FPM group Engineering and Environmental Science

FPM Group, Ltd.
FPM Engineering Group, P.C.
formerly Fanning, Phillips and Molnar

CORPORATE HEADQUARTERS
909 Marconi Avenue
Ronkonkoma, NY 11779
631/737-6200
FAX 631/737-2410

TRANSMITTAL SHEET

DATE: May 15, 2000

TO: Joe Jones

COMPANY: NYSDEC

FAX NUMBER: 518-457-4198

CC:

COMMENTS:

FROM:

- ☐ Dr. Kevin J. Phillips, P.E. Principal
- ☐ Gary A. Molnar, P.E. Principal
- ☑ Peter Dermody Hydrogeology
- ☐ John J. Tacetta, P.E. Environmental Engineering
- ☐ Gaby A. Atik, P.E. Regional Operations
- ☐ Stephanie O. Davis Senior Hydrogeologist
- ☐ Fred Novak Marketing

Total number of pages, including cover sheet: 43

If you do not receive all pages, please call: Teresa Conrad (631) 737-6200

SUPPLEMENTAL FOCUSSED REMEDIAL

INVESTIGATION REPORT

FOR THE PROPERTY LOCATED AT

118-130 SWALM STREET

WESTBURY, NEW YORK

PREPARED FOR THE

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

PREPARED BY

FPM group

(Formerly FANNING, PHILLIPS AND MOLNAR)
909 MARCONI AVENUE
RONKONKOMA, NEW YORK 11779

MAY, 2000

TABLE OF CONTENTS

APPENDIX

SECTION 1.0
INTRODUCTION

1.1 Overview

This Supplemental Focussed Remedial Investigation (FRI) Report has been prepared by FPM Group for the property located at 118-130 Swalm Street, Westbury, New York (the "Site") (see Figure 1.1.1). The Site is located within the New Cassel Industrial Area (NCIA).

The NCIA is located in the unincorporated Village of Westbury in the Town of North Hempstead, Nassau County, New York. Due to volatile organic compound (VOC) contamination of the groundwater beneath the NCIA, the New York State Department of Environmental Conservation (NYSDEC) listed the entire NCIA on its Registry of Inactive Hazardous Waste Disposal Sites (IHWDSs) in 1988. Several subsurface investigations were conducted by the New York State Department of Environmental Conservation (NYSDEC) to delineate the contaminant plumes under the NCIA and locate the source of the contaminants.

Initial investigations conducted in 1993 and 1994 by Lawler, Matusky, & Skelly Engineers (LMS) identified several areas exhibiting significant groundwater contamination within the NCIA (LMS 1994). Potentially responsible parties for the two central section plumes and one of the western section plumes were identified; those facilities were listed as Class 2 sites on the Registry of IHWDSs. The remaining sites within the plume regions were designated as potential registry sites requiring additional investigation.

Lawler, Matusky & Skelly (LMS), as contractor to the NYSDEC, conducted a Multisite Preliminary Site Assessment (PSA) in 1995 on the sites that required additional investigation. The objectives of the Multisite PSA were to further delineate the contaminant plumes, locate the sources of the contaminants, and assess the threat of each source to the environment. Based on the Multisite PSA

Fanning, Phillips & Molnar Engineers		
FIGURE 1.1.1 SITE LOCATION PLAN 118-130 SWALM STREET NEW CASSEL, NEW YORK		
Drawn By:L.G.	Checked By: B.K.	Date: 8/12/97

SECTION 2.0
SITE BACKGROUND AND SETTING

2.1 Current Conditions

The Site consists of approximately 1.1 acres and is located in an area of industrially-zoned properties. A one-story, 28,000-square-foot masonry and steel building occupies approximately 60 percent of the Site. The area on the Site north of the building consists of a former parking lot which consists of asphalt and exposed soil. The area contains grass and weeds. A Site plan is presented in Figure 2.1.

During the previous Site inspection conducted by FPM, three subsurface drainage structures were identified at the Site. During the Supplemental FRI, an additional subsurface structure was identified. None of the four subsurface drainage structures are in use.

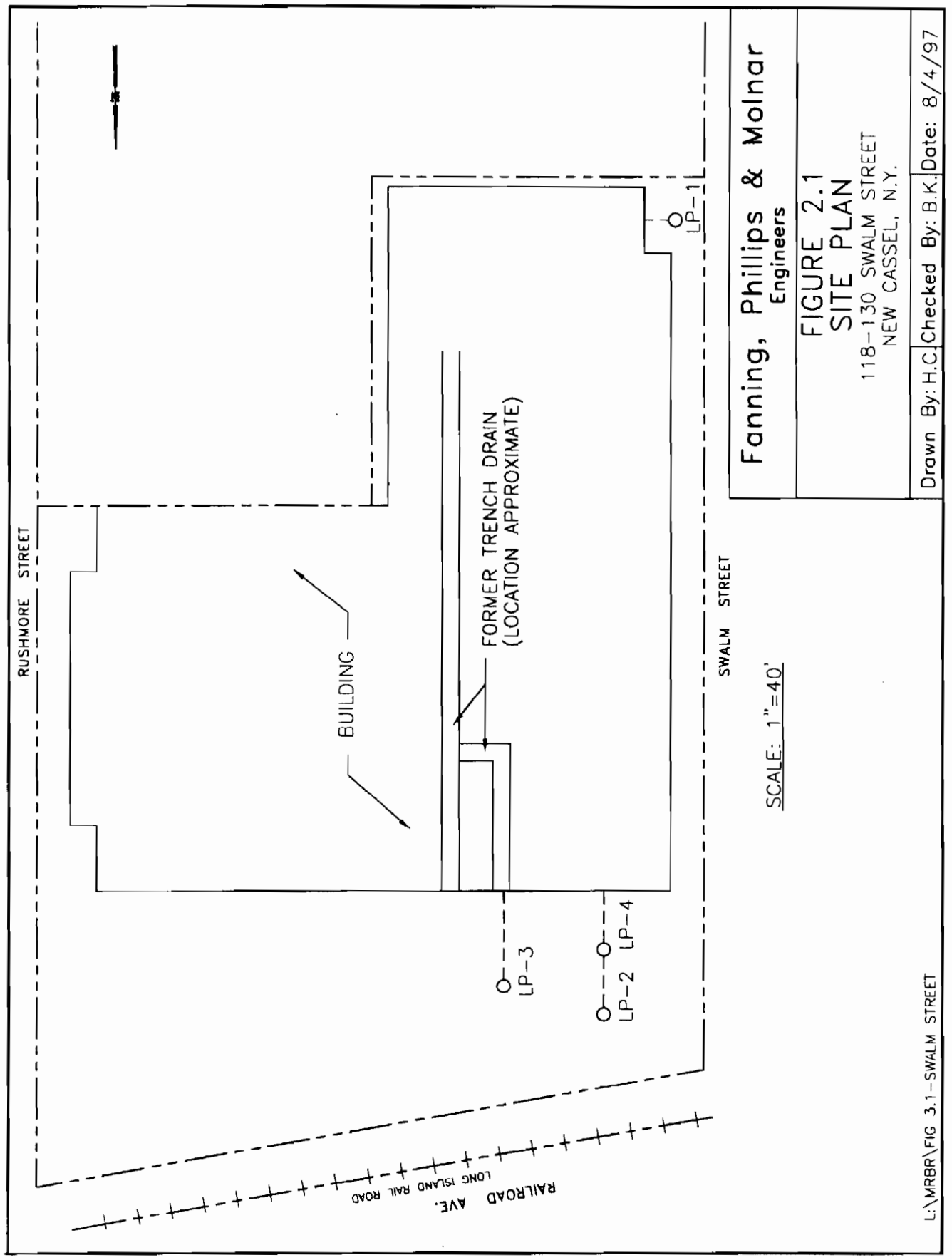
According to building department records, the Site has been connected to the municipal sewer system since 1980. The Nassau County Department of Public Works (NCDPW) performed a dye test at the facility on March 18, 1999. The NCDPW dye test confirmed that the facility is connected to the public sewer. No storm drainage structures were noted on the Site.

2.2 Current Site Operations

The Site is currently occupied by Liqui-Mark Inc., which is a manufacturer of water-based marking pens, alcohol-based marking pens, and ballpoint pens. Liqui-Mark Inc. has been operating at the Site since June, 1994.

