



Write or Copy/Paste Document Title In This Space

Report. HW. 734014. 2009-01-01. RIR

DO NOT PHOTOCOPY. PRINT FROM PDF VERSION ONLY.





SITE INVESTIGATION REPORT

FRAZER and JONES SITE

3000 Milton Avenue

Solvay, New York

Prepared For

FRAZER and JONES COMPANY

By



January 2009

GOULD GROUNDWATER INVESTIGATIONS, INC.

300 Brooklea Drive
Fayetteville, NY 13066
315.637.3165 *office*
315.637.9891 *fax*
www.gouldgw.com

RECEIVED
JAN 30 2009
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
REGION 7

January 30, 2009

Mr. Tom Annal
NYSDEC Region 7
615 Erie Blvd West
Syracuse, New York 13204

Re: Site Investigation Report
Frazer and Jones Co – Solvay, NY
GGI Job No. 1050

Dear Mr. Annal:

In accordance with the February 25, 2008 Order on Consent between the NYSDEC and the Frazer and Jones Company, please find enclosed three copies of the Site Investigation Report, dated January 2009 for your review and comment.

If you have any questions or comments, please feel free to contact me at (315) 637-3165 or by e-mail at ggould@gouldgw.com.

Very truly yours,

Gerald Gould
Certified Ground Water Professional

GG/gg
Enclosures

cc: Ms. Mary Jane Peachey, Regional Engineer, NYSDEC (1 copy)
Mr. Mark Novakowski, Frazer and Jones (2 copies)
Mr. Kevin Bernstein, Bond Schoeneck and King (1 copy)

SITE INVESTIGATION REPORT

FRAZER and JONES SITE

3000 Milton Avenue

Solvay, New York

Prepared For

FRAZER and JONES COMPANY

By



January 2009

SITE INVESTIGATION REPORT

FRAZER AND JONES SITE

TABLE OF CONTENTS

SectionTitle Page

1 INTRODUCTION 1

1.1 Purpose 1

1.2 Report Organization 1

2 SITE DESCRIPTION AND BACKGROUND 3

2.1 Site Location, Ownership and Access 3

2.2 Site Description 3

2.2.1 Regional Setting 3

2.2.2 Site Setting 5

2.3 Site History 10

2.3.1 Frazer and Jones Site Development and Operations Chronology 10

2.3.2 Aerial Photograph Review 11

2.3.3 NYSDEC Correspondence File Review 13

2.4 Summary of Previous Investigation Findings 14

2.4.1 Frazer and Jones Site 14

2.4.2 Neighboring Sites 15

3 SITE INVESTIGATION 18

3.1 Site Management 18

3.2 Background Review 19

3.3 Base Map Development 19

3.4 Site Survey 20

3.5 Surface Soil Sampling 20

3.6 Backhoe Test Pits 22

3.7 Subsurface Soil Samples 24

3.8 Monitoring Wells and Piezometers 25

3.8.1 Monitoring Well Installation Procedures 25

3.8.2 Drilling Observations 28

3.9 Groundwater Sampling 31

3.10 Surface Water and Surface Water Sediment Sampling 31

3.11 Groundwater Level Measurement 33

3.12 Hydraulic Conductivity Testing 33

3.13 Site Survey – Phase II 35

3.14 Ambient Air Monitoring 35

3.15 Health and Safety Program 35

3.16 Quality Assurance/Quality Control Program 36
3.17 Data Validation 36

4 INVESTIGATION RESULTS 37

4.1 Identification of Standards, Criteria and Guidelines 37
4.1.1 Soil 37
4.1.2 Groundwater 38
4.1.3 Surface Water 39
4.1.4 Surface Water Sediment 39
4.2 Data Usability Summary 39
4.3 Analytical Results 40
4.3.1 Surface Soil Sample Analytical Results 40
4.3.2 Subsurface Soil Sample Analytical Results 43
4.3.3 Groundwater Sample Analytical Results 44
4.3.4 Surface Water Sample Analytical Results 46
4.3.5 Sediment Sample Analytical Results 48

5 CONCLUSIONS 51

5.1 Surface Soil 51
5.2 Subsurface Soil 51
5.3 Groundwater 52
5.4 Surface Water 52
5.5 Sediment 53

6 REFERENCES 54

List of Figures

Figure 1 Site Location Map 4
Figure 2 Site Layout 6
Figure 3 Surface and Subsurface Soil Sample Locations 21
Figure 4 Test Pit Locations 23
Figure 5 Monitoring Well and Piezometer Locations 26
Figure 6 Cross Section A-A' 29
Figure 7 Cross Section B-B' 30
Figure 8 Surface Water and Sediment Sample Locations 32
Figure 9 Water Table Surface 34
Figure 10 SCG Exceedances in Surface and Subsurface Soils 41
Figure 11 SCG Exceedances in Groundwater 45
Figure 12 SCG Exceedances in Surface Water 47
Figure 13 SCG Exceedances in Sediment 49

List of Appendices

A **Oversize Drawings**

B **Site History Documentation**

C **Test Pit Data**

D **Drilling Data**

E **Monitoring Well Records**

F **Analytical Results**

1 INTRODUCTION

1 INTRODUCTION

The Frazer and Jones Company entered into an Order on Consent with the New York State Department of Environmental Conservation (NYSDEC) to evaluate environmental concerns at the company's Solvay, New York facility. The consent order, among other things, requires Frazer and Jones to conduct an investigation of spent foundry sand piles located on their property. Gould Groundwater Investigations, Inc. (GGI) was contracted by the Frazer and Jones Company to conduct a Site Investigation/Remedial Alternative Report (SI/RAR). This document, "Frazer and Jones Site Investigation Report," submitted in fulfillment of the spent foundry sand investigation requirement of the Order on Consent, presents the findings of the Site Investigation.

1.1 Purpose

The purpose of this Site Investigation Report is to present the findings of the Site Investigation performed during the summer of 2008. The Site Investigation was conducted in accordance with the "Site Investigation and Remedial Alternatives Report Work Plan," dated May 2008 and prepared by GGI. The Work Plan was approved by NYSDEC on July 12, 2008. The purpose of the investigation was to assess the quality and quantity of spent foundry sand at the Frazer and Jones facility and to provide the basis for evaluating remedial alternatives for the spent foundry sand pile. Identification and evaluation of remedial technologies and alternatives, and a recommended remedial action plan for the site will be provided, under separate cover, in the Remedial Alternatives Report.

1.2 Report Organization

This report is presented in a format that allows for a logical and ordered progression of the descriptions and findings of the investigation. Section 1.0 discusses the project objectives. Section 2.0 discusses the site background and a review of the site history, including a discussion of previous investigations and a summary of the results. Section 3.0 provides a detailed description of the field program methods used and observations made during the site investigation phase of the project. Section 4.0 presents the analytical results, and discusses the

nature and extent of the contamination compared to the standards, criteria and guidelines for the various media sampled. Section 5.0 presents the conclusions of the site investigation based on investigation observations and laboratory analytical results.

2 SITE DESCRIPTION AND BACKGROUND

2 SITE DESCRIPTION AND BACKGROUND

The Frazer & Jones Company is a Central New York iron foundry that produces high quality ductile and malleable iron products for the automotive, natural gas, electrical, utility, construction tool and mining industries. Frazer and Jones is a leading producer of underground mine roof expansion anchors for the United States, Canadian and Australian mining industries. The Syracuse foundry manufactures approximately 90 million castings per year ranging in size from a few ounces to eight pounds. The foundry has been operating in the same location for over 150 years and the present facility occupies almost 210,000 square feet and employs approximately 130 people (Frazer and Jones, 2008).

2.1 Site Location, Ownership and Access

The Frazer and Jones Company is located at 3000 Milton Avenue, Solvay, New York (see Figure 1). The site is owned and operated by the Frazer and Jones Company which is a Division of the Eastern Company located in Connecticut. Motor vehicle access to the site is from the north side of Milton Avenue via a driveway that slopes downhill to the southwest onto the southwestern portion of the property. A railroad siding also provides access from the south side of the property for railcar supply deliveries. There are no other points of vehicular access to the site. Access to the buildings and interior portions of the site is limited by a series of gates and fences.

2.2 Site Description

The following sections describe general site features in the context of regional physiography, geology and climate and in more detailed site specific descriptions.

2.2.1 Regional Setting

The Frazer and Jones Site is located in central New York State in the southern portion of the Erie-Ontario Lowland physiographic province. The site is approximately 30 miles southeast of Lake Ontario (elevation 246 feet above mean sea level) and 1.4 miles southwest of Onondaga Lake (364 feet amsl). The Onondaga Escarpment borders the site and rises to the south to a

DWG PATH: G:\Gerry Gould\Frazer and Jones\005.DWG



Site Investigation Report
Frazer and Jones Site
Solvay, New York

Site Location Map

FIGURE 1

File No.X14

PLOT DATE: 11/16/08

regional maximum elevation of approximately 1,100 feet amsl about five miles away. The site elevation is approximately 420 feet amsl.

Bedrock beneath the Solvay area is mapped as the Syracuse Formation consisting of dolostone, shale and gypsum (Rickard and Fisher, 1970). Surficial geology is mapped as lacustrine silt and clay and is described as "generally laminated clay and silt deposited in proglacial lakes, generally calcareous with potential land instability and thickness up to 150 feet" (Muller and Cadwell, 1986). Unconsolidated aquifer mapping for the region indicates that the site is underlain by a confined sand and gravel aquifer overlain by till, fine sand, silt or clay (Miller, 1987).

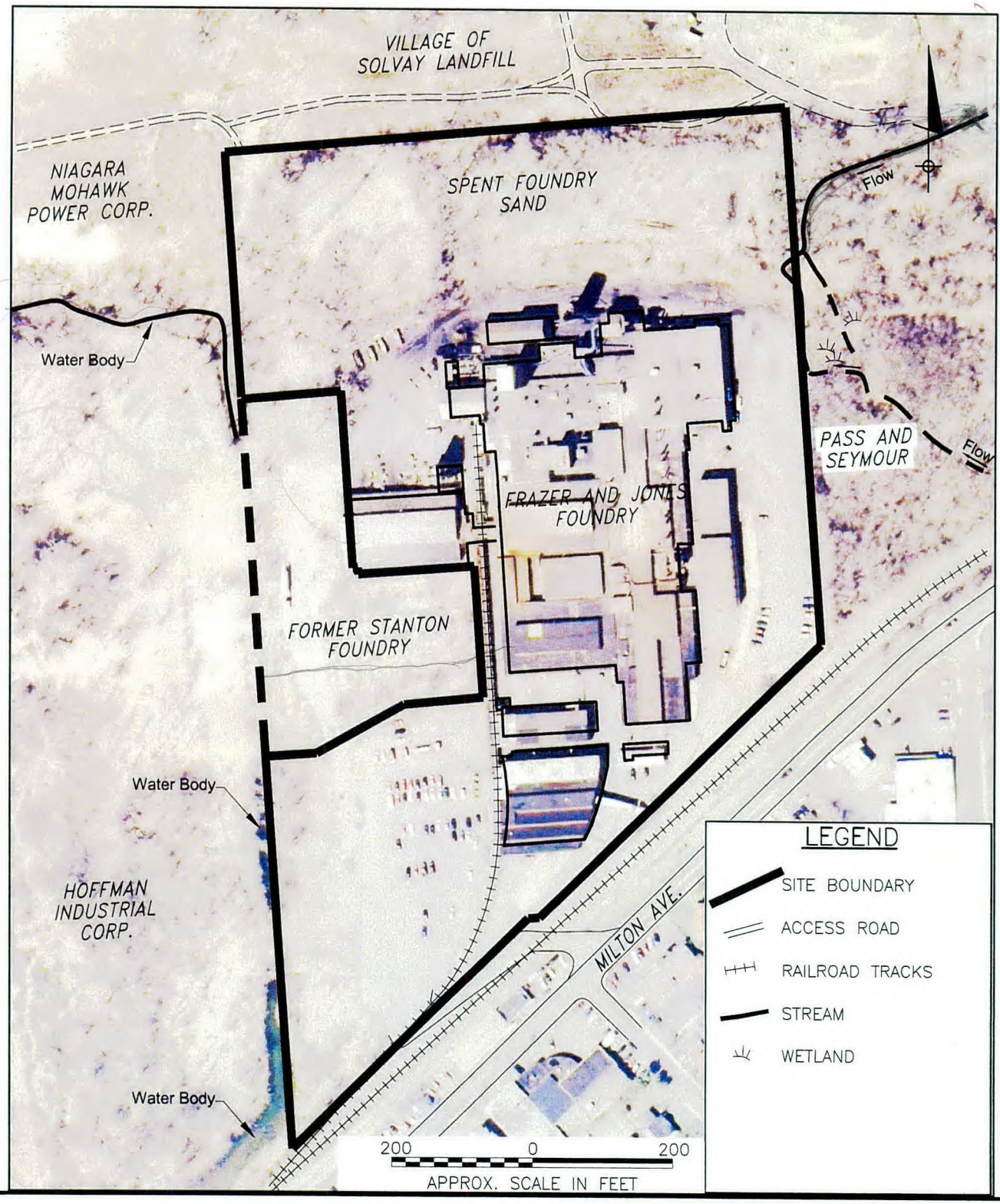
Natural Resource Conservation Service mapping of the site and surrounding areas indicates the presence of "made land", "cut and fill land" and "urban land." These classifications are described as areas consisting mainly of chemical waste material. The chemical waste material originated from the Solvay Process Company and was deposited as a slurry. The chemical composition of the waste is 50% calcium carbonate, 11% calcium hydroxide, 11% calcium chloride, 9% sodium chloride, 5.5% silica, 4.5% calcium oxide, 4% magnesium oxide, 2.5% calcium sulfate, and 2% iron and aluminum oxides with a pH generally greater than 10 (Natural Resource Conservation Service, 1973).

The climate in Central New York is classified as humid continental with Lake Ontario influencing the climate by moderating temperatures. Average annual precipitation is about 36 inches and the average annual daily maximum and minimum temperatures are 57 and 38 degrees Fahrenheit, respectively.

2.2.2 Site Setting

The 18 acre site is located on the north side of Milton Avenue in an urban industrial neighborhood and is adjacent to a low-lying undeveloped area south of the New York State Fairgrounds. Much of the Frazer and Jones Site is paved or occupied by buildings. Figure 2

DWG PATH: G:\Gerry Gould\Frazer and Jones\002.DWG



Site Investigation Report
Frazer and Jones Site
Solvay, New York

Site Layout

FIGURE 2

PLOT DATE: 11/16/08

FILE NO. XX2

presents the site boundaries and general site layout. Drawing SP-1 in Appendix A provides property boundaries, facility layout and topography at a larger scale.

Topography

The southern portion of the property exhibits the highest elevation. Ground surface is 439 feet amsl at the intersection of the entrance driveway and Milton Avenue. The driveway slopes downward to an elevation of about 415 feet amsl and the majority of the site parking lots and building ground floors are at this elevation. The northern one-third of the property, approximately five acres, contains spent foundry sand piles. These piles rise to approximately 15 feet above the parking lot to the south and 25 feet above the ground surface to the north of the property line. The foundry sand piles are overgrown with trees and scrub brush. Steep slopes trend north, east and west to the property boundaries. The bottom of the foundry sand pile is approximately 408 feet amsl.

Surface Water and Drainage

Two intermittent streams flow near the site. Neither stream is a NYSDEC classified water body. The first originates at a culvert that passes under the railroad tracks approximately 900 feet east of the Frazer and Jones driveway and conveys storm water originating from Milton Avenue. The stream flows toward the northeast corner of Frazer and Jones property, turns northward and then eastward and flows toward the former Village of Solvay landfill where it becomes intermittent in a wetland area adjacent to Geddes Brook. Flow in the stream is highly dependent on precipitation and storm water runoff from Milton Avenue. A second water body is located on the west side of Frazer and Jones and appears to flow northward, parallel to the Frazer and Jones west property line. It then turns west and the channel disappears into NYSDEC wetland SYW-5. The wetland is designated Class 2 and occupies approximately 52 acres between the site and Geddes Brook. Geddes Brook is Class C water body approximately 850 feet west of Frazer and Jones that flows northeast, approximately two miles, into Nine Mile Creek. Nine Mile Creek discharges into Onondaga Lake.

Boundaries

The site is bounded to the south by the Fingerlakes Rail Lines railroad tracks, which separate the site from Milton Avenue and a commercial/residential section of the Village of Solvay. The west side is bounded by the Hoffman property (formerly the Stanton Foundry) which is currently vacant and not maintained. The Stanton Foundry property contains deteriorated parking lots, scrub brush and wooded areas. The north edge of Frazer and Jones includes a 20-foot wide, east-west trending permanent right-of-way for a sanitary sewer controlled by the Onondaga County Department of Water Environment Protection (OCDWEP). North of the sewer easement is a Niagara Mohawk Power Corporation property running east-west along the northern property boundary. The Pass and Seymour Company owns property that borders the east property line and is partially fenced and consists of scrub brush, small trees and a poorly drained wet area.

Land Use

The Frazer and Jones Site land use consists of the facility buildings, parking lots, driveway, a railroad siding and spent foundry sand pile. The buildings occupy the middle portion of the site and contain raw material storage areas, mold shops, furnaces, conveyor systems, finishing areas, packaging and shipping areas, laboratories and offices. Parking lots surround the building complex with employee parking on the east and west sides of the facility and visitor parking on the south side.

The railroad siding enters the site at the southwest corner and passes through the southwest parking lot to a loading and unloading area in the middle of the site. Rail traffic occurs periodically when raw materials are delivered to Frazer and Jones. The railroad siding crosses the main driveway and traffic in and out of the site is halted when rail cars are moved through the site. The main railroad track also crosses the driveway and impedes vehicular traffic moving between Milton Avenue and the site when trains pass.

The northern portion of the property contains the spent foundry sand pile. The pile consists of two mounds separated by a former access road and drainage swale the runs north-south from the building complex to the north property line. The west pile is approximately 2.0 acres and the east pile is approximately 2.2 acres in size. Utility poles with electrical power lines are located on the sand pile and run northeast off-site.

During winter months the Frazer and Jones entrance road is used by the Village of Solvay for the transport of excess snow cleared from village streets and parking lots. The snow is transported by dump truck and piled in the Frazer and Jones southwest parking area and adjacent vacant land. The snow piles are left to melt and run off into the adjacent wetland area.

Adjacent Properties

The Frazer and Jones site is adjoined by several parcels of land. To the south are Milton Avenue and several commercial properties including a former gas station, an auto repair shop, industrial laundry and various other small businesses. The site is bounded on the west by an approximately 23 acre parcel currently owned by the Hoffman Company and formerly occupied by the Stanton Foundry. The Hoffman property is vacant and overgrown with trees and scrub brush. All buildings that formerly occupied the site have been removed and only concrete floor slabs and an approximately 1.5 acre pile of spent foundry sand remain. North of the Frazer and Jones spent foundry sand piles are two sets of electrical transmission lines that run east-west. North of the power lines is the 18-acre former Village of Solvay landfill site. East of the Frazer and Jones site is a 12-acre parcel owned by the Pass and Seymour Company.

Three electrical substations are located near the Frazer and Jones Site. One substation is located on Horan Road, approximately 1,200 feet west-northwest of Frazer and Jones. The construction of the superstructure of this station using rivets as fasteners, suggests it was built prior to the 1940s. The substation is visible in a 1938 aerial photograph (Cornell, 2009). A second substation is located on Village of Solvay property 750 feet northeast of the Frazer and Jones Site and is operated by the Solvay Electric Company. This substation has been in existence since at least 1966 as indicated in aerial photography for that year (Cornell, 2009). A

third electrical substation was recently decommissioned and formerly located on Pass and Seymour property, approximately 900 feet east of Frazer and Jones. Several sets of electrical transmission lines run between the transformers and adjacent to the Frazer and Jones property. The substations and some of the utility poles on these lines contain electrical equipment including transformers, capacitors and switches. It is likely that some of this equipment contained PCBs over the history of operation of the facilities.

2.3 Site History

The Frazer and Jones site history was compiled through a review of Frazer and Jones Company records, interviews with current employees and a review of NYSDEC files. A summary of the history from each of these sources is provided below.

2.3.1 Frazer and Jones Site Development and Operations Chronology

Foundry operations at the Frazer and Jones Site began in 1845 when the company was known as Frazer and Benedict. The company name changed to Frazer and Burns in 1847, Frazer, Burns and Jones in 1875, and Frazer and Jones Company in 1882. In 1945, Frazer and Jones became part of the Eastern Malleable Iron Co., which is now the Eastern Companies (Weeks, 1952).

Since its inception, Frazer and Jones has operated a high quality ductile and malleable iron foundry. Historically the company has been known for the production of railroad-related castings, C-clamps and most recently as a supplier of engineered roof support anchors for the mining industry.

As part of its historic operation, Frazer and Jones generated wastes including molding sand sludge, broken cores, core butts and floor sweepings of molding sand. Frazer and Jones is a Green Sand foundry, which means that bentonite, rather than phenolic compounds, acts as the binding agent for molds. Waste materials were once disposed on-site in the spent sand piles located north of the buildings. The spent sand piles also reportedly contain iron shot blast waste, scrubber dust, and slag. In 1985 it was estimated that approximately 2,000 tons per year of waste

material were disposed in the spent sand piles (NYSDEC, 1985). In 1988 Frazer and Jones began removing spent foundry sand from the northern portion of the site and disposed of the sand at the Auburn landfill (Frazer and Jones, 1988). In June 1991, Frazer and Jones reported off-site removal of approximately 8,700 tons of waste material from the spent sand piles. Frazer and Jones has also supplied spent foundry sand to Lafarge North America for use in the manufacture of cement.

2.3.2 Aerial Photograph Review

Historical aerial photographs of the Frazer and Jones site and surrounding areas were reviewed to determine the sequence of overall site development. The aerial photos included images from county-wide aerial photo coverage from 1938, 1951, 1966, 1978, 1990 and 1995 that are available for public viewing at the Onondaga County Farm Bureau in Lafayette, New York. Photocopies of the aerial photographs are presented in Appendix B.

In general the aerial photographs provide visual evidence of the construction of new buildings, land filling to increase useable land area, accumulation of waste materials, construction of roads, above-ground electrical transmission lines, sub-stations and uses of farmed land. Table B-2, in Appendix B provides observations about each aerial photograph. Below is a summary of those observations by year.

In 1938 the Frazer and Jones facility footprint appears very similar to today's layout. Most of the present-day building footprints existed and the driveway and railroad siding are present and in the same locations as today. Buildings of the Stanton Foundry are evident to the west of Frazer and Jones. The northern portion of the Frazer and Jones facility is bordered by a dirt road that is an extension of the present-day Matthews Avenue. Cultivated farm fields are visible on the north and south sides of Matthews Avenue adjacent to the Frazer and Jones property.

By 1951, the area between the Frazer and Jones northernmost buildings and Matthews Avenue show evidence of disturbance indicating land filling from Frazer and Jones progressing northward. Two distinct lobes can be seen extending north of the 1938 fill face.

In 1961 the two lobes have coalesced into a single fill face that partially covers Matthews Avenue. This seems to be the prototype of the spent foundry sand piles observed today.

By 1978, the fill piles appear to be the same size and geometry as they are today. The west sand pile exhibits what appears to be construction and demolition debris. Matthews Avenue appears to have been blocked from through traffic near the present day entrance to the Village of Solvay Landfill. Disturbed soil and accumulated debris indicate that waste is accumulating at the location of the present Village of Solvay Landfill, about 250 feet north of the Frazer and Jones property line. An access road has been constructed around the base of fill at the Frazer and Jones spent sand pile.

By 1990, the geometry of the spent foundry sand pile is largely unchanged. Grass, brush and trees are observed on the pile and a perimeter access road is visible around and on top of the east pile. Disturbed soils at the Matthews Avenue and Solvay Landfill sites indicate continuing activity.

In 1995, the buildings of the Stanton Foundry, formerly located on the western edge of Frazer and Jones buildings, have been demolished. Vegetation covers the Frazer and Jones spent foundry sand pile with no signs of recent disturbance. The small stream that flows near the northeast corner of the Frazer and Jones site exhibits a noticeable channel trending west, then north and disappearing between the Matthews Avenue site and the Solvay Landfill. The small stream that parallels the west boundary of the Frazer and Jones property has been buried or filled.

Based on the aerial photographs, it appears that active expansion of the spent foundry sand pile occurred between 1951 and 1978. Since 1978, the footprint of the sand pile has remained unchanged.

2.3.3 NYSDEC Correspondence File Review

NYSDEC and Frazer and Jones correspondence files were reviewed for information pertaining to spent foundry sand disposal and plant operations related to foundry sand disposal. A listing of documents reviewed is provided in Table B-1 in Appendix B. Copies of selected documents are provided in Appendix B. A summary of the pertinent documents follows.

NYSDEC records regarding spent foundry sand and the operation of an on-site landfill at Frazer and Jones indicate a history of cooperation and operation in compliance with NYSDEC regulations. In 1977, Frazer and Jones completed an Industrial Chemical Survey in which it acknowledged the use of a landfill in the rear of the plant. In 1979, NYSDEC inspections noted the landfill was unlined and expressed concern about possible leaching of phenols into groundwater. Frazer and Jones provided explanations of the processes and chemicals used at the plant and offered cooperation with NYSDEC and an open invitation to inspect the site. An October 1979 NYSDEC memorandum recommended that the Frazer and Jones Foundry be downgraded to a Class E priority meaning that the site was a "Properly operated or closed and maintained site; periodic surveillance and chemical analysis required."

Between 1980 and 1984, spent foundry sand was analyzed for permeability and phenol concentrations in an effort to characterize the sand for a beneficial use or off-site disposal. A December 1984 NYSDEC Hazardous Waste Compliance inspection of the Frazer and Jones facility reported that Frazer and Jones had replaced PCB capacitors with non-PCB capacitors. Six PCB capacitors were shipped to the Cecos hazardous waste landfill and other hazardous wastes were properly handled and disposed. The inspection concluded that that no further follow-up was required. A June 1985 letter from Frazer and Jones to Wehran Engineers reports compliance with several environmental regulations including documentation that the facility operated under an Onondaga County Industrial waste permit and several air permits. In 1986 a

Phase I investigation Report on the Frazer and Jones facility was completed by Wehran Engineers. The results of the Phase I investigation are discussed in Section 2.4.1 of this report. In 1988 a Frazer and Jones purchase order and internal memos indicate that spent foundry sand was shipped for disposal at the Auburn Landfill and on-site disposal ceased. From 1989 to 1991 Frazer and Jones continued evaluation of waste slag and foundry sand and explored various disposal alternatives.

2.4 Summary of Previous Investigation Findings

Several environmental investigations have been conducted at Frazer and Jones and surrounding sites. The results of some of these investigations are summarized below.

2.4.1 Frazer and Jones Site

The only previous environmental investigation report on record for the Frazer and Jones Site is a Phase I Investigation completed in April 1986 by Wehran Engineers for the New York State Department of Environmental Conservation. The investigation was undertaken as part of the NYSDEC program of Engineering Investigations at Inactive Hazardous Waste Sites in New York State. The investigation was designed to evaluate the potential environmental and public health hazards associated with disposal activities at the Frazer and Jones Site. The investigation involved a review of available records and a site visit. No sampling, laboratory analysis, drilling or other intrusive environmental investigations were conducted.

The results of the Phase I investigation indicated that spent core sands containing phenolic binders were disposed on-site at the estimated rate of 3,000 tons per year. The concern was raised that phenolic compounds have the potential to migrate into groundwater, surface water and subsurface soils. The report concluded that there were "no known environmental problems at the site." The report also calculated a Hazardous Ranking System Score, based on EPA methodology, of 7.19. The score was based largely on the potential for groundwater, surface water and subsurface soils contamination from phenols leaching out of the foundry sand pile. The pile was estimated at five acres in aerial extent. A Phase II investigation was recommended, but never conducted.

2.4.2 Neighboring Sites

Village of Solvay Landfill

The Village of Solvay Landfill is a recently capped landfill that received municipal and industrial waste from the 1950s to 1991. The Solvay Landfill is located approximately 250 feet north of the Frazer and Jones Site. The two sites are separated by a low-lying area exhibiting poor drainage and wetland vegetation. Two sets of electrical power transmission lines run between the two sites. A power line service road built on fill material to raise it above the wetland, parallels the power lines and separates surface water drainage between the two sites.

In February 1992, the Village of Solvay entered into a consent order agreement with NYSDEC to conduct a closure investigation. In 1994 monitoring wells were installed including an up-gradient well (MW-1) located on the Frazer and Jones northern property boundary. The well was installed and sampled on September 21, 1994. Sampling results indicated exceedances of groundwater standards for sodium, manganese, magnesium and iron. An October 18, 2004 groundwater monitoring report for samples collected on December 29, 2003 identified exceedances of groundwater standards for total phenols (4.6 ppb to 190 ppb), iron (4 to 8.9 ppm), magnesium (410 to 530 ppm), manganese (420 to 680 ppb) and sodium (120 to 480 ppm). The well was replaced in 2007 as part of the landfill closure construction. The boring log for the 1994 well is presented in Appendix B.

In April 2003, NYSDEC conducted sediment sampling in the wetland area north of the Frazer and Jones property. Four sediment samples were collected including one from a location near the Stanton Foundry northwest property corner and Geddes Creek, two from near Frazer and Jones' north property line and one from near the Pass and Seymour property. Results of the sampling indicated a few isolated detections of low concentrations of volatile organic compounds and a few semi-volatile organic compounds that were predominantly polynuclear aromatic hydrocarbons (PAHs). The sample results also indicated concentrations of PCBs in exceedance of environmental standards and guidelines. Aroclor 1254 concentrations ranged from non-detect, in one of the samples near Frazer and Jones and one near Pass and Seymour, to 260

µg/kg and 1,900 µg/kg in the other sample near Frazer and Jones and the sample near the Stanton Foundry Site, respectively. Elevated metals concentrations were identified in all of the samples with the highest concentrations of iron and zinc near the Frazer and Jones property (NYSDEC, 2003)

Matthews Avenue Site

The Mathews Avenue site is a 70 acre area with a 20 acre landfill located approximately 800 feet northeast of Frazer and Jones. A Preliminary Site Assessment Report dated April 2007 presents the result of an investigation at the Matthews Avenue Site. The site was owned and operated by the Solvay Process Company and Allied Chemical Corporation. The landfill received unburned sandstone and limestone rock waste from the Solvay soda ash lime kiln, paper, bricks, wood and demolition debris. The landfill was operating under a NYSDEC Part 360 permit when it closed in 1988. In 2002 a consent order was issued requiring investigation and closure of the site (O'Brien and Gere, 2007).

Stanton Foundry

The Stanton Foundry once occupied the property immediately west of Frazer and Jones. Stanton Foundry reportedly manufactured gray iron and produced phenolic molding sand wastes. A spent sand pile currently exists on the western portion of the Stanton Foundry property. It is unknown when the Stanton Foundry ceased operation; however, the Stanton Foundry buildings were demolished in 1993. In 1988 a site characterization study was conducted on the Foundry Sand Disposal Area (Hancock and Estabrook, 1988). This area is located on the east border of the Stanton property at the edge of a NYSDEC wetland. Samples of spent foundry sand, surface water and groundwater were collected and analyzed. The report concluded that the sand was non-hazardous and groundwater contained 5 ppb total phenols. The report also estimated that 122,000 tons of foundry sand are present and are located within a NYSDEC designated wetland. The report also indicates that as of 1988, on-site disposal was no longer practiced.

Pass and Seymour

The Pass and Seymour site is an 18 acre parcel of land on the east boundary of Frazer and Jones. The site was used for the manufacture of electrical components including steel milling and porcelain production. Trichoroethene is known to have been used to clean porcelain prior to firing. A dump was operated on the western one third of the site between 1900 and the 1980s. A February 2006 Brownfield Remedial Investigation Report (SWRNA, 2006) documents the results of groundwater sampling conducted at the site. The results indicate TCE and PCE contamination in concentrations exceeding groundwater standards. Several PAHs were also identified in exceedance of standards. Metals including arsenic, lead, nickel, chromium, copper, mercury, and zinc have also been reported to exceed groundwater standards.

3 SITE INVESTIGATION

3 SITE INVESTIGATION

The purpose of this section is to document the field activities and techniques used to investigate the Frazer and Jones Site. Fieldwork was performed during the summer of 2008 and included surveying, backhoe test pits, soil borings, installation of piezometers and monitoring wells and sampling of surface soil, subsurface soil, groundwater, surface water and sediment. The field investigation was conducted in accordance with the NYSDEC approved Site Investigation and Remedial Alternatives Report Work Plan (Gould Groundwater, 2008).

3.1 Site Management

Gould Groundwater Investigations (GGI) was responsible for managing the site investigation field program. Subcontractors reported to GGI whenever they entered or exited the site. The site was accessed by vehicle from the main entrance at Milton Avenue. The northeast portion of the parking lot was used as a temporary storage and lay down area, as needed. Otherwise, equipment, materials and supplies used in the field investigation were brought to the site and removed each day as needed. At night, active work areas were secured to prevent tampering and vandalism.

Field work was conducted during July and August, 2008. During this time the spent foundry sand pile surface was overgrown with tall grasses, phragmites, scrub brush and small trees. Limited clearing was performed using a track mounted excavator to facilitate access for field activities. Brush and tall grass were flattened with the excavator tracks. Larger brush, small trees and tree limbs were cleared using the excavator bucket.

Project meetings were held at work vehicles on-site or in a Frazer and Jones office, when necessary. Daily tailgate safety meetings were conducted at the work zone. On-site communications were conducted face-to-face or by cell phone.

Decontamination of sampling equipment and hand held drilling tools was performed in five-gallon buckets using liquinox and potable water. The excavator, drill rig and large drilling

tools were decontaminated by steam cleaning on the foundry sand pile. Potable water used for decontamination and drilling purposes was obtained at the subcontractors' shop and temporarily stored in plastic tanks on-site until needed. Contaminant levels encountered during the investigation were low, and after determining VOCs were at, or below, background levels by screening with a photoionization detector (PID), wash water from decontamination was allowed to drain onto the site.

3.2 Background Review

A background review of historical and environmental information pertaining to the Frazer and Jones site was conducted to provide information about the development of the site. The background review helps to place the site in context with neighboring sites and local environmental conditions. The review included interviews with Frazer and Jones personnel and record reviews about historic site development, especially as it pertains to the spent foundry sand disposal area. The background review involved identification and evaluation of publicly available literature and mapping including soils maps, geologic maps, hydrogeologic maps, aerial photographs and topographic maps of the area. The background review involved an examination of NYSDEC records including environmental investigations at neighboring sites, and the results of environmental sampling related to the Frazer and Jones landfill and adjoining properties. In addition, the background review included a review of Frazer and Jones records including site plans and company documents. Results of the background review are discussed in Sections 2.3 and 2.4. Summaries and copies of pertinent documents are presented in Appendix B.

3.3 Base Map Development

A base map provided the basis for the field work and the characterization of the limits and volume of the waste foundry sand disposal area. The base map compiled in AutoCAD using an existing Frazer and Jones site plan and aerial photographs. The base map included property boundaries, right-of-ways, on-site buildings, roads, approximate waste disposal limits, surface water bodies, above-ground utilities, proposed investigation sample locations and other significant features. A copy of the base map (drawing HS-1) is provided in Appendix A.

3.4 Site Survey

A site survey was conducted in several phases by Bryant Associates, a New York State licensed surveyor. The first phase involved the establishment of control points at the site which were used to establish a baseline for determining topography. The survey area included the entire site with an emphasis on details in the foundry sand disposal area. The survey consisted of field locating significant features identified on the base map, determining the topography of the waste disposal area and determining the locations and elevations of significant site features including roads, trails, buildings, manholes, surface water bodies and topography. Property boundaries were determined based on deed research and existing drawings provided by Frazer and Jones.

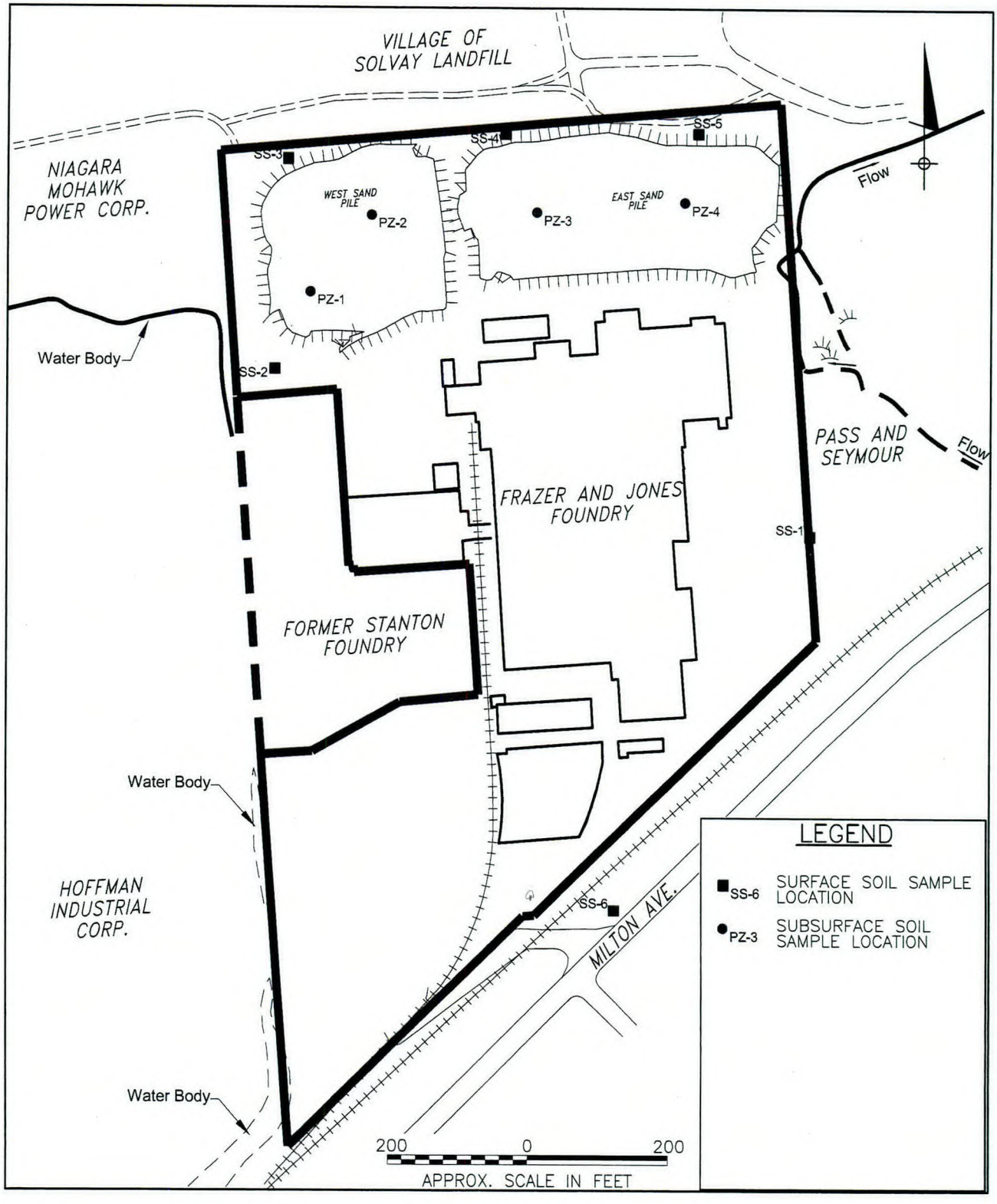
The second phase of surveying was conducted following the completion of the fieldwork. During this phase of surveying, the locations and elevations of test pits, monitoring wells (including water level measurement reference points), surface water sample locations, and other pertinent site features were surveyed and included on the base map.

Appendix A contains drawing SP-1 at a scale of 1" = 60 feet and depicts the full site with property boundaries and site features. Drawing SD-1, also in Appendix A, shows the northern portion of the property featuring the foundry sand pile and investigation locations at a scale of 1" = 40 feet and a contour interval of 2 feet.

3.5 Surface Soil Sampling

Six surface soil samples were collected from various locations across the site. Four samples (SS-2, SS-3, SS-4 and SS-5) were collected at the toe of the waste disposal slopes near the property boundaries (see Figure 3). Sample SS-3 was collected adjacent to a deteriorated drum where the gray granular drum contents have spilled onto the ground. One sample (SS-6) was collected at a side gradient location, adjacent to the east parking lot, away from the sand piles. One background sample (SS-1) was collected at an upgradient, off-site location.

DWG PATH: G:\Gerry Gould\Frazer and Jones\002.DWG



Site Investigation Report
Frazer and Jones Site
Solvay, New York

Surface and Subsurface Soil Sample Locations

FIGURE 3

FILE NO. XX3

PLOT DATE: 10/6/08

The surface soil samples were collected by hand using dedicated sterile gloves or a clean shovel. Surface soil samples were collected from depths of 0 to 2 inches below the ground surface, vegetative cover, or pavement and placed directly into pre-cleaned laboratory containers.

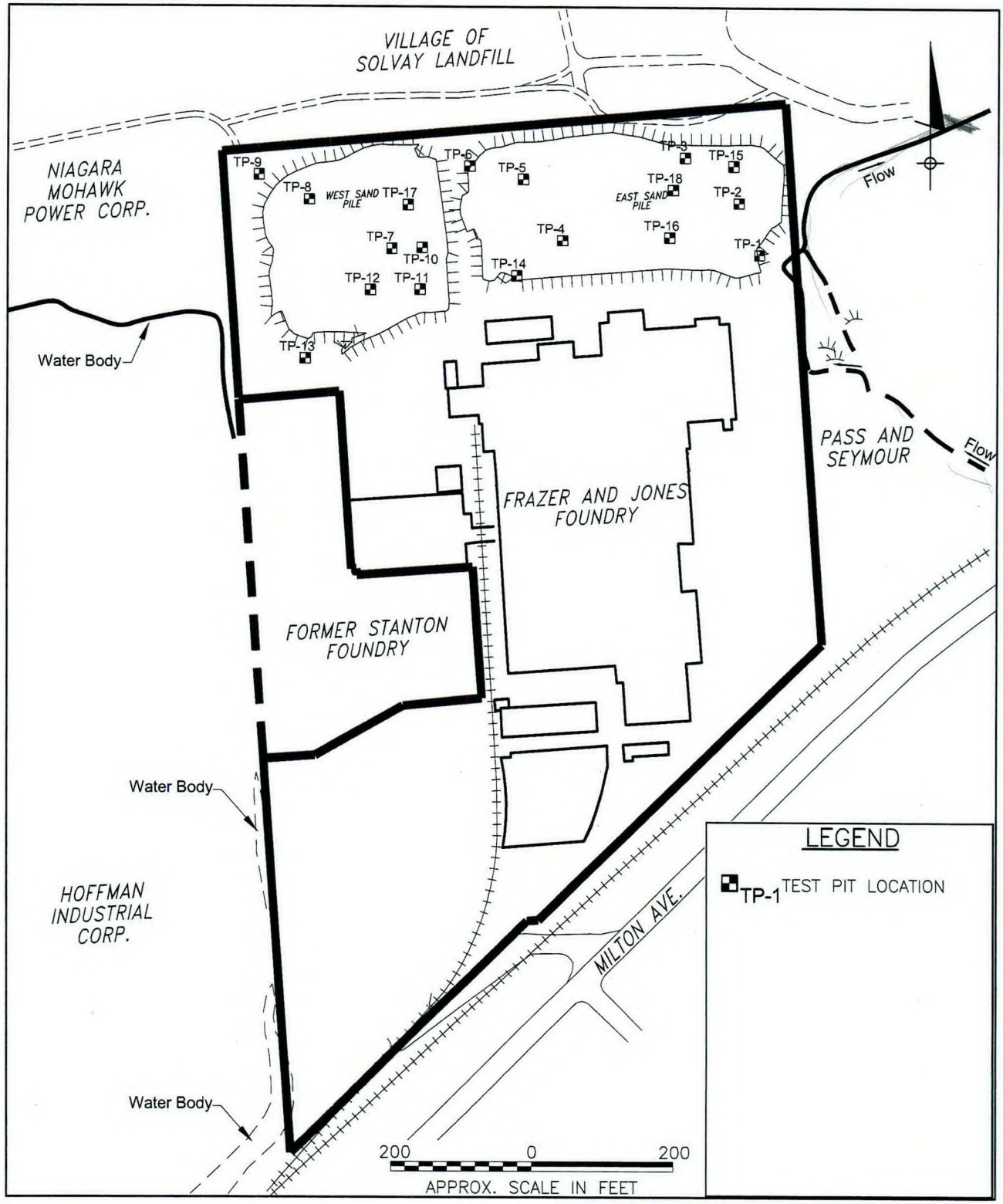
The surface soil samples were collected on August 1, 2008 and analyzed at the laboratory for Target Compound List (TCL) semivolatile organic compounds (SVOCs), PCBs, and Target Analyte List (TAL) metals. Tabulated results are presented on Table F-1 in Appendix F and discussed in Section 4.3.1.

3.6 Backhoe Test Pits

A total of 18 backhoe test pits were excavated in July 2008 to determine the areal vertical and horizontal extent of spent foundry sand, thickness of soil cover, and to identify the shallow stratigraphy of the site. The test pits were excavated using a JCB Model JS130 track mounted excavator operated by Parratt-Wolf, Inc.

The test pits were dug in biased and unbiased locations (see Figure 4). Unbiased locations (TP-1 through TP-9) were determined prior to going into the field by applying a 3 row by 11 column grid with 75 feet node spacing across the spent foundry sand pile. Test pit locations were assigned to every third grid node. Biased locations (TP-10 through TP-18) were based on historic information including personnel interviews, aerial photographs, existing surface features or observations of the unbiased test pits. The test pits were excavated to a maximum depth of 19 feet, or until groundwater or undisturbed soil was encountered, whichever occurred first. Soils were screened in the excavator bucket and in spoils piles using a MiniRae 2000 photoionization detector (PID) to monitor volatile organic compounds and a QRAE Plus PGM 2000 4-gas personal protection monitor meter to monitor percent lower explosive limit, oxygen, carbon monoxide and hydrogen sulfide levels. The instruments were calibrated prior to use and none of the soils screened exhibited measurements above ambient background levels.

DWG PATH: G:\Gerry Gould\Frazer and Jones\002.DWG



Site Investigation Report
Frazer and Jones Site
Solvay, New York

Test Pit Locations

FIGURE 4

FILE NO. XX4

PLOT DATE: 11/16/08

Materials encountered were predominantly black foundry sand from spent molds. Also identified in the test pits were occasional wooden mold frames, spent cores, bricks, slag, scrap metal and bottles and cans. Two drum carcasses and a small metal container containing a white powdery substance were found. Material observed in each pit was visually screened for indications of industrial or hazardous waste. All observed materials exhibited characteristics consistent with iron foundry waste reported to be disposed by Frazer and Jones. The observations are also consistent with wastes documented in a joint NYSDEC – Onondaga County Health Department inspection conducted in 1979 (NYSDEC, 1979). Furthermore, observations of the test pits did not indicate the presence of drum caches, transformers, capacitors or bulk quantities of potentially hazardous wastes.

The test pits were excavated and filled in such a manner as to preserve subsurface conditions prior to excavation. Top soil, if present was placed on one side of the pit and spent foundry sand on the other. If unique waste layers or native soil was encountered the material was segregated on the side of the pit. The pits were filled in the opposite order of material removal, replacing spoils in the same stratigraphic location from which they were removed. The pit was compacted in lifts with the excavator bucket during backfilling and again using the excavator tracks when finished.

Test pit measurements, vapor screening and soil and waste characteristics were logged by a geologist. Test pit depths and elevations are summarized in Appendix C on Table C-1. Test pit logs are also presented in Appendix C.

3.7 Subsurface Soil Samples

A total of eight soil borings were installed to collect overburden soil samples to characterize the foundry sand pile. The soil borings included four borings through the waste disposal area to the top of native soils, three borings for overburden monitoring wells near the edges of the sand piles, and one boring for an upgradient monitoring well. Split spoon samples were collected from each boring, screened with a PID and logged for physical characteristics.

Piezometers were installed in the four borings that were not completed as wells. Four composite subsurface soil samples were collected from soil borings for laboratory analyses in August 2008. Two samples were collected from shallow depths ranging from 6 to 8 feet below ground surface to characterize relatively recently disposed waste material. Two other samples were collected from locations near the bottom of the waste mass (16-18 feet below ground surface) to characterize presumed older waste material. Boring logs are presented in Appendix D.

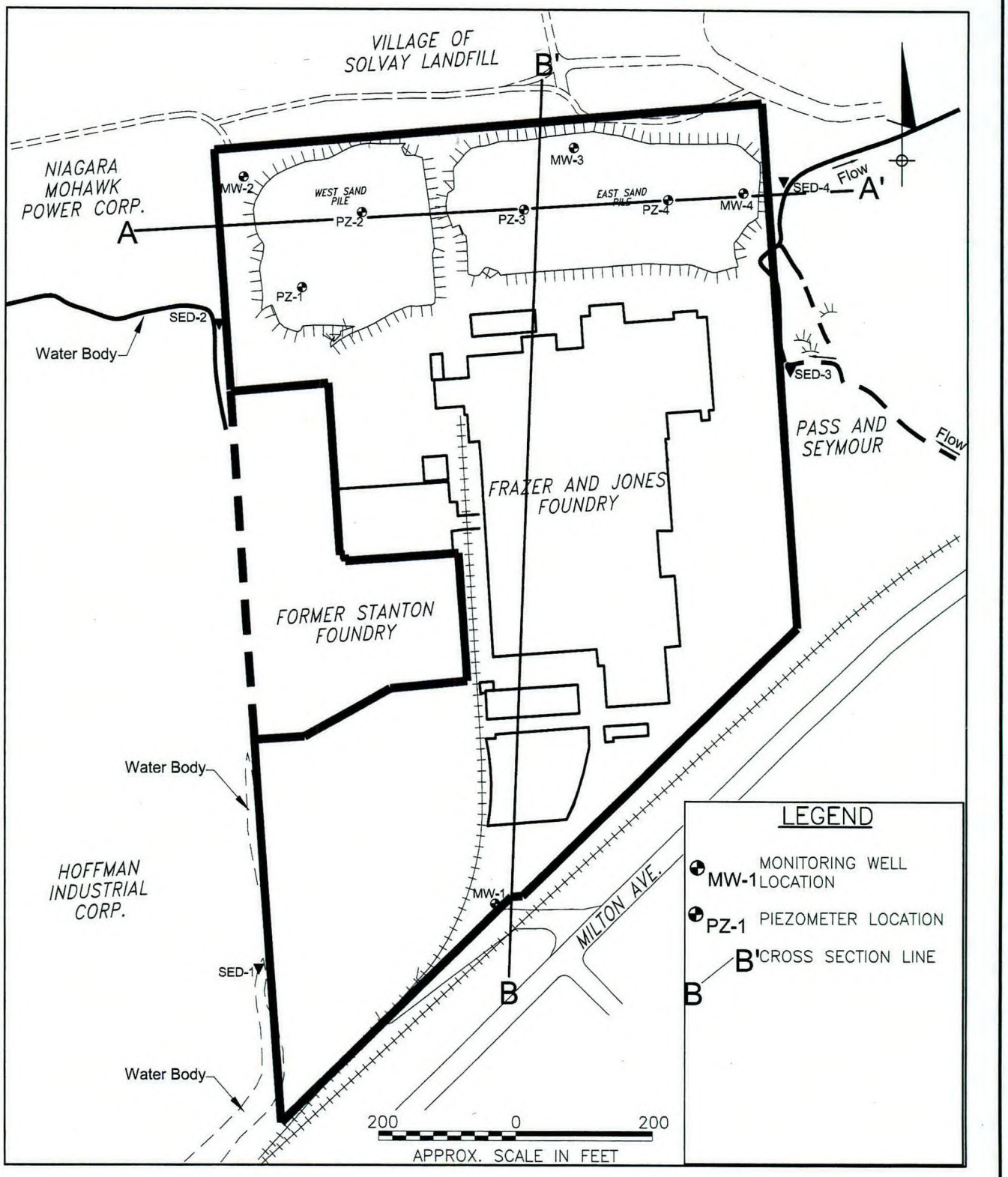
The soil samples were analyzed at the laboratory for Target Compound List (TCL) VOCs, SVOCs, PCBs, and TAL metals. Results of the subsurface soil analyses are described in Section 4.3.2.

3.8 Monitoring Wells and Piezometers

A total of four monitoring wells and four piezometers were installed to characterize shallow groundwater. MW-1 is an upgradient well and located at the southern boundary of the site in the parking lot. MW-2 is a downgradient location and is located at the northwest corner of the property at the edge of a low-lying poorly drained area. MW-3 and MW-4 are downgradient and installed on the spent foundry sand pile near the northern and eastern property boundaries, respectively. All of the piezometers were installed through the spent foundry sand pile with PZ-1 and PZ-2 located in the western portion and PZ-3 and PZ-4 in the eastern portion. The locations of the monitoring wells and piezometers are presented on Figure 5. Table D-1, in Appendix D lists the monitoring well and piezometer depths and construction specifications.

3.8.1 Monitoring Well Installation Procedures

All monitoring wells and piezometers installed on or adjacent to the spent foundry sand pile were installed using a Diedrich D-90 ATV drill rig. Monitoring well MW-1, the upgradient well, was installed through pavement in the southern portion of the site using a truck-mounted CME 55 drill rig. The borings for the monitoring wells and piezometers were drilled by advancing 4-1/4 inch inside diameter (ID) hollow stem augers. All drilling equipment was steam cleaned before the start of work at a temporary decontamination area. The decontamination area was located in the northeast parking lot. All downhole drilling tools were steam cleaned after the



Site Investigation Report
Frazer and Jones Site
Solvay, New York

Monitoring Well and Piezometer Locations

FIGURE 5

FILE NO. XX5

PLOT DATE: 11/16/08

DWG PATH: G:\Gerry Gould\Frazer and Jones\002.DWG

completion of each boring and monitoring well with the exception of the split spoon samplers. Split spoons were washed and rinsed at the borehole between uses. Decontamination wastewater was allowed to drain into surface soils on-site. Drilling and installation of the monitoring wells was performed by Parratt-Wolff, Inc.

The monitoring wells were constructed of 2-inch ID Schedule 40 PVC 0.010-inch wire wrapped screens and 2-inch ID Schedule 40 PVC riser pipe. The augers were removed coincidentally with the installation of the sand pack. Number 0 sand was emplaced to a depth 2 feet above the top of the screen. A six inch layer of 00 "choke" sand was placed on top of the sand pack and overlain by a 2 feet thick bentonite seal. The remainder of the borehole annulus was tremie-grouted to ground surface with a cement-bentonite slurry. All monitoring wells were completed to work plan specifications with the exception of MW-2. Because of the shallow water table at MW-2, the monitoring well was constructed with the top of screen below the water table in order to leave sufficient riser to complete the bentonite seal and protective casing installation. As a result, the work plan specifications of at least 2 feet of sand pack above the top of the screen and at least 2 feet of bentonite seal were decreased to maximize the screened interval of the shallow aquifer while maintaining protection from potential surface water cross-contamination. Protective casings with locking covers were installed in concrete surface pads for all wells.

The piezometers were constructed of 1-1/4-inch ID Schedule 40 PVC 0.010-inch slotted screens and 1-1/4-inch ID Schedule 40 PVC riser pipe. The augers were removed coincidentally with the installation of the sand pack. Number 0 sand was emplaced to a depth 2 feet above the top of the screen. A two-foot thick bentonite seal was installed above the sand pack and the remainder of the boring was allowed to collapse upon auger removal. Any remaining open hole was filled with drill cuttings to ground surface.

Borehole construction and monitoring well installation details were logged and documented by a geologist. Observations and notes were recorded on boring logs and include the depths of stratigraphic changes, descriptions of all samples, details of drilling techniques and

total organic vapor measurements obtained with a MiniRae 2000 PID, and well construction details. No elevated PID readings were observed from any of the borings. The monitoring well and piezometer boring logs are presented in Appendix D.

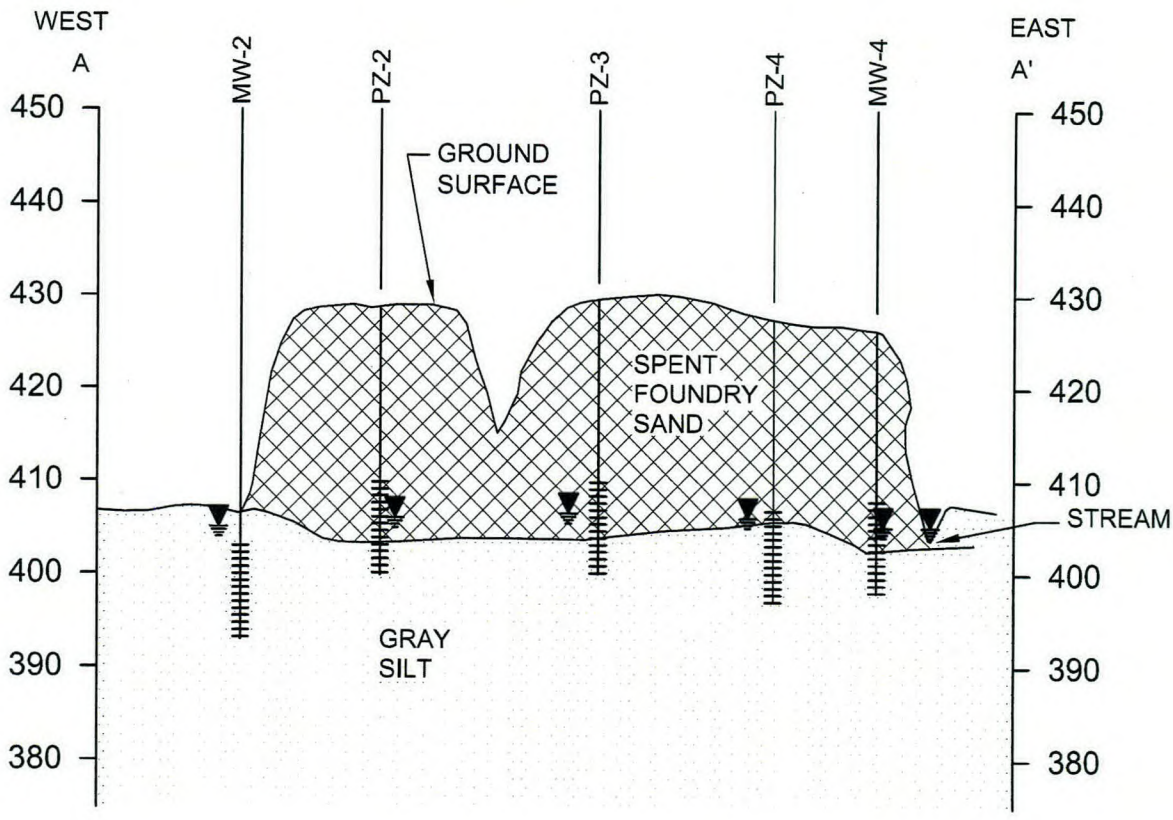
All monitoring wells were developed by surging and by evacuating groundwater using dedicated bailers or by pumping using decontaminated 12 volt submersible pumps and dedicated tubing. Water was not removed from the wells until at least one day after well completion to allow the grout and concrete surface seals to cure, thereby minimizing the potential for surface water to enter the screened zone. Well development records are presented in Appendix D.

