D120652.D	1	12/06/06	YL	n/a	n/a	VD4809
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	1.0	0.52	ug/l	
74-83-9	Bromomethane	ND	1.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0 R	1.4	ug/l	
75-15-0	Carbon disulfide	ND	1.0	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.74	ug/l	
75-00-3	Chloroethane	ND	1.0	0.65	ug/l	
67-66-3	Chloroform	ND	1.0	0.18	ug/l	
74-87-3	Chloromethane	ND	1.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	1.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.15	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.16	ug/l	

ND = Not detected   MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-2S-112906		
Lab Sample ID:	J47796-1	**Date Sampled:**	11/29/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		77-121%
17060-07-0	1,2-Dichloroethane-D4	116%		65-133%
2037-26-5	Toluene-D8	97%		80-117%
460-00-4	4-Bromofluorobenzene	111%		79-124%

ND = Not detected   MDL - Method Detection Limit   J = Indicates an estimated value
RL = Reporting Limit   B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range   N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-2S-112906		
Lab Sample ID:	J47796-1	**Date Sampled:**	11/29/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
Method:	SW846 8015	**Percent Solids:**	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33498.D	1	12/08/06	HSC	n/a	n/a	GII1676
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	206	0.10	0.066	ug/l	
74-84-0	Ethane	ND	0.10	0.056	ug/l	
74-85-1	Ethene	ND	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-2S-112906			
Lab Sample ID:	J47796-1		Date Sampled:	11/29/06
Matrix:	AQ - Ground Water		Date Received:	12/01/06
			Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	61800	10000	ug/l	1	12/18/06	12/19/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18522
(2) Prep QC Batch: MP37272

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-2S-112906		
Lab Sample ID:	J47796-1	**Date Sampled:**	11/29/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	441	5.0	mg/l	1	12/12/06	ST	EPA 310.1
Chloride	21.5	2.0	mg/l	1	12/21/06 01:14	JH	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	0.33	0.11	mg/l	1	12/21/06 14:49	NR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.33	0.10	mg/l	1	12/21/06 14:49	NR	EPA 353.2/LACHAT
Nitrogen, Nitrite	<0.010	0.010	mg/l	1	12/01/06 15:50	ST	SM19 4500NO2B
Sulfate	10.4	2.0	mg/l	1	12/21/06 01:14	JH	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	12/06/06	ST	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-2S-112906		
Lab Sample ID:	J47796-1F	**Date Sampled:**	11/29/06
Matrix:	AQ - Groundwater Filtered	**Date Received:**	12/01/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.2	1.0	mg/l	1	12/22/06 00:06	ESJ	EPA415.1/SW8469060M

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-3S-120506			
Lab Sample ID:	J48302-5		Date Sampled:	12/05/06
Matrix:	AQ - Ground Water		Date Received:	12/06/06
Method:	SW846 8260B		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A45432.D	1	12/15/06	PWC	n/a	n/a	V1A1943
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	1.0	0.52	ug/l	
74-83-9	Bromomethane	ND	1.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0 — R	1.4	ug/l	
75-15-0	Carbon disulfide	ND	1.0	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.74	ug/l	
75-00-3	Chloroethane	ND	1.0	0.65	ug/l	
67-66-3	Chloroform	ND	1.0	0.18	ug/l	
74-87-3	Chloromethane	ND	1.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	1.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.15	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.16	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-3S-120506		
Lab Sample ID:	J48302-5	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		77-121%
17060-07-0	1,2-Dichloroethane-D4	111%		65-133%
2037-26-5	Toluene-D8	96%		80-117%
460-00-4	4-Bromofluorobenzene	86%		79-124%

ND = Not detected   MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-3S-120506		
Lab Sample ID:	J48302-5	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
Method:	SW846 8015	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33620.D	1	12/14/06	HSC	n/a	n/a	GII1680
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	6.12	0.10	0.066	ug/l	
74-84-0	Ethane	ND	0.10	0.056	ug/l	
74-85-1	Ethene	ND	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-3S-120506		
Lab Sample ID:	J48302-5	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	11200	10000	ug/l	1	12/21/06	12/22/06	ND	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18543
(2) Prep QC Batch: MP37346

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-3S-120506		
Lab Sample ID:	J48302-5	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	462	10	mg/l	1	12/19/06	ST	EPA 310.1
Chloride	10.4	2.0	mg/l	1	12/30/06 16:30	VLP	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	0.35	0.11	mg/l	1	12/28/06 19:43	NR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.35	0.10	mg/l	1	12/28/06 19:43	NR	EPA 353.2/LACHAT
Nitrogen, Nitrite	<0.010	0.010	mg/l	1	12/07/06 00:29	MET	SM19 4500NO2B
Sulfate	21.3	10	mg/l	1	12/30/06 16:30	VLP	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	12/11/06	JA	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-3S-120506		
Lab Sample ID:	J48302-5F	Date Sampled:	12/05/06
Matrix:	AQ - Groundwater Filtered	Date Received:	12/06/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.1	1.0	mg/l	1	12/28/06 23:44	ESJ	EPA415.1/SW8469060M

RL = Reporting Limit

Raw Data: 1A45433.D 1A45434.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-3B-120506		
Lab Sample ID:	J48302-6	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A45433.D	1	12/15/06	PWC	n/a	n/a	V1A1943
Run #2	1A45434.D	5	12/15/06	PWC	n/a	n/a	V1A1943

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	1.0	0.52	ug/l	
74-83-9	Bromomethane	ND	1.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0 R	1.4	ug/l	
75-15-0	Carbon disulfide	ND	1.0	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.74	ug/l	
75-00-3	Chloroethane	ND	1.0	0.65	ug/l	
67-66-3	Chloroform	ND	1.0	0.18	ug/l	
74-87-3	Chloromethane	ND	1.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	351 [a]	5.0	0.89	ug/l	
156-60-5	trans-1,2-Dichloroethene	5.9	1.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	1.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	0.48	1.0	0.41	ug/l	J
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.15	ug/l	
79-01-6	Trichloroethene	1.4	1.0	0.16	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-3B-120506		
Lab Sample ID:	J48302-6	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	237 [a]	5.0	3.8	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%	98%	77-121%
17060-07-0	1,2-Dichloroethane-D4	112%	114%	65-133%
2037-26-5	Toluene-D8	97%	97%	80-117%
460-00-4	4-Bromofluorobenzene	85%	86%	79-124%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: II33626.D

Accutest Laboratories

Report of Analysis

Page 1 of 1

3.11

43

Client Sample ID:	GW-MW-3B-120506		
Lab Sample ID:	J48302-6	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
Method:	SW846 8015	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33626.D	1	12/15/06	HSC	n/a	n/a	GII1681
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	24.4	0.10	0.066	ug/l	
74-84-0	Ethane	2.3	0.10	0.056	ug/l	
74-85-1	Ethene	16.2	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-3B-120506		
Lab Sample ID:	J48302-6	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	192000	30000	ug/l	3	12/21/06	12/26/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18554
(2) Prep QC Batch: MP37346

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-3B-120506		
Lab Sample ID:	J48302-6	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	63.4	5.0	mg/l	1	12/19/06	ST	EPA 310.1
Chloride	104	2.0	mg/l	1	12/30/06 16:48	VLP	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	< 0.11	0.11	mg/l	1	12/30/06 12:35	MR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	12/30/06 12:35	MR	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	12/07/06 00:29	MET	SM19 4500NO2B
Sulfate	2090	100	mg/l	10	01/02/07 19:29	JH	EPA 300/SW846 9056
Sulfide	< 2.0	2.0	mg/l	1	12/11/06	JA	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-3B-120506		
Lab Sample ID:	J48302-6F	Date Sampled:	12/05/06
Matrix:	AQ - Groundwater Filtered	Date Received:	12/06/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.1	1.0	mg/l	1	12/28/06 23:54	ESJ	EPA415.1/SW8469060M

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-4S-120506		
Lab Sample ID:	J48302-3	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A45429.D	1	12/15/06	PWC	n/a	n/a	V1A1943
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	1.0	0.52	ug/l	
74-83-9	Bromomethane	ND	1.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	~~ND~~	~~5.0~~ R	1.4	ug/l	
75-15-0	Carbon disulfide	ND	1.0	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.74	ug/l	
75-00-3	Chloroethane	ND	1.0	0.65	ug/l	
67-66-3	Chloroform	ND	1.0	0.18	ug/l	
74-87-3	Chloromethane	ND	1.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	6.3	1.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	1.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.15	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.16	ug/l	

ND = Not detected   MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-4S-120506			
Lab Sample ID:	J48302-3		Date Sampled:	12/05/06
Matrix:	AQ - Ground Water		Date Received:	12/06/06
Method:	SW846 8260B		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	2.3	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		77-121%
17060-07-0	1,2-Dichloroethane-D4	103%		65-133%
2037-26-5	Toluene-D8	95%		80-117%
460-00-4	4-Bromofluorobenzene	85%		79-124%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-4S-120506			
Lab Sample ID:	J48302-3		Date Sampled:	12/05/06
Matrix:	AQ - Ground Water		Date Received:	12/06/06
Method:	SW846 8015		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33618.D	1	12/14/06	HSC	n/a	n/a	GII1680
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	6.43	0.10	0.066	ug/l	
74-84-0	Ethane	0.12	0.10	0.056	ug/l	
74-85-1	Ethene	ND	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-4S-120506		
Lab Sample ID:	J48302-3	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	< 10000	10000	ug/l	1	12/21/06	12/22/06	ND	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18543
(2) Prep QC Batch: MP37346

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-4S-120506		
Lab Sample ID:	J48302-3	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	393	10	mg/l	1	12/19/06	ST	EPA 310.1
Chloride	12.8	2.0	mg/l	1	12/30/06 15:53	VLP	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	< 0.11	0.11	mg/l	1	12/28/06 19:41	NR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	12/28/06 19:41	NR	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	12/07/06 00:29	MET	SM19 4500NO2B
Sulfate	42.2	10	mg/l	1	12/30/06 15:53	VLP	EPA 300/SW846 9056
Sulfide	< 2.0	2.0	mg/l	1	12/10/06	ST	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-4S-120506		
Lab Sample ID:	J48302-3F	Date Sampled:	12/05/06
Matrix:	AQ - Groundwater Filtered	Date Received:	12/06/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	4.3	1.0	mg/l	1	12/28/06 23:27	ESJ	EPA415.1/SW8469060M

