

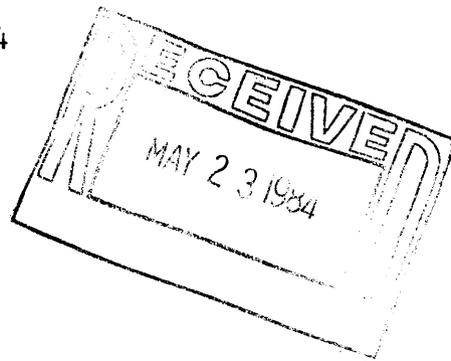
— GENEVA - BORDER CITY
GEM 370(GWW)
SOIL AUGER BORINGS I

784

Woodward-Clyde Consultants

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18 May 1984
84C4048



Mr. James B. Marean
New York State Electric and Gas Corp.
87-89 Chenango Street
Binghamton, NY 13902

Dear Jim:

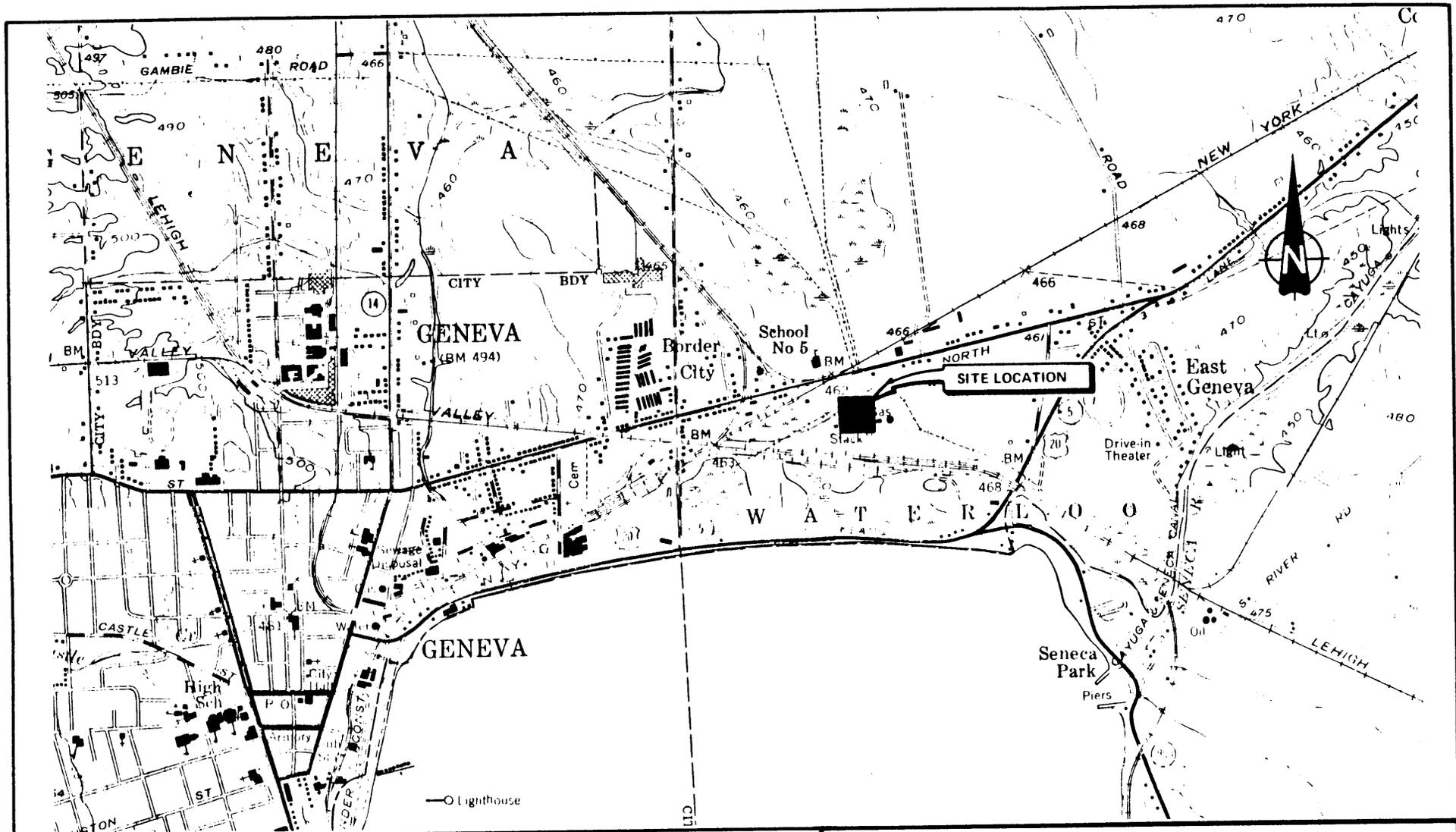
I would like to present the results of our investigation at the New York State Electric and Gas Corporation (NYSEG) Geneva Service Center. The work was performed on 8 May 1984. During the field investigation, a Woodward-Clyde Consultants' (WCC) geologist observed, logged, and measured organic vapor levels for 10 shallow auger borings. In addition, organic vapor levels were measured at various locations across the Geneva facility. The work was performed in accordance with our letter of proposal #84P4048 dated 9 March 1984. It is our understanding that this project was implemented in order to obtain subsurface information at the locations of a planned new service garage and sanitary sewer line.