2.3 Site History

According to the Town of North Hempstead Building Department records obtained by FPM, the Site is zoned Industrial-B and was developed in 1961 with a one-story steel and masonry industrial

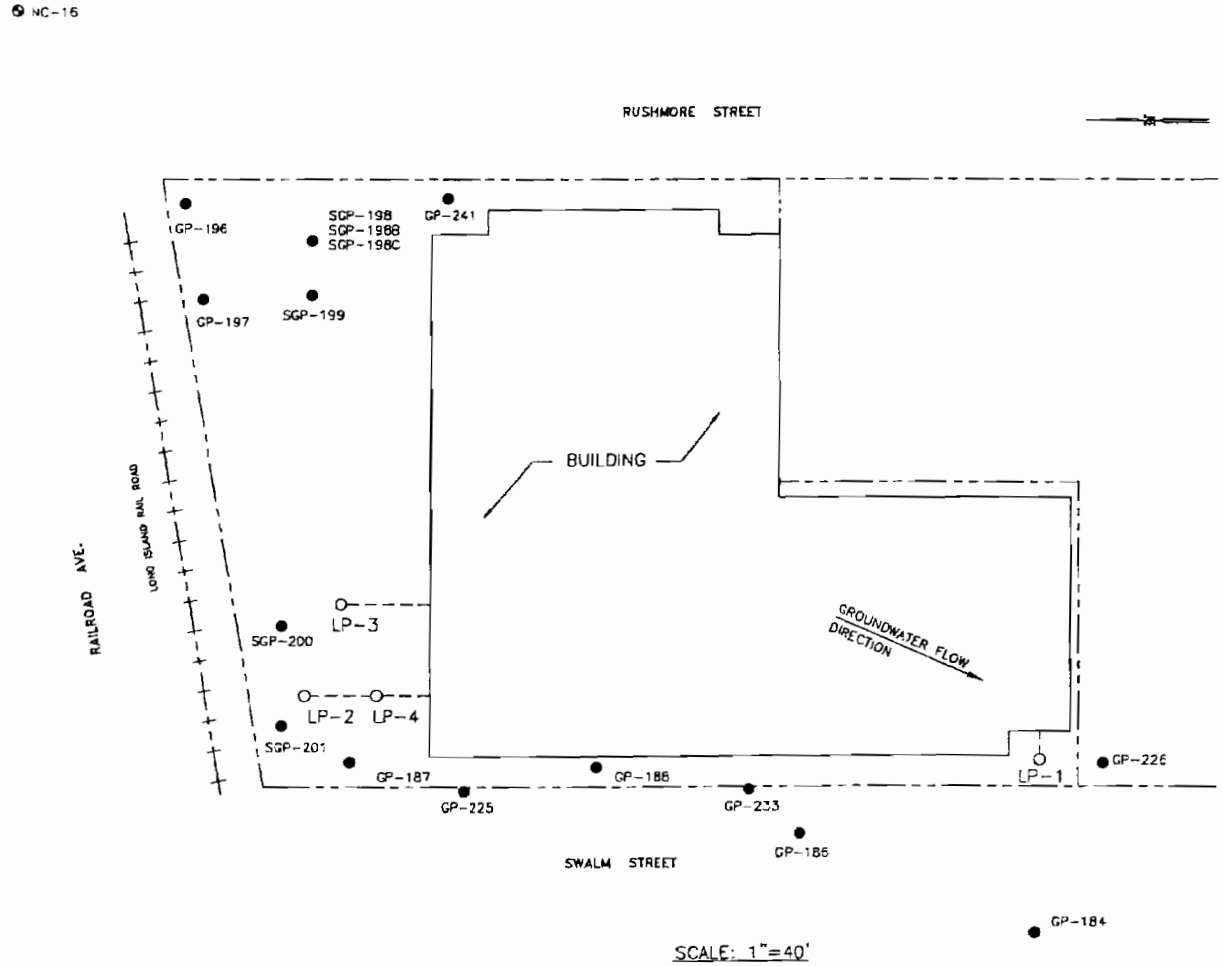

RUSHMORE STREET
SWALM STREET
RAILROAD AVE.
LONG ISLAND RAIL ROAD
BUILDING
FORMER TRENCH DRAIN
(LOCATION APPROXIMATE)
LP-1
LP-2
LP-3
LP-4
SCALE: 1"=40'
Fanning, Phillips & Molnar
Engineers
FIGURE 2.1
SITE PLAN
118-130 SWALM STREET
NEW CASSEL, N.Y.
Drawn By: H.C. Checked By: B.K. Date: 8/4/97
L:\MRBR\FIG 3.1-SWALM STREET

building. A Sanborn map dated 1968 indicated that the building contained a mechanical engraving company and a plastic extrusion company. Information supplied by the owner of the Site indicated that BEAC took title of the Site through Andrigal Enterprises on October 21, 1977. The LMS report indicated that numerous tenants have occupied the Site since that time. These include All Records Distributors from 1971 to 1974, Allomatic Industries from 1979 to 1992, Louis Jordan Labs from 1978 to 1980, Varitek Machine Co. from 1979 to 1992, and possibly Atlas Graphics in 1985. The current tenant, Liqui-Mark Corporation, has occupied the building since June, 1994.

2.4 Previous Soil Investigations

Information regarding the environmental history of the Site was obtained from the March, 1997 LMS report entitled "Multisite PSA Task 4 Report". The report contained soil and groundwater sampling data for the 118-130 Swalm Street Site.

In October, 1996, LMS conducted a round of soil sampling at the NCIA. A total of four soil sampling locations were located on the Site, and the locations (SGP-198, 199, 200, and 201) are shown on Figure 2.4.1. Samples were obtained from each location at varying depths and analyzed for Target Compound List VOCs. The results are summarized in Table 2.4.1. In general, the concentrations of the detected compounds were found to be very low, and none of the concentrations were above NYSDEC TAGM-4046 Soil Cleanup Objectives (TAGM-4046 Objectives). The detected compounds were PCE (detected at a maximum concentration of 0.57 mg/kg which is well below the TAGM-4046 Objective of 1.4 mg/kg), methylene chloride (detected at a maximum concentration of 0.0018 mg/kg which is well below the TAGM-4046 Objective of 0.1 mg/kg and was also detected in an associated blank and, therefore, the result is questionable), trichloroethylene (TCE) (detected at one location at a concentration



SCALE: 1"=40'
(SAMPLING LOCATIONS ARE APPROXIMATE)

Fanning, Phillips & Molnar
Engineers

FIGURE 2.4.1
1995/1996 SOIL AND GROUNDWATER SAMPLING LOCATIONS
118-130 SWALM STREET
NEW CASSEL, N.Y.

Drawn By: L.G. | Checked By: B.K. | Date: 8/4/97

TABLE 2.4.1
SUMMARY OF SOIL SAMPLING RESULTS*
(SAMPLES OBTAINED OCTOBER, 1996)

Sample Location	Depth Interval	Compound (mg/kg)			
		Methylene Chloride	PCE	TCE	Toluene
SGP-198	10 - 11 ft.	0.0017	ND	ND	ND
SGP-198	18 - 19 ft.	ND	0.57	ND	ND
SGP-198B	10 - 12 ft.	ND	ND	ND	ND
SGP-198B	17 - 19 ft.	ND	ND	ND	ND
SGP-198C	3 - 4 ft.	ND	ND	ND	ND
SGP-198C	10 - 12 ft.	ND	ND	ND	ND
SGP-198C	17 - 19 ft.	ND	ND	ND	ND
SGP-199	10 - 11 ft.	ND	ND	ND	ND
SGP-199	14 - 15 ft.	ND	ND	ND	ND
SGP-200	1 - 2 ft.	ND	0.030	0.023	0.0011
SGP-200	11 - 12 ft.	ND	ND	ND	ND
SGP-200	17 - 19 ft.	ND	ND	ND	ND
SGP-201	1 - 2 ft.	ND	0.0018	ND	0.0025
SGP-201	17 - 19 ft.	0.0018 B	ND	ND	ND
Soil Cleanup Objective	-	0.1	1.4	0.7	1.5

Notes:

mg/kg = milligrams per kilogram
B = Detected in associated blanks
ND = Not Detected
* = Results from Multisite PSA Task 4 Report (LMS, 1997).

of 0.023 mg/kg which is well below the TAGM-4046 Objective of 0.7 mg/kg), and toluene (detected at a maximum concentration of 0.0025 mg/kg which is well below the TAGM-4046 Objective of 1.5 mg/kg).

It should be noted that an error occurred in the Multisite PSA Task 4 Report by LMS (March, 1997). On page 6-13 of the report it is stated "Target compounds were detected in three of the four [soil] samples completed. Concentrations range from ND [non-detected] in SGP-200 (11-12 ft. and 14-15 ft.) to 0.708 mg/kg PCE at SGP-198 (18-19 ft.) (Figure 6-35)." Based on FP&M's review of the report, neither the data summary tables nor Figure 6-35 of the LMS report shows that PCE was detected at 0.708 mg/kg (the highest detection of PCE in soil at the Site was 0.57 mg/kg).