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-4B-120506		
Lab Sample ID:	J48302-4	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A45430.D	100	12/15/06	PWC	n/a	n/a	V1A1943
Run #2	1A45431.D	500	12/15/06	PWC	n/a	n/a	V1A1943

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	500	460	ug/l	
71-43-2	Benzene	ND	100	37	ug/l	
75-27-4	Bromodichloromethane	ND	100	14	ug/l	
75-25-2	Bromoform	ND	100	52	ug/l	
74-83-9	Bromomethane	ND	100	39	ug/l	
78-93-3	2-Butanone (MEK)	ND	500 R	140	ug/l	
75-15-0	Carbon disulfide	ND	100	38	ug/l	
56-23-5	Carbon tetrachloride	ND	100	53	ug/l	
108-90-7	Chlorobenzene	ND	100	74	ug/l	
75-00-3	Chloroethane	ND	100	65	ug/l	
67-66-3	Chloroform	ND	100	18	ug/l	
74-87-3	Chloromethane	ND	100	20	ug/l	
124-48-1	Dibromochloromethane	ND	100	17	ug/l	
75-34-3	1,1-Dichloroethane	ND	100	8.9	ug/l	
107-06-2	1,2-Dichloroethane	ND	100	57	ug/l	
75-35-4	1,1-Dichloroethene	ND	100	49	ug/l	
156-59-2	cis-1,2-Dichloroethene	64800 [a]	500	89	ug/l	
156-60-5	trans-1,2-Dichloroethene	130	100	18	ug/l	
78-87-5	1,2-Dichloropropane	ND	100	50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	100	56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	100	15	ug/l	
100-41-4	Ethylbenzene	ND	100	44	ug/l	
591-78-6	2-Hexanone	ND	500	35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	500	50	ug/l	
75-09-2	Methylene chloride	ND	200	53	ug/l	
100-42-5	Styrene	ND	100	6.9	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	100	11	ug/l	
127-18-4	Tetrachloroethene	ND	100	39	ug/l	
108-88-3	Toluene	ND	100	41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	100	9.4	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	100	15	ug/l	
79-01-6	Trichloroethene	2130	100	16	ug/l	

ND = Not detected   MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-4B-120506		
Lab Sample ID:	J48302-4	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	8740	100	77	ug/l	
1330-20-7	Xylene (total)	ND	100	34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%	96%	77-121%
17060-07-0	1,2-Dichloroethane-D4	104%	106%	65-133%
2037-26-5	Toluene-D8	98%	97%	80-117%
460-00-4	4-Bromofluorobenzene	85%	85%	79-124%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-4B-120506		
Lab Sample ID:	J48302-4	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
Method:	SW846 8015	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33619.D	1	12/14/06	HSC	n/a	n/a	GII1680
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	287	0.10	0.066	ug/l	
74-84-0	Ethane	60.0	0.10	0.056	ug/l	
74-85-1	Ethene	163	0.10	0.075	ug/l	

ND = Not detected   MDL - Method Detection Limit   J = Indicates an estimated value
RL = Reporting Limit   B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range   N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-4B-120506			
Lab Sample ID:	J48302-4		Date Sampled:	12/05/06
Matrix:	AQ - Ground Water		Date Received:	12/06/06
			Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	95200	20000	ug/l	2	12/21/06	12/26/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18554
(2) Prep QC Batch: MP37346

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-4B-120506		
Lab Sample ID:	J48302-4	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	361	10	mg/l	1	12/19/06	ST	EPA 310.1
Chloride	187	2.0	mg/l	1	12/30/06 16:11	VLP	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	< 0.11	0.11	mg/l	1	12/28/06 19:42	NR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	12/28/06 19:42	NR	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	12/07/06 00:29	MET	SM19 4500NO2B
Sulfate	1150	50	mg/l	5	01/02/07 19:10	JH	EPA 300/SW846 9056
Sulfide	< 2.0	2.0	mg/l	1	12/11/06	JA	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-4B-120506		
Lab Sample ID:	J48302-4F	Date Sampled:	12/05/06
Matrix:	AQ - Groundwater Filtered	Date Received:	12/06/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.8	1.0	mg/l	1	12/28/06 23:34	ESJ	EPA415.1/SW84690GOM

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-4C-120506		
Lab Sample ID:	J48302-2	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A45428.D	1	12/15/06	PWC	n/a	n/a	V1A1943
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	1.0	0.52	ug/l	
74-83-9	Bromomethane	ND	1.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	1.4	ug/l	R
75-15-0	Carbon disulfide	ND	1.0	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.74	ug/l	
75-00-3	Chloroethane	ND	1.0	0.65	ug/l	
67-66-3	Chloroform	ND	1.0	0.18	ug/l	
74-87-3	Chloromethane	ND	1.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	1.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.15	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.16	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-4C-120506		
Lab Sample ID:	J48302-2	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	92%		77-121%
17060-07-0	1,2-Dichloroethane-D4	98%		65-133%
2037-26-5	Toluene-D8	94%		80-117%
460-00-4	4-Bromofluorobenzene	84%		79-124%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: II33617.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-4C-120506		
Lab Sample ID:	J48302-2	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
Method:	SW846 8015	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33617.D	1	12/14/06	HSC	n/a	n/a	GII1680
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	4.16	0.10	0.066	ug/l	
74-84-0	Ethane	0.12	0.10	0.056	ug/l	
74-85-1	Ethene	ND	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-4C-120506			
Lab Sample ID:	J48302-2		Date Sampled:	12/05/06
Matrix:	AQ - Ground Water		Date Received:	12/06/06
			Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	244000	50000	ug/l	5	12/21/06	12/26/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18554
(2) Prep QC Batch: MP37346

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-4C-120506		
Lab Sample ID:	J48302-2	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	188	25	mg/l	1	12/19/06	ST	EPA 310.1
Chloride	253	2.0	mg/l	1	12/30/06 15:35	VLP	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	< 0.11	0.11	mg/l	1	12/28/06 19:40	NR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	12/28/06 19:40	NR	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	12/07/06 00:29	MET	SM19 4500NO2B
Sulfate	1710	100	mg/l	10	01/02/07 18:52	JH	EPA 300/SW846 9056
Sulfide	< 2.0	2.0	mg/l	1	12/10/06	ST	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-4C-120506		
Lab Sample ID:	J48302-2F	Date Sampled:	12/05/06
Matrix:	AQ - Groundwater Filtered	Date Received:	12/06/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	< 1.0	1.0	mg/l	1	12/28/06 23:20	ESJ	EPA415.1/SW8469060M

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-X-2-120506		
Lab Sample ID:	J48302-7	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A45435.D	1	12/15/06	PWC	n/a	n/a	V1A1943
Run #2 [a]	1A45614.D	1	12/21/06	PWC	n/a	n/a	V1A1952

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	4.6	ug/l	J
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	1.0	0.52	ug/l	
74-83-9	Bromomethane	ND	1.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	~~ND~~	~~5.0~~	1.4	ug/l	R
75-15-0	Carbon disulfide	ND	1.0	0.38	ug/l	J
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.74	ug/l	
75-00-3	Chloroethane	ND	1.0	0.65	ug/l	
67-66-3	Chloroform	ND	1.0	0.18	ug/l	
74-87-3	Chloromethane	ND	1.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	1.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.15	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.16	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-X-2-120506		
Lab Sample ID:	J48302-7	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0 J	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0 ↓	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%	112%	77-121%
17060-07-0	1,2-Dichloroethane-D4	117%	155% b	65-133%
2037-26-5	Toluene-D8	97%	92%	80-117%
460-00-4	4-Bromofluorobenzene	87%	112%	79-124%

(a) Confirmation run.
(b) Outside control limits.

ND = Not detected   MDL - Method Detection Limit   J = Indicates an estimated value
RL = Reporting Limit   B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range   N = Indicates presumptive evidence of a compound

Raw Data: II33628.D

Accutest Laboratories

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3

Report of Analysis

Client Sample ID:	GW-X-2-120506		
Lab Sample ID:	J48302-7	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
Method:	SW846 8015	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33628.D	1	12/15/06	HSC	n/a	n/a	GII1681
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	4.46	0.10 J	0.066	ug/l	
74-84-0	Ethane	0.14	0.10	0.056	ug/l	
74-85-1	Ethene	ND	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-X-2-120506		
Lab Sample ID:	J48302-7	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	239000	50000	ug/l	5	12/21/06	12/26/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18554
(2) Prep QC Batch: MP37346

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-X-2-120506		
Lab Sample ID:	J48302-7	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	159	5.0	mg/l	1	12/19/06	ST	EPA 310.1
Chloride	256	2.0	mg/l	1	12/30/06 17:43	VLP	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	< 0.11	0.11	mg/l	1	12/30/06 12:36	MR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	12/30/06 12:36	MR	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	12/07/06 01:09	MET	SM19 4500NO2B
Sulfate	1790	100	mg/l	10	01/02/07 19:47	JH	EPA 300/SW846 9056
Sulfide	< 2.0	2.0	mg/l	1	12/11/06	JA	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-X-2-120506			
Lab Sample ID:	J48302-7F		Date Sampled:	12/05/06
Matrix:	AQ - Groundwater Filtered		Date Received:	12/06/06
			Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	< 1.0	1.0	mg/l	1	12/29/06 00:04	ESJ	EPA415.1/SW8469060M

RL = Reporting Limit

Raw Data: 1A45393.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-5S-120506		
Lab Sample ID:	J48302-1	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A45393.D	1	12/14/06	PWC	n/a	n/a	V1A1942
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	1.0	0.52	ug/l	
74-83-9	Bromomethane	ND	1.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0 –R	1.4	ug/l	
75-15-0	Carbon disulfide	ND	1.0	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.74	ug/l	
75-00-3	Chloroethane	ND	1.0	0.65	ug/l	
67-66-3	Chloroform	ND	1.0	0.18	ug/l	
74-87-3	Chloromethane	ND	1.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	1.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.15	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.16	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-5S-120506		
Lab Sample ID:	J48302-1	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	88%		77-121%
17060-07-0	1,2-Dichloroethane-D4	92%		65-133%
2037-26-5	Toluene-D8	95%		80-117%
460-00-4	4-Bromofluorobenzene	86%		79-124%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: II33616.D