GENERAL SITE CONDITIONS

The Geneva Service Center is located in the Finger Lakes region of New York State near the north end of Seneca Lake. The specific site location is shown on Figure 1. Based on our understanding of the regional geology, our experience in similar settings and field observations, the following conditions are believed to exist at the site.

Surface materials on the site are, for the most part, fill or reworked site soils. Beneath the various fill layers are organic clayey marsh and swamp deposits which were laid down after the Wisconsin age glacial stage. These sediments are underlain by tills of Wisconsin age and earlier Pleistocene glacial stages. Bedrock beneath the tills consists of Paleozoic age sedimentary rocks.





NOTE: BASE MAP FROM USGS, GENEVA NORTH AND GENEVA SOUTH, 7.5 MINUTE QUADRANGLES, NY

**SITE LOCATION
NYSEG, GENEVA SERVICE CENTER**

WOODWARD—CLYDE CONSULTANTS
CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS
WAYNE, NEW JERSEY

DR. BY:	CIG	SCALE: 1 IN. = 2000 FT	PROJ. NO.: 84C4048
CK'D. BY:	SRH	DATE: 15 MAY 1984	FIG. NO.: 1

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The water table is shallow; 3 to 5 feet below ground level, and should approximately follow the ground surface topography. Downward vertical infiltration is probably limited by the fine grained marsh deposits. The water table surface may deviate from the above model if points of recharge or discharge, such as ponds and wells, exist nearby.

RESULTS

Visual Logging of Auger Borings

The boring locations are shown on Figure 2. Of the 10 borings 8 (B-1 through B-8) were drilled in an existing parking lot which is 2 to 3 feet above the general ground surface. As expected, these borings encountered fill and buried structures to a depth as great as 10.5 feet below ground level. The original ground surface may have been encountered in boring B-4 where the driller reported a "swampy" odor. A large portion of the fill consisted of bricks which presumably were part of the coke oven and loading facility which formerly occupied this area. The open chamber encountered in boring B-1 is also thought to be a remnant of the coke oven facility. Although some unidentified odors were detected, no visible contamination was observed in any of the parking lot borings.

The remaining 2 borings (B-9, B-10) were placed on the planned sewer line and on an old underground tar storage tank. In both of these, liquid coal tar was observed seeping from the borehole walls. The clay encountered in boring B-9 probably represents the original soil. When it was removed from service, the tar storage tank was backfilled with sandy gravel. The boring logs are contained in Appendix A.

Organic Vapor Measurements

Organic vapor measurements were made in the auger boreholes using an Hnu photo ionization organic vapor detector. Readings are given on the boring logs (in

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the center column) in parts per million (ppm) relative to benzene as a standard. The parking lot borings all showed levels below 0.5 ppm on the Hnu. It should be noted that strong winds prevailed during the field work. These would cause volatiles to be rapidly dispersed and tend to lower the Hnu readings. As expected, the readings in borings B-9 and B-10 were higher, up to 0.8 ppm and 6.0 ppm, respectively.

