Environmental
PRODUCTS & SERVICES, INC

P.O. Box 7141, Newburgh, NY 12550 (914) 561-0707, FAX (914) 561-0863, (800) 477-4557

August 31, 1998

Mr. Stephen Mandracchia
Hudson Technologies, Inc.
25 Torne Valley Road
Hillburn, New York 10931

RE: PHASE II SUBSURFACE INVESTIGATION
100 BRENNER DRIVE
CONGERS, NEW YORK 10950

Dear Mr. Mandracchia:

Environmental Products & Services, Inc. is pleased to provide Hudson Technologies, Inc. with a copy of the Phase II Subsurface Investigation Report for the above-referenced property. Environmental Products & Services, Inc. performed environmental services at the site on August 5th 10th & 12th, 1998. This report summarizes the work performed.

If you have any questions, or we can clarify any of the items discussed, please do not hesitate to contact myself at (914) 561-0707.

Very truly yours,

ENVIRONMENTAL PRODUCTS & SERVICES, INC.

Robert A Hulihan, Senior Hydrogeologist
Newburgh Branch

RAH/ljm
7309.RAH.703

BACKGROUND

Environmental Products & Services, Inc. performed a Subsurface Investigation at the former Wilsonart Laminate Company facility which included installation of three (3) monitoring wells at the property to a depth of 30 feet. The monitoring wells were installed to obtain samples and to characterize the existing conditions of the soils and groundwater. This investigation was conducted to evaluate if any residual contamination exists from the former operations by the Wilsonart Company and the removal of underground fuel oil storage tanks at the site. The monitoring wells were strategically located to evaluate the soil/groundwater conditions with an emphasis on the loading dock area, supposed septic tank / leachfield area and the former underground storage tank area. A site layout is shown as Figure 1 and a site description is depicted as Figure 2.

METHODS USED / MONITORING WELL INSTALLATION

Each monitoring well was installed using 4 inch air hammer. The surface completion of the monitoring well is a flush-mount curb-box. The monitoring wells consist of 10 or 15 feet of 2 inch screen and flush joint PVC riser to grade. Soil characterization was also recorded in order to characterize soil properties. Monitoring Well logs with field analytical data are in Appendix A. Split spoon samples were unattainable due to the density of the soil. Sampling equipment was decontaminated between borings to prevent cross contamination. All samples were handled using disposable surgical gloves. Operation of the drilling equipment was conducted by Environmental Products & Services, Inc. of Syracuse, New York. Groundwater samples and associated documentation were handled and prepared by an Environmental Products & Services, Inc. on site geologist.

MONITORING WELL DEVELOPMENT

The monitoring wells were developed until the groundwater appeared clear using a Grundfos Redi-Flo-2, submersible pump. The purpose of well development is to remove any silt and fine particles which may have entered the well during installation and to restore the subsurface stratigraphy immediately surrounding the well to as close to natural conditions as possible.

GEOLOGIC / HYDROGEOLOGIC CONDITIONS

Surficial geology of the project site is mapped as glacial till consisting of poorly sorted variable textured soils (silt, clay, boulders), kame deposits and bedrock outcrops. This information was obtained from the "Surficial Geologic Map of New York, Lower Hudson Sheet" published by the New York State Geological Survey in 1970 (edited by Donald H. Cadwell, 1989).

The site is not located within the boundaries of an area mapped as a primary or principal aquifer, according to the map "Potential Yields of Wells in Unconsolidated Aquifers in Upstate New York - Lower Hudson Sheet" (Bugliosi and Trudell). This map indicates the site is not located over a primary or principal aquifer capable of yielding 10 to 100 gallons per minute (gpm).

Based on groundwater gauging data collected during the August 12, 1998 sampling event, the average groundwater flow direction at the site was toward the southwest across an average hydraulic gradient of 0.003 feet-per-foot (ft/ft). Liquid level gauging data is presented in Table 1 and a groundwater contour map for, August 12, 1998 is provided in Figure 4.