3.8.2 Drilling Observations

The general shallow site stratigraphy is fairly uniform beneath the Frazer and Jones Site. Based on observations of split spoon samples and drill cuttings, spent foundry sand can be characterized as a black fine grained sand of uniform grain size containing occasional metal debris, wood, slag and bricks. The spent foundry sand is located across the northern portion of the site and ranges in thickness from 0 to 25 feet with a bottom elevation of approximately 402 feet amsl. The volume of spent foundry sand is estimated to be 140,000 cubic yards.

The spent foundry sand is underlain by a glacial till and/or weathered bedrock layer at all locations except the northwest corner of the property at monitoring well MW-2. This location is a low lying area on the edge of a wetland and consists of a shallow layer of organic material over a buff-colored silt and medium sand marl. The southern part of the site near MW-1 is underlain by glacial till and weathered bedrock. The transition between spent foundry sand fill and native soils (glacial till and weathered bedrock) is characterized by a significant increase in density and a color change from black to gray or buff in the subsurface materials. Figure 5 presents monitoring well and piezometer locations and the orientation of cross sections A-A' and B-B'. Figures 6 and 7 present cross sections A-A' and B-B', respectively.

DWG PATH: G:\Gerry Gould\Frazer and Jones\003.DWG



VERTICAL EXAGGERATION IS 10X

200 0 200

APPROX. HORIZONTAL SCALE IN FEET

LEGEND

WELL SCREEN

GROUND WATER SURFACE

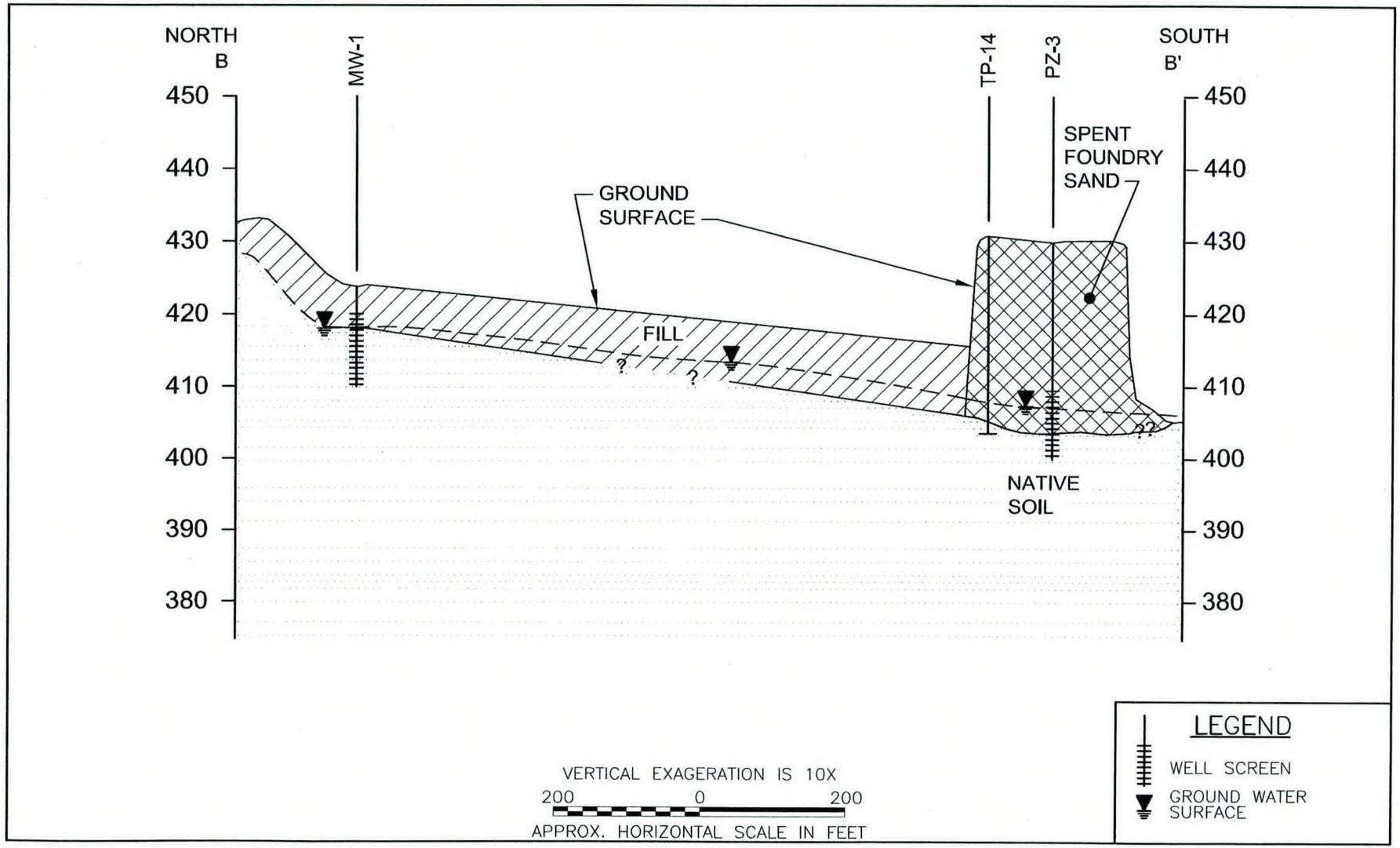
Site Investigation Report
Frazer and Jones Site
Solvay, New York

Cross Section
A-A'

FIGURE 6

FILE NO. XX6

PLOT DATE: 11/16/08



Site Investigation Report
Frazer and Jones Site
Solvay, New York

Cross Section
B-B'

FIGURE
7

DATE: 10/29/08
FILE NO. XX7

DWG PATH: G:\Gerry Gould\Frazer and Jones\003.dwg

PLOT DATE: 11/16/08

3.9 Groundwater Sampling

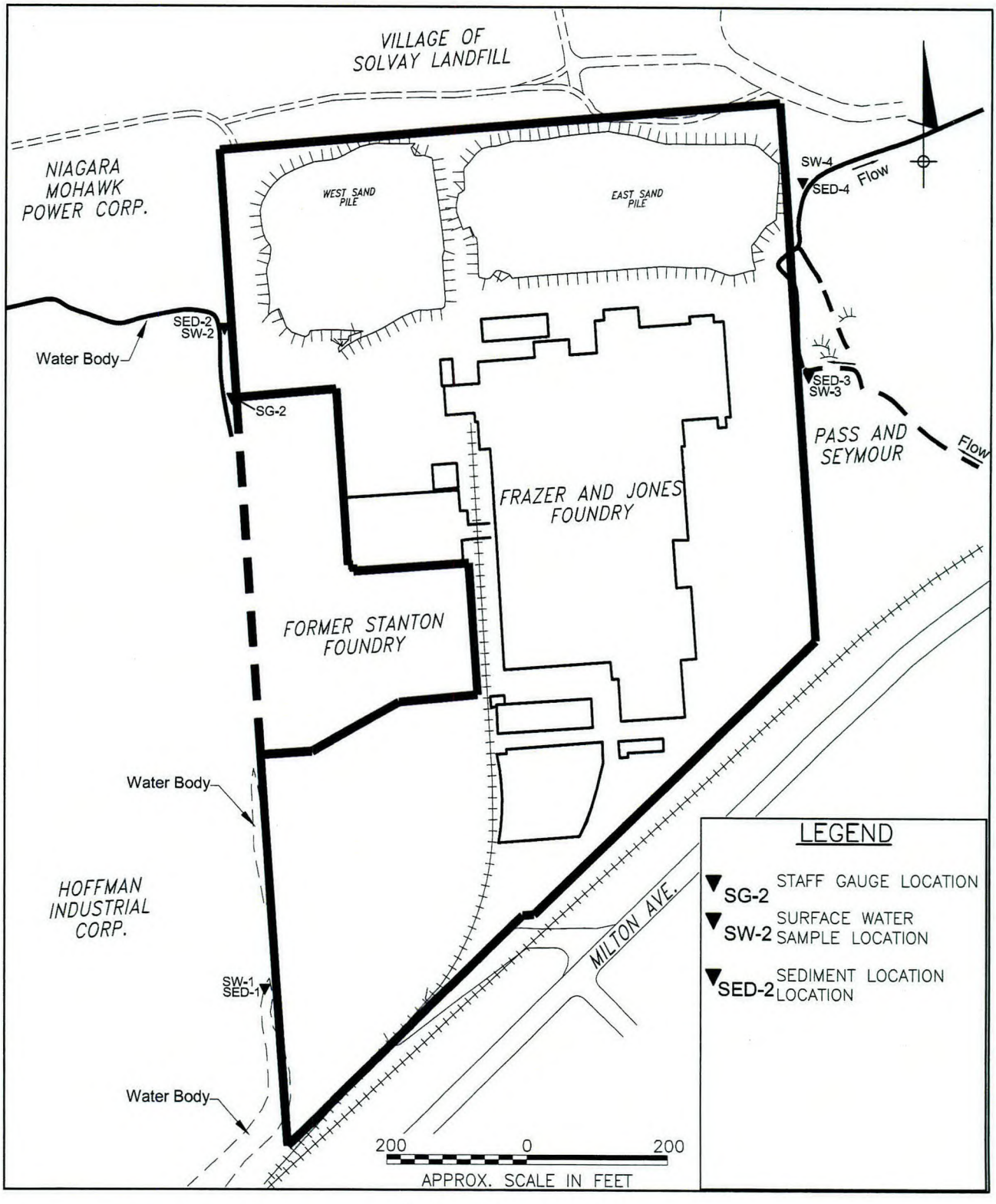
One round of groundwater samples was collected for chemical analysis on August 12, 2008. Each well was purged of at least three volumes of groundwater before sample collection using disposable polyethylene bailers. Field parameters, including pH, conductance, total dissolved solids, turbidity and dissolved oxygen, were monitored during purging using a Horiba U-10 instrument. Wells with groundwater exhibiting turbidity of greater than 50 nephelometric turbidity units (NTUs) were allowed to stand overnight prior to collecting samples for total metals. Groundwater samples were analyzed for TCL VOCs, SVOCs, PCBs, and TAL metals. Tabulated laboratory results are presented in Appendix F, Tables F-4 a, b, c and d.. The results are discussed in Section 4.3.3.

3.10 Surface Water and Surface Water Sediment Sampling

Four surface water samples (SW-1, SW-2, SW-3, and SW-4) were collected on August 13, 2008 from streams that flow through or adjacent to the Frazer and Jones property. Up-gradient and down-gradient samples were collected from small water bodies located on the west (SW-1 and SW-2) and east (SW-3 and SW-4) sides of the property (see Figure 8). The samples were obtained by submerging the laboratory-supplied sample containers and allowing the containers to fill. The surface water samples were analyzed for TCL SVOCs, PCBs, TAL metals, and hardness. Tabulated results of the laboratory analyses are presented in Appendix F, Tables F-3a,b,c and d. The results are discussed in Section 4.3.4.

Four surface water sediment samples (SED-1, SED-2, SED-3 and SED-4) were collected from the four surface water sample locations on August 13, 2008. The samples were obtained using a clean shovel or hoe to obtain a large amount of sediment. Sediment was then manually transferred to laboratory supplied containers using dedicated nitrile gloves. The sediment samples were analyzed for TCL VOCs, SVOCs, PCBs, TAL metals, and total organic carbon to

DWG PATH: G:\Gerry Gould\Frazer and Jones\002.DWG



Site Investigation Report
Frazer and Jones Site
Solvay, New York

FIGURE 8

Surface Water and Sediment Sample Locations

FILE NO. XX8

PLOT DATE: 11/16/08

provide a basis for establishing sediment quality criteria. Tabulated results of the laboratory analyses are presented in Appendix F, Tables F-4a, b, and c. The results are discussed in Section 4.3.5.

3.11 Groundwater Level Measurement

Groundwater levels in the monitoring wells and piezometers were measured periodically after installation. Measurements were made to the nearest 0.01 feet. In addition, temporary staff gauges consisting of a surveyed measuring point marked on metal fence stakes were installed at selected locations to monitor surface water elevations. These data were used to establish surface water and groundwater flow conditions at the site.

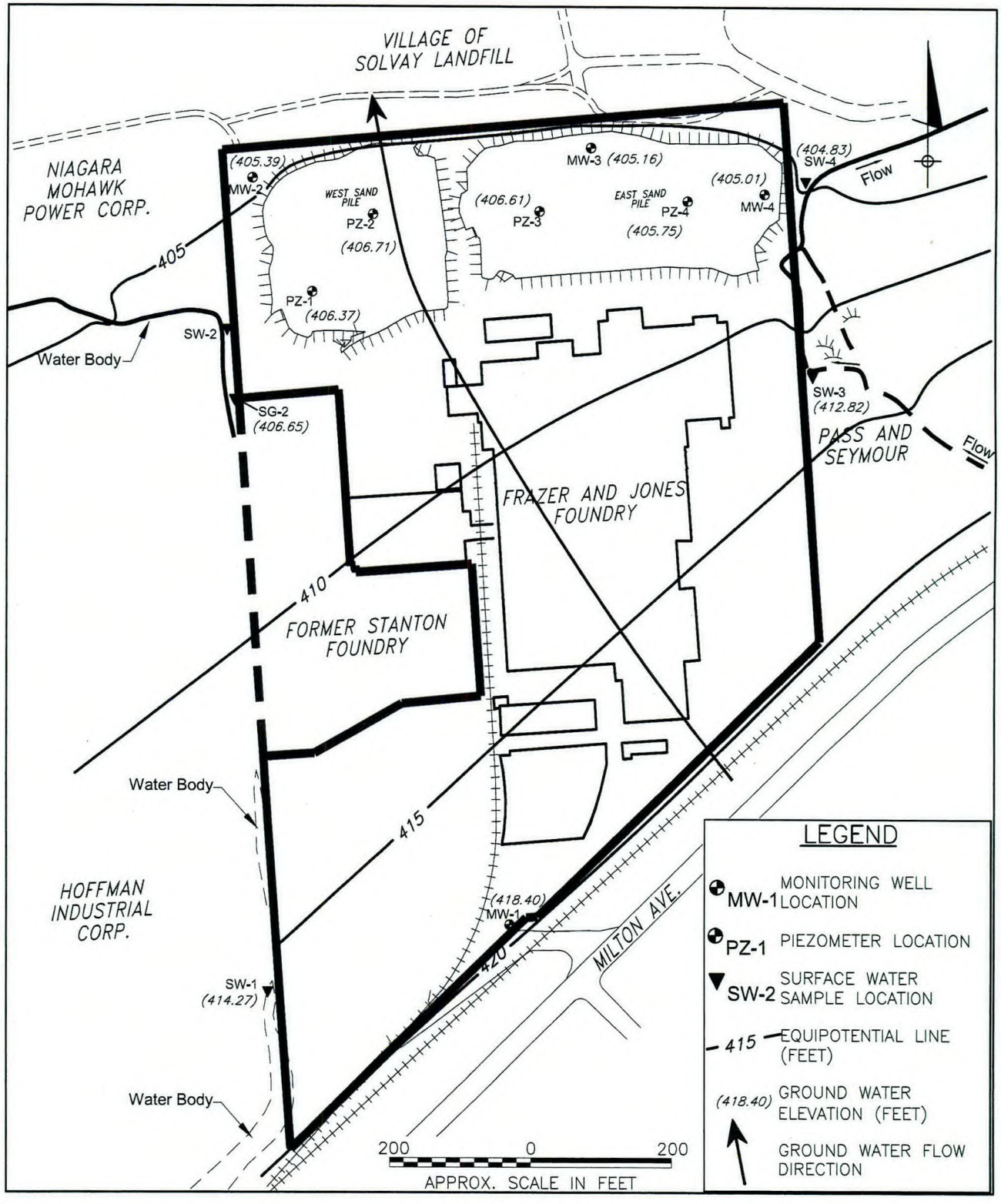
Water levels were measured on a monthly basis at the surface water measurement points and monitoring wells. Water level rounds were conducted at times of relatively stable weather conditions and within as short a period as possible in order to provide a synoptic view of groundwater conditions. In general, water level measurements were completed in less than one hour.

Water level measurements were used with topographic survey data to calculate groundwater elevations. These data were then used to prepare water table and potentiometric surface maps of groundwater. Figure 9 presents the water table surface for October 22, 2008 and is representative of the period of August through November 2008. Groundwater and surface water elevation data for all rounds of measurements are tabulated in Appendix E.

3.12 Hydraulic Conductivity Testing

Hydraulic conductivity testing included falling and rising head measurements at each well. Water displacement was achieved by lowering a 1-inch diameter capped and weighted PVC pipe measuring 6 feet in length into the well. Changes in water level over time were recorded using a pressure transducer and an electronic data logger.

DWG PATH: G:\Gerry Gould\Frazer and Jones\002.DWG



Site Investigation Report
Frazer and Jones Site
Solvay, New York

Water Table Surface
October 22, 2008

FIGURE 9

FILE NO. XX9

PLOT DATE: 11/16/08

Data collected from the slug (falling head) and bail (rising head) tests were analyzed using AQTESOLVE software and applying the Bouwer and Rice (1976) solution technique for hydraulic conductivity determination. The results of the calculations indicate a range of hydraulic conductivity between 1 $x10^{-3}$ cm/s and 1 x 10^{-5} cm/s with a geometric mean of 1 x 10^{-4} cm/s. Hydraulic conductivity results are presented in Appendix E on table E-1. The raw data and calculations are also presented in Appendix E.

3.13 Site Survey – Phase II

All new monitoring wells, sampling locations, staff gauges and other points of interest determined during investigation were surveyed for location and elevation by a New York State licensed surveyor. The new locations are plotted on the Site Plan (Drawing SP-1), and Spent Foundry Sand Detail (Drawing SD-1) which are presented in Appendix A.

3.14 Ambient Air Monitoring

Air monitoring for organic vapors, dust, oxygen, carbon monoxide, lower explosive limit and hydrogen sulfide was conducted throughout the test pit portion of the investigation in accordance with the site-specific Health and Safety Plan. Air monitoring was conducted using a MiniRae 2000 Photoionization detector (PID) and QRAE-Plus PGM 2000 4-gas personal protection monitor. At no time during the investigation was the action level for the PID or the 4 gas meter exceeded in the breathing zone.

3.15 Health and Safety Program

A site-specific Health and Safety Plan (HASP) was prepared to provide for worker and community protection during the investigation. The Health and Safety Plan is contained in the NYSDEC-approved Site Investigation Work Plan dated May 2008. Activities conducted as part of the field investigation were conducted in accordance with the HASP.

3.16 Quality Assurance/Quality Control Program

A site-specific Quality Assurance/Quality Control Plan (QA/QC) was developed for the site and is included in the NYSDEC-approved Site Investigation Work Plan dated May 2008. Work performed during the field investigation was performed in accordance with procedures described in the QA/QC Plan. The QA/QC Plan is designed to maximize the quality and validity of the data collected during the field investigation. The QA/QC Plan describes detailed sampling and analytical procedures, as well as necessary QA/QC sampling and analyses for each sampling matrix investigated. Adherence to QA/QC protocols allows for data validation and usability analyses. In accordance with the QA/QC plan, chain of custody forms and sample information records were completed for each sample collected and are presented in Appendix F.

3.17 Data Validation

A Data Usability Summary Report (DUSR) was prepared by SGD Environmental Services in order to define and document analytical data so that investigation data is of known and acceptable quality. The DUSR was prepared utilizing NYSDEC "Guidelines for the Development of Data Usability Summary Reports" and provides an informed assessment of the laboratory's performance based upon contractual requirements and applicable analytical criteria. The results of the DUSR are summarized in Section 4.2. The full DUSR is included in Appendix F

4 INVESTIGATION RESULTS

4 INVESTIGATION RESULTS

The purpose of this section is to discuss the results obtained from environmental sampling conducted during the site investigation field program at the Frazer and Jones Site. The results are compared to standards, criteria and guidance (SCGs) selected for the site to determine potential impacts on human health and the environment. The nature and extent of contamination found at, and in the vicinity of the site during the site investigation is described below.

The results of the environmental sampling performed at the Frazer and Jones Site are provided below. The analytical results are presented and discussed as a function of environmental media. The following sections describe the exceedances of SCGs. Within each environmental medium subsection, the discussion is separated into descriptions of analyte groups. VOCs are discussed first, followed by SVOCs, PCBs and metals. Tabulated results for all analyses are presented in Appendix F.

4.1 Identification of Standards, Criteria and Guidelines

This section provides a presentation of the standards, criteria and guidance (SCGs), which were used as screening values to determine the significance of the analytical results and contamination found at the site. Exceedance of the SCGs does not necessarily imply that remediation is required, but rather identifies the contaminants and media of potential concern, as well as areas of the site that may require further evaluation.

4.1.1 Soil

Screening levels for the soil analytical results are based on the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046, "Determination of Soil Cleanup Objectives and Cleanup Levels", dated January 1994. The TAGM 4046 soil cleanup standards for several metals are determined by site background concentrations of metals. A summary of background concentrations of target analyte list metals was prepared by O'Brien and Gere Engineers (2007) in the Matthews Avenue Preliminary Site Assessment. The Matthews Avenue Site is approximately 800 feet northeast of Frazer and Jones and, therefore, this site background

data is applicable to Frazer and Jones soil sampling results. The summary includes background concentrations for native soils, New York State Natural background levels and typical concentrations found in Solvay Waste, which is widely distributed in the vicinity of the Frazer and Jones site (see section 2.2.1). Table F-5 in Appendix F presents the background metals concentrations in soils.

In addition, the Matthews Avenue PSA presents results and statistical analysis of over 50 soil samples analyzed for metals at, and in the vicinity of, the Matthews Avenue Site. Copies of the Matthews Avenue background soil data and site results are presented in Appendix F tables F-6 and F-7. Surface and subsurface metals results from the Frazer and Jones Site Investigation were compared to these values. Sample results determined to be outside the range of the average values reported in the Matthews Avenue PSA were considered to be in exceedance of site background and are noted on the Frazer and Jones analytical results tables presented in Appendix F.

TAGM 4046 values were developed based on human health criteria and the potential for unlimited exposure to possible contaminants. Since Frazer and Jones is, and plans to continue to be, an industrial facility and is located in a portion of Solvay noted for industrial facilities and waste disposal areas, potential exposures are likely limited to working adults and for limited durations. As such, it is worthwhile to compare the soil results to a cleanup standard that accounts for this type of exposure. The Part 375-6 recommended soil clean-up objectives for Industrial areas are such a standard and are listed, along with TAGM 4046 SCGs, on the analytical results tables for soils.

4.1.2 Groundwater

The screening levels for the groundwater analytical results were obtained from the NYSDEC TOGS 1.1.1, "Ambient Water Quality Standards and Guidance Values", dated June 1998. Analytical results obtained for groundwater samples are compared to Class GA groundwater standards and guidance values.

4.1.3 Surface Water

The NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1, "Ambient Water Quality Standards and Guidance Values", dated June 1998, are used for screening the surface water data. Surface water analyses are compared to Class C surface water standards and guidance values.

4.1.4 Surface Water Sediment

Screening levels for the surface water sediment analytical results are based on criteria contained in the NYSDEC Division of Fish and Wildlife "Technical Guidance for Screening Contaminated Sediment," dated January 25, 1999.

4.2 Data Usability Summary

Surface soil, subsurface soil, groundwater, surface water and sediment samples were collected between July 30 and August 13, 2008 at the Frazer and Jones Site. The samples were analyzed by Life Science Laboratories, Inc. (LSL) for volatile organic compounds (VOCs) (USEPA Method 8260B), semivolatile organic compounds (SVOCs) (USEPA Method 8270D), polychlorinated biphenyls (PCBs) (USEPA Method 8082A), total metals (USEPA Method 6010), mercury (USEPA Method 245.1) and total organic carbon (TOC) (USEPA Method 9060). The TOC analysis was subcontracted by LSL to Test America located in Nashville, Tennessee.

The data were reviewed for completeness, chain of custody, holding times, preservation, laboratory control samples (LCS), matrix spikes/matrix spike duplicates (MS/MSD), laboratory duplicates, surrogate recoveries, preparation/calibration blanks, initial and continuing calibrations, instrument tunes, and detection limits. This review identified data which were considered non-compliant with method requirements. Whenever possible, further data and clarifications were requested of, and provided by, LSL. In cases where data deficiencies were confirmed, the affected results were hand-flagged on the Form 1 sample result reports using data qualifiers explaining the appropriate usage and reliability of the data. For ease of review, data qualifiers recorded on the Form 1s have been transposed to the analytical results tables presented in Appendix F. Detailed

explanations of the data qualifiers and the observations leading to the qualifications are presented on the Data Usability Summary Report, dated January 26th 2009 and included in Appendix F.

In general, based on the laboratory Quality Assurance/Quality Control data, clarifications, additional documentation provided by LSL, and the exceptions and qualifications flagged on the analytical results tables, the data is deemed usable for environmental assessment purposes.

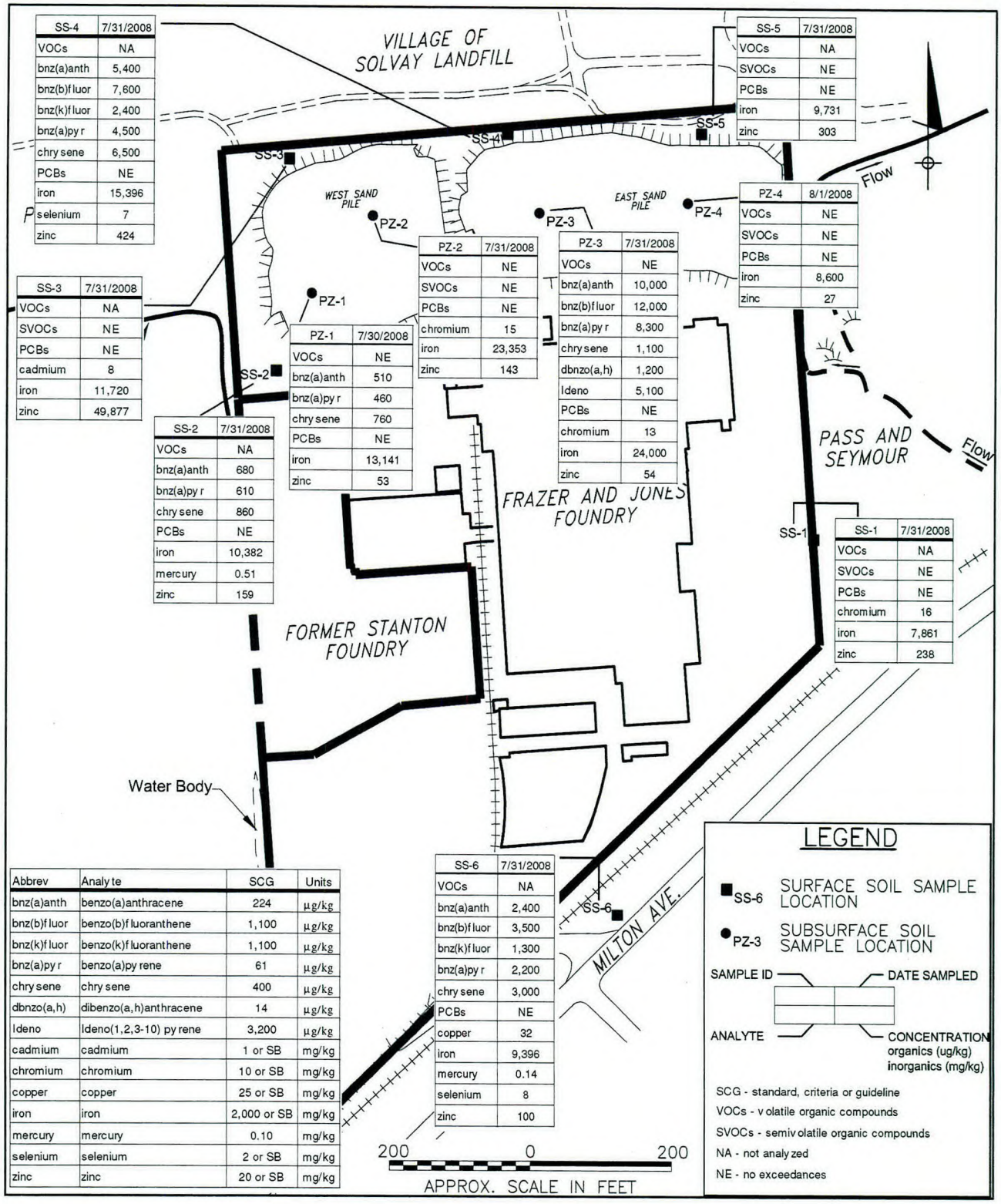
4.3 Analytical Results

4.3.1 Surface Soil Sample Analytical Results

Six surface soil samples were collected on July 31st and were analyzed for SVOCs, PCBs and metals. Sample SS-6 was collected at an upgradient location in a grassy area adjacent to Milton Avenue. Sample SS-1 was collected at the edge of the parking lot on the east side of the site. Samples SS-2, SS-3, SS-4 and SS-5 were collected from locations on the spent foundry sand pile. Sample SS-3 was collected adjacent to a deteriorated metal drum with gray granular material in, and adjacent to, the drum. The complete list of subsurface soil sample analytes and results are presented in Appendix F, Tables 1a, b, c and d. Figure 10 presents a summary of the analytes that exceed SCGs. A discussion of exceedances of SCGs is presented below.

Five SVOCs were identified at concentrations above SCGs in the surface soil samples. Benzo(a)pyrene was detected above the SCG of 61 µg/kg at three surface soil sample locations, including SS-2 (610 µg/kg), SS-4 (4,500 µg/kg), and SS-6 (2,200 µg/kg). Benzo(a)anthracene was detected above the SCG of 224 µg/kg at three surface sample locations, including SS-2 (680 µg/kg), SS-4 (5,400 µg/kg) and SS-6 (2,400 µg/kg). Chrysene was detected above the SCG of 400 µg/kg in three samples, including SS-2 (860 µg/kg), SS-4 (6,500 µg/kg) and SS-6 (3,000 µg/kg). Benzo(b)fluoranthene was detected above the SCG of 1,100 µg/kg in SS-4 (7,600 µg/kg) and SS-6 (3,500 µg/kg). Benzo(k)fluoranthene was also detected above the SCG of 1,100 µg/kg in SS-4 (2,400 µg/kg) and SS-6 (1,300 µg/kg).

DWG PATH: G:\Gerry Gould\Frazer and Jones\002.DWG



Abbrev	Analyte	SCG	Units
bnz(a)anth	benzo(a)anthracene	224	µg/kg
bnz(b)fluor	benzo(b)fluoranthene	1,100	µg/kg
bnz(k)fluor	benzo(k)fluoranthene	1,100	µg/kg
bnz(a)pyr	benzo(a)pyrene	61	µg/kg
chrysene	chrysene	400	µg/kg
dbnzo(a,h)	dibenzo(a,h)anthracene	14	µg/kg
Ideno	Ideno(1,2,3-10) pyrene	3,200	µg/kg
cadmium	cadmium	1 or SB	mg/kg
chromium	chromium	10 or SB	mg/kg
copper	copper	25 or SB	mg/kg
iron	iron	2,000 or SB	mg/kg
mercury	mercury	0.10	mg/kg
selenium	selenium	2 or SB	mg/kg
zinc	zinc	20 or SB	mg/kg

Site Investigation Report
Frazer and Jones Site
Solvay, New York

SCG Exceedances in Surface and Subsurface Soils

FIGURE 10

FILE NO. X11

PLOT DATE: 11/1/08

When the surface soil sampling results are compared to the Part 375-6 soil cleanup objectives, benzo(a)pyrene is the only SVOC to exceed the SCG for industrial areas. Benzo(a)pyrene exceeded the Part 375-6 standard of 1,100 µg/kg at two locations including the upgradient SS-6 (2,200 µg/kg) and SS-4 (4,500 µg/kg).

There were no PCBs detected above SCGs in subsurface soil samples.

Seven metals were detected above TAGM 4046 SCGs in surface soil samples. Iron exceeded the SCG of 2,000 mg/kg in all six of the surface soil samples with concentrations ranging from 7,861 mg/kg in SS-1 to 15,396 mg/kg in SS-4. Zinc was detected above the SCG of 20 mg/kg in all six samples with concentrations ranging from 100 mg/kg in SS-6 to 49,877 mg/kg in SS-3. Mercury slightly exceeded the SCG of 0.10 mg/kg in two samples including SS-2 (0.51 mg/kg) and SS-6 (0.14 mg/kg). Selenium exceeded the standard of 2 mg/kg in samples SS-4 (7 mg/kg) and SS-6 (8 mg/kg). Chromium slightly exceeded the standard of 10 mg/kg in SS-1 (16 mg/kg) and SS-2 (10.4 mg/kg). Cadmium exceeded the standard of 1 mg/kg in SS-3 (7.8 mg/kg) and copper exceeded the standard of 25 mg/kg in the upgradient sample SS-6 (31 mg/kg).

Of the metals whose SCGs are determined exclusively by site background concentrations (aluminum, antimony, calcium, magnesium, manganese, potassium, silver, sodium and thallium), three exceed the ranges of background values and include magnesium (identified at SS-1, SS-2 and SS-6 at values of 9,381mg/kg, 9,212 mg/kg and 9,622 mg/kg, respectively), calcium (at SS-1 and SS-2 at concentrations of approximately 213,000 mg/kg and 62,000 mg/kg, respectively), and antimony (at SS-3 at a concentration of 3.2 mg/kg).

When all of the surface soil sample metals results are compared to the Part 375-6 soil cleanup objectives, only zinc, in sample SS-3 exceeds the industrial standard.

4.3.2 Subsurface Soil Sample Analytical Results

Four subsurface soil samples were collected between July 30th and August 1st and were analyzed for VOCs, SVOCs, PCBs and metals. All four samples were collected from subsurface borings advanced into the spent foundry sand piles. The complete list of analytes and results are presented in Appendix F, Tables 1a, b, c and d. Figure 10 presents a summary of the analytes that exceed SCGs. A discussion of exceedances of SCGs is presented below.

There were no VOCs detected above SCGs in subsurface soil samples.

Seven SVOCs were detected above SCGs in the subsurface soil samples. Benzo(a)pyrene was detected above the SCG of 61 µg/kg at two subsurface soil sample locations, including PZ-1 (460 µg/kg) at a sample depth of 2' to 6'and PZ-3 (8,300 µg/kg) at a depth of 14' to 18'. Benzo(a)anthracene was detected above the SCG of 224 µg/kg at two subsurface sample locations, including PZ-1 (510 µg/kg), and PZ-3 (10,000 µg/kg). Chrysene was detected above the SCG of 400 µg/kg in PZ-1 and PZ-3 at concentrations of 760 µg/kg and 1,100 µg/kg, respectively. Benzo(b)fluoranthene was detected above the SCG of 1,100 µg/kg in PZ-3 (2,000 µg/kg). Dibenzo(a,h)anthracene was also detected in PZ-3 (1,200 µg/kg) above the SCG of 14 µg/kg. Dibenzo(k)fluoranthene was detected above the SCG of 1,100 µg/kg in PZ-3 (4,900 µg/kg) and Ideno(1,2,3-cd)pyrene was identified above the SCG of 3,200 µg/kg in PZ-3 (5,100 µg/kg). Total carcinogenic polyaromatic hydrocarbons (PAHs) exceeded the combined total of 10,000 µg/kg in sample PZ-3 (20,000 µg/kg).

When all of the subsurface soil sample SVOC results are compared to the Part 375-6 soil cleanup objectives, three compounds (benzo(b)fluoranthene, benzo(a)pyrene, and dibenzo(a,h)anthracene) exceed the industrial standard and all occur in sample PZ-3.

There were no PCBs detected above SCGs in subsurface soil samples.

Three metals were detected above TAGM 4046 SCGs in subsurface soil samples. Iron exceeded the SCG of 2,000 mg/kg in all four of the subsurface soil samples with concentrations ranging from 8,559 mg/kg in PZ-4 to 23,835 mg/kg in PZ-1. Zinc was detected above the SCG of 20 mg/kg in all four samples with concentrations ranging from 27 mg/kg in PZ-4 to 143 mg/kg in PZ-2. Chromium exceeded the standard of 10 mg/kg in PZ-2 and PZ-3 at concentrations of 15 mg/kg and 126 mg/kg, respectively.

Of the metals whose SCGs are determined exclusively by site background concentrations (aluminum, antimony, calcium, magnesium, manganese, potassium, silver, sodium and thallium), none exceed the ranges of background values.

When the subsurface soil sample metals results are compared to the Part 375-6 soil cleanup objectives, none exceed the industrial standard.

4.3.3 Groundwater Sample Analytical Results

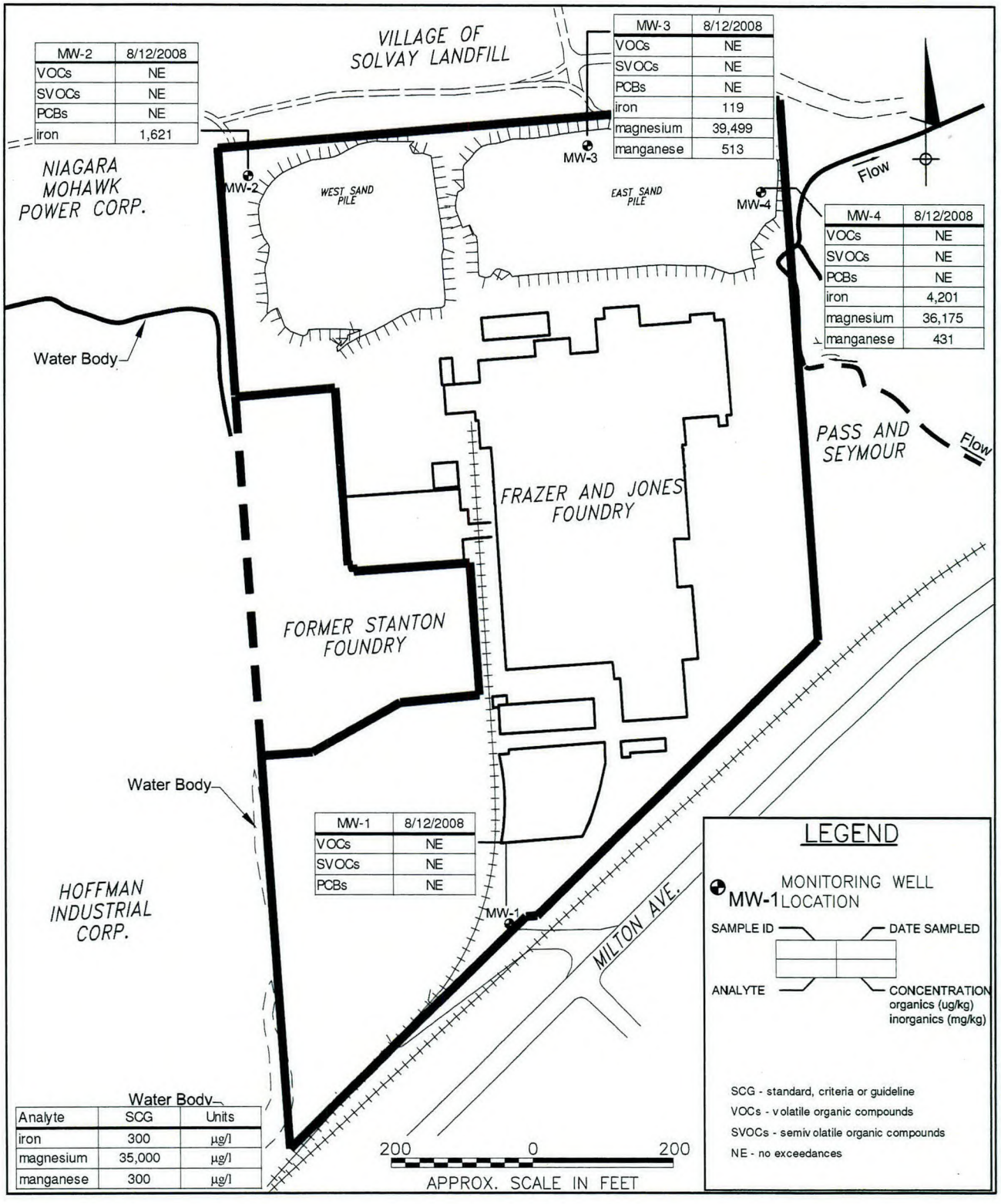
Four groundwater samples were collected from the four on-site monitoring wells on August 12, 2008 and were analyzed for VOCs, SVOCs, PCBs and metals. Figure 11 presents a summary of the analytes that exceed SCGs. The complete list of analytes and results are presented in Appendix F, Tables 2a, b, c and d. A discussion of exceedances of SCGs is presented below.

There were no VOCs detected above SCGs in any of the groundwater samples.

There were no SVOCs detected above SCGs in any of the groundwater samples.

There were no PCBs detected above SCGs in any of the groundwater samples.

DWG PATH: G:\Gerry Gould\Frazer and Jones\002.DWG



MW-2	8/12/2008
VOCs	NE
SVOCs	NE
PCBs	NE
iron	1,621

MW-3	8/12/2008
VOCs	NE
SVOCs	NE
PCBs	NE
iron	119
magnesium	39,499
manganese	513

MW-4	8/12/2008
VOCs	NE
SVOCs	NE
PCBs	NE
iron	4,201
magnesium	36,175
manganese	431

MW-1	8/12/2008
VOCs	NE
SVOCs	NE
PCBs	NE

Analyte	SCG	Units
iron	300	µg/l
magnesium	35,000	µg/l
manganese	300	µg/l

Site Investigation Report
Frazer and Jones Site
Solvay, New York

SCG Exceedances in Groundwater

FIGURE 11

FILE NO. X11

PLOT DATE: 11/1/08

Four metals were detected above SCGs for groundwater. Iron was detected above the SCG of 300 µg/l in two samples including MW-2 (1,600 µg/l) and MW-4 (4,200 µg/l). Magnesium was detected slightly above the guidance value of 35,000 µg/kg in MW-3 (39,499 µg/l) and MW-4 (36,175 µg/l) and manganese was detected above the SCG of 300 µg/l in MW-3 and MW-4 at concentrations of 513 µg/l and 431 µg/l, respectively. MW-3 exceeded the SCG of 300 µg/l for iron and manganese, combined.

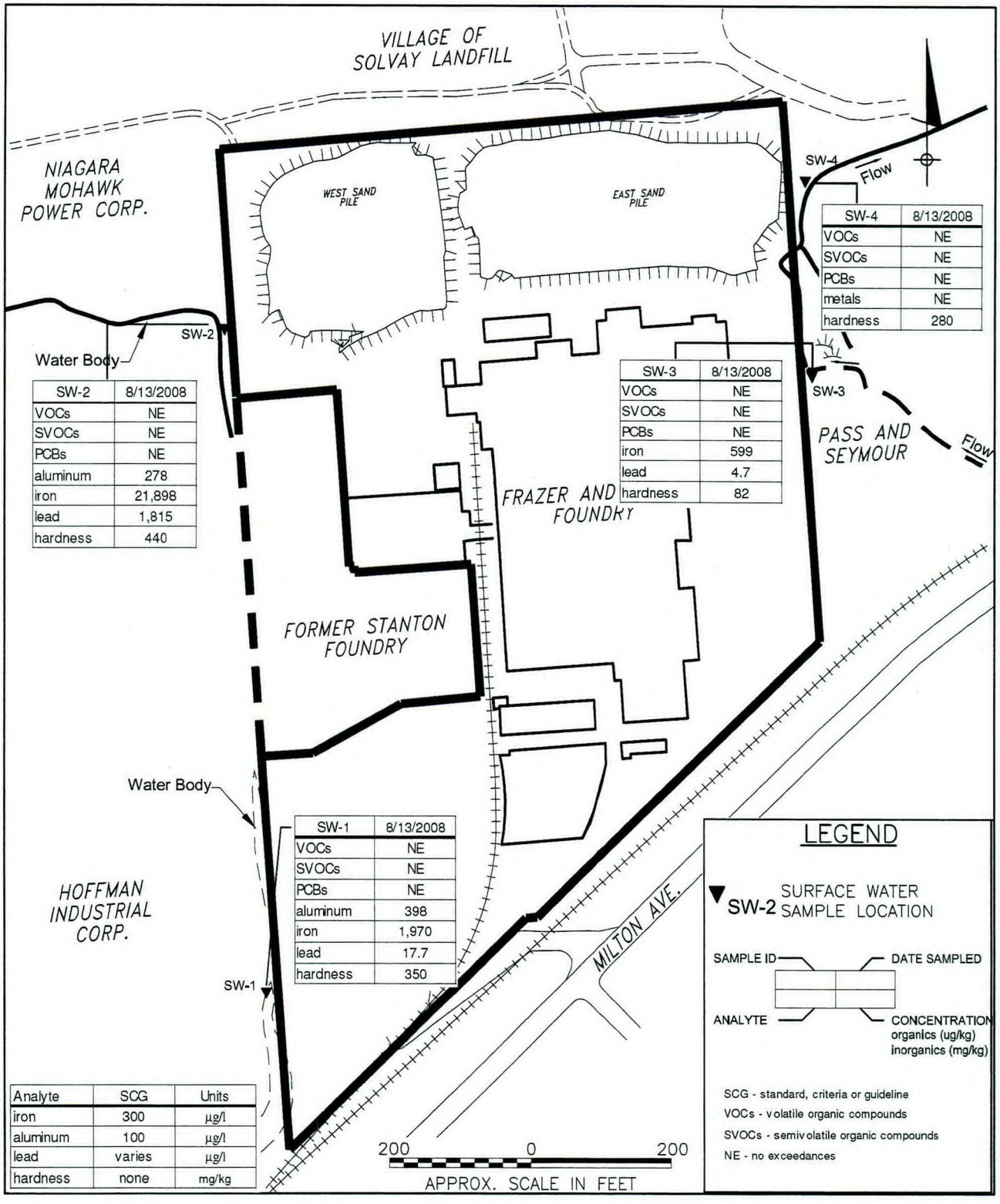
4.3.4 Surface Water Sample Analytical Results

Four surface water samples were collected from the four locations adjacent to the site on August 13, 2008 and were analyzed for VOCs, SVOCs, PCBs and metals. Samples SW-1 and SW-2 were collected from two water bodies near the west boundary of the site. SW-1 was collected from a location anticipated to be upgradient of SW-2, however, no inlet or outlet could be identified during the sampling event and no flow was observed in the water body. SW-2 was collected at a location anticipated to be downgradient of SW-1, however, no inlet or outlet was identified and no flow observed during sampling or subsequent site visits. The water surface in the vicinity of SW-2 was observed to have significant iron staining (presumed to be iron bacteria) and floating algae during a November 2008 site visit.

Samples SW-3 and SW-4 were collected from a flowing stream located near the east edge of the site. SW-3 is an upgradient location and SW-4 is downgradient. The flow of this stream increases noticeably between the two sampling points due to the presence of two outfalls between the two sampling locations. The outfalls discharge water originating from the Frazer and Jones facility.

The complete list of analytes and results are presented in Appendix F, Tables 3a, b, c and d. Figure 12 presents a summary of the analytes that exceed SCGs. A discussion of exceedances of SCGs is presented below.

DWG PATH: G:\Gerry Gould\Frazer and Jones\002.DWG



SW-4	8/13/2008
VOCs	NE
SVOCs	NE
PCBs	NE
metals	NE
hardness	280

SW-3	8/13/2008
VOCs	NE
SVOCs	NE
PCBs	NE
iron	599
lead	4.7
hardness	82

SW-2	8/13/2008
VOCs	NE
SVOCs	NE
PCBs	NE
aluminum	278
iron	21,898
lead	1,815
hardness	440

SW-1	8/13/2008
VOCs	NE
SVOCs	NE
PCBs	NE
aluminum	398
iron	1,970
lead	17.7
hardness	350

Analyte	SCG	Units
iron	300	µg/l
aluminum	100	µg/l
lead	varies	µg/l
hardness	none	mg/kg

LEGEND

SW-2 SURFACE WATER SAMPLE LOCATION

SAMPLE ID — DATE SAMPLED

ANALYTE — CONCENTRATION
organics (ug/kg)
inorganics (mg/kg)

SCG - standard, criteria or guideline
VOCs - volatile organic compounds
SVOCs - semivolatile organic compounds
NE - no exceedances

Site Investigation Report
Frazer and Jones Site
Solvay, New York

SCG Exceedances in Surface Water

FIGURE 12

FILE NO. X12

PLOT DATE: 11/1/08

There were no VOCs detected above SCGs in any of the surface water samples.

There were no SVOCs detected above SCGs in any of the surface water samples.

There were no PCBs detected above SCGs in any of the surface water samples.

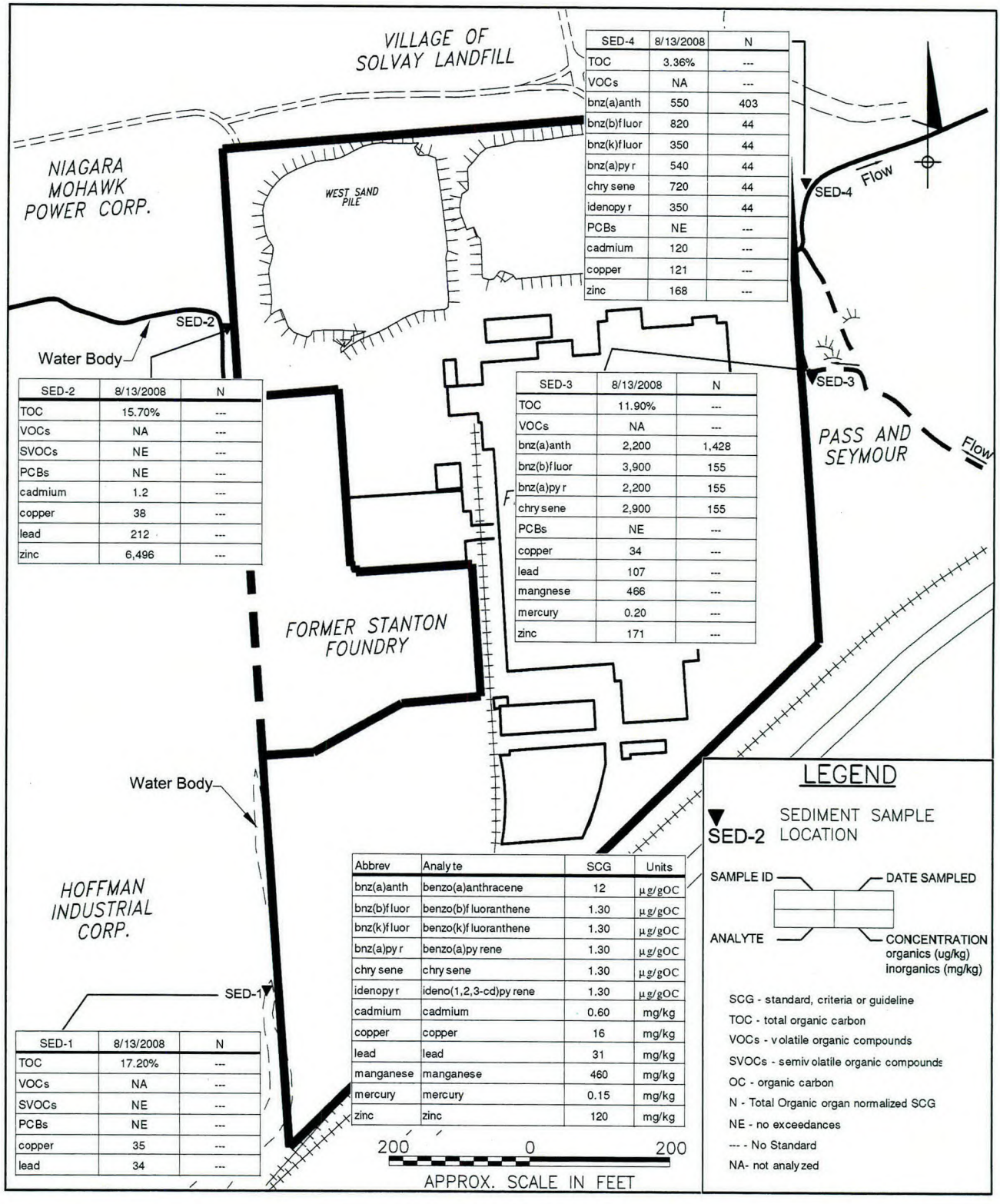
Four metals were detected above SCGs in the surface water samples. Iron was detected above the SCG of 300 µg/l in three of the four surface water samples including SW-1 (1,970 µg/l), SW-2 (21,898 µg/l) and SW-3 (599 µg/l). Aluminum exceeded the SCG of 100 µg/l at SW-1 (398 µg/l) and SW-2 (278 µg/l). Zinc exceeded the hardness-normalized SCG in SW-2 and lead was detected slightly above the hardness-normalized SCG in SW-1 and SW-3. Hardness results ranged from 82,000 mg/l at SW-3 to 440,000 mg/l at SW-2.

4.3.5 Sediment Sample Analytical Results

Four surface water sediment samples were collected from the four locations adjacent to the site on August 13, 2008 and were analyzed for organic carbon, SVOCs, PCBs and metals. The SCGs for sediment samples are determined by the total organic carbon concentration of each sample, and therefore are different for each sample location.. The complete list of analytes, results and sample-specific calculation of SCGs are presented in Appendix F, Tables 4a, b and c. Figure 13 presents the analytes that exceed SCGs. A discussion of exceedances of SCGs is presented below.

Total organic carbon results ranged from a low of 3.36% in sample SED-4 to a high of 17.2% in sample SED-1. Samples SED-2 and SED-3 exhibited TOC values of 15.7% and 11.9%, respectively. The SCGs for the SVOCs have been normalized using the TOC values for each individual sample. The normalized SCGs are listed on the results Table 4a in Appendix F.

Six SVOCs were detected in exceedance of SCGs in the surface water sediment samples. SVOC exceedances occurred in only two of the four samples, SED-3 and SED-4. Benzo(a)anthracene was detected above the normalized SCG of at SED-3 (2,200 µg/kg) and SED-4 (550 µg/kg). Benzo(b)fluoranthene was detected above the normalized SCG at SED-3



SED-4	8/13/2008	N
TOC	3.36%	---
VOCs	NA	---
bnz(a)anth	550	403
bnz(b)fluor	820	44
bnz(k)fluor	350	44
bnz(a)pyr	540	44
chrysene	720	44
idenopyr	350	44
PCBs	NE	---
cadmium	120	---
copper	121	---
zinc	168	---

SED-2	8/13/2008	N
TOC	15.70%	---
VOCs	NA	---
SVOCs	NE	---
PCBs	NE	---
cadmium	1.2	---
copper	38	---
lead	212	---
zinc	6,496	---

SED-3	8/13/2008	N
TOC	11.90%	---
VOCs	NA	---
bnz(a)anth	2,200	1,428
bnz(b)fluor	3,900	155
bnz(a)pyr	2,200	155
chrysene	2,900	155
PCBs	NE	---
copper	34	---
lead	107	---
mangnese	466	---
mercury	0.20	---
zinc	171	---

SED-1	8/13/2008	N
TOC	17.20%	---
VOCs	NA	---
SVOCs	NE	---
PCBs	NE	---
copper	35	---
lead	34	---

Abbrev	Analyte	SCG	Units
bnz(a)anth	benzo(a)anthracene	12	µg/gOC
bnz(b)fluor	benzo(b)fluoranthene	1.30	µg/gOC
bnz(k)fluor	benzo(k)fluoranthene	1.30	µg/gOC
bnz(a)pyr	benzo(a)pyrene	1.30	µg/gOC
chrysene	chrysene	1.30	µg/gOC
idenopyr	ideno(1,2,3-cd)pyrene	1.30	µg/gOC
cadmium	cadmium	0.60	mg/kg
copper	copper	16	mg/kg
lead	lead	31	mg/kg
manganese	manganese	460	mg/kg
mercury	mercury	0.15	mg/kg
zinc	zinc	120	mg/kg

LEGEND

SED-2 SEDIMENT SAMPLE LOCATION

SAMPLE ID — DATE SAMPLED

ANALYTE — CONCENTRATION organics (ug/kg) inorganics (mg/kg)

SCG - standard, criteria or guideline
TOC - total organic carbon
VOCs - volatile organic compounds
SVOCs - semivolatile organic compounds
OC - organic carbon
N - Total Organic organ normalized SCG
NE - no exceedances
--- - No Standard
NA- not analyzed

Site Investigation Report
Frazer and Jones Site
Solvay, New York

SCG Exceedances in Surface Water Sediment

FIGURE 13

FILE NO. X13

DWG PATH: G:\Gerry Gould\Frazer and Jones\002.DWG

PLOT DATE: 11/1/08

(3,900 µg/kg) and SED-4 (820 µg/kg). Benzo(k)fluoranthene was detected above the normalized SCG in SED-4 (350 µg/kg). Benzo(a)pyrene was detected above the normalized SCG at SED-3 (2,200 µg/kg), and SED-4 (540 µg/kg). Chrysene was detected above the normalized SCG of at SED-3 and SED-4 at concentrations of 2,900 µg/kg and 720 µg/kg, respectively. Ideno(1,2,3-cd)pyrene was detected above the normalized SCG in SED-4 at a concentration of 350 µg/kg.

There were no PCBs detected above SCGs in any of the surface water sediment samples.

Six metals were detected above SCGs in surface water sediment samples. Copper exceeded the SCG of 16 mg/kg in all four of the surface water sediment samples with concentrations ranging from 34 mg/kg in SED- 3 to 121 mg/kg in SED-4. Lead was detected above the SCG of 31 mg/kg in all samples with concentrations ranging from 34 mg/kg in SED-1 to 212 mg/kg in SED-3. Zinc exceeded the SCG of 120 in three samples including SED-2 (6,496 mg/kg), SED-3 (171 mg/kg) and SED-4 (168 mg/kg). Cadmium exceeded the standard of 0.6 mg/kg in SED-2 (1.2 mg/kg). Manganese slightly exceeded the SCG of 460 mg/kg in one location, SED-3 (466 mg/kg). Mercury also slightly exceeded the SCG of 0.15 mg/kg in SED-3 (0.2 mg/kg).

5 CONCLUSIONS

5 CONCLUSIONS

5.1 Surface Soil

Surface soil sample results indicate the presence of five polycyclic aromatic hydrocarbons (PAHs) including benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene and chrysene. Concentrations such as these are typical in surface soils and fill material in urban and industrial settings. PAHs are products of combustion and are common around railroad tracks, roadways and near any building that burns fuel for heating or manufacturing processes. Frazer and Jones is surrounded by potential PAH sources and the concentrations observed very likely fall within the range of background concentrations for the area. When compared to the recommended soil cleanup objectives stipulated in NYSDEC Part 375-6 for Brownfield Sites in industrial settings, benzo(a)pyrene is the only SVOC that exceeds standards. Similarly, the concentrations of six metals exceed NYSDEC Technical Administrative Guidance Memorandum (TAGM) 4046 SCGs for surface soil, however, when compared to the industrial SCGs of 6NYCRR Part 375-6, only one metal (zinc) at one location (SS-3) exceeds standards.

Overall, surface soil contaminants pose a slight concern.