The Hnu was used to survey the organic vapor levels across the Geneva site. At all locations checked, the levels were below the detectable limit of the Hnu. The sensitivity of this survey was probably hindered by the strong winds mentioned earlier.

RECOMMENDATIONS

These recommendations are based on the information obtained from this limited study. It is quite likely that the actual subsurface conditions differ in detail from the simplified model indicated by the 10 borings. For the above reasons, these recommendations cannot be taken as a guarantee of performance for the planned construction. They do, however, represent our best assessment of the situation using the available information.

Service Garage

We do not foresee any major problems with construction of the planned service garage. We would recommend that the possibility of encountering more open chambers be considered in the final design for this structure. As no significant contamination was measured with the Hnu or visibly observed, we do not expect this new construction to adversely affect any future studies of subsurface contamination dealing with Hnu detectable vapors or visible solids/liquids. However, if other types of contaminants are present at this location there could be a problem in the future.

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Sanitary Sewer Line

The planned new sewer line intersects at least one area of coal tar contamination. If constructed, some measures would have to be taken to minimize personnel exposure to coal tar during construction, and to minimize the tendency of the backfilled trench to act as a pathway for contaminant migration. In light of these potential problems we recommend that an alternative route or use of existing underground piping be considered.

General Site Organic Vapor Levels

Our survey indicated that if any vapors are emanating from the site, they are at very low levels. If more information is desired, we would recommend a more sensitive survey using shallow borings and analysis of head space vapors from jar samples.

If you have any further questions, please do not hesitate to contact me.

Yours very truly,



Steffan R. Helbig,
Assistant Project Geologist



Donald R. Ganser,
Associate

DRG:ydf

D475/149

APPENDIX A

WOODWARD-CLYDE CONSULTANTS
CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS

LOG OF BORING B-1

SHEET 1 OF 1

PROJECT AND LOCATION NYSEG Geneva, N.Y.		ELEVATION AND DATUM ~104' MSL		PROJECT NO. 84CA048	
DRILLER AGENCY NYSEG		PERSONNEL —		DATE STARTED 8 May 1984	
DRILLER EQUIPMENT Power Auger		COMPLETION DEPTH 10.5'		ROCK DEPTH —	
SIZE AND TYPE OF BIT 1.5 ft Auger	SIZE AND TYPE OF BARREL N/A	NO. SAMPLES —	DEPTH —	DEPTH —	DEPTH —
CASING N/A	CASING HAMMER —	WEIGHT —	DROP —	WATER LEVEL 5.0	
CASING HAMMER —	WEIGHT —	DROP —	BORING ANGLE AND DIRECTION Vertical		
SAMPLER N/A	SAMPLER HAMMER —	WEIGHT —	DROP —	OPERATOR S. Helbig	

DESCRIPTION	DEPTH, FT	ORGANIC ANALYSIS READINGS	REMARKS
Blacktop			
Brown Sandy Cobbles (Bricks) Occ. Concrete Boulders Dry (GW)	1	0.2	
	2	0.0	
	3	0.0	
Concrete Slab	4		
Open Void Water Filled	5		∇ Auger partially penetrated concrete slab exposing water filled opening to a depth of 10.5' BGL.
	6		
	7		
	8		
	9		
	10		End Of Boring 10.5'
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		

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LOG OF BORING B-2

SHEET 1 OF 1

PROJECT AND LOCATION NYSEG Geneva, N.Y.		ELEVATION AND DATE ~103' MSL		PROJECT NO. 84CA048	
DRILLING AGENCY NYSEG		FOREMAN —		DATE STARTED 8 May 1984	
DRILLING EQUIPMENT Power Auger		COMPLETED DEPTH 8.0'		RISK DEPTH —	
SIZE AND TYPE OF BIT 1.5 ft Auger		SIZE AND TYPE OF CORE BARREL N/A		NO. SAMPLES —	
CASING N/A		CASING HAMMER WEIGHT —		DROPS —	
SAMPLER N/A		SAMPLER HAMMER WEIGHT —		DROPS —	
BORING ANGLE AND DIRECTION Vertical				REPORTER S. Helbig	