2.5 Previous Groundwater Investigations

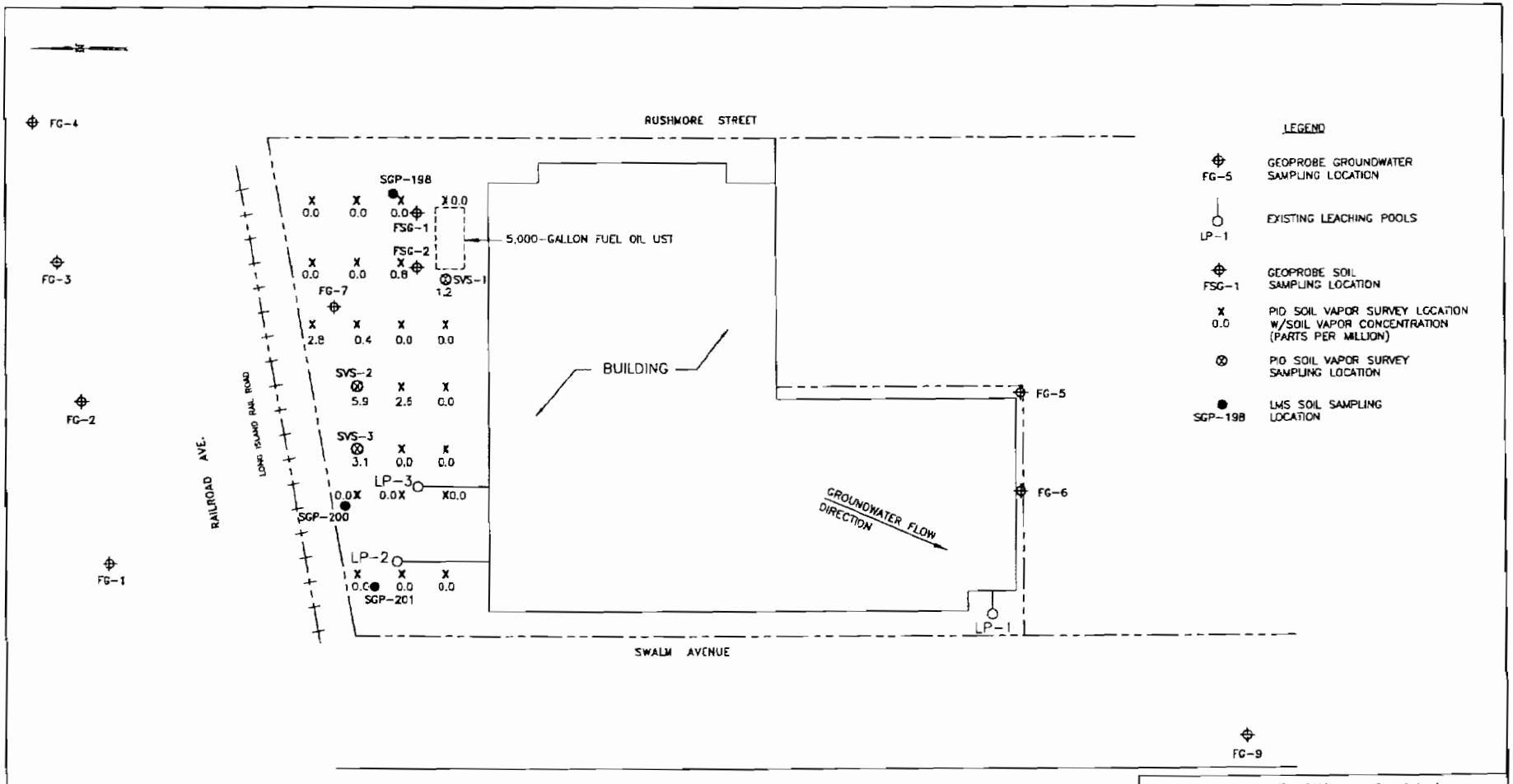
A summary of LMS groundwater sampling results for the years 1995 and 1996 is presented in Table 2.5.1. All of the groundwater samples were analyzed for VOCs. A total of 10 groundwater sampling points were located at and immediately adjacent to the Site (identified as "GP" locations on Figure 2.4.1). The groundwater samples were obtained at each sampling location from three different depth intervals: the water table to 65 feet, 65 feet to 85 feet, and greater than 85 feet. The results of the groundwater sampling show that PCE was detected primarily in the shallow groundwater with significant decreases in concentration with increased depth. Therefore, the contamination at the Site primarily exists in the zone from the water table (55 feet below land surface) to 65 feet below land surface. The groundwater contamination primarily consists of PCE; very minor amounts of cis-1,2-dichloroethylene and trichloroethylene were also detected at the Site.

The groundwater results show that PCE had existed in the groundwater beneath the Site at concentrations as high as 1,800 ug/l at the Site. It should also be noted that both upgradient groundwater samples obtained along the eastern side of the northern border, both showed detections of PCE (one of

Sample Location	Depth Interval		
	Water Table to 65 ft.	65 ft. to 85 ft.	>85 ft.
GP-196	PCE 7.5	PCE 6.0	PCE ND
			TCE 5.6
			1,2-DCE 1.2
GP-197	PCE 160	PCE 1.3	ND
GP-225	PCE 970	ND	PCE 1.3
GP-226	PCE 1600	ND	PCE 1.4
			TCE 2.4
GP-233	PCE 1100	PCE 5.3	NS
GP-241	PCE 9.5	ND	PCE ND
			TCE 5.5

Notes:

ND = Not Detected
NS = Not Sampled
ug/l = micrograms per liter



Fanning, Phillips & Molnar
Engineers

FIGURE 2.6.1
PREVIOUS FPM SAMPLING LOCATIONS
118-130 SWALM STREET
NEW CASSEL, N.Y.

Drawn By: H.C. & L.G. | Checked By: | Date: 2/24/99

TABLE 2.6.1
LEACHING POOL SEDIMENT CHEMICAL ANALYTICAL RESULTS
118-130 SWALM STREET, NEW CASSEL NEW YORK

Sample Location Sample Depth (in feet)* Sample Date Parameter	LP-1 0 to 1 12/18/98	LP-2 0 to 1 12/18/98	LP-3 0 to 1 12/18/98	NYSDEC TAGM 4046 Soil Cleanup Objective
Volatile Organic Compounds in micrograms per kilogram				
Methylene Chloride	8	7	26 J	100
Acetone	33 B	26 B	39 JB	200
1,1-Dichloroethane	7	ND	5 J	200
1,2-Dichloroethene (total)	54	ND	ND	250
Chloroform	6	ND	ND	300
1,1,1-Trichloroethane	0.8 J	ND	9 J	800
Trichloroethene	340 D	8	120	700
Tetrachloroethene	42	180	660	1,400
Toluene	2 J	ND	ND	1,500

Notes:

Only detected compounds are reported. See laboratory report for complete analytical data.
ND = Not Detected.
J = Indicates an estimated value which is less than the specified detection limit but greater than zero.
B = Indicates the analyte was found in both the sample and associated laboratory blank.
D = Indicates compound identified in an analysis at a secondary dilution factor.
* = Depth below sediment surface.
Bold values exceed NYSDEC Soil Cleanup Objective.

TABLE 2.6.2
SOIL VAPOR SURVEY SOIL CHEMICAL ANALYTICAL RESULTS
118-130 SWALM STREET, NEW CASSEL NEW YORK

Sample Location Sample Depth (in feet)* Sample Date Parameter	SVS-1 0 to 1 12/18/98	SVS-2 0 to 1 12/18/98	SVS-3 0 to 1 12/18/98	NYSDEC TAGM 4046 Soil Cleanup Objective
Volatile Organic Compounds in micrograms per kilogram				
Methylene Chloride	2 J	2 J	ND	100
Acetone	7 J	7 J	ND	200
Trichloroethene	ND	2 J	ND	700
1,1,2-Trichloroethane	ND	14	ND	6,000
4-Methyl-2-Pentanone	1 JB	1 JB	ND	1,000
Tetrachloroethene	ND	82	14	1,400

Notes:

Only detected compounds are reported. See laboratory report for complete analytical data.
ND = Not Detected.
J = Indicates an estimated value which is less than the specified detection limit but greater than zero.
B = Indicates the analyte was found in both the sample and associated laboratory blank.
* = Depth below sediment surface.
Bold values exceed NYSDEC Soil Cleanup Objective.

TABLE 2.6.3
GEOPROBE SOIL SAMPLING CHEMICAL ANALYTICAL RESULTS
118-130 SWALM STREET, NEW CASSEL NEW YORK

Sample Location Sample Depth (in feet) Sample Date Parameter	FSG-1 18-20 12/16/98	FSG-1 28-30 12/16/98	FSG-1 38-40 12/16/98	FSG-2 18-20 12/18/98	FSG-2 28-30 12/18/98	FSG-2 38-40 12/18/98	NYSDEC TAGM 4046 Soil Cleanup Objective
Volatile Organic Compounds in micrograms per kilogram							
Methylene Chloride	3 J	3 J	3 J	ND	5	4 J	100
Acetone	9 JB	8 JB	10 JB	ND	31 B	21 B	200
2-Butanone	ND	1 J	2 J	ND	ND	ND	300
Trichloroethene	ND	ND	ND	1 J	1 J	ND	700
4-Methyl-2-Pentanone	1 JB	0.9 JB	ND	ND	ND	ND	1,000

Notes:

Only detected compounds are reported. See laboratory report for complete analytical data.
ND = Not Detected.
J = Indicates an estimated value which is less than the specified detection limit but greater than zero.
B = Indicates the analyte was found in both the sample and associated laboratory blank.
Bold values exceed NYSDEC Soil Cleanup Objective.

grade in a 1996 sample (see Table 2.6.3). Of the five samples obtained, only trace levels of VOCs were detected and no PCE was detected.

Geoprobe groundwater samples were obtained at eight locations including multiple-depth sampling at some locations for a total of 12 samples. The results shown in Table 2.6.4 show that only minor levels of contamination are present in the samples. The only exceedances of Class GA Groundwater Standards were for PCE at FG-9 (560 ppb), FG-6 (8 ppb), and FG-7 (7 ppb). The results show a significant decrease in PCE and total VOC concentrations as compared to the 1995/1996 groundwater sampling.