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Report of Analysis

Client Sample ID:	GW-MW-5S-120506		
Lab Sample ID:	J48302-1	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
Method:	SW846 8015	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33616.D	1	12/14/06	HSC	n/a	n/a	GII1680
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	21.8	0.10	0.066	ug/l	
74-84-0	Ethane	ND	0.10	0.056	ug/l	
74-85-1	Ethene	ND	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-5S-120506		
Lab Sample ID:	J48302-1	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	< 10000	10000	ug/l	1	12/21/06	12/22/06	ND	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18543
(2) Prep QC Batch: MP37346

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-5S-120506		
Lab Sample ID:	J48302-1	Date Sampled:	12/05/06
Matrix:	AQ - Ground Water	Date Received:	12/06/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as $CaCO_3$	739	25	mg/l	1	12/19/06	ST	EPA 310.1
Chloride	< 2.0	2.0	mg/l	1	12/30/06 15:16	VLP	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	< 0.11	0.11	mg/l	1	12/28/06 19:38	NR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	12/28/06 19:38	NR	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	12/07/06 00:29	MET	SM19 4500NO2B
Sulfate	12.3	10	mg/l	1	12/30/06 15:16	VLP	EPA 300/SW846 9056
Sulfide	< 2.0	2.0	mg/l	1	12/10/06	ST	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-5S-120506		
Lab Sample ID:	J48302-1F	Date Sampled:	12/05/06
Matrix:	AQ - Groundwater Filtered	Date Received:	12/06/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.9	1.0	mg/l	1	12/28/06 23:10	ESJ	EPA415.1/SW8469060M

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	GW-MW-5B-120606		
Lab Sample ID:	J48443-7	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A45520.D	1	12/18/06	PWC	n/a	n/a	V1A1947
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	4.7	5.0	4.6	ug/l	J
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	1.0	0.52	ug/l	
74-83-9	Bromomethane	ND	1.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	1.4	ug/l	
75-15-0	Carbon disulfide	ND	1.0 J	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.74	ug/l	
75-00-3	Chloroethane	ND	1.0	0.65	ug/l	
67-66-3	Chloroform	ND	1.0	0.18	ug/l	
74-87-3	Chloromethane	ND	1.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	1.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.15	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.16	ug/l	

ND = Not detected   MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-5B-120606		
Lab Sample ID:	J48443-7	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		77-121%
17060-07-0	1,2-Dichloroethane-D4	109%		65-133%
2037-26-5	Toluene-D8	97%		80-117%
460-00-4	4-Bromofluorobenzene	81%		79-124%

ND = Not detected   MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-5B-120606		
Lab Sample ID:	J48443-7	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
Method:	SW846 8015	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33585.D	1	12/13/06	HSC	n/a	n/a	GII1679
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	6.97	0.10	0.066	ug/l	
74-84-0	Ethane	0.70	0.10	0.056	ug/l	
74-85-1	Ethene	0.35	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-5B-120606			
Lab Sample ID:	J48443-7		Date Sampled:	12/06/06
Matrix:	AQ - Ground Water		Date Received:	12/07/06
			Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	166000	50000	ug/l	5	12/26/06	12/27/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18563
(2) Prep QC Batch: MP37400

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-5B-120606		
Lab Sample ID:	J48443-7	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	105	5.0	mg/l	1	12/20/06	JA	EPA 310.1
Chloride	123	2.0	mg/l	1	01/03/07 01:55	JH	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	< 0.11	0.11	mg/l	1	12/30/06 13:41	MR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	12/30/06 13:41	MR	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	12/07/06 18:00	MET	SM19 4500NO2B
Sulfate	1840	100	mg/l	10	01/03/07 19:07	JH	EPA 300/SW846 9056
Sulfide	< 2.0	2.0	mg/l	1	12/12/06	JA	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-5B-120606			
Lab Sample ID:	J48443-7F		Date Sampled:	12/06/06
Matrix:	AQ - Groundwater Filtered		Date Received:	12/07/06
			Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	< 1.0	1.0	mg/l	1	12/29/06 01:47	ESJ	EPA415.1/SW8469060M

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-6S-120606		
Lab Sample ID:	J48443-2	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A45606.D	500	12/20/06	PWC	n/a	n/a	V1A1952
Run #2	1A45605.D	2000	12/20/06	PWC	n/a	n/a	V1A1952

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	2500	2300	ug/l	
71-43-2	Benzene	ND	500	190	ug/l	
75-27-4	Bromodichloromethane	ND	500	69	ug/l	
75-25-2	Bromoform	ND	500	260	ug/l	
74-83-9	Bromomethane	ND	500	190	ug/l	
78-93-3	2-Butanone (MEK)	ND	2500	710	ug/l	
75-15-0	Carbon disulfide	ND	500	190	ug/l	
56-23-5	Carbon tetrachloride	ND	500	260	ug/l	
108-90-7	Chlorobenzene	ND	500	370	ug/l	
75-00-3	Chloroethane	ND	500	320	ug/l	
67-66-3	Chloroform	ND	500	92	ug/l	
74-87-3	Chloromethane	ND	500	100	ug/l	
124-48-1	Dibromochloromethane	ND	500	84	ug/l	
75-34-3	1,1-Dichloroethane	ND	500	45	ug/l	
107-06-2	1,2-Dichloroethane	ND	500	280	ug/l	
75-35-4	1,1-Dichloroethene	ND	500	250	ug/l	
156-59-2	cis-1,2-Dichloroethene	186000 [a]	2000	360	ug/l	
156-60-5	trans-1,2-Dichloroethene	478	500	92	ug/l	J
78-87-5	1,2-Dichloropropane	ND	500	250	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	500	280	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	500	76	ug/l	
100-41-4	Ethylbenzene	ND	500	220	ug/l	
591-78-6	2-Hexanone	ND	2500	180	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	2500	250	ug/l	
75-09-2	Methylene chloride	ND	1000	270	ug/l	
100-42-5	Styrene	ND	500	34	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	500	54	ug/l	
127-18-4	Tetrachloroethene	ND	500	190	ug/l	
108-88-3	Toluene	24900	500	200	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	500	47	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	500	77	ug/l	
79-01-6	Trichloroethene	ND	500	80	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-6S-120606		
Lab Sample ID:	J48443-2	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	73200	500	380	ug/l	J
1330-20-7	Xylene (total)	854	500	170	ug/l	↓

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%	92%	77-121%
17060-07-0	1,2-Dichloroethane-D4	109%	100%	65-133%
2037-26-5	Toluene-D8	92%	91%	80-117%
460-00-4	4-Bromofluorobenzene	105%	102%	79-124%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-6S-120606		
Lab Sample ID:	J48443-2	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
Method:	SW846 8015	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33724.D	25	12/20/06	HSC	n/a	n/a	GII1684
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	3520	2.5 J	1.6	ug/l	
74-84-0	Ethane	718	2.5	1.4	ug/l	
74-85-1	Ethene	2710	2.5	1.9	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-6S-120606		
Lab Sample ID:	J48443-2	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	67800	10000	ug/l	1	12/26/06	12/26/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18554
(2) Prep QC Batch: MP37400

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-6S-120606		
Lab Sample ID:	J48443-2	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	439	17	mg/l	1	12/20/06	JA	EPA 310.1
Chloride	236	2.0	mg/l	1	01/02/07 23:46	JH	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	< 0.11	0.11	mg/l	1	12/30/06 13:36	MR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	12/30/06 13:36	MR	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	12/07/06 17:55	MET	SM19 4500NO2B
Sulfate	10.4	10	mg/l	1	01/02/07 23:46	JH	EPA 300/SW846 9056
Sulfide	< 2.0	2.0	mg/l	1	12/12/06	JA	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-6S-120606		
Lab Sample ID:	J48443-2F	Date Sampled:	12/06/06
Matrix:	AQ - Groundwater Filtered	Date Received:	12/07/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	33.8	5.0	mg/l	5	01/03/07 17:08	ESJ	EPA415.1/SW8469060M

RL = Reporting Limit

Raw Data: 1A45608.D 1A45438.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-6B-120606		
Lab Sample ID:	J48443-1	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A45608.D	100	12/20/06	PWC	n/a	n/a	V1A1952
Run #2	1A45438.D	500	12/15/06	PWC	n/a	n/a	V1A1943

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	500	460	ug/l	
71-43-2	Benzene	ND	100	37	ug/l	
75-27-4	Bromodichloromethane	ND	100	14	ug/l	
75-25-2	Bromoform	ND	100	52	ug/l	
74-83-9	Bromomethane	ND	100	39	ug/l	
78-93-3	2-Butanone (MEK)	~~ND~~	~~500~~ R	140	ug/l	
75-15-0	Carbon disulfide	ND	100 J	38	ug/l	
56-23-5	Carbon tetrachloride	ND	100	53	ug/l	
108-90-7	Chlorobenzene	ND	100	74	ug/l	
75-00-3	Chloroethane	ND	100	65	ug/l	
67-66-3	Chloroform	ND	100	18	ug/l	
74-87-3	Chloromethane	ND	100	20	ug/l	
124-48-1	Dibromochloromethane	ND	100	17	ug/l	
75-34-3	1,1-Dichloroethane	ND	100	8.9	ug/l	
107-06-2	1,2-Dichloroethane	ND	100	57	ug/l	
75-35-4	1,1-Dichloroethene	59.3	100	49	ug/l	J
156-59-2	cis-1,2-Dichloroethene	50400 [a]	500	89	ug/l	
156-60-5	trans-1,2-Dichloroethene	119	100	18	ug/l	
78-87-5	1,2-Dichloropropane	ND	100	50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	100	56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	100	15	ug/l	
100-41-4	Ethylbenzene	ND	100	44	ug/l	
591-78-6	2-Hexanone	ND	500	35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	500	50	ug/l	
75-09-2	Methylene chloride	ND	200	53	ug/l	
100-42-5	Styrene	ND	100	6.9	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	100	11	ug/l	
127-18-4	Tetrachloroethene	ND	100	39	ug/l	
108-88-3	Toluene	ND	100	41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	100	9.4	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	100	15	ug/l	
79-01-6	Trichloroethene	95.5	100	16	ug/l	J