DESCRIPTION	DEPTH, FT	Organic Xenyls Readings	REMARKS
Blacktop			
Brown Sandy Cobbles (Bricks) Moist (GW)	1	0.0	
	2		
	3	0.2	
Brown Sandy Gravel, Trace Silt, Moist (GW) (Rounded Gravel)	4		Drilling became easier at ~ 3.5'
	5		▽
Becoming Wet	6	0.4	
	7		
	8		End of Boring 8'
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		

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LOG OF BORING B-3

SHEET 1 OF 1

PROJECT AND LOCATION NYSEG Geneva, N.Y.			ELEVATION AND DATUM ~102' MSL		PROJECT NO. 84CA048	
DRILLING AGENCY NYSEG			DATE STARTED 8 May 1984		DATE FINISHED 8 May 1984	
DRILLER EQUIPMENT Power Auger			COMPLETED DEPTH 6.0'		RISK DEPTH —	
SIZE AND TYPE OF BIT 1.5 ft Auger		SIZE AND TYPE OF BARRYL N/A		SOIL SAMPLES	SOFT	LIQUID
CASING N/A				WATER LEVEL	FEET NE	DEPTH
CASING HAMMER		WEIGHT		BORING AREA AND DIRECTION Vertical		
SAMPLER N/A		DROP		OPERATOR S. Helbig		
SAMPLER HAMMER		WEIGHT				
SAMPLER HAMMER		DROP				
DESCRIPTION	DEPTH, FT	Organic Oxylve Readings	REMARKS			
Black top						
Brown Sandy fine Gravel, Trace Silt, Moist (G-P) (Rounded Gravel)	1	0.0				
	2					
Occ. Bricks	3					
	4	0.4	Slight odor reported by driller, No visible contamination			
Brown Sandy Cobbles (Bricks) (G.W.)	5		Obtained Hm readings of 0.5 to 2.0 ppm off of worm cuttings			
	6	0.1	End of Boring 6.0'			
	7		Could not penetrate deeper			
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					
	16					
	17					
	18					
	19					

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LOG OF BORING.....B-4.....

SHEET 1 OF 1

PROJECT AND LOCATION NYSEG Geneva, N.Y.		ELEVATION AND DATE ~103' MSL	PROJECT NO. 84CA048
DRILLER AGENCY NYSEG		DATE STARTED 8 May 1984	DATE FINISHED 8 May 1984
DRILLING EQUIPMENT Power Auger		COMPLETION DEPTH 8.0'	REEL DEPTH —
SIZE AND TYPE OF BIT 1.5 ft Auger	SIZE AND TYPE OF CORE BARREL N/A	NO. SAMPLES —	DEPTH —
CASING N/A	WEIGHT —	DRIVER LEVEL A.5	DEPTH —
CASING HAMMER —	WEIGHT —	CORRECTION AND DIRECTION Vertical	
SAMPLER N/A	WEIGHT —	OPERATOR S. Helbig	
SAMPLER HAMMER —	WEIGHT —	DROPS —	

DESCRIPTION	DEPTH, FT	Organic Xenyls Readings	REMARKS
Blacktop			
Brown Sandy Cobbles (Brcks) Sl. Moist (GW)	1	0.0	
	2		
	3		
	4	0.1	Driller reports some odor, not coal, tan, "Swampy" Drilling became easier at 4'
Brown Sandy Gravel, Some Cobbles, Trace Sand, Wet (GW)	5		Hole caving to 4' BGL
	6		11.7 Bu probe - readings 1.5 ppm above background
	7		
	8		End of Boring 8.0'
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		