TABLE 2.6.4
WATER SAMPLE CHEMICAL ANALYTICAL DATA
118-130 SWALM STREET, NEW CASSEL NEW YORK

Sample Location Sample Depth (in feet) Sample Date Parameter	FG-1 56-58 12/17/98	FG-2 56-58 12/17/98	FG-3 56-58 12/17/98	FG-4 56-58 12/18/98	FG-5 61-63 12/18/98	FG-6 61-63 12/16/98	FG-7 61-63 1/8/99	FG-7 76-78 1/8/99	FG-7 91-93 1/8/99	FG-9 61-63 1/8/99	FG-9 76-78 1/8/99	FG-9 91-93 1/8/99	NYSDEC Class GA Water Quality Standards
Volatile Organic Compounds in micrograms per liter													
Chloroethane	ND	2 J	ND	ND	ND	2 J	ND	ND	ND	ND	ND	ND	5
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	4 J	ND	ND	5
Acetone	70 B	23 B	ND	54 J	29 J	29 B	6 JB	3 JB	3 JB	12 JB	ND	ND	-
Carbon Disulfide	0.6 J	ND	ND	ND	ND	1 J	ND	ND	ND	ND	ND	ND	-
1,1,-Dichloroethene	ND	ND	ND	ND	ND	0.7 J	ND	ND	ND	ND	ND	ND	5
1,1-Dichloroethane	ND	ND	ND	ND	ND	5	ND	ND	ND	3 J	ND	ND	5
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	4 J	ND	ND	7
2-Butanone	ND	8 J	ND	16	10	10	4 J	ND	ND	10 J	ND	ND	-
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	2 J	ND	ND	ND	3 J	ND	ND	5
Trichloroethene	ND	ND	ND	ND	ND	1 J	ND	3 J	2 J	13 J	1 J	3 J	5
4-Methyl-2-Pentanone	1 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2 J	-
2-Hexanone	3 J	0.7 J	ND	ND	ND	4 J	ND	ND	ND	ND	ND	ND	-
Tetrachloroethene	0.5 J	3 J	2 J	ND	5	**8**	7	0.7 J	1 J	**560**	ND	0.7 J	5
Toluene	1 J	0.7 J	ND	0.8 J	ND	0.7 J	ND	0.5 J	ND	0.7 J	0.5 J	ND	5
Xylene (total)	0.7 J	0.6 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5

Notes: Only detected compounds are reported. See laboratory report for complete analytical data.
ND = Not Detected.
J = Indicates an estimated value which is less than the specified detection limit but greater than zero.
B = Indicates the analyte was found in both the sample and associated laboratory blank.
- = Indicates no standard available for the specified compound.
Bold values exceed NYSDEC STARS Guidance Values.

SECTION 3.0
ENVIRONMENTAL SETTING

3.1 Hydrogeologic Setting

The regional geology of the New Cassel area was derived from US Geological Survey Paper #1825 entitled, "Geology and Hydrology of Northeastern Nassau County, Long Island, New York (Ibister, 1986)". In the vicinity of the Site, the geology consists of a basement layer of Precambrian-age bedrock which occurs at a depth of approximately 900 feet below mean sea level (MSL).

Overlying the bedrock is a series of unconsolidated glacial deposits which includes the Lloyd Sand which is a stratified deposit consisting of discontinuous layers of sand, gravel, sandy clay, silt, and clay. The upper surface of the Lloyd Sand occurs at approximately 650 below MSL.

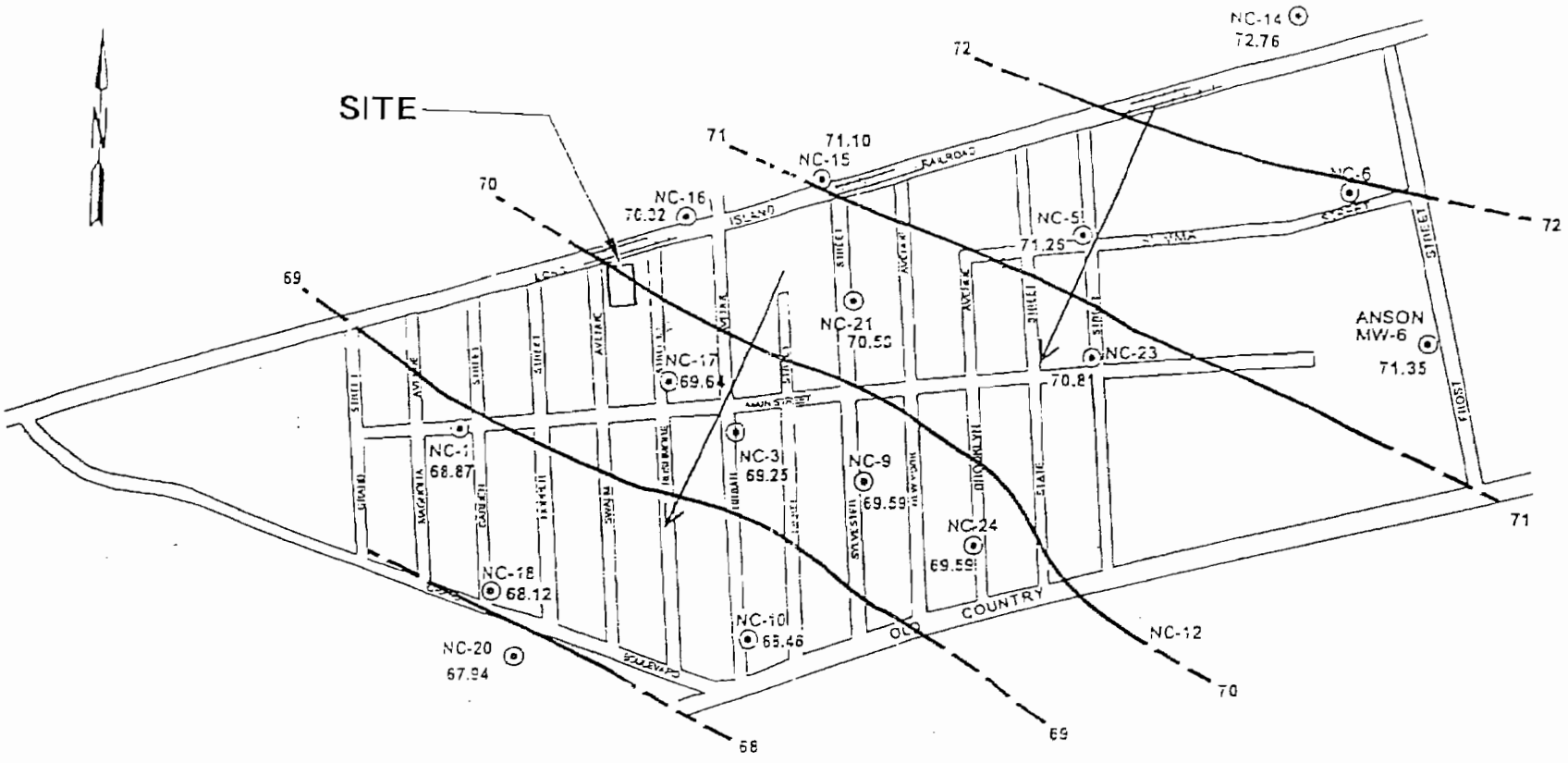
Overlying the Lloyd Sand is the Raritan Clay which consists chiefly of gray, red, white, and blue clay and silty clay and lenses of sand and gravel. The upper surface of the Raritan Clay occurs at approximately 550 below MSL in the vicinity of the Site. Overlying the Raritan Clay is the Magothy Formation which consists chiefly of interbedded gray and white fine sand and clayey sand and black, gray, white, and some red clay. Gravelly zones are common at the bottom of the formation but are rare in the upper part. The upper surface of the Magothy Formation is estimated to occur at 50 to 100 feet below the ground surface.

Overlying the Magothy Formation is the Upper Glacial Formation which, in the New Cassel area, is composed primarily of outwash deposits consisting of well-sorted stratified sand and gravel. The Upper Glacial deposits are the uppermost unit and are estimated to be 50 to 100 feet thick in the Site vicinity.

Based on the US Geological Survey Paper 82-4056 entitled, "Geology of the "20-foot" Clay and Gardiners Clay in Southern Nassau and Southwestern Suffolk Counties, Long Island, New York (Doriski and Wilde-Katz, 1982)", neither the 20-foot nor the Gardiners Clay exists under the NCIA.

The groundwater beneath the NCIA is recharged through infiltrating precipitation. The infiltrating precipitation accumulates above the bedrock and forms aquifers which correspond to the permeable geologic units. The depth to water is approximately 55 feet.

The groundwater flow direction across the Site was ascertained from the Site Investigation Report for the New Cassel Industrial Area by LMS (February, 1995). The report showed that based on measurements from November 8 and 9, 1993, the groundwater flow direction in the vicinity of the Swalm Street Site was generally southwest (see Figure 3.1.1). Also, based on the groundwater elevation contour map of Nassau County for 1995, obtained from the NCDH, a groundwater divide exists approximately two miles north of the Site.



LEGEND:

NC-20 ⊙ Monitoring well

67.97 Water table elevation in feet above mean sea level

69 Water table contour (dashed line is inferred)

Groundwater flow direction

0 500 ft

SCALE

Fanning, Phillips & Molnar
Engineers

FIGURE 3.1.1
GROUNDWATER FLOW CONTOUR LINES IN VICINITY OF SITE

Drawn By: JPS	Checked By BK	Date: 8/12/97

SOURCE:
NYSDEC REPORT, "NEW YORK STATE SUPERFUND CONTRACT SITE INVESTIGATION REPORT FOR NEW CASSEL INDUSTRIAL AREA SITE" (1995)