5.2 Subsurface Soil

Subsurface soil samples indicate the presence of the same PAHs that are found in the surface soils, however at lower concentrations. Applying the Part 375-6 Industrial SCGs eliminates all exceedances except benzo(a)pyrene, benzo(b)fluoranthene, and dibenzo(a,h)anthracene. The metals chromium and iron exceed SCGs in subsurface soils, however, when the Part 375-6 standards are applied, there are no metals exceedances in any of the samples.

These concentrations are lower than the surface soil conditions and not unusual for an urban-industrial setting. Therefore, subsurface soils are only a slight concern at the site since concentrations are relatively low and migration does not appear to be occurring.

5.3 Groundwater

Groundwater at the site occurs in an unconfined, water table aquifer that discharges into a wetland adjacent to the north and west sides of the site. Underlying bedrock, although not encountered during the investigation, is the Syracuse Formation which is known to locally contain halite and gypsum, both readily leachable under natural conditions and capable of increasing the concentrations of several metals as groundwater passes through. Groundwater in this area is known to exhibit brine conditions. Monitoring well data indicate that the aquifer has relatively high hydraulic conductivity (2×10^{-4} cm/s) and that groundwater flow is to the northwest. Public water is readily available to all homes and businesses in the area. The shallow occurrence, high TDS and relatively low hydraulic conductivity make the use of local groundwater unlikely as a potable source.

The only contaminants identify above SCGs in groundwater samples were metals, including iron, magnesium, and manganese. All of these metals could have originated in fill material at the Frazer and Jones site, however these concentrations are also likely elevated due to the natural geologic conditions of the area. The upgradient well, MW-1 has generally lower concentrations, however, it is likely that groundwater discharging near the downgradient wells has come from a deeper source derived from a different flow path than that which flows through the shallow groundwater flow system at MW-1.

Based on sampling results and groundwater observations groundwater contamination is not a concern.

5.4 Surface Water

The only contaminants found in exceedance of standards in surface water were the four metals aluminum, lead, iron and zinc. On the west side of the site, exceedances of SCGs occurred in both the up and downgradient sample locations which appeared stagnant during several observations between March and October. Iron staining, likely from iron bacteria, was observed on the water surface several times. Decaying matter has been observed in the west side

locations on all site visits. On the east side of the site, exceedances of the metals SCGs occur only in the upgradient sample location and decrease to a concentration below the standards downgradient of the site.

Overall, surface water contaminants are a slight concern.

5.5 Sediment

Surface water sediment samples indicate the presence of the same PAHs found in surface and subsurface soil samples. In the case of the east side of the site, concentrations of PAHs decrease in the downgradient sample, suggesting there is little or no contribution of contaminants from the Frazer and Jones site. As with soils, the PAH concentrations are likely background due to the industrial character of the area. Metals exceedances, with the exception of zinc in sample SED-2, are only slightly above standards and appear to represent background for the area.

Sediment contaminants are a slight concern.

6 REFERENCES

6 REFERENCES

Bouwer and Rice, 1976. A slug test for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells. Water Resources Research, Vol. 12, No. 3, p.423-428.

C&S Engineers, 1995. "Closure Investigation Report (CIR), Village of Solvay Landfill, Solvay, New York," March 1995.

Cadwell, D. H. and others, 1986. Surficial Geologic Map of New York: Finger Lakes Sheet. Albany, New York State Museum Geological Survey.

Cornell University, 2009. Institute of Resource Information Systems, New York Aerial Photographs, http://aerial-ny.library.cornell.edu/ny/browse/onondaga/ accessed January 28, 2009.

Frazer and Jones Co. (Wright, Ray), 1989. Letter to: NYSDEC (Larry Gross), Mar 27, 1989,1p. Re: foundry sand disposal at Auburn Landfill.

Frazer and Jones (Getman, Jeff), 1988. Purchase order 0005734 to: City of Auburn for disposal of spent foundry sand, with invoice, dated 8/8/1988, 3p.

Frazer and Jones, 2008. Frazer and Jones Co. home page, <http://frazerandjones.com/>, accessed November 5, 2008.

Gould Groundwater Investigations, Inc., 2008. "Site Investigation and Remedial Alternatives Report Work Plan," Frazer and Jones Site, Solvay, NY. May 2008.

Hancock and Estabrook, 1988. "Stanton Foundry, Inc. Solvay, NY. Foundry Sand Disposal Area Site Characterization." 7 pages + attachments.

Miller, Todd S., 1987. Unconsolidated Aquifers in Upstate New York – Finger Lakes Sheet, US Geological Survey: WRI Report 87-4122.

National Resource Conservation Service, 1973. Onondaga County Soils Survey

NYSDEC (Maloy, Karen E.), 1985. "Hazardous Waste Disposal Sites Report – Frazer and Jones Co." November 1, 1985, 2p.

NYSDEC (Region 7), 2007. Frazer and Jones Solid Waste File: document including maps and sediment sample result tables for Solvay landfill vicinity, 7p.

NYSDEC, 1984. Hazardous Waste Compliance Inspection Form, Frazer and Jones Facility Inspection, completed 12/17/1984, 7 pages.

NYSDEC, 2008. Environmental Resource Mapper, State-Regulated Freshwater Wetlands http://www.dec.ny.gov/imsmaps/ERM/viewer.htm accessed November 14, 2008.

O'Brien and Gere, 2007. "Preliminary Site Assessment, Matthews Avenue Site, Geddes, New York," April 2007.

Rickard, L.V. and Fisher, D.W. 1970. Geologic Map of New York: Finger Lakes Sheet. Albany, New York State Museum and Science Service.

S&W Redevelopment of North America, 2006. Letter to: NYSDEC (Burke, James) "Pass and Seymour/Boyd Avenue Site, Brownfield Remedial Investigation, Phase I Groundwater Report" February 21, 2006.

Weeks, 1952. "Yankee Iron, the Story of the Eastern Malleable Iron Company," published by the Eastern Malleable Iron Company, Naugatuck, CT.

Wehran, 1986. "Engineering Investigations at Inactive Hazardous Waste Sites in the State of New York, Phase I Investigations, Frazer and Jones Company Site Code 734014, April 1986.

APPENDICES

APPENDIX A

Oversize Drawings

Drawing SP-1 Site Property Boundary

Drawing SD-1 Site Details

Drawing HS-1 Historical Site Survey

DWG PATH: G:\Gerry Gould\Frazer and Jones\VDS.dwg xf 1

PLOT DATE: 1/28/09

APPENDIX A

Site Investigation Report
Frazer and Jones Site
Solvay, New York

Historical
Site Survey

REF.DWG.	SIMILAR TO:	DWG NO.	REFERENCE DRAWING
E-2167	FRAZER & JONES ELEC. PLOT PLAN	C-7263	SHOTBLAST AREA LAYOUT
E-2158	SAFETY ENVIR'L EQ'P LOCAT'N PLAN	C-156'	[illegible]
		[illegible]	[illegible]
		E-2001	GALVANIZING AVOL. 15 & 20 C.T.'s=41
E 2002, 2002-1	N.P.S. LAYOUTS - HELD [illegible]
E-2125	SOUTH SIDE AVOL. 1 w/PR POSED FUTURE REV. NO.
[illegible]	[illegible]
29523	FACTORY MUTU'L WAT'R SUPPLY SYSTEM PLAN
none	PLAN - SPRINKLER SYSTEM SHOWING 2" VAN ENDS
none	
103-3	
C-1263	MARK-ON INSPECTION SYSTEM
E-209	SAND RESOURCES SURVEY 1st & 2nd
D 3204-1	NEW POT PALK 'O STATE
D-2062	SANDY POND BAY & TRAFFIC RE-ROUTE PROPOSAL DWG.
1117 LG	3-20-43 GAS SL

REF. 1 FOR ADDING LOCATIONS OF PIPES, BLDGS. FROM NEW SURVEYS USING NO. 2 AND NO. 3 MONUMENTS AS BASE POINTS AND BASE LINES ON THE MAGNETIC DECLINATION AXIS AS INDICATED ABOVE ON THE U.S. GEO. MAP. THEREAFTER CONSIDER THESE LINES AS REPRESENTING NORTH AND SOUTH ON YOUR COPY. THIS PROCEDURE WILL ELIMINATE THE NEED FOR ADJUSTMENT OF THE COMPASS BEARINGS SHOWN ON THE ORIGINAL DRAWING USED WITH THE MAP. NOT APPLIC. WITH PLOT LINES, READ VERIFIED DATA NOTE 1.

U.S. GEO. SURVEY
SYR. WEST QUAD.
TOPICGRAPHIC
UPDATED 1978
SCALE:
1" = 24,000' REF.

FRAZER & JONES CO.
DIVISION OF THE EASTERN COMPANY

LOT 136 - TOWN OF GEDDES COUNTY OF ONONDAGA STATE OF NEW YORK

NO.	DATE	BY
14	9-1-94 UPDATE	CC
13	3-16-94 UPDATE	CC

Part Of Lot 135-Geddes, Solvay, NY.
Certified By Jack W. Cottrell L.S. NO 21368
May 21, 83

"FORMER" STANTON FOUNDRIES INC.

ELECTRIC MELT BASEMENT PLAN

DETAIL
(ENGLISH 1" WATER SUPPLY 1"-1981)

NOTE: REFER TO LISTED DRAWINGS FOR CONSTRUCTION PURPOSES. DO NOT SCALE DRAWING FOR LAYOUT OR LOCATION OF PIPES & WIRES. NOT FOR SCALE.
NOT FOR US. OTHER PURPOSES WITHOUT PERMISSION

GENERAL PURPOSE LAYOUT | SEWER/WATER LINES DWG. | SCALE: 1"=60'-0" (See note 2) | 2 PRODUCTS n/a | 3 yes | 4 no

LEGEND

ELEC. WIRE Reg'ts	0.025 % PIPE GRADE - .187"/FT. (50'-0" @ 0.4"/FT.)
MAIN WATER FEED	DRILL & TAP HOLE
sprinkler & supply	
RAILROAD TRACKS	WOOD POLE
SEWER / STORM WATERLINES	4 & 6 LINE WATER line
FENCE	MANHOLE NO.
[CAR] CELESTIAL NORTH POLE	OIL SAND MANHOLES
	CATCH BASIN
	ELEC. POLES
	DRAIN PIT
	GUY WIRE

NO.	DATE	BY	DESCRIPTION
5	1-28-09	KC	ADD PROPERTY LINE, BLDG. TYP. NO. ADD PROPERTY LINE ALONG 'A'-'B'
4	1-20-00	MLC	ADDED NEW MONUMENTS & REVISED DATA TO CONSTRUCTION, VERIFIED TO WEBDATA
3	4-3-96	MLC	REVISED NORTH SIDE No.1 BLDG DIM.
2	2-27-96	MLC	ADDED BLDG. No. 1 TO NORTH SIDE OF TRUCK ROUTE, ADDED NEW SURVEY DATA TO ITEM 1 - REVISED N.W. CORNER
1	10-6-95	MLC	ADD WATER SYSTEM, STREETS, BLDGS., & EXIT, RETURN SAND MILL, EXTRA GATE, ETC.

FRAZER & JONES CO. PLOT PLAN
SCALE 1" = 60'-0"
2-21-86
CLARK 10-15-91
E-2167 15
see table

PRELIMINARY

REV DATE: 1/28/09

MAP OF LANDS OF FRAZER & JONES CO., DIVISION OF THE EASTERN COMPANY, LOT 136 – TOWN OF GEDDES, COUNTY OF ONONDAGA, STATE OF NEW YORK, PREPARED BY MARK CLARK AND LAST REVISED 3/12/96.

60 0 60
APPROX. SCALE IN FEET

HS-1
DATE: 1/28/09
FILE NO. 15

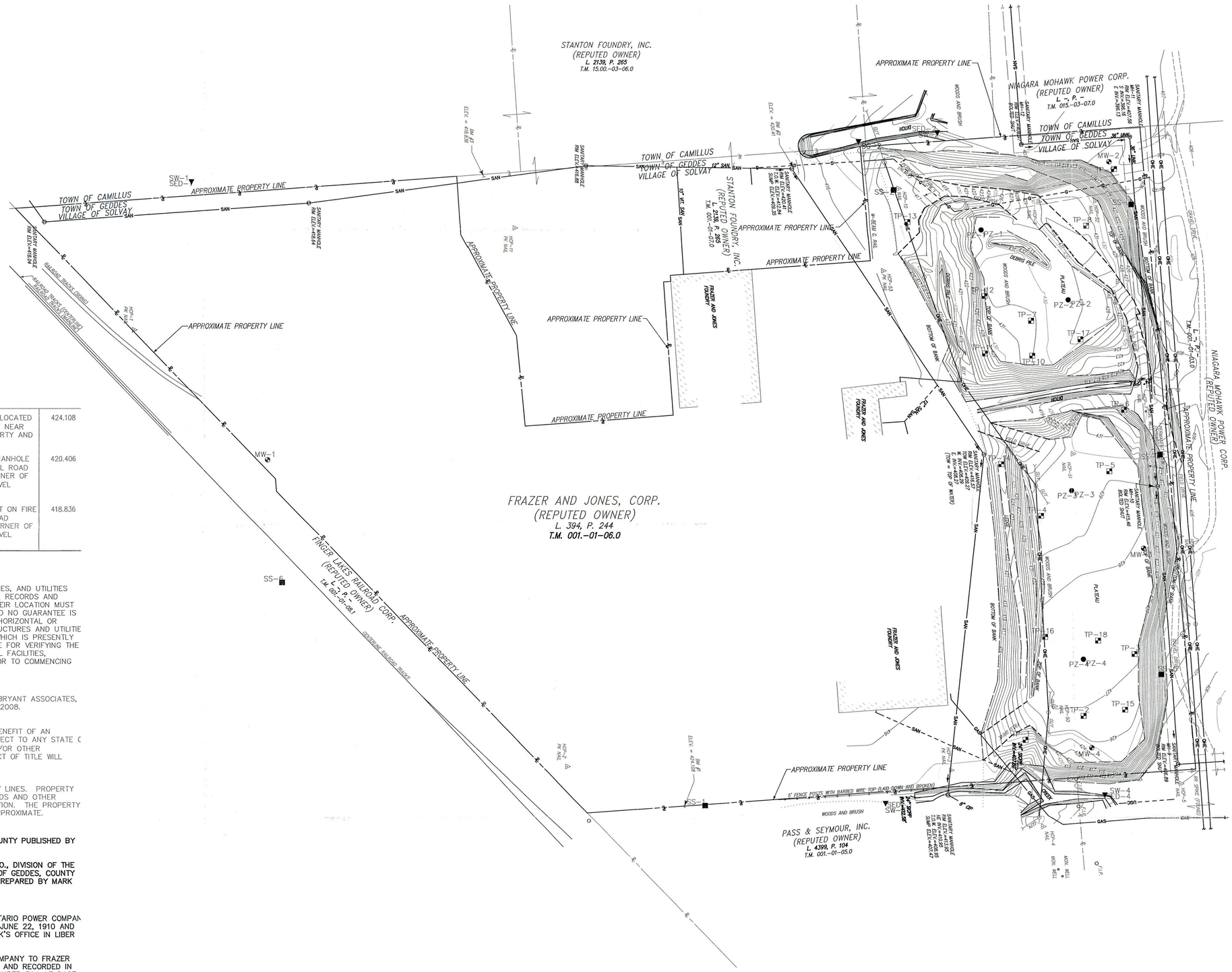
GOULD GROUNDWATER INVESTIGATIONS, INC.

DWG PATH: G:\Gerry Gould\Frazer and Jones\SP-1.dwg

Appendix A

Site Investigation Report
Frazer and Jones Site
Solvay, New York

Site Plan



BM #1	RAIL ROAD SPIKE IN UTILITY POLE, LOCATED 150'± NORTH OF RAILROAD TRACKS NEAR THE SOUTHEAST CORNER OF PROPERTY AND 2'± EAST OF PARKING LOT	424.108
BM #2	CHISELED 'X' ON NORTH EDGE OF MANHOLE RIM, LOCATED 850'± NORTH OF RAIL ROAD TRACKS NEAR THE SOUTHWEST CORNER OF PROPERTY AND 10'± WEST OF GRAVEL ACCESS DRIVE (MH #1307)	420.406
BM #3	CHISELED 'X' ON EAST FLANGE BOLT ON FIRE HYDRANT, 500'± NORTH OF RAILROAD TRACKS NEAR THE SOUTHWEST CORNER OF PROPERTY AND 75'± WEST OF GRAVEL ACCESS ROAD	418.836

UTILITY NOTE:
EXISTING UNDERGROUND FACILITIES, STRUCTURES, AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE PLANS, RECORDS AND SURVEYS WITHOUT ENTERING STRUCTURES. THEIR LOCATION MUST THEREFORE BE CONSIDERED APPROXIMATE AND NO GUARANTEE IS MADE BY BRYANT ASSOCIATES, P.C. TO THE HORIZONTAL OR VERTICAL LOCATION OF SUCH FACILITIES, STRUCTURES AND UTILITIE THERE MAY BE OTHERS, THE EXISTENCE OF WHICH IS PRESENTLY UNKNOWN. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL FACILITIES, STRUCTURES AND UTILITIES IN THE FIELD PRIOR TO COMMENCING WORK.

SURVEY NOTE:
TOPOGRAPHIC FIELD SURVEY PERFORMED BY BRYANT ASSOCIATES, P.C. BETWEEN APRIL 22, 2008 AND MAY 30, 2008.

R.O.W. NOTE:
THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE, AND IS THEREFORE SUBJECT TO ANY STATE C FACTS, EASEMENTS, LEASE AGREEMENTS AND/OR OTHER RESTRICTIONS THAT AN UP TO DATE ABSTRACT OF TITLE WILL SHOW.

CERTIFICATION NOTE:
NO CERTIFICATION IS MADE TO THE PROPERTY LINES. PROPERTY LINES SHOWN ARE FROM RECORD PLANS, DEEDS AND OTHER MATERIALS THAT HAVE CONFLICTING INFORMATION. THE PROPERTY LINES SHOULD THEREFORE BE CONSIDERED APPROXIMATE.

MAP REFERENCES:
1. SWEET'S NEW ATLAS OF ONONDAGA COUNTY PUBLISHED BY WALKER BROS. & CO. DATED 1874.
2. MAP OF LANDS OF FRAZER & JONES CO., DIVISION OF THE EASTERN COMPANY, LOT 136 – TOWN OF GEDDES, COUNTY OF ONONDAGA, STATE OF NEW YORK, PREPARED BY MARK CLARK AND LAST REVISED 3/12/99.

DEED REFERENCES:
1. DEED FROM NIAGARA, LOCKPORT & ONTARIO POWER COMPAN TO FRAZER & JONES COMPANY DATED JUNE 22, 1910 AND RECORDED IN ONONDAGA COUNTY CLERK'S OFFICE IN LIBER 394 AT PAGE 244.
2. DEED FROM WESTERN COARSE SALT COMPANY TO FRAZER JONES COMPANY DATED JUNE 22, 1910 AND RECORDED IN ONONDAGA COUNTY CLERK'S OFFICE IN LIBER 394 AT PAGE 245.
3. QUITCLAIM DEED FROM ONONDAGA COUNTY INDUSTRIAL DEVELOPMENT AGENCY TO PASS & SEYMOUR, INC. DATED FEBRUARY 9, 2000 AND RECORDED IN ONONDAGA COUNTY CLERK'S OFFICE IN LIBER 4399 AT PAGE 104.
4. RIDER TO BARGAIN AND SALE DEED FROM HOFFMAN INDUSTRIES, INC. TO STANTON FOUNDRY, INC. DATED APRIL 4, 1963 AND RECORDED IN ONONDAGA COUNTY CLERK'S OFFICE IN LIBER 2139 AT PAGE 267.

LEGEND
SS-5■ = SS-xx (SOIL SAMPLE)
MW-4⊕ = MW-xx (MONITORING WELL)
TP-2▲ = TP-xx (TEST PIT)
PZ-1● = PZ-xx (PIEZOMETER)
SG-2▼ = SG-xx (FENCE POST)

SCALE IN FEET
60 0 30 60 120 240

BRYANT ASSOCIATES, JUNE 2008, DONE BY NMD/GVN, SCALE 1"=60', DRAWING NAME SP-1

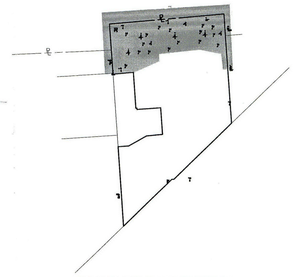
REV DATE: 11/11/08

SP-1
NOVEMBER 2008
FILE NO. 004

GOULD GROUNDWATER INVESTIGATIONS, INC.

PLOT DATE: 11/11/08

Spent Foundry Sand Detail





LEGEND

SS–5■ = SS–xx (SOIL SAMPLE)
MW–4● = MW–xx (MONTORING WELL)
TP–2■ = TP–xx (TEST PIT)
PZ–4● = PZ–xx (PIEZOMETER)
SG–2▼ = SG–xx (FENCE POST)

NIAGARA MOHAWK POWER CORP.
(REPUTED OWNER)
L. –, P. –
T.M. 001.–01–03.0

NIAGARA MOHAWK POWER CORP.
(REPUTED OWNER)
L. –, P. –
T.M. 015.–03–07.0

TOWN OF CAMILLUS
TOWN OF GEDDES
VILLAGE OF SOLVAY

FRAZER AND JONES, CORP.
(REPUTED OWNER)
L. 394, P. 244
T.M. 001.–01–06.0

STANTON FOUNDRY, INC.
(REPUTED OWNER)
L. 2139, P. 265
T.M. 001.–01–07.0

PASS & SEYMOUR, INC.
(REPUTED OWNER)
L. 4398, P. 104
T.M. 001.–01–05.0

APPROXIMATE PROPERTY LINE

SANITARY MANHOLE
MH–11
RIM ELEV.=407.56
S INV.=396.16
E INV.=396.13

SANITARY MANHOLE
MH–12
RIM ELEV.=408.97
BOLTED SHUT

SANITARY MANHOLE
MH–10
RIM ELEV.=415.46
BOLTED SHUT

SANITARY MANHOLE
MH–9
RIM ELEV.=406.89
BOLTED SHUT

SANITARY MANHOLE
RIM ELEV.=416.57
TOW ELEV.=409.27
W. INV.=408.29
E. INV.=408.27
(TOW = TOP OF WATER)

SANITARY MANHOLE
RIM ELEV.=413.95
NE INV.=410.95
T.O.W. ELEV.=408.95
SUMP ELEV.=407.47

SANITARY MANHOLE
RIM ELEV.=420.41
T.O.W. ELEV.=412.84
SUMP ELEV.=409.35

24" SICPP
INV.=407.82'

24" SICPP
INV.=412.58'

BM #2
ELEV. = 420.41

BM #1
ELEV. = 424.108

PLATEAU

TOP OF BANK

BOTTOM OF BANK

LEDGE

WOODS AND BRUSH

DEBRIS PILE

FIELD DRIVE

GRAVEL DRIVE

CREEK

DITCH

5' FENCE POSTS WITH BARBED WIRE TOP (LAID DOWN AND BROKEN)

FRAZER AND JONES FOUNDRY

MW–1 MW–2 MW–3 MW–4

TP–1 TP–2 TP–3 TP–4 TP–5 TP–6 TP–7 TP–8 TP–9 TP–10 TP–11 TP–12 TP–13 TP–14 TP–15 TP–16 TP–17 TP–18

PZ–1 PZ–2 PZ–3 PZ–4

SS–1 SS–2 SS–3 SS–4 SS–5

SG–1 SG–2 SG–3

HCP–1 PK NAIL
HCP–2 NAIL
HCP–3 PK NAIL
HCP–4 NAIL
HCP–5 NAIL
HCP–6 NAIL
HCP–8 NAIL
HCP–9 NAIL
HCP–10 NAIL
HCP–50 NAIL
HCP–51 NAIL
HCP–52 NAIL
HCP–53 PK NAIL
RR SPIKE (FOUND)

BENCHMARK LIST

NUMBER	DESCRIPTION	ELEVATION
BM #1	RAIL ROAD SPIKE IN UTILITY POLE, LOCATED 150'± NORTH OF RAILROAD TRACKS NEAR THE SOUTHEAST CORNER OF PROPERTY AND 2'± EAST OF PARKING LOT	424.108
BM #2	CHISELED 'X' ON NORTH EDGE OF MANHOLE RIM, LOCATED 850'± NORTH OF RAIL ROAD TRACKS NEAR THE SOUTHWEST CORNER OF PROPERTY AND 10'± WEST OF GRAVEL ACCESS DRIVE (MH #1307)	420.406
BM #3	CHISELED 'X' ON EAST FLANGE BOLT ON FIRE HYDRANT, 500'± NORTH OF RAILROAD TRACKS NEAR THE SOUTHWEST CORNER OF PROPERTY AND 75'± WEST OF GRAVEL ACCESS ROAD	418.836

UTILITY NOTE:
EXISTING UNDERGROUND FACILITIES, STRUCTURES, AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE PLANS, RECORDS AND SURVEYS WITHOUT ENTERING STRUCTURES. THEIR LOCATION MUST THEREFORE BE CONSIDERED APPROXIMATE AND NO GUARANTEE IS MADE BY BRYANT ASSOCIATES, P.C. TO THE HORIZONTAL OR VERTICAL LOCATION OF SUCH FACILITIES, STRUCTURES AND UTILITIES. THERE MAY BE OTHERS, THE EXISTENCE OF WHICH IS PRESENTLY UNKNOWN. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL FACILITIES, STRUCTURES AND UTILITIES IN THE FIELD PRIOR TO COMMENCING WORK.

SURVEY NOTE:
TOPOGRAPHIC FIELD SURVEY PERFORMED BY BRYANT ASSOCIATES, P.C. BETWEEN APRIL 22, 2008 AND MAY 30, 2008.

R.O.W. NOTE:
THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE, AND IS THEREFORE SUBJECT TO ANY STATE OF FACTS, EASEMENTS, LEASE AGREEMENTS AND/OR OTHER RESTRICTIONS THAT AN UP TO DATE ABSTRACT OF TITLE WILL SHOW.

SCALE IN FEET
40 0 20 40 80 160

BRYANT ASSOCIATES, JUNE 2008, DONE BY NMD/GVN, SCALE 1"=40', DRAWING NAME SP–1

REV DATE: 11/11/08

SD–1
NOVEMBER 2008
FILE NO. 004

GOULD GROUNDWATER INVESTIGATIONS, INC.

DWG PATH: G:\Kerry Gould\Frazer and Jones\SP01.dwg
PLOT DATE: 11/11/08

APPENDIX B

Site History Documentation

Table B-1 Correspondence with NYSDEC Summary

Table B-2 Aerial Photograph Summary

Selected Letters and Documents

Aerial Photographs

Table B – 1
Frazer and Jones
Site Investigation
Background Document Review
Environmental Correspondence

Date	Author	Document	Topic	Summary	Source
1/12/1977	Frazer and Jones (Piperno, C.A.)	NYSDEC Industrial Chemical Survey Form	F&J Landfill activity	The NYSDEC survey completed by Frazer and Jones indicates that they own and use a landfill in the rear of the plant.	2*
3/19/1979	NYSDEC (DelPrete, Kathy)	In-Place Toxics Inspection Form	Landfill Inspection	Concerns about lack of liner and leaching phenols	2
4/18/1979	Frazer and Jones (Herres, D.C.)	Letter to: NYSDEC (Delprete, K.)	In-Place toxics inspection follow-up	Frazer and Jones provided NYSDEC with explanation of the use of phenols in mold making. Frazer and Jones offers cooperation if NYSDEC wants to inspect landfill or analyze core samples.	2*
7/2/1979	NYSDEC(Hannifin, K.)	NYSDEC memorandum	NYSDEC and Onondaga Co. Health Dept. inspection of F&J Landfill	NYSDEC and OCDOH inspected Frazer and Jones landfill in response to a complaint. The inspection found a "large disposal area" containing mostly "foundry sand with lumber, metal and other non-putrescible waste." Some 55-gallon drums believed to contain foundry sand waste were also observed. The inspectors also noted landfill activities at the Stanton Foundry, Pass and Seymour property and Village of Solvay landfill.	2
10/2/1979	NYSDEC (DelPrete, Kathy)	NYSDEC Memorandum	In-Place toxics inspection follow-up	Recommendation by NYSDEC that Frazer and Jones Foundry be downgraded to a Class E priority – "Properly Operated or closed and maintained site; periodic surveillance and chemical analysis required".	2*
3/10/1980	NYSDEC (Knowles,)	Hazardous Waste Disposal Report	Landfill Inspection	No problems, planning closure	2*
3/27/1980	Bond, Schoeneck and King (Kogut, B.)	Letter to: NYSDEC	Foundry sand lab results	Request for approval to dispose	2
4/29/1980	Empire Soils Investigations	Soils Lab report	Permeability Test Results	Foundry sand permeability reported at 1.09×10^{-4} and 1.36×10^{-4} cm/sec.	2
10/1/1984	Upstate Lab (Scala, Anthony)	Letter and Lab report to: Frazer and Jones.	Foundry sand and oil analyses	Mixed foundry sand – 60 ppm phenol Waste core sand – 230 ppm phenol	1
10/15/1984	Upstate Lab (Scala, Anthony)	Letter and Lab report to: Frazer and Jones.	Foundry sand sample analyses	White foundry sand – 140 ppm phenol Black Foundry sand – 16 ppm phenol	1
12/17/1984	NYSDEC	Inspection Form	Hazardous Waste Compliance inspection	1. The inspection form notes the replacement of PCB capacitors with non-PCB capacitors and shipping of 6 PCB capacitors to Cecos Landfill on 3/19/1984.	1*

Table B – 1
Frazer and Jones
Site Investigation
Background Document Review
Environmental Correspondence

Date	Author	Document	Topic	Summary	Source
				2. H2SO4 pickle waste is disposed of through Cecos permit. 3. Old PCB capacitors are placed in 55-gallon drums and packed with speedy-dry 4. Inspection form recommends "No follow-up necessary"	
5/21/1985	Wehran Engineers (Gasporavic,)	EPA Preliminary Site Inspection form	F&J Site visit	Potential leaching of phenols	2
5/22/1985	NYSDEC (Mafresi?, David)	Letter to: Frazer and Jones (Mantle, Alfred)	Results of 12/17/84 inspection	Frazer and Jones has been determined to be a hazardous waste generator.	1
6/14/1985	Frazer and Jones (Giannone, A. T.)	Letter from F&J to Wehran Engineering	NYSDEC Phase I Investigation	Frazer and Jones operates under Onondaga County Industrial Waste permit No. 72, Industrial Code 152, SIC 332. A site sketch attached to the letter identifies the landfill area and estimates the landfill size at 5.14 acres.	2*
7/31/1985	Frazer and Jones	Letter to: NYSDEC	Training and emergency procedures	Submittal of Training and emergency procedures plan with MSDSs for sulfuric acid, hydrofluoric acid, millboard (chrysotile asbestos), and hot box resin	1
8/1/1985	Frazer and Jones (Giannone, A. T.)	Letter to: Wehran Engineers (Maloy, K.)	Landfill size and waste disposal	Height of spent foundry sand pile is approximately 40 feet. Frazer and Jones has not disposed of any waste sand at the Auburn Landfill.	2
10/28/1985	Wehran Eng (Maloy, K.)	Phone conversation with NYSDEC (Wezenkowitz, D.)	Foundry sand	F&J given permission by NYSDEC to sell core sand as landfill cover after EPTOX testing.	2*
10/28/1985	Onondaga Co. Health Dept. (Abbott, D.)	Wehran interview acknowledgement form	Spent Foundry sand disposal at F&J	Frazer and Jones is currently dumping on-site.	2
11/1/1985	NYSDEC (Maloy, K.)	NYSDEC Hazardous Waste Disposal Sites Report	Waste description and quantity	Frazer and Jones Site is classified Code E. A 1 to 5 acre landfill has been receiving spent core sand, sludge, scrubber dust and shot blast wastes. There is a potential for migration of contaminants. Spent core sands with phenolic binders and heavy metals are considered hazardous waste. Disposal quantity is listed as 2,000 tons per year.	2*

Table B – 1
Frazer and Jones
Site Investigation
Background Document Review
Environmental Correspondence

Date	Author	Document	Topic	Summary	Source
11/25/1985	Frazer and Jones (Giannone, A. T.)	Letter to: NYSDEC (Hannifin. K.)	Lab results on sludge waste material	Request to dispose of sludge in F&J landfill	1
1/22/1986	NYSDEC (Hannifin, K.)	Letter to: Frazer and Jones (Giannone, A. T.)	Soda Ash waste disposal	Soda ash waste needs to be disposed in an approved Part 360 landfill. The present Frazer and Jones landfill is not part 360 approved. F&J would need to apply for a Part 360 permit if it wishes to "further look into the possibilities of disposing waste at the site…"	1
April 1986	Wehran Engineering for NYSDEC	NYSDEC Phase I Investigation Report	Phase I Inactive Hazardous Waste Site Investigation Report	Hazardous Ranking System Score Sm = 7.19. No known environmental problems at site. Potential groundwater, surface water and subsurface soil contamination from leaching phenols in foundry sand pile. June 28, 1979 sampling event indicated phenol at concentrations below applicable water quality standards.	2
3/27/1987	Frazer and Jones (Wright, Ray)	MACNY questionnaire	Foundry sand disposal	Manufacturer's Association of Central New York is addressing problem of disposal options for foundry sand due to landfill closures. F&J estimates disposal rate of 8,000 tons per year in it own landfill.	3*
11/12/1987	Frazer and Jones (Wright, Ray)	Letter to: NYSDEC (Shattuck, F.)	Haz waste exclusion	Request for exclusion to dispose of spent soda ash and sulfuric acid on F&J premises	1
4/4/1988	NYSDEC (Ricotta, F.)	Letter to: Frazer and Jones (Wright, Ray)	Biological threat survey	Biological threat survey completion is scheduled for May 1988	1
6/15/1988	Frazer and Jones (Wright, Ray)	Frazer and Jones Co. Notice to employees	Spent Foundry Sand	The notice informs employees that on June 14, 1988 foundry sand began shipping to the Auburn Landfill. Employees are encouraged to separate paper, wood, cans etc from the sand.	3*
6/23/1988	Syracuse Post Standard (Hirsch, Michael)	Newspaper article	Frazer and Jones Foundry sand disposal	The article describes plans for disposal of foundry sand. The article was posted for employees with a note that starting 6/14/1988 foundry sand was sent to the Auburn Landfill.	4*
7/13/1988	Frazer and Jones (Wright, Ray)	Letter to: NYSDEC (Kaul, N.G.)	Request change in phenol specifications (for waste disposal)	Acknowledges F&J is paying for off-site foundry sand disposal at a cost of $176,000 per year. The letter indicates the waste pile quantity is 123,00 tons.	3*

Table B – 1
Frazer and Jones
Site Investigation
Background Document Review
Environmental Correspondence

Date	Author	Document	Topic	Summary	Source
8/8/1988	Frazer and Jones (Getman, Jeff)	Purchase Order 0005734 to: City of Auburn (O'Neill, Mike)	Foundry sand disposal	A P.O. was issued to the City of Auburn for disposal of F&J spent foundry sand at the Auburn City Landfill. An invoice with quantity and cost is attached.	3*
3/27/1989	Frazer and Jones (Wright, Ray)	Letter to: NYSDEC (Gross, Larry)	Lab analysis of slag for disposal	Slag has some phenol detects. Request permission to dispose of slag in Village of Solvay C&D landfill adjacent to F&J. Letter notes current disposal of foundry sand to Auburn Landfill at a cost of $15,000 per year	1*
4/5/1989	NYSDEC (Gross, Larry)	Letter to: Frazer and Jones	Slag disposal	Slag must go to a permitted facility or a consent order location. Suggest working with Allied Chemical	1
4/9/1991	NYSDEC (Koch, Tom)	NYSDEC Mobile Lab Report	Spent foundry sand lab results	Two foundry sand samples collected 3/11/1991 from spent foundry sand pile at F&J. Low levels of phenols, SVOCs and metals found. No PCBs.	1
8/17/1992	USEPA	Letter to: Frazer and Jones	RCRA Compliance	Frazer and Jones is in compliance with RCRA	1
8/21/1992	Frazer and Jones (Getman, Jeff)	Letter to: USEPA	Hazardous Waste Generator Classification	Request to USEPA to declassify Frazer and Jones as a hazardous waste generator	1
9/29/1992	Frazer and Jones (Getman, Jeff)	Letter to: NYSDEC	Storm water Permitting	Application to modify SPDES permit NY 023 2491	1
4/10/2003	NYSDEC	Air photo, sample location map and spreadsheets of lab results (7 pages)	Sediment sampling between Solvay LF and neighbor sites	Results of sediment samples collected near the Stanton Foundry site, Frazer and Jones and Pass and Seymour exhibit Aroclor 1254, acetone, carbon disulfide, cis-1,2 DCE, TCE and PCE hits	1*

* A copy of the document is included in Appendix B.

[1] NYSDEC Freedom of Information request

[2] Wehran, 1986. "Engineering Investigations at Inactive Hazardous Waste Sites in the State of New York, Phase I Investigations, Frazer and Jones Company Site Code 734014, April 1986.

[3] Frazer and Jones files

[4] Syracuse Post Standard Newspaper

Table B -2
Frazer and Jones
Site Investigation
Site Development Observations from Aerial Photographs

Year:	*Frazer and Jones Property*	*Adjacent/nearby parcels:*	*Source:*
1938	○ Most buildings of existing facility are present ○ Possible fill face on North edge of foundry complex ○ Some vegetation north of buildings ○ Possible farmed land at toe of fill slope ○ Large building on east side of property at location of current parking area ○ Building on west side where there is now a concrete pad remaining after demolition ○ Main driveway splits at current hairpin – one branch goes N and another goes east, as it does today ○ Pedestrian bridge over RR tracks near SE corner of F&J is visible	○ Wooded area east of site ○ Road connects Bridge Street to Horan Rd –an extension of present Matthews Ave. – through what will be the Solvay landfill ○ Land North of Frazer and Jones is cultivated in thin rectangular fields trending NE-SW ○ Electrical substation is present on east side of Horan Rd. ○ Geddes Brook appears to follow engineered channel ○ Possible water course running NNE through current Stanton Foundry parcel ○ N-S trending linear feature (ditch) runs west of F&J near boundary with Stanton property ○ Buildings are present on west side of Boyd Ave – presumably Pass and Seymour or pre-cursor	A
1951	○ Fill north of buildings forms 2 lobes extending North of 1938 fill face ○ Main driveway runs from RR track west, then north then east to buildings, current hairpin turn and east road is non-existent ○ NE lobe is almost to Mathews Ave road ○ Pedestrian bridge over RR tracks near SE corner of F&J is visible ??? (faintly) ○ Land NE of pedestrian bridge has building	○ Road connects Bridge Street to Horan Rd –an extension of present Matthews Ave. – through what will be the Solvay landfill ○ Land North of Frazer and Jones is cultivated in thin rectangular fields trending NE-SW. Land immediately adjacent to F&J no longer appears farmed ○ Allied waste beds are visible to N and NE ○ Buildings are present on west side of Boyd Ave – presumably Pass and Seymour or pre-cursor ○ Structure added to SW corner of Horan rd Substation	B
1966	○ Fill north of buildings is one front now partially covering Matthews Ave road ○ Pedestrian bridge over RR tracks near SE corner of F&J is visible ○ Land NE of pedestrian bridge has building and parking area ○ Main driveway is now routed around hairpin turn and trends east, south of all buildings	○ Fill is visible at future Matthews Ave landfill site ○ Fill is visible at future Solvay landfill site ○ Engineered stream course is visible running N-S between Stanton Foundry property and F&J ○ Disturbed land SW of F&J and S of intersection of Milton Ave and Horan RD – possible development of divided Highway Rt 5. ○ Electrical substation exists north of Matthews Ave and NE of F&J property, on SW edge of Matthews Ave fill area ○ Matthews Ave no longer connects to Horan Rd due to fill blocking road	C

Table B -2
Frazer and Jones
Site Investigation
Site Development Observations from Aerial Photographs

Year:	*Frazer and Jones Property*	*Adjacent/nearby parcels:*	*Source:*
1978	○ Two fill piles at F&J ○ An access road trends E-W to the north of the fill piles ○ Apparent C&D debris on west fill pile ○ Two Stanton buildings are visible	○ Rt 5 and Rt 695 bypass highways are present ○ Parking lot exists on west side of pass and Seymour buildings ○ A round mound of apparent fill is between Pass and Seymour parking area and F&J buildings ○ Additional equipment has been added to Matthews Ave substation	D
1990	○ Perimeter road around East fill pile ○ Grass and trees have grown on sand piles ○ Possible recent disturbance on west pile ○ Two Stanton buildings are visible	○ Power line access road runs to Horan Rd substation ○ Activity at Matthews Ave and Solvay landfills	E
1995	○ Stanton buildings are gone ○ NE creek visible ○ W creek is covered at Stanton	○ No activity at Solvay or Matthews Ave Landfills.	F

A – Aerial photograph ARX-27-98 taken July 5, 1938
B – Aerial photograph ARX – 2H – 86 taken October 5, 1951
C – Aerial Photograph ARX-2GG-74, taken 1966
D – Aerial photograph 36067-178, taken 1978
E - Aerial photograph 36067-990, taken 1990
F - Aerial photograph NAPP - 8042, taken 1995

91-15-5 (12/76) RECEIVED

JAN 12 1977

DIVISION OF PURE WATERS

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
ALBANY, NEW YORK 12233

INDUSTRIAL CHEMICAL SURVEY

PART I

(7) SPDES

LEASE COMPLETE AND RETURN TO THE ABOVE ADDRESS, ATTENTION: INDUSTRIAL CHEMICAL SURVEY.

COMPANY NAME: FRAZER & JONES COMPANY DIVISION OF THE EASTERN COMPANY		SIC CODE (If known): 3479	OFFICE USE ONL: 31 8801
COMPANY MAILING ADDRESS: Box 1155,	CITY: Syracuse	STATE: N Y	ZIP CODE: 13201
PLANT NAME (If different)	CONTACT NAME: Charles Piperno	TELEPHONE Area: 315-468-6251	
PLANT ADDRESS (If different) Street: 3000 Milton Ave.	CITY: Solvay	STATE: N Y	ZIP CODE: 13209
PRINCIPAL BUSINESS OF PLANT: Malleable Iron Foundry			

NOTE: (If parent company, give name and addresses of all divisions, subsidiaries, etc. located in New York State. A separate questionnaire is to be completed and submitted for each.)

PART II
Discharge Information

WATER

1. Does your plant discharge liquid wastes to a municipally owned sanitary sewer system? ☒ Yes ☐ No
   Name of System: Onondaga County Waste Disposal
2. Is your facility permitted to discharge liquid wastes under a State (SPDES) or Federal (NPDES) permit? ☐ Yes ☒ No
   Permit Number: 0 0 2 7 0 8 1
3. Do you discharge liquid wastes in any other manner? ☐ Yes ☒ No
   Explain: _____

If any of the above are "Yes":

a. Do you discharge process or chemical wastes – (i.e. water used in manufacturing including direct contact cooling water and scrubber water)? ☐ Yes ☐ No
b. Do you discharge non-contact cooling water? ☐ Yes ☐ No
c. Do you discharge collected storm drainage only? ☐ Yes ☐ No
d. Do you discharge sanitary wastes only? ☐ Yes ☐ No

AIR

1. Does your facility have sources of possible emissions to the atmosphere? ☒ Yes ☐ No
2. Enter Location and Facility Code as shown on your Air Pollution Control Application for Permits and Certification (If applicable)

LIQUID WASTES

1. List Name and Address of Firm (Including yourself) removing wastes other than office and cafeteria refuse.

Name	Address	City	State	Zip Code
FRAZER & JONES COMPANY	Box 1155	Syracuse	N Y	13201

2. List Location(s) of Landfill(s) owned and used by your facility.

		Active	Inactive
1	Rear of Plant - Plant North	☒	☐
2		☐	☐

PESTICIDES

1. Does this facility:

Manufacture Pesticides or Pesticide Product Ingredients?	☐ Yes	☒ No
Produce Pesticides or Pesticide Product Ingredients?	☐ Yes	☒ No
Formulate Pesticides?	☐ Yes	☒ No
Repackage Pesticides?	☐ Yes	☒ No

2. EPA Establishment Number: ____ – ____ – ____

PART III

SUBSTANCES OF CONCERN
(Refer to attached TABLE I)

Complete all information for those substances your facility has used, produced, stored, distributed or otherwise disposed of since January 1, 1971. Do not include chemicals used only in analytical laboratory work. Enter the name and code from Table I. If facility uses a substance in any of the Classes A – F which is not specified in the list, enter it as code class plus 99, e.g. B99 with name, usage, etc.

NAME OF SUBSTANCE	CODE	AVERAGE ANNUAL USAGE	AMOUNT NOW ON HAND	(✓) GAL.	(✓) LB.	PURPOSE OF USE (State whether produced, reacted, blended, packaged, distributed, no longer used, etc.

FRAZER & JONES COMPANY
DIVISION OF
THE EASTERN COMPANY
3000 MILTON AVE. • SOLVAY, NEW YORK
MAILING ADDRESS: P. O. BOX 4955 • SYRACUSE, NEW YORK 13221
TELEPHONE: 315-468-6251

April 18, 1979

Ms. Kathleen DelPrete
Sanitary Engineer
New York State Department of Enviornmental Conservation
Region 7, Enviornmental Quality Office
7481 Henry Clay Boulevard
Liverpool, New York 13088

Ms. DelPrete:

In response to your visit of March 13, 1979 and your letter of March 19, the following information is provided. The core binder is a phenol-urea formaldehyde liquid resin which is mixed with an acid salt solution in water, an acclerator. The free phenol content of the binder is typically 3 to 3½% before reaction. There is approxiamately 30% phenol content in the binder which is in the form of methylol phenol.

When mixed with the accelerator, the free phenol reacts with free formaldehyde to form the polymer which gives form to the cores. This reaction is accelerated under heat (260°C) when the cores are made, however it continues after the core is formed so that the final product is a complete solid within approxiamately one hour.

The manufactuer, Hooker Chemical, and others have done tests to determine the remaining phenol after metal had been poured over the cores. The results were inconclusive: more research is being done on the subject and results of this will probably be available in several years. The tests did indicate that the levels were extremely low.

There is no binder that is being dumped without having been used in the manufacture of cores. Therefore, of the 52225 lbs. of binder that was purchased last year, all of it was reacted so that only trace amounts would be dumped of the original free phenols present. In specific response to your letter, binders are added by weight at 2%±1% to core sands. 3,600,000 lbs. of core sands were purchased last year.

Should you wish to inspect our landfill area, or have samples of cores mad available for your laboratory analysis I will be pleased to offer any cooperation required. I beleive the information supplied here warrants the removal of Frazer & Jones from your list of in-place hazardous waste problems.

Sincerely,
FRAZER & JONES COMPANY

Donald C. Herres
Electrical Engineer

cc: Mr. Robert Pandick

F&J, 1979-04-18

15 (12/75)

New York State Department of Environmental Conservation

MEMORANDUM

TO: Mr. Halton
FROM: K. DelPrete
SUBJECT: In-Place Toxics Inspection Follow-up for Frazer & Jones Foundry, Syracuse (C) and Oberdorfer Foundry, Syracuse (C)
DATE: October 2, 1979

As a result of our initial inspections and subsequent surface water samplings of the above-referenced facilities, we are recommending a change to their class designation. Previously, both sites had been designated as Class B priority: "Detailed chemical analysis or hydrogeological survey is needed, if warranted by the site's potential for health and environmental impact."

Both facilities should now be designated as Class E priority: "Properly operated or closed and maintained site; periodic surveillance and chemical analysis required". Our main concern regarding these sites was the potential for the leaching of phenolic compounds from landfilled spent foundry sands. Phenolic-based resins are used as foundry sand binders. Our samplings of surface waters near the active dump sites did not reveal phenol concentrations in excess of applicable State water quality standards (maximum concentration measured was 0.003 ppm).

The reason we did not designate these facilities as Class F ("No in-place toxics are present in dangerous amounts and no further action is required") is that the Bureau of Solid Waste has investigated a few cases of groundwater contamination from phenolic compounds leaching from landfilled foundry sand in Region 9. We felt that this Department should periodically monitor the active foundry sand disposal sites in our Region to preclude the possibility of serious environmental problems developing.

cc McCarthy
Gucla
Goddard
Ros Miller

47-15-11(2/80)

HAZARDOUS WASTE DISPOSAL SITES REPORT
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Code: F
Site Code: 734014
Name of Site: Frazer and Jones Company
Region: 7
County: Onondaga
~~Town~~/City Syracuse
Street Address: 3000 Milton Avenue, Syracuse, NY

Status of Site Narrative:

This foundry operation utilized on-site disposal of spent core sand, sludge, scrubber dust and shot blast wastes. Because of the possible presence of phenolic binders and other materials, DEC's investigation of this company was undertaken. The site was sampled on June 28, 1979, and the presence of phenol was less than the applicable water quality standard. Leachability tests indicate that materials are not leachable from the waste stream.

Type of Site: Open Dump [X] Landfill [ ] Structure [ ]
Treatment Pond(s) [ ] Lagoon(s) [ ]
Number of Ponds ____ Number of Lagoons ____

Estimated Size ~ 1.0 Acres

Hazardous Wastes Disposed? Confirmed [ ] Suspected [X]

*Type and Quantity of Hazardous Wastes:

TYPE	QUANTITY (Pounds, drums, tons, gallons)

*Use additional sheets if more space is needed.

47-15-11(2/80)

Name of Current Owner of Site: _____

Address of Current Owner of Site: _____

Time Period Site Was Used for Hazardous Waste Disposal:

_____, 19 ___ To Present, 19 ___

Is site Active ☒ Inactive ☐

(Site is inactive if hazardous wastes were disposed of at this site and site was closed prior to August 25, 1979)

Types of Samples: Air ☐ Groundwater ☐ None ☐
Surface Water ☒ Soil ☐

Remedial Action: Proposed ☒ Under Design ☐
In Progress ☐ Completed ☐
Nature of Action:

Status of Legal Action: NONE State ☐ Federal ☐

Permits Issued: Federal ☐ Local Government ☐ SPDES ☐
None Solid Waste ☐ Mined Land ☐ Wetlands ☐ Other ☐

Assessment of Environmental Problems:

No known environmental problems at this site. Site is under closure plans by the company.

Assessment of Health Problems:

None known, Company study underway.

Persons Completing this Form:

G.D. Knowles

New York State Department of Environmental Conservation
Date March 10, 1980

R. Tramontano

New York State Department of Health
Date March 10, 1980

1/13/80
Copies

PAGE C-7-28

INSPECTION FORM

REGION: 7
Major:
Non-Major: X

NEW YORK STATE
INDUSTRIAL HAZARDOUS WASTE MANAGEMENT ACT
(Chapter 639, Laws of 1978)

Prepared for:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Henry G. Williams, Commissioner

Division of Solid and Hazardous Waste
Norman H. Nosenchuck, Director

Send to: Compliance Inspection Section
50 Wolf Road - Room 207/415
Albany, New York 12233-0001

EPA I.D. NUMBER: N Y D 0 0 2 2 2 5 5 9 7

*HANDLER'S NAME (Corporate): FRAZER AND JONES COMPANY

(Division):

*HANDLER'S MAILING ADDRESS: 3002 Milton Ave.

City & State SYRACUSE, N.Y. Zip Code 13221

*HANDLER'S LOCATION ADDRESS: (if different than mailing)

City & State , Zip Code

*HANDLER'S TELEPHONE NUMBER: (315) 468-6251 Extension

*FULL NAME OF HANDLER'S CONTACT: (Mr.) (Ms.) Alfred Mantle, MR GIANNONE

*TITLE OF HANDLER'S CONTACT: MANAGER

*HANDLER'S CONTACT ADDRESS: (if different than Handler's)

City & State , Zip Code

HANDLER'S CONTACT TELEPHONE NUMBER: ( ) Extension
(if different than Handler's)

INSPECTION DATE: 12/17/84 TIME OF INSPECTION: 10:00 (a.m.) p.m.

COUNTY: Onondaga E/A NUMBER: 2 1 1 5 0 0

INSPECTOR'S NAME: KEVIN B. HANLIN

TITLE: Solid Waste Spec II

NAME:

TITLE:

CHECK ONE: Copy of THIS report (X has) (has not) been given to the Handler.

REPORT PREPARED BY: DATE: 12/20/84

REPORT APPROVED BY: DATE:

New York State Department of Environmental Conservation
Division of Solid and Hazardous Waste
50 Wolf Road, Albany, New York 12233

PART I

General Information and Classification of Facility

1. Identification of Hazardous Waste - 366

	Yes	No
A. Is there reason to believe the facility has hazardous waste on-site? If yes, what leads you to believe it is hazardous waste? Check appropriate box/boxes and attach any applicable correspondence with DEC or EPA:	___	X

(1) X Company recognizes that its waste is hazardous during the inspection.

(2) X Company admitted the waste is hazardous in its RCRA notification and/or Part A permit application.

(3) ___ EPA testing (SWA-46) has shown characteristics of:
( ) ignitability - 366.3(b);
( ) corrosivity - 366.3(c);
( ) reactivity - 366.3(d);
( ) EP toxicity - 366.3(e)

___ Has revealed hazardous constituents (please attach analysis report) 366.4(a)2 (261 Appendix VIII)

(4) ___ The material is listed in the regulations as a hazardous waste from non-specific sources 366.4b.

(5) X The waste material is listed in the regulations as a hazardous waste from specific sources. 366.4c. None of this waste on site at present time

(6) ___ The material or product is listed in the regulations as discarded commercial chemical products, off-specification species, containers residues and spill residues thereof. 366.4d.

(7) X Company is unsure, but they have reason to believe that waste materials are hazardous. (Explain) Capacitor is new and should not contain PCBs.

(8) ___ If don't know, please explain: _____

I-1

B. Is there reason, other than those above, for you to believe that there are hazardous waste on site? (Explain) No

C. What other environmental permits are held by the company, relative to hazardous waste management?

____ SPDES Permit Number X Air Permit Number

____ Part 364 Industrial Waste Transporter Permit (indicate this company's permit number if any)

Onondaga County Drainage + Sanitation Sewer Discharge Permit

Please describe other relavent (if any) permits and give the name, address, Part 364 Permit Number and EPA I.D. Number of transporter(s) used by company.

CECOS - NYD 080336241 - 9A-090

H_2SO_4
Sulfuric Acid 11/23/83 6 PCB capacitors shipped on 3/19/84

D. If the facility is a treatment, storage or disposal facility, have they:

____ Submitted a Part A application. ____ Have changes been made that are not reflected in the Part A application? Should the Part A be modified by the Company? ____ If so, explain.

____ Submitted a Part B application.

____ Been granted a Part 360 permit.

If so, when does it expire: _____

Please attach or explain any special conditions or variances - 360.1(g)

New York State Department of Environmental Conservation
Division of Solid and Hazardous Waste
Bureau of Hazardous Waste Operations
50 Wolf Road, Albany, New York 12233

Part II

Generator Inspection Section

Indicate:

X Violations

Indicate:

X Satisfactory
NA Not Applicable

1. Requirements for Category 1-4 Generators:

Refer to questions based upon category checked in Part I.

A.___ If in Part I an exemption applies, inspection is complete if only category company is regulated under and requirements for that exemption are met. ✓

B. If Category 1 and 4 generators or generators exempt for used engine lubricating oil, has met the following:

____ disposed in a solid waste facility - 365.1(e)(1)(i)(a) ✓

____ made a hazardous waste determination - 365.1(e)(1)(i)(b) ✓

C. If Category 2 and 3 generators has met the following:

____ made a hazardous waste determination - 365.1(e)(1)(ii)(a) ✓

____ disposed of in authorized hazardous waste facility - 365.1(e)(1)(ii)(b) ✓

____ submitted document justifying exemption - 365.1(e)(1)(ii)(c) ✓

____ used appropriate containers; properly packaged, labeled and marked during storage and shipment - 365.1(e)(1)(ii)(d) ✓

____ had containers and tanks stored properly; inspected at least quarterly - 365.1(e)(1)(ii)(e) ✓

____ had tanks designed, constructed and operated in accordance with regulations - 365.1(e)(1)(ii)(f) ✓

____ had tanks properly sheltered and protected-365.1(e)(1)(ii)(g) ✓

D. If Category 3 generator, has:

____ annual report prepared - 365.1(e)(1)iii; and ✓

____ sent to DEC - 365.2(c)2 ✓

II-1

Indicate:

X Violations

Indicate:

X Satisfactory
NA Not Applicable

For Category 5 and 6 generators complete remainder of Part II.

2. Labeling & Marking

A. ____ The container is marked with the date upon which each period of accumulation begins - 365.2(a)(7)(ii)(c) ✓

WASTE IS pumped directly from pickling tank to Truck

B. ____ The container is labeled and marked in accordance with paragraphs 365.2(a)4 and 365.2(a)5. - 365.2(a)(7)(ii)(d) ✓

3. On-site accumulation of hazardous waste prior to shipment - 365.2(a)7. ✓
(For generators who accumulate any hazardous waste for a period of 90 days or less or store 8,800 gallons or less in containers or 20,000 gallons or less in tanks.)

A. ____ All such wastes are shipped off-site to a permitted treatment, storage or disposal (TSD) facility in 90 days or less or treated on-site of generation in 90 days or less - 365.2(a)(7)(ii)(a) ✓

B. ____ The date upon which each period of accumulation begins is clearly marked and visible for inspection on each container 365.2(a)(7)(ii)(c) NA ✓

C. Standards for management of containers - 365.2(a)8
(This section will also be completed for TSD's as refered to from Appendix A.)

1. What type of containers are used for accumulation? Describe the size, type. (e.g., 12 fifty-five gallon drums of waste acetone).

When PCB capacitors are replaced one capacitors is put in a 55 gallon drum and packed with Speedy-Dri.

NOT FOR RELEASE TO COMPANY, PROTECTED INFORMATION

PART III

Comments, Conclusions and Recommendations Section

Facility Name FRAZER AND JONES Co

EPA I.D. No. N Y D 0 0 2 2 2 5 5 9 7

Date of Inspection 12/17/84

General Comments and Conclusions (cite appropriate State regulations in violation and attach additional sheets and other information as required)

Company personnel do not handle the pickle waste. CECOS international is hired to come in & and handle waste which is pumped directly from the pickle tank to tanker truck.

Company is in process of replacing capacitors containing PCB's with non PCB capacitors. When the work is completed this waste stream will be eliminated.

III-1

NOT FOR RELEASE TO COMPANY, PROTECTED INFORMATION

Recommendations EPA I.D. No. _ _ _ _ _ _ _ _ _ _ _ _

___ Formal confidentiality is being requested.

_X_ No follow-up necessary.

___ Do you recommend that the central office wait a maximum of two weeks for you to review supplemental documents prior to determining if a warning letter should be issued?

___ A soft warning letter should be issued.

___ A strong warning letter should be issued.

___ A complaint letter should be issued and a fine levied.

___ DO NOT PROCESS, THIS COMPANY HAS BEEN REFERRED TO THE BUREAU OF ENVIRONMENTAL CONSERVATION INVESTIGATION (BECI) ON _____ (Date).