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LOG OF BORING B-5

SHEET 1 OF 1

PROJECT AND LOCATION NYSEG Geneva, N.Y.		ELEVATION AND DATUM 58.5' E. OF B-3		PROJECT ID 84CA048	
WELL AND AGENCY NYSEG		DATE STARTED 8 May 1984		DATE FINISHED 8 May 1984	
WELL AND EQUIPMENT Power Auger		COMPLETION DEPTH 4.0		WELL DEPTH —	
SIZE AND TYPE OF BIT 1.5 ft Auger	SIZE AND TYPE OF CORE BARREL N/A	NO. SAMPLES —	DEPTH —	DEPTH —	DEPTH —
CASING N/A	CASING HAMMER —	WEIGHT —	DIRECTION Vertical		
DROP —			REPORTER S. Helbig		
SAMPLER N/A	SAMPLER HAMMER —	WEIGHT —	DROP —		

DESCRIPTION	DEPTH, FT	Organic Analyses Readings	REMARKS
Blacktop			
Brown Sandy Cobbles (Bricks) Some Gravel, occ. Steel Pipe Fragments Moist. (Gw)	1	0.4	
	2		
	3	0.2	Boring caving to 2' BGL Some odor
	4		∇ Bottom of Auger wet
	5		End of Boring 4.0'
	6		
	7		
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		

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LOG OF BORING B-6

SHEET 1 OF 1

PROJECT AND LOCATION NYSEG Geneva, N.Y. 100' W, 42' N OF B-4		ELEVATION AND DATUM 103' MSL		PROJECT NO. 84CA048	
DRILLED AGENCY NYSEG		DATE STARTED 8 May 1984		DATE FINISHED 8 May 1984	
DRILLED EQUIPMENT Power Auger		COMPLETION DEPTH 8.0'		CORE DEPTH —	
SIZE AND TYPE OF BIT 1.5 ft Auger	SIZE AND TYPE CORE BARREL N/A	NO. SAMPLES —	DEPTH —	NO. OF —	DEPTH —
CASING N/A	CASING HAMMER —	WEIGHT —	DIRECTION Vertical		
SAMPLER N/A	SAMPLER HAMMER —	WEIGHT —	INSPECTOR S. Helbig		
				DIRECTION Vertical	
				INSPECTOR S. Helbig	

DESCRIPTION	DEPTH, FT	Organic Analyses Readings	REMARKS
Blacktop			
Brown Sandy Cobbles (Bricks) Trace Gravel, Moist (GW)	1	0.2	
	2		
	3		
	4		▽ Drilling became easier @ 4.5'
Dark Brown Gravelly Sand, Wet. (SW)	5	0.1	
	6		
	7		
	8		End of Boring 8.0'
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		

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LOG OF BORING B-7

SHEET 1 OF 1

PROJECT AND LOCATION NYSEG Geneva, N.Y. 15'S, 100'W OF B-1		ELEVATION AND DATUM 103.5' MSL		PROJECT NO. 84CA048	
DRILLING AGENCY NYSEG		DATE STARTED 8 May 1984		DATE FINISHED 8 May 1984	
DRILLING EQUIPMENT Power Auger		COMPLETION DEPTH 2.5'		RISK DEPTH —	
SIZE AND TYPE OF BIT 1.5 ft Auger	SIZE AND TYPE CORE BARREL N/A	NO. SAMPLES —	SOIL —	LIQUID —	SAND —
CASING N/A	WEIGHT —	DROP —	WATER LEVEL NE	TEMP. —	DEPTH —
CASING HAMMER —	WEIGHT —	DROP —	BORING AXLE AND DIRECTION Vertical		
SAMPLER N/A	WEIGHT —	DROP —	REPORTER S. Helbig		
SAMPLER HAMMER —	WEIGHT —	DROP —			

DESCRIPTION	DEPTH, FT	Organic Xenobiotics Readings	REMARKS
<u>Black top</u>			
Brown Sand and Gravel, Some Bricks, Dry (SW)	1	0.1	
Solid Brick and Concrete Slab	2	0.1	Could not penetrate End of Boring 2.5'
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		