ND = Not detected   MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-6B-120606		
Lab Sample ID:	J48443-1	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	1750	100	77	ug/l	
1330-20-7	Xylene (total)	ND	100	34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%	102%	77-121%
17060-07-0	1,2-Dichloroethane-D4	124%	119%	65-133%
2037-26-5	Toluene-D8	94%	97%	80-117%
460-00-4	4-Bromofluorobenzene	109%	87%	79-124%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-6B-120606		
Lab Sample ID:	J48443-1	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
Method:	SW846 8015	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33577.D	1	12/13/06	HSC	n/a	n/a	GII1679
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	93.0	0.10	0.066	ug/l	
74-84-0	Ethane	2.0	0.10	0.056	ug/l	
74-85-1	Ethene	41.3	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-6B-120606		
Lab Sample ID:	J48443-1	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	73600	10000	ug/l	1	12/26/06	12/26/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18554
(2) Prep QC Batch: MP37400

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-6B-120606			
Lab Sample ID:	J48443-1		Date Sampled:	12/06/06
Matrix:	AQ - Ground Water		Date Received:	12/07/06
			Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	256	5.0	mg/l	1	12/20/06	JA	EPA 310.1
Chloride	144	2.0	mg/l	1	01/02/07 23:28	JH	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	< 0.11	0.11	mg/l	1	12/30/06 13:35	MR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	12/30/06 13:35	MR	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	12/07/06 17:55	MET	SM19 4500NO2B
Sulfate	1420	100	mg/l	10	01/03/07 18:30	JH	EPA 300/SW846 9056
Sulfide	< 2.0	2.0	mg/l	1	12/12/06	JA	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-6B-120606		
Lab Sample ID:	J48443-1F	Date Sampled:	12/06/06
Matrix:	AQ - Groundwater Filtered	Date Received:	12/07/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.5	1.0	mg/l	1	12/29/06 00:35	ESJ	EPA415.1/SW8469060M

RL = Reporting Limit

Raw Data: 1A45179.D 1A45392.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-7S-120406			
Lab Sample ID:	J48143-1		Date Sampled:	12/04/06
Matrix:	AQ - Ground Water		Date Received:	12/05/06
Method:	SW846 8260B		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A45179.D	1	12/08/06	PWC	n/a	n/a	V1A1932
Run #2	1A45392.D	5	12/14/06	PWC	n/a	n/a	V1A1942

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	1.0	0.52	ug/l	
74-83-9	Bromomethane	ND	1.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	1.4	ug/l	
75-15-0	Carbon disulfide	ND	1.0 J	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.74	ug/l	
75-00-3	Chloroethane	ND	1.0	0.65	ug/l	
67-66-3	Chloroform	ND	1.0	0.18	ug/l	
74-87-3	Chloromethane	ND	1.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	0.62	1.0	0.49	ug/l	J
156-59-2	cis-1,2-Dichloroethene	414 [a]	5.0 J	0.89	ug/l	
156-60-5	trans-1,2-Dichloroethene	2.5	1.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	1.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.15	ug/l	
79-01-6	Trichloroethene	0.46	1.0	0.16	ug/l	J

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-7S-120406		
Lab Sample ID:	J48143-1	Date Sampled:	12/04/06
Matrix:	AQ - Ground Water	Date Received:	12/05/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	12.4	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	92%	88%	77-121%
17060-07-0	1,2-Dichloroethane-D4	101%	89%	65-133%
2037-26-5	Toluene-D8	98%	95%	80-117%
460-00-4	4-Bromofluorobenzene	90%	86%	79-124%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-7S-120406			
Lab Sample ID:	J48143-1		Date Sampled:	12/04/06
Matrix:	AQ - Ground Water		Date Received:	12/05/06
Method:	SW846 8015		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33518.D	1	12/11/06	HSC	n/a	n/a	GII1677
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	6.28	0.10	0.066	ug/l	
74-84-0	Ethane	ND	0.10	0.056	ug/l	
74-85-1	Ethene	ND	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-7S-120406		
Lab Sample ID:	J48143-1	Date Sampled:	12/04/06
Matrix:	AQ - Ground Water	Date Received:	12/05/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	37700	10000	ug/l	1	12/21/06	12/22/06	ND	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18543
(2) Prep QC Batch: MP37346

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-7S-120406		
Lab Sample ID:	J48143-1	Date Sampled:	12/04/06
Matrix:	AQ - Ground Water	Date Received:	12/05/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	352	5.0	mg/l	1	12/16/06	KD	EPA 310.1
Chloride	74.2	2.0	mg/l	1	12/29/06 07:08	JH	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	< 0.11	0.11	mg/l	1	12/21/06 15:10	NR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	12/21/06 15:10	NR	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	12/05/06 15:03	AO	SM19 4500NO2B
Sulfate	231	10	mg/l	1	12/29/06 07:08	JH	EPA 300/SW846 9056
Sulfide	< 2.0	2.0	mg/l	1	12/06/06	ST	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-7S-120406			
Lab Sample ID:	J48143-1F		Date Sampled:	12/04/06
Matrix:	AQ - Groundwater Filtered		Date Received:	12/05/06
			Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.3	1.0	mg/l	1	12/28/06 22:13	ESJ	EPA415.1/SW8469060M

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-7B-120406		
Lab Sample ID:	J48143-2	Date Sampled:	12/04/06
Matrix:	AQ - Ground Water	Date Received:	12/05/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A45175.D	1	12/08/06	PWC	n/a	n/a	V1A1932
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	1.0	0.52	ug/l	
74-83-9	Bromomethane	ND	1.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	1.4	ug/l	
75-15-0	Carbon disulfide	ND	1.0	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.74	ug/l	
75-00-3	Chloroethane	ND	1.0	0.65	ug/l	
67-66-3	Chloroform	ND	1.0	0.18	ug/l	
74-87-3	Chloromethane	ND	1.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	0.58	1.0	0.18	ug/l	J
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	1.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.15	ug/l	
79-01-6	Trichloroethene	0.35	1.0	0.16	ug/l	J

ND = Not detected　MDL - Method Detection Limit　J = Indicates an estimated value
RL = Reporting Limit　B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range　N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-7B-120406			
Lab Sample ID:	J48143-2		Date Sampled:	12/04/06
Matrix:	AQ - Ground Water		Date Received:	12/05/06
Method:	SW846 8260B		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%		77-121%
17060-07-0	1,2-Dichloroethane-D4	103%		65-133%
2037-26-5	Toluene-D8	97%		80-117%
460-00-4	4-Bromofluorobenzene	89%		79-124%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-7B-120406		
Lab Sample ID:	J48143-2	Date Sampled:	12/04/06
Matrix:	AQ - Ground Water	Date Received:	12/05/06
Method:	SW846 8015	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33519.D	1	12/11/06	HSC	n/a	n/a	GII1677
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	7.1	0.10	0.066	ug/l	
74-84-0	Ethane	0.30	0.10	0.056	ug/l	
74-85-1	Ethene	0.62	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-7B-120406			
Lab Sample ID:	J48143-2		Date Sampled:	12/04/06
Matrix:	AQ - Ground Water		Date Received:	12/05/06
			Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	90600	20000	ug/l	2	12/21/06	12/26/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18554
(2) Prep QC Batch: MP37346

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-7B-120406		
Lab Sample ID:	J48143-2	Date Sampled:	12/04/06
Matrix:	AQ - Ground Water	Date Received:	12/05/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	16.1	5.0	mg/l	1	12/16/06	KD	EPA 310.1
Chloride	40.6	2.0	mg/l	1	12/29/06 06:50	JH	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	0.19	0.11	mg/l	1	12/21/06 14:48	NR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.19	0.10	mg/l	1	12/21/06 14:48	NR	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	12/05/06 15:03	AO	SM19 4500NO2B
Sulfate	1740	100	mg/l	10	12/30/06 02:28	JH	EPA 300/SW846 9056
Sulfide	< 2.0	2.0	mg/l	1	12/06/06	ST	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-7B-120406			
Lab Sample ID:	J48143-2F		Date Sampled:	12/04/06
Matrix:	AQ - Groundwater Filtered		Date Received:	12/05/06
			Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon [a]	< 5.0	5.0	mg/l	5	12/28/06 22:37	ESJ	EPA415.1/SW8469060M

(a) Dilution required due to difficult sample matrix.