___ Facility representative would like a copy of report (inspector submit two copies to C.O. and C.O. will send with reply)

___ Facility representative has been given a copy of report on _____ (Date) (inspector submit one copy to C.O.)

___ Other (please explain)

_____

_____

_____

_____

_____

_____

_____

_____

___ Sample(s) have been taken.

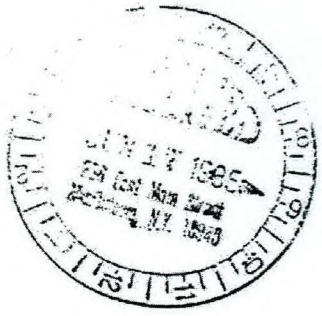
Comments on sample results: _____

_____

_____

III-2

FRAZER & JONES COMPANY



June 14, 1985

Wehran Engineering
666 E. Main Street
Middleton, NY 10940

Attention: Karen Maloy

Re: DEC Phase One Investigation
May 21, 1985

Dear Karen:

Enclosed is the information that you requested at the time of your inspection:

1. Managing Director: Mr. Raymond L. Wright

2. Dump Site Acreage: Approx. 5.14 (See enclosed drawing.)

3. Frazer & Jones site map is enclosed.

4. Most recent analysis of dump sand is enclosed. Approx. 3000 ton dumped per ye

5. Onondaga County Industrial Waste Permit

Permit No.: 72
Industrial Code: 152
SIC: 332

6. Air Contamination Certificates, Location: 313201, FAC 0197
EP: OWHL2WI, OWHL1WI, SCH13WI, PRFANWI, 00020WI, 00019WI, 00018WI, PGBN1WI, PGBN2WI, PGBN3WI, 00010WI, 00011WI, 00012WI, 00015WI, 00016WI, 00017WI, 00021WI, and 00022WI.

If I can answer any further questions, please feel free to contact my office.

Sincerely,

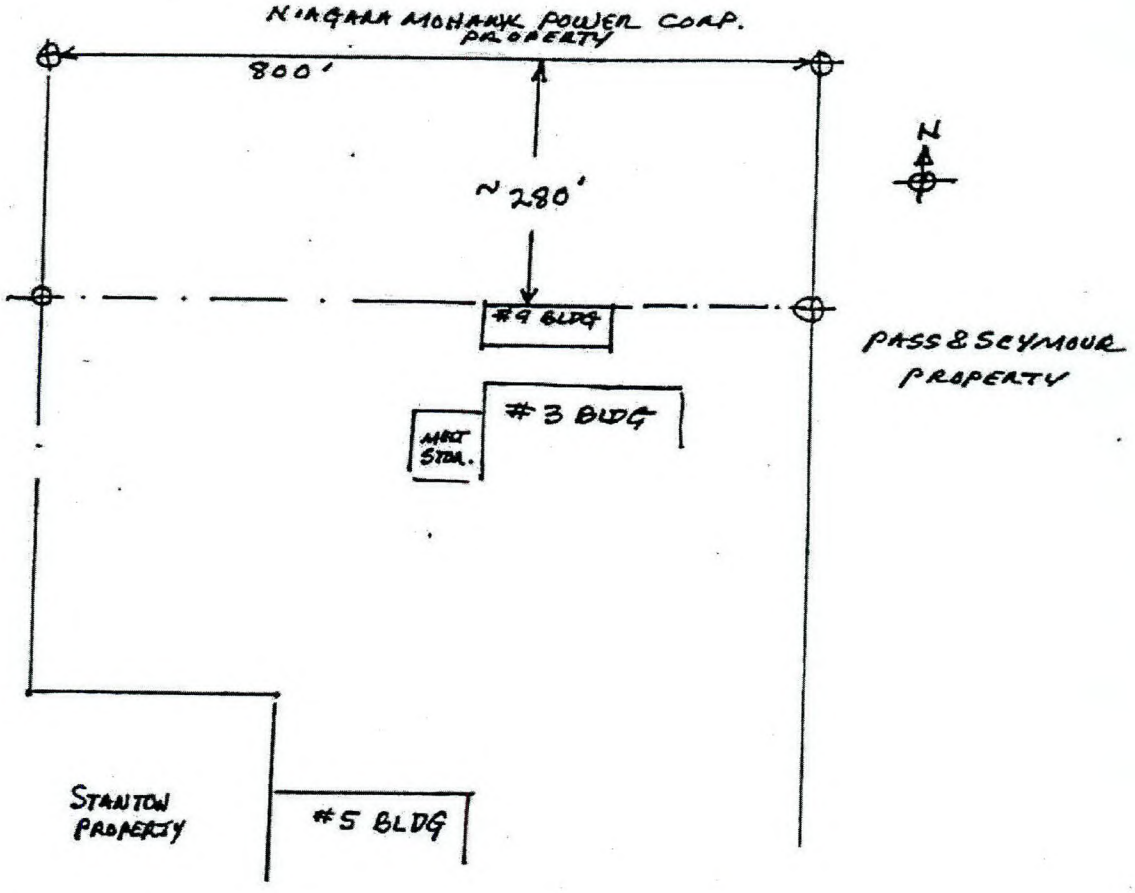
FRAZER & JONES COMPANY

A. Thomas Giannone

A. Thomas Giannone
Manager, Personnel & Purchasing

6-11-85

FRAZER & JONES CO
DUMP ZONE AREA, APPROXIMATE



CALCULATIONS

800' WIDE X 280' APPROX. DEPTH = 224,000 SQ.FT.

224,000 SQ. FT ÷ 43,561 SF/ACRE = 5.14 ACRES.

∴ F&J DUMPING ZONE APPROXIMATE AREA, LOCATED NORTH OF BLDG. #9 (BOND & SEA COAL STORAGE BLDG.) INCLUDING ROADWAYS FOR PLANT MATERIAL DELIVERYS NORTH OF BLDG #9. SHALL BE APPROXIMATED AT 224,000 SQ FT OR 5.14 ACRES

P. Clark
6/11/85

WEHRAN ENGINEERS & SCIENTISTS

INTERVIEW ACKNOWLEDGEMENT FORM

Site Name	Frazer and Jones	**I.D. Number**	734014
Person Contacted	Mr. Dave Wazenkowitz	**Date**	10/28/85
Title			
Affiliation	NYSDEC Region 7	**Phone Number**	(315) 428-4483
Address	7481 Henry Clay Boulevard Liverpool, New York 13088		
Type of Contact	Telephone	**Contact Person**	Karen Maloy

Interview Summary

The Frazer and Jones Company was given permission to sell core sand as landfill cover after EPA toxicity testing.

Information on molding sand and sweepings available from Kevin Hanifan at (315) 428-4483.

Acknowledgement

I have read the above transcript and I agree that it is an accurate summary of the information verbally conveyed to Wehran Engineering interviewer(s) (as revised below, if necessary).

Revisions (please write in any corrections needed to above transcript)

Signature _____ **Date** _____

_____

566 EAST MAIN STREET P.O. BOX 2006 MIDDLETOWN NY 10940 • (914) 343-0660

47-15-11(2/80)

HAZARDOUS WASTE DISPOSAL SITES REPORT
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Code: E

Site Code: 734014

Name of Site: Frazer and Jones Company Region: 7

County: Onondaga Town/City Solvay

Street Address 3000 Milton Avenue

Status of Site Narrative:

This foundry operation utilized on-site disposal of spent core sand, sludge, scrubber dust, and shot blast wastes since 1845. Spent core sands contain phenolic binders and heavy metals. Potential for groundwater, surface water and soil contamination due to migration.

Type of Site: Open Dump ☒ Treatment Pond(s) ☐ Number of Ponds
Landfill ☒ Lagoon(s) ☐ Number of Lagoons
Structure ☐

Estimated Size 1.0 - 5 Acres

Hazardous Wastes Disposed? Confirmed ☒ Suspected ☐

*Type and Quantity of Hazardous Wastes:

TYPE	QUANTITY (Pounds, drums, tons, gallons)
Spent core sands with phenolic binders and heavy metals	2000TPY

* Use additional sheets if more space is needed.

Name of Current Owner of Site: Frazer & Jones Company

Address of Current Owner of Site: 3000 Milton Avenue, Solvay, NY 13209

Time Period Site Was Used for Hazardous Waste Disposal:

_____, 1945 To present, 19

Is site Active [X] Inactive [ ]
(Site is inactive if hazardous wastes were disposed of at this site and site was closed prior to August 25, 1979)

Types of Samples: Air [X] Groundwater [ ] None [ ]
Surface Water [X] Soil [ ]

Remedial Action: Proposed [X] Under Design [ ]
In Progress [ ] Completed [ ]
Nature of Action:

Status of Legal Action: _____ State [ ] Federal [ ]

Permits Issued: Federal [ ] Local Government [X] SPDES [ ]
Solid Waste [ ] Mined Land [ ] Wetlands [ ] Other [ ]

Assessment of Environmental Problems:

Potential for the leaching of phenolic compounds and heavy metals from the spent foundry sands

Assessment of Health Problems:

Persons Completing this Form:

Karen E. Maloy

New York State Department of Environmental Conservation

New York State Department of Health

Date November 1, 1985

6/3/81

FILE

OFFICERS:

Chairman: Chester D. Amond
President: James B. Schneider
First VP: Edward F. Reynolds
VP: L. R. Leeby
VP: Robert R. Andrews
Treasurer: Richard J. Vinette
General Counsel: Leslie Deming

BOARD OF DIRECTORS:

Robert F. Allen
Carrier Corporation

William F. Allyn
Welch Allyn, Inc.

Chester D. Amond
Canadian Pacific (U.S.) Inc.

Robert R. Andrews
Morse Mfg. Company, Inc.

Ralph E. BeVard
The Eraser Co., Inc.

Vincent H. Callahan
Crucible Materials Corp.

Gerrald E. Church
Miller Brewing Co.

Fred Del Conte
Arrowhead Tool Builders, Inc.
La-Del Manufacturing Corp.

Alan Devendorf
Ie Comtronics, Inc.

Donald F. Dew
Diemolding Corp.

James L. Higbee
Higbee Gaskets & Sealing Products, Inc.

H. Follett Hodgkins, Jr.
Lipe-Rollway Corp.

Donald S. Jaquith
Jaquith Industries, Inc.

L. R. Leeby
Dix Type Inc.

Peter Meier
G. A. Braun, Inc.

David H. Northrup
Cambridge Filter Corp.

Edward F. Reynolds
R. E. Dietz Company

David A. A. Ridings
Pass & Seymour, Inc.

E. Robert Spencer
Sunbeam Welders, Inc.

Robert Stephens
Selflock Screw Products Co.

Richard F. Torrey
Niagara Mohawk Power Corp.

Richard J. Vinette
[illegible]-Syracuse, Inc.

Manufacturers Association of Central New York, Inc.

770 JAMES STREET ☐ SYRACUSE, NEW YORK 13203 ☐ TELEPHONE 474-4201

Serving business and industry for 73 years

March 27, 1987

Mr. Raymond L. Wright, Managing Director
Frazer & Jones Company
P. O. Box 4955
Syracuse, NY 13221

Dear Ray:

About six years ago, the Association secured permission from the Department of Environmental Conservation - Region 7 - to use spent foundry sands as a daily cover on existing sanitary landfills. As many of the landfills are closing, this option is no longer as feasible as it once was.

The purpose of this letter is to identify your current method of disposal for spent foundry sands. Please fill in the following information and return it to MACNY by April 8th. All information will be held in strict confidence by the Association.

1) Amount of Foundry Sand Waste Generated Annually 8000 Tons

2) Method of Disposal of Your Foundry Sand Waste OUR LAND FILL *

3) Cost of Disposal of Your Foundry Sand Waste (annually) N/A *

Should you have any questions, please contact Ron Cook at the Association offices.

Sincerely,

James B. Schneider
President

JBS/err

* BUT TIME IS RUNNING OUT; THEN, COST WILL BE PROHIBITED.

NOTE: CAMILLUS WOULD NOT ACCEPT OUR SAND - DEWITT " " " " " BECAUSE WE WERE NOT IN THEIR TOWNSHIP.

RAY WRIGHT

N O T I C E

PROGRESS: SPENT FOUNDRY SAND

ON TUESDAY, JUNE 14, WE STARTED SENDING SAND TO THE CITY OF AUBURN LANDFILL.

IN KEEPING WITH OUR AGREEMENT WITH AUBURN WE MUST ALL WORK TOGETHER TO INSURE THAT PAPER, WOOD, CANS, SLAG, AND ANY OTHER MATERIALS DO NOT GET MIXED WITH THE SAND.

THANK YOU FOR YOUR COOPERATION.

Raymond L. Wright
Managing Director

6/15/88

Auburn May Accept Sand from Solvay Foundry

By MICHAEL HIRSCH

The largest of four Syracuse area foundries that planned to pay Madison County $30 a ton to accept its waste sand may have found a better deal in Auburn.

The foundry, Frazer & Jones Co. of Solvay, is negotiating to pay Auburn between $15 to $25 a ton to take the sand, Auburn City Engineer Michael O'Neill has confirmed.

Although a contract has not been signed, the company has been delivering its daily output of foundry sand to the Auburn landfill the past two weeks.

O'Neill said the city is accepting the sand, which contains low levels of phenol, on a trial basis to determine if it will serve as a good material for covering garbage in the landfill.

"We want to get a little time under our belt and look at this on an experimental basis," he said.

Raymond Wright, managing director of Frazer and Jones, said he is confident the company will sign a contract with Auburn to discard an estimated 8,000 tons of foundry sand each year.

The deal would take the largest foundry out of a tentative pact with Madison County. County lawmakers in May approved a contract to accept more than 10,000 tons of sand a year from four foundries. The foundries would have annually paid the county about $300,000.

"The $30-a-ton figure is not affordable," Wright said, explaining his firm's reasons for not signing. "By the time I add in the costs of testing and transportation, I'm up to $50 a ton."

Ten foundries in Onondaga County have been searching for ways to dispose of foundry sand since the state barred them in March from dumping at the closed DeWitt landfill.

Officials in Madison County and Auburn see the foundry sand as a major source of revenue. Both municipalities would save mo by using the foundry sand as a r source of cover material.

The sand is contaminated low levels of phenol, an aci compound used to enable sand retain its shape when it is usec the casting process.

The state, which consid foundry sand a non-hazard industrial waste, allows it to used to cover garbage as long the phenol content is less than parts per million.

JUNE 23, 88

ON TUESDAY, JUNE 14, WE STARTED SENDING SAND TO THE CITY OF AUBURN LANDFILL.

Syracuse Post Standard, 6/23/1988

FRAZER & JONES COMPANY

July 13, 1988

Mr. N. G. Kaul, Director
Division of Hazardous Substance Regulation
New York State Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233

Dear Mr. Kaul:

I have received a copy of Dr. Allison E. Carter's letter to you dated July 6 to which I make further comment.

Our spent foundry sand continues to remain a monumental problem due to the one part per billion maximum phenol level per DEC Regulation 364. Currently our cost for disposal of 8000 tons annually is $176,000. In addition we have a waste pile consisting of 123,000 tons which will ultimately cost a minimum of $2,700,000 to dispose of in a permitted landfill. Unfortunately these costs are too great to absorb and remain in business in today's competitive world market.

I am now hopeful you will be able to change the DEC phenol specification as outlined by Dr Carter. This change would certainly be most beneficial to all of us. It would open opportunities for our sand to be used in the construction of roads, runways, berms, construction fill sites, and similar type applications. Also, it would reserve our expensive and precious landfill space for other materials.

For your consideration in this matter I sincerely thank you.

Sincerely,

FRAZER & JONES COMPANY

Raymond L. Wright
Managing Director

c.c. Dr. Allison Carter

FRAZER & JONES COMPANY

DIVISION OF EASTERN COMPANY
3000 MILTON AVENUE
SYRACUSE, N.Y. 13209
(315) 468-6251

8/8/88
BILLING ADDRESS
P.O. BOX 4955
SYRACUSE, N.Y. 13221

To:
- CITY OF AUBURN
  24 SOUTH ST.
- AUBURN, NY 13021
  ATTN: MIKE O'NEILL
  CITY ENGINEER

CONTRACT PROVISION OF SECTION 202 OF EXECUTIVE ORDER 11246 OF SEPT. 24, 1965 GENERALLY KNOWN AS THE EQUAL OPPORTUNITY CLAUSE ARE INCORPORATED HEREIN BY REFERENCE.

SHIP AND BILL TO		VIA	
US		BEST WAY	
REQ. NO	CHARGE	MARK PACKAGES FOR	THIS NUMBER MUST APPEAR ON ALL INVOICES ▶ PURCHASE ORDER No. 0005734
	2391-00-00	STOCK ROOM	

QUANTITY	DESCRIPTION
	1988 BLANKET ORDER TO ACCEPT DELIVERY OF FOUNDRY SAND FOR THE YEAR 1988 AT $12.50 PER TON. THIS ORDER MAY BE CANCELLED AT OUR DISCRETION AT ANY TIME. **NORMAL DELIVERIES NOT ACCEPTED AFTER 2:30 P.M.**

[redacted]

AS INVOICE

DATE RECEIVED _____ BY _____ CHECKED BY _____

F&J, 1988-08-08

CITY OF AUBURN
MEMORIAL CITY HALL
24 SOUTH ST
AUBURN, N.Y. 13021
Phone: (315) 252-9531

INVOICE

INVOICE NO E 2041
INVOICE DATE 8/2/88
BUYER'S ORDER NO

FRAZER AND JONES CO.
3000 MILTON AVENUE
SOLVAY, NEW YORK 13209

MAKE CHECKS PAYABLE TO CITY TREASURER, AUBURN, N.Y

DESCRIPTION	AMOUNT	CREDITS
Foundry sand delivered to Auburn Sanitary Landfill:		
126.8 tons @ $15/ton delivered prior to July 1988	$1,902.00	
238.2 tons @ $20/ton delivered in July 1988	4,764.00	
Total	$6,666.00	

ORIGINAL INVOICE

p. 1 of 2

F&J, 1988-08-08

FOUNDRY SAND FROM FRAZER AND JONES
DELIVERED TO AUBURN SANITARY LANDFILL

Loads Delivered Prior to July, 1988

Load #	Tons
1	12.50
2	9.50
3	9.75
4	9.60
5	8.40
6	11.00
7	12.50
8	11.40
9	13.90
10	8.10
11	9.25
12	10.90

126.80 x 15/ton = $1,902

Loads Delivered in July 1988

Load #	Tons
1	22.21
2	19.08
3	16.27
4	7.62
5	14.39
6	16.61
7	14.79
8	12.87
9	13.93
10	13.27
11	14.48
12	14.97
13	14.43
14	15.32
15	13.59
16	14.39

238.20 x 20/ton = $4,764

Total $6,666

p 2 of 2

FRAZER & JONES COMPANY

March 27, 1989

NYSDEC - Region 7
615 Erie Boulevard West
Syracuse, New York 13204-2400

Attention: Mr. Larry Gross

Dear Larry,

Enclosed are analysis dated July 11, 1988 and March 23, 1989 on our slag pile. This slag is generated from molten iron at 2700°F. Currently we estimate we have 1000 tons of this material.

Although the slag should not contain any phenol whatsoever you will, nevertheless, note that sample #3 on Report dated March 23rd depicts a TCLP of 0.41. It is unfortunate this level of phenol presented itself which only tells me there is a slight presence of phenol due to the environment of where the slag is stored. Nevertheless, in light of the exorbitant cost of between $28.00 to $65.00 to put this material into a permitted landfill, I am requesting authorization from the DEC to put the slag into the Solvay construction landfill behind our plant. The DEC has my assurance that we will take every precaution so as not to transfer any foundry sand.

I consider my request to be prudent due to the economics involved as well as the fact that there is very little permissible landfill area left. It is also worth noting that the Frazer & Jones Company is already incurring a $15,000 per month cost to have our foundry spent sand hauled to the Auburn Landfill.

I sincerely thank you for your consideration to this request.

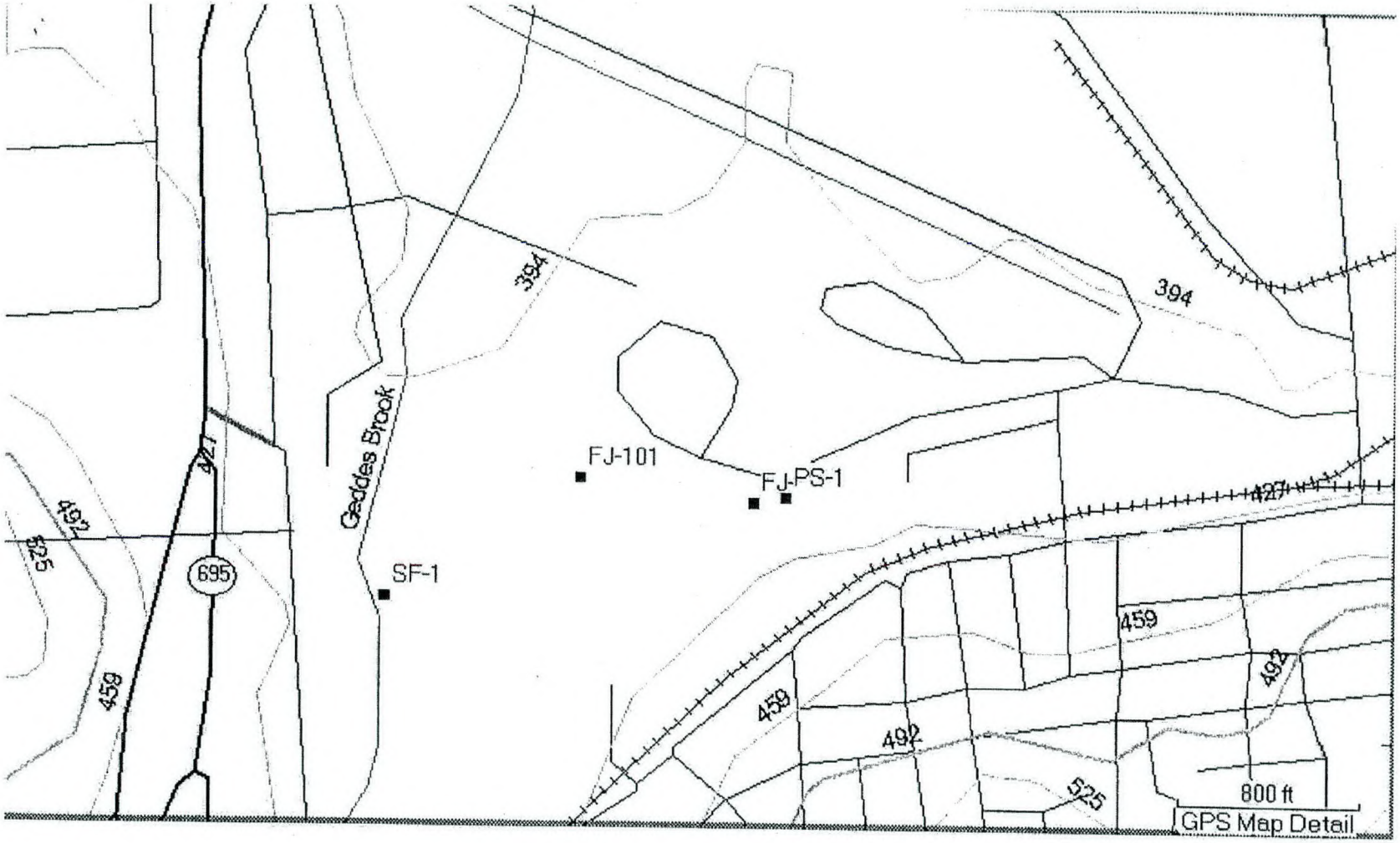
Sincerely,

FRAZER & JONES COMPANY

Raymond L. Wright
Managing Director

Enclosure


FJ-101
FJ-102
PS-1
SF-1



Garmin Corporation 1995-1999

_6010_
Metals

ANALYTE	Units	Result	Lab	Units	Result	Lab	Units	Result	Lab	Units	Result	Lab	Units	Result	Lab
SAMP_ID		SF-1			PS-1L			FJ-101			FJ-102			PS-1	
LAB_ID		B0572-01A			B0572-01AL			B0572-02A			B0572-03A			B0572-04A	
SAMP_DATE		04-10-03			04-10-03			04-10-03			04-10-03			04-10-03	
Aluminum	MG/KG	11100					MG/KG	6900		MG/KG	4780		MG/KG	4490	
Antimony	MG/KG	0.26	UN	UG/L	35.05	B	MG/KG	0.57	UN	MG/KG	1.7	N	MG/KG	1.1	NB
Arsenic	MG/KG	5.4					MG/KG	12.9		MG/KG	5.2		MG/KG	4.5	
Barium	MG/KG	52.2					MG/KG	107		MG/KG	30.4		MG/KG	191	
Beryllium	MG/KG	0.75					MG/KG	0.74	B	MG/KG	0.39		MG/KG	0.66	
Cadmium	MG/KG	0.63					MG/KG	50.9		MG/KG	4.1		MG/KG	17	
Calcium	MG/KG	35600					MG/KG	16900		MG/KG	21300		MG/KG	103000	
Chromium	MG/KG	22.1					MG/KG	60		MG/KG	18.1		MG/KG	62.1	
Cobalt	MG/KG	7.6					MG/KG	16		MG/KG	3.6		MG/KG	3.1	B
Copper	MG/KG	30					MG/KG	226		MG/KG	154		MG/KG	1350	
Iron	MG/KG	16500					MG/KG	95400		MG/KG	26700		MG/KG	36400	
Lead	MG/KG	44.7					MG/KG	666		MG/KG	44.3		MG/KG	148	
Magnesium	MG/KG	15200					MG/KG	4870		MG/KG	5470		MG/KG	20900	
Manganese	MG/KG	350					MG/KG	468		MG/KG	258		MG/KG	642	
Mercury	MG/KG	0.16					MG/KG	1.1		MG/KG	0.096		MG/KG	1.1	
Nickel	MG/KG	22.8					MG/KG	37.1		MG/KG	15.9		MG/KG	70.8	
Potassium	MG/KG	1860		UG/L	21986.28		MG/KG	831		MG/KG	583		MG/KG	440	
Selenium	MG/KG	0.78	U				MG/KG	1.7	U	MG/KG	0.62	U	MG/KG	0.74	U
Silver	MG/KG	0.29	B				MG/KG	2.9	B	MG/KG	0.27	B	MG/KG	0.16	U
Sodium	MG/KG	741		UG/L	9171.51		MG/KG	358		MG/KG	368		MG/KG	736	
Thallium	MG/KG	0.26	U				MG/KG	0.57	U	MG/KG	0.21	U	MG/KG	0.25	U
Vanadium	MG/KG	20.7					MG/KG	19.3		MG/KG	11.6		MG/KG	12.1	
Zinc	MG/KG	96.7					MG/KG	95100		MG/KG	247		MG/KG	486	

2 25
6 33
- -
- -
0.6 9
- -
26 110
- -
16 110
90,000 48,000
31 110
- -
450 1100
.15 1.
16 5
- -
- -
1 2.2
-
- -
- -
120 270

PCBs

_8082_

ANALYTE	Units	Result	Lab	Units	Result	Lab	Units	Result	Lab	Units	Result	Lab
SAMP_ID		SF-1			FJ-101			FJ-102			PS-1	
LAB_ID		B0572-01A			B0572-02A			B0572-03A			B0572-04A	
SAMP_DATE		04-10-03			04-10-03			04-10-03			04-10-03	
Aroclor-1016	UG/KG	60	U	UG/KG	150	U	UG/KG	48	U	UG/KG	65	U
Aroclor-1221	UG/KG	60	U	UG/KG	150	U	UG/KG	48	U	UG/KG	65	U
Aroclor-1232	UG/KG	60	U	UG/KG	150	U	UG/KG	48	U	UG/KG	65	U
Aroclor-1242	UG/KG	60	U	UG/KG	150	U	UG/KG	48	U	UG/KG	65	U
Aroclor-1248	UG/KG	60	U	UG/KG	150	U	UG/KG	48	U	UG/KG	65	U
Aroclor-1254	UG/KG	1900		UG/KG	260		UG/KG	48	U	UG/KG	65	U
Aroclor-1260	UG/KG	60	U	UG/KG	150	U	UG/KG	48	U	UG/KG	65	U

_8260_

ANALYTE	Units	Result	Lab	Units	Result	Lab	Units	Result	Lab	Units	Result	Lab
SAMP_ID		SF-1			FJ-101			FJ-102			PS-1	
LAB_ID		B0572-01B			B0572-02B			B0572-03B			B0572-04B	
SAMP_DATE		04-10-03			04-10-03			04-10-03			04-10-03	
Dichlorodifluoromethane	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
Chloromethane	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
Vinyl Chloride	UG/KG	8	U	UG/KG	24	U	UG/KG	20		UG/KG	10	U
Bromomethane	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
Chloroethane	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
Trichlorofluoromethane	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
1,1-Dichloroethene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
Acetone	UG/KG	42		UG/KG	200		UG/KG	29	B	UG/KG	45	
Iodomethane	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
Carbon Disulfide	UG/KG	6	J	UG/KG	200		UG/KG	6	J	UG/KG	4	J
Methylene Chloride	UG/KG	3	JB	UG/KG	9	JB	UG/KG	5	JB	UG/KG	3	JB
trans-1,2-Dichloroethene	UG/KG	8	U	UG/KG	24	U	UG/KG	6	J	UG/KG	10	U
Methyl tert-butyl ether	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
1,1-Dichloroethane	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
Vinyl acetate	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
2-Butanone	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
cis-1,2-Dichloroethene	UG/KG	8	U	UG/KG	24	U	UG/KG	230		UG/KG	10	U
2,2-Dichloropropane	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
Bromochloromethane	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
Chloroform	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
1,1,1-Trichloroethane	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
1,1-Dichloropropene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
Carbon Tetrachloride	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
1,2-Dichloroethane	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
Benzene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
Trichloroethene	UG/KG	8	U	UG/KG	24	U	UG/KG	99		UG/KG	10	U
1,2-Dichloropropane	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
Dibromomethane	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
Bromodichloromethane	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
cis-1,3-Dichloropropene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
4-Methyl-2-pentanone	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
Toluene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
trans-1,3-Dichloropropene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U

140

1,1,2-Trichloroethane	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
1,3-Dichloropropane	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
Tetrachloroethene	UG/KG	3	J	UG/KG	24	U	UG/KG	560		UG/KG	2	J
2-Hexanone	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
Dibromochloromethane	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
1,2-Dibromoethane	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
Chlorobenzene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
1,1,1,2-Tetrachloroethane	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
Ethylbenzene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
m,p-Xylene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
o-Xylene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
Xylene (Total)	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
Styrene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
Bromoform	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
Isopropylbenzene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
1,1,2,2-Tetrachloroethane	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
Bromobenzene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
1,2,3-Trichloropropane	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
n-Propylbenzene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
2-Chlorotoluene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
1,3,5-Trimethylbenzene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
4-Chlorotoluene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
tert-Butylbenzene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
1,2,4-Trimethylbenzene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
sec-Butylbenzene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
4-Isopropyltoluene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
1,3-Dichlorobenzene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
1,4-Dichlorobenzene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	8	J
n-Butylbenzene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	11	
1,2-Dichlorobenzene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
1,2-Dibromo-3-chloropropane	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
1,2,4-Trichlorobenzene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
Hexachlorobutadiene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
Naphthalene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U
1,2,3-Trichlorobenzene	UG/KG	8	U	UG/KG	24	U	UG/KG	18	U	UG/KG	10	U

ANALYTE	Units	Result	Lab	Units	Result	Lab	Units	Result	Lab	Units	Result	Lab	Units	Result	Lab	Units	Result	Lab
SAMP_ID		SF-1			FJ-101			FJ-102			FJ-102			PS-1			PS-1	
LAB_ID		B0572-01A			B0572-02A			B0572-03A			B0572-03ADL			B0572-04A			B0572-04ADL	
SAMP_DATE		04-10-03			04-10-03			04-10-03			04-10-03			04-10-03			04-10-03	
Phenol	UG/KG	580	U	UG/KG	1600	U	UG/KG	71	J	UG/KG	1200	U	UG/KG	100	J	UG/KG	1600	U
bis(2-Chloroethyl)Ether	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
2-Chlorophenol	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
1,3-Dichlorobenzene	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	220	J	UG/KG	200	DJ
1,4-Dichlorobenzene	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	210	J	UG/KG	210	DJ
1,2-Dichlorobenzene	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
2-Methylphenol	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
2,2-oxybis(1-Chloropropane)	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
4-Methylphenol	UG/KG	580	U	UG/KG	1600	U	UG/KG	74	J	UG/KG	1200	U	UG/KG	140	J	UG/KG	1600	U
N-Nitroso-di-n-propylamine	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
Hexachloroethane	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
Nitrobenzene	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
Isophorone	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
2-Nitrophenol	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
2,4-Dimethylphenol	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
2,4-Dichlorophenol	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	84	J	UG/KG	1600	U
1,2,4-Trichlorobenzene	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
Naphthalene	UG/KG	580	U	UG/KG	330	J	UG/KG	580		UG/KG	560	DJ	UG/KG	160	J	UG/KG	1600	U
4-Chloroaniline	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	2000		UG/KG	2000	D
bis(2-Chloroethoxy)methane	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
Hexachlorobutadiene	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
4-Chloro-3-Methylphenol	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
2-Methylnaphthalene	UG/KG	580	U	UG/KG	390	J	UG/KG	660		UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
Hexachlorocyclopentadiene	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	640	DJ	UG/KG	880		UG/KG	860	DJ
2,4,6-Trichlorophenol	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
2,4,5-Trichlorophenol	UG/KG	1200	U	UG/KG	3100	U	UG/KG	980	U	UG/KG	2400	U	UG/KG	1300	U	UG/KG	3300	U
2-Chloronaphthalene	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
2-Nitroaniline	UG/KG	1200	U	UG/KG	3100	U	UG/KG	980	U	UG/KG	2400	U	UG/KG	1300	U	UG/KG	3300	U
Dimethylphthalate	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
Acenaphthylene	UG/KG	580	U	UG/KG	1600	U	UG/KG	220	J	UG/KG	190	DJ	UG/KG	320	J	UG/KG	340	DJ
2,6-Dinitrotoluene	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
3-Nitroaniline	UG/KG	1200	U	UG/KG	3100	U	UG/KG	980	U	UG/KG	2400	U	UG/KG	1300	U	UG/KG	3300	U
Acenaphthene	UG/KG	580	U	UG/KG	1600	U	UG/KG	880		UG/KG	840	DJ	UG/KG	1500		UG/KG	1500	DJ
2,4-Dinitrophenol	UG/KG	1200	U	UG/KG	3100	U	UG/KG	980	U	UG/KG	2400	U	UG/KG	1300	U	UG/KG	3300	U
4-Nitrophenol	UG/KG	1200	U	UG/KG	3100	U	UG/KG	980	U	UG/KG	2400	U	UG/KG	1300	U	UG/KG	3300	U
Dibenzofuran	UG/KG	580	U	UG/KG	1600	U	UG/KG	1000		UG/KG	980	DJ	UG/KG	1400		UG/KG	1300	DJ
2,4-Dinitrotoluene	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
Diethylphthalate	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
4-Chlorophenyl-phenylether	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
Fluorene	UG/KG	580	U	UG/KG	1600	U	UG/KG	1500		UG/KG	1400	D	UG/KG	1800		UG/KG	1800	D
4-Nitroaniline	UG/KG	1200	U	UG/KG	3100	U	UG/KG	980	U	UG/KG	2400	U	UG/KG	1300	U	UG/KG	3300	U
4,6-Dinitro-2-methylphenol	UG/KG	1200	U	UG/KG	3100	U	UG/KG	980	U	UG/KG	2400	U	UG/KG	1300	U	UG/KG	3300	U
N-Nitrosodiphenylamine(1)	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	160	J	UG/KG	1600	U
4-Bromophenyl-phenylether	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
Hexachlorobenzene	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
Pentachlorophenol	UG/KG	1200	U	UG/KG	3100	U	UG/KG	980	U	UG/KG	2400	U	UG/KG	1300	U	UG/KG	3300	U
Phenanthrene	UG/KG	140	J	UG/KG	750	J	UG/KG	9400	E	UG/KG	9300	D	UG/KG	13000	E	UG/KG	12000	D
Anthracene	UG/KG	580	U	UG/KG	220	J	UG/KG	1600		UG/KG	1500	D	UG/KG	3400		UG/KG	3300	D
Carbazole	UG/KG	1200	U	UG/KG	3100	U	UG/KG	1000		UG/KG	980	DJ	UG/KG	1700		UG/KG	1800	DJ
Di-n-butylphthalate	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	87	J	UG/KG	1600	U
Fluoranthene	UG/KG	390	J	UG/KG	690	J	UG/KG	10000	E	UG/KG	9600	D	UG/KG	13000	E	UG/KG	13000	D
Pyrene	UG/KG	350	J	UG/KG	1200	J	UG/KG	8100	E	UG/KG	9100	D	UG/KG	14000	E	UG/KG	12000	D
Butylbenzylphthalate	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
3,3-Dichlorobenzidine	UG/KG	580	U	UG/KG	1600	U	UG/KG	480	U	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
Benzo(a)anthracene	UG/KG	180	J	UG/KG	570	J	UG/KG	3500		UG/KG	3300	D	UG/KG	5800		UG/KG	5800	D
Chrysene	UG/KG	240	J	UG/KG	720	J	UG/KG	3500		UG/KG	3600	D	UG/KG	5500		UG/KG	5200	D
bis(2-Ethylhexyl)phthalate	UG/KG	150	J	UG/KG	1000	J	UG/KG	610		UG/KG	590	DJ	UG/KG	640	J	UG/KG	490	DJ
Di-n-octylphthalate	UG/KG	580	U	UG/KG	1600	U	UG/KG	76	J	UG/KG	1200	U	UG/KG	650	U	UG/KG	1600	U
Benzo(b)fluoranthene	UG/KG	380	J	UG/KG	1100	J	UG/KG	5100		UG/KG	5300	D	UG/KG	8200		UG/KG	8800	D
Benzo(k)fluoranthene	UG/KG	180	J	UG/KG	310	J	UG/KG	2100		UG/KG	2200	D	UG/KG	4400		UG/KG	4100	D
Benzo(a)pyrene	UG/KG	230	J	UG/KG	610	J	UG/KG	3300		UG/KG	3300	D	UG/KG	5700		UG/KG	6000	D
Indeno(1,2,3-cd)pyrene	UG/KG	100	J	UG/KG	1600	U	UG/KG	1300		UG/KG	1200	DJ	UG/KG	2100		UG/KG	2000	D
Dibenzo(a,h)anthracene	UG/KG	580	U	UG/KG	1600	U	UG/KG	350	J	UG/KG	320	DJ	UG/KG	600	J	UG/KG	520	DJ
Benzo(g,h,i)perylene	UG/KG	580	U	UG/KG	1600	U	UG/KG	1100		UG/KG	1100	DJ	UG/KG	1700		UG/KG	1500	DJ

Table 115
Honeywell
Mathews Avenue Preliminary Site Assessment
Comparison of Background Values, Standards, and Typical Solvay Waste

Analyte	Native Soil Concentrations (ppm) (a)	NYS Natural Background Level (ppm) (b)	Typical Conc. in Solvay Waste (ppm) (c)	NYSDEC TAGM 4046 Soil Cleanup Objective (ppm) (d)
Aluminum	10,000 - 300,000	1,000 - 25,000	4,800	SB
Antimony	0.6 - 10	--	--	SB
Arsenic	1 - 40	3 - 12	16	7.5
Barium	100 - 3,500	15 - 600	--	300
Beryllium	0.1 - 40	0 - 1.75	--	0.16
Cadmium	0.01 - 7	0.01 - 0.88 (e)	2	10
Calcium	100 - 400,000	130 -35,000	--	SB
Chromium	5 - 3,000	1.5 - 40	9	50
Cobalt	1- 40	2.5 - 60	--	30
Copper	2 - 100	<1 - 15 (e)	10	25
Cyanide	--	--	0.04	16
Iron	7,000- 550,000	17,500 - 25,000 (f)	4,520	--
Lead	2 - 200	1 - 12.5 (e)	30	400
Magnesium	600 - 6,000	2,500 - 6000 (f)	--	--
Manganese	100 - 4,000	50 - 5,000	--	--
Mercury	0.01 0.08	0.042 - 0.066 (f)	0.04	0.1
Nickel	5 - 1,000	0.5 - 25	13	13
Potassium	400 - 30,000	8,500 - 43,000	--	SB
Selenium	0.1 - 2	<0.1 - 0.125 (f)	--	2

Table 115
Honeywell
Mathews Avenue Preliminary Site Assessment
Comparison of Background Values, Standards, and Typical Solvay Waste

Analyte	Native Soil Concentrations (ppm) (a)	NYS Natural Background Level (ppm) (b)	Typical Conc. in Solvay Waste (ppm) (c)	NYSDEC TAGM 4046 Soil Cleanup Objective (ppm) (d)
Silver	0.1 - 5	--	--	SB
Sodium	750 - 7500	6,000 - 8,000 (f)	--	SB
Thallium	0.1 - 12	--	--	SB
Vanadium	20 - 500	--	--	150
Zinc	10 - 300	37 - 70 (f)	30	20

Notes:
-- no value listed
(a) Dragun, 1988. The Soil Chemistry of Hazardous Materials
(b) McGovern, 1988. Background Concentrations of 20 elements in soils with special regard for New York State
(c) Calcerinos & Spina, 1980. Proceedings of the Conference on Geotechnical Practice for Disposal of Solid Waste Materials.
(d) New York State Department of Environmental Conservation, 1995. Division of Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels (TAGM 4046).
(e) value for Massachusetts used
(f) value for Albany used
SB = site background

S&W Redevelopment

of North America, LLC

Pass & Seymour
Remedial Investigation
BCP Site No. C734102
Solvay, Onondaga County, New York

Project No. N5005.11

Depth of Boring	11-feet bgs
Drilling Contractor	Parratt Wolff, Inc.
Drilling Rig Type	IR-A300
Driller	Layne Petch
Drilling Method	Hollow Stem Augers
Hydraulic Hammer	Geoprobe
Sampling Method	Split Spoon 1-3/8" ID
Logged By	JLK
Surveyed By	Bryant Assoc, P.C.

LOG OF BORING MW05-21

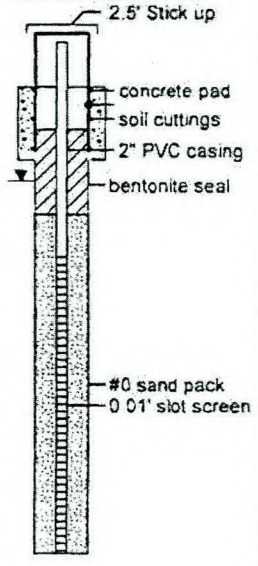
(Page 1 of 1)

Date Started	10-28-05
Time	9:00 AM
Date Completed	10-28-05
Time	11:00 AM
Weather	overcast, 40F
Boring Location	NE of landfill

Depth in Feet (bgs)	Surf. Elev 409.21	Sample Interval (Feet)	Recovery (Inches)	DESCRIPTION
0	409			Top Soil
		0 - 2	6	Fill: gravel, brown silt/clay
2	407			moist, hard, red brown SILT/CLAY, trace gravel
		2 - 4	4	
4	405			dry to moist, loose, green gray SILT/CLAY, trace gravel (weathered shale)
		4 - 6	20	
6	403			Spoon refusal @ 6.5' bgs
		6 - 8		Augered to 8' bgs
8	401			moist/wet loose, green gray SILT/CLAY & shale fragments
		8 - 10	14	Spoon refusal @ 9.5' bgs, augered to 10' bgs
10	399			fractured shale
		10 - 11	10	Spoon refusal @ 11' bgs
				End Boring
12	397			
14	395			
16	393			
18	391			
20	389			
22	387			
24				

Depth in Feet (bgs): 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24

Monitoring Well: MW05-03
TOC Elevation: 411.46'



NOTES:
bgs - below ground surface
NR - no recovery

LOG OF BORING MW05-21

(Page 1 of 1)

parratt wolff inc

TEST BORING LOG

FISHER ROAD
EAST SYRACUSE, N.Y. 13057

PROJECT: Village of Solvay Landfill
LOCATION: Solvay, New York

HOLE NO. MW-1
SURF. EL.

DATE STARTED 9/9/94 DATE COMPLETED 9/9/94

JOB NO. 94210

GROUND WATER DEPTH
WHILE DRILLING 8.0'
BEFORE CASING REMOVED Added Water While Drilling
AFTER CASING REMOVED Installed Well

N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING 30" — ASTM D-1586, STANDARD PENETRATION TEST

C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING
"/OR — % CORE RECOVERY

CASING TYPE - HOLLOW STEM AUGER

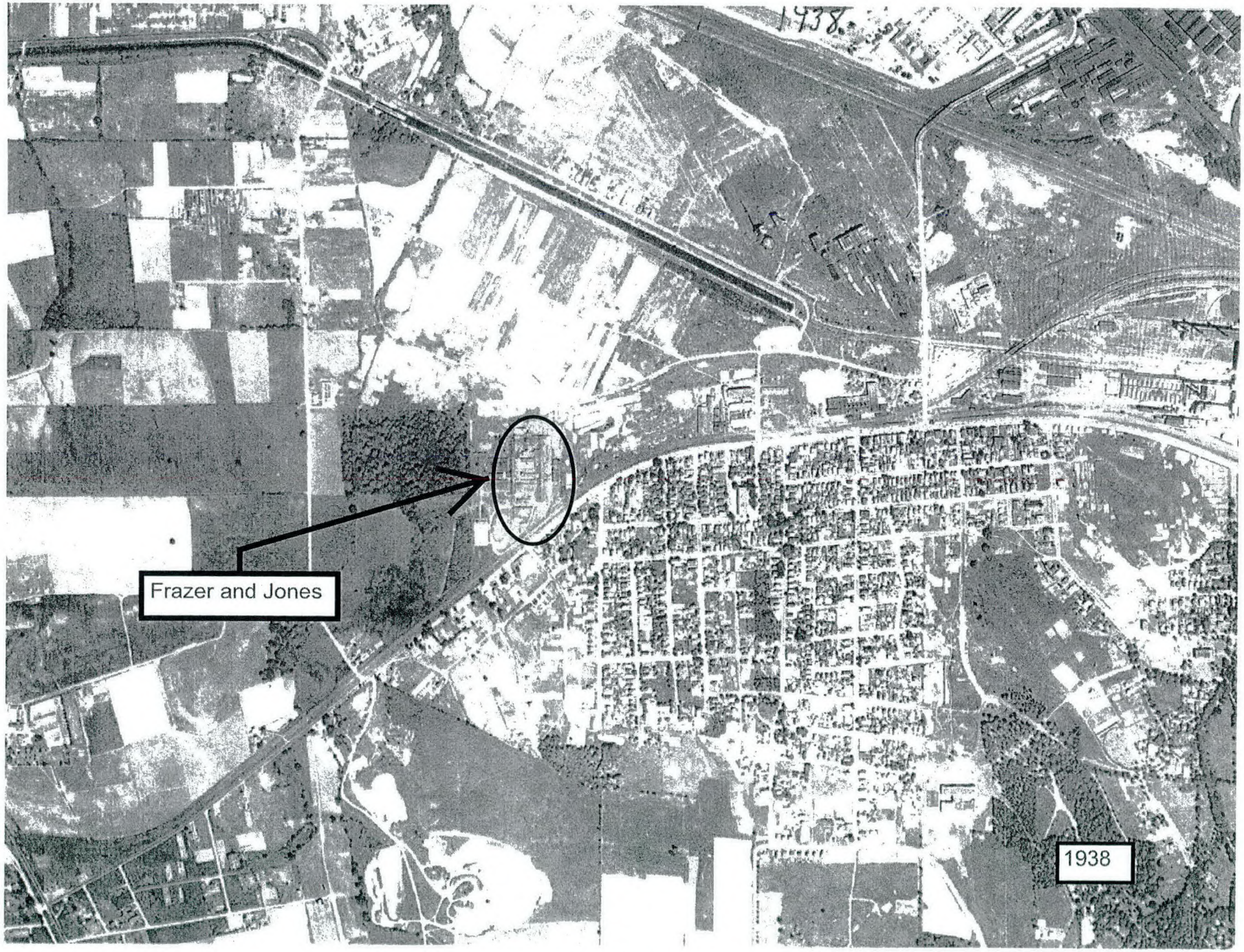
SHEET 1 OF 1
Project No.: 114.003

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
	0.0'-	1		1/11		Black-dry medium dense fine to coarse SAND, little cinders, little fine to coarse gravel	
	2.0'			15/17	26		2.0'
	2.0'-	2		7/8		Black dry medium dense fine to coarse SAND and CINDERS	
	4.0'			11/11	19		4.0'
5.0	4.0'-	3		4/3		Black moist loose to very loose fine to medium SAND, little cinders, little slag, little fine gravel, trace wood	
	6.0'			3/3	6		8.0'
	6.0'-	4		2/2		Brown moist very stiff SILT, little fine to coarse sand	
WL ▼	- 8.0'			1/1	3		11.0'
	8.0'-	5		3/9		Gray wet stiff SILT and fine to coarse SAND, little fine to coarse gravel	
10.0	10.0'			12/12	21		14.0'
	10.0'-	6		4/5		Gray wet soft SILT, little clay, little fine to coarse sand	
	12.0'			9/6	14		16.0'
	12.0'-	7		8/6		Brown moist medium dense fine to coarse SAND	
	14.0'			5/5	11		18.0'
15.0	14.0'-	8		WH/1		CONCRETE	18.5'
	16.0'			1/3	2	Brown wet stiff SILT, some clay, little fine to coarse sand, little fine gravel	19.5'
	16.0'-	9		23/18		Brown-gray wet very dense fine to coarse SAND, some fine to coarse gravel, few cobbles	
	18.0'			6/5	20		
	18.0'-	10		21/4		Bottom of Boring	24.0'
20.0	19.9'			4/50-.4'	8		
	20.0'-	11		50-.4'			
	20.4'						
25.0							

Note: Installed 2" PVC 6 slot screen from 23.0' to 8.0', 2" PVC riser to surface with a standpipe protective casing.

WH indicates sampler penetrated under weight of 140# hammer.

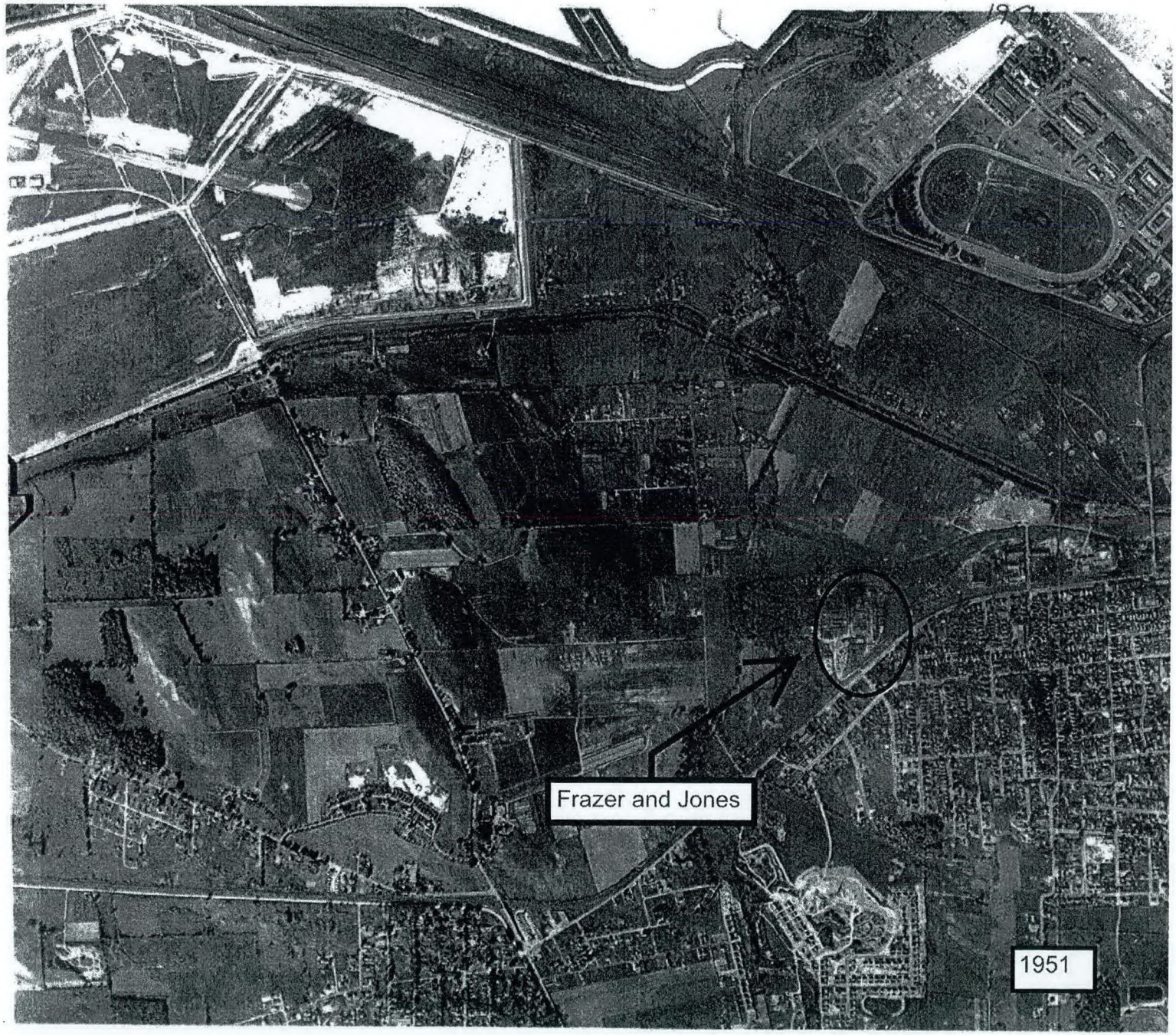
C&S Engineers, 1995



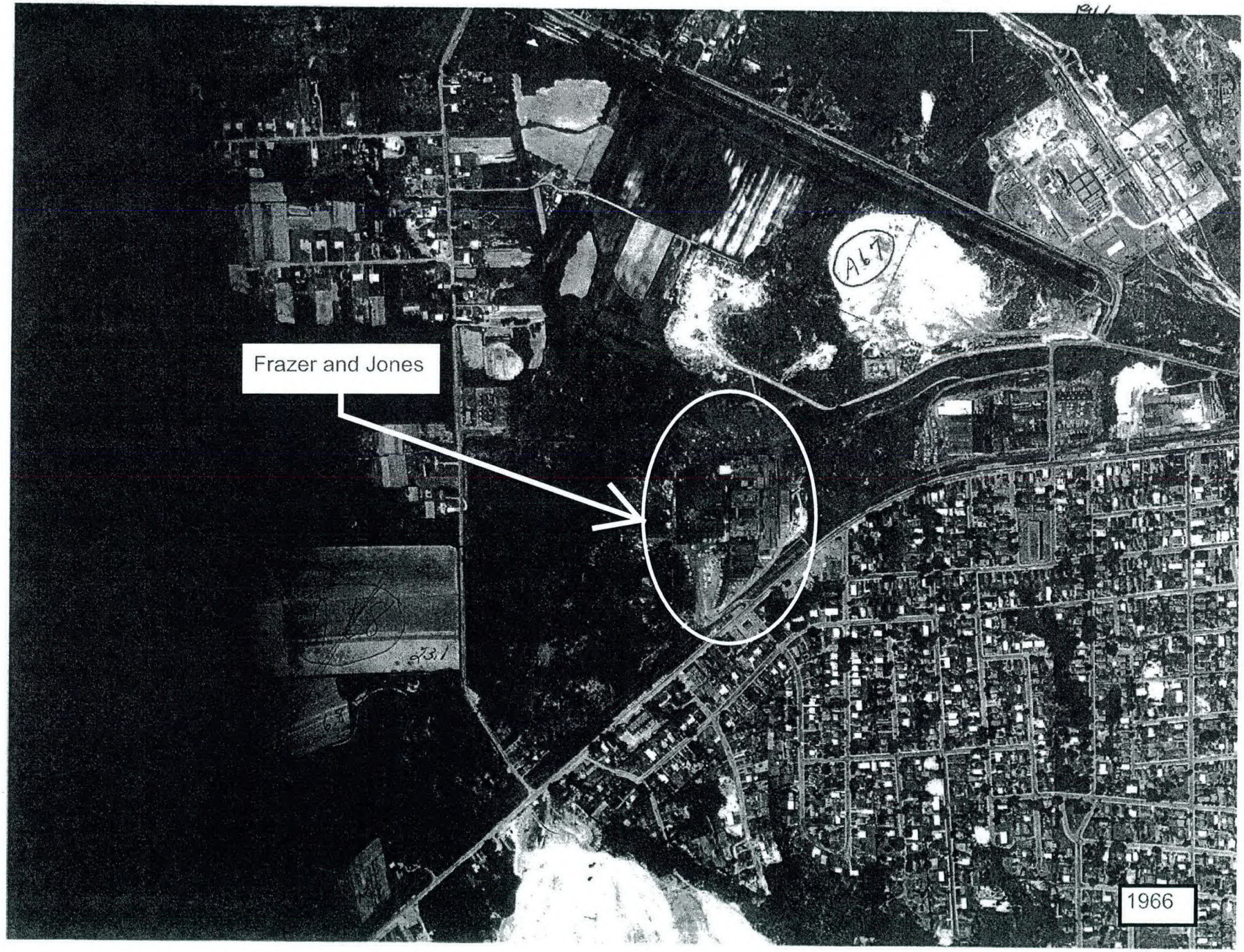
F&J Air Photos

ARX-2H-86

10-5-51

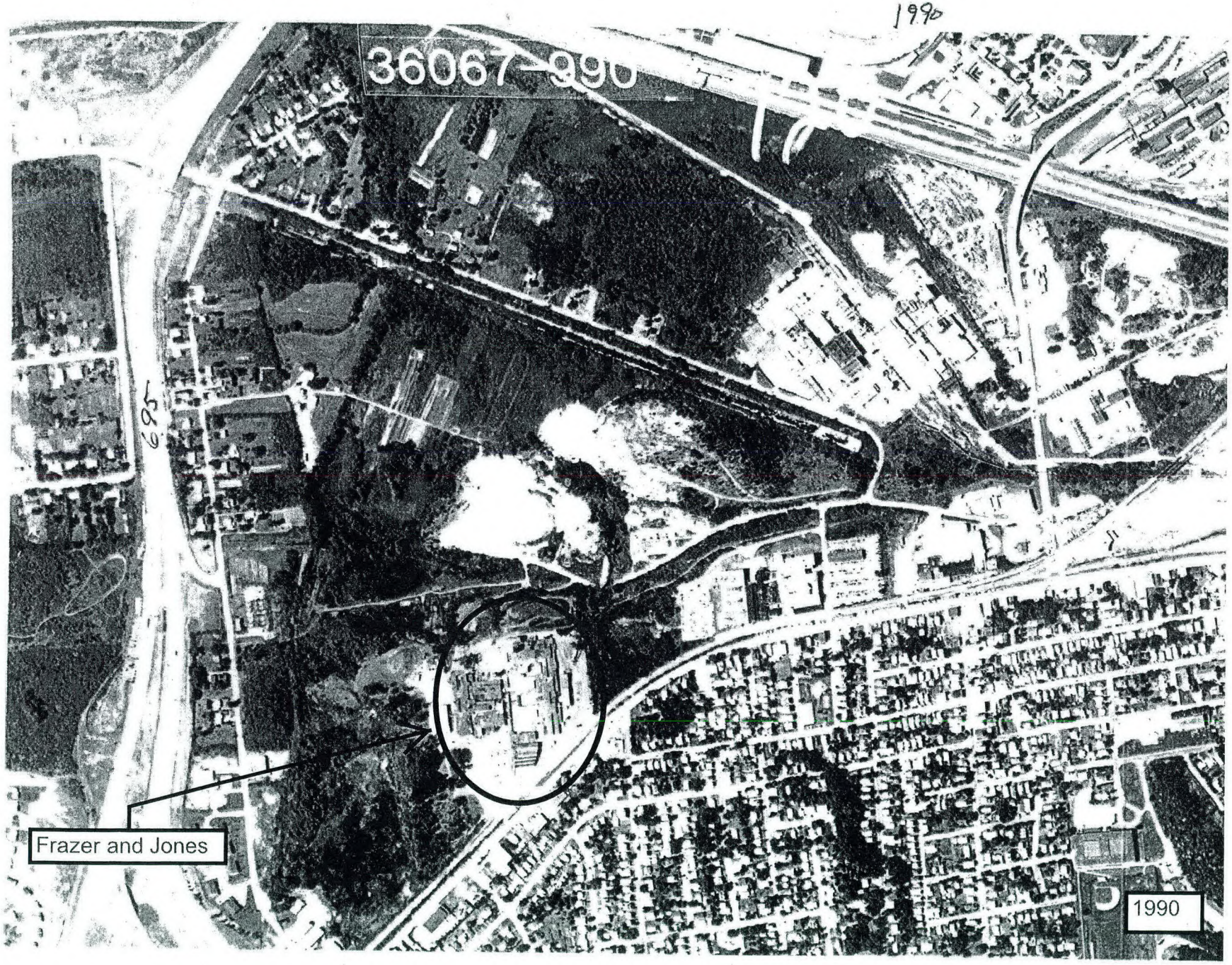


F&J Air Photos


Frazer and Jones
1966



F&J Air Photos


1990
36067-990
695
Frazer and Jones
1990



F&J Air Photos

APPENDIX C

Test Pit Data

Table C-1 Test Pit Summary

Test Pit Logs

Table C - 1.
Frazer and Jones
Site Investigation
Test Pit Summary

ID	Ground Elev. (ft amsl)	Test pit depth (feet)	Bottom elevation (ft amsl)	Depth to Native Soil (feet)	Top of Native (ft amsl)
TP - 1	416.62	13.00	403.62	12	404.62
TP - 2	427.22	19.00	408.22	ne	ne
TP - 3	427.86	17.00	410.86	ne	ne
TP - 4	429.78	19.00	410.78	ne	ne
TP - 5	429.65	17.50	412.15	ne	ne
TP - 6	418.91	20.00	398.91	19.5	399.41
TP - 7	432.35	19.00	413.35	ne	ne
TP - 8	430.78	18.00	412.78	ne	ne
TP - 9	405.85	18.00	387.85	3.5	402.35
TP - 10	431.71	19.00	412.71	ne	ne
TP - 11	429.30	18.50	410.80	ne	ne
TP - 12	431.26	17.00	414.26	ne	ne
TP - 13	416.58	12.00	404.58	11.5	405.08
TP - 14	421.05	18.00	403.05	17.5	403.55
TP - 15	427.19	19.00	408.19	ne	ne
TP - 16	427.65	19.00	408.65	ne	ne
TP - 17	429.47	17.00	412.47	ne	ne
TP - 18	428.13	18.00	410.13	ne	ne

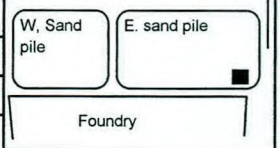
ne - native soils not encountered

Contractor: Parratt-Wolff **Operator:** Brad Palmer **Inspector:** G. Gould **Equip Type:** JCB JS130 Tracked excavator	**Gould Groundwater Investigations, Inc.** **Test Pit Log** **Project Name:** Frazer and Jones **Project #:** 1050	**Pit No. TP - 1**

Groundwater Observations		
Water level	none	
Time	9:40	
Date	7/22/08	
Depth of pit	13.0 ft	

Start: 9:05 7/22/2008
Finish: 9:45 7/22/2008
Weather: overcast, humid, 72 degrees F

Plot Plan



Sample No.	Depth	Description	Comments
		roots and vines **black fine to medium sand,** red bricks, brown f. sand, wire, metal strapping	
	2		0.0 ppm on PID
	4		
	6	*(fill)*	
	8		
	10		
	12	12.0 ft **moist gray silt and clay** *(native soil)*	0.0 ppm on PID
	14	bottom of pit 13.0 ft	
	16		
	18		
	20		

Contractor: Parratt-Wolff
Operator: Brad Palmer
Inspector: G. Gould
Equip Type: JCB JS130 Tracked excavator

Gould Groundwater Investigations, Inc.