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LOG OF BORING B-8

SHEET 1 OF 1

PROJECT AND LOCATION NYSEG Geneva, N.Y. 20' N OF B-7		ELEVATION AND DATUM 102' MSL		PROJECT NO. 84CA048	
DRILLER AGENCY NYSEG		DATE STARTED 8 May 1984		DATE FINISHED 8 May 1984	
DRILLER EQUIPMENT Power Auger		COMPLETION DEPTH 8.0		RISK DEPTH —	
SIZE AND TYPE OF BIT 1.5 ft Auger	SIZE AND TYPE CORE BARREL N/A	NO. SAMPLES —	DEPTH —	DEPTH —	DEPTH —
CASING N/A	WEIGHT —	DEPTH 6.0	DEPTH —	DEPTH —	DEPTH —
CASING HAMMER —	WEIGHT —	SOURCE ANGLE AND DIRECTION Vertical			
SAMPLER N/A	WEIGHT —	REPORTER S. Helbig			
SAMPLER HAMMER —	WEIGHT —				

DESCRIPTION	DEPTH, FT	Organic Analysis Readings	REMARKS
Grass + Topsoil			
Dark Brown Sandy Cobbles (Bricks), Some Gravel, Sl. Moist (G.W)	1	0.0	
	2		
	3		
	4		
	5	0.0	
Becoming wet	6		▽
	7		
	8		End of Boring 8.0'
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		

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LOG OF BORING B-9

SHEET 1 OF 1

PROJECT AND LOCATION NYSEG Geneva, N.Y.		ELEVATION AND DATUM ~ 98' MSL		PROJECT NO. 84CA048	
DRILLER AGENCY NYSEG		FORWARD —		DATE FINISHED 8 May 1984	
DRILLER EQUIPMENT Power Auger		COMPLETION DEPTH 8.0'		HOLE DEPTH —	
SIZE AND TYPE OF BIT 1.5 ft Auger		SIZE AND TYPE CORE BARREL N/A		NO. SAMPLES —	
CASING N/A		CASING HAMMER - WEIGHT - DROP -		DEPTH —	
SAMPLER N/A		SAMPLER HAMMER - WEIGHT - DROP -		WATER LEVEL 1.0	
				BORING AXIAL AND DIRECTION Vertical	
				OPERATOR S. Helbig	

DESCRIPTION	DEPTH, FT	Organic Analysis Readings	REMARKS
Black top			
Dark Brown Alternating Sandy Gravel and Sandy Clay, Wet (GW), (CH)	1	0.1	▽
	2		Coal tar seeping into boring.
	3	0.8	Strong Coal Tar Odor Reported By Driller.
	4		
	5		
	6		
	7		
	8		End of Boring 8.0'
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		

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LOG OF BORING B-10

SHEET 1 OF 1

PROJECT AND LOCATION NYSEG Geneva, N.Y., At Center Of Former Tar Tank		ELEVATION AND DATUM ~98.5' MSL		PROJECT NO. 84CA048	
DRILLING AGENCY NYSEG		DATE STARTED 8 May 1984		DATE FINISHED 8 May 1984	
DRILLING EQUIPMENT Power Auger		COMPLETION DEPTH 5.5'		ROCK DEPTH —	
SIZE AND TYPE OF BIT 1.5 ft Auger	SIZE AND TYPE CORE BARREL N/A	NO. SAMPLES —	DEPTH —	DEPTH —	DEPTH —
CASING N/A	WEIGHT —	DROP —	WATER LEVEL ~3'	DEPTH —	DEPTH —
CASING HAMMER —	WEIGHT —	DROP —	BORING ANGLE AND DIRECTION Vertical		
SAMPLER N/A	WEIGHT —	DROP —	OPERATOR S. Helbig		
SAMPLER HAMMER —	WEIGHT —	DROP —			

DESCRIPTION	DEPTH, FT	Organic X-ray Analysis Readings	REMARKS
Blacktop			
Dark Brown to Black Sandy fine Gravel, wet, partially saturated with coal tar. (GW)	1	5.0	Strong coal tar odor Reported by Driller
	2		
	3	6.0	∇
	4		
	5		End of Boring 5.5'
	6		
	7		
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		