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-8S-113006		
Lab Sample ID:	J47796-3	**Date Sampled:**	11/30/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	D120654.D	1	12/06/06	YL	n/a	n/a	VD4809
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	~~ND~~	~~5.0~~ R	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	1.0	0.52	ug/l	
74-83-9	Bromomethane	ND	1.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	~~ND~~	~~5.0~~ R	1.4	ug/l	
75-15-0	Carbon disulfide	ND	1.0	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.74	ug/l	
75-00-3	Chloroethane	ND	1.0	0.65	ug/l	
67-66-3	Chloroform	ND	1.0	0.18	ug/l	
74-87-3	Chloromethane	ND	1.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	1.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.15	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.16	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-8S-113006		
Lab Sample ID:	J47796-3	Date Sampled:	11/30/06
Matrix:	AQ - Ground Water	Date Received:	12/01/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		77-121%
17060-07-0	1,2-Dichloroethane-D4	119%		65-133%
2037-26-5	Toluene-D8	97%		80-117%
460-00-4	4-Bromofluorobenzene	108%		79-124%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-8S-113006		
Lab Sample ID:	J47796-3	**Date Sampled:**	11/30/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
Method:	SW846 8015	**Percent Solids:**	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33501.D	1	12/08/06	HSC	n/a	n/a	GII1676
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	0.13	0.10	0.066	ug/l	
74-84-0	Ethane	ND	0.10	0.056	ug/l	
74-85-1	Ethene	ND	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-8S-113006		
Lab Sample ID:	J47796-3	**Date Sampled:**	11/30/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	158000	30000	ug/l	3	12/18/06	12/19/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18529
(2) Prep QC Batch: MP37272

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-8S-113006		
Lab Sample ID:	J47796-3	**Date Sampled:**	11/30/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	409	13	mg/l	1	12/12/06	ST	EPA 310.1
Chloride	248	2.0	mg/l	1	12/21/06 00:18	JH	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	0.17	0.11	mg/l	1	12/21/06 14:47	NR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.17	0.10	mg/l	1	12/21/06 14:47	NR	EPA 353.2/LACHAT
Nitrogen, Nitrite	<0.010	0.010	mg/l	1	12/01/06 15:50	ST	SM19 4500NO2B
Sulfate	67.3	2.0	mg/l	1	12/21/06 00:18	JH	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	12/06/06	ST	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-8S-113006		
Lab Sample ID:	J47796-3F	**Date Sampled:**	11/30/06
Matrix:	AQ - Groundwater Filtered	**Date Received:**	12/01/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.4	1.0	mg/l	1	12/22/06 00:21	ESJ	EPA415.1/SW8469060M

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-9S-113006		
Lab Sample ID:	J47796-5	**Date Sampled:**	11/30/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	D120650.D	1	12/06/06	YL	n/a	n/a	VD4809
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0 R	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	1.0	0.52	ug/l	
74-83-9	Bromomethane	ND	1.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0 R	1.4	ug/l	
75-15-0	Carbon disulfide	0.55	1.0	0.38	ug/l	J
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.74	ug/l	
75-00-3	Chloroethane	ND	1.0	0.65	ug/l	
67-66-3	Chloroform	ND	1.0	0.18	ug/l	
74-87-3	Chloromethane	ND	1.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	1.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.15	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.16	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-9S-113006		
Lab Sample ID:	J47796-5	Date Sampled:	11/30/06
Matrix:	AQ - Ground Water	Date Received:	12/01/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		77-121%
17060-07-0	1,2-Dichloroethane-D4	115%		65-133%
2037-26-5	Toluene-D8	97%		80-117%
460-00-4	4-Bromofluorobenzene	110%		79-124%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-9S-113006		
Lab Sample ID:	J47796-5	**Date Sampled:**	11/30/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
Method:	SW846 8015	**Percent Solids:**	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H33504.D	1	12/08/06	HSC	n/a	n/a	GH1676
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	4.00	0.10	0.066	ug/l	
74-84-0	Ethane	0.11	0.10	0.056	ug/l	
74-85-1	Ethene	ND	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-9S-113006		
Lab Sample ID:	J47796-5	**Date Sampled:**	11/30/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	58900	10000	ug/l	1	12/18/06	12/19/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18522
(2) Prep QC Batch: MP37272

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-9S-113006		
Lab Sample ID:	J47796-5	**Date Sampled:**	11/30/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	340	13	mg/l	1	12/12/06	ST	EPA 310.1
Chloride	55.5	2.0	mg/l	1	12/21/06 02:09	JH	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	<0.11	0.11	mg/l	1	12/21/06 14:55	NR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	<0.10	0.10	mg/l	1	12/21/06 14:55	NR	EPA 353.2/LACHAT
Nitrogen, Nitrite	<0.010	0.010	mg/l	1	12/01/06 14:45	ST	SM19 4500NO2B
Sulfate	96.3	2.0	mg/l	1	12/21/06 02:09	JH	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	12/06/06	ST	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-9S-113006		
Lab Sample ID:	J47796-5F	**Date Sampled:**	11/30/06
Matrix:	AQ - Groundwater Filtered	**Date Received:**	12/01/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	5.1	1.0	mg/l	1	12/22/06 01:03	ESJ	EPA415.1/SW8469060M

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-10B-113006		
Lab Sample ID:	J47958-5	Date Sampled:	11/30/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	D120644.D	1	12/06/06	YL	n/a	n/a	VD4809
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0 R	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	1.0	0.52	ug/l	
74-83-9	Bromomethane	ND	1.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0 R	1.4	ug/l	
75-15-0	Carbon disulfide	ND	1.0	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.74	ug/l	
75-00-3	Chloroethane	ND	1.0	0.65	ug/l	
67-66-3	Chloroform	ND	1.0	0.18	ug/l	
74-87-3	Chloromethane	ND	1.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	1.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.15	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.16	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-10B-113006		
Lab Sample ID:	J47958-5	Date Sampled:	11/30/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		77-121%
17060-07-0	1,2-Dichloroethane-D4	111%		65-133%
2037-26-5	Toluene-D8	97%		80-117%
460-00-4	4-Bromofluorobenzene	107%		79-124%

ND = Not detected   MDL - Method Detection Limit   J = Indicates an estimated value
RL = Reporting Limit   B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range   N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-10B-113006			
Lab Sample ID:	J47958-5		Date Sampled:	11/30/06
Matrix:	AQ - Ground Water		Date Received:	12/02/06
Method:	SW846 8015		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33489.D	1	12/08/06	HSC	n/a	n/a	GII1676
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	2.27	0.10	0.066	ug/l	
74-84-0	Ethane	ND	0.10	0.056	ug/l	
74-85-1	Ethene	ND	0.10	0.075	ug/l	

ND = Not detected   MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-10B-113006		
Lab Sample ID:	J47958-5	Date Sampled:	11/30/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	568000	100000	ug/l	10	12/18/06	12/19/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18529
(2) Prep QC Batch: MP37272

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-10B-113006			
Lab Sample ID:	J47958-5		Date Sampled:	11/30/06
Matrix:	AQ - Ground Water		Date Received:	12/02/06
			Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	152	13	mg/l	1	12/14/06	ST	EPA 310.1
Chloride [a]	751	20 J	mg/l	10	12/29/06 22:47	JH	EPA 300/SW846 9056
Nitrogen, Nitrate [b]	<0.11	0.11	mg/l	1	12/21/06 15:03	NR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	<0.10	0.10	mg/l	1	12/21/06 15:03	NR	EPA 353.2/LACHAT
Nitrogen, Nitrite [c]	0.025	0.010	mg/l	1	12/02/06 14:00	HF	SM19 4500NO2B
Sulfate [d]	1970	100 J	mg/l	10	12/29/06 22:47	JH	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	12/06/06	ST	EPA 376.1

(a) Initially analyzed within holding time, but over calibration. Reanalysis on dilution done 1 day out of holding time.
(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)
(c) Analysis done out of holding tine.Spike blank indicates possible slight high bias (113% recovery).
(d) Initially analyzed within holding time, but over calibratiion. Reanalysis on dilution done 1 day out of holding time.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-10B-113006		
Lab Sample ID:	J47958-5F	Date Sampled:	11/30/06
Matrix:	AQ - Groundwater Filtered	Date Received:	12/02/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	< 1.0	1.0	mg/l	1	12/26/06 18:34	MO	EPA415.1/SW8469060M

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-11S-113006		
Lab Sample ID:	J47958-3	Date Sampled:	11/30/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	D120642.D	1	12/06/06	YL	n/a	n/a	VD4809
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0 R	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	1.0	0.52	ug/l	
74-83-9	Bromomethane	ND	1.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0 R	1.4	ug/l	
75-15-0	Carbon disulfide	ND	1.0	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.74	ug/l	
75-00-3	Chloroethane	ND	1.0	0.65	ug/l	
67-66-3	Chloroform	ND	1.0	0.18	ug/l	
74-87-3	Chloromethane	ND	1.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	1.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.15	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.16	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-11S-113006			
Lab Sample ID:	J47958-3		Date Sampled:	11/30/06
Matrix:	AQ - Ground Water		Date Received:	12/02/06
Method:	SW846 8260B		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		77-121%
17060-07-0	1,2-Dichloroethane-D4	111%		65-133%
2037-26-5	Toluene-D8	95%		80-117%
460-00-4	4-Bromofluorobenzene	105%		79-124%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-11S-113006		
Lab Sample ID:	J47958-3	Date Sampled:	11/30/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
Method:	SW846 8015	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33486.D	1	12/08/06	HSC	n/a	n/a	GII1676
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	218	0.10	0.066	ug/l	
74-84-0	Ethane	ND	0.10	0.056	ug/l	
74-85-1	Ethene	ND	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-11S-113006		
Lab Sample ID:	J47958-3	Date Sampled:	11/30/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	10900	10000	ug/l	1	12/18/06	12/19/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18522
(2) Prep QC Batch: MP37272

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-11S-113006			
Lab Sample ID:	J47958-3		Date Sampled:	11/30/06
Matrix:	AQ - Ground Water		Date Received:	12/02/06
			Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	442	13	mg/l	1	12/14/06	ST	EPA 310.1
Chloride	10.1	2.0	mg/l	1	12/28/06 00:43	JH	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	< 0.11	0.11	mg/l	1	12/21/06 15:00	NR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	12/21/06 15:00	NR	EPA 353.2/LACHAT
Nitrogen, Nitrite [b]	< 0.010	0.010	mg/l	1	12/02/06 14:00	HF	SM19 4500NO2B
Sulfate	24.3	10	mg/l	1	12/28/06 00:43	JH	EPA 300/SW846 9056
Sulfide	< 2.0	2.0	mg/l	1	12/06/06	ST	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)
(b) Analysis done out of holding time.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-11S-113006		
Lab Sample ID:	J47958-3F	Date Sampled:	11/30/06
Matrix:	AQ - Groundwater Filtered	Date Received:	12/02/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	2.5	1.0	mg/l	1	12/26/06 18:20	MO	EPA415.1/SW8469060M

RL = Reporting Limit

Raw Data: D120643.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-11B-113006			
Lab Sample ID:	J47958-4		Date Sampled:	11/30/06
Matrix:	AQ - Ground Water		Date Received:	12/02/06
Method:	SW846 8260B		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	D120643.D	1	12/06/06	YL	n/a	n/a	VD4809
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0 R	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	1.0	0.52	ug/l	
74-83-9	Bromomethane	ND	1.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0 R	1.4	ug/l	
75-15-0	Carbon disulfide	ND	1.0	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.74	ug/l	
75-00-3	Chloroethane	ND	1.0	0.65	ug/l	
67-66-3	Chloroform	ND	1.0	0.18	ug/l	
74-87-3	Chloromethane	ND	1.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	1.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.15	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.16	ug/l	