Test Pit Log

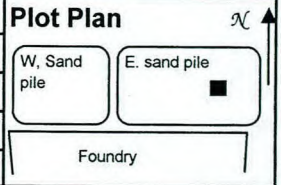
Project Name: Frazer and Jones
Project #: 1050

Pit No. TP - 2

Groundwater Observations		
Water level	none	
Time	10:18	
Date	7/22/08	
Depth of pit	19.0 ft	

Start: 9:48 7/22/2008
Finish: 10:20 7/22/2008
Weather: overcast, humid, 72 degrees F

Plot Plan



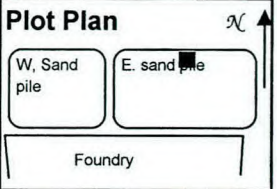
Sample No.	Depth	Description	Comments
		moist black medium sand	
	2	car seat	0.0 ppm on PID 0% LEL
	4	wood	
	6	broken sand cores	
	8		
	10	*(fill)*	0.0 ppm on PID 0% LEL
	12		
		steel drum carcass - gray fine sand-size material in drum	0.0 ppm on PID
	14		
		3/4" diameter braided wire cable	
	16		
	18		
		moist black medium sand (fill)	0.0 ppm on PID 0% LEL
	20	bottom of pit 19.0 ft	

Contractor: Parratt-Wolff **Operator:** Brad Palmer **Inspector:** G. Gould **Equip Type:** JCB JS130 Tracked excavator	**Gould Groundwater Investigations, Inc.** **Test Pit Log** **Project Name:** Frazer and Jones **Project #:** 1050	**Pit No. TP - 3**

Groundwater Observations		
Water level	none	
Time	11:06	
Date	7/22/08	
Depth of pit	17.0 ft	

Start: 10:45 7/22/2008
Finish: 11:10 7/22/2008
Weather: partly sunny, 73 degrees F, wind 0-3 mph from SW, humid

Plot Plan



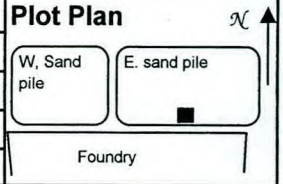
Sample No.	Depth	Description	Comments
		moist black medium sand	
	2	tan mold fragments	0.0 ppm on PID 0% LEL
		(fill)	
	4		
		clear glass fragments	
	6	Sprite can with removable tab	6.0 ft - oil-like odor 0.0 ppm on PID
	8	*(fill)*	
		wood	
	10		
		3/4" dia. steel rod	
	12		
		Sunkist soda bottle	
	14		
		3/4" diameter braided wire cable	
	16		0.0 ppm on PID 0% LEL
		bottom of pit 17.0 ft	
	18		
	20		

Contractor: Parratt-Wolff **Operator:** Brad Palmer **Inspector:** G. Gould **Equip Type:** JCB JS130 Tracked excavator	**Gould Groundwater Investigations, Inc.** **Test Pit Log** **Project Name:** Frazer and Jones **Project #:** 1050	**Pit No. TP - 4**

Groundwater Observations		
Water level	none	
Time	11:48	
Date	7/22/08	
Depth of pit	19.0 ft	

Start: 11:30 7/22/2008
Finish: 12:00 7/22/2008
Weather: partly sunny, 73 degrees F, wind 0-3 mph from SW, humid

Plot Plan



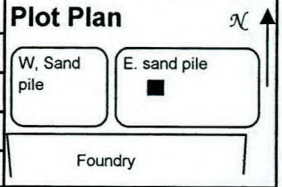
Sample No.	Sample Depth	Description	Comments
		moist black medium sand	
	2	trace molds and slag	0.0 ppm on PID 0% LEL
	4		
	6		0.0 ppm on PID
	8		
	10	*(fill)*	
	12		
	14		
	16		0.0 ppm on PID 0% LEL
	18	**moist black fine sand and silt** - cohesive corrugated fiberglass panel	
	20	bottom of pit 19.0 ft	

Contractor: Parratt-Wolff **Operator:** Brad Palmer **Inspector:** G. Gould **Equip Type:** JCB JS130 Tracked excavator	**Gould Groundwater Investigations, Inc.** **Test Pit Log** **Project Name:** Frazer and Jones **Project #:** 1050	**Pit No. TP - 5**

Groundwater Observations		
Water level	none	
Time	13:27	
Date	7/22/08	
Depth of pit	17.5 ft	

Start: 13:00 7/22/2008
Finish: 13:45 7/22/2008
Weather: overcast, 72 degrees F
rain sprinkles

Plot Plan



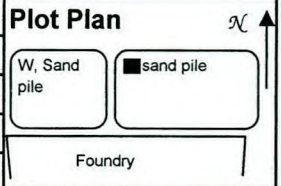
Sample No.	Sample Depth	Description	Comments
		moist black medium sand	
	2	trace bricks, concrete, plastic, wood	0.0 ppm on PID 0% LEL
	4		
	6		0.0 ppm on PID 0% LEL
	8	*(fill)*	
	10	electric conduit	
		orange soda can	
	12		
	14		
	16	**moist black medium sand**	0.0 ppm on PID 0% LEL
		moist light gray medium sand	
		moist black medium sand	
	18	bottom of pit 17.5 ft	
	20		

Contractor: Parratt-Wolff **Operator:** Brad Palmer **Inspector:** G. Gould **Equip Type:** JCB JS130 Tracked excavator	**Gould Groundwater Investigations, Inc.** **Test Pit Log** **Project Name:** Frazer and Jones **Project #:** 1050	**Pit No. TP - 6**

Groundwater Observations		
Water level	19.0 ft	
Time	14:35	
Date	7/22/08	
Depth of pit	20.0 ft	

Start: 13:55 7/22/2008
Finish: 14:45 7/22/2008
Weather: overcast, 72 degrees F
rain sprinkles

Plot Plan



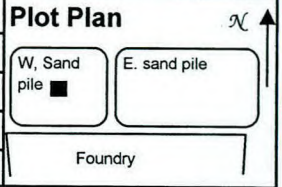
Sample No.	Depth	Description	Comments
		moist black medium sand	
	2	red, gray and yellow bricks broken concrete	0.0 ppm on PID 0% LEL
	4		
	6		0.0 ppm on PID 0% LEL
	8		
	10	*(fill)*	
	12	slag, sheet metal metal floor drain grate	
	14		
	16		0.0 ppm on PID 0% LEL
	18	yellow brick, slag	
		wet black medium sand	
	20	**moist gray-tan silt and f. sand, trace roots** *(native soil)*	
		bottom of pit 20.0 ft	

Contractor: Parratt-Wolff **Operator:** Brad Palmer **Inspector:** G. Gould **Equip Type:** JCB JS130 Tracked excavator	**Gould Groundwater Investigations, Inc.** **Test Pit Log** **Project Name:** Frazer and Jones **Project #:** 1050	**Pit No. TP - 7**

Groundwater Observations		
Water level	none	
Time	10:44	
Date	7/23/08	
Depth of pit	19.0 ft	

Start: 8:10 7/23/2008
Finish: 8:43 7/23/2008
Weather: overcast, 72 degrees F
humid

Plot Plan



Sample No.	Depth	Description	Comments
		moist black medium sand	
	2		0.0 ppm on PID 0% LEL
		few pink - tan sand cores	
	4	plastic sheeting	
	6		0.0 ppm on PID 0% LEL
	8		
	10	*(fill)*	
	12	slag, sheet metal metal floor drain grate	left pit open for DEC - filled at 9:50
	14		
	16	increasing debris and garbage plastic milk jug	0.0 ppm on PID 0% LEL
	18		
		wood, Coke can with pull off tab metal drum lid, small can of yellow-white powder	
	20	bottom of pit 19.0 ft	

Contractor: Parratt-Wolff
Operator: Brad Palmer
Inspector: G. Gould
Equip Type: JCB JS130 Tracked excavator

Gould Groundwater Investigations, Inc.

Test Pit Log

Project Name: Frazer and Jones
Project #: 1050

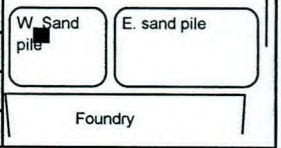
Pit No. TP - 8

Groundwater Observations

Water level	none	
Time	9:50	
Date	7/24/08	
Depth of pit	18.0 ft	

Start: 9:22 7/24/2008
Finish: 10:00 7/24/2008
Weather: mostly cloudy, 75 deg. F
no wind

Plot Plan



Sample No.	Sample Depth	Description	Comments
		moist brown slag, bricks, sand and gravel	0.0 ppm on PID 0% LEL
	2	sheet metal	
	4		
		moist black medium sand	
	6	trace tan cores, trace wood	
	8	cans, glass wire	
	10		
	12	*(fill)*	0.0 ppm on PID 0% LEL
	14		
	16		
	18		
		bottom of pit 18.0 ft	
	20		

Contractor: Parratt-Wolff
Operator: Brad Palmer
Inspector: G. Gould
Equip Type: JCB JS130 Tracked excavator

Gould Groundwater Investigations, Inc.

Test Pit Log

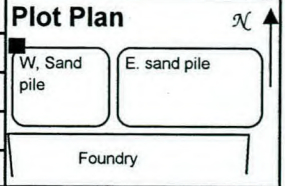
Project Name: Frazer and Jones
Project #: 1050

Pit No. TP - 9

Groundwater Observations		
Water level	3.5 ft	
Time	8:33	
Date	7/24/08	
Depth of pit	18.0 ft	

Start: 7:55 7/24/2008
Finish: 8:40 7/24/2008
Weather: cloudy, 75 deg. F
no wind

Plot Plan



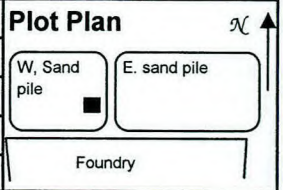
Sample No.	Sample Depth	South ... North Description	Comments
		moist black medium sand	0.0 ppm on PID
		ground surface	0% LEL
	2	trace brick	no odor
			no sheen
	4	water seeps	clear water flowing into pit
			0.0 ppm on PID
		wet gray to tan silt and clay, some fine to coarse angular sand	0% LEL
	6	**- loose**	
	8		
	10	soft *(native)*	
	12		
	14		
	16		
	18		0.0 ppm on PID
			0% LEL
		bottom of pit 18.0 ft	
	20		

Contractor: Parratt-Wolff **Operator:** Brad Palmer **Inspector:** G. Gould **Equip Type:** JCB JS130 Tracked excavator	**Gould Groundwater Investigations, Inc.** **Test Pit Log** **Project Name:** Frazer and Jones **Project #:** 1050	**Pit No. TP - 10**

Groundwater Observations		
Water level	none	
Time	9:45	
Date	7/23/08	
Depth of pit	19.0 ft	

Start: 9:05 7/23/2008
Finish: 9:50 7/23/2008
Weather: overcast, 72 degrees F, humid
wind 0-3 mph from SW

Plot Plan



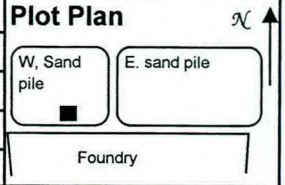
Sample No.	Depth	Description	Comments
		roots **moist black medium sand**	
	2		0.0 ppm on PID 0% LEL
	4		
	6		0.0 ppm on PID 0% LEL
	8		
	10	*(fill)*	
	12	plastic container approx 30 gallons	left pit open for DEC - filled at 9:50
	14		
	16	wood bricks	0.0 ppm on PID 0% LEL
	18	metal canister lids - brass-color, 12" dia. slag	digging is more difficult
	20	bottom of pit 19.0 ft	

Contractor: Parratt-Wolff **Operator:** Brad Palmer **Inspector:** G. Gould **Equip Type:** JCB JS130 Tracked excavator	**Gould Groundwater Investigations, Inc.** **Test Pit Log** **Project Name:** Frazer and Jones **Project #:** 1050	**Pit No. TP - 11**

Groundwater Observations		
Water level	none	
Time	10:30	
Date	7/23/08	
Depth of pit	18.5 FT	

Start: 10:05 7/23/2008
Finish: 10:40 7/23/2008
Weather: p. sunny, 80 degrees F, humid
wind 0-5 mph from SW

Plot Plan



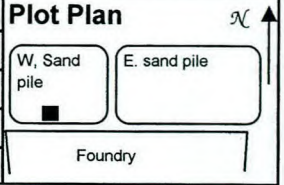
Sample No.	Sample Depth	Description	Comments
		roots **moist black medium sand**	
	2		0.0 ppm on PID 0% LEL
	4	finger-size core pieces	
	6		
	8		
	10	*(fill)*	
	12		
	14		
	16	24" x 18" x 8" ingot - iron?	0.0 ppm on PID 0% LEL
	18		digging is more difficult
		bottom of pit 18.5 ft	
	20		

Contractor: Parratt-Wolff **Operator:** Brad Palmer **Inspector:** G. Gould **Equip Type:** JCB JS130 Tracked excavator	**Gould Groundwater Investigations, Inc.** **Test Pit Log** **Project Name:** Frazer and Jones **Project #:** 1050	**Pit No. TP - 12**

Groundwater Observations		
Water level	none	
Time	11:15	
Date	7/23/08	
Depth of pit	17.0 ft	

Start: 11:00 7/23/2008
Finish: 11:25 7/23/2008
Weather: overcast, breezy, 74 degrees F
wind 3-7 mph from SW

Plot Plan



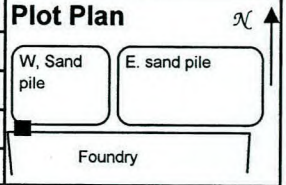
Sample No.	Depth	Description	Comments
		moist black medium sand	
	2	finger-size core pieces	0.0 ppm on PID 0% LEL
	4		
	6		
	8	*(fill)*	
	10		
	12	light tan medium sand	0.0 ppm on PID 0% LEL original foundry sand, new non-waste
	14	brown cores and brown medium sand	
	16		digging is more difficult
	18	bottom of pit 17.0 ft	
	20		

Contractor: Parratt-Wolff **Operator:** Brad Palmer **Inspector:** G. Gould **Equip Type:** JCB JS130 Tracked excavator	**Gould Groundwater Investigations, Inc.** **Test Pit Log** **Project Name:** Frazer and Jones **Project #:** 1050	**Pit No. TP - 13**

Groundwater Observations		
Water level	11.5 ft	
Time	12:07	
Date	7/23/08	
Depth of pit	12.0 ft	

Start: 11:50 7/23/2008
Finish: 12:20 7/23/2008
Weather: overcast, 75 degrees F
wind 0-3 mph from SW

Plot Plan



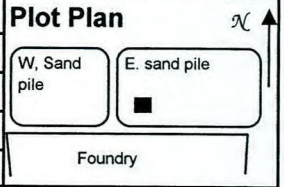
Sample No.	Sample Depth	South … North Description	Comments
		moist, dark brown, dark gray to black medium sand	
	2	red and yellow bricks	0.0 ppm on PID 0% LEL
	4	slag	
	6	moist light tan fine to medium sand layer (dips from North to south) *(fill)*	
	8		
	10		0.0 ppm on PID 0% LEL
	12	**wet tan to light gray silt, little fine to coarse sand** *(native soil)*	water is running into pit at top of native soil
	14	bottom of pit 12.0 ft	
	16		
	18		
	20		

Contractor: Parratt-Wolff **Operator:** Brad Palmer **Inspector:** G. Gould **Equip Type:** JCB JS130 Tracked excavator	**Gould Groundwater Investigations, Inc.** **Test Pit Log** **Project Name:** Frazer and Jones **Project #:** 1050	**Pit No. TP - 14a**

Groundwater Observations		
Water level	none	
Time	13:25	
Date	7/23/08	
Depth of pit	4.0 ft	

Start: 13:20 7/23/2008
Finish: 13:35 7/23/2008
Weather: mostly cloudy, humid, 72 deg. F
wind 3-7 mph from SE

Plot Plan



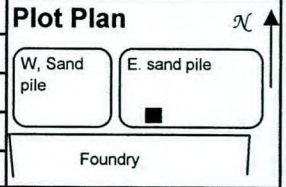
Sample No.	Sample Depth	North — Description — South	Comments
		moist black med. sand — ground surface	
	2	trace slag	0.0 ppm on PID 0% LEL - little garbage
		metal auger red rubber hose	
	4		
		bottom of pit 4.0 ft	
	6		
	8		
	10		
	12		
	14		
	16		
	18		
	20		

Contractor: Parratt-Wolff **Operator:** Brad Palmer **Inspector:** G. Gould **Equip Type:** JCB JS130 Tracked excavator	**Gould Groundwater Investigations, Inc.** **Test Pit Log** **Project Name:** Frazer and Jones **Project #:** 1050	**Pit No. TP - 14**

Groundwater Observations		
Water level	17.5 ft	
Time	13:58	
Date	7/23/08	
Depth of pit	18.0 ft	

Start: 13:35 7/23/2008
Finish: 14:10 7/23/2008
Weather: overcast, breezy, 74 degrees F
wind 3-7 mph from SE

Plot Plan



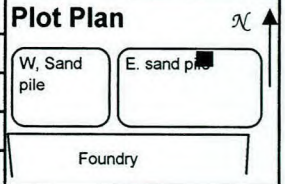
Sample No.	Depth	west — Description — east	Comments
		moist dark brown, dark gray to black medium sand fine to course gravel, little cobbles, slag, cores	
	2		0.0 ppm on PID 0% LEL
	4	red, yellow, gray bricks and slag wood	
	6		
	8		
	10	*(fill)*	
	12		loose and caving
	14	more bricks and slag	0.0 ppm on PID 0% LEL
	16	brown cores and brown medium sand	
	18		water flowing in from side
		wet gray silt and fine sand	
	20	bottom of pit 18.0 ft	

Contractor: Parratt-Wolff **Operator:** Brad Palmer **Inspector:** G. Gould **Equip Type:** JCB JS130 Tracked excavator	**Gould Groundwater Investigations, Inc.** **Test Pit Log** **Project Name:** Frazer and Jones **Project #:** 1050	**Pit No. TP - 15**

Groundwater Observations		
Water level	none	
Time	14:51	
Date	7/23/08	
Depth of pit	19.0 ft	

Start: 14:30 7/23/2008
Finish: 15:00 7/23/2008
Weather: mostly cloudy, humid, 75 deg. F
wind 3-7 mph from S

Plot Plan



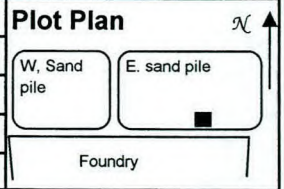
Sample No.	Depth	Description	Comments
		moist brown to black fine to medium sand and silt, trace fine to coarse gravel, trace cobbles	loose, mixed hard fill
	2	cores	
	4	slag, wood	0.0 ppm on PID 0% LEL
	6		
	8		
	10	**moist black medium sand** *(fill)*	
		tan cores	0.0 ppm on PID 0% LEL
	12		
		tree branch	
	14		
		slag	
	16		
	18		0.0 ppm on PID 0% LEL
	20	bottom of pit 19.0 ft	

Contractor: Parratt-Wolff **Operator:** Brad Palmer **Inspector:** G. Gould **Equip Type:** JCB JS130 Tracked excavator	**Gould Groundwater Investigations, Inc.** **Test Pit Log** **Project Name:** Frazer and Jones **Project #:** 1050	**Pit No. TP - 16**

Groundwater Observations		
Water level	none	
Time	15:27	
Date	7/23/08	
Depth of pit	19.0 ft	

Start: 15:05 7/23/2008
Finish: 15:45 7/23/2008
Weather: mostly cloudy, 75 deg. F
wind 3-7 mph from S

Plot Plan



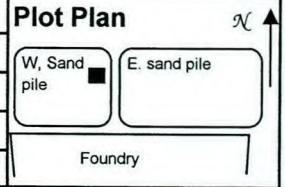
Sample No.	Sample Depth	Description	Comments
		moist black medium sand trace tan and pink core pieces	
	2		loose, mixed hard fill
	4		0.0 ppm on PID 0% LEL
	6	wood, sheet metal, wire	increasing debris in fill below 5.0 ft
		plastic sheeting	
	8		
		(fill)	
	10		
		metal drum containing gray medium to coarse sandy material - no odor	0.0 ppm on PID 0% LEL
	12		
	14		
	16		
	18	sheet metal duct work	0.0 ppm on PID 0% LEL
	20	bottom of pit 19.0 ft	

Contractor: Parratt-Wolff **Operator:** Brad Palmer **Inspector:** G. Gould **Equip Type:** JCB JS130 Tracked excavator	**Gould Groundwater Investigations, Inc.** **Test Pit Log** **Project Name:** Frazer and Jones **Project #:** 1050	**Pit No. TP - 17**

Groundwater Observations		
Water level	none	
Time	10:24	
Date	7/24/08	
Depth of pit	17.0 ft	

Start: 10:00 7/24/2008
Finish: 10:40 7/24/2008
Weather: partly sunny, 78 degrees F
wind 0-3 mph from SW

Plot Plan



Sample No.	Depth	Description	Comments
		moist black medium sand	0.0 ppm on PID 0% LEL
	2	bricks, stamp sheet metal scraps	
	4		
	6		
	8	*(fill)*	- leave pit open for F&J to observe - fill at 14:30
	10		
	12	plastic sheeting	0.0 ppm on PID 0% LEL
	14		
	16	wood, cobble sized slag, brick	- getting hard
	18	bottom of pit 17.0 ft	
	20		

Contractor: Parratt-Wolff
Operator: Brad Palmer
Inspector: G. Gould
Equip Type: JCB JS130
Tracked excavator

Gould Groundwater Investigations, Inc.

Test Pit Log

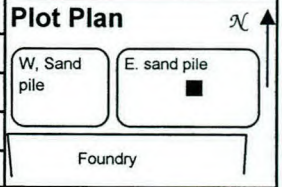
Project Name: Frazer and Jones
Project #: 1050

Pit No. TP - 18

Groundwater Observations		
Water level	none	
Time	13:50	
Date	7/24/08	
Depth of pit	18.0 ft	

Start: 13:10 7/24/2008
Finish: 14:05 7/24/2008
Weather: cloudy, thunder shower, 70 deg F
wind 0-10 mph from S

Plot Plan



Sample No.	Depth	Description	Comments
		moist black medium sand	
	2	wood, core pieces	0.0 ppm on PID 0% LEL
	4	slag, boulders, bricks, wire, wood	harder digging at 4.0 ft
	6		
	8		0.0 ppm on PID 0% LEL
	10	*(fill)*	
	12		0.0 ppm on PID 0% LEL
	14		
	16	55 gallon metal drum with gray sandy powder	2.3 ppm on PID 0% LEL slight turpentine-like odor
	18		
		bottom of pit 18.0 ft	
	20		

APPENDIX D

Drilling Data

Table D-1 Piezometer and Monitoring Well Specifications

Piezometer Logs

Monitoring Well Logs

Table D - 1
Frazer and Jones
Site Investigation
Well and Piezometer Summary

ID	Ground Elev. (feet)	Boring Depth (feet)	Bottom Elevation (feet)	Screen Length (feet)	Top of Screen Elev (feet)	Bottom of Screen Elev (feet)	Depth to Native Soil (feet)	Top of Native Soil (feet)
MW - 1	423.14	13.00	410.14	10	420.14	410.14	5.5	417.64
MW - 2	406.06	13.00	393.06	10	403.06	393.06	0	406.06
MW - 3	428.15	30.00	398.15	10	408.15	398.15	25.5	402.65
MW - 4	425.90	28.00	397.90	10	407.90	397.90	23.5	402.40
PZ - 1	429.00	30.00	399.00	10	409.00	399.00	27	402.00
PZ - 2	429.55	30.00	399.55	10	409.55	399.55	26.5	403.05
PZ - 3	429.67	30.00	399.67	10	409.67	399.67	26	403.67
PZ - 4	427.23	30.00	397.23	10	407.23	397.23	22	405.23

Driller: Parratt-Wolff - D. Thoma, M. Cha
Inspector: G. Gould
Rig Type: CME 55 Truck
Drilling Method: 4.25" hollow stem auger

Gould Groundwater Investigations, Inc.
Project Name: Frazer and Jones, Solvay, NY
Project #: 1050
Boring Depth: 13.0 ft

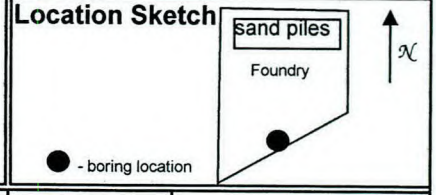
Boring ID
MW-1

Sheet 1 of 1

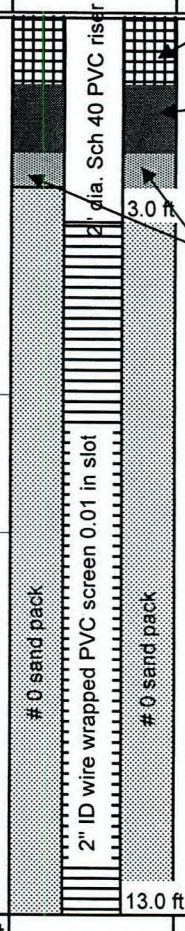
Groundwater Observations			
Date			
Time			
DTW			
Casing/Total Depth			

Start (Date & Time): 9:20 7/30/08
Finish (Date & Time): 12:05 7/30/08
Weather: mostly cloudy, 70 deg F, humid
wind 0-5 from West

Location Sketch



Sample Interval	Sample No.	Blows	PID (ppm)	Field Description	Well Schematic	Comments
0'-2'	SS-1	-	0	**0 ft** black top		cement-bentonite grout
Recovery=	1.5'	9	0	dry brown - dark brown silt, little gravel, little fine to coarse sand		*(road subbase)*
		11	0			bentonite chip seal
		14	0			
2' - 4'	SS-2	50/0.2'	0	dry brown silt, little coarse gravel		
Recovery=	0.2'		0			3.0 ft
			0			# 00 sand pack
			0			
4' - 6'	SS-3	27	0			
Recovery=	1.0'	8	0	**5ft** wet dark gray and brown medium to coarse angular gravel,		
		9	0	little fine to coarse sand, trace silt		
		8	0	moist red-brown silt, trace fine to coarse sub-rounded sand,		
6' - 8'	SS-4	16	0	trace subrounded gravel, trace clay		*(till)*
Recovery=	2.0'	15	0			
		34	0			
		18	0	dry green-brown silt with white and orange mottling, some		
8' - 10'	SS-5	4	0	fine to coarse sand		
Recovery=	1.0'	10	0	wet green silt and angular fine to coarse gravel, trace clay		*(weathered shale)*
		7	0			
		18	0	**10 ft**		
10' - 12'	SS-6	2	0	moist gray-brown silt and angular fine to coarse gravel, fine		
Recovery=	1.5	22	0	to coarse sand, trace clay		
		40	0			
		43	0			
				Bottom of boring 13.0 ft		



Driller: Parratt-Wolff - Thoma, Carney
Inspector: G. Gould
Rig Type: CME 55 Truck
Drilling Method: 4.25" hollow stem auger

Gould Groundwater Investigations, Inc.
Project Name: Frazer and Jones, Solvay, NY
Project #: 1050
Boring Depth: 13.0 ft

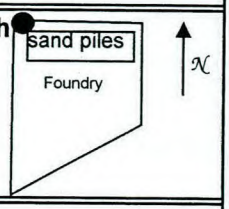
Boring ID
MW-2

Sheet 1 of 1

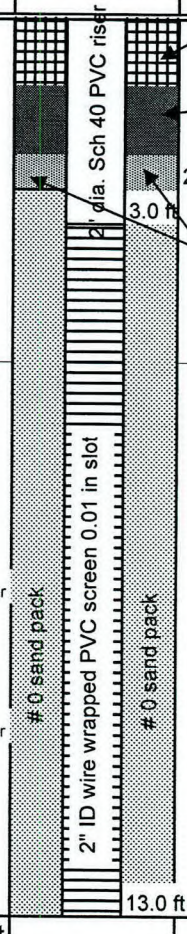
Groundwater Observations			
Date			
Time			
DTW			
Casing/Total Depth			

Start (Date & Time): 14:00 7/29/08
Finish (Date & Time): 8:50 7/30/08
Weather: p. sunny, 82 deg F
wind 0-3 from Northwest

Location Sketch



Sample Interval	Sample No.	Blows	PID (ppm)	Field Description	Well Schematic	Comments
0'-2'	SS-1	w.o.h.	0	**0 ft** wet brown silt, litle roots, organic matter, tr. gravel		
Recovery=	1.0'	w.o.h.	0			
		6	0			
		12	0			
2' - 4'	SS-2	3	0	moist black medium sand and brown organic matter		
Recovery=	0.2'	2	0			
		2	0			
		3	0			
4' - 6'	SS-3	w.o.h.	0	moist brown organic matter		
Recovery=	0.3'	w.o.h.	0	**5ft** ▼		
		w.o.h.	0	wet buff fine to med. sand and silt, tr coarse, tr. ang. gravel		
		1	0			
6' - 8'	SS-4	w.o.h.	0	wet buff silt and fine to med. sand, tr coarse sand		
Recovery=	2.0'	w.o.h.	0	'(1" thick peat layers)		
		w.o.h.	0			
		w.o.h.	0			
8' - 10'	SS-5	w.o.h.	0	wet buff fine to med. sand and silt, tr clay, tr f to med angular		
Recovery=	2.0'	w.o.h.	0	gravel		
		w.o.h.	0			
		w.o.h.	0	**10 ft**		
10' - 12'	SS-6	w.o.r.	0	wet buff fine to med. sand and silt, tr clay, tr f to med angular		
Recovery=	2.0	w.o.r.	0	gravel		
		1	0			
		1	0			
				Bottom of boring 13.0 ft		



(marl)

w.o.h - weight of hammer
w.o.r. - weight of rods

Driller: Parratt-Wolff - Thoma, Carney
Inspector: G. Gould
Rig Type: CME 55 Truck
Drilling Method: 4.25" hollow stem auger

Gould Groundwater Investigations, Inc.
Project Name: Frazer and Jones, Solvay, NY
Project #: 1050
Boring Depth: 30.0 ft

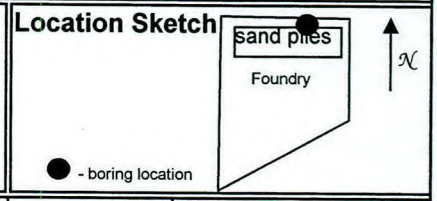
Boring ID
MW-3

Sheet 1 of 2

Groundwater Observations			
Date	7/29/08		
Time	12:10		
DTW	22.5'		
Casing/Total Depth	28'		

Start (Date & Time): 07:30 7/29/08
Finish (Date & Time): 13:20 7/29/08
Weather: m. sunny, 70 deg F
wind 3-7 from west

Location Sketch



Sample Interval	Sample No.	Blows	PID (ppm)	Field Description	Well Schematic	Comments
				0 ft		cement-bentonite grout
				easy drilling - fill		
				auger to 14.o ft - no samples		
				5ft		
				10 ft		
				drilling becomes harder		
					13.5'	bentonite chip seal
14 - 16 '	SS-1	9	0	moist black medium sand, tr. wood		
Recovery =	0.2'	16	0	**15 ft**		
		8	0			15.5 '
		8	0			16.0'
16 - 18'	SS-2	29	0	dry black, gray and tan med. sand, tr. wood, tr. brick		# 00 sand pack
Recovery =	1.0'	31	0			
		34	0			
		21	0			
18 - 20'	SS-3	6	0	moist black, gray tan med. sand, tr. brick fragments		
Recovery =	1.5'	15	0			
		16	0			
		10	0	**20 ft**		

2" dia. Sch 40 PVC riser
0 sand pack
18.0'

Driller: Parratt-Wolff - Thoma, Carney
Inspector: G. Gould
Rig Type: CME 55 Truck
Drilling Method: 4.25" hollow stem auger

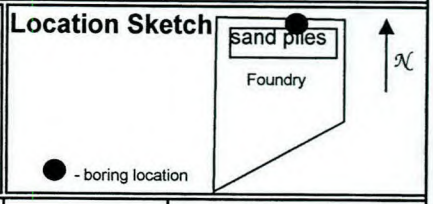
Gould Groundwater Investigations, Inc.
Project Name: Frazer and Jones, Solvay, NY
Project #: 1050
Boring Depth: 13.0 ft

Boring ID
MW-3

Groundwater Observations			
Date			
Time			
DTW			
Casing/Total Depth			

Start (Date & Time): 07:30 7/29/08
Finish (Date & Time): 13:20 7/29/08
Weather: m. sunny, 70 deg F
wind 3-7 from west

Location Sketch



Sample Interval	Sample No.	Blows	PID (ppm)	Field Description	Well Schematic	Comments
20'-22'	SS-4	11	0	**20 ft** moist black and yellow med. sand (brick fragments)	# 0 sand pack / 2" ID wire wrapped PVC screen 0.01 in slot / # 0 sand pack	
Recovery=	1.0'	8	0			
		12	0			
		10	0			
22' - 24'	SS-5	22	0	▼ wet black, brown, yellow fine to medium sand (brick fragments)		*(fill)*
Recovery=	1.5'	41	0			
		50/.4'	0			
			0			
24' - 26'	SS-6	12	0			
Recovery=	2.0'	10	0	**25ft**		
		9	0	moist to wet tan and black medium sand		
		6	0	moist gray silt, tr. fine to coarse angular sand, tr. Roots		
26' - 28'	SS-7	6	0			
Recovery=	2.0'	6	0			
		7	0	wet layered brown fine to medium sand and gray silt		*(native)*
		7	0			28.0'
28' - 30'	SS-8	7	0	wet layered brown fine to medium sand and gray silt		*(layered silt and sand)*
Recovery=	2.0'	32	0			
		34	0	wet coarse angular gravel, little fine sand, little silt		*(till?)*
		33	0	**30 ft** orange mottling		
				Bottom of boring 30.0 ft		

Driller: Parratt-Wolff - Thoma, Carney
Inspector: G. Gould
Rig Type: CME 55 Truck
Drilling Method: 4.25" hollow stem auger

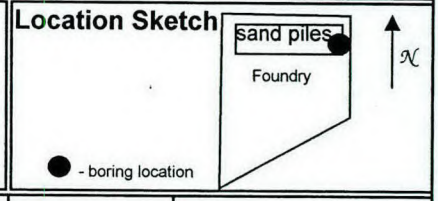
Gould Groundwater Investigations, Inc.
Project Name: Frazer and Jones, Solvay, NY
Project #: 1050
Boring Depth: 28.0 ft

Boring ID
MW-4
Sheet 1 of 2

	Groundwater Observations		
Date	none		
Time			
DTW			
Casing/Total Depth			

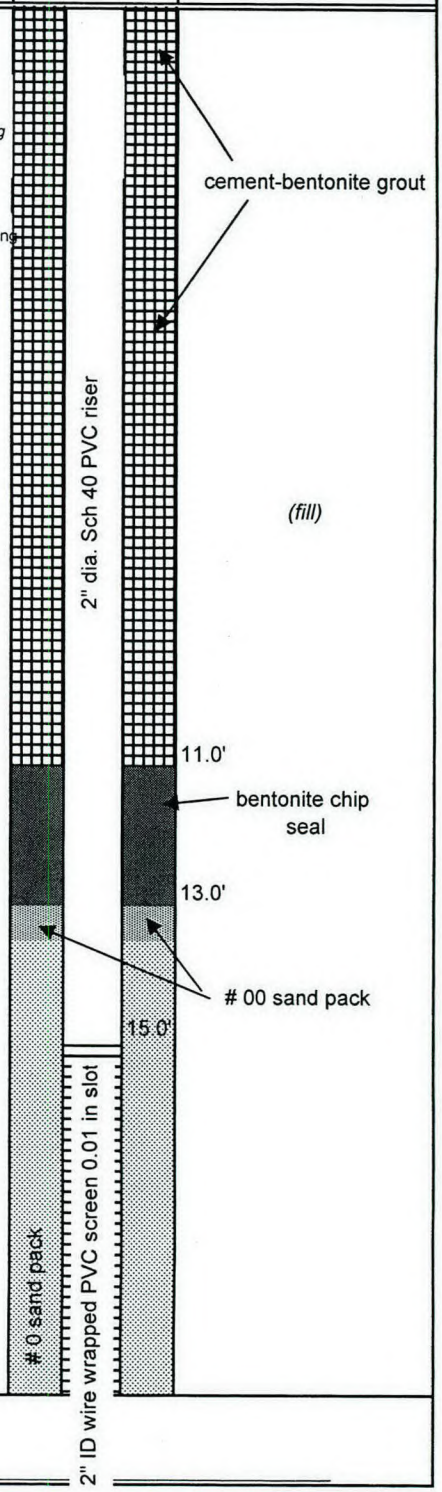
Start (Date & Time): 09:30 7/28/08
Finish (Date & Time): 16:00 7/28/08
Weather: m. sunny, 73 deg F
wind 3-7 from southwest

Location Sketch



Sample Interval	Sample No.	Blows	PID (ppm)	Field Description
				0 ft
				auger through black medium sand to 14.0 ft withut sampling
				auger refusal at 3.5 ft. Move rig ahead 5 ft and continue drilling
				5ft
				easy drilling
				10 ft
14 - 16 '	SS-1	3	0	moist black medium sand
Recovery =	0.1'	4	0	**15 ft**
		3	0	
		5	0	
16 - 18'	SS-2	4	0	moist black medium sand, tr brown med. Sand
Recovery =	1.0'	4	0	
		4	0	
		3	0	
18 - 20'	SS-3	3	0	▼ wet black medium sand
Recovery =	2.0'	3	0	
		3	0	
		8	0	**20 ft**

Well Schematic



Comments

Driller: Parratt-Wolff - Thoma, Carney
Inspector: G. Gould
Rig Type: CME 55 Truck
Drilling Method: 4.25" hollow stem auger

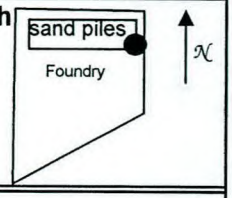
Gould Groundwater Investigations, Inc.
Project Name: Frazer and Jones, Solvay, NY
Project #: 1050
Boring Depth: 13.0 ft

Boring ID
MW-4

Groundwater Observations			
Date			
Time			
DTW			
Casing/Total Depth			

Start (Date & Time): 09:30 7/28/08
Finish (Date & Time): 16:00 7/28/08
Weather: m. sunny, 73 deg F
wind 3-7 from southwest

Location Sketch



Sample Interval	Sample No.	Blows	PID (ppm)	Field Description	Well Schematic	Comments
20'-22'	SS-4	7	0	**20 ft** wet medium black sand	# 0 sand pack; 2" ID wire wrapped PVC screen 0.01 in slot; # 0 sand pack	
Recovery=	0.7'	8	0			
		7	0			*(fill)*
		8	0			
22' - 24'	SS-5	6	0			
Recovery=	1.0	5	0			
		4	0			
		4	0	wet gray silt, little clay, tr. fine to coarse angular sand		
24' - 26'	SS-6	11	0			
Recovery=	2.0'	16	0	**25ft**		25.0
		31	0	wet brown to gray dense fine to coarse sand, some silt,		
		20	0	(angular to subrounded)		*(till)*
26' - 28'	SS-7	10	0			
Recovery=	0.8	16	0			
		17	0	wet gray dense silt and fine to coarse sand,		*(weathered bedrock)*
		11	0	dark gray rock fragments (*weathered bedrock*)		28.0'
				Bottom of boring 28.0 ft		
				30 ft		

Driller: Parratt-Wolff - Thoma, Carney
Inspector: G. Gould
Rig Type: CME 55 Truck
Drilling Method: 4.25" hollow stem auger

Gould Groundwater Investigations, Inc.
Project Name: Frazer and Jones, Solvay, NY
Project #: 1050
Boring Depth: 30.0 ft

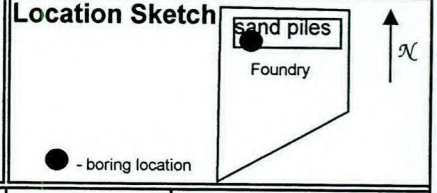
Boring ID
PZ-1

Sheet 1 of 2

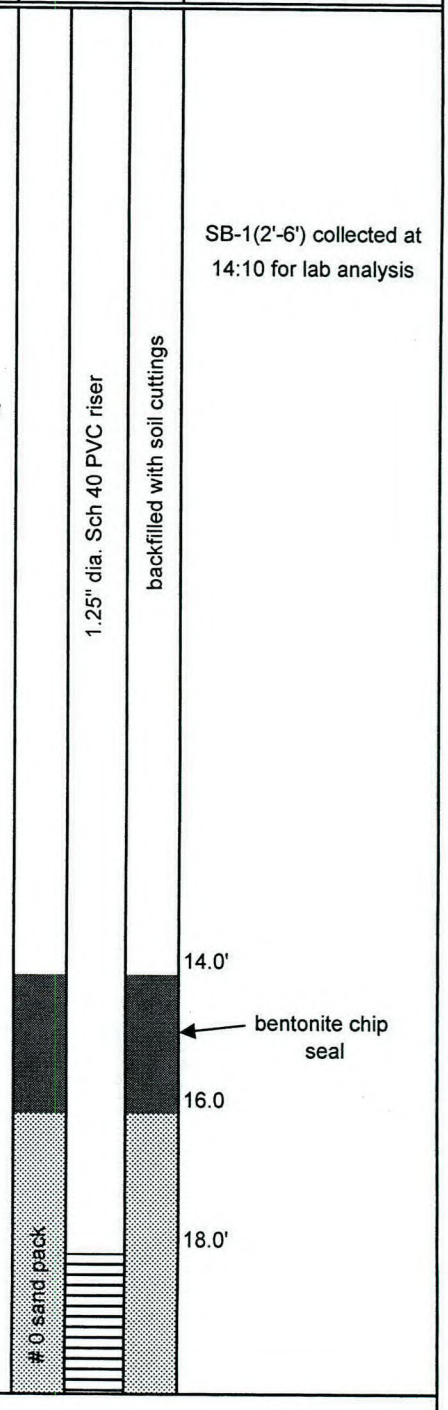
Groundwater Observations			
Date	7/31/08		
Time	7:50		
DTW	22.2'		
Casing/Total Depth	28.0'		

Start (Date & Time): 13:45 7/30/08
Finish (Date & Time): 08:15 7/31/08
Weather: cloudy, humid 75 deg F
wind 0-5 from west

Location Sketch



Sample Interval	Sample No.	Blows	PID (ppm)	Field Description	Well Schematic	Comments
				0 ft		
2' - 4'	SS-1	nr	0	moist black medium sand, tr. tan medium sand		
Recovery =	1.0'	nr	0			
		nr	0			SB-1(2'-6') collected at 14:10 for lab analysis
		nr	0			
4' - 6'	SS-2	nr	0			
Recovery =	2.0'	nr	0	**5ft**		
		nr	0			
		nr	0	*auger through black medium sand to 16 ft without sampling*		
				10 ft		
				15 ft		
16 - 18'	SS-3	5	0	moist black medium sand, tr brown med. Sand		
Recovery =	1.5'	8	0			
		8	0			
		5	0			
18 - 20'	SS-4	8	0	moist black m. sand, tr. white fine to coarse sand		
Recovery =	1.0'	7	0	(brick fragments)		
		6	0			
		4	0	**20 ft**		



nr - not recorded

Driller: Parratt-Wolff - Thoma, Carney
Inspector: G. Gould
Rig Type: CME 55 Truck
Drilling Method: 4.25" hollow stem auger

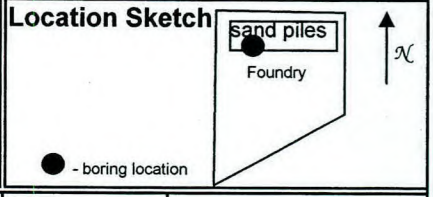
Gould Groundwater Investigations, Inc.
Project Name: Frazer and Jones, Solvay, NY
Project #: 1050
Boring Depth: 30.0 ft

Boring ID
PZ-1

Groundwater Observations			
Date			
Time			
DTW			
Casing/Total Depth			

Start (Date & Time): 13:45 7/30/08
Finish (Date & Time): 08:15 7/31/08
Weather: cloudy, humid 75 deg F
wind 0-5 from west

Location Sketch



Sample Interval	Sample No.	Blows	PID (ppm)	Field Description	Well Schematic	Comments
20'-22'	SS-5	5	0	**20 ft** moist black medium sand, tr. Angular gravel		
Recovery=	1.0	7	0			
		5	0			
		4	0			
22' - 24'	SS-6	7	0	▼ wet black medium sand and silt, tr. Yellow brick		
Recovery=	0.6	6	0			
		7	0			
		4	0			
24' - 26'	SS-7	12	0	moist black sand, tr. Brick		*(fill)*
Recovery=	2.0'	23	0	**25ft**		
		15	0			
		16	0			
26' - 28'	SS-8	3	0	wet black medium sand		
Recovery=	2.0'	5	0			
		5	0			
		8	0	wet to moist brown silt		28.0'
28-30'	SS-9	5	0	wet gray fine to medium sand and silt, tr. fine to coarse		*(marl?)*
Recovery=	0.5'	4	0	subrounded gravel		
		3	0			
		4	0	**30 ft**		30.0'
				bottom of boring 30.0'		

Soil Stratigraphy Summary _____

Driller: Parratt-Wolff - Thoma, Carney
Inspector: G. Gould
Rig Type: CME 55 Truck
Drilling Method: 4.25" hollow stem auger

Gould Groundwater Investigations, Inc.
Project Name: Frazer and Jones, Solvay, NY
Project #: 1050
Boring Depth: 30.0 ft

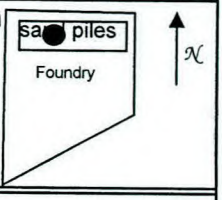
Boring ID
PZ-2

Sheet 1 of 2

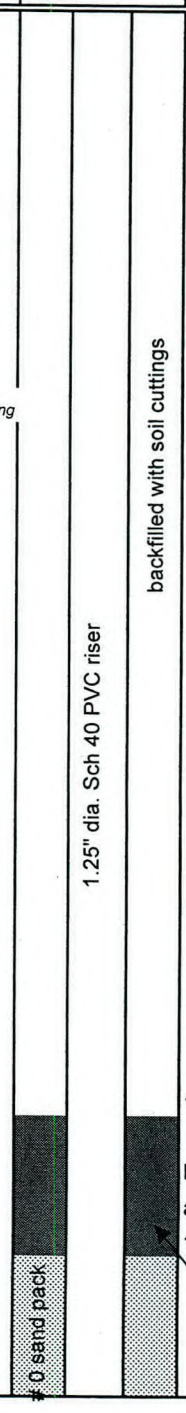
Groundwater Observations			
Date			
Time			
DTW			
Casing/Total Depth			

Start (Date & Time): 08:30 7/31/08
Finish (Date & Time): 11:45 7/31/08
Weather: p. sunny, breezy 75 deg F

Location Sketch



Sample Interval	Sample No.	Blows	PID (ppm)	Field Description	Well Schematic	Comments
				0 ft		
				5ft		
				auger through black medium sand to 16.0 ft without sampling		*(fill)*
				10 ft		
16 - 18'	SS-1	8	0	moist black medium sand, tr orange brick		16.0
Recovery =	1.5'	20	0			10:05 collect soil sample FJ-PZ-2 (16-23') for lab analysis
		16	0			
		12	0			18.0'
18 - 20'	SS-2	6	0	moist black medium sand, tr orange brick		
Recovery =	0.3'	9	0			
		13	0			
		12	0	**20 ft**		



Driller: Parratt-Wolff - Thoma, Carney
Inspector: G. Gould
Rig Type: CME 55 Truck
Drilling Method: 4.25" hollow stem auger

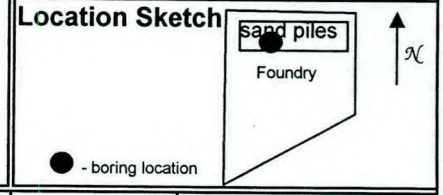
Gould Groundwater Investigations, Inc.
Project Name: Frazer and Jones, Solvay, NY
Project #: 1050
Boring Depth: 30.0 ft

Boring ID
PZ-2

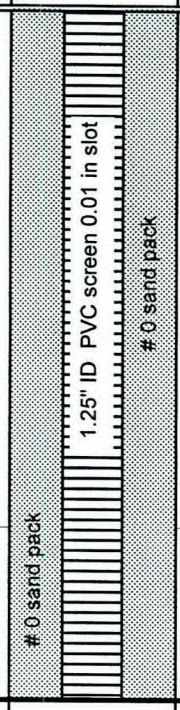
Groundwater Observations			
Date			
Time			
DTW			
Casing/Total Depth			

Start (Date & Time): 08:30 7/31/08
Finish (Date & Time): 11:45 7/31/08
Weather: p. sunny, breezy 75 deg F

Location Sketch



Sample Interval	Sample No.	Blows	PID (ppm)	Field Description	Well Schematic	Comments
20'-22'	SS-3	16	0	**20 ft** moist black medium sand, and red and white brick		20.0'
Recovery=	0.5'	12	0			
		8	0			
		6	0			
22' - 24'	SS-4	6	0	moist brick fragments (red and white)		
Recovery=	1.5'	11	0			
		6	0	▼ wet black medium sand		
		10	0			
24' - 26'	SS-5	20	0	wet black medium sand, tr brick fragments, tr. silt		*(fill)*
Recovery=	1.5'	22	0	**25ft**		
		16	0			
		15	0			
26' - 28'	SS-6	16	0	wet black medium sand, little gravel		
Recovery=	1.0'	15	0			
		15	0			
		16	0	wet gray silt, tr. Subrounded gravel		
28-30'	SS-7	6	0	wet gray silt, little mottled gray-green fine to coarse sand, tr.		*(native soil)*
Recovery=	2.0'	5	0	fine to medium gravel		
		4	0			
		3	0	**30 ft**		30.0'
				bottom of boring 30.0'		



Driller: Parratt-Wolff - Thoma, Carney
Inspector: G. Gould
Rig Type: CME 55 Truck
Drilling Method: 4.25" hollow stem auger

Gould Groundwater Investigations, Inc.
Project Name: Frazer and Jones, Solvay, NY
Project #: 1050
Boring Depth: 30.0 ft

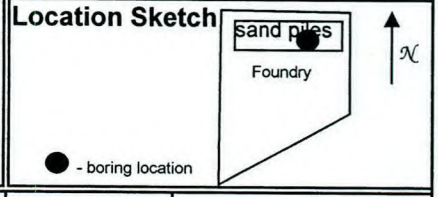
Boring ID
PZ-3

Sheet 1 of 2

Groundwater Observations			
Date			
Time			
DTW			
Casing/Total Depth			

Start (Date & Time): 12:45 7/31/08
Finish (Date & Time): 15:45 7/31/08
Weather: m. cloudy, breezy 80 deg F
showers

Location Sketch



Sample Interval	Sample No.	Blows	PID (ppm)	Field Description	Well Schematic	Comments
				0 ft		
				5ft		
				auger through black medium sand to 14.0 ft without sampling		
				10 ft		
14'-16'	SS-1	5	0	moist black medium sand, tr. brick		13:18 collect soil sample FJ-PZ-3 (14-18') for lab analysis
Recovery =	1.0'	4	0			
		6	0			
		7	0			16.0'
16 - 18'	SS-2	15	0	moist black medium sand, tr white brick		bentonite chip seal
Recovery =	2.0'	21	0			
		42	0			
		52	0			18.0'
18 - 20'	SS-3	7	0	moist black medium sand, tr gray brick, wood		
Recovery =	1.5'	19	0			
		6	0			
		9	0	**20 ft**		20.0'

1.25" dia. Sch 40 PVC riser
backfilled with soil cuttings
0 sand pack

Driller: Parratt-Wolff - Thoma, Carney
Inspector: G. Gould
Rig Type: CME 55 Truck
Drilling Method: 4.25" hollow stem auger

Gould Groundwater Investigations, Inc.
Project Name: Frazer and Jones, Solvay, NY
Project #: 1050
Boring Depth: 30.0 ft

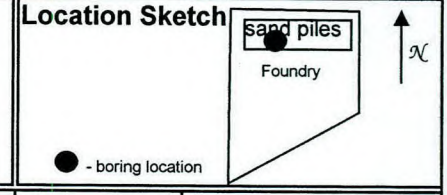
Boring ID
PZ-3

Sheet 2 of 2

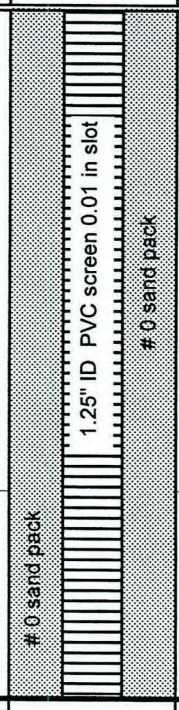
Groundwater Observations			
Date			
Time			
DTW			
Casing/Total Depth			

Start (Date & Time): 12:45 7/31/08
Finish (Date & Time): 15:45 7/31/08
Weather: m. cloudy, breezy 80 deg F
showers

Location Sketch



Sample Interval	Sample No.	Blows	PID (ppm)	Field Description	Well Schematic	Comments
20'-22'	SS-4	5	0	**20 ft** moist black medium sand, tr. brick, tr. glass		
Recovery=	1.5'	5	0			
		7	0			
		10	0			
22' - 24'	SS-5	15	0	moist black medium sand, tr. slag, tr. Wood		
Recovery=	2.0'	12	0			
		7	0	▼		
		7	0			*(fill)*
24' - 26'	SS-6	15	0	wet black medium sand, tr gray brick, wood		
Recovery=	1.5'	14	0	**25ft**		
		10	0			
		9	0			
26' - 28'	SS-7	11	0	wet black medium sand, some fine to coarse gravel		
Recovery=	2.0'	6	0			
		6	0	wet gray-brown silt		
		8	0			
28-30'	SS-8	4	0	wet gray-green mottled silt		*(native soil)*
Recovery=	1.0	3	0			
		3	0			
		6	0	**30 ft**		30.0'
				bottom of boring 30.0'		



Driller: Parratt-Wolff - Thoma, Carney
Inspector: G. Gould
Rig Type: CME 55 Truck
Drilling Method: 4.25" hollow stem auger