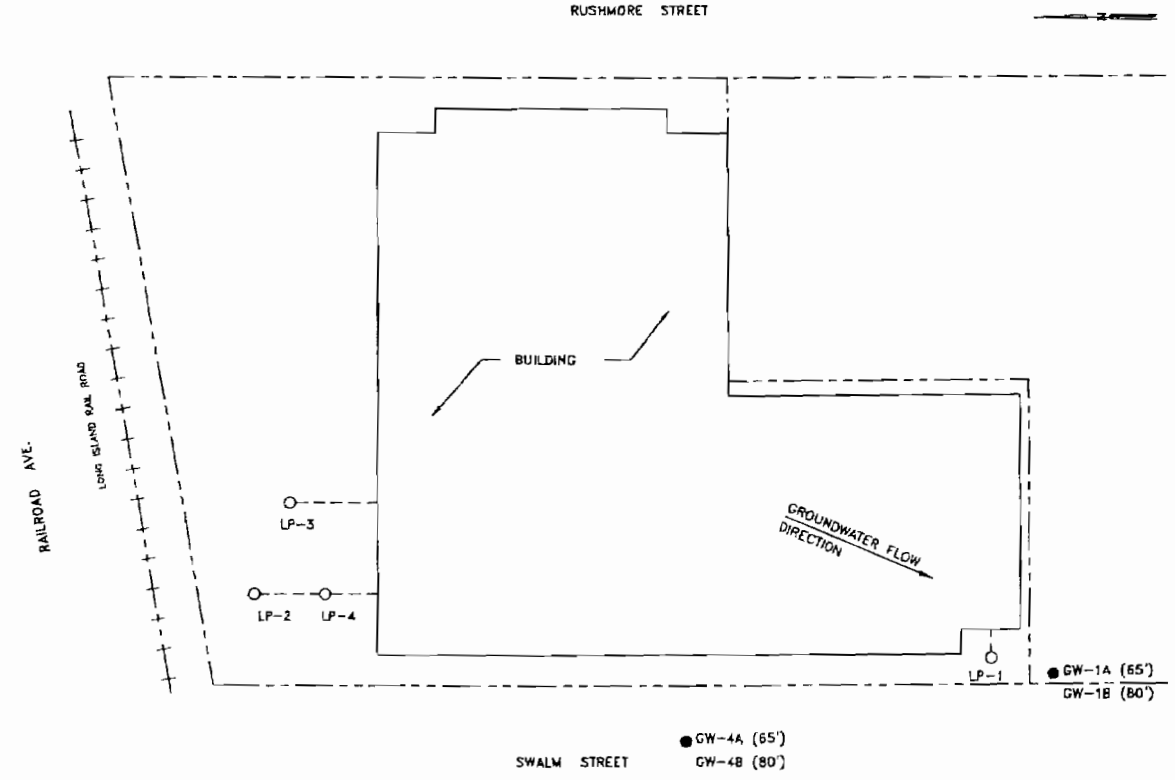
SECTION 4.0
REMEDIAL INVESTIGATION

The Supplemental FRI field work was performed by FPM in November and December, 1999, and January 2000, in accordance with the NYSDEC-approved work plan described in a letter from Mr. Richard Gaborow dated July 30, 1999. The NYSDEC was informed prior to the initiation of field work and a NYSDEC representative, Ms. Anna Ruepp, was present during portions of the field work. The following sections present the field procedures, results, and conclusions. Figure 4.1 shows all sampling locations.

4.1 Leaching Pool Sampling

Four leaching pool locations were sampled. Soil/sediment samples were obtained from leaching pool LP-1 located on the west side of the building along Swalm Street and leaching pools LP-2, LP-3, and LP-4 located in the rear yard on the north portion of the Site. LP-4 was discovered during this investigation and was not previously sampled. LP-4 is in a line with LP-2 and the subject building. There is a 10-inch outfall entering LP-2 at approximately 10 feet below grade and it appears that it is an overflow from LP-4. LP-1 appears to be a former cesspool which received sanitary waste prior to connection to the sewer. Pools LP-2, LP-3, and LP-4 are likely to have been associated with a former trench drain (which is now sealed) inside the building which was reportedly used by former tenants. The samples were obtained for the purpose of further evaluating potential on-Site sources of contamination.

Sediment samples were collected from each leaching pool utilizing a Geoprobe. Each sample was obtained from a depth of 10 feet below the sediment surface and approximately 10 feet above the water table. The samples collected at a depth of 50 feet below grade in LP-2 and LP-3 were collected approximately one foot outside the leaching pool rings because of excessive bowing of the Geoprobe rods



SCALE: 1"=40'
(SAMPLING LOCATIONS ARE APPROXIMATE)

Fanning, Phillips & Molnar
Engineers

FIGURE 4.1
SOIL & GROUNDWATER SAMPLING LOCATIONS (DEC. 99/JAN 2000)
118-130 SWALM STREET
NEW CASSEL, N.Y.

Drawn By: L.G. | Checked By: B.K. | Date: 5/11/00

inside the open space of the leaching pool rings. The recovered sediment samples were transferred to laboratory-supplied sample containers using a disposable plastic sampling spoon. Each sample container was labeled with the Site location, sample location, date and time of sampling, and analysis to be performed. The labeled sample containers were placed in laboratory-supplied coolers containing ice to depress the temperature to four degrees Celsius. A chain of custody form was completed and placed with the samples to document the sequence of sample possession. The filled coolers were sealed and delivered via overnight courier to the subcontracted chemical analytical laboratory, York Analytical Laboratories of Stamford, Connecticut. This laboratory is a NYSDOH-certified ELAP facility and the analyses were performed using USEPA Contract Laboratory Protocol (CLP) with NYSDEC ASP Category B deliverables. The leaching pool samples were analyzed for VOCs by USEPA Method 8260 plus 10 tentatively identified compounds (TICs).

4.2 Geoprobe Groundwater Sampling

Four Geoprobe groundwater locations were sampled during the investigation. Geoprobe groundwater samples were obtained from locations GW-1, GW-2, GW-3, and GW-4. Samples were obtained from these locations approximately 0 to 5 feet below the water table and 20 feet below the water table. Samples were obtained from each location using dedicated polyethylene tubing equipped with a check valve. The groundwater was surged by hand through the tubing directly into laboratory-supplied containers.

4.3 Quality Assurance/Quality Control

Quality Assurance/Quality Control (QA/QC) procedures were utilized during the performance of the FRI field work to ensure that the resulting chemical analytical data accurately represent subsurface

conditions at the Site. The following sections include descriptions of the QA/QC procedures utilized and evaluations of the QA/QC results.

4.3.1 Equipment Decontamination Procedures

All sampling equipment was either dedicated disposable equipment or was decontaminated prior to use at each location. For groundwater sampling, dedicated disposable polyethylene tubing was used to obtain groundwater samples. The decontamination procedures utilized for all non-disposable sampling equipment (i.e., Geoprobe sampling rods, check valves) were as follows:

1. The equipment was scrubbed in a bath of potable water and low-phosphate detergent followed by a potable water rinse;
2. The equipment was rinsed successively in methanol, hexane, and distilled water;
3. The equipment was allowed to air dry, if feasible, and wrapped in aluminum foil (shiny side out) for storage and transportation.

The decontamination procedures were evaluated by the use of equipment blank samples. These samples consist of aliquots of laboratory-supplied water which are poured over or through the dedicated or decontaminated sampling equipment and then submitted to the laboratory for analysis. An equipment blank sample was prepared for each matrix for each day that sampling was conducted at the Site and was analyzed for the target constituents.

The results of the QA/QC samples are shown in Tables 4.3.1 and 4.3.2 and are indicated by the "E" suffix affixed to the sample numbers. Several of the equipment blanks showed low levels of chloroform, however, the trip blank also had low levels of the same contaminant. Since chloroform is a common laboratory contaminant it appears that the results do not impact the quality of the analytical data.

TABLE 4.3.1
QA/QC RESULTS ASSOCIATED WITH LEACHING POOL SAMPLES
118-130 SWALM STREET, WESTBURY, NEW YORK

Location	TB1	LP1	LP1	LP1	LP3	TB2	LP2	TB3
Sample No. (Depth)	Trip Blank	A (MS/MSD)	C (49') Dup. of B	E (Equipment Blank)	E (Equipment Blank)	Trip Blank	E (Equipment Blank)	Trip Blank
Sample Date	11/22/99	11/22/99	11/22/99	11/22/99	11/23/99	11/23/99	1/4/00	1/4/00
Volatile Organic Compounds VOC (ug/kg)								
1,4-Dichlorobenzene	ND	49	17	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	ND	7	7	ND	ND	ND	ND	ND
Trichloroethylene	ND	11	7	ND	ND	ND	ND	ND
Tetrachloroethylene	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	16	ND	11	7	ND
Methylene chloride	ND	ND	ND	ND	2B	2B	ND	ND
VOC Tentatively Identified Compounds (ug/kg)								
Hexane	3	120	160	2	ND	ND	ND	ND
Pentane	ND	ND	5	ND	ND	ND	ND	ND
Undecane	ND	8	7	ND	ND	ND	ND	ND
Propene	ND	ND	ND	ND	ND	ND	32	ND
1- Propanol	ND	5	ND	ND	ND	ND	ND	ND
3 Methyl pentane	ND	ND	ND	ND	ND	ND	1	ND

TABLE 4.3.1 (CONTINUED)
QA/QC RESULTS ASSOCIATED WITH LEACHING POOL SAMPLES
118-130 SWALM STREET, WESTBURY, NEW YORK

Location	TB1	LP1	LP1	LP1	LP3	TB2	LP2	TB3
Sample No. (Depth)	Trip Blank	A (MS/MSD)	C (49') Dup. of B	E (Equipment Blank)	E (Equipment Blank)	Trip Blank	E (Equipment Blank)	Trip Blank
Sample Date	11/22/99	11/22/99	11/22/99	11/22/99	11/23/99	11/23/99	1/4/00	1/4/00
VOC Tentatively Identified Compounds (ppb) (Cont'd)								
Methyl cyclohexane	ND	22	ND	ND	ND	ND	ND	ND
Decane	ND	7	ND	ND	ND	ND	ND	ND
1-Butene	ND	ND	ND	ND	ND	ND	2	ND
1-Pentene	ND	ND	ND	ND	ND	ND	3	ND
Isobutane	ND	ND	ND	ND	ND	ND	3	ND
Limonene	ND	8	ND	ND	ND	ND	ND	ND

Notes:

Only detected parameters are reported. See laboratory report for complete chemical analytical data.
ND = Not Detected.