ND = Not detected   MDL - Method Detection Limit   J = Indicates an estimated value
RL = Reporting Limit   B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range   N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-11B-113006			
Lab Sample ID:	J47958-4		Date Sampled:	11/30/06
Matrix:	AQ - Ground Water		Date Received:	12/02/06
Method:	SW846 8260B		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		77-121%
17060-07-0	1,2-Dichloroethane-D4	108%		65-133%
2037-26-5	Toluene-D8	97%		80-117%
460-00-4	4-Bromofluorobenzene	107%		79-124%

ND = Not detected   MDL - Method Detection Limit   J = Indicates an estimated value
RL = Reporting Limit   B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range   N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-11B-113006		
Lab Sample ID:	J47958-4	Date Sampled:	11/30/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
Method:	SW846 8015	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33488.D	1	12/08/06	HSC	n/a	n/a	GII1676
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	2.87	0.10	0.066	ug/l	
74-84-0	Ethane	ND	0.10	0.056	ug/l	
74-85-1	Ethene	ND	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-11B-113006			
Lab Sample ID:	J47958-4		Date Sampled:	11/30/06
Matrix:	AQ - Ground Water		Date Received:	12/02/06
			Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	477000	100000	ug/l	10	12/18/06	12/19/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18529
(2) Prep QC Batch: MP37272

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-11B-113006		
Lab Sample ID:	J47958-4	Date Sampled:	11/30/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	159	13	mg/l	1	12/14/06	ST	EPA 310.1
Chloride [a]	613	20 J	mg/l	10	12/29/06 21:52	JH	EPA 300/SW846 9056
Nitrogen, Nitrate [b]	< 0.11	0.11	mg/l	1	12/21/06 15:01	NR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	12/21/06 15:01	NR	EPA 353.2/LACHAT
Nitrogen, Nitrite [c]	< 0.010	0.010	mg/l	1	12/02/06 14:00	HF	SM19 4500NO2B
Sulfate [d]	1930	100 J	mg/l	10	12/29/06 21:52	JH	EPA 300/SW846 9056
Sulfide	< 2.0	2.0	mg/l	1	12/06/06	ST	EPA 376.1

(a) Initially analyzed within holding time, but over calibration. Reanalysis on dilution done 1 day out of holding time.
(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)
(c) Analysis done out of holding time.
(d) Initially analyzed within holding time, but over calibratiion. Reanalysis on dilution done 1 day out of holding time.

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-11B-113006		
Lab Sample ID:	J47958-4F	Date Sampled:	11/30/06
Matrix:	AQ - Groundwater Filtered	Date Received:	12/02/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	< 1.0	1.0	mg/l	1	12/26/06 18:26	MO	EPA415.1/SW8469060M

RL = Reporting Limit

Raw Data: D120640.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-12S-113006		
Lab Sample ID:	J47958-1	Date Sampled:	11/30/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	D120640.D	1	12/06/06	YL	n/a	n/a	VD4809
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0 R	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	1.0	0.52	ug/l	
74-83-9	Bromomethane	ND	1.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0 R	1.4	ug/l	
75-15-0	Carbon disulfide	ND	1.0	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.74	ug/l	
75-00-3	Chloroethane	ND	1.0	0.65	ug/l	
67-66-3	Chloroform	ND	1.0	0.18	ug/l	
74-87-3	Chloromethane	ND	1.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	1.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.15	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.16	ug/l	

ND = Not detected   MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-12S-113006		
Lab Sample ID:	J47958-1	Date Sampled:	11/30/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		77-121%
17060-07-0	1,2-Dichloroethane-D4	107%		65-133%
2037-26-5	Toluene-D8	99%		80-117%
460-00-4	4-Bromofluorobenzene	105%		79-124%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-12S-113006		
Lab Sample ID:	J47958-1	Date Sampled:	11/30/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
Method:	SW846 8015	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33484.D	1	12/08/06	HSC	n/a	n/a	GII1676
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	34.3	0.10	0.066	ug/l	
74-84-0	Ethane	ND	0.10	0.056	ug/l	
74-85-1	Ethene	ND	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-12S-113006			
Lab Sample ID:	J47958-1		Date Sampled:	11/30/06
Matrix:	AQ - Ground Water		Date Received:	12/02/06
			Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	< 10000	10000	ug/l	1	12/18/06	12/19/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18522
(2) Prep QC Batch: MP37272

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-12S-113006		
Lab Sample ID:	J47958-1	Date Sampled:	11/30/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as $CaCO_3$	629	13	mg/l	1	12/14/06	ST	EPA 310.1
Chloride	3.0	2.0	mg/l	1	12/27/06 23:30	JH	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	5.3	0.21	mg/l	1	12/21/06 17:03	NR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	5.3	0.20	mg/l	2	12/21/06 17:03	NR	EPA 353.2/LACHAT
Nitrogen, Nitrite [b]	< 0.010	0.010	mg/l	1	12/02/06 14:00	HF	SM19 4500NO2B
Sulfate	72.4	10	mg/l	1	12/27/06 23:30	JH	EPA 300/SW846 9056
Sulfide	< 2.0	2.0	mg/l	1	12/06/06	ST	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)
(b) Analysis done out of holding time.

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-12S-113006		
Lab Sample ID:	J47958-1F	Date Sampled:	11/30/06
Matrix:	AQ - Groundwater Filtered	Date Received:	12/02/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	3.8	1.0	mg/l	1	12/26/06 18:03	MO	EPA415.1/SW8469060M

RL = Reporting Limit

Raw Data: D120641.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-12B-113006		
Lab Sample ID:	J47958-2	Date Sampled:	11/30/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	D120641.D	1	12/06/06	YL	n/a	n/a	VD4809
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0 R	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	1.0	0.52	ug/l	
74-83-9	Bromomethane	ND	1.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0 R	1.4	ug/l	
75-15-0	Carbon disulfide	1.0	1.0	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.74	ug/l	
75-00-3	Chloroethane	ND	1.0	0.65	ug/l	
67-66-3	Chloroform	ND	1.0	0.18	ug/l	
74-87-3	Chloromethane	ND	1.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	1.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.15	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.16	ug/l	

ND = Not detected   MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-12B-113006		
Lab Sample ID:	J47958-2	Date Sampled:	11/30/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		77-121%
17060-07-0	1,2-Dichloroethane-D4	109%		65-133%
2037-26-5	Toluene-D8	98%		80-117%
460-00-4	4-Bromofluorobenzene	105%		79-124%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-12B-113006		
Lab Sample ID:	J47958-2	Date Sampled:	11/30/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
Method:	SW846 8015	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33485.D	1	12/08/06	HSC	n/a	n/a	GII1676
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	2.53	0.10	0.066	ug/l	
74-84-0	Ethane	0.89	0.10	0.056	ug/l	
74-85-1	Ethene	0.36	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-12B-113006		
Lab Sample ID:	J47958-2	Date Sampled:	11/30/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	778000	250000	ug/l	25	12/18/06	12/19/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18529
(2) Prep QC Batch: MP37272

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-12B-113006		
Lab Sample ID:	J47958-2	Date Sampled:	11/30/06
Matrix:	AQ - Ground Water	Date Received:	12/02/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	59.7	5.0	mg/l	1	12/14/06	ST	EPA 310.1
Chloride [a]	964	20 J	mg/l	10	12/29/06 21:34	JH	EPA 300/SW846 9056
Nitrogen, Nitrate [b]	< 0.11	0.11	mg/l	1	12/21/06 14:59	NR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	12/21/06 14:59	NR	EPA 353.2/LACHAT
Nitrogen, Nitrite [c]	< 0.010	0.010	mg/l	1	12/02/06 14:00	HF	SM19 4500NO2B
Sulfate [d]	2130	100 J	mg/l	10	12/29/06 21:34	JH	EPA 300/SW846 9056
Sulfide	3.0	2.0	mg/l	1	12/06/06	ST	EPA 376.1

(a) Initially analyzed within holding time, but over calibration. Reanalysis on dilution done 1 day out of holding time.
(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)
(c) Analysis done out of holding time.
(d) Initially analyzed within holding time, but over calibratiion. Reanalysis on dilution done 1 day out of holding time.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-12B-113006		
Lab Sample ID:	J47958-2F	Date Sampled:	11/30/06
Matrix:	AQ - Groundwater Filtered	Date Received:	12/02/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	< 1.0	1.0	mg/l	1	12/26/06 18:09	MO	EPA415.1/SW8469060M

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-13S-113006		
Lab Sample ID:	J47796-4	**Date Sampled:**	11/30/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	D120655.D	40	12/06/06	YL	n/a	n/a	VD4809
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	200 R	180	ug/l	
71-43-2	Benzene	ND	40	15	ug/l	
75-27-4	Bromodichloromethane	ND	40	5.5	ug/l	
75-25-2	Bromoform	ND	40	21	ug/l	
74-83-9	Bromomethane	ND	40	15	ug/l	
78-93-3	2-Butanone (MEK)	ND	200 R	57	ug/l	
75-15-0	Carbon disulfide	ND	40	15	ug/l	
56-23-5	Carbon tetrachloride	ND	40	21	ug/l	
108-90-7	Chlorobenzene	ND	40	29	ug/l	
75-00-3	Chloroethane	ND	40	26	ug/l	
67-66-3	Chloroform	ND	40	7.3	ug/l	
74-87-3	Chloromethane	ND	40	8.0	ug/l	
124-48-1	Dibromochloromethane	ND	40	6.7	ug/l	
75-34-3	1,1-Dichloroethane	ND	40	3.6	ug/l	
107-06-2	1,2-Dichloroethane	ND	40	23	ug/l	
75-35-4	1,1-Dichloroethene	ND	40	20	ug/l	
156-59-2	cis-1,2-Dichloroethene	6870	40	7.1	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	40	7.4	ug/l	
78-87-5	1,2-Dichloropropane	ND	40	20	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	40	22	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	40	6.0	ug/l	
100-41-4	Ethylbenzene	ND	40	18	ug/l	
591-78-6	2-Hexanone	ND	200	14	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	200	20	ug/l	
75-09-2	Methylene chloride	ND	80	21	ug/l	
100-42-5	Styrene	ND	40	2.8	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	40	4.3	ug/l	
127-18-4	Tetrachloroethene	ND	40	16	ug/l	
108-88-3	Toluene	ND	40	16	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	40	3.8	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	40	6.1	ug/l	
79-01-6	Trichloroethene	845	40	6.4	ug/l	