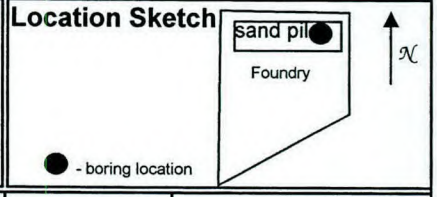
Gould Groundwater Investigations, Inc.
Project Name: Frazer and Jones, Solvay, NY
Project #: 1050
Boring Depth: 28.0 ft

Boring ID
PZ-4

Groundwater Observations			
Date			
Time			
DTW			
Casing/Total Depth			

Start (Date & Time): 08:00 8/1/08
Finish (Date & Time): 11:20 8/1/08
Weather: p. cloudy, 70 deg F
breezy

Location Sketch



Sample Interval	Sample No.	Blows	PID (ppm)	Field Description	Well Schematic	Comments
				0 ft		
2' - 4'	SS-1	5	0	moist black medium sand, tr. tan medium sand, tr. Brick		
Recovery =	2.0'	3	0			
		3	0			FJ-PZ-4(2'-6') collected at 8:10 for lab analysis
		4	0			
4' - 6'	SS-2	3	0	moist black medium sand, tr. tan med. sand		
Recovery =	2.0'	4	0	**5ft**		
		11	0			
		8	0			
				auger through black medium sand to 20.0 ft without sampling		
				10 ft		
						14.0'
				15 ft *auger through black medium sand*		bentonite chip seal
						16.0'
						18.0'
				20 ft		

1.25" dia. Sch 40 PVC riser
backfilled with soil cuttings
0 sand pack

Driller: Parratt-Wolff - Thoma, Carney
Inspector: G. Gould
Rig Type: CME 55 Truck
Drilling Method: 4.25" hollow stem auger

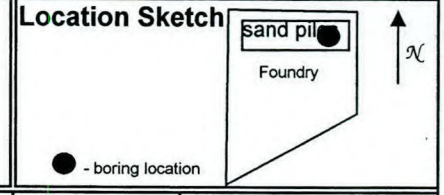
Gould Groundwater Investigations, Inc.
Project Name: Frazer and Jones, Solvay, NY
Project #: 1050
Boring Depth: 28.0 ft

Boring ID
PZ-4
Sheet 2 of 2

	Groundwater Observations		
Date			
Time			
DTW			
Casing/Total Depth			

Start (Date & Time): 08:00 8/1/08
Finish (Date & Time): 11:20 8/1/08
Weather: p. cloudy, 70 deg F
breezy

Location Sketch



Sample Interval	Sample No.	Blows	PID (ppm)	Field Description	Well Schematic	Comments
20'-22'	SS-3	12	0	**20 ft** moist black med. Sand, wood, orange brick		
Recovery=	2.0'	12	0			
		26	0	▼		*(fill)*
		14	0	wet black medium sand		
22' - 24'	SS-4	5	0	wet gray silt, tr. Fine to coarse sand, tr. Organic material		
Recovery=	2.0'	15	0			
		15	0	wet gray and brown layered silt and fine sand, tr. Clay		
		10	0			
24' - 26'	SS-5	5	0	wet gray and brown layered silt and fine sand, tr. Clay		*(layered silt and sand)*
Recovery=	1.0'	6	0	**25ft**		
		7	0			
		5	0			
26' - 28'	SS-6	4	0	wet gray and brown layered silt and fine sand, tr. Clay		
Recovery=	1.0'	4	0			
		4	0			
		4	0			28.0'
				bottom of boring 28.0 ft		
				30 ft		

APPENDIX E

Monitoring Well Records

Table E-1 Hydraulic Conductivity Testing Summary

Hydraulic Conductivity Test Data

Table E-2 Water Table Elevation Summary

Water Level Measurements

Well Development Records

TABLE E - 1.
Frazer and Jones
Site Investigation
HYDRAULIC CONDUCTIVITY TEST RESULTS

(results presented in cm/s)

Well	Falling Head	Rising Head	Geometric Mean
MW-1	1.64E-05	3.20E-05	2.29E-05
MW-2	3.47E-04	3.36E-04	3.41E-04
MW-3	2.82E-05	6.14E-04	1.32E-04
MW-4	1.89E-03	1.21E-03	1.51E-03
		Geometric mean	1.98E-04

Slug/Bail Test Data Sheet

For use with Hermit Datalogger and Bouwer & Rice Data Reduction Methods

Job Name: Frazer & Jones **Job No:** 1050 **Site Name:** FJ

On-Site personnel: G. Gould **Well ID:** MW-1

Well Characteristics

Well Depth: 12.66 Well Radius (Inches),Rc= 1"

Depth to water (static): 4.20 Boring Radius (inches),Rw= 4"

Water Level above well bottom,Lw= 8.46 Screen Thick.(feet),Le= 10'

Saturated Aq. Thick.(feet), H= 8.46

Equipment Specs Slug diameter 1"

~~Hermit~~ Minitroll Unit No. — Slug length 6'

Transducer (PSI): 30 Transducer Serial No. 7577

Slug (Falling Head) Test

Date: 10/22/08

Start Time: 9:23

Hermit Ref. value (depth to water) 4.20

XD = 6.015

~~Hermit~~ Minitroll Test No: 1

****

Backup data

(read from Hermit display)

Time (min)	WL (feet)	Time (min)	WL (feet)
110 points			

Finish Time 9:41 Finish ~~DTW~~ XD 6.078

Time: 9:41 Date: 10/22/08

Download file (Header & data) MW-1 In

Download file (data only)

Bail (Rising Head) Test

Date: 10/22

Start Time: 9:44

Hermit Ref. value (depth to water) —

XD = 6.098

Hermit Test No: 2

****

Backup data

(read from Hermit display)

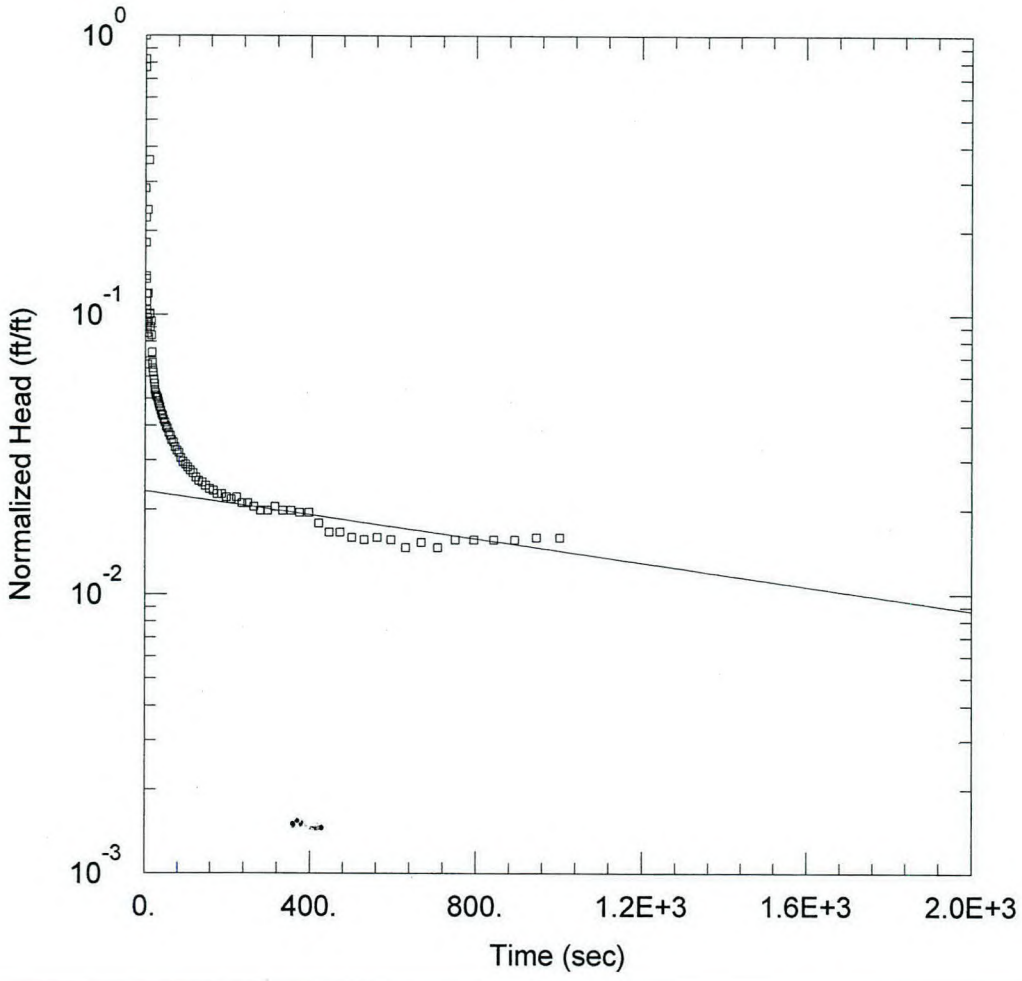
Time (min)	WL (feet)	Time (min)	WL (feet)
105 points			

Finish Time 9:58 Finish DTW 6.051

Time: Date:

Download file (Header & data)

Download file (data only)



FALLING HEAD

Data Set: C:\...\MW-1 in.aqt
Date: 11/19/08 Time: 21:34:49

PROJECT INFORMATION

Company: Gould Groundwater
Client: Frazer and Jones
Project: 1050
Location: Solvay, NY
Test Well: MW-1
Test Date: 10/22/08

AQUIFER DATA

Saturated Thickness: 8.46 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-1)

Initial Displacement: 3.076 ft
Total Well Penetration Depth: 12.66 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 8.46 ft
Screen Length: 10. ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.643E-5 cm/sec
y0 = 0.07173 ft

Data Set: C:\Documents and Settings\Gerry\My Documents_GGI_Jobs - recent\1050 - F&J Site Investigation\Slug
Title: Falling Head
Date: 11/19/08
Time: 21:35:13

PROJECT INFORMATION

Company: Gould Groundwater
Client: Frazer and Jones
Project: 1050
Location: Solvay, NY
Test Date: 10/22/08
Test Well: MW-1

AQUIFER DATA

Saturated Thickness: 8.46 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: MW-1

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 3.076 ft
Static Water Column Height: 8.46 ft
Casing Radius: 0.08333 ft
Well Radius: 0.3333 ft
Well Skin Radius: 1. ft
Screen Length: 10. ft
Total Well Penetration Depth: 12.66 ft

No. of Observations: 105

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	3.076	51.1	0.122
0.3	-0.314	54.2	0.12
0.6	0.875	57.5	0.116
0.9	2.371	61.	0.113
1.2	2.532	64.7	0.109
1.5	-0.049	68.6	0.107
1.8	0.558	72.8	0.103
2.1	0.686	77.2	0.1
2.4	0.413	81.9	0.098
2.7	0.423	86.9	0.094
3.	0.364	92.2	0.091
3.3	0.343	97.8	0.089
3.6	0.319	103.7	0.087
3.9	0.3	110.	0.085
4.2	0.287	116.6	0.083
4.5	0.276	123.6	0.08
4.9	0.263	131.1	0.078
5.2	0.203	139.	0.077
5.6	-0.224	147.4	0.075
6.	0.732	156.3	0.073
6.5	-0.294	165.7	0.072
6.9	0.366	175.7	0.07
7.4	0.291	186.3	0.07
8.	0.255	197.5	0.068
8.5	-2.019	209.4	0.067
9.1	1.104	222.	0.068
9.8	-0.337	235.3	0.065
10.4	0.308	249.4	0.065
11.1	0.311	264.3	0.063
11.9	0.278	280.1	0.061
12.7	-0.102	296.9	0.061
13.5	-0.782	314.7	0.063
14.4	0.291	333.5	0.061

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
15.3	0.259	353.4	0.061
16.3	0.225	374.5	0.06
17.4	0.206	396.9	0.06
18.5	0.197	420.6	0.055
19.7	0.19	445.7	0.051
20.9	0.18	472.3	0.051
22.3	0.174	500.5	0.049
23.7	0.165	530.4	0.048
25.2	0.161	562.	0.049
26.7	0.158	595.5	0.048
28.3	0.156	631.	0.045
30.	0.154	668.6	0.047
31.8	0.15	708.4	0.045
33.7	0.146	750.6	0.048
35.8	0.143	795.3	0.048
38.	0.139	842.7	0.048
40.3	0.135	892.9	0.048
42.8	0.133	946.	0.049
45.4	0.129	1002.3	0.049
48.2	0.126		

SOLUTION

Slug Test
Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
ln(Re/rw): 2.671

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	1.643E-5	cm/sec
y0	0.07173	ft

T = K*b = 0.004238 cm²/sec

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	Approx. C.I.	t-Ratio	
K	0.017	0.003949	+/- 0.00783	4.304	cm/sec
y0	1.935	0.2868	+/- 0.5688	6.747	ft

C.I. is approximate 95% confidence interval for parameter
t-ratio = estimate/std. error
No estimation window

T = K*b = 4.382 cm²/sec

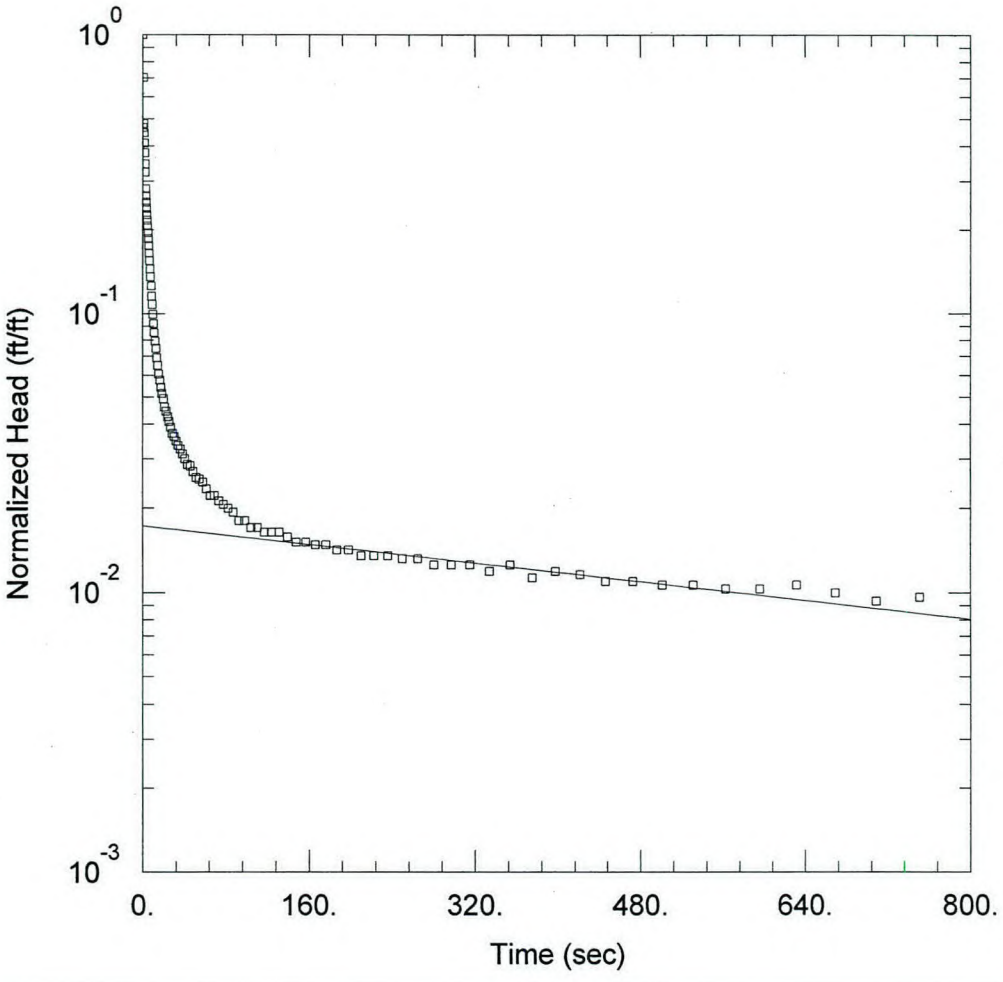
Parameter Correlations

	K	y0
K	1.00	0.66
y0	0.66	1.00

Residual Statistics

for weighted residuals

Sum of Squares . . . . . 18.2 ft^2
Variance . . . . . 0.1767 ft^2
Std. Deviation . . . . . 0.4203 ft
Mean . . . . . 0.06536 ft
No. of Residuals 105
No. of Estimates 2



RISING HEAD

Data Set: C:\...\MW-1 out.aqt
Date: 11/19/08 Time: 21:35:41

PROJECT INFORMATION

Company: Gould Groundwater
Client: Frazer and Jones
Project: 1050
Location: Solvay, NY
Test Well: MW-1
Test Date: 10/22/08

AQUIFER DATA

Saturated Thickness: 8.46 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-1)

Initial Displacement: 3.107 ft
Total Well Penetration Depth: 12.66 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 8.46 ft
Screen Length: 10. ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 3.195E-5 cm/sec
y0 = 0.05369 ft

Data Set: C:\Documents and Settings\Gerry\My Documents_GGI_Jobs - recent\1050 - F&J Site Investigation\Slug
Title: Rising Head
Date: 11/19/08
Time: 21:35:58

PROJECT INFORMATION

Company: Gould Groundwater
Client: Frazer and Jones
Project: 1050
Location: Solvay, NY
Test Date: 10/22/08
Test Well: MW-1

AQUIFER DATA

Saturated Thickness: 8.46 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: MW-1

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 3.107 ft
Static Water Column Height: 8.46 ft
Casing Radius: 0.08333 ft
Well Radius: 0.3333 ft
Well Skin Radius: 1. ft
Screen Length: 10. ft
Total Well Penetration Depth: 12.66 ft

No. of Observations: 100

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	3.107	43.1	0.089
0.3	1.445	45.7	0.088
0.6	2.188	48.5	0.084
0.9	1.494	51.4	0.08
1.2	1.387	54.5	0.079
1.5	1.271	57.8	0.077
1.8	1.175	61.3	0.073
2.1	1.073	65.	0.069
2.4	1.004	68.9	0.069
3.	0.874	73.1	0.066
3.3	0.825	77.5	0.064
3.6	0.782	82.2	0.062
3.9	0.743	87.2	0.06
4.2	0.705	92.5	0.056
4.5	0.673	98.1	0.056
4.8	0.641	104.	0.053
5.2	0.608	110.3	0.053
5.5	0.577	116.9	0.051
5.9	0.544	123.9	0.051
6.3	0.512	131.4	0.051
6.8	0.482	139.3	0.049
7.2	0.45	147.7	0.047
7.7	0.421	156.6	0.047
8.3	0.39	166.	0.046
8.8	0.359	176.	0.046
9.4	0.335	186.6	0.044
10.1	0.309	197.8	0.044
10.7	0.286	209.7	0.042
11.4	0.265	222.3	0.042
12.2	0.247	235.6	0.042
13.	0.232	249.7	0.041
13.8	0.215	264.6	0.041
14.7	0.202	280.4	0.039

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
15.6	0.188	297.2	0.039
16.6	0.179	315.	0.039
17.7	0.168	333.8	0.037
18.8	0.16	353.7	0.039
20.	0.153	374.8	0.035
21.2	0.143	397.2	0.037
22.6	0.138	420.9	0.036
24.	0.132	446.	0.034
25.5	0.127	472.6	0.034
27.	0.121	500.8	0.033
28.6	0.115	530.7	0.033
30.3	0.112	562.3	0.032
32.1	0.108	595.8	0.032
34.	0.104	631.3	0.033
36.1	0.101	668.9	0.031
38.3	0.097	708.7	0.029
40.6	0.093	750.9	0.03

SOLUTION

Slug Test
Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
ln(Re/rw): 2.671

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	3.195E-5	cm/sec
y0	0.05369	ft

$T = K*b = 0.008238$ cm²/sec

Slug/Bail Test Data Sheet

For use with Hermit Datalogger and Bouwer & Rice Data Reduction Methods

Job Name: Frazer & Jones **Job No:** 1050 **Site Name:** F&J

On-Site personnel: G. Gould **Well ID:** MW-2

Well Characteristics

Well Depth: 14.36 Well Radius (Inches),Rc= 1"

Depth to water (static): 2.46 Boring Radius (inches),Rw= 4"

Water Level above well bottom,Lw= 11.90 Screen Thick.(feet),Le= 10'

Saturated Aq. Thick.(feet), H= 11.9

Equipment Specs

~~Hermit~~ Unit No. —

Transducer (PSI): 30

Slug diameter 1"

Slug length 6'

Transducer Serial No. 7577

Slug (Falling Head) Test

Date: 10/22/08

Start Time: 10:34

Minitroll ~~Hermit~~ Ref. value (depth to water) 2.46

XD = 11.067

Minitroll ~~Hermit~~ Test No: 3

MW-2 In

Backup data

(read from Hermit display)

Time (min)	WL (feet)	Time (min)	WL (feet)
111 points			

Finish Time 10:52 Finish DTW 2.46

Time: — Date: —

Download file (Header & data) —

Download file (data only) —

Bail (Rising Head) Test

Date: 10/22/08

Start Time: 10:54

Minitroll ~~Hermit~~ Ref. value (depth to water) 2.46

XD = 11.066

Minitroll ~~Hermit~~ Test No: 4

Backup data

(read from Hermit display)

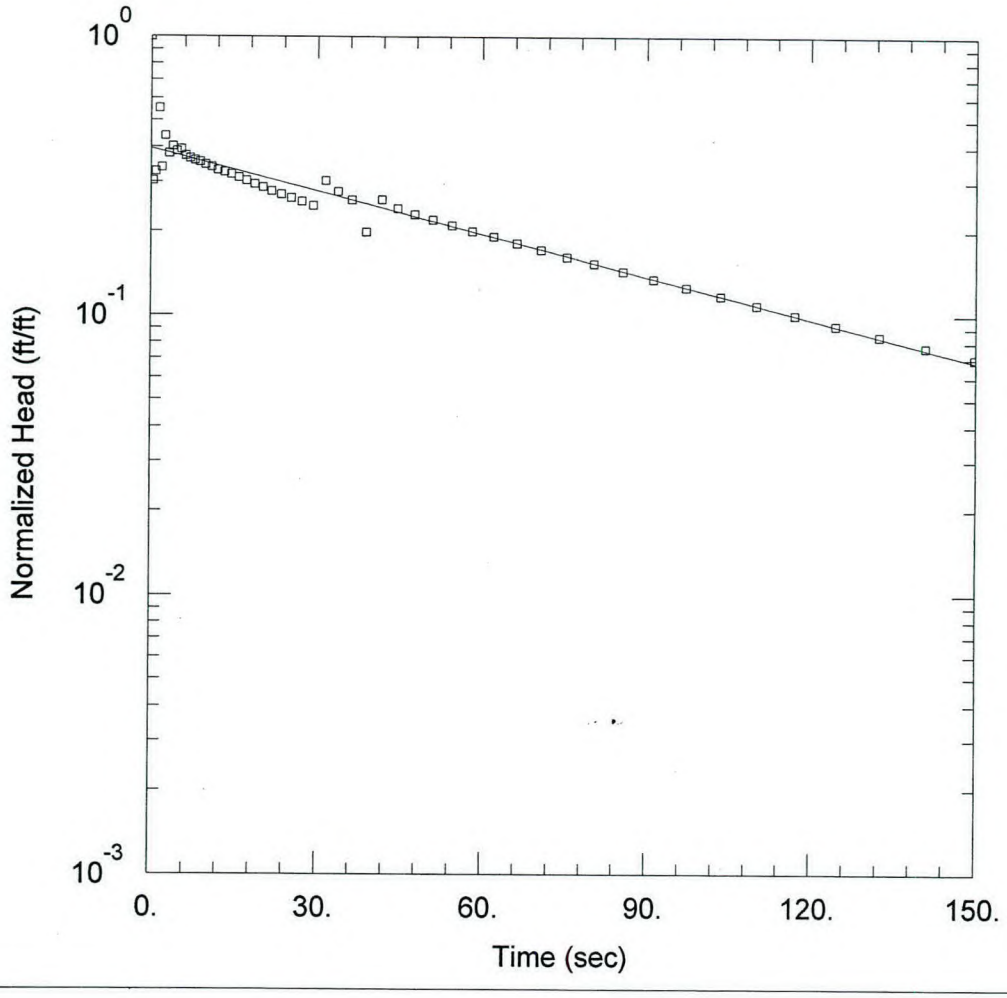
Time (min)	WL (feet)	Time (min)	WL (feet)
110 points			

Finish Time 11:12 Finish DTW 2.46

Time: 11:12 Date: —

Download file (Header & data) —

Download file (data only) —



FALLING HEAD

Data Set: C:\...\MW-2 in.aqt
Date: 11/19/08 Time: 21:36:20

PROJECT INFORMATION

Company: Gould Groundwater
Client: Frazer and Jones
Project: 1050
Location: Solvay, NY
Test Well: MW-2
Test Date: 10/22/08

AQUIFER DATA

Saturated Thickness: 11.9 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-2)

Initial Displacement: 2.969 ft
Total Well Penetration Depth: 14.36 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 11.9 ft
Screen Length: 10. ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0003467 cm/sec
y0 = 1.174 ft

Data Set: C:\Documents and Settings\Gerry\My Documents_GGI_Jobs - recent\1050 - F&J Site Investigation\Slug
Title: Falling Head
Date: 11/19/08
Time: 21:36:35

PROJECT INFORMATION

Company: Gould Groundwater
Client: Frazer and Jones
Project: 1050
Location: Solvay, NY
Test Date: 10/22/08
Test Well: MW-2

AQUIFER DATA

Saturated Thickness: 11.9 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: MW-2

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.969 ft
Static Water Column Height: 11.9 ft
Casing Radius: 0.08333 ft
Well Radius: 0.3333 ft
Well Skin Radius: 1. ft
Screen Length: 10. ft
Total Well Penetration Depth: 14.36 ft

No. of Observations: 86

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	2.969	85.7	0.428
0.4	0.899	91.3	0.402
0.9	0.972	97.2	0.375
1.5	1.639	103.5	0.349
2.	1.005	110.1	0.323
2.6	1.303	117.1	0.298
3.3	1.127	124.6	0.274
3.9	1.194	132.5	0.251
4.6	1.147	140.9	0.229
5.4	1.164	149.8	0.208
6.2	1.106	159.2	0.186
7.	1.082	169.2	0.167
7.9	1.063	179.8	0.148
8.8	1.052	191.	0.131
9.8	1.027	202.9	0.114
10.9	1.01	215.5	0.097
12.	0.984	228.8	0.084
13.2	0.967	242.9	0.069
14.4	0.95	257.8	0.06
15.8	0.924	273.6	0.048
17.2	0.901	290.4	0.037
18.7	0.873	308.2	0.028
20.2	0.851	327.	0.019
21.8	0.826	346.9	0.013
23.5	0.804	368.	0.007
25.3	0.779	390.4	0.004
27.2	0.757	414.1	-0.002
29.3	0.732	439.2	-0.006
31.5	0.899	465.8	-0.008
33.8	0.821	494.	-0.011
36.3	0.768	523.9	-0.013
38.9	0.59	555.5	-0.015
41.7	0.77	589.	-0.015

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
44.6	0.715	624.5	-0.018
47.7	0.683	662.1	-0.018
51.	0.653	701.9	-0.018
54.5	0.625	744.1	-0.02
58.2	0.595	788.8	-0.02
62.1	0.569	836.2	-0.02
66.3	0.539	886.4	-0.02
70.7	0.511	939.5	-0.02
75.4	0.482	995.8	-0.018
80.4	0.456	1055.4	-0.018

SOLUTION

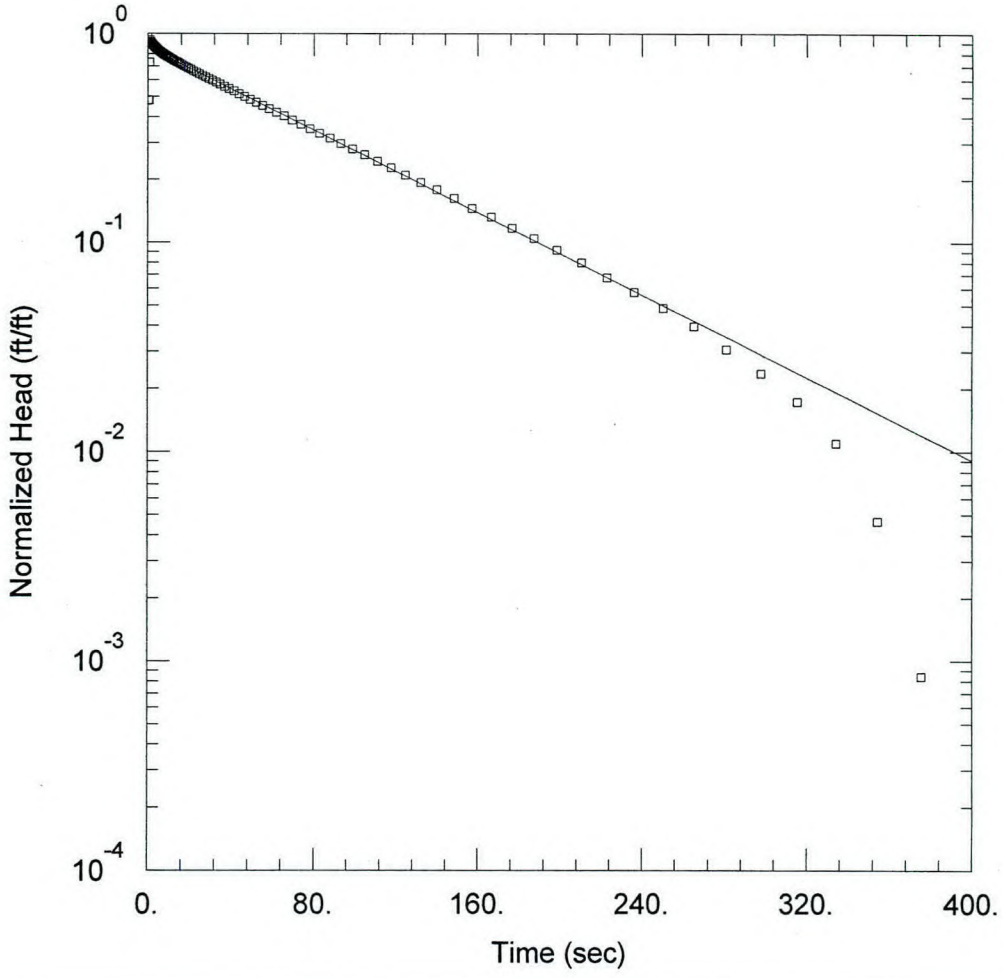
Slug Test
Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
ln(Re/rw): 2.794

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.0003467	cm/sec
y0	1.174	ft

T = K*b = 0.1257 cm²/sec



RISING HEAD

Data Set: C:\...\MW-2 out.aqt
Date: 11/19/08 Time: 21:36:51

PROJECT INFORMATION

Company: Gould Groundwater
Client: Frazer and Jones
Project: 1050
Location: Solvay, NY
Test Well: MW-2
Test Date: 10/22/08

AQUIFER DATA

Saturated Thickness: 11.9 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-2)

Initial Displacement: 2.373 ft
Total Well Penetration Depth: 14.36 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 11.9 ft
Screen Length: 10. ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0003359 cm/sec
y0 = 2.032 ft

Data Set: C:\Documents and Settings\Gerry\My Documents_GGI_Jobs - recent\1050 - F&J Site Investigation\Slug
Title: Rising Head
Date: 11/19/08
Time: 21:37:04

PROJECT INFORMATION

Company: Gould Groundwater
Client: Frazer and Jones
Project: 1050
Location: Solvay, NY
Test Date: 10/22/08
Test Well: MW-2

AQUIFER DATA

Saturated Thickness: 11.9 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: MW-2

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.373 ft
Static Water Column Height: 11.9 ft
Casing Radius: 0.08333 ft
Well Radius: 0.3333 ft
Well Skin Radius: 1. ft
Screen Length: 10. ft
Total Well Penetration Depth: 14.36 ft

No. of Observations: 91

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	2.373	29.2	1.443
0.3	1.138	30.9	1.417
0.6	1.142	32.7	1.385
0.9	1.729	34.6	1.358
1.2	2.212	36.7	1.325
1.5	2.174	38.9	1.291
1.8	2.15	41.2	1.259
2.1	2.123	43.7	1.223
2.4	2.108	46.3	1.187
2.7	2.088	49.1	1.15
3.	2.076	52.	1.114
3.3	2.052	55.1	1.077
3.6	2.041	58.4	1.037
3.9	2.024	61.9	0.998
4.2	2.014	65.6	0.958
4.5	1.999	69.5	0.917
4.8	1.986	73.7	0.875
5.1	1.977	78.1	0.834
5.4	1.964	82.8	0.793
5.8	1.951	87.8	0.75
6.1	1.941	93.1	0.708
6.5	1.926	98.7	0.665
6.9	1.915	104.6	0.624
7.4	1.898	110.9	0.582
7.8	1.887	117.5	0.541
8.3	1.87	124.5	0.5
8.9	1.855	132.	0.46
9.4	1.843	139.9	0.425
10.	1.828	148.3	0.387
10.7	1.813	157.2	0.347
11.3	1.796	166.6	0.314
12.	1.78	176.6	0.278
12.8	1.763	187.2	0.248

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
13.6	1.744	198.4	0.218
14.4	1.725	210.3	0.19
15.3	1.704	222.9	0.161
16.2	1.685	236.2	0.137
17.2	1.665	250.3	0.115
18.3	1.642	265.2	0.094
19.4	1.622	281.	0.073
20.6	1.599	297.8	0.056
21.8	1.573	315.6	0.041
23.2	1.548	334.4	0.026
24.6	1.522	354.3	0.011
26.1	1.496	375.4	0.002
27.6	1.469		

SOLUTION

Slug Test
Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
ln(Re/rw): 2.794

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.0003359	cm/sec
y0	2.032	ft

$T = K*b = 0.1218$ cm²/sec

Slug/Bail Test Data Sheet

For use with Hermit Datalogger and Bouwer & Rice Data Reduction Methods

Job Name: Frazer & Jones **Job No:** 1050 **Site Name:** FJ

On-Site personnel: G. Gould **Well ID:** MW-3

Well Characteristics

Well Depth: 30.46 Well Radius (Inches),Rc= 1"

Depth to water (static): 24.92 Boring Radius (inches),Rw= 4"

Water Level above well bottom,Lw= 5.54 Screen Thick.(feet),Le= 10

Saturated Aq. Thick.(feet), H= 5.54

Equipment Specs

Minitroll ~~Hermit~~ Unit No. — Slug diameter 1"

Transducer (PSI): 30 Slug length 6'

Transducer Serial No. 7577

Slug (Falling Head) Test

Date: 10/22/08

Minitroll Start Time: 11:31

~~Hermit~~ Ref. value (depth to water) —

Minitroll XD = 5.385

~~Hermit~~ Test No: 5

********** ********** ********** **********

Backup data

(read from Hermit display)

Time (min)	WL (feet)	Time (min)	WL (feet)
115 pounds			

Finish Time 11:54 Finish DTW —

Time: _____ Date: _____

Download file (Header & data) _____

Download file (data only) _____

Bail (Rising Head) Test

Date: 10/22/08

Minitroll Start Time: 11:57

~~Hermit~~ Ref. value (depth to water) —

minitroll XD = 5.28

~~Hermit~~ Test No: 6

********** ********** ********** **********

Backup data

(read from Hermit display)

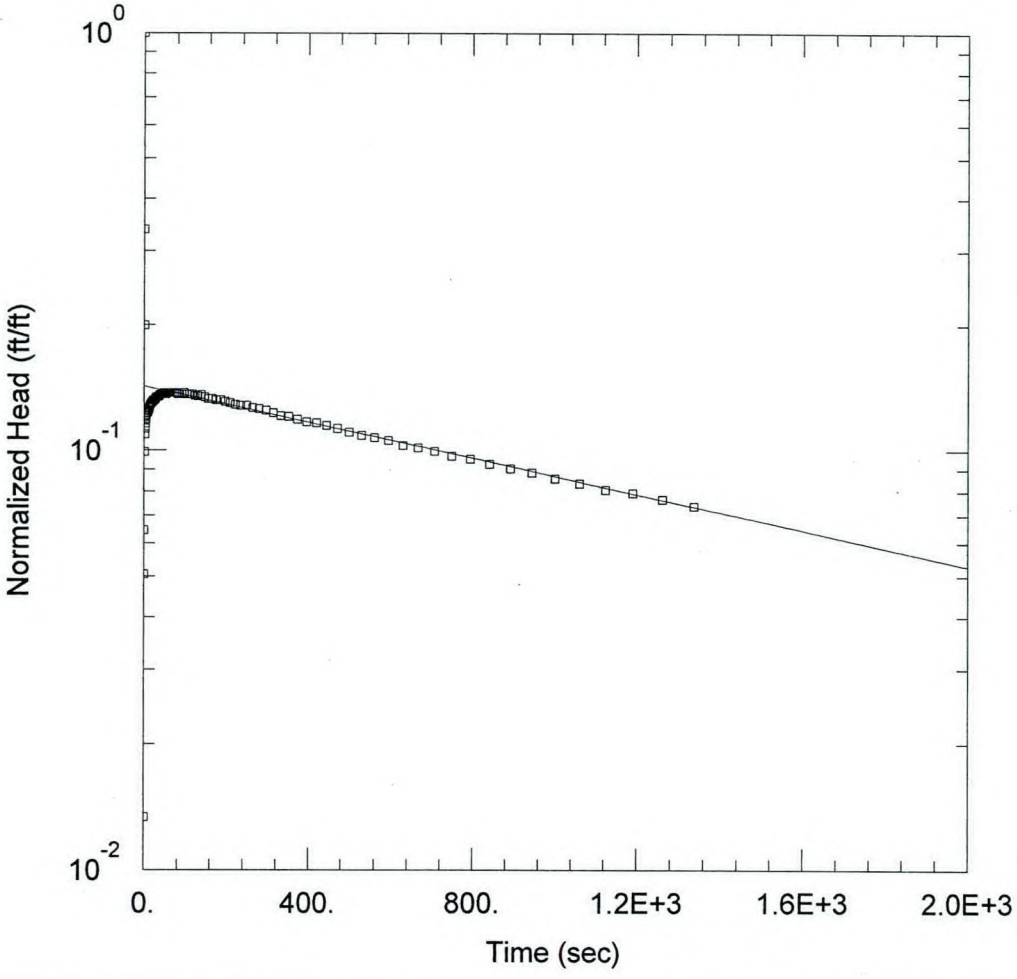
Time (min)	WL (feet)	Time (min)	WL (feet)

Finish Time 12:32 Finish DTW

Time: _____ Date: _____

Download file (Header & data) _____

Download file (data only) _____



FALLING HEAD

Data Set: C:\...\MW-3 in.aqt
Date: 11/19/08 Time: 21:37:25

PROJECT INFORMATION

Company: Gould Groundwater
Client: Frazer and Jones
Project: 1050
Location: Solvay, NY
Test Well: MW-3
Test Date: 10/22/08

AQUIFER DATA

Saturated Thickness: 5.54 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-3)

Initial Displacement: 2.17 ft
Total Well Penetration Depth: 30.46 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 5.54 ft
Screen Length: 10. ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.818E-5 cm/sec
y0 = 0.3096 ft

Data Set: C:\Documents and Settings\Gerry\My Documents_GGI_Jobs - recent\1050 - F&J Site Investigation\Slug
Title: Falling Head
Date: 11/19/08
Time: 21:37:38

PROJECT INFORMATION

Company: Gould Groundwater
Client: Frazer and Jones
Project: 1050
Location: Solvay, NY
Test Date: 10/22/08
Test Well: MW-3

AQUIFER DATA

Saturated Thickness: 5.54 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: MW-3

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.17 ft
Static Water Column Height: 5.54 ft
Casing Radius: 0.08333 ft
Well Radius: 0.3333 ft
Well Skin Radius: 1. ft
Screen Length: 10. ft
Total Well Penetration Depth: 30.46 ft

No. of Observations: 107

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	2.17	63.8	0.298
0.3	0.14	67.7	0.298
0.6	0.11	71.9	0.298
0.9	0.734	76.3	0.298
1.2	0.029	81.	0.296
1.5	0.433	86.	0.296
1.8	0.215	91.3	0.296
2.1	0.269	96.9	0.298
2.4	0.271	102.8	0.296
2.7	0.237	109.1	0.296
3.	0.267	115.7	0.296
3.3	0.245	122.7	0.294
3.6	0.262	130.2	0.293
4.	0.252	138.1	0.295
4.3	0.26	146.5	0.291
4.7	0.258	155.4	0.289
5.1	0.262	164.8	0.289
5.6	0.262	174.8	0.287
6.	0.264	185.4	0.287
6.5	0.266	196.6	0.284
7.1	0.267	208.5	0.282
7.6	0.267	221.1	0.28
8.2	0.267	234.4	0.278
8.9	0.267	248.5	0.278
9.5	0.269	263.4	0.275
10.2	0.269	279.2	0.273
11.	0.271	296.	0.271
11.8	0.273	313.8	0.267
12.6	0.273	332.6	0.263
13.5	0.275	352.5	0.262
14.4	0.277	373.6	0.258
15.4	0.279	396.	0.254
16.5	0.281	419.7	0.253

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
17.6	0.281	444.8	0.249
18.8	0.283	471.4	0.245
20.	0.283	499.6	0.24
21.4	0.285	529.5	0.236
22.8	0.285	561.1	0.233
24.3	0.287	594.6	0.229
25.8	0.287	630.1	0.223
27.4	0.288	667.7	0.22
29.1	0.29	707.5	0.216
30.9	0.292	749.7	0.21
32.8	0.292	794.4	0.207
34.9	0.292	841.8	0.201
37.1	0.294	892.	0.196
39.4	0.296	945.1	0.192
41.9	0.296	1001.4	0.186
44.5	0.296	1061.	0.181
47.3	0.298	1124.2	0.175
50.2	0.296	1191.1	0.172
53.3	0.296	1262.	0.166
56.6	0.298	1337.1	0.16
60.1	0.298		

SOLUTION

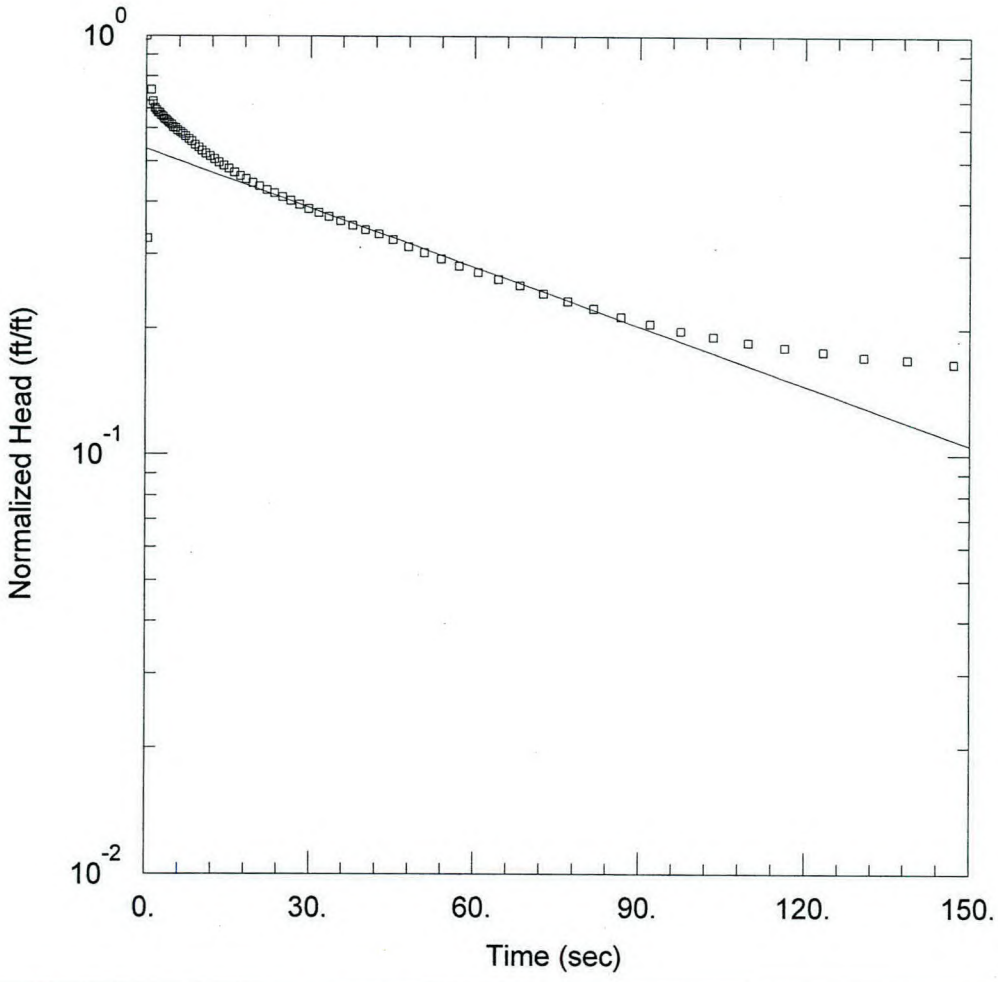
Slug Test
Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
ln(Re/rw): 2.966

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	2.818E-5	cm/sec
y0	0.3096	ft

T = K*b = 0.004758 cm²/sec



RISING HEAD

Data Set: C:\...\MW-3 out.aqt
Date: 11/20/08 Time: 21:38:35

PROJECT INFORMATION

Company: Gould Groundwater
Client: Frazer and Jones
Project: 1050
Location: Solvay, NY
Test Well: MW-3
Test Date: 10/22/08

AQUIFER DATA

Saturated Thickness: 5.54 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-3)

Initial Displacement: 2.124 ft
Total Well Penetration Depth: 30.46 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 5.54 ft
Screen Length: 10. ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0006141 cm/sec
y0 = 1.138 ft

Data Set: C:\Documents and Settings\Gerry\My Documents_GGI_Jobs - recent\1050 - F&J Site Investigation\Slug
Title: Rising Head
Date: 11/20/08
Time: 21:39:11

PROJECT INFORMATION

Company: Gould Groundwater
Client: Frazer and Jones
Project: 1050
Location: Solvay, NY
Test Date: 10/22/08
Test Well: MW-3

AQUIFER DATA

Saturated Thickness: 5.54 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: MW-3

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.124 ft
Static Water Column Height: 5.54 ft
Casing Radius: 0.08333 ft
Well Radius: 0.3333 ft
Well Skin Radius: 1. ft
Screen Length: 10. ft
Total Well Penetration Depth: 30.46 ft

No. of Observations: 116

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	2.124	72.5	0.513
0.3	0.694	76.9	0.493
0.6	1.453	81.6	0.474
0.9	1.577	86.6	0.453
1.2	1.478	91.9	0.436
1.5	1.427	97.5	0.419
1.8	1.41	103.4	0.406
2.1	1.391	109.7	0.393
2.4	1.39	116.3	0.383
2.7	1.371	123.3	0.374
3.	1.359	130.8	0.364
3.3	1.344	138.7	0.359
3.6	1.335	147.1	0.351
3.9	1.324	156.	0.347
4.2	1.314	165.4	0.342
4.6	1.301	175.4	0.338
4.9	1.284	186.	0.334
5.3	1.277	197.2	0.332
5.7	1.26	209.1	0.327
6.2	1.249	221.7	0.325
6.6	1.236	235.	0.321
7.1	1.221	249.1	0.317
7.7	1.202	264.	0.313
8.2	1.187	279.8	0.31
8.8	1.164	296.6	0.308
9.5	1.147	314.4	0.304
10.1	1.128	333.2	0.3
10.8	1.109	353.1	0.298
11.6	1.093	374.2	0.297
12.4	1.076	396.6	0.291
13.2	1.057	420.3	0.289
14.1	1.038	445.4	0.285
15.	1.021	472.	0.284

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
16.	1.	500.2	0.28
17.1	0.981	530.1	0.278
18.2	0.965	561.7	0.274
19.4	0.944	595.2	0.273
20.6	0.927	630.7	0.269
22.	0.908	668.3	0.267
23.4	0.891	708.1	0.265
24.9	0.872	750.3	0.26
26.4	0.856	795.	0.26
28.	0.837	842.4	0.256
29.7	0.818	892.6	0.252
31.5	0.801	945.7	0.251
33.4	0.784	1002.	0.249
35.5	0.767	1061.6	0.245
37.7	0.748	1124.8	0.243
40.	0.73	1191.7	0.241
42.5	0.713	1262.6	0.238
45.1	0.69	1337.7	0.236
47.9	0.664	1417.2	0.234
50.8	0.643	1501.5	0.23
53.9	0.621	1590.8	0.228
57.2	0.598	1685.3	0.227
60.7	0.577	1785.4	0.223
64.4	0.555	1891.5	0.221
68.3	0.536	2003.9	0.208

SOLUTION

Slug Test
Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
ln(Re/rw): 2.966

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.0006141	cm/sec
y0	1.138	ft

T = K*b = 0.1037 cm²/sec

Slug/Bail Test Data Sheet

For use with Hermit Datalogger and Bouwer & Rice Data Reduction Methods

Job Name: Frazer & Jones **Job No:** 1050 **Site Name:** F&J

On-Site personnel: G. Gould **Well ID:** MW-4

Well Characteristics

Well Depth:	27.34	Well Radius (Inches), Rc=	1"
Depth to water (static):	22.86	Boring Radius (inches), Rw=	4"
Water Level above well bottom, Lw=	4.48	Screen Thick. (feet), Le=	10'
		Saturated Aq. Thick. (feet), H=	4.48'

Equipment Specs

~~Hermit~~ Mini troll Unit No. ~~Hermit~~ Mini troll

Transducer (PSI): 30

Slug diameter 1"

Slug length 6'

Transducer Serial No. 7577

Slug (Falling Head) Test

Date: 10/22/08

~~Hermit~~ Mini troll Start Time: 12:42

~~Hermit~~ Mini troll Ref. value (depth to water)

~~Hermit~~ Mini troll XD = 4.336

~~Hermit~~ Test No: 7

Backup data (read from Hermit display)

Time (min)	WL (feet)	Time (min)	WL (feet)

Finish Time 13:08 Finish DTW (XD) 4.310

Time: _____ Date: _____

Download file (Header & data) _____

Download file (data only) _____

Bail (Rising Head) Test

Date: 10/22/08

~~Hermit~~ Mini troll Start Time: 13:10

~~Hermit~~ Mini troll Ref. value (depth to water)

~~Hermit~~ Mini troll XD = 4.309

~~Hermit~~ Test No: 8

Backup data (read from Hermit display)

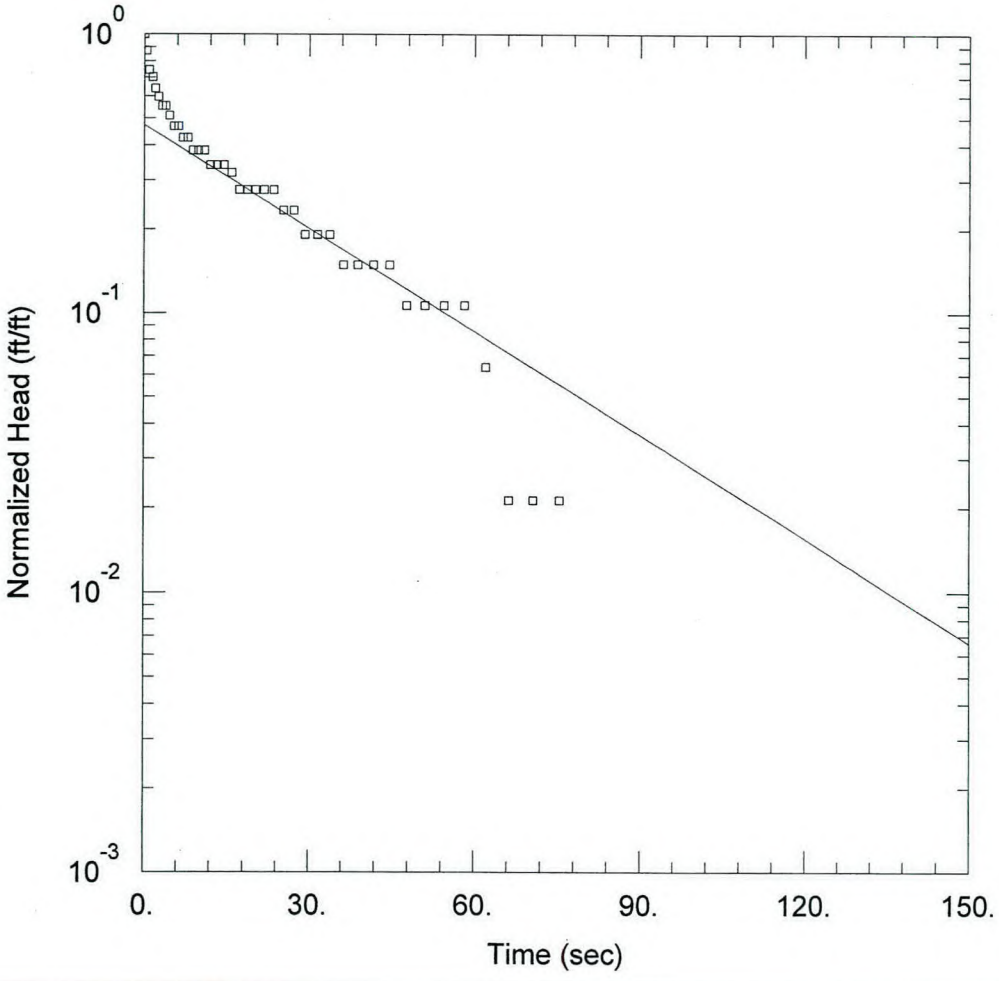
Time (min)	WL (feet)	Time (min)	WL (feet)

Finish Time _____ Finish DTW _____

Time: _____ Date: _____

Download file (Header & data) _____

Download file (data only) _____



FALLING HEAD

Data Set: C:\...\MW-4 in.aqt
Date: 11/19/08 Time: 21:38:00

PROJECT INFORMATION

Company: Gould Groundwater
Client: Frazer and Jones
Project: 1050
Location: Solvay, NY
Test Well: MW-4
Test Date: 10/22/08

AQUIFER DATA

Saturated Thickness: 4.48 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-4 in)

Initial Displacement: 0.047 ft
Total Well Penetration Depth: 27.34 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 4.48 ft
Screen Length: 10. ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.001886 cm/sec
y0 = 0.02224 ft

Data Set: C:\Documents and Settings\Gerry\My Documents_GGI_Jobs - recent\1050 - F&J Site Investigation\Slug
Title: Falling Head
Date: 11/19/08
Time: 21:38:17

PROJECT INFORMATION

Company: Gould Groundwater
Client: Frazer and Jones
Project: 1050
Location: Solvay, NY
Test Date: 10/22/08
Test Well: MW-4

AQUIFER DATA

Saturated Thickness: 4.48 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: MW-4 in

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 0.047 ft
Static Water Column Height: 4.48 ft
Casing Radius: 0.08333 ft
Well Radius: 0.3333 ft
Well Skin Radius: 1. ft
Screen Length: 10. ft
Total Well Penetration Depth: 27.34 ft

No. of Observations: 92

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	0.047	103.5	-0.003
0.4	0.041	110.1	-0.003
0.9	0.035	117.1	-0.005
1.5	0.033	124.6	-0.005
2.	0.03	132.5	-0.005
2.6	0.028	140.9	-0.005
3.3	0.026	149.8	-0.007
3.9	0.026	159.2	-0.007
4.6	0.024	169.2	-0.008
5.4	0.022	179.8	-0.008
6.2	0.022	191.	-0.008
7.	0.02	202.9	-0.01
7.9	0.02	215.5	-0.01
8.8	0.018	228.8	-0.012
9.8	0.018	242.9	-0.012
10.9	0.018	257.8	-0.014
12.	0.016	273.6	-0.014
13.2	0.016	290.4	-0.016
14.4	0.016	308.2	-0.014
15.8	0.015	327.	-0.016
17.2	0.013	346.9	-0.018
18.7	0.013	368.	-0.018
20.2	0.013	390.4	-0.016
21.8	0.013	414.1	-0.018
23.5	0.013	439.2	-0.024
25.3	0.011	465.8	-0.02
27.2	0.011	494.	-0.02
29.3	0.009	523.9	-0.02
31.5	0.009	555.5	-0.02
33.8	0.009	589.	-0.022
36.3	0.007	624.5	-0.022
38.9	0.007	662.1	-0.022
41.7	0.007	701.9	-0.022

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
44.6	0.007	744.1	-0.024
47.7	0.005	788.8	-0.024
51.	0.005	836.2	-0.026
54.5	0.005	886.4	-0.024
58.2	0.005	939.5	-0.024
62.1	0.003	995.8	-0.026
66.3	0.001	1055.4	-0.024
70.7	0.001	1118.6	-0.026
75.4	0.001	1185.5	-0.026
80.4	-0.001	1256.4	-0.026
85.7	-0.001	1331.5	-0.026
91.3	-0.001	1411.	-0.026
97.2	-0.003	1495.3	-0.026

SOLUTION

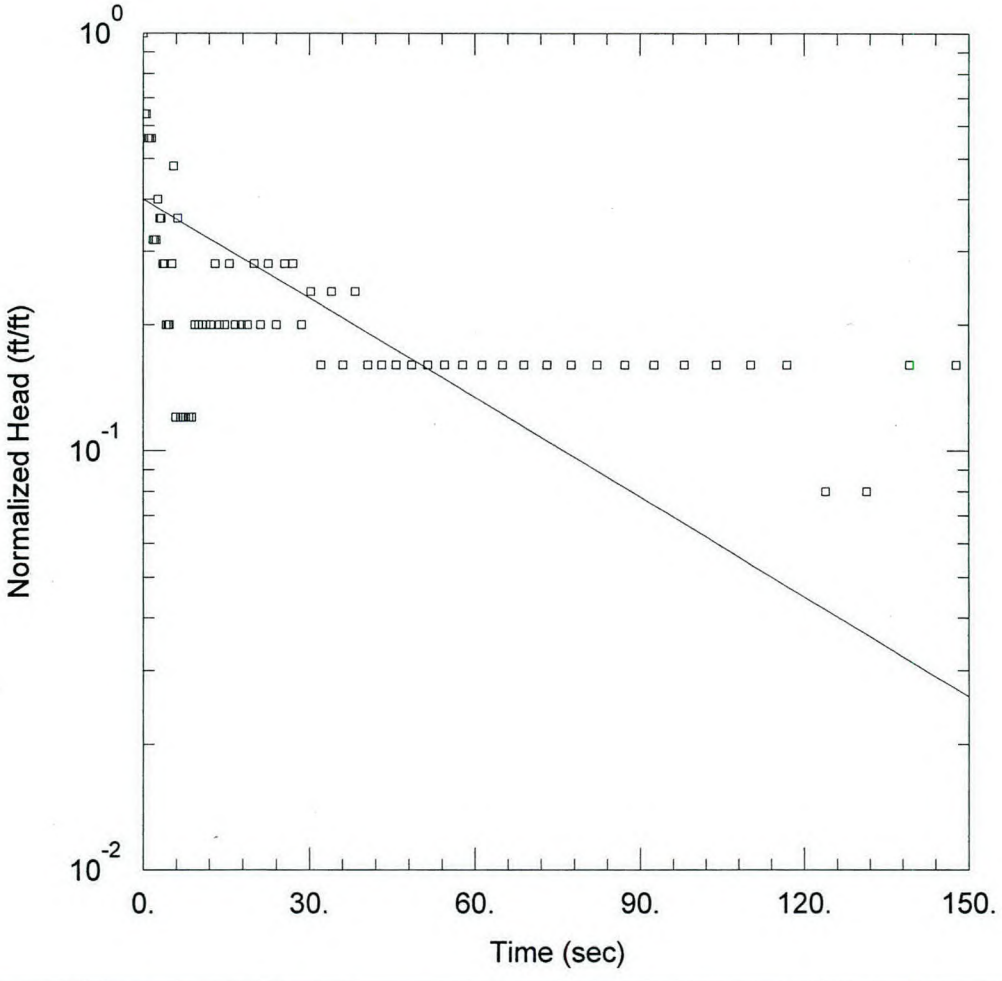
Slug Test
Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
ln(Re/rw): 2.803