TABLE 4.3.2
QA/QC RESULTS ASSOCIATED WITH GROUNDWATER SAMPLES
118-130 SWALM STREET, WESTBURY, NEW YORK

Location	GW1	TB1	GW2	GW1	GW2	TB2	GW3	GW3	GW4	TB3
Sample No. (Depth)	E (Equipment Blank)	Trip Blank	B MS/MSD	C (80') Dup of B	E (Equipment Blank)	Trip Blank	A MS/MSD	E (Equipment Blank)	C (60') Dup of A	Trip Blank
Sample Date	11/22/99	11/22/99	11/23/99	11/23/99	11/23/99	11/23/99	11/23/99	1/4/00	1/4/00	1/4/00
Volatile Organic Compounds VOC (ug/l)										
1,1,1-Trichloroethane	ND	ND	ND	2.4	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	2.4	ND	ND	ND	ND	ND	ND
Trichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	2	ND
Tetrachloroethylene	ND	ND	9	20	ND	ND	ND	ND	14	ND
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylene (Total)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethylene (total)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	11	11	ND	10	ND	ND
Methylene chloride	ND	ND	1B	ND	2B	2B	ND	ND	ND	ND
VOC Tentatively Identified Compounds (ug/l)										
2-Methyl-1-propene	ND	ND	7	17	17	ND	ND	ND	12	ND
2-Methyl-1-butene	ND	ND	ND	1	1	ND	ND	ND	ND	ND
2-Methyl-butane	ND	ND	ND	2	2	ND	ND	ND	ND	ND
2-Methyl-propanol	ND	ND	ND	4	4	ND	ND	ND	ND	ND
Hexane	9	3	ND	14	14	ND	ND	ND	ND	ND

TABLE 4.3.2 (CONTINUED)
QA/QC RESULTS ASSOCIATED WITH GROUNDWATER SAMPLES
118-130 SWALM STREET, WESTBURY, NEW YORK

Location	GW1	TB1	GW2	GW2	GW2	TB2	GW3	GW3	GW4	TB3
Sample No. (Depth)	E (Equipment Blank)	Trip Blank	B MS/MSD	C (80') Dup of B	E (Equipment Blank)	Trip Blank	A MS/MSD	E (Equipment Blank)	C (60') Dup of A	Trip Blank
Sample Date	11/22/99	11/22/99	11/23/99	11/23/99	11/23/99	11/23/99	11/23/99	1/4/00	1/4/00	1/4/00
VOC Tentatively Identified Compounds (ug/l) (Cont'd)										
Pentane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Propene	ND	ND	ND	32	32	ND	ND	ND	26	ND
1- Propanol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3 Methyl pentane	ND	ND	ND	1	1	ND	ND	ND	ND	ND
Ethyl-cyclopropane	ND	ND	ND	ND	ND	ND	ND	ND	3	ND
Decane	ND	ND	ND	2	ND	ND	ND	ND	ND	ND
1-Butene	ND	ND	ND	2	2	ND	ND	ND	ND	ND
1-Pentene	ND	ND	ND	3	3	ND	ND	ND	ND	ND
Isobutane	ND	ND	ND	3	3	ND	ND	ND	ND	ND

Notes:

Only detected parameters are reported. See laboratory report for complete chemical analytical data.
ND = Not Detected.

Trip blank samples were utilized to evaluate the potential for VOC cross-contamination between samples in the same cooler. Trip blank samples consist of aliquots of laboratory water which are sealed in sample bottles at the laboratory and which are then transported to the field with the empty sample bottles. A trip blank was placed in each cooler on each day of sampling and was managed in the field and analyzed in the laboratory in the same manner as the primary environmental samples.

Trip blank sample results are indicated by the "TB" prefix. The results show that the few detections of VOCs in the trip blank samples were for methylene chloride and chloroform which are common laboratory contaminants. Therefore, there is no indication of cross-contamination in the samples.

A blind duplicate sample for each matrix was obtained at a frequency of at least five percent of the total number of environmental samples and were used to attest to the precision of the laboratory. A blind duplicate consists of a separate aliquot of sample collected at the same time, in the same manner, and analyzed for the same parameters as the primary environmental sample. The blind duplicate samples are labeled in a manner such that they cannot be identified by the laboratory. The sample results are compared to those of the primary environmental sample to evaluate if the results are similar.

Blind duplicate sample results are indicated with a "C" suffix. The results show that, in general, the primary sample results and duplicate sample results vary by less than 10 percent and, therefore, the laboratory results show a high degree of precision. Variation between the primary and duplicate sample results may be affected by differences in sample matrix, particularly for soil samples. The results for the primary and duplicate soil samples are consistent with minor variations in sample matrix.

Matrix spike/matrix spike duplicate (MS/MSD) samples were collected at a frequency of one per 20 environmental samples for each matrix. The purpose of the MS/MSD samples is to confirm the accuracy and precision of the laboratory.

4.3.2 Chain-of-Custody Procedures

For each day of sampling, chain-of-custody (COC) sheets were completed and submitted to the laboratory with the samples collected that day. A copy of each COC sheet was retained by FPM for sample tracking purposes. Each COC sheet included the project name, the sampler's signature, the sampling locations and intervals, and the analytical parameters requested.

4.4 Leaching Pool Sediment Sampling Results

Chemical analyses of the soil samples obtained from the leaching pools with the Geoprobe sampling unit are discussed below.

4.4.1 Leaching Pool Sediment Data

Sediment samples were collected for chemical analysis from each of the four leaching pools (LP-1, LP-2, LP-3, and LP-4) at the Site. The samples consisted primarily of brown to light brown, fine to medium sand. The chemical analytical results for the leaching pool samples are presented in Table 4.4.1 and are compared to the TAGM-4046 Objectives. Minor concentrations of VOCs were detected in LP-1 and LP-2.

The sediments in LP-1, at a depth of 10 feet below the sediment surface (LP-1A), contained 15 parts per billion (ppb) of trichloroethylene and at a depth of 10 feet above the water table (equal to 50 feet below grade) LP-1B contained 5 ppb of trichloroethylene, 7 ppb of 1,2,4-trimethylbenzene, and 11 ppb of 1,4-dichlorobenzene. The sediments in LP-2, on the northern portion of the subject property, at a depth of 10 feet below the sediment surface (LP-2A) exhibited no concentrations of VOCs. At a depth of 10 feet above the water table (LP-2B), concentrations of PCE equaled 9 ppb. LP-3 and LP-4 only showed concentrations of methylene chloride which appears to be due to laboratory contamination since it was also detected in the method blanks and is a common laboratory contaminant.

TABLE 4.4.1
CHEMICAL ANALYTICAL DATA (LEACHING POOLS)
118-130 SWALM STREET, WESTBURY, NEW YORK

Location	LP1	LP1	LP2	LP2	LP3	LP3	LP4	LP4	Soil Cleanup Objective (TAGM 4046)
Sample No. (Depth)	A 10' Below Sediment Surface	B 10' Above Water Table (50' BG)	A 10' Below Sediment Surface	B 10' Above Water Table (50' BG)	A 10' Below Sediment Surface	B 10' Above Water Table (50' BG)	A 10' Below Sediment Surface	B 10' Above Water Table (50' BG)	
Sample Date	11/22/99	11/22/99	1/4/00	1/6/00	11/23/99	1/6/00	11/23/99	11/23/99	
Volatile Organic Compounds VOC (ppb)									
Trichloroethylene	15	5	ND	ND	ND	ND	ND	ND	700
Tetrachloroethylene	ND	ND	ND	9	ND	ND	ND	ND	1,400
Methylene chloride	ND	ND	ND	ND	170B	ND	160B	170B	100
1,2,4-Trimethylbenzene	ND	7	ND	ND	ND	ND	ND	ND	NO
1,4-Dichlorobenzene	ND	11	ND	ND	ND	ND	ND	ND	8,500
Total VOCs	15	23	0	9	170B	0	160B	170B	10,000
VOC Tentatively Identified Compounds (ppb)									
1-Propanol	ND	5	ND	ND	ND	ND	ND	ND	ND
3-Methylpentane	6	ND	ND	ND	ND	ND	ND	ND	ND
Undecane	6	ND	ND	ND	ND	ND	ND	ND	ND
Pentane	5	ND	ND	ND	ND	ND	ND	ND	ND
Decane	6	5	ND	ND	ND	ND	ND	ND	ND
Hexane	144	140	ND	ND	ND	ND	ND	ND	ND
Limonene	7	ND	ND	ND	ND	ND	ND	ND	ND
Methyl cyclopentane	ND	26	ND	ND	ND	ND	ND	ND	ND
Freon 113	ND	ND	ND	ND	67	ND	ND	29	ND

Notes:

Only detected parameters are reported. See laboratory report for complete chemical analytical data.
ND = Not Detected.

B = Detected in Blank
BG = Below Grade.
NO = No Soil Cleanup Objective.

The VOCs (other than methylene chloride) were detected at concentrations that were significantly below the TAGM-4046 Objectives for each VOC. In addition to the target compounds, some minor concentrations of VOC TICs were detected in each of the samples.

It is important to note that the eight samples obtained from the four leaching pools, PCE was detected in only one sample (at a concentration of 9 ppb).

4.5 Groundwater/Sampling Results

Geoprobe groundwater samples were obtained from four locations in the vicinity of the Site. Sampling location GW-1, is located downgradient (18 feet south) of LP-1. Sampling location GW-2 is located downgradient (194 feet south) of LP-1 along Swalm Street and GW-3 is located downgradient (150 feet south) of the LP-1. GW-4 is located in front of 118-130 Swalm Street, downgradient of LP-2, LP-3, and LP-4. Groundwater samples were obtained from just below the water table and 20 feet below the water table (approximately 60 and 80 feet below grade, respectively).