GROUNDWATER SAMPLING & ANALYSIS

Groundwater samples were collected from the monitoring wells on August 12, 1998 and analyzed for Volatile Organic Compounds in accordance with EPA Method 8260 with MTBE. The laboratory analytical results from the monitoring well sampling indicate the presence of volatile organic compounds (VOC's) above New York State Department of Environmental Conservation guidance values for groundwater. The analytical results of the groundwater samples revealed the presence of 1,1-Dichloroethane, 1,1-Dichloroethene, Trichlorofluoromethane, Trichloroethene and 1,1,1-Trichloroethane above groundwater quality guidance values. Laboratory analytical results revealed elevated levels of Trichloroethene and 1,1-Dichloroethene concentrations in all three monitoring wells. The source of Trichloroethene and 1,1-Dichloroethene in groundwater is unknown but is likely due to former operations at the facility. Laboratory analytical data is summarized in Table 2 and shown as Appendix B.

With the exception of Trichlorofluoromethane these compounds detected share the following properties;

- The compounds are not naturally occurring; probable sources of -chloroethylenes in groundwater are the accidental release of solvents and metal degreasers.
- The compounds have relatively high vapor pressures and will therefore volatilize readily into the atmosphere, when exposed.
- The compounds have low adsorption potential to soil in surface soils or below the water table and will therefore leach rapidly through soils to groundwater.
- Due to a lack of significant biodegradation, the compounds will remain in untreated groundwater indefinitely. (Howard, 1990)

CONCLUSIONS

- Based on the analytical results of the groundwater samples obtained, Volatile Organic Compounds were detected at or above NYSDEC guidance values for groundwater in monitoring wells MW-1, MW-2 and MW-3. The known area of contaminated groundwater is located on the western side and front of the building near the supposed septic tank / leachfield area and the former underground storage tanks. The highest level of Trichloroethene was found in MW-3 which is located downgradient by the concrete loading ramp.

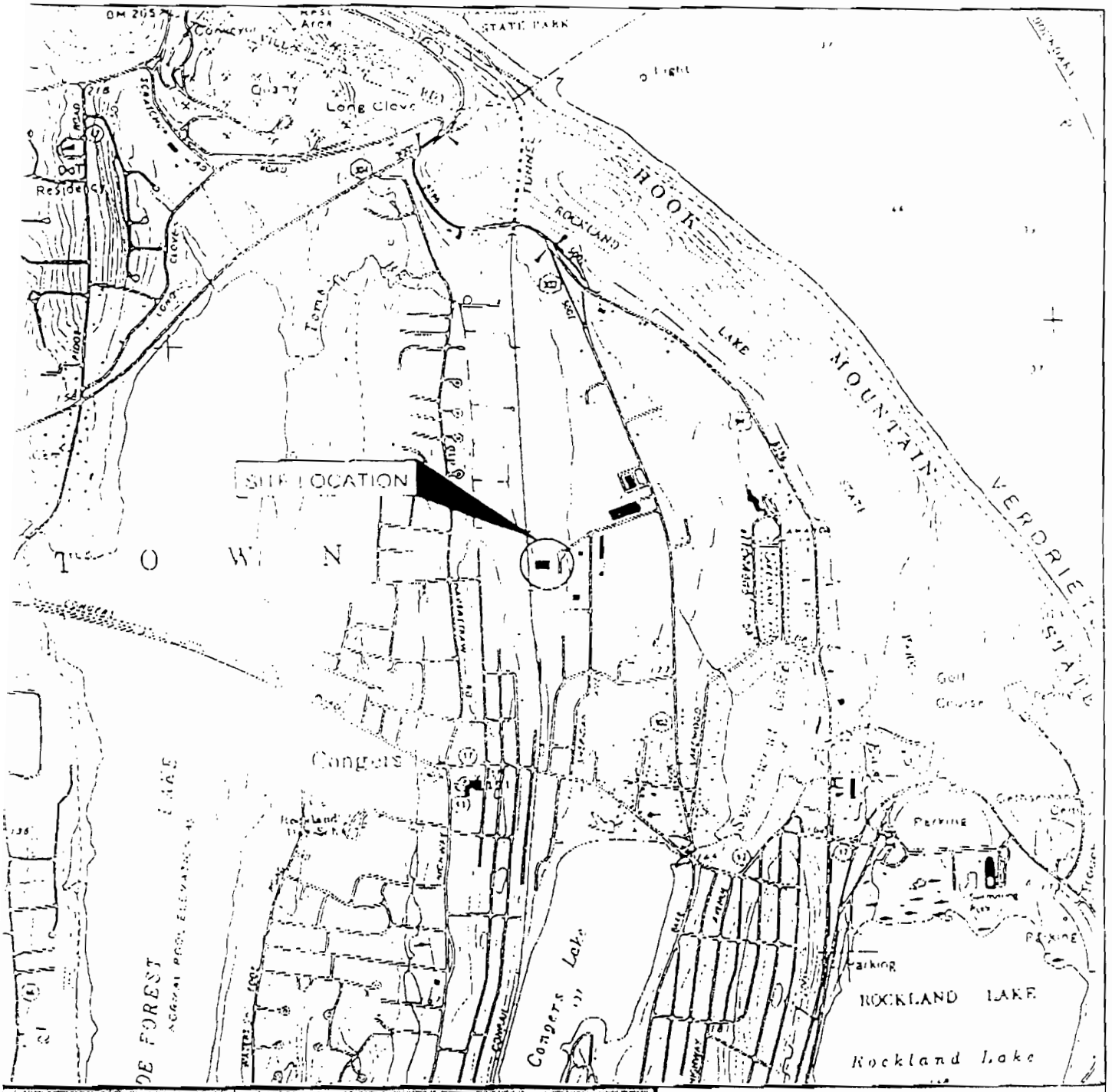
- The petroleum and chlorinated solvent contamination appears to have been caused by former operations at the facility.