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.001886	cm/sec
y0	0.02224	ft

$T = K*b = 0.2575$ cm²/sec



RISING HEAD

Data Set: C:\...\MW-4 out.aqt
Date: 11/19/08 Time: 21:38:38

PROJECT INFORMATION

Company: Gould Groundwater
Client: Frazer and Jones
Project: 1050
Location: Solvay, NY
Test Well: MW-4
Test Date: 10/22/08

AQUIFER DATA

Saturated Thickness: 4.48 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-4 out)

Initial Displacement: 0.025 ft
Total Well Penetration Depth: 27.34 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 4.48 ft
Screen Length: 10. ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.001207 cm/sec
y0 = 0.01 ft

Data Set: C:\Documents and Settings\Gerry\My Documents_GGI_Jobs - recent\1050 - F&J Site Investigation\Slug
Title: Rising head
Date: 11/19/08
Time: 21:38:51

PROJECT INFORMATION

Company: Gould Groundwater
Client: Frazer and Jones
Project: 1050
Location: Solvay, NY
Test Date: 10/22/08
Test Well: MW-4

AQUIFER DATA

Saturated Thickness: 4.48 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: MW-4 out

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 0.025 ft
Static Water Column Height: 4.48 ft
Casing Radius: 0.08333 ft
Well Radius: 0.3333 ft
Well Skin Radius: 1. ft
Screen Length: 10. ft
Total Well Penetration Depth: 27.34 ft

No. of Observations: 109

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	0.025	54.5	0.004
0.3	0.016	57.8	0.004
0.6	0.016	61.3	0.004
0.9	0.014	65.	0.004
1.2	0.014	68.9	0.004
1.5	0.014	73.1	0.004
1.8	0.008	77.5	0.004
2.1	0.008	82.2	0.004
2.4	0.008	87.2	0.004
2.7	0.01	92.5	0.004
3.	0.009	98.1	0.004
3.3	0.009	104.	0.004
3.6	0.007	110.3	0.004
3.9	0.007	116.9	0.004
4.2	0.005	123.9	0.002
4.5	0.005	131.4	0.002
4.8	0.005	139.3	0.004
5.2	0.007	147.7	0.004
5.5	0.012	156.6	0.004
5.9	0.003	166.	0.004
6.3	0.009	176.	0.004
6.8	0.003	186.6	0.004
7.2	0.003	197.8	0.002
7.7	0.003	209.7	0.002
8.3	0.003	222.3	0.004
8.8	0.003	235.6	0.004
9.4	0.005	249.7	0.002
10.1	0.005	264.6	0.004
10.7	0.005	280.4	0.002
11.4	0.005	297.2	0.002
12.2	0.005	315.	0.002
13.	0.007	333.8	0.002
13.8	0.005	353.7	0.002

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
14.7	0.005	374.8	0.002
15.6	0.007	397.2	0.002
16.6	0.005	420.9	0.002
17.7	0.005	446.	0.002
18.8	0.005	472.6	0.002
20.	0.007	500.8	0.002
21.2	0.005	530.7	0.002
22.6	0.007	562.3	0.002
24.	0.005	595.8	0.002
25.5	0.007	631.3	0.002
27.	0.007	668.9	0.002
28.6	0.005	843.	0.002
30.3	0.006	946.3	0.002
32.1	0.004	1002.6	0.002
34.	0.006	1062.2	0.002
36.1	0.004	1125.4	0.002
38.3	0.006	1192.3	0.002
40.6	0.004	1263.2	0.002
43.1	0.004	1338.3	0.002
45.7	0.004	1417.8	0.002
48.5	0.004	1502.1	0.004
51.4	0.004		

SOLUTION

Slug Test
Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
ln(Re/rw): 2.803

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.001207	cm/sec
y0	0.01	ft

$T = K*b = 0.1648$ cm²/sec

Table E - 2
Frazer and Jones
Water Table Elevation Summary
2008
(feet amsl)

Well	Date 8/5/2008	8/12/2008	10/8/2008	10/22/2008	11/7/2008	Max	Min	Range
MW-1	418.50	418.83	418.16	418.40	418.61	418.83	418.16	0.67
MW-2	405.07	405.49	404.97	405.39	405.56	405.56	404.97	0.59
MW-3	405.69	405.72	405.10	405.16	405.78	405.78	405.10	0.68
MW-4	405.39	405.51	405.05	405.01	405.26	405.51	405.01	0.50
PZ-1	406.62	406.65	406.29	406.37	407.26	407.26	406.29	0.97
PZ-2	406.58	406.62	406.28	406.71	407.07	407.07	406.28	0.79
PZ-3	407.07	407.12	406.56	406.61	407.55	407.55	406.56	0.99
PZ-4	406.33	406.30	405.85	405.75	406.02	406.33	405.75	0.58
SG-1	nm	414.26	414.23	414.27	414.27	414.27	414.23	0.04
SG-2	nm	406.50	406.63	406.65	406.67	406.67	406.50	0.17
SG-3	nm	412.78	dry	412.80	dry	412.80	412.78	0.02
SG-4	nm	404.82	404.84	404.83	404.82	404.84	404.82	0.02

nm - not measured, gauge not installed

dry - surface water location was dry during this measurement round

Frazer and Jones
Site Investigation
Groundwater Level Measurements

August 5, 2008

Well ID	Depth to Groundwater* (feet)	Groundwater Elevation (feet amsl)	Water Column Height
MW-1	4.10	418.50	8.02
MW-2	2.78	405.07	13.37
MW-3	24.39	405.69	8.00
MW-4	22.48	405.39	6.83
PZ-1	24.77	406.62	8.55
PZ-2	25.72	406.58	9.71
PZ-3	25.16	407.07	9.84
PZ-4	23.10	406.33	9.10
SG-1	NM	NA	NA
SG-2	NM	NA	NA
SG-3	NM	NA	NA
SG-4	NM	NA	NA

* Measured from top of 2" ID casing or staff gauge

NM - not measured

NA - not applicable

Frazer and Jones
Site Investigation
Groundwater Level Measurements

August 12, 2008

Well ID	Depth to Water* (feet)	Groundwater Elevation (feet amsl)	Water Column Height
MW-1	3.77	418.83	8.35
MW-2	2.36	405.49	13.79
MW-3	24.36	405.72	8.03
MW-4	22.36	405.51	6.95
PZ-1	24.74	406.65	8.58
PZ-2	25.68	406.62	9.75
PZ-3	25.11	407.12	9.89
PZ-4	23.13	406.30	9.07
SG-1	3.63	414.26	NA
SG-2	6.39	406.50	NA
SG-3	4.78	412.78	NA
SG-4	4.64	404.82	NA

* Measured from top of 2" ID casing or staff gauge

NM - not measured

NA - not applicable

Frazer and Jones
Site Investigation
Groundwater Level Measurements

October 8, 2008

Well ID	Depth to Water* (feet)	Groundwater Elevation (feet amsl)	Water Column Height
MW-1	4.44	418.16	7.68
MW-2	2.88	404.97	13.27
MW-3	24.98	405.10	7.41
MW-4	22.82	405.05	6.49
PZ-1	25.10	406.29	8.22
PZ-2	26.02	406.28	9.41
PZ-3	25.67	406.56	9.33
PZ-4	23.58	405.85	8.62
SG-1	3.66	414.23	NA
SG-2	6.26	406.63	NA
SG-3	dry	NA	NA
SG-4	4.62	404.84	NA

* Measured from top of 2" ID casing or staff gauge

NM - not measured

NA - not applicable

Frazer and Jones
Site Investigation
Groundwater Level Measurements

October 22, 2008

Well ID	Depth to Water* (feet)	Groundwater Elevation (feet amsl)	Water Column Height
MW-1	4.20	418.40	7.92
MW-2	2.46	405.39	13.69
MW-3	24.92	405.16	7.47
MW-4	22.86	405.01	6.45
PZ-1	25.02	406.37	8.30
PZ-2	25.59	406.71	9.84
PZ-3	25.62	406.61	9.38
PZ-4	23.68	405.75	8.52
SG-1	3.62	414.27	NA
SG-2	6.24	406.65	NA
SG-3	4.76	412.80	NA
SG-4	4.63	404.83	NA

* Measured from top of 2" ID casing or staff gauge

NM - not measured

NA - not applicable

Frazer and Jones
Site Investigation
Groundwater Level Measurements

November 7, 2008

Well ID	Depth to Water* (feet)	Groundwater Elevation (feet amsl)	Water Column Height
MW-1	3.99	418.61	8.13
MW-2	2.29	405.56	13.86
MW-3	24.30	405.78	8.09
MW-4	22.61	405.26	6.70
PZ-1	24.13	407.26	9.19
PZ-2	25.23	407.07	10.20
PZ-3	24.68	407.55	10.32
PZ-4	23.41	406.02	8.79
SG-1	3.62	414.27	NA
SG-2	6.22	406.67	NA
SG-3	dry	NA	NA
SG-4	4.64	404.82	NA

* Measured from top of 2" ID casing or staff gauge

NM - not measured

NA - not applicable

Well Development Data Sheet

Site Name: Frazer & Jones Job Number: 1050 Date: 7/31/08 Well ID: MW-1

On Site Personnel: G. Gould

Weather Conditions: cloudy - showers

Static water level before development: _____

Bottom of well: _____

Development Technique

bailing	12 volt submersible
peristaltic pump	surge block
air lift	trash pump w/foot valve
other _____	

Date	Water Removal Start	Stop	Elapsed Time (min)	Flow Rate	Approx Vol. Removed	pH	Cond.	Turb	Temp	Observations/Comments
7/31/08	15:50	16:20	230min	2.5gpm	575+2015 +10 +5					light brown

Well Development Data Sheet

Site Name: Frazer & Jones Job Number: 1050 Date: 8/5/08 Well ID: MW-1

On Site Personnel: G. Gould

Weather Conditions: sunny 85° F

Development Technique

bailing — ~~12 volt submersible~~
peristaltic pump — surge block
air lift — trash pump w/foot valve
other

Static water level before development:
Bottom of well:

Date	Water Removal Start	Stop	Elapsed Time (min)	Flow Rate	Approx Vol. Removed	pH	Cond.	Turb	Temp	Observations/Comments
8/5/08	14:48	14:58	Surge							
	15:00			2.5gpm	10gal	7.32	4.18	337	24.4	v. cloudy brown
	15:12				10gal	7.52	5.25	231	23	cloudy brown
	15:25				≈30gal	6.99	4.94	480	22.8	" "
	15:35				≈25gal	6.99	5.08	94	22.5	" "
	15:45				≈25gal	6.92	5.01	463	22.3	" "
	15:55	16:07			≈25gal	6.93	4.93		22.2	" "

Well Development Data Sheet

Site Name: Frazer & Jones Job Number: 1050 Date: 8/1/08 Well ID: MW-2

On Site Personnel: G. Gould

Weather Conditions: P. cloudy 75°F breezy

Development Technique

bailing	12 volt submersible
peristaltic pump	surge block
air lift	trash pump w/foot valve
other	

Static water level before development:

Bottom of well:

Date	Water Removal Start	Stop	Elapsed Time (min)	Flow Rate	Approx Vol. Removed	pH	Cond.	Turb	Temp	Observations/Comments
8/1/08	9:38	10:48	10	—	—					surging 2' stroke over 10' screen ~~barometer~~
	10:02	10:09	<7	2gpm	5					start/stop pumping dk brown to light brown - pumps dry - recovers quick
	11:20	11:40	20min	on & off	5+5					light gray - near clear

Well Development Data Sheet

Site Name: Frazer Farm Job Number: 1050 Date: 8/4/08 Well ID: MW-2

On Site Personnel:

Weather Conditions: m. cloudy, breezy 75°F

Development Technique

bailing	(12 volt submersible)
peristaltic pump	surge block
air lift	trash pump w/foot valve
other	

Static water level before development: 2.66
Bottom of well: 14.36

Date	Water Removal Start	Stop	Elapsed Time (min)	Flow Rate	Approx Vol. Removed	pH	S/cm Cond.	Turb	Temp	Observations/Comments
8/4/08	13:24			~2gpm	0gal	7.10	2.52	—	13.63	cloudy, brown, dry after 3 gals
	13:34				5 gals	7.13	2.76	197	13.3	light brown, surging
	13:40				3 gals	7.13	2.76	99	13.38	slight swampy odor
	13:45				2 gals	7.11	2.75	55.5	13.27	slightly cloudy, swampy odor
	13:55				5 gals	7.09	2.75	46	13.07	" " "
	14:07				5 gals	7.08	2.75	25	13.18	yellowish tint, swampy odor
	14:29				5 gal +	7.06	2.73	71	13.58	
	14:40	14:43			5 gals	7.09	2.72	6	13.55	yellow, slight odor

Well Development Data Sheet

Site Name: Frazier Downs Job Number: 1050 Date: 7/31/08 Well ID: MW-3

On Site Personnel: G. Gould

Weather Conditions: M. cloudy, humid 80's

Development Technique

bailing	12 volt submersible
peristaltic pump	surge block
air lift	trash pump w/foot valve
other	

Static water level before development: 24.46

Bottom of well: 30.46

Date	Water Removal Start	Stop	Elapsed Time (min)	Flow Rate	Approx Vol. Removed	pH	Cond.	Turb	Temp	Observations/Comments
7/31/08	13:50	14:25		<1/gpm	5gals					dark brown, no sheen, no floating
8/1/08	8:55	9:07	7 min	—	—					surge 1ft strokes over 7' of sat. (light)
"	9:15	9:26	11	<1/gpm	4gals					cloudy dark brown → light gray

Well Development Data Sheet

Site Name: Frazer & Jones Job Number: 1052 Date: 8/4/08 Well ID: MW-3

On Site Personnel: G. Gould

Weather Conditions: p. cloudy 78°F breezy 5-10 mph from W

Static water level before development: 24.36

Bottom of well: 30.46

Development Technique

- bailing
- peristaltic pump
- air lift
- other
- 12 volt submersible (circled)
- surge block
- trash pump w/foot valve

Date	Water Removal Start	Stop	Elapsed Time (min)	Flow Rate	Approx Vol. Removed	pH	Cond.	Turb	Temp	Observations/Comments
8/4/08	15:25									
	15:31			<1gpm	3gals	7.21	1.97		14.19	cloudy brown
	15:46			"	2gals	6.91	1.85	667	17.2	cloudy brown
	16:11	16:20			1gal	6.35	1.64	987	17.58	" "
8/5/08	13:51				1gal	7.49	1.85	226	14.9	" "
	14:08				4 gal	6.96	1.98	837	16.8	" "
	14:33	14:34				6.97	1.99	156	19.2	" "

Well Development Data Sheet

Site Name: Frazer & Jones Job Number: 1050 Date: 7/30/08 Well ID: MW-4

On Site Personnel: G. Gould

Weather Conditions: clear 65°F & warming

Development Technique

bailing	12 volt submersible
peristaltic pump	surge block
air lift	trash pump w/foot valve
other	

Static water level before development: 22.43

Bottom of well: 27.33

Date	Water Removal Start	Stop	Elapsed Time (min)	Flow Rate	Approx Vol. Removed	pH	Cond.	Turb	Temp	Observations/Comments
7/29/08					15 gal					periodic pumping over 8 hrs dk gray
7/30/08	7:50	8:00		≈1 gpm	5 gal					gray water, pumping is sporatic, pulsing
	12:18	12:30			5 gal					cloudy gray
	12:33	12:43			2 gal					lt. gray - cloudy
	13:15	13:21			2 gal					" " "

Well Development Data Sheet

Site Name: Frazer & Jones Job Number: 1050 Date: 8/5/08 Well ID: MW-4

On Site Personnel: G. Gould

Weather Conditions: Sunny 75° F.

Development Technique

bailing	12 volt submersible
peristaltic pump	surge block
air lift	trash pump w/foot valve
other	

Static water level before development: 22.48

Bottom of well: 27.34

Date	Water Removal Start	Stop	Elapsed Time (min)	Flow Rate	Approx Vol. Removed	pH	S/cm Cond.	Turb	Temp	Observations/Comments
8/5/08	9:50	10:00	0min							Surging
	10:26				2gal	6.82	1.61	225	13.5	black
	10:36				3gal	7.00	1.53	244	14.6	gray
	10:44				1gal	7.19	1.54	163	14.5	light gray
	11:13				3gal	7.20	1.49	610	15.3	light gray
	11:21	11:26			1gal	7.19	1.53	238	15.9	
	12:16 Resume Pumping				—					
	12:41				5gal	7.23	1.55	58	16.3	clear - lt. gray
	13:03				2gal	7.22	1.54	68	16.9	" "
	13:40	13:40			2	7.23	1.54	217	16.0	

APPENDIX F

Analytical Results

Table 1a. Surface and Subsurface Soil Sample Results – VOCs
Table 1b. Surface and Subsurface Soil Sample Results – SVOCs
Table 1c. Surface and Subsurface Soil Sample Results – PCBs
Table 1d. Surface and Subsurface Soil Sample Results – Metals

Table 2a. Groundwater Sample Results - VOCs
Table 2b. Groundwater Sample Results – SVOCs
Table 2c. Groundwater Sample Results – PCBs
Table 2d. Groundwater Sample Results – Metals

Table 3a. Surface Water Sample Results – VOCs
Table 3b. Surface Water Sample Results - SVOCs
Table 3c. Surface Water Sample Results - PCBs
Table 3d. Surface Water Sample Results – Metals

Table 4a. Surface Water Sediment Results – SVOCs
Table 4b. Surface Water Sediment Results – PCBs
Table 4c. Surface Water Sediment Results – Metals

Table F-5. Comparison of Background Values for Metals in Soils (*from O'Brien and Gere, 2007*)
Table F-6. Detected Surface Soil Metals Concentrations (*from O'Brien and Gere, 2007*)
Table F-7. Detected Subsurface Surface Soil Metals Concentrations (*from O'Brien and Gere, 2007*)

Chain of Custody Forms
Sample Information Records

Data Usability Summary Report

TABLE 1a.
Frazer and Jones
Site Investigation
Surface and Subsurface Soil Sample Results
VOLATILE ORGANIC COMPOUNDS

Sample Identification	SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	PZ-1	PZ-2	PZ-3	PZ-4		NYSDEC Recommended Soil Clean-Up Objective*	Part 375-6 Soil Clean-up Objective *Industrial*
Sample Depth (feet)	0-0.2	0-0.2	0-0.2	0-0.2	0-0.2	0-0.2	2-6'	16-23'	14-18'	2-6'	Reporting Limit		
Date of Collection	07/31/08	07/31/08	07/31/08	07/31/08	07/31/08	07/31/08	07/30/08	07/31/08	07/31/08	08/01/08			
Units	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
Acetone	ns	ns	ns	ns	ns	ns	R	R	R	R	500	200	1,000,000
Benzene	ns	ns	ns	ns	ns	ns	U	U	U	U	200	60	89,000
Bromodichloromethane	ns	ns	ns	ns	ns	ns	U	U	U	U	200	----	----
Bromoform	ns	ns	ns	ns	ns	ns	U	U	U	U	200	----	----
Bromomethane	ns	ns	ns	ns	ns	ns	U	U	U	U	200	----	----
2-Butanone	ns	ns	ns	ns	ns	ns	U	U	U	U	500	300	----
Carbon Disulfide	ns	ns	ns	ns	ns	ns	U	U	U	U	200	2,700	----
Carbon Tetrachloride	ns	ns	ns	ns	ns	ns	U	U	U	U	200	600	44,000
Chlorobenzene	ns	ns	ns	ns	ns	ns	U	U	U	U	200	1,700	1,000,000
Chloroethane	ns	ns	ns	ns	ns	ns	U	U	U	U	200	1,900	----
Chloroform	ns	ns	ns	ns	ns	ns	U	U	U	U	200	300	700,000
Chloromethane	ns	ns	ns	ns	ns	ns	U	U	U	U	200	----	----
Dibromochloromethane	ns	ns	ns	ns	ns	ns	U	U	U	U	200	----	----
1,1-Dichloroethane	ns	ns	ns	ns	ns	ns	U	U	U	U	200	200	480,000
1,2-Dichloroethane	ns	ns	ns	ns	ns	ns	U	U	U	U	200	100	60,000
1,1-Dichloroethene	ns	ns	ns	ns	ns	ns	U	U	U	U	200	400	1,000,000
Ethylbenzene	ns	ns	ns	ns	ns	ns	U	U	U	U	200	5,500	780,000
2-Hexanone	ns	ns	ns	ns	ns	ns	U	U	U	U	500	----	----
Methylene Chloride	ns	ns	ns	ns	ns	ns	U	U	U	U	500	100	1,000,000
4-Methyl-2-Pentanone	ns	ns	ns	ns	ns	ns	U	U	U	U	500	1,000	----
Styrene	ns	ns	ns	ns	ns	ns	U	U	U	U	200	----	----
1,1,2,2-Tetrachloroethane	ns	ns	ns	ns	ns	ns	U	U	U	U	200	600	----
Tetrachloroethene	ns	ns	ns	ns	ns	ns	U	U	U	U	200	1,400	300,000
Toluene	ns	ns	ns	ns	ns	ns	U	U	U	U	200	1,500	1,000,000
1,1,1-Trichloroethane	ns	ns	ns	ns	ns	ns	U	U	U	U	200	800	1,000,000
1,1,2-Trichloroethane	ns	ns	ns	ns	ns	ns	U	U	U	U	200	----	----
Trichloroethene	ns	ns	ns	ns	ns	ns	U	U	U	U	200	700	400,000
Vinyl Chloride	ns	ns	ns	ns	ns	ns	U	U	U	U	200	200	27,000
Total Xylenes	ns	ns	ns	ns	ns	ns	U	U	U	U	200	1,200	1,000,000
Total VOCs							0	0	0	0		10,000	

QUALIFIERS:

U: Compound analyzed for but not detected

R: Result rejected due to failure to meet QA/QC criteria

J: Analyte positively identified, result is approximate.

UJ: Analyte not detected above quantitation limit, however the quantitation limit has been qualified as approximately 5X the reporting limit.

NOTES:

[ ] Indicates value exceeds the NYSDEC recommended soil clean up objective.

* - NYSDEC TAGM 4046

ns - not sampled

TABLE 1b.
Frazer and Jones
Site Investigation
Surface and Subsurface Soil Sample Results
SEMIVOLATILE ORGANIC COMPOUNDS

Sample Identification	SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	PZ-1	PZ-2	PZ-3	PZ-4	Reporting Limit	NYSDEC Recommended Soil Clean-Up Objective	Part 375-6 Soil Clean-up Objective *Industrial*
Sample Depth (feet)	0-0.2	0-0.2	0-0.2	0-0.2	0-0.2	0-0.2	2-6'	16-23'	14-18'	2-6'			
Date of Collection	07/31/08	07/31/08	07/31/08	07/31/08	07/31/08	07/31/08	07/30/08	07/31/08	07/31/08	08/01/08			
Units	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
Acenaphthene	U	U	U	U	U	U	U	U	1,900 J	U	200	50,000	1,000,000
Acenaphthylene	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	200	41,000	1,000,000
Anthracene	U	U	U	1,700 J	U	U	U	U	3,200 J	U	200	50,000	1,000,000
Benzo (a) anthracene	U	680 J	U	5,400	U	2,400 J	510 J	220 J	10,000	U	200	224 OR MDL	11,000
Benzo(b)fluoranthene	U	1,100	U	7,600	U	3,500 J	710 J	280 J	12,000	U	200	1,100	11,000
Benzo(k)fluoranthene	U	320 J	U	2,400 J	UJ	1,300 J	220 J	U	4,900	J	200	1,100	110,000
Benzo(g,h,i)perylene	U	290 J	U	1,400 J	U	U	320 J	U	4,600	UJ	200	50,000	1,000,000
Benzo(a)pyrene	U	610 J	U	4,500	U	2,200 J	460 J	U	8,300	U	200	61 OR MDL	1,100
4-Bromophenyl-phenylether	U	U	U	U	U	U	U	U	U	U	200	----	----
Butylbenzylphthalate	U	U	U	U	U	U	U	U	U	U	200	50,000	----
Carbazole	U	U	U	1,300 J	U	U	U	U	2,500 J	U	200	----	----
4-Chloroaniline	U	U	U	U	U	U	U	U	U	R	200	220 OR MDL	----
bis(2-Chloroethoxy)methane	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	200	----	----
bis(2-Chloroethyl)ether	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	200	----	----
bis(2-chloroisopropyl)ether	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	200	----	----
4-Chloro-3-methylphenol	U	U	U	U	U	U	U	U	U	R	200	240 OR MDL	----
2-Chloronaphthalene	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	200	----	----
2-Chlorophenol	U	U	U	U	UJ	U	U	U	UJ	R	200	800	----
4-Chlorophenyl-phenylether	U	U	U	U	U	U	U	U	U	U	200	----	----
Chrysene	U	860	U	6,500	U	3,000 J	760 J	270 J	1,100	U	200	400	110,000
Dibenzo(a,h)anthracene	U	U	U	U	UJ	U	U	U	1,200 J	UJ	200	14 OR MDL	1,100
Dibenzofuran	U	U	U	U	U	U	U	U	U	U	200	6,200	----
Di-n-butylphthalate	U	U	U	U	U	U	U	U	U	U	200	8,100	----
1,2-Dichlorobenzene	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	200	7,900	1,000,000
1,3-Dichlorobenzene	U	U	U	U	U	U	U	U	U	U	200	1,600	560,000
1,4-Dichlorobenzene	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	200	8,500	250,000
3,3'-Dichlorobenzidine	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	R	400	----	----
2,4-Dichlorophenol	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	R	200	400	----
Diethylphthalate	U	U	U	U	U	U	U	U	U	U	200	7,100	----
2,4-Dimethylphenol	U	U	U	U	U	U	U	U	U	R	200	----	----
Dimethylphthalate	U	U	U	U	U	U	U	U	U	U	200	2,000	----
2,4-Dinitrophenol	U	U	U	U	UJ	U	U	U	U	R	400	200 OR MDL	----
2,4-Dinitrotoluene	U	U	U	U	U	U	U	U	U	U	200	----	----
2,6-Dinitrotoluene	U	U	U	U	U	U	U	U	U	U	200	1,000	----
Di-n-octylphthalate	U	U	U	U	UJ	U	U	U	U	UJ	200	50,000	----
bis(2-Ethylhexyl)phthalate	U	U	U	U	U	U	2,700	510 J	U	U	200	50,000	----

TABLE 1b.
Frazer and Jones
Site Investigation
Surface and Subsurface Soil Sample Results
SEMIVOLATILE ORGANIC COMPOUNDS

Sample Identification	SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	PZ-1	PZ-2	PZ-3	PZ-4		NYSDEC Recommended Soil Clean-Up Objective	Part 375-6 Soil Clean-up Objective *Industrial*
Sample Depth (feet)	0-0.2	0-0.2	0-0.2	0-0.2	0-0.2	0-0.2	2-6'	16-23'	14-18'	2-6'	Reporting Limit		
Date of Collection	07/31/08	07/31/08	07/31/08	07/31/08	07/31/08	07/31/08	07/30/08	07/31/08	07/31/08	08/01/08			
Units	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
Fluoranthene	U	1,200	U	12,000	U	4,300	810 J	400 J	24,000	U	200	50,000	1,000,000
Fluorene	U	U	U	U	U	U	U	U	1,500 J	U	200	50,000	1,000,000
Hexachlorobenzene	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	U	UJ	200	410	----
Hexachlorobutadiene	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	200	----	----
Hexachlorocyclopentadiene	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	400	----	----
Hexachloroethane	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	200	----	----
Indeno(1,2,3-cd)pyrene	U	380 J	U	2,100 J	UJ	1,200 J	290 J	U	5,100	UJ	200	3,200	11,000
Isophorone	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	200	4,400	----
2-methyl-4,6-dinitrophenol	U	U	U	U	U	U	U	U	U	R	400	---	----
2-Methylnaphthalene	U	U	U	U	290 J	U	300 J	U	U	U	200	36,400	----
2-Methylphenol (o-cresol)	UJ	UJ	UJ	UJ	U	UJ	UJ	UJ	U	R	200	100 OR MDL	1,000,000
4-Methylphenol (p-cresol)	U	U	U	U	U	U	U	U	U	R	200	900	1,000,000
Naphthalene	UJ	UJ	UJ	UJ	240 J	UJ	310 J	UJ	UJ	UJ	200	13,000	1,000,000
2-Nitroaniline	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	R	400	430 OR MDL	----
3-Nitroaniline	U	U	U	U	U	U	U	U	U	R	400	500 OR MDL	----
4-Nitroaniline	U	U	U	U	U	U	U	U	UJ	R	400	----	----
2-Nitrophenol (o-nitrophenol)	U	U	U	U	U	U	U	U	U	R	200	200 OR MDL	----
Nitrobenzene	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	200	330 OR MDL	----
4-Nitrophenol	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	R	200	100 OR MDL	----
N-Nitrosodiphenylamine	U	U	U	U	U	U	U	U	U	U	200	----	----
N-Nitroso-di-n-propylamine	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	200	----	----
Pentachlorophenol	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	R	400	1,000 OR MDL	55,000
Phenanthrene	U	660 J	U	7,900	220 J	1,700 J	830	350 J	14,000 J	U	200	50,000	1,000,000
Phenol	U	U	U	U	U	U	U	U	U	R	200	30 OR MDL	1,000,000
Pyrene	U	1,000	U	10,000	U	4,200	730 J	370 J	20,000	U	200	50,000	1,000,000
1,2,4-Trichlorobenzene	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	200	3,400	----
2,4,5-Trichlorophenol	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	R	200	100	----
2,4,6-Trichlorophenol	U	U	U	U	U	U	U	U	U	R	200	----	----
Total PAHs	0	1,000	0	10,000	240	4,200	1,040	370	20,000	0		----	
Total Carcinogen PAHs	0	1,000	0	10,000	0	4,200	730	370	20,000	0		10,000	
Total SVOCs	0	7,100	0	62,800	750	23,800	8,950	2,400	114,300	0		500,000	

QUALIFIERS:

U: Compound analyzed for but not detected

J: Analyte positively identified, result is approximate.

R: Result rejected due to failure to meet QA/QC criteria

UJ: Analyte not detected above quantitation limit, however the quantitation limit has been qualified as approximately 5X the reporting limit.

NOTES:

---: not established

Indicates value exceeds NYSDEC TAGM 4046 Soil Clean-up objective

Indicates value exceeds NYSDEC Part 375-6, Industrial Soil Clean-up objective

TABLE 1c.
Frazer and Jones
Site Investigation
Surface and Subsurface Soil Sample Results
PCBs

Sample Identification	SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	PZ-1	PZ-2	PZ-3	PZ-4		NYSDEC Recommended Soil Clean-Up Objective*	Part 375-6 Soil Clean-up Objective *Industrial*
Sample Depth (feet)	0-0.2	0-0.2	0-0.2	0-0.2	0-0.2	0-0.2	2-6'	16-23'	14-18'	2-6'	Reporting Limit		
Date of Collection	07/31/08	07/31/08	07/31/08	07/31/08	07/31/08	07/31/08	07/30/08	07/31/08	07/31/08	08/01/08			
Units	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
Aroclor-1016	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	200	1000/10000**	25,000
Aroclor-1221	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	200	1000/10000**	25,000
Aroclor-1232	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	200	1000/10000**	25,000
Aroclor-1242	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	200	1000/10000**	25,000
Aroclor-1248	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	200	1000/10000**	25,000
Aroclor-1254	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	200	1000/10000**	25,000
Aroclor-1260	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	200	1000/10000**	25,000
Total PCBs	0	0	0	0	0	0	0	0	0	0		1000/10000**	

QUALIFIERS:
UJ: Analyte not detected above quantitation limit, however
the quantitation limit has been qualified as approximately 1.5X to 3X the reporting limit.

NOTES:
* - NYSDEC TAGM 4046
**: Value refers to the sum of these compounds; 1,000 ug/kg for surface soils and 10,000 ug/kg for subsurface soils

Indicates value exceeds NYSDEC recommended soil clean-up objective

TABLE 1d.
Frazer and Jones
Site Investigation
Surface and Subsurface Soil Sample Results
INORGANIC PARAMETERS

Sample Identification	SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	PZ-1	PZ-2	PZ-3	PZ-4	Reporting Limit	NYSDEC Recommended Soil Clean-Up Objective**	Part 375-6 Soil Clean-up Objective *Industrial*
Sample Depth (feet)	0-0.2	0-0.2	0-0.2	0-0.2	0-0.2	0-0.2	2-6'	16-23'	14-18'	2-6'			
Date of Collection	07/31/08	07/31/08	07/31/08	07/31/08	07/31/08	07/31/08	07/30/08	07/31/08	07/31/08	08/01/08			
Units	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Aluminum	1,201	4,786	2,953	3,855	3,186	4,548	2,948	3,600	3,661	3,272	10	SB	----
Antimony	UJ	UJ	3.2 BJ	UJ	UJ	UJ	UJ	UJ	UJ	UJ	1	SB	----
Arsenic	U*	U*	U*	U*	U*	U*	U*	U*	U*	U*	1	7.5 or SB	16
Barium	14.8 B	40.8	96.9	34.3	17.3 B	43.4	19.8	34	24.1	19.1 B	20	300 or SB	10,000
Beryllium	U	U	U	U	U	U	U	U	U	U	15	0.16 or SB	2,700
Cadmium	0.57	0.52	**7.8**	0.58	U	0.55	U	0.53	0.52	U	1	1 or SB	60
Calcium	213,327 J*	61,967 J*	2,192 *	45,909 J*	2,205 J*	43,360	3,605 J*	14,125 J*	3,899 J*	3,273 J*	1	SB	----
Chromium	**16.1**	**10.4**	7.3	8	4.8	9.4	8.7	**15**	**12.6**	3.8	1	10 or SB	800
Cobalt	U	U	U	U	U	U	U	U	U	U	25	30 or SB	----
Copper	20.6	21.4	24.4	11.1	6.2	**31.5**	8.5	19.7	18.7	3.5	1	25 or SB	10,000
Iron	**7,861 J***	**10,382 J**	**11,720 J**	**15,396 J**	**9,731 J**	**9,396**	**13,141 J**	**23,353**	**23,835 J**	**8,559 J**	5	2,000 or SB	----
Lead	9.1 J*	52	251	42.1	11.7 J	133 J	3.8 J	5.32 J	5.6 J	2.9 J	1	400	3,900
Magnesium	9,381	9,212	532	3,485	862	9,622	1,097	4,074	1,142	973	1	SB	----
Manganese	298	266	132	633	146	473	179	692	218	82.6	1	SB	10,000
Mercury	0.055 J	**0.51 J**	0.076	0.1 J	0.03 J	0.14 J	0.054 J	UJ	0.03 BJ	0.052 J	0.03	0.1	5.7
Nickel	13	9.9	4.8	11.3	5	10.2	6.5	9.84	10.5	4.0	1	13 or SB	10,000
Potassium	420 B	UJ	318 B	UJ	478 B	UJ	412 UJ	UJ	380 B	310 B	1	SB	----
Selenium	UJ*	UJ*	UJ*	**7 J***	UJ*	**8 J**	UJ*	UJ*	UJ*	U*	1	2 or SB	6,800
Silver	R	R	R	R	R	R	R	R	R	R	1	SB	6,800
Sodium	R	R	R	R	R	R	R	R	R	R	100	SB	----
Thallium	UJ*	UJ*	U*	11.6 *	U*	13	U*	U*	U*	U*	1	SB	----
Vanadium	6.6	7.1	3.66 B	6.1	3.5 B	11.9	2.2 B	7.75	3.2 B	2.6 B	1	150 or SB	----
Zinc	**238**	**159**	**49,877 J**	**424**	**303**	**99.7 J**	**52.9**	**143**	**53.8**	**27.1 J**	1	20 or SB	10,000

QUALIFIERS:

U: Compound analyzed for but not detected

J: Analyte positively identified, result is approximate.

B: Compound concentration is less than the CRDL but greater than the IDL.

R: Result rejected due to failure to meet QA/QC criteria

UJ: Analyte not detected above quantitation limit, however the quantitation limit has been qualified as greater than the reporting limit.

* Result lacks precision due to duplicate analysis outside control limits.

NOTES:

SB: Site background

----: not established

**: as per NYSDEC TAGM 4046

Indicates value exceeds the NYSDEC TAGM 4046 Soil Cleanup Objective

Indicates value exceeds the NYSDEC Part 375-6, Industrial Soil Cleanup Objective

Indicates value exceeds site background concentrations

TABLE 2a.
Frazer and Jones
Site Investigation
Groundwater Sample Results
VOLATILE ORGANIC COMPOUNDS

Sample Identification	MW-1	MW-2	MW-3	MW-4	Reporting Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	08/12/08	08/12/08	08/12/08	08/12/08		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Acetone	12 JB	UJ	UJ	UJ	10	50 GV
Benzene	UJ	UJ	UJ	UJ	1	1 ST
Bromodichloromethane	UJ	UJ	UJ	UJ	1	50 GV
Bromoform	UJ	UJ	UJ	UJ	1	50GV
Bromomethane	UJ	UJ	UJ	UJ	1	5 ST
2-Butanone	UJ	UJ	UJ	UJ	10	50 GV
Carbon Disulfide	UJ	UJ	UJ	UJ	1	60 GV
Carbon Tetrachloride	UJ	UJ	UJ	UJ	1	5 ST
Chlorobenzene	UJ	UJ	UJ	UJ	1	5 ST
Chloroethane	UJ	UJ	UJ	UJ	1	5 ST
Chloroform	1.4 J	UJ	UJ	UJ	1	7 ST
Chloromethane	UJ	UJ	UJ	UJ	1	5 ST
Dibromochloromethane	UJ	UJ	UJ	UJ	1	50 GV
1,1-Dichloroethane	UJ	UJ	UJ	UJ	1	5 ST
1,2-Dichloroethane	UJ	UJ	UJ	UJ	1	0.6 ST
1,1-Dichloroethene	UJ	UJ	UJ	UJ	1	5 ST
1,2-Dichloroethene, Total	UJ	UJ	UJ	UJ	1	5 ST
1,2-Dichloropropane	UJ	UJ	UJ	UJ	1	1 ST
cis-1,3-Dichloropropene	UJ	UJ	UJ	UJ	1	0.4 ST*
trans-1,3-Dichloropropene	UJ	UJ	UJ	UJ	1	0.4 ST*
Ethylbenzene	UJ	UJ	UJ	UJ	1	5 ST
2-Hexanone	UJ	UJ	UJ	UJ	10	50 GV
Methylene Chloride	UJ	UJ	UJ	UJ	10	5 ST
4-Methyl-2-Pentanone(MIBK)	UJ	UJ	UJ	UJ	10	----
Styrene	UJ	UJ	UJ	UJ	1	5 ST
1,1,2,2-Tetrachloroethane	UJ	UJ	UJ	UJ	1	5 ST
Tetrachloroethene	UJ	UJ	UJ	UJ	1	5 ST
Toluene	UJ	UJ	UJ	UJ	1	5 ST
1,1,1-Trichloroethane	UJ	UJ	UJ	UJ	1	5 ST
1,1,2-Trichloroethane	UJ	UJ	UJ	UJ	1	1 ST
Trichloroethene	UJ	UJ	UJ	UJ	1	5 ST
Vinyl Chloride	UJ	UJ	UJ	UJ	1	2 ST
Total Xylenes	UJ	UJ	UJ	UJ	1	5 ST
Total VOCs	0	0	0	0		

QUALIFIERS:

J: Analyte positively identified, result is approximate.

B: Analyte is present in the trip blank as well as in the sample.

UJ: Analyte not detected above quantitation limit, however the quantitation limit is approximate.

NOTES:

Indicates value exceeds the NYSDEC standard.

*: Value pertains to the sum of the isomers

GV: Guidance Value

ST: Standard

----: Not established

TABLE 2b.
Frazer and Jones
Site Investigation
Groundwater Sample Results
SEMIVOLATILE ORGANIC COMPOUNDS

Sample Identification	MW-1	MW-2	MW-3	MW-4	Reporting	NYSDEC Class GA Groundwater Standard or
Date of Collection	08/12/08	08/12/08	08/12/08	08/12/08	Limit	Guidance Value
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Acenaphthene	U	U	U	U	5	20 GV
Acenaphthylene	U	U	U	U	5	----
Anthracene	U	U	U	U	5	50 GV
Benzo (a) anthracene	U	U	U	U	5	.002 GV
Benzo(b)fluoranthene	U	U	U	U	5	.002 GV
Benzo(k)fluoranthene	U	U	U	U	5	.002 GV
Benzo(g,h,i)perylene	U	U	U	U	5	----
Benzo(a)pyrene	U	U	U	U	5	ND ST
4-Bromophenyl-phenylether	U	U	U	U	5	----
Butylbenzylphthalate	U	U	U	U	5	50 GV
Carbazole	U	U	U	U	5	----
4-Chloroaniline	U	U	U	U	5	5 ST
bis(2-Chloroethoxy)methane	U	U	U	U	5	5 ST
bis(2-Chloroethyl)ether	U	U	U	U	5	1 ST
bis(2-chloroisopropyl)ether	U	U	U	U	5	----
4-Chloro-3-methylphenol	U	U	U	U	5	----
2-Chloronaphthalene	U	U	U	U	5	5 ST
2-Chlorophenol	U	U	U	U	5	1 ST*
4-Chlorophenyl-phenylether	U	U	U	U	5	----
Chrysene	U	U	U	U	5	.002 GV
Dibenzo(a,h)anthracene	U	U	U	U	5	----
Dibenzofuran	U	U	U	U	5	----
Di-n-butylphthalate	U	U	U	U	5	50 ST
1,2-Dichlorobenzene	U	U	U	U	5	3 ST
1,3-Dichlorobenzene	U	U	U	U	5	3 ST
1,4-Dichlorobenzene	UJ	UJ	UJ	UJ	5	3 ST
3,3'-Dichlorobenzidine	U	U	U	U	10	5 ST
2,4-Dichlorophenol	U	U	U	U	5	1 ST*
Diethylphthalate	U	U	U	U	5	50 GV
2,4-Dimethylphenol	U	U	U	U	5	1 ST*
Dimethylphthalate	UJ	UJ	UJ	UJ	5	50 GV
2,4-Dinitrophenol	R	R	R	UJ	10	1 ST*
2,4-Dinitrotoluene	U	U	U	U	5	5 ST
2,6-Dinitrotoluene	U	U	U	U	5	5 ST
Di-n-octylphthalate	U	U	U	U	5	50 GV
bis(2-Ethylhexyl)phthalate	U	U	U	U	5	5 ST

TABLE 2b.
Frazer and Jones
Site Investigation
Groundwater Sample Results
SEMIVOLATILE ORGANIC COMPOUNDS

Sample Identification	MW-1	MW-2	MW-3	MW-4	Reporting Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	08/12/08	08/12/08	08/12/08	08/12/08		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Fluoranthene	U	U	U	U	5	50 GV
Fluorene	U	U	U	U	5	50 GV
Hexachlorobenzene	U	U	U	U	5	.04 ST
Hexachlorobutadiene	UJ	UJ	UJ	UJ	5	0.5 ST
Hexachlorocyclopentadiene	UJ	UJ	UJ	UJ	10	5 ST
Hexachloroethane	U	U	U	U	5	5 ST
Indeno(1,2,3-cd)pyrene	U	U	U	U	5	.002 GV
Isophorone	U	U	U	U	5	50 GV
2-methyl-4,6-dinitrophenol	U	U	U	UJ	10	----
2-Methylnaphthalene	U	U	U	U	5	----
2-Methylphenol (o-cresol)	U	U	U	U	5	1 ST*
4-Methylphenol (p-cresol)	U	U	U	U	5	1 ST*
Naphthalene	U	U	U	U	5	10 GV
2-Nitroaniline	U	U	U	U	10	5 ST
3-Nitroaniline	U	U	U	U	10	5 ST
4-Nitroaniline	U	U	U	U	10	5 ST
2-Nitrophenol (o-nitrophenol)	U	U	U	U	5	----
Nitrobenzene	UJ	UJ	UJ	UJ	5	0.4 ST
4-Nitrophenol	U	U	U	U	5	----
N-Nitrosodiphenylamine	U	U	U	U	5	50 GV
N-Nitroso-di-n-propylamine	U	U	U	U	5	----
Pentachlorophenol	R	R	R	UJ	10	1 ST*
Phenanthrene	U	U	U	U	5	50 GV
Phenol	U	U	U	U	5	1 ST*
Pyrene	U	U	U	U	5	50 GV
1,2,4-Trichlorobenzene	UJ	UJ	UJ	UJ	5	5 ST
2,4,5-Trichlorophenol	U	U	U	U	5	----
2,4,6-Trichlorophenol	U	U	U	U	5	----
Total PAHs	0	0	0	0		
Total Carcinogen PAHs	0	0	0	0		
Total SVOCs	0	0	0	0		

QUALIFIERS:

U: Compound analyzed for but not detected

R: Result rejected due to failure to meet QA/QC criteria

UJ: Analyte not detected above quantitation limit, however the quantitation limit is approximate.

NOTES:

*: Value pertains to the sum of the isomers

GV: Guidance Value

ST: Standard

---: not established

Indicates value exceeds NYSDEC standard.

TABLE 2c.
Frazer and Jones
Site Investigation
Groundwater Sample Results
PCBs

Sample Identification	MW-1	MW-2	MW-3	MW-4	Reporting Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	08/12/08	08/12/08	08/12/08	08/12/08		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Aroclor-1016	U	U	U	U	0.05	0.09 ST *
Aroclor-1221	U	U	U	U	0.05	0.09 ST *
Aroclor-1232	U	U	U	U	0.05	0.09 ST *
Aroclor-1242	U	U	U	U	0.05	0.09 ST *
Aroclor-1248	U	U	U	U	0.05	0.09 ST *
Aroclor-1254	U	U	U	U	0.05	0.09 ST *
Aroclor-1260	U	U	U	U	0.05	0.09 ST *
Total PCBs	0	0	0	0		

QUALIFIERS:
U: Compound analyzed for but not detected

NOTES:
----: not established
GV: Guidance Value
ST: Standard
*: Applies to the sum of the isomers
Indicates value exceeds NYSDEC standard.

TABLE 2d.
Frazer and Jones
Site Investigation
Groundwater Sample Results
INORGANIC PARAMETERS

Sample Identification	MW-1	MW-2	MW-3	MW-4	Reporting Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	08/12/08	08/12/08	08/12/08	08/12/08		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Aluminum	U	280	U	U	200	----
Antimony	U	U	U	U	10	3 ST
Arsenic	U	U	U	U	10	25 ST
Barium	47 B	95.7 B	99.7 B	95.1 B	200	1,000 ST
Beryllium	U	U	U	U	10	3 GV
Cadmium	U	U	U	U	10	5 ST
Calcium	123,973	182,974	83,689	122,270	5	----
Chromium	1.28 B	2.1 B	1.6 B	1.1 B	10	50 ST
Cobalt	0.41 B	1.7 B	0.86 B	0.38 B	10	----
Copper	U	U	U	U	25	200 ST
Iron	U	1621	119	4201 J	50	300 ST ^
Lead	UJ	UJ	UJ	UJ	10	25 ST
Magnesium	17,961 J	34,411 J	39,499 J	36,175 J	10	35,000 GV
Manganese	7.5 B	328	513	431	10	300 ST ^
Mercury	U	U	U	U	0.2	0.7 ST
Nickel	U	1.5 B	5.2 B	U	10	100 ST
Potassium	U	10,205	38,109	27,514 J	10	----
Selenium	U	U	U	U	10	10 ST
Silver	UJ	UJ	UJ	UJ	10	50 ST
Sodium	R	R	R	R	100	20,000 ST
Thallium	16.4	31.1	U	11.7	10	0.5 GV
Vanadium	0.59 B	0.85 B	0.54 B	U	10	----
Zinc	U	59.1	U	U	10	2,000 GV

QUALIFIERS:

U: Compound analyzed for but not detected

J: Analyte positively identified, result is approximate.

UJ: Analyte not detected above quantitation limit, however the quantitation limit is approximate.

R: Result rejected due to failure to meet QA/QC criteria

B: Compound concentration is less than the CRDL but greater than the IDL.

NOTES:

----: not established

GV: Guidance Value

ST: Standard

Indicates value exceeds the NYSDEC Standard

TABLE 3a.
Frazer and Jones
Site Investigation
SURFACE WATER SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS

Sample Identification	SW-1	SW-2	SW-3	SW-4	Reporting Limit	NYSDEC Class C Standard or Guidance Value
Date of Collection	08/13/08	08/13/08	08/13/08	08/13/08		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Acetone	U	U	U	U	10	---
Benzene	U	U	U	U	1	10 ST
Bromodichloromethane	U	U	U	U	1	---
Bromoform	U	U	U	U	1	---
Bromomethane	U	U	U	U	1	---
2-Butanone	U	U	U	U	10	---
Carbon Disulfide	U	U	U	U	1	---
Carbon Tetrachloride	U	U	U	U	1	---
Chlorobenzene	U	U	U	U	1	5 ST
Chloroethane	U	U	U	U	1	---
Chloroform	U	U	U	U	1	---
Chloromethane	U	U	U	U	1	---
Dibromochloromethane	U	U	U	U	1	---
1,1-Dichloroethane	U	U	U	U	1	---
1,2-Dichloroethane	U	U	U	U	1	---
1,1-Dichloroethene	U	U	U	U	1	---
1,2-Dichloroethene, Total	U	U	U	U	1	---
1,2-Dichloropropane	U	U	U	U	1	---
cis-1,3-Dichloropropene	U	U	U	U	1	---
trans-1,3-Dichloropropene	U	U	U	U	1	---
Ethylbenzene	U	U	U	U	1	17 GV
2-Hexanone	U	U	U	U	10	---
Methylene Chloride	U	U	U	U	10	200 ST
4-Methyl-2-Pentanone(MIBK)	U	U	U	U	10	---
Styrene	U	U	U	U	1	---
1,1,2,2-Tetrachloroethane	U	U	U	U	1	---
Tetrachloroethene	U	U	U	U	1	1 GV
Toluene	U	U	U	U	1	100 GV
1,1,1-Trichloroethane	U	U	U	U	1	---
1,1,2-Trichloroethane	U	U	U	U	1	---
Trichloroethene	U	U	U	U	1	40 ST
Vinyl Chloride	U	U	U	U	1	---
Total Xylenes	U	U	U	U	1	65 GV*
Total VOCs	0	0	0	0		10,000

QUALIFIERS:
U: Compound analyzed for but not detected

NOTES:
GV: Guidance Value
ST: Standard
---: Not established
Indicates value exceeds the NYSDEC standard

TABLE 3b.
Frazer and Jones
Site Investigation
SURFACE WATER SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS

Sample Identification	SW-1	SW-2	SW-3	SW-4	Reporting Limit	NYSDEC Class C Standard or Guidance Value
Date of Collection	08/13/08	08/13/08	08/13/08	08/13/08		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Acenaphthene	U	U	U	U	5	5.3 GV
Acenaphthylene	U	U	U	U	5	----
Anthracene	U	U	U	U	5	3.8 GV
Benzo (a) anthracene	U	U	U	U	5	0.03 GV
Benzo(b)fluoranthene	U	U	U	U	5	----
Benzo(k)fluoranthene	U	U	U	U	5	----
Benzo(g,h,i)perylene	U	U	U	U	5	----
Benzo(a)pyrene	U	U	U	U	5	1.2E-3 GV
4-Bromophenyl-phenylether	U	U	U	U	5	----
Butylbenzylphthalate	U	U	U	U	5	----
Carbazole	U	U	U	U	5	----
4-Chloroaniline	U	U	U	U	5	----
bis(2-Chloroethoxy)methane	U	U	U	U	5	----
bis(2-Chloroethyl)ether	U	U	U	U	5	----
bis(2-chloroisopropyl)ether	U	U	U	U	5	----
4-Chloro-3-methylphenol	U	U	U	U	5	1 ST*
2-Chloronaphthalene	U	U	U	U	5	----
2-Chlorophenol	U	U	U	U	5	1 ST*
4-Chlorophenyl-phenylether	U	U	U	U	5	----
Chrysene	U	U	U	U	5	----
Dibenzo(a,h)anthracene	U	U	U	U	5	----
Dibenzofuran	U	U	U	U	5	----
Di-n-butylphthalate	U	U	U	U	5	----
1,2-Dichlorobenzene	U	U	U	U	5	5 ST**
1,3-Dichlorobenzene	UJ	UJ	UJ	UJ	5	5 ST**
1,4-Dichlorobenzene	U	U	U	U	5	5 ST**
3,3'-Dichlorobenzidine	U	U	U	U	10	----
2,4-Dichlorophenol	U	U	U	U	5	1 ST*
Diethylphthalate	U	U	U	U	5	----
2,4-Dimethylphenol	U	U	U	U	5	1 ST*
Dimethylphthalate	UJ	UJ	UJ	UJ	5	----
2,4-Dinitrophenol	UJ	R	R	R	10	5 ST**
2,4-Dinitrotoluene	U	U	U	U	5	----
2,6-Dinitrotoluene	U	U	U	U	5	----
Di-n-octylphthalate	U	U	U	U	5	----
bis(2-Ethylhexyl)phthalate	U	U	U	U	5	0.6 ST

TABLE 3b.
Frazer and Jones
Site Investigation
SURFACE WATER SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS

Sample Identification	SW-1	SW-2	SW-3	SW-4	Reporting	NYSDEC Class C Standard or
Date of Collection	08/13/08	08/13/08	08/13/08	08/13/08	Limit	Guidance Value
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Fluoranthene	U	U	U	U	5	----
Fluorene	U	U	U	U	5	0.54 GV
Hexachlorobenzene	U	U	U	U	5	3E-5 ST
Hexachlorobutadiene	UJ	UJ	UJ	UJ	5	0.01 ST
Hexachlorocyclopentadiene	UJ	UJ	UJ	UJ	10	0.45 ST
Hexachloroethane	U	U	U	U	5	0.6 ST
Indeno(1,2,3-cd)pyrene	U	U	U	U	5	----
Isophorone	U	U	U	U	5	----
2-methyl-4,6-dinitrophenol	UJ	U	U	U	10	1 ST*
2-Methylnaphthalene	UJ	UJ	U	U	5	4.7 GV
2-Methylphenol (o-cresol)	U	U	U	U	5	1 ST*
4-Methylphenol (p-cresol)	U	U	U	U	5	1 ST*
Naphthalene	U	U	U	U	5	13 GV
2-Nitroaniline	U	U	U	U	10	----
3-Nitroaniline	U	U	U	U	10	----
4-Nitroaniline	U	U	U	U	10	----
Nitrobenzene	U	U	UJ	UJ	5	----
2-Nitrophenol (o-nitrophenol)	U	U	U	U	5	1 ST*
4-Nitrophenol	U	U	U	U	5	1 ST*
N-Nitrosodiphenylamine	U	U	U	U	5	----
N-Nitroso-di-n-propylamine	U	U	U	U	5	----
Pentachlorophenol	UJ	R	R	R	10	1 ST ****
Phenanthrene	U	U	U	U	5	5 GV
Phenol	U	U	U	U	5	1 ST**
Pyrene	U	U	U	U	5	4.6 GV
1,2,4-Trichlorobenzene	UJ	UJ	UJ	UJ	5	5 ST**
2,4,5-Trichlorophenol	U	U	U	U	5	1 ST*
2,4,6-Trichlorophenol	U	U	U	U	5	1 ST*
Total PAHs	0	0	0	0		
Total Carcinogen PAHs	0	0	0	0		
Total SVOCs	0	0	0	0		

QUALIFIERS:

U: Compound analyzed for but not detected

UJ: Analyte not detected above quantitation limit, however the quantitation limit is approximate.

R: Result rejected due to failure to meet QA/QC criteria

NOTES:

GV: Guidance Value

ST: Standard

---: Not established

Indicates value exceeds NYSDEC recommended Soil Clean-up objective

TABLE 3c.
Frazer and Jones
Site Investigation
SURFACE WATER SAMPLE RESULTS
PCBs

Sample Identification	**SW-1**	**SW-2**	**SW-3**	**SW-4**	Reporting Limit	NYSDEC Class C Standard or Guidance Value
Date of Collection	08/13/08	08/13/08	08/13/08	08/13/08		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Aroclor-1016	UJ	UJ	UJ	U	0.05	1E-6 ST *
Aroclor-1221	UJ	UJ	UJ	U	0.05	1E-6 ST *
Aroclor-1232	UJ	UJ	UJ	U	0.05	1E-6 ST *
Aroclor-1242	UJ	UJ	UJ	U	0.05	1E-6 ST *
Aroclor-1248	UJ	UJ	UJ	U	0.05	1E-6 ST *
Aroclor-1254	UJ	UJ	UJ	U	0.05	1E-6 ST *
Aroclor-1260	UJ	UJ	UJ	U	0.05	1E-6 ST *
Total PCBs	0	0	0	0		

QUALIFIERS:
U: Compound analyzed for but not detected
UJ: Analyte not detected above quantitation limit, however the quantitation limit has been qualified as approximately 30X, 10x and 12X the reporting limit for SW-1, SW-2 and SW-3, respectively.

NOTES:
*: Applies to the sum of the isomers
GV: Guidance Value
ST: Standard
---: Not established
Indicates value exceeds standard or guidance value.