The chemical analytical results from the groundwater sampling are presented in Table 4.5.1 and are compared to the NYSDEC Class GA Water Quality Standards (the Standards).

The groundwater chemical analysis shows that the four sample locations showed minor exceedances of the Standards. The exceedances were all for PCE and occurred at GW-1 (30 and 42 ug/l), GW-2 (5.9 and 9 ug/l), GW-3 (10 and 6 ug/l) at 60 feet and 80 feet below grade respectively, and GW-4 (31 ug/l) at 60 feet below grade.

At GW-4, which is located directly downgradient of LP-2, LP-3, and LP-4 on the north side of the subject property, PCE is the only VOC found in exceedance of the Standards.

TABLE 4.5.1
CHEMICAL ANALYTICAL DATA (GROUNDWATER)
118-130 SWALM STREET, WESTBURY, NEW YORK

Location	GW1	GW1	GW2	GW2	GW3	GW3	GW4	GW4	NYSDEC Class GA Water Quality Standards
Sample No. (Depth)	A(60')	B(80')	A (60')	B (80')	A (60')	B (80')	A (60')	B (80')	
Sample Date	11/22/99	11/22/99	11/23/99	11/23/99	1/4/00	1/4/00	1/4/00	1/4/00	
Volatile Organic Compounds VOC (ppb = ug/l)									
1,1-Dichloroethane	ND	ND	1	ND	1	ND	ND	ND	5
Trichloroethylene	3	1	1.3	ND	2	ND	2	ND	5
Tetrachloroethylene	30	42	5.9	9	10	6	31	ND	5
Toluene	ND	ND	ND	ND	2	1	ND	ND	5
1,2-Dichloroethylene (total)	5	ND	ND	ND	ND	ND	1	ND	-
Methylene Chloride	ND	ND	1B	1B	ND	ND	ND	ND	5
VOC Tentatively Identified Compounds (ppb = ug/l)									
2 Methyl-butane	ND	ND	3	ND	ND	ND	ND	ND	-
2 Methyl-1-propene	2	4	31	7	ND	5	17	ND	-
Ethyl-cyclopropane	ND	ND	ND	ND	ND	ND	6	ND	-
1,1-Dimethyl-cyclopropane	ND	ND	3	ND	ND	6	ND	ND	-
Hexane	3	3	7	ND	ND	ND	ND	ND	-
Pentane	1	1	5	ND	ND	6	ND	ND	-
Propene	4	6	ND	ND	17	91	36	ND	-
1-Pentene	ND	ND	5	ND	ND	11	ND	ND	-
2-Pentene	ND	ND	ND	ND	ND	4	ND	ND	-

TABLE 4.5.1 (CONTINUED)
CHEMICAL ANALYTICAL DATA (GROUNDWATER)
118-130 SWALM STREET

Location	GW1	GW1	GW2	GW2	GW3	GW3	GW4	GW4	NYSDEC Class GA Water Quality Standards
Sample No. (Depth)	A(60')	B(80')	A (60')	B (80')	A (60')	B (80')	A (60')	B (80')	
Sample Date	11/22/99	11/22/99	11/23/99	11/23/99	1/4/00	1/4/00	1/4/00	1/4/00	
VOC Tentatively Identified Compounds (ppb = ug/l) (Cont'd)									
1-Hexene	ND	ND	4	ND	ND	7	ND	ND	-
1-Butene	ND	ND	4	ND	8	49	ND	ND	-
Trimethyl silanol	2	ND	ND	ND	ND	ND	ND	ND	-
unknown ester	1	ND	ND	ND	ND	ND	ND	ND	-
Isobutane	ND	ND	ND	ND	ND	5	ND	ND	-

Notes:

Only detected parameters are reported. See laboratory report for complete chemical analytical data.
ND = Not Detected.
- = No standard.

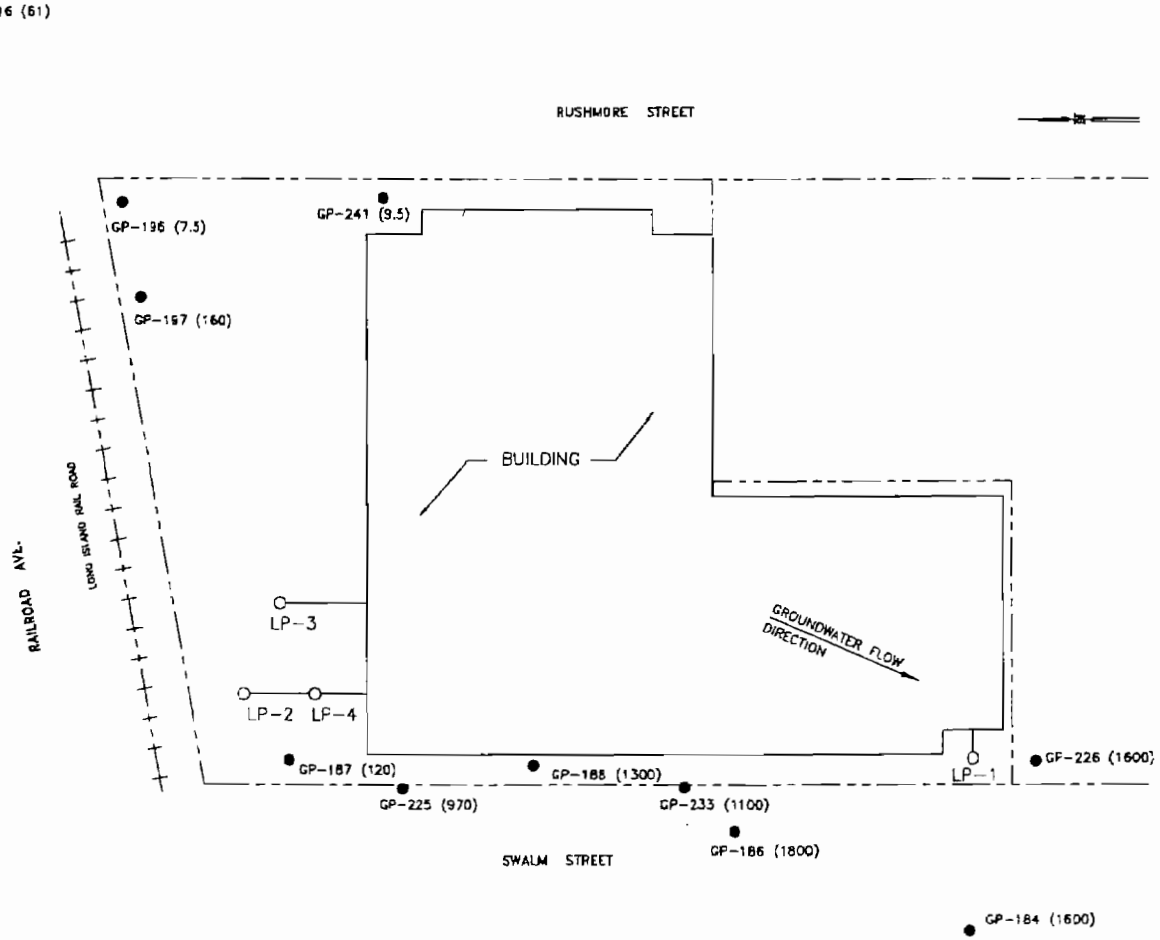
In summary, minimal concentrations of PCE were detected in the on-Site groundwater which is likely to be due, primarily or totally, to contamination from upgradient sources. The downgradient concentration is also significantly lower than past sampling in the same areas.

SECTION 5.0
CONCLUSIONS

Based on the findings of all investigations performed at the Site, the following can be concluded:

- A soil vapor investigation, soil borings, and multi-depth soil sampling of all leaching pools were performed at the Site and although low levels of PCE and other VOCs were detected, all VOCs detected in the soil samples were at a concentration that was less than half of the TAGM-4046 Objective concentrations. The TAGM-4046 Objective concentrations are calculated to determine soil contamination levels which are protective of groundwater and since there were no exceedances of these Objectives, there is no clear evidence to conclude that the leaching pools are a source area for the PCE contamination in the groundwater at the Site.
- The maximum concentration of PCE in the groundwater in 1995 to 1996 was 1,800 ppb. The maximum concentration of PCE detected during the most recent sampling was 42 ppb (see Figures 5.1, 5.2, and 5.3 for a summary of the history of PCE concentrations in the groundwater). Based on this information, it appears that there is not a continuous source of PCE due to the significant decrease in groundwater concentrations over approximately the last five years.
- An upgradient source of contamination exists. Although FPM upgradient Geoprobes showed only trace levels of PCE, upgradient well NC-16 has shown PCE concentration as high as 61 ppb and on-Site upgradient LMS Geoprobe groundwater sample GP-197 showed PCE at 160 ppb. No source area has been identified by NYSDEC for this contamination.