- Groundwater samples obtained from all three monitoring wells revealed the presence of volatile organic compounds above New York State Department of Environmental Conservation guidance values. Elevated concentrations of Trichloroethene were present in monitoring wells MW-2 and MW-3. While minor amounts of petroleum compounds were present, the majority of the compounds found in water samples from the monitoring wells are indicative of solvents or metal degreasers.

RECOMMENDATIONS

- Further investigation should be implemented in the front of the property in order to further define the areal extent of existing contamination. Investigative efforts should concentrate on the area of the former underground storage tanks, septic tank / leachfield area and the downgradient portion of the front of the property.

FIGURES



Environmental Products & Services, Inc.

SITE LOCATION MAP

Figure No.: 1	**Quadrangle:** Haverstraw
Project No.: N1556	**Prepared by:** LJM
Client: Hudson Technologies Inc 25 Torne Valley Road Hillburn, NY 10931	**Project location:** Hudson Technologies, Inc 100 Brenner Drive Congers, NY 10920

0 1000 2000 4000

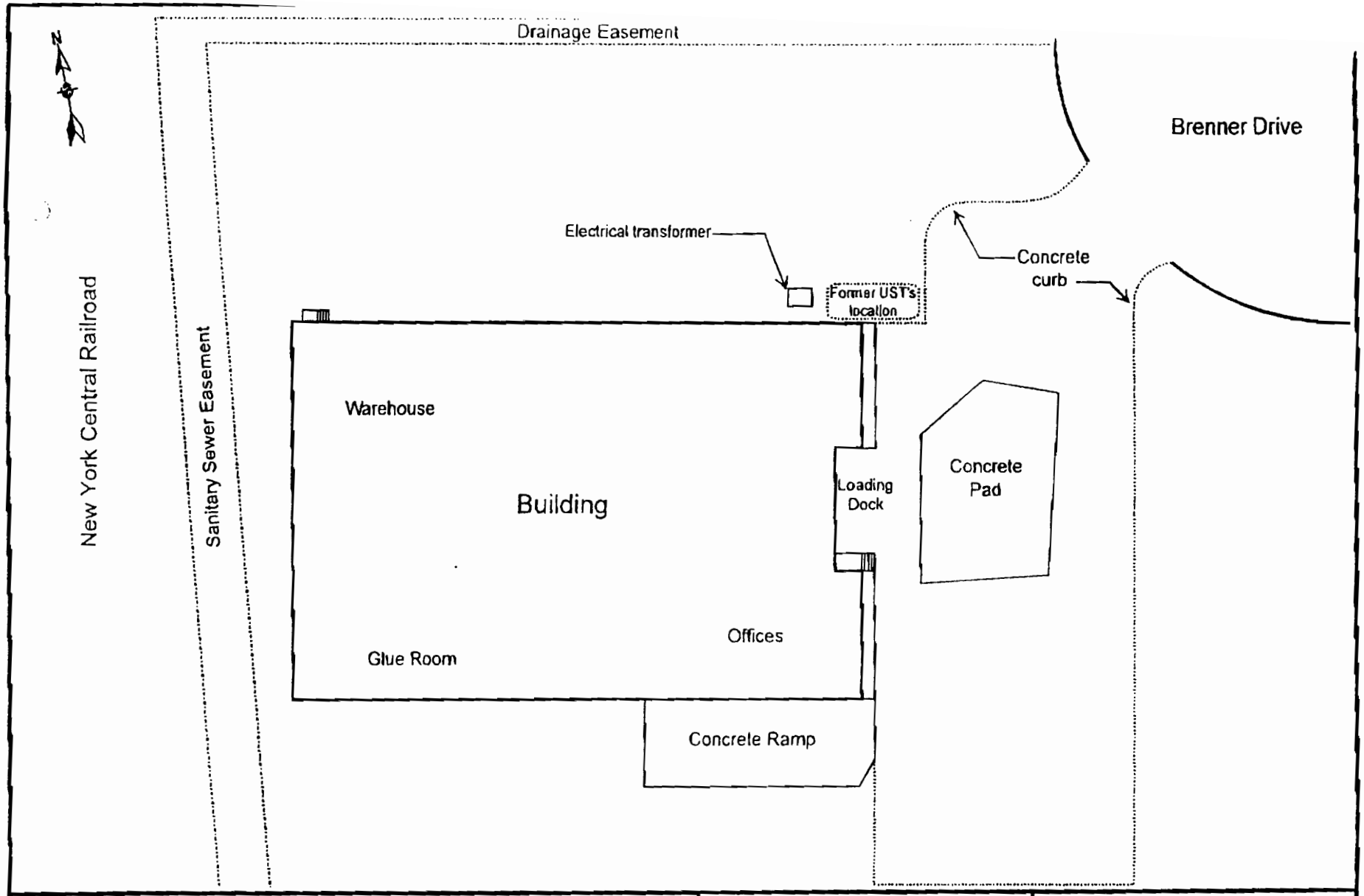
scale in feet

Approx. scale 1" = 2000 ft

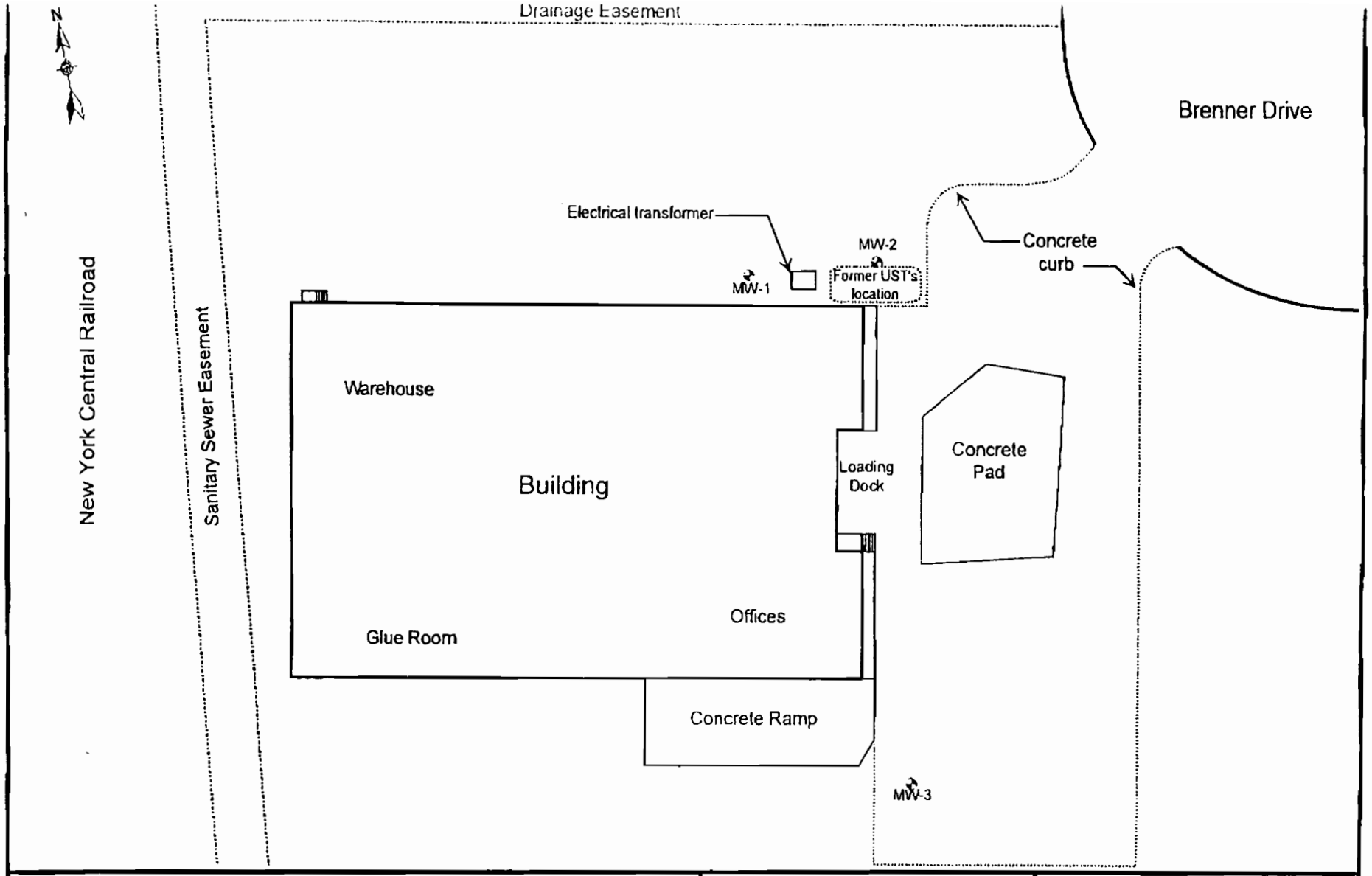
Quadrangle Location

N

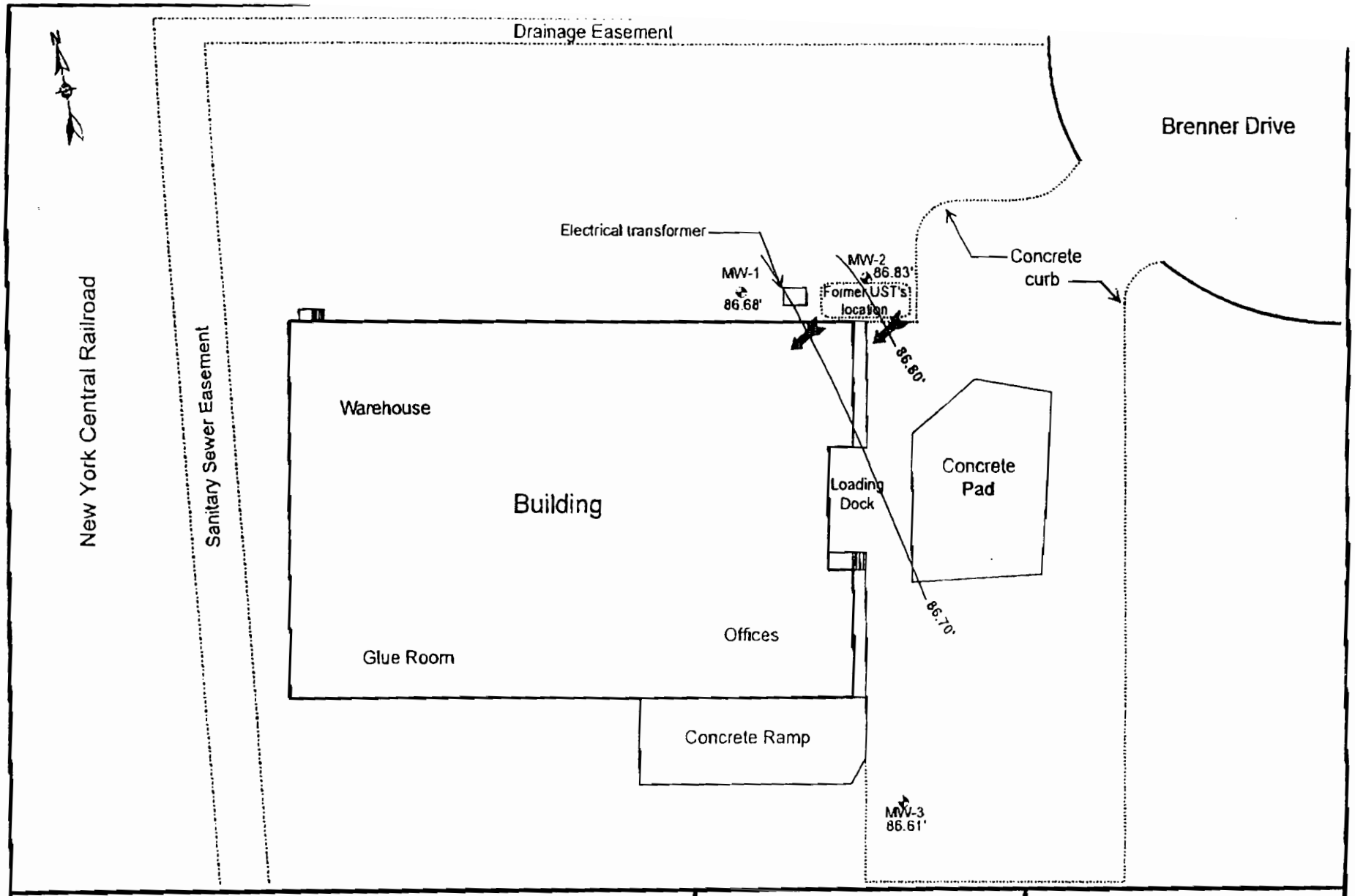
Source: USGS 7.5 min.



Environmental Products & Services, Inc.	DATE: August 20, 1998	PROJECT NO.: N1556
100 Brenner Drive, Congers, NY	SCALE: Approx. 1" = 50'	FIGURE NO.: 2
Site Map	DRAWN BY: LJM	LOCATION: Congers, New York



Environmental Products & Services, Inc.	DATE: August 20, 1998	PROJECT NO.: N1556
100 Brenner Drive, Congers, NY Site Map (Showing locations of monitoring wells)	SCALE: Approx. 1" = 50'	FIGURE NO.: 3
	DRAWN BY: LJM	LOCATION: Congers, New York



Environmental Products & Services, Inc.	DATE: August 20, 1998	PROJECT NO.: N1556
100 Brenner Drive, Congers, NY Groundwater Contour Map (Based on data collected on August 12, 1998)	SCALE: Approx. 1" = 50'	FIGURE NO.: 4
	DRAWN BY: LJM	LOCATION: Congers, New York