TABLE 3d.
Frazer and Jones
Site Investigation
SURFACE WATER SAMPLE RESULTS
INORGANIC PARAMETERS

Sample Identification	SW-1		SW-2		SW-3		SW-4		Reporting	NYSDEC Class C Surface Water Standard or
Date of Collection	08/13/08		08/13/08		08/13/08		08/13/08		Limit	Guidance Value
Units	(ug/l)	N	(ug/l)	N	(ug/l)	N	(ug/l)	N	(ug/l)	(ug/l)
Aluminum	398		278		U		U		100	100 ST
Antimony	U		U		U		U		10	---
Arsenic	U		U		U		U		10	150 ST *
Barium	58 B		125 B		20.3 B		57.1 B		200	---
Beryllium	0.36 B		U		U		U		10	11 or 1,100 **
Cadmium	U	6	0.68 B	7	U	2	U	5	5	ST***
Calcium	113,262		121,644		26,242		81,782		10	---
Chromium	4.3 B	207	5.4 B	249	1.1 B	63	0.79 B	172	10	ST^
Cobalt	1.3 B		2.3 B		0.34 B		U		10	5 ST
Copper	U	26	U	32	U	8	U	22	10	ST^^
Iron	1,970		21,898 J		599		U		50	300 ST
Lead	17.7	14	2.9 BJ	18	4.7 J	3	UJ	11	10	ST^^^
Magnesium	15,951		23,999		UJ		17,491 J		10	---
Manganese	358		811		90		18.9		10	---
Mercury	U		U		U		U		0.2	0.0007 ST
Nickel	8.4 B	145	18.7 B	175	2.1 B	42	U	120	10	ST~
Potassium	24,657		12,280		UJ		UJ		10	---
Selenium	U		U		U		U		10	4.6 ST
Silver	UJ		UJ		UJ		UJ		10	0.1 ST
Sodium	R		R		R		R		100	---
Thallium	5.4 B		14.5		U		U		10	8 ST
Vanadium	2 B		0.64 B		1.3 B		U		10	14 ST
Zinc	237	240	1,815	291	U	70	22.4	198	10	ST~~
Hardness (as CaCO3)	350,000		440,000		82,000		280,000			---

QUALIFIERS:

U: Compound analyzed for but not detected

J: Compound found at a concentration below the CRDL, value estimated

UJ: Analyte not detected above quantitation limit, however quantitation limit is approximate.

R: Result rejected due to failure to meet QA/QC criteria

B: Compound concentration is less than the CRDL but greater than the IDL.

NOTES:

Indicates value exceeds standard or guidance value.

* : Dissolved arsenic form

** : 11 ug/l when hardness is less than or equal to 75 ppm and 1,100 ug/l when hardness is greater than 75 ppm

*** : (0.85) exp(.7852 [ln (ppm hardness)] - 2.715)

^ : (0.86) exp(0.819 [ln (ppm hardness)] + 0.6848)

^^ : (0.96) exp(0.8545 [ln (ppm hardness)] - 1.702)

^^^ : {1.46203 - [ln (hardness) (0.145712)]} exp (1.273 [ln (hardness)] - 4.297)

~ :(0.997) exp (0.846 [ln (hardness)] + 0.0584)

~~ : exp(0.85* [ln (ppm hardness)] + 0.5)

~~~ : As free cyanide: the sum of HCN and CN- expressed as CN

N - standard normalized to hardness
~~~

TABLE 4a.
Frazer and Jones
Site Investigation
Sediment Samples
SEMIVOLATILE ORGANIC COMPOUNDS

Sample Identification	SED - 1		SED - 2		SED - 3		SED - 4		Reporting	NYSDEC	
Date of Collection	8/13/08		8/13/08		8/13/08		8/13/08		Limit	Sediment Criteria	Protection
Total Organic Carbon (%)	17.2	N	15.7	N	11.9	N	3.36	N			
Units	(ug/kg)		(ug/kg)		(ug/kg)		(ug/kg)		(ug/kg)	(ug/gOC)	Level
Fluoranthene	U	175,440	U	160,140	4,300 J	121,380	1,300 J	34,272	200	1,020	BALCT
Fluorene	U	1,376	U	1,256	U	952	U	269	200	8	BALCT
Hexachlorobenzene	U	26	U	24	U	18	U	5	200	0.15	HHB
Hexachlorobutadiene	U	52	U	47	U	36	U	10	200	0.3	HHB
Hexachlorocyclopentadiene	UJ	757	UJ	691	UJ	524	UJ	148	400	4.4	BALCT
Hexachloroethane	U	---	U	---	U	---	U	---	200	----	
Indeno(1,2,3-cd)pyrene	U	224	U	204	U	155	350 J	44	200	1.3	HHB
Isophorone	U	---	U	---	U	---	U	---	200	----	
2-methyl-4,6-dinitrophenol	UJ	---	UJ	---	U	---	UJ	---	400	----	
2-Methylnaphthalene	UJ	5,848	UJ	5,338	UJ	4,046	UJ	1,142	200	34	BALCT
2-Methylphenol (o-cresol)	U	---	U	---	U	---	U	---	200	----	
4-Methylphenol (p-cresol)	U	---	U	---	U	---	U	---	200	----	
Naphthalene	U	5,160	U	4,710	U	3,570	U	1,008	200	30	BALCT
2-Nitroaniline	U	---	U	---	U	---	U	---	400	----	
3-Nitroaniline	U	---	U	---	U	---	U	---	400	----	
4-Nitroaniline	U	---	U	---	U	---	U	---	400	----	
Nitrobenzene	U	---	U	---	U	---	U	---	200	----	
2-Nitrophenol (o-nitrophenol)	U	---	U	---	U	---	U	---	200	----	
4-Nitrophenol	U	---	U	---	U	---	U	---	200	----	
N-Nitrosodiphenylamine	U	---	U	---	U	---	U	---	200	----	
N-Nitroso-di-n-propylamine	U	---	U	---	U	---	U	---	200	----	
Pentachlorophenol	UJ	6,880	UJ	6,280	UJ	4,760	UJ	1,344	400	40	BALCT
Phenanthrene	U	20,640	U	18,840	U	14,280	880 J	4,032	200	120	BALCT
Phenol	U	86	U	79	U	60	U	17	200	0.5	BALCT
Pyrene	U	165,292	U	150,877	4,400 J	114,359	1,400 J	32,290	200	961	BALCT
1,2,4-Trichlorbenzene	U	---	U	---	U	---	U	---	200	----	
2,4,5-Trichlorophenol	UJ	---	UJ	---	UJ	---	UJ	---	200	----	
2,4,6-Trichlorophenol	U	---	U	---	U	---	U	---	200	----	
Total PAHs	0		0		4,400		1,400				
Total Carcinogen PAHs	0		0		4,400		1,400				
Total SVOCs	4,300		11,000		19,900		7,270				

QUALIFIERS:

U: Compound analyzed for but not detected

J: Analyte positively identified, result is approximate.

UJ: Analyte not detected above quantitation limit, however the quantitation limit has been qualified as approximately 5X the reporting limit.

NOTES:

N - Total organic carbon normalized criteria

HHB - Human Health Bioaccumulation

BALCT - Benthic Aquatic Life Chronic Toxicity

MDL - method detection limit

----: not established

Indicates value exceeds NYSDEC sediment criteria.

TABLE 4b.
Frazer and Jones
Site Investigation
Sediment Samples
PCBs

Sample Identification	SED - 1		SED - 2		SED - 3		SED - 4		Reporting Limit	NYSDEC Sediment Criteria	Protection Level
Date of Collection	8/13/08		8/13/08		8/13/08		8/13/08				
Total Organic Carbon (%)	17.20	**N**	15.70	**N**	11.90	**N**	3.36	**N**			
Units	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/gOC)	
Aroclor-1016	UJ	0.1376	UJ	0.126	UJ	0.095	UJ	0.027	200.0	0.0008	HHB
Aroclor-1221	UJ	0.1376	UJ	0.126	UJ	0.095	UJ	0.027	200.0	0.0008	HHB
Aroclor-1232	UJ	0.1376	UJ	0.126	UJ	0.095	UJ	0.027	200.0	0.0008	HHB
Aroclor-1242	UJ	0.1376	UJ	0.126	UJ	0.095	UJ	0.027	200.0	0.0008	HHB
Aroclor-1248	UJ	0.1376	UJ	0.126	UJ	0.095	UJ	0.027	200.0	0.0008	HHB
Aroclor-1254	UJ	0.1376	UJ	0.126	UJ	0.095	UJ	0.027	200.0	0.0008	HHB
Aroclor-1260	UJ	0.1376	UJ	0.126	UJ	0.095	UJ	0.027	200.0	0.0008	HHB
Total PCBs	0		0		0		0				

Qualifiers:

U: Compound analyzed for but not detected

UJ: Analyte not detected above quantitation limit, however
the quantitation limit has been qualified as approximately 1.5 X to 5X the reporting limit.

Notes:

N - Total organic carbon normalized criteria

HHB - Human Health Bioaccumulation

BALCT - Benthic Aquatic Life Chronic Toxicity

----: not established

Indicates value exceeds NYSDEC sediment criteria.

TABLE 4c.
Frazer and Jones
Site Investigation
Sediment Samples
INORGANIC PARAMETERS

Sample Identification	SED - 1	SED - 2	SED - 3	SED - 4	Reporting Limit	NYSDEC Sediment Criteria for Metals* Lowest Effect Level	NYSDEC Sediment Criteria for Metals* Severe Effect Level
Date of Collection	08/13/08	08/13/08	08/13/08	08/13/08			
Units	mg/kg	mg/kg	mg/kg	mg/kg	(mg/kg)	(mg/kg)	(mg/kg)
Aluminum	773	1,118	5,410	2,813	10	--	--
Antimony	UJ	UJ	UJ	UJ	1	2	25
Arsenic	UJ	UJ	UJ	1.2 J	1	6	33
Barium	13.4 BJ	27.1 J	43 J	17.4 BJ	20	--	--
Beryllium	UJ	0.096 J	J	UJ	1	--	--
Cadmium	0.64 J	**1.2 J**	0.09 BJ	UJ	1	0.6	9
Calcium	42,851 J	9,992 J	22,529	10,389	1	--	--
Chromium	6.1 J	12 J	14.0 J	6.5 J	1	26	110
Cobalt	UJ	2.6 J	5.5 J	UJ	1	--	--
Copper	**35**	**37.5 J**	**34 J**	**121 J**	1	16	110
Iron	1,864 J	16,136 J	11,917 J	6,691 J	5	20,000	40,000
Lead	**34.1 J**	**212 J**	**107 J**	19 J	1	31	110
Magnesium	1,850	1,095	10,267 J	2,329 J	1	--	--
Manganese	40 J	115	**466 J**	106	1	460	1100
Mercury	0.14	0.035	**0.2 J**	0.066	0.03	0.15	1.3
Nickel	6 J	8.4 J	14.6 J	7.7 J	1	16	50
Potassium	UJ	UJ	874 J	UJ	1	--	--
Selenium	UJ	UJ	1.2 J	UJ	1	--	--
Silver	UJ	UJ	UJ	UJ	1	1	2.2
Sodium	R	R	R	R	100	--	--
Thallium	R	UJ	2.7 J	R	1	--	--
Vanadium	2.69 J	3.3 BJ	13.7 J	4.1 BJ	1	--	--
Zinc	112	**6,496 J**	**171 J**	**168 J**	1	120	270

QUALIFIERS:

U: Compound analyzed for but not detected

J: Analyte positively identified, result is approximate.

B: Compound concentration is less than the CRDL but greater than the IDL.

R: Result rejected due to failure to meet QA/QC criteria

UJ: Analyte not detected above quantitation limit, however the quantitation limit is approximate.

NOTES:

SB: Site background

----: not established

*: as per January 22, 1999 NYSDEC Technical Guidance for Screening Contaminated Sediment

Indicates value exceeds NYSDEC Lowest effect sediment criteria.

Indicates value exceeds NYSDEC Severest effect sediment criteria.

Table F-5

Table 115
Honeywell
Mathews Avenue Preliminary Site Assessment
Comparison of Background Values, Standards, and Typical Solvay Waste

Analyte	Native Soil Concentrations (ppm) (a)	NYS Natural Background Level (ppm) (b)	Typical Conc. in Solvay Waste (ppm) (c)	NYSDEC TAGM 4046 Soil Cleanup Objective (ppm) (d)
Aluminum	10,000 - 300,000	1,000 - 25,000	4,800	SB
Antimony	0.6 - 10	--	--	SB
Arsenic	1 - 40	3 - 12	16	7.5
Barium	100 - 3,500	15 - 600	--	300
Beryllium	0.1 - 40	0 - 1.75	--	0.16
Cadmium	0.01 - 7	0.01 - 0.88 (e)	2	10
Calcium	100 - 400,000	130 -35,000	--	SB
Chromium	5 - 3,000	1.5 - 40	9	50
Cobalt	1- 40	2.5 - 60	--	30
Copper	2 - 100	<1 - 15 (e)	10	25
Cyanide	--	--	0.04	16
Iron	7,000- 550,000	17,500 - 25,000 (f)	4,520	--
Lead	2 - 200	1 - 12.5 (e)	30	400
Magnesium	600 - 6,000	2,500 - 6000 (f)	--	--
Manganese	100 - 4,000	50 - 5,000	--	--
Mercury	0.01 0.08	0.042 - 0.066 (f)	0.04	0.1
Nickel	5 - 1,000	0.5 - 25	13	13
Potassium	400 - 30,000	8,500 - 43,000	--	SB
Selenium	0.1 - 2	<0.1 - 0.125 (f)	--	2

Table 1-5
Honeywell
Mathews Avenue Preliminary Site Assessment
Comparison of Background Values, Standards, and Typical Solvay Waste

Analyte	Native Soil Concentrations (ppm) (a)	NYS Natural Background Level (ppm) (b)	Typical Conc. in Solvay Waste (ppm) (c)	NYSDEC TAGM 4046 Soil Cleanup Objective (ppm) (d)
Silver	0.1 - 5	--	--	SB
Sodium	750 - 7500	6,000 - 8,000 (f)	--	SB
Thallium	0.1 - 12	--	--	SB
Vanadium	20 - 500	--	--	150
Zinc	10 - 300	37 - 70 (f)	30	20

Notes:
-- no value listed
(a) Dragun, 1988. The Soil Chemistry of Hazardous Materials
(b) McGovern, 1988. Background Concentrations of 20 elements in soils with special regard for New York State
(c) Calcerinos & Spina, 1980. Proceedings of the Conference on Geotechnical Practice for Disposal of Solid Waste Materials.
(d) New York State Department of Environmental Conservation, 1995. Division of Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels (TAGM 4046).
(e) value for Massachusetts used
(f) value for Albany used
SB = site background

Table 4.1. *Detected Surface Soil CPOIs.*

Parameter	No. of Samples	No. of Detects	Minimum Detected Conc.	Mean Detected Conc.[3]	Maximum Detected Conc.	No. of Exceedances[1]
Barium	14	13	50.7	111	355	2
Sodium	14	7	1.2	683	2,330	2
Silver	14	3	1.6	79.6	234	2
Thallium	14	2	1.3	7.1	12.9	2
Lead	14	14	20.8	2,102	28,200	1
Cobalt	14	13	3.5	9.6	53.1	1
Selenium	14	2	2.4	2.55	2.7	1
Vanadium	14	14	11.4	17.3	46.3	0
Cadmium	14	4	0.1	0.24	0.54	0

Notes:
1 – Exceeds either NYSDEC Soil Cleanup Objectives (TAGM 4046)
2 – Total TEQ was compared to NYSDEC Soil Cleanup Objective for 2,3,7,8-TCDD of 1,000 ng/kg
3 – Mean concentration values have been rounded

For the purposes of the nature and extent discussion, the surface soil samples collected during the PSA and Supplemental PSA are discussed together below.

Volatile organic compound CPOIs detected in Site surface soils include dichlorobenzenes, methylene chloride, acetone, benzene, and trichloroethene. The distributions of the VOC CPOIs are presented on **Figure 21**.

The distributions of SVOC CPOIs are presented on **Figure 22** and include benzo[a]pyrene and total PAHs. The total PAH concentrations were derived by calculating the sum of the following detected chemical parameters in the USEPA SW-846 Method 8270 scan:

- 2-methylnaphthalene
- acenaphthene
- acenaphthylene
- anthracene
- benzo[a]anthracene
- benzo[a]pyrene
- benzo[b]fluoranthene
- benzo[g,h,i]perylene
- benzo[k]flouranthene
- chrysene
- dibenzo[a,h]anthracene
- flouranthene
- flourene
- indeno[1,2,3-cd]pyrene
- naphthalene
- phenanthrene
- pyrene

The distribution of surface soil PCBs exceeding *NYSDEC Soil Cleanup Objectives (TAGM 4046)* criteria (NYSDEC 1994) are presented on **Figure 23**. The distribution of select inorganic CPOIs that exceeded TAGM 4046, including arsenic, copper, mercury, and nickel are included on **Figure 24**.

There is no clear distribution of chemical parameters in Site surface soils and no apparent source area. The results are consistent with the Site being used as a landfill in the past. The VOC concentrations were variable across the Site and did not present a distinct distribution pattern. PAHs were detected consistently across the Site and had the highest concentrations in the northeastern portion of the landfill at locations MA-SB-14 and MA-SS-17. The highest PCB concentrations were detected at MA-SB-07 in the western portion of the landfill. Inorganic constituent concentrations were variable throughout the footprint of the landfill and presented no clear pattern of distribution..

Table 4.2. *Detected Subsurface Soil CPOIs.*

Parameter	No. of Samples	No. of Detects	Minimum Detected Conc.	Mean Detected Conc.[3]	Maximum Detected Conc.	No. of Exceedances[1]
Sodium	39	30	107	702	2,210	10
Antimony	39	8	0.21	4	16.7	6
Lead	39	38	4.4	192	3,200	5
Silver	39	4	0.3	1.03	2.7	4
Barium	39	39	21.4	80	304	1
Cadmium	39	14	0.11	1	5.1	1
Selenium	39	2	1.2	5.1	9	1
Vanadium	39	38	9.6	18	34	0
Cobalt	39	34	3.7	8.4	24.5	0

Notes:
1 – Exceeds either NYSDEC Soil Cleanup Objectives (TAGM 4046)
2 – Total TEQ was compared to NYSDEC Soil Cleanup Standard for 2,3,7,8-TCDD of 1,000 ng/kg
3 – Mean concentration values have been rounded.

For the purposes of the nature and extent discussion, the subsurface soil include soil samples collected during the PSA and Supplemental PSA are discussed together below.

Subsurface soil VOCs that exceed TAGM 4046 soil cleanup criteria include trichloroethene, *cis*-1,2-dichloroethene, *trans*-1,2-dichloroethene, and 1,1-dichloroethane. The exceedences of the above listed compounds are presented on **Figure 25**. **Figure 26** presents the distribution of 1,2-dichlorobenzene and 1,4-dichlorobenzene exceedences in subsurface soil.

The distributions of SVOC CPOIs are presented on **Figure 27** and include total PAHs and benzo(a)pyrene.

The distribution of subsurface soil Aroclor 1254 exceedences are presented on **Figure 28**. The distribution of select inorganic CPOIs in subsurface soil that exceeded TAGM 4046, including arsenic, chromium, copper, mercury, and nickel are included on **Figure 29**.

Generally, the highest concentrations and the majority of subsurface soil constituent concentrations greater than NYSDEC soil cleanup criteria were in the vicinity of the Mathews Avenue Landfill. There was no clear distribution of chemical parameters within subsurface soil within the Landfill. Concentration results were highly variable between locations. No apparent source was identified within the landfill. This is consistent with the Site being previously used as a landfill, with the fill materials heterogeneous in nature. The landfill subsurface soils contained dichlorobenzenes, assorted PAHs, 4,4-DDT, PCBs, total TEQs, and inorganics exceeding TAGM 4046. 1,4-Dichlorobenzene was detected at its highest concentration at MA-SB-11 (8-12 ft) in the center of the landfill. PAHs were also distributed in subsurface soils throughout the Site with the highest concentrations in the center of the landfill at MA-TP-11 (10 ft). In general, the highest VOC and SVOC concentrations were associated with the fill at the Mathews Avenue Landfill. The highest PCB and pesticide concentrations were also within the Mathews Avenue Landfill. Inorganics in subsurface soils exceeded TAGM 4046 values in many cases. These inorganics in subsurface soils may be background in nature in some cases.

The chlorinated organics including trichloroethene, *cis*-1,2-dichloroethene, *trans*-1,2-dichloroethene, and 1,1-dichloroethane were detected at their highest concentrations at MA-SB-12 (20-24 ft) in native

Life Science Laboratories, Inc.
5854 Butternut Drive
East Syracuse, NY 13057
Phone # (315) 445-1105 Telefax # (315) 445-1301

Chain of Custody Record

Client: Gould Groundwater Inv. Phone # 637-3165
Address: 300 Brooklea Dr. Fax # 637-9891
Fayetteville, NY 13066

Contact Person: Gerry Gould

LSL Project #:

Client's Site I.D.: Frazer + Jones

Client's Project I.D.: 1050

Authorization:

LSL Sample Number	Client's Sample Identifications	Sample Date	Sample Time	Type grab	Type comp.	Matrix	Preserv. Added	Containers #	Containers size/type	Analyses	Free Cl (mg/L)	Pres. Check
	FJ MW-1	8/12/08	12:30	✓		W		4	2L glass amber 40ml glass	VOCs, SVOCs, PCBs		
	FJ MW-1 MS			✓		W		4	1L amber 40ml glass	" " "		
	FJ MW-1 MSD			✓		W		4	"	" " "		
	FJ MW-2		13:30	✓		W		4	"	" " "		
	FJ MW-3		14:20	✓		W		4	"	" " "		
	FJ MW-4		15:00	✓		W		4	"	" " "		
	FJ MW-1	8/13/08	9:55	✓		W		1	plastic	metals		
	FJ MW-1 MS			✓		W		1	"	metals		
	FJ MW-1 MSD			✓		W		1	"	metals		
	FJ MW-2		10:15	✓		W		1	"	"		
	FJ MW-3		9:20	✓		W		1	"	"		
	FJ MW-4		9:30	✓		W		1	"	"		
	~~SED~~ FJ SED-1	8/13/08	11:20	✓		S		1	glass	SVOCs, PCBs, metals, TOC		
	FJ SED-2		10:50	✓		S		1	"	" " " "		
	FJ SED-3		11:45	✓		S		1	"	" " " "		
	FJ SED-4		12:10	✓		S		1	"	" " " "		
	FJ SED-2 MS/MSD	8/13/08	10:50	✓		S		2	"	" " " "		

Notes and Hazard Identifications:

Custody Transfers

		Date	Time
Sampled By: Gould Gould	Received By:	8/13/08	13:55
Relinquished By: Gould Gr	Received By:	8/13/08	13:55
Relinquished By:	Received for Lab By: 03-13-08 13:55 RCVD		

Shipment Method: Samples Received Intact: Y N

Life Science Laboratories, Inc.
5854 Butternut Drive
East Syracuse, NY 13057
Phone # (315) 445-1105 Telefax # (315) 445-1301

Chain of Custody Record

Client: Gould Groundwater Inv. Phone # 637-3165
Address: 300 Brooklea Dr Fax # 637-9891
Fayetteville, NY 13066

Contact Person: Gerry Gould

LSL Project #:

Client's Site I.D.: Frazer & Jones

Client's Project I.D.: 1050

Authorization:

LSL Sample Number	Client's Sample Identifications	Sample Date	Sample Time	Type: grab	Type: comp.	Matrix	Preserv. Added	Containers: #	Containers: size/type	Analyses	Free Cl (mg/L)	Pres. Check
	FJSW-1	8/13/08	11:20	✓		W		3	1 amber plastic	SVOCs, PCBs, metals, hardness		
	FJSW-2	"	10:50	✓		W		3	"	"		
~~gg~~	~~FJSW-2 MS~~	"	"	✓		"						
~~gg~~	~~FJSW-2 MSD~~	"	"	✓		"						
	FJSW-3	8/13/08	11:45	✓		W		3	1 amber plastic	SVOCs, PCBs, metals, hardness		
	FJSW-4	8/13/08	12:10	✓		W		3	"	"		
	Trip Blank					W		2	40mL	VOCs		

Notes and Hazard Identifications:

Custody Transfers

		Date	Time
Sampled By: Gerald Gould	Received By:	8/13/08	13:15
Relinquished By: Gerald Gould	Received By:	"	13:55
Relinquished By:	Received for Lab By:	08-13-08	13:55 RCVD

Shipment Method: Samples Received Intact: Y N

GOULD GROUNDWATER INVESTIGATIONS, INC.

Date: 8/13/08

SAMPLE INFORMATION RECORD

Site: Frazer & Jones **Sample Crew:** G. Gould

Sample Location/Well No. SW-1 SED-1

Field Sample I.D. Number FJSW-1 FJSED-1 **Time** 11:20

Weather p. cloudy **Temperature** 70°F

Sample Type:

Groundwater _____ **Sediment** ✓

Surface Water/Stream ✓ **Air** _____

Soil _____ **Other (describe, i.e. water, septage, etc.)** _____

Well Information (fill out for groundwater samples)

Depth to Water _____ **Measurement Method** _____

Depth of Well _____ **Measurement Method** _____

Volume Removed _____ **Removal Method** _____

Field Test Results

pH 7.16 Spec Cond (mS/cm) 1.01 Turbidity (NTUs) 26

Diss. Oxygen (mg/l) 3.09 Temperature °C 20.4 Salinity (%) 0.04

PID (ppm) _____ Color _____ Odor sulfer odor

Other: _____

Laboratory Analyses Requested

SVOCs PCBs metals TOC (sed only)

hardness (water only) _____ _____ _____

Remarks:

- water is clear with floating duck weed
- sediment is dk gray soft clayey organic material

Well Casing Volumes

GAL/FT	1¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1½ = 0.10	2½ " = 0.24	3½ = 0.50	6" = 1.46

GOULD GROUNDWATER INVESTIGATIONS, INC.

Date: 8/13/08

SAMPLE INFORMATION RECORD

Site: Frazer & Jones **Sample Crew:** G. Gould

Sample Location/Well No. SW-2 SED-2

Field Sample I.D. Number FJ SW-2 FJSED-2 **Time** 10.50

Weather m. sunny **Temperature** 70°F

Sample Type:

Groundwater _____ **Sediment** ✓

Surface Water/Stream ✓ **Air** _____

Soil _____ **Other (describe, i.e. water, septage, etc.)** _____

Well Information (fill out for groundwater samples)

Depth to Water _____ **Measurement Method** _____

Depth of Well n/a **Measurement Method** n/a

Volume Removed _____ **Removal Method** _____

Field Test Results

pH 7.05 Spec Cond (mS/cm) 138 Turbidity (NTUs) 100

Diss. Oxygen (mg/l) 1.21 Temperature °C 18.2 Salinity (%) ~~0.08~~ 0.06

PID (ppm) – Color dk gray Odor oily organic odor petroleum-like

Other: much organic matter, no sheen

Laboratory Analyses Requested

SVOCs PCBs metals ~~TOC~~ TOC (sed only)

hardness (water only)

Remarks:

MS/MSD collected here

- water is gray with duckweed floating on top & sulphur odor
- sediment is black, soft clayey material, lots of leaves, twigs

Well Casing Volumes

GAL/FT	1¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1½ = 0.10	2½" = 0.24	3½ = 0.50	6" = 1.46

GOULD GROUNDWATER INVESTIGATIONS, INC.

Date: 8/17/08

SAMPLE INFORMATION RECORD

Site: Frazer & Jones **Sample Crew:** G. Gould

Sample Location/Well No. SW-3 SED-3

Field Sample I.D. Number FJSW-3 FJSED-3 **Time** 11:45

Weather P. Cloudy **Temperature** 70°

Sample Type:

Groundwater _____ **Sediment** ✓

Surface Water/Stream ✓ **Air** _____

Soil _____ **Other (describe, i.e. water, septage, etc.)** _____

Well Information (fill out for groundwater samples)

Depth to Water _____ **Measurement Method** _____

Depth of Well N/A **Measurement Method** N/A

Volume Removed _____ **Removal Method** _____

Field Test Results

pH 7.45 Spec Cond (mS/cm) 1.80 Turbidity (NTUs) 2

Diss. Oxygen (mg/l) ~~3.14~~ 2.96 Temperature °C 19.8 Salinity (%) 0.07

PID (ppm) _____ Color Clear Odor none

Other: _____

Laboratory Analyses Requested

SVOCs PCBs metals TOC (sed only)

hardness (water only) _____ _____ _____

Remarks:

- water is clear, standing water in depression - was flowing 8/12/08 but now not flowing
- sediment is brown, silt & roots

Well Casing Volumes

GAL/FT	1¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1½ = 0.10	2½ " = 0.24	3½ = 0.50	6" = 1.46

GOULD GROUNDWATER INVESTIGATIONS, INC.

Date: 8/13/08

SAMPLE INFORMATION RECORD

Site: Frazer & Jones **Sample Crew:** G. Gould

Sample Location/Well No. SW-4 SED-4

Field Sample I.D. Number FJSW-4 FJSED-4 **Time** 12:10

Weather p. sunny **Temperature** 70°F

Sample Type:

Groundwater _____ **Sediment** ✓

Surface Water/Stream ✓ **Air** _____

Soil _____ **Other (describe, i.e. water, septage, etc.)** _____

Well Information (fill out for groundwater samples)

Depth to Water _____ **Measurement Method** _____

Depth of Well n/a **Measurement Method** n/a

Volume Removed _____ **Removal Method** _____

Field Test Results

pH 7.76 Spec Cond (mS/cm) 1.60 Turbidity (NTUs) 2

Diss. Oxygen (mg/l) 4.86 Temperature °C 20.4 Salinity (%) 0.07

PID (ppm) _____ Color _____ Odor _____

Other: _____

Laboratory Analyses Requested

SVOCs PCBs metals TOC (sed only)

hardness (water only) _____ _____ _____

Remarks:

- flowing clear water
- sed under aquatic plant mat is soft & clayey/organic - dark gray

Well Casing Volumes

GAL/FT	1¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1½ = 0.10	2½ " = 0.24	3½ = 0.50	6" = 1.46

GOULD GROUNDWATER INVESTIGATIONS, INC.

Date: 8/12/08

SAMPLE INFORMATION RECORD

Site: Frazer & Jones **Sample Crew:** G. Gould

Sample Location/Well No. MW-4

Field Sample I.D. Number FJ MW-4 **Time** 15:00

Weather p. sunny, breezy 75°F **Temperature** 75°F

Sample Type:

Groundwater ✓ **Sediment** _____

Surface Water/Stream _____ **Air** _____

Soil _____ **Other (describe, i.e. water, septage, etc.)** _____

Well Information (fill out for groundwater samples)

Depth to Water 22.34 w.c. = 5' **Measurement Method** water level indicator

Depth of Well 27.34 x .16 **Measurement Method** " " "

1vol = .80gal

Volume Removed 3vol = 2.4gal **Removal Method** bailer

Field Test Results

pH 7.33 Spec Cond (mS/cm) 1.36 Turbidity (NTUs) 359

Diss. Oxygen (mg/l) 2.80 Temperature °C 14.1 Salinity (%) 0.06

PID (ppm) — Color dk gray Odor none

Other: _____

Laboratory Analyses Requested

VOCs	SVOCs	PCBs	metals

Remarks:

too turbid for metals sample - collect metals later

8/13/08 - 9:30 collect metals sample pH = 6.82 Spcond = 1.35 ms/cm Turb = 1 NTU

D.O. = 2.19 mg/l Temp = 14.2°C Sal = 0.04 ‰

- top of water column - no purge

Well Casing Volumes

GAL/FT				
	1¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1½ = 0.10	2½" = 0.24	3½ = 0.50	6" = 1.46

GOULD GROUNDWATER INVESTIGATIONS, INC.

Date: 8/12/08

SAMPLE INFORMATION RECORD

Site: Frazer & Jones **Sample Crew:** G. Gould

Sample Location/Well No. MW-3

Field Sample I.D. Number FJMW-3 **Time** 14:20

Weather p. cloudy **Temperature** 75° F

Sample Type:

Groundwater ✓ **Sediment** _____

Surface Water/Stream _____ **Air** _____

Soil _____ **Other (describe, i.e. water, septage, etc.)** _____

Well Information (fill out for groundwater samples)

Depth to Water 24.36 WC = 6.10 **Measurement Method** W.L. indicator

Depth of Well 30.46 × .16 **Measurement Method** W.L. indicator

1 vol = 0.98

Volume Removed 3 vol = 3 gal (3 gal) **Removal Method** bailer

Field Test Results

pH 6.92 Spec Cond (mS/cm) 1.63 Turbidity (NTUs) 999

Diss. Oxygen (mg/l) 1.62 Temperature °C 14.1 Salinity (%) 0.07

PID (ppm) — Color brown Odor very slight sulfur

Other:

Laboratory Analyses Requested

VOCs SVOCs PCBs metals

Remarks:

too turbid for metals sample - collect metals later

- almost purged dry

8/13/08 9:20 collect metals sample pH: 6.55 sp cond: 1.60 mS/cm Turb: 14 ntu T: 14.6°C Sal: 0.07‰

D.O. = 2.07 mg/l

Well Casing Volumes

GAL/FT	1¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1½ = 0.10	2½ " = 0.24	3½ = 0.50	6" = 1.46

GOULD GROUNDWATER INVESTIGATIONS, INC.

Date: 8/12/08

SAMPLE INFORMATION RECORD

Site: Frazer & Jones **Sample Crew:** G. Gould

Sample Location/Well No. MW-2

Field Sample I.D. Number FJ MW-2 **Time** 13:30

Weather p. sunny, breezy **Temperature** 75°F

Sample Type:

Groundwater ✓ **Sediment** _____

Surface Water/Stream _____ **Air** _____

Soil _____ **Other (describe, i.e. water, septage, etc.)** _____

Well Information (fill out for groundwater samples) 2" PVC Well

Depth to Water 2.36 } W.C. = 12' **Measurement Method** ~~tape~~ water level indicator

Depth of Well 14.36 } + .16 **Measurement Method** ~~tape~~ " " "

1vol = 1.92gal

Volume Removed 3vol = 5.76 gals (6gals) **Removal Method** bailer

Field Test Results

pH 7.08 Spec Cond (mS/cm) 2.03 Turbidity (NTUs) 999

Diss. Oxygen (mg/l) 3.67 Temperature °C 15.7 Salinity (%) 0.09

PID (ppm) — Color brown Odor slight sulfur odor

Other: _____

Laboratory Analyses Requested

VOCs	SVOCs	PCBs	metals

Remarks:

too turbid for metals, collect separate sample later

- almost purged dry

8/13/08 10:15 collect metals sample pH = 7.01 Spcond = 2.11 Turb = 131 DO = 2.09 Temp = 16.9

Well Casing Volumes Sch: ~~0.08~~ O.D

GAL/FT	**1¼" = 0.077**	**2" = 0.16**	**3" = 0.37**	**4" = 0.65**
	1½ =0.10	**2½ " = 0.24**	**3½ = 0.50**	**6" = 1.46**

GOULD GROUNDWATER INVESTIGATIONS, INC.

Date: 8/12/08

SAMPLE INFORMATION RECORD

Site: Frazer & Jones **Sample Crew:** G. Gould

Sample Location/Well No. MW-1

Field Sample I.D. Number MW-1 **Time** 12:30

Weather P. Sunny **Temperature** 75°F

Sample Type:

Groundwater ✓ **Sediment** _____

Surface Water/Stream _____ **Air** _____

Soil _____ **Other (describe, i.e. water, septage, etc.)** _____

Well Information (fill out for groundwater samples)

Depth to Water 3.77' **Measurement Method** water level indicator

Depth of Well 12.66 **Measurement Method** " " "

Volume Removed MW: 8.89 x .16 = 1.4 gals **Removal Method** bailer

3 vols = 4.2 gals

5 gals

Field Test Results

pH 6.85 Spec Cond (mS/cm) 3.35 Turbidity (NTUs) 999

Diss. Oxygen (mg/l) — Temperature °C 24.7 Salinity (%) 0.16

PID (ppm) — Color brown Odor none

Other: _____

Laboratory Analyses Requested

VOCs | SVOCs | PCBs | metals

_____ | _____ | _____ | _____

Remarks:

Sample metals later when Turb drops

MS/MSD collected here

8/13/08 9:55 collect metals sample pH = 6.75 Spcond = 1.22 Turb = 3 DO = ~~0.05~~

Temp 24.3°C Sal = 0.07

Well Casing Volumes

GAL/FT	1¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1½ = 0.10	2½ " = 0.24	3½ = 0.50	6" = 1.46

Life Science Laboratories, Inc.
5854 Butternut Drive
East Syracuse, NY 13057

Chain of Custody Record

Phone # (315) 445-1105 Telefax # (315) 445-1301

Client: Gould Groundwater Phone # 637-3165
Address: 300 Brookler Dr. Fax # 637-989.
Fayetteville, NY 13066

Authorization:

Contact Person: Gerry Gould

LSL Project #:

Client's Site I.D.: Frazer & Jones

Client's Project I.D.: 1050

LSL Sample Number	Client's Sample Identifications	Sample Date	Sample Time	Type: grab	Type: comp.	Matrix	Preserv. Added	Containers: #	Containers: size/type	Analyses	Free Cl (mg/L)	Pres. Check
	FJ-PZ-1(2'-6')	7/30/08	14:10		✓	S	none	2	8oz 4oz Glass	8270, 8082, metals 8260		
	FJ-PZ-2(16-23')	7/31/08	10:05		✓	S	none	2	" "	8270, 8082, metals, 8260		
	FJ-SS-2	"	11:30	✓		S	none	1	8oz Glass	8270, 8082, metals		
	FJ-SS-3	"	8:42	✓		S	none	1	"	" " "		
	FJ-SS-4	"	9:07	✓		S	"	1	"	" " "		
*	FJ-SS-6	"	12:15	✓		S	"	1	"	" " "		
	FJ-SS-1	"	12:30	✓		S	"	1	"	" " "		
	FJ-SS-5	"	8:56	✓		S	"	1	"	" " "		
	FJ-PZ-3 (14'-18')	7/31/08	13:18		✓	S	"	2	8oz 4oz Glass	8260, 8270, 8082, metals		
	FJ-PZ-4(2'-6')	8/1/08	8:10		✓	S	"	2	8oz 4oz Glass	8260, 8270, 8082, metals		

Notes and Hazard Identifications:
* MS/MSD on this sample GG 8/1/08

Custody Transfers	Date	Time
Sampled By: Gerald Gould Received By:		
Relinquished By: Gerald Gould Received By:		
Relinquished By: Received for Lab By: R. Dumbar 08-01-08 13:24 RCVD		

Shipment Method: Samples Received Intact: Y N 5.1°C. on ice

GOULD GROUNDWATER INVESTIGATIONS, INC.

Date: 7/31/08

SAMPLE INFORMATION RECORD

Site: Frazer & Jones **Sample Crew:** G. Gould

Sample Location/Well No. SS-1 (0-2")

Field Sample I.D. Number SS-1 **Time** ~~12:25~~ 12:30

Weather Cloudy, shower **Temperature** 78°F

Sample Type:

Groundwater _____ **Sediment** _____

Surface Water/Stream _____ **Air** _____

Soil ✓ **Other (describe, i.e. water, septage, etc.)** _____

Well Information (fill out for groundwater samples)

Depth to Water _____ **Measurement Method** _____

Depth of Well _____ **Measurement Method** _____

Volume Removed _____ **Removal Method** _____

Field Test Results

pH _____ Spec Cond (mS/cm) _____ Turbidity (NTUs) _____

Diss. Oxygen (mg/l) _____ Temperature °C _____ Salinity (%) _____

PID (ppm) _____ Color _____ Odor _____

Other: _____

Laboratory Analyses Requested

SVOCs PCBs metals _____

_____ _____ _____ _____

Remarks:

behind yellow guard rail on E side of parking lot

Well Casing Volumes

GAL/FT	**1¼" = 0.077**	**2" = 0.16**	**3" = 0.37**	**4" = 0.65**
	1½ =0.10	**2½ " = 0.24**	**3½ = 0.50**	**6" = 1.46**

GOULD GROUNDWATER INVESTIGATIONS, INC.

Date: 7/31/08

SAMPLE INFORMATION RECORD

Site: Frazer & Jones **Sample Crew:** G. Gould

Sample Location/Well No. SS-2 (0-2")

Field Sample I.D. Number SS-2 **Time** 11:30

Weather m, sunny, humid **Temperature** 80°F

Sample Type:

Groundwater _____ **Sediment** _____

Surface Water/Stream _____ **Air** _____

Soil ✓ **Other (describe, i.e. water, septage, etc.)** _____

Well Information (fill out for groundwater samples)

Depth to Water _____ **Measurement Method** _____

Depth of Well _____ **Measurement Method** _____

Volume Removed _____ **Removal Method** _____

Field Test Results

pH _____ Spec Cond (mS/cm) _____ Turbidity (NTUs) _____

Diss. Oxygen (mg/l) _____ Temperature °C _____ Salinity (%) _____

PID (ppm) _____ Color _____ Odor _____

Other: _____

Laboratory Analyses Requested

SVOCs PCBs metals _____

_____ _____ _____ _____

Remarks:

in grass area, west of access road

Well Casing Volumes

GAL/FT	1¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1½ = 0.10	2½ " = 0.24	3½ = 0.50	6" = 1.46

GOULD GROUNDWATER INVESTIGATIONS, INC.

Date: 7/31/08

SAMPLE INFORMATION RECORD

Site: Frazer & Jones **Sample Crew:** G. Gould

Sample Location/Well No. SS-3 - NW corner of west sand pile

Field Sample I.D. Number SS-3 **Time** 10:42

Weather P. sunny 75°, breezy **Temperature** 75° F

Sample Type:

Groundwater _____ **Sediment** _____

Surface Water/Stream _____ **Air** _____

Soil ✓ **Other (describe, i.e. water, septage, etc.)** _____

Well Information (fill out for groundwater samples)

Depth to Water _____ **Measurement Method** _____

Depth of Well _____ **Measurement Method** _____

Volume Removed _____ **Removal Method** _____

Field Test Results

pH _____ Spec Cond (mS/cm) _____ Turbidity (NTUs) _____

Diss. Oxygen (mg/l) _____ Temperature °C _____ Salinity (%) _____

PID (ppm) _____ Color _____ Odor _____

Other: _____

Laboratory Analyses Requested

SVOCs PCBs metals _____

_____ _____ _____ _____

Remarks:

composite of gray drum contents and surrounding soil

Well Casing Volumes

GAL/FT	**1¼" = 0.077**	**2" = 0.16**	**3" = 0.37**	**4" = 0.65**
	1½ =0.10	**2½ " = 0.24**	**3½ = 0.50**	**6" = 1.46**

GOULD GROUNDWATER INVESTIGATIONS, INC.

Date: 7/31/08

SAMPLE INFORMATION RECORD

Site: Frazer & Jones **Sample Crew:** G. Gould

Sample Location/Well No. SS-4

Field Sample I.D. Number SS-4 **Time** 9:07

Weather p. sunny, breezy **Temperature** 75°F

Sample Type:

Groundwater _____ **Sediment** _____

Surface Water/Stream _____ **Air** _____

Soil ✓ **Other (describe, i.e. water, septage, etc.)** _____

Well Information (fill out for groundwater samples)

Depth to Water _____ **Measurement Method** _____

Depth of Well _____ **Measurement Method** _____

Volume Removed _____ **Removal Method** _____

Field Test Results

pH _____ Spec Cond (mS/cm) _____ Turbidity (NTUs) _____

Diss. Oxygen (mg/l) _____ Temperature °C _____ Salinity (%) _____

PID (ppm) _____ Color _____ Odor _____

Other: _____

Laboratory Analyses Requested

SVOCs PCBs Metals _____

_____ _____ _____ _____

Remarks:

between manhole & survey well, N slope of East pile - near access road.

Well Casing Volumes

GAL/FT	**1¼" = 0.077**	**2" = 0.16**	**3" = 0.37**	**4" = 0.65**
	1½ =0.10	**2½ " = 0.24**	**3½ = 0.50**	**6" = 1.46**

GOULD GROUNDWATER INVESTIGATIONS, INC.

Date: 7/31/08

SAMPLE INFORMATION RECORD

Site: Frazer & Jones **Sample Crew:** G Gould

Sample Location/Well No. SS-5 N slope of east sand pile

Field Sample I.D. Number SS-5 **Time** 8:56

Weather p. sunny breezy **Temperature** 75°F

Sample Type:

Groundwater _____ **Sediment** _____

Surface Water/Stream _____ **Air** _____

Soil ✓ **Other (describe, i.e. water, septage, etc.)** _____

Well Information (fill out for groundwater samples)

Depth to Water _____ **Measurement Method** _____

Depth of Well _____ **Measurement Method** _____

Volume Removed _____ **Removal Method** _____

Field Test Results

pH _____ Spec Cond (mS/cm) _____ Turbidity (NTUs) _____

Diss. Oxygen (mg/l) _____ Temperature °C _____ Salinity (%) _____

PID (ppm) _____ Color _____ Odor _____

Other: _____

Laboratory Analyses Requested

SVOCs PCBs metals _____

_____ _____ _____ _____

Remarks:

one third of the way up slope - off access rd.

Well Casing Volumes

GAL/FT	1¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1½ =0.10	2½ " = 0.24	3½ = 0.50	6" = 1.46

GOULD GROUNDWATER INVESTIGATIONS, INC.

Date: 7/31/08

SAMPLE INFORMATION RECORD

Site: Frazer & Jones **Sample Crew:** G. Gould

Sample Location/Well No. SS-6 (0-2")

Field Sample I.D. Number SS-6 **Time** 12:15

Weather m. cloudy & breezy **Temperature** 80°F

Sample Type:

Groundwater _____ **Sediment** _____

Surface Water/Stream _____ **Air** _____

Soil ✓ **Other (describe, i.e. water, septage, etc.)** _____

Well Information (fill out for groundwater samples)

Depth to Water _____ **Measurement Method** _____

Depth of Well _____ **Measurement Method** _____

Volume Removed _____ **Removal Method** _____

Field Test Results

pH _____ Spec Cond (mS/cm) _____ Turbidity (NTUs) _____

Diss. Oxygen (mg/l) _____ Temperature °C _____ Salinity (%) _____

PID (ppm) _____ Color _____ Odor _____

Other: _____

Laboratory Analyses Requested

SVOCs PCBs metals _____

_____ _____ _____ _____

Remarks:

in grass, under sod, South of RR tracks

Well Casing Volumes

GAL/FT	1¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1½ =0.10	2½ " = 0.24	3½ = 0.50	6" = 1.46

2063 STANLEY ROAD
CAZENOVIA, NEW YORK 13035
Tel/Fax: (315) 655-2733

January 26, 2009

Mr. Gerald Gould, President
Gould Groundwater Investigations, Inc.
300 Brooklea Drive
Fayetteville, New York 13066

Re: Final DUSR – Frazer & Jones site
LSL SDGs 0813463 & 0814443
File: 2131.001

Dear Mr. Gould:

SGD Environmental has completed the review of data generated by Life Science Laboratories, Inc. (LSL) and indentified as LSL Sample Delivery Groups (SDGs) 0813463 & 0814443 for the purpose of preparing a Data User Summary Report (DUSR). The data reviewed consists of surface soil, groundwater, sediment and surface water samples collected by Gould Groundwater Investigations, Inc. (GGI) on July 30 & 31, 2008 and August 12 & 13, 2008. The samples were analyzed by LSL for volatile organic compounds (VOCs) (USEPA Method 8260B), semivolatile organic compounds (SVOCs) (USEPA Method 8270D), polychlorinated biphenyls (PCBs) (USEPA Method 8082A), total metals (USEPA Method 6010), mercury (USEPA Method 245.1) and total organic carbon (TOC) (USEPA Method 9060). The TOC analysis was subcontracted by LSL to Test America located in Nashville, Tennessee. The laboratory data reports for the TOC analyses were presented in a modified NYSDEC ASP Category B deliverables format. The raw data for the TOC analyses were not available for review.

This DUSR was prepared utilizing the New York State Department of Environmental Conservation "Guidance for the Development of Data Usability Summary Reports" (Appendix 2B) which references the United States Environmental Protection Agency (USEPA) Region 2 Data Validation Standard Operating Procedures, with consideration given for method requirements. The data was reviewed for completeness, chain of custody, holding times, preservation, laboratory control samples (LCS), matrix spikes/matrix spike duplicates (MS/MSD), laboratory duplicates, surrogate recoveries, preparation/calibration blanks, initial and continuing calibrations, instrument tunes, and detection limits. The summary of this review is presented in the following sections (by analysis) and outlines data which are considered non-compliant with method requirements. Where necessary, the sample results are hand-flagged by SGD Environmental on the accompanying Form 1 sample result reports with data qualifiers to reflect data deficiencies (see attached). A summary list of qualifiers used to flag the data and their definitions are accompanying the Form 1 reports.

General review findings

- Samples were received at 6°C or less and, therefore, compliant.
- Holding times for receipt, preparation, and analysis were met and therefore, compliant.

General review findings (cont.,)

- LSL did not report soil/sediment samples on a dry weight adjusted basis; the percent moisture was not performed by LSL. According to Mr. Hugh Guider, LSL Director of Client Services, percent moisture was not performed because it was not requested by the client. The soil/sediment wet weight results as reported for all analyses are biased low by the percentage moisture that was present.
- Acid preservation for aqueous VOC and metals samples was not documented. Mr. Guider indicated, however, that pH was measured with pH paper by LSL to confirm proper preservation requirements (*i.e.*, low pH). Without proper preservation, results for metals would be qualified "R" and the VOCs analysis holding time would change from 14 days to 7 days and would be exceeded.
- LSL did not report the potentially present compounds reportable between the method detection limit (MDL) and the reporting limit (normally qualified as estimated "J") for the VOC, SVOC, and PCB analyses.

Volatile Organics by USEPA Method 8260

- Sample results for MW-1 through 4 had the data qualified "J" due to samples being analyzed outside the 12 hour tune clock. LSL provided tune data for the next analytical run (analyzed the same day) which showed that although the 12 hour criteria was exceeded, the instrument tune was stable, therefore, the data was not qualified "R."
- Acetone results for samples PZ-1 through PZ-4 are qualified "R" due to a low relative response factor (RRF) below 0.05.
- The MS and MSD for SS-4 were not analyzed by LSL.
- Soil samples PZ-1 through 4 were analyzed as "medium soils" due to the sample matrix interaction with the internal standards. As such, the reporting limits are 200X higher than "low level" soils. This is not a data quality problem but it should be noted in case the data quality objectives for the site that the lowest reporting limits could not be achieved.
- Tentatively identified compounds (TICS) were not reported; LSL stated that they were not requested by the client.
- Mass spectra for identified compounds were not provided and could not be evaluated.
- Sixteen compounds failed percent difference criteria for the continuing calibration verification (CCV) for the trip blank associated with SDG 0813463 and were qualified "J." Bromoform, 2-butanone, and 1,1,2,2-tetrachoroethane did not meet the minimum RRF requirements and were qualified "R" for the same trip blank.
- LSL used a four point calibration for acetone in the initial calibration of Instrument 5971C performed January 21, 2008. A three point calibration for acetone and 4 point calibration for 2-butanone for Instrument 5973K on July 29, 2008 was used. USEPA Method 8260 requires that a minimum of 5 point calibration be performed. Results for these compounds were already qualified either "R" or "J" for other quality control excursions.
- The trip blank for SDG 0814443 had acetone detected above the contract required quantitation limit (CRQL), therefore, the reported concentration of acetone was qualified with a "U" for sample MW-1.

Semivolatile Organics by USEPA Method 8270

- The soil LCS extracted on August 6, 2008 failed percent recovery criteria for twenty compounds. The compounds were qualified as estimated ("J") for the associated samples.

Semivolatile Organics by USEPA Method 8270 (contd.,)

- The soil sample LCS extracted on August 18, 2008 failed percent recovery criteria for two compounds. The compounds were qualified as estimated ("J") for the associated samples.
- The water LCS extracted on August 18, 2008 failed percent recovery criteria for five compounds. The compounds were qualified as estimated ("J") for the associated samples.
- Multiple CCVs had failures for percent difference resulting in the failed compounds being qualified as estimated ("J") for the associated samples. The RRF for 2,4-dinitrophenol and pentachlorophenol was less than 0.05 as required by the method. Results for these compounds are qualified "R" for samples MW-1, MW-2, MW-3, SW-2, SW-3, and SW-4.
- The low standard (5 ppm) in the initial calibration correlates to a soil quantitation limit of 0.167 mg/Kg. LSL did run a 1.0 ppm standard, corresponding to a detection limit of 0.0333 mg/Kg, this low standard was not included in the calibration. LSL reporting limit for undiluted soil samples is 0.2 mg/Kg, however, LSL reported detected target compounds less than the quantitation limit adjusted for the dilution factor. In these cases, the detected target compounds were qualified as estimated ("J").
- TICS were not reported; LSL stated that they were not requested by the client.
- Mass spectra for identified compounds were not provided and could not be evaluated.
- LSL noted in the case narrative that sample SW-2 had the internal standard added twice. LSL adjusted the percent recoveries for 3 of 6 surrogates accordingly. The quantitation report indicates that the surrogate area counts were approximately 2X high; therefore, suggesting that possibly the internal standard was not added twice and that something else happened (probably a bad injection). This scenario would result in 3 of 6 surrogates failing high, but since no target compounds were detected the data was not qualified.
- Sample SS-2 had one surrogate recovery fail high; therefore, the data was not qualified. Sample PZ-4 had zero percent recoveries for three surrogates. The results for the acid extractable fraction for this sample were qualified "R."
- Several compounds failed percent recoveries low and had high relative percent differences (RPDs) for samples: MW-1MS/MSD, SS-6MS/MSD and SED-2MS/MSD. No data qualification for MS/MSDs was necessary.
- One sample (SS-3) was diluted 5X but no target compounds were identified above the reporting limit.

PCBs by USEPA Method 8082

- The data as presented makes it impossible to check retention times since the instrument sensitivity threshold was adjusted which resulted in none of the peaks being automatically integrated by the software; only the surrogates were integrated (manually) by the analyst. Many peaks are present in the samples, but none, other than the two surrogates, have retention times. Gas chromatograph analyses depend on retention times for identification. Polychlorinated biphenyls aroclors are also identified by their distinctive pattern of peaks, however, without integrating the peaks they cannot be confirmed as present or absent. This is especially true if interference from non-PCB peaks makes identification even more difficult.
- Many of the samples exhibited significant non-PCB interference peaks, the worst of which look like "humps" in the middle of the chromatogram (about where aroclor 1254 would elute). The interference could mask or co-elute with PCB peaks, especially if PCBs are present at a low concentration, making detection and identification impossible. Although the interference is likely to be naturally occurring sulfur from the samples, as suggested by LSL, the laboratory did not do a sulfur cleanup, as described in USEPA Method 8082.
-

PCBs by USEPA Method 8082 (cont.,)

Given the interference, the data as presented did not support the non-detectable concentrations for PCBs at LSL reported detection limits for the following samples: PZ-2, PZ-4, SED-1 through 4, SS-4, and SW-1 through 3.

- LSL subsequently performed sulfur cleanup and reanalysis for qualitative confirmation of the reported PCB non-detects of soil and sediment samples on January 6 and 7, 2009 (after the holding times had expired). Sample extracts PZ-1 through 4 and SS-1, 2, 4 and 6 were reanalyzed; extracts for samples SS-3 and SS-5 could not be located by the laboratory. The PCB extracts for samples SED-1 through 4 could not be located by the laboratory either, however LSL did locate the SVOC extracts, diluted them 100x, solvent switched them to hexane, performed acid wash and sulfur cleanup, and reanalyzed them. Surrogate recoveries for the PCB extracts were high, suggesting a high bias; the SVOC extracts did not have PCB method surrogates. The data for the reanalysis of the extracts supports the non-detectable concentrations for PCBs at the higher limit of 0.3 mg/Kg as reported with the reanalysis with the exception of sample PZ-1. Sample PZ-1 exhibited a concentration of 0.60 mg/Kg of aroclor 1248 (degraded pattern) and sample SED-2 exhibited concentrations of 0.47 mg/Kg aroclor 1248, 0.93 mg/Kg aroclor 1254 and 0.29 mg/Kg aroclor 1260. Since the PCB levels were reported as present for the reanalysis, the reporting limits for these two samples were raised to the level of the PCBs detected during the reanalysis and qualified "UJ."
- The water samples which had interference and LSL did not reanalyze (SW-1 through SW-3), have the reporting limits raised to the level suggested by the magnitude of the sulfur interference present and were qualified "UJ."
- LSL used aroclors 1221, 1232, 1242 and 1248 for five point initial calibration and single point calibration for the other aroclors. USEPA Method 8082 allows that the instrument may be calibrated with a five point initial calibration using other aroclors than aroclor 1016 and aroclor 1260 (as required by USEPA Method 8082) if approved in the project Quality Assurance Plan.
- LSL used absolute retention time window of 0.03 minutes as opposed to performing a three point retention time window study. Retention time shift was not a problem.
- Samples results for SS-1, SS-2, SS-3, SS-5, SS-6, PZ-1, PZ-3, PZ-4 were qualified estimated ("UJ") due to CCV failures. The CCVs failed high suggesting a high bias, which would support the non-detectable concentrations.
- The water preparation blank MBLK-W exhibited interference peaks in the range of aroclor 1242/1248. Based on the chromatography and that the peaks were not integrated, it could not be determined if the peaks were from PCB contamination. If the contamination is from PCBs, based on the peak response in relation to the standards, the level of PCBs potentially present would be at or near the reporting limit.
- Several soil samples had high decachlorobiphenyl surrogate recoveries. Since PCBs were reported non-detected, the samples are not qualified for high recoveries.
- Sample SED-2MS/MSD had high percent recoveries for aroclor 1221. Sample MW-1MSD was inadvertently not spiked by LSL, therefore, percent recoveries and RPDs were not attainable. No data qualification for MS/MSDs was necessary.

Metals by USEPA Methods 6010/245.1

- Silver was qualified "R" in samples PZ-1 through PZ-4 and SS-1 through SS-6 due to failed low MS recovery. Other compounds for the same samples were qualified "J" due to MS failures.
- Sodium was qualified "R" for the samples collected due to failed low negative LCS percent recovery.

Metals by USEPA Methods 6010/245.1 (cont.,)

- The following samples had CRI failures and the results were qualified "J": PZ-1 through PZ-4 and SS-1 through SS-6 (lead and selenium), MW-1 through 4 and SW-2 through MW-4 (lead), SED-1 (arsenic, nickel, antimony, selenium and cadmium), SED-2 (arsenic, nickel, antimony, selenium, cadmium, and thallium), SED-3 (arsenic, antimony, selenium, and silver), SED-4 (arsenic, nickel, antimony, selenium, thallium, and silver).
- All samples had some metals qualified with raised detection limits and flagged "U" due to levels detected in the continuing calibration blanks (CCBs). Samples SED-1 and SED-4 had thallium contamination above the CRQL in the associated CCB and were qualified "R" for thallium.
- Duplicate samples exceeded the RPD criteria and, therefore, metal results for associated samples were qualified with an asterisk (*).
- Serial dilutions and post-digestion spikes were not performed by LSL.
- Iron as reported, exceeded the linear range for samples SS-1 through SS-6 and PZ-1 through PZ-4. Calcium exceeded the linear range for samples PZ-2 through PZ-4 and SS-1, SS-2, and SS-5. Most samples from SDG 081443 had several metals exceed the instrument linear range. The sample results for the compounds which exceeded the linear range were qualified "J."
- Several interference check samples (ICS) did not meet criteria and the failed compounds for the associated samples were qualified "J."

TOC by USEPA Method 9060

- Raw data were not provided from subcontracted laboratory. Blank, LCS and Duplicate analysis were performed and were within laboratory control limits.

No other problems were identified with the data and based on clarifications and additional documentation provided by LSL, the data is deemed usable for environmental assessment purposes with the exceptions and qualifications detailed in the body of the report. Should you have any questions regarding the information as presented above and/or accompanying documentation, please do not hesitate to contact me.

Respectfully submitted,

SGD ENVIRONMENTAL SERVICES

Mark C. Yates
Project Associate

enc.