It is the opinion of FPM that the four Site leaching pools are not the source for groundwater contamination. This opinion is based on the fact that the elevated concentrations in the groundwater detected in 1995 and 1996 indicated a recent release at that time. Since the leaching pools have not

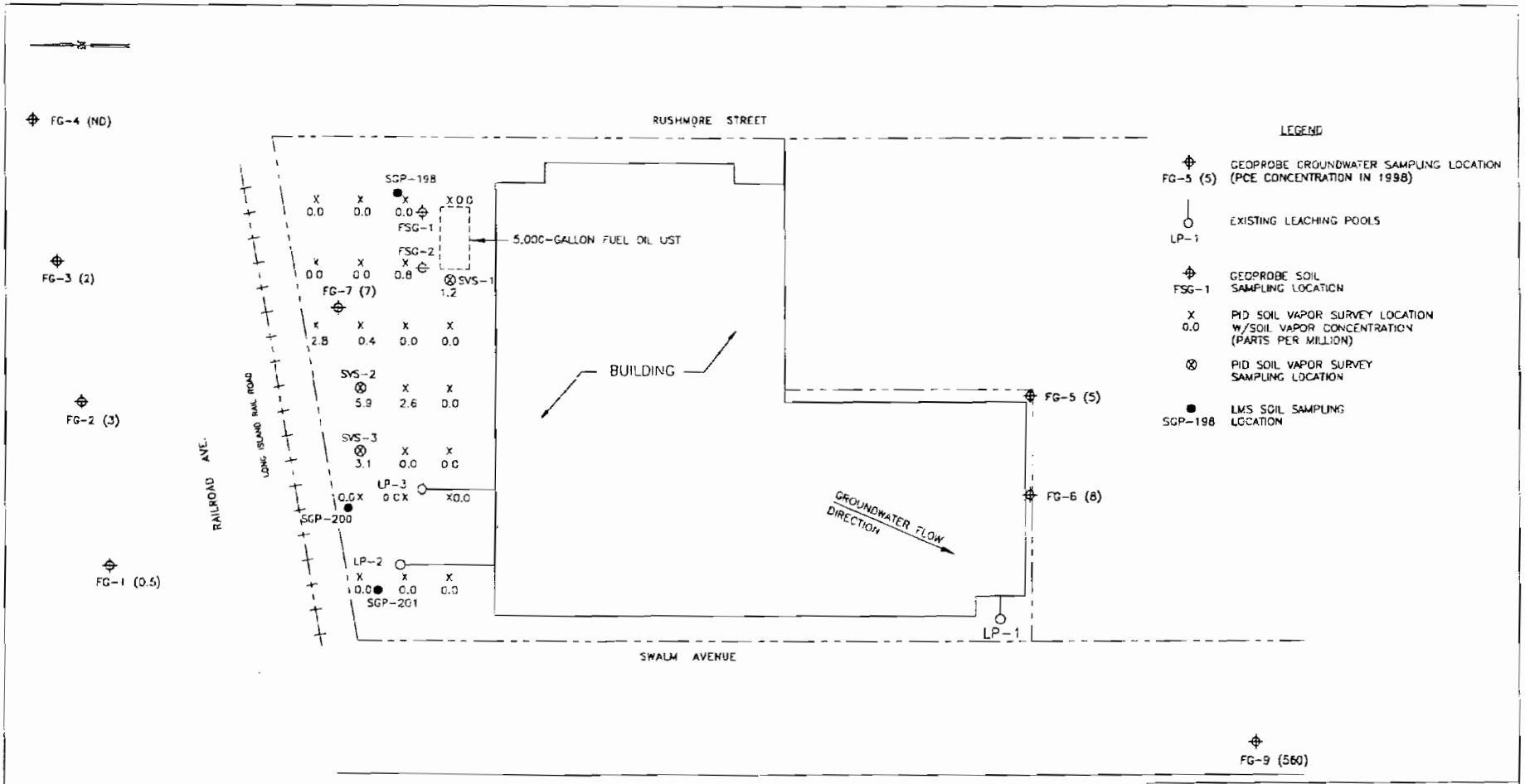


SCALE: 1"=40'
(SAMPLING LOCATIONS ARE APPROXIMATE)

Fanning, Phillips & Molnar
Engineers

FIGURE 5.1
PCE CONCENTRATIONS CONTOURS IN SHALLOW GROUNDWATER DURING 1995-1996
116-130 SWALM STREET
NEW CASSEL, N.Y.

Drawn By: L.G. | Checked By: B.K. | Date: 5/11/00



SCALE: 1"=40'

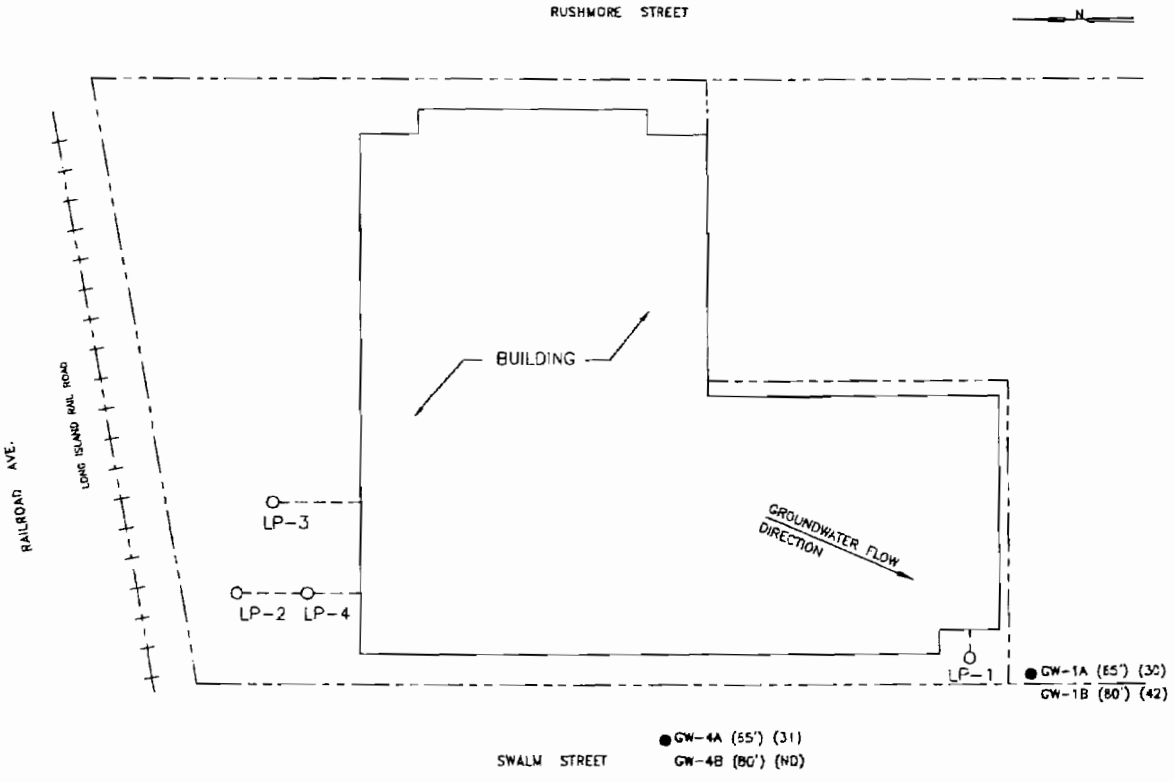
(SAMPLING LOCATIONS ARE APPROXIMATE)

SITE MAP FROM PLOT PLAN PROVIDED BY LIQUI-MARK FILE

Fanning, Phillips & Molnar
Engineers

FIGURE 5.2
PCE CONCENTRATIONS IN SHALLOW GROUNDWATER DURING 1998
118-130 SWALM STREET
NEW CASSEL, N.Y.

Drawn By: J.C. & L.G | Checked By: | Date: 2/24/99



LEGEND

●GW-1A (65) (30)	GROUNDWATER SAMPLING LOCATION WITH SAMPLE DEPTH (PCE CONCENTRATION IN 1999-2000)
ND	NOT DETECTED

SCALE: 1"=40'
(SAMPLING LOCATIONS ARE APPROXIMATE)

Fanning, Phillips & Molnar
Engineers

FIGURE 5.3
PCE CONCENTRATIONS IN SHALLOW & DEEP GROUNDWATER SAMPLES DURING 1999-2000
118-130 SWALM STREET
NEW CASSEL, N.Y.

Drawn By: L.G. | Checked By: B.K. | Date: 5/11/00

accepted liquids since 1980, there is a period of 15 years (1980 to 1995) that the leaching pools would have to have been acting as a significant source of groundwater contamination. However, since the leaching pools contain solid covers, stormwater is inhibited from entering the pools, therefore, there is no mechanism to transport PCE to the water table.

In addition, since the release would have had to have occurred prior to 1980, there would expected to be higher concentrations of degradation products of PCE (such as TCE, TCA, DCE, DCA, and vinyl chloride) in the groundwater. In the shallow groundwater in 1995/1996, out of 10 wells at which PCE was detected, TCE was the only potential degradation product detected and was found at only one location and at a concentration which represented six percent of the total VOC concentration (excluding VOCs not related to PCE or its degradation products) at that sample location.

In the most recent sampling, TCE, DCA, and DCE were detected. These potential degradation products now represent 15 percent of the total VOCs indicating increased degradation over time.

For the shallow leaching pool soil sampled in 1998, four degradation products were detected (TCA, TCE, DCA, and DCE). The shallow leaching pool sediments contain potential degradation products which represent 62 percent of the total VOC content. This suggests that the PCE in the leaching pools is significantly degraded. This would be expected since the PCE is likely to have been present in the pools for at least 18 years. Also, in the deeper leaching pool samples, only a trace level of PCE (9 ppb) was detected in one of the eight samples obtained).

Since the 1995-1996 sampling shows significantly elevated PCE concentrations within 100 feet or less from the leaching pools, this suggests that significant concentrations of PCE would have had to be present in the pools and would have had to have been a significant source since at least 1980 and at least to 1994-1995 (since the travel time from the leaching pools to the location 100 feet downgradient is

expected to be less than one year. For the leaching pools to have acted as an active significant source for 15 years or more, there would have to have been non-aqueous phase liquid (NAPL) in the pools. The concentrations of PCE detected in the pools in 1998, 1999, and 2000 are to a low to be indicative of residual NAPL.

Therefore, it can be concluded that the most likely source of the PCE contamination is an off-Site, upgradient source.