ND = Not detected   MDL - Method Detection Limit   J = Indicates an estimated value
RL = Reporting Limit   B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range   N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-13S-113006		
Lab Sample ID:	J47796-4	**Date Sampled:**	11/30/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	348	40	31	ug/l	
1330-20-7	Xylene (total)	ND	40	14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		77-121%
17060-07-0	1,2-Dichloroethane-D4	118%		65-133%
2037-26-5	Toluene-D8	97%		80-117%
460-00-4	4-Bromofluorobenzene	107%		79-124%

ND = Not detected MDL - Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-13S-113006		
Lab Sample ID:	J47796-4	**Date Sampled:**	11/30/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
Method:	SW846 8015	**Percent Solids:**	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33503.D	1	12/08/06	HSC	n/a	n/a	GII1676
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	115	0.10	0.066	ug/l	
74-84-0	Ethane	13.2	0.10	0.056	ug/l	
74-85-1	Ethene	22.9	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-13S-113006		
Lab Sample ID:	J47796-4	**Date Sampled:**	11/30/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	93800	20000	ug/l	2	12/18/06	12/19/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18529
(2) Prep QC Batch: MP37272

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-13S-113006			
Lab Sample ID:	J47796-4		**Date Sampled:**	11/30/06
Matrix:	AQ - Ground Water		**Date Received:**	12/01/06
			Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY			

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	289	13	mg/l	1	12/12/06	ST	EPA 310.1
Chloride	163	2.0	mg/l	1	12/21/06 01:50	JH	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	<0.11	0.11	mg/l	1	12/21/06 14:54	NR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	<0.10	0.10	mg/l	1	12/21/06 14:54	NR	EPA 353.2/LACHAT
Nitrogen, Nitrite	<0.010	0.010	mg/l	1	12/01/06 15:50	ST	SM19 4500NO2B
Sulfate	878	8.0	mg/l	4	12/27/06 02:34	JH	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	12/06/06	ST	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-13S-113006		
Lab Sample ID:	J47796-4F	**Date Sampled:**	11/30/06
Matrix:	AQ - Groundwater Filtered	**Date Received:**	12/01/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	5.4	1.0	mg/l	1	12/22/06 00:56	ESJ	EPA415.1/SW8469060M

RL = Reporting Limit

Accutest Laboratories

145 (KP)

Report of Analysis

Client Sample ID:	GW-MW-145-120606		
Lab Sample ID:	J48443-8	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A45424.D	50	12/15/06	PWC	n/a	n/a	V1A1943
Run #2	1A45423.D	500	12/15/06	PWC	n/a	n/a	V1A1943

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	250	230	ug/l	
71-43-2	Benzene	ND	50	19	ug/l	
75-27-4	Bromodichloromethane	ND	50	6.9	ug/l	
75-25-2	Bromoform	ND	50	26	ug/l	
74-83-9	Bromomethane	ND	50	19	ug/l	
78-93-3	2-Butanone (MEK)	ND	250 R	71	ug/l	
75-15-0	Carbon disulfide	ND	50 J	19	ug/l	
56-23-5	Carbon tetrachloride	ND	50	26	ug/l	
108-90-7	Chlorobenzene	ND	50	37	ug/l	
75-00-3	Chloroethane	ND	50	32	ug/l	
67-66-3	Chloroform	ND	50	9.2	ug/l	
74-87-3	Chloromethane	ND	50	10	ug/l	
124-48-1	Dibromochloromethane	ND	50	8.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	50	4.5	ug/l	
107-06-2	1,2-Dichloroethane	ND	50	28	ug/l	
75-35-4	1,1-Dichloroethene	51.8	50	25	ug/l	
156-59-2	cis-1,2-Dichloroethene	28200 [a]	500	89	ug/l	
156-60-5	trans-1,2-Dichloroethene	80.0	50	9.2	ug/l	
78-87-5	1,2-Dichloropropane	ND	50	25	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	50	28	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	50	7.6	ug/l	
100-41-4	Ethylbenzene	ND	50	22	ug/l	
591-78-6	2-Hexanone	ND	250	18	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	250	25	ug/l	
75-09-2	Methylene chloride	ND	100	27	ug/l	
100-42-5	Styrene	ND	50	3.4	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	50	5.4	ug/l	
127-18-4	Tetrachloroethene	ND	50	19	ug/l	
108-88-3	Toluene	639	50	20	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	50	4.7	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	50	7.7	ug/l	
79-01-6	Trichloroethene	254	50	8.0	ug/l	

ND = Not detected   MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-148-120606		
Lab Sample ID:	J48443-8	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	4610	50	38	ug/l	
1330-20-7	Xylene (total)	ND	50	17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	91%	90%	77-121%
17060-07-0	1,2-Dichloroethane-D4	99%	96%	65-133%
2037-26-5	Toluene-D8	97%	97%	80-117%
460-00-4	4-Bromofluorobenzene	86%	84%	79-124%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-145-120606		
Lab Sample ID:	J48443-8	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
Method:	SW846 8015	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33587.D	1	12/13/06	HSC	n/a	n/a	GII1679
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	588	0.10	0.066	ug/l	
74-84-0	Ethane	151	0.10	0.056	ug/l	
74-85-1	Ethene	215	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-147-120606		
Lab Sample ID:	J48443-8	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	90400	20000	ug/l	2	12/26/06	12/27/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18563
(2) Prep QC Batch: MP37400

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-145-120606		
Lab Sample ID:	J48443-8	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	371	17	mg/l	1	12/20/06	JA	EPA 310.1
Chloride	141	2.0	mg/l	1	01/03/07 02:14	JH	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	< 0.11	0.11	mg/l	1	12/30/06 13:45	MR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	12/30/06 13:45	MR	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	12/07/06 18:00	MET	SM19 4500NO2B
Sulfate	355	10	mg/l	1	01/03/07 02:14	JH	EPA 300/SW846 9056
Sulfide	< 2.0	2.0	mg/l	1	12/12/06	JA	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-145-120606		
Lab Sample ID:	J48443-8F 5	Date Sampled:	12/06/06
Matrix:	AQ - Groundwater Filtered	Date Received:	12/07/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	6.7	1.0	mg/l	1	12/29/06 01:54	ESJ	EPA415.1/SW8469060M

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-15S-120706		
Lab Sample ID:	J48660-1	Date Sampled:	12/07/06
Matrix:	AQ - Ground Water	Date Received:	12/08/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3A32189.D	25	12/21/06	LY	n/a	n/a	V3A1345
Run #2 [a]	1A45616.D	50	12/21/06	PWC	n/a	n/a	V1A1952
Run #3	1A45523.D	200	12/18/06	PWC	n/a	n/a	V1A1947

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml
Run #3	5.0 ml

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	130	120	ug/l	
71-43-2	Benzene	ND	25	9.3	ug/l	
75-27-4	Bromodichloromethane	ND	25	3.4	ug/l	
75-25-2	Bromoform	ND	25	13	ug/l	
74-83-9	Bromomethane	ND	25	9.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	130	36	ug/l	
75-15-0	Carbon disulfide	ND	25	9.5	ug/l	
56-23-5	Carbon tetrachloride	ND	25	13	ug/l	
108-90-7	Chlorobenzene	ND	25	18	ug/l	
75-00-3	Chloroethane	ND	25	16	ug/l	
67-66-3	Chloroform	ND	25	4.6	ug/l	
74-87-3	Chloromethane	ND	25	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	25	4.2	ug/l	
75-34-3	1,1-Dichloroethane	ND	25	2.2	ug/l	
107-06-2	1,2-Dichloroethane	ND	25	14	ug/l	
75-35-4	1,1-Dichloroethene	13.7	25	12	ug/l	J
156-59-2	cis-1,2-Dichloroethene	20800 [b]	200	36	ug/l	
156-60-5	trans-1,2-Dichloroethene	30.8	25	4.6	ug/l	
78-87-5	1,2-Dichloropropane	ND	25	13	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	25	14	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	25	3.8	ug/l	
100-41-4	Ethylbenzene	ND	25	11	ug/l	
591-78-6	2-Hexanone	ND	130	8.8	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	130	13	ug/l	
75-09-2	Methylene chloride	ND	50	13	ug/l	
100-42-5	Styrene	ND	25	1.7	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	25	2.7	ug/l	
127-18-4	Tetrachloroethene	ND	25	9.7	ug/l	
108-88-3	Toluene	98.9	25	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	25	2.4	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-15S-120706		
Lab Sample ID:	J48660-1	Date Sampled:	12/07/06
Matrix:	AQ - Ground Water	Date Received:	12/08/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
79-00-5	1,1,2-Trichloroethane	ND	25	3.8	ug/l	
79-01-6	Trichloroethene	5.6	25	4.0	ug/l	J
75-01-4	Vinyl chloride	9040 [b]	200	150	ug/l	
1330-20-7	Xylene (total)	ND	25	8.6	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
1868-53-7	Dibromofluoromethane	93%	111%	99%	77-121%
17060-07-0	1,2-Dichloroethane-D4	86%	157% [c]	111%	65-133%
2037-26-5	Toluene-D8	95%	94%	97%	80-117%
460-00-4	4-Bromofluorobenzene	97%	115%	83%	79-124%

(a) for qc purpose only
(b) Result is from Run# 3
(c) Outside control limits due to matrix interference.

ND = Not detected   MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-15S-120706		
Lab Sample ID:	J48660-1	Date Sampled:	12/07/06
Matrix:	AQ - Ground Water	Date Received:	12/08/06
Method:	SW846 8015	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33749.D	5	12/21/06	HSC	n/a	n/a	GII1685
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	6660	0.50	0.33	ug/l	
74-84-0	Ethane	426	0.50	0.28	ug/l	
74-85-1	Ethene	512	0.50	0.38	ug/l	

ND = Not detected   MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-15S-120706		
Lab Sample ID:	J48660-1	Date Sampled:	12/07/06
Matrix:	AQ - Ground Water	Date Received:	12/08/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	68200	10000	ug/l	1	12/26/06	12/26/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18554
(2) Prep QC Batch: MP37400

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-15S-120706		
Lab Sample ID:	J48660-1	Date Sampled:	12/07/06
Matrix:	AQ - Ground Water	Date Received:	12/08/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as $CaCO_3$	550	13	mg/l	1	12/21/06	ST	EPA 310.1
Chloride	122	2.0	mg/l	1	01/04/07 06:46	JH	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	< 0.11	0.11	mg/l	1	01/02/07 17:04	NR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	01/02/07 17:04	NR	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	12/08/06 22:30	MET	SM19 4500NO2B
Sulfate	18.3	10	mg/l	1	01/04/07 06:46	JH	EPA 300/SW846 9056
Sulfide	< 2.0	2.0	mg/l	1	12/12/06	JA	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-15S-120706		
Lab Sample ID:	J48660-1F	Date Sampled:	12/07/06
Matrix:	AQ - Groundwater Filtered	Date Received:	12/08/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	11.7	1.0	mg/l	1	12/31/06 01:45	ESJ	EPA415.1/SW8469060M

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-16S-120606		
Lab Sample ID:	J48443-4	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A45610.D	1	12/20/06	PWC	n/a	n/a	V1A1952
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	1.0	0.52	ug/l	
74-83-9	Bromomethane	ND	1.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0 R	1.4	ug/l	
75-15-0	Carbon disulfide	ND	1.0 J	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.74	ug/l	
75-00-3	Chloroethane	ND	1.0	0.65	ug/l	
67-66-3	Chloroform	ND	1.0	0.18	ug/l	
74-87-3	Chloromethane	ND	1.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	5.7	1.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	1.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	ND	1.0	0.41	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.15	ug/l	
79-01-6	Trichloroethene	8.4	1.0	0.16	ug/l	

ND = Not detected
MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-16S-120606		
Lab Sample ID:	J48443-4	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		77-121%
17060-07-0	1,2-Dichloroethane-D4	133%		65-133%
2037-26-5	Toluene-D8	93%		80-117%
460-00-4	4-Bromofluorobenzene	110%		79-124%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-16S-120606		
Lab Sample ID:	J48443-4	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
Method:	SW846 8015	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33581.D	1	12/13/06	HSC	n/a	n/a	GII1679
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	2.07	0.10	0.066	ug/l	
74-84-0	Ethane	0.35	0.10	0.056	ug/l	
74-85-1	Ethene	0.13	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-16S-120606		
Lab Sample ID:	J48443-4	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	20000	10000	ug/l	1	12/26/06	12/26/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18554
(2) Prep QC Batch: MP37400

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-16S-120606		
Lab Sample ID:	J48443-4	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	134	5.0	mg/l	1	12/20/06	JA	EPA 310.1
Chloride	13.1	2.0	mg/l	1	01/03/07 01:00	JH	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	2.0	0.11	mg/l	1	12/30/06 13:38	MR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	2.0	0.10	mg/l	1	12/30/06 13:38	MR	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	12/07/06 18:00	MET	SM19 4500NO2B
Sulfate	19.2	10	mg/l	1	01/03/07 01:00	JH	EPA 300/SW846 9056
Sulfide	< 2.0	2.0	mg/l	1	12/12/06	JA	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-16S-120606		
Lab Sample ID:	J48443-4F	Date Sampled:	12/06/06
Matrix:	AQ - Groundwater Filtered	Date Received:	12/07/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	1.7	1.0	mg/l	1	12/29/06 01:23	ESJ	EPA415.1/SW8469060M

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-16B-120606		
Lab Sample ID:	J48443-3	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A45609.D	1	12/20/06	PWC	n/a	n/a	V1A1952
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	1.0	0.52	ug/l	
74-83-9	Bromomethane	ND	1.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	1.4	ug/l	
75-15-0	Carbon disulfide	ND	1.0	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.74	ug/l	
75-00-3	Chloroethane	ND	1.0	0.65	ug/l	
67-66-3	Chloroform	ND	1.0	0.18	ug/l	
74-87-3	Chloromethane	ND	1.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	16.0	1.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	1.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	0.72	1.0	0.41	ug/l	J
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.15	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.16	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-16B-120606		
Lab Sample ID:	J48443-3	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
Method:	SW846 8260B	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	1.2	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		77-121%
17060-07-0	1,2-Dichloroethane-D4	128%		65-133%
2037-26-5	Toluene-D8	93%		80-117%
460-00-4	4-Bromofluorobenzene	108%		79-124%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-MW-16B-120606		
Lab Sample ID:	J48443-3	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
Method:	SW846 8015	Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33580.D	1	12/13/06	HSC	n/a	n/a	GII1679
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	6.70	0.10	0.066	ug/l	
74-84-0	Ethane	0.60	0.10	0.056	ug/l	
74-85-1	Ethene	0.72	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-MW-16B-120606		
Lab Sample ID:	J48443-3	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	153000	30000	ug/l	3	12/26/06	12/27/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18563
(2) Prep QC Batch: MP37400

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-16B-120606		
Lab Sample ID:	J48443-3	Date Sampled:	12/06/06
Matrix:	AQ - Ground Water	Date Received:	12/07/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	37.6	5.0	mg/l	1	12/20/06	JA	EPA 310.1
Chloride	128	2.0	mg/l	1	01/03/07 00:05	JH	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	< 0.11	0.11	mg/l	1	12/30/06 13:37	MR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	12/30/06 13:37	MR	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	12/07/06 17:55	MET	SM19 4500NO2B
Sulfate	1690	100	mg/l	10	01/03/07 18:49	JH	EPA 300/SW846 9056
Sulfide	< 2.0	2.0	mg/l	1	12/12/06	JA	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Report of Analysis

Client Sample ID:	GW-MW-16B-120606		
Lab Sample ID:	J48443-3F	Date Sampled:	12/06/06
Matrix:	AQ - Groundwater Filtered	Date Received:	12/07/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon	21.4	1.0	mg/l	1	12/29/06 01:16	ESJ	EPA415.1/SW8469060M

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-TMW-2-112906		
Lab Sample ID:	J47796-6	**Date Sampled:**	11/29/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	D120651.D	1	12/06/06	YL	n/a	n/a	VD4809
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	5.0 R	4.6	ug/l	
71-43-2	Benzene	ND	1.0	0.37	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.14	ug/l	
75-25-2	Bromoform	ND	1.0	0.52	ug/l	
74-83-9	Bromomethane	ND	1.0	0.39	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0 R	1.4	ug/l	
75-15-0	Carbon disulfide	ND	1.0	0.38	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.53	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.74	ug/l	
75-00-3	Chloroethane	ND	1.0	0.65	ug/l	
67-66-3	Chloroform	ND	1.0	0.18	ug/l	
74-87-3	Chloromethane	ND	1.0	0.20	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.17	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.089	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.57	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.49	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.18	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.56	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.15	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.44	ug/l	
591-78-6	2-Hexanone	ND	5.0	0.35	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	0.50	ug/l	
75-09-2	Methylene chloride	ND	2.0	0.53	ug/l	
100-42-5	Styrene	ND	1.0	0.069	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.11	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.39	ug/l	
108-88-3	Toluene	0.51	1.0	0.41	ug/l	J
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.094	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.15	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.16	ug/l	

ND = Not detected   MDL - Method Detection Limit   J = Indicates an estimated value
RL = Reporting Limit   B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range   N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-TMW-2-112906		
Lab Sample ID:	J47796-6	**Date Sampled:**	11/29/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.77	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.34	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		77-121%
17060-07-0	1,2-Dichloroethane-D4	113%		65-133%
2037-26-5	Toluene-D8	96%		80-117%
460-00-4	4-Bromofluorobenzene	111%		79-124%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-TMW-2-112906		
Lab Sample ID:	J47796-6	**Date Sampled:**	11/29/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
Method:	SW846 8015	**Percent Solids:**	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II33505.D	1	12/08/06	HSC	n/a	n/a	GII1676
Run #2							

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	8.97	0.10	0.066	ug/l	
74-84-0	Ethane	1.2	0.10	0.056	ug/l	
74-85-1	Ethene	ND	0.10	0.075	ug/l	

ND = Not detected MDL - Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-TMW-2-112906		
Lab Sample ID:	J47796-6	**Date Sampled:**	11/29/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Sodium	12700	10000	ug/l	1	12/18/06	12/19/06	LH	SW846 6010B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA18522
(2) Prep QC Batch: MP37272

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-TMW-2-112906		
Lab Sample ID:	J47796-6	**Date Sampled:**	11/29/06
Matrix:	AQ - Ground Water	**Date Received:**	12/01/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3	586	13	mg/l	1	12/12/06	ST	EPA 310.1
Chloride	19.4	2.0	mg/l	1	12/21/06 02:27	JH	EPA 300/SW846 9056
Nitrogen, Nitrate [a]	<0.11	0.11	mg/l	1	12/21/06 14:56	NR	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	<0.10	0.10	mg/l	1	12/21/06 14:56	NR	EPA 353.2/LACHAT
Nitrogen, Nitrite	<0.010	0.010	mg/l	1	12/01/06 14:45	ST	SM19 4500NO2B
Sulfate	35.0	2.0	mg/l	1	12/21/06 02:27	JH	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	12/06/06	ST	EPA 376.1

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	GW-TMW-2-112906		
Lab Sample ID:	J47796-6F	Date Sampled:	11/29/06
Matrix:	AQ - Groundwater Filtered	Date Received:	12/01/06
		Percent Solids:	n/a
Project:	GE - Parker Hannifin - Old Erie Canal Site, Clyde, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Dissolved Organic Carbon [a]	12.7	2.0	mg/l	2	12/26/06 20:28	MO	EPA415.1/SW8469060M

(a) Detection limit raised due to dilution required for possible matrix interference.

RL = Reporting Limit