TABLES

Table 1

Summary of Groundwater Elevation Data

Hudson Technologies, Inc.
100 Brenner Drive

Job# N1556
Congers, New York

Location	Top of Casing Elevation (ft.)	Depth to Water 8/12/98	Groundwater Elevation (ft.) 8/12/98
MW-1	98.86	12.18	86.68
MW-2	99.20	12.37	86.83
MW-3	95.81	9.20	86.61

Notes:
1. Top of Casing Elevations are assigned utilizing an arbitrary benchmark of 100.00 feet.
2. Data based on elevations taken on August 12, 1998.

Table 2

Comparison of Water Quality Data vs.
New York State Department of Environmental Conservation
Guidance Values for Drinking Water

Hudson Technologies Inc.
100 Brenner Drive

Job # N1556
Congers,NY

Petroleum Compound	Guidance Value	MW-1 8/12/98	MW-2 8/12/98	MW-3 8/12/98
Benzene	0.7	BDL	BDL	BDL
Toluene	5	BDL	BDL	BDL
Ethylbenzene	5	BDL	BDL	BDL
Total Xylenes	15	BDL	BDL	BDL
Acetone	50	BDL	BDL	BDL
Chlorobenzene	5	BDL	BDL	BDL
Chloroform	5	BDL	3.3	BDL
1,1-Dichloroethane	5	**5.2**	BDL	BDL
1,1-Dichloroethene	5	**5.4**	**8.8**	**14**
1,2-Dichlorobenzene	5	BDL	BDL	BDL
Dichlorodifluoromethane	5	BDL	BDL	BDL
N-Butylbenzene	5	BDL	BDL	BDL
n-Propylbenzene	5	1.9	BDL	BDL
Sec-Butylbenzene	5	4.6	BDL	BDL
Isopropylbenzene	5	1.6	BDL	BDL
4-Isopropyltoluene	5	BDL	BDL	BDL
Napthalene	10	1.4	1.2	BDL
1,2,4 Trimethylbenzene	5	3.4	BDL	BDL
1,3,5 Trimethylbenzene	5	BDL	BDL	BDL
Trichlorofluoromethane	5	BDL	2.6	**5.0**
Trichloroethene	5	**10**	**320**	**480**
1,1,1 Trichloroethane	5	2.2	**38**	**66**
Tetrachloroethene	5	BDL	1.7	3.0
MTBE	50	1.8	3.6	2.0

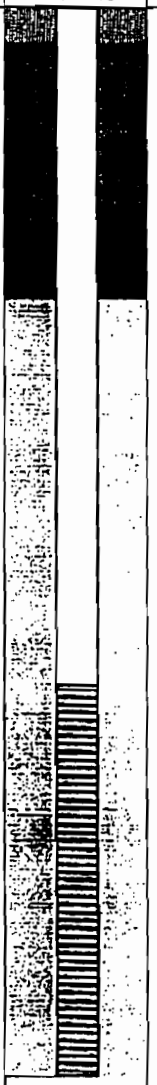
Notes:

1. All measurements recorded in micrograms-per-liter (ug/L).
2. Samples analyzed in accordance with EPA method 8260 plus MTBE.
3. BDL = Below Detection Limits (detection limits varied).
4. The present guidance values were adopted by NYSDEC in September of 1990.
5. Analytical measurements exceeding guidance values are in bold type.

APPENDIX A

Monitoring Well Logs

vironmental lucts & Services, Inc.	Subsurface Log	Hole No.: MW-2 Sheet 1	Date Started: 8/5/98 Date Finished: 8/5/98
Client: Hudson Tech. Inc. 100 Brenner Dr. cation: Congers, NY	Method of investigation: 4" Air Hammer		
ranch: Newburgh ct No.: N1556 nager: Robert Hulihan	Drilling Co.: EP&S Geologist: Robert Hulihan	Driller: Jeff Ludlow D.Helper Chet Brunelle Drill Rig: CT-150	Weather: Hot 90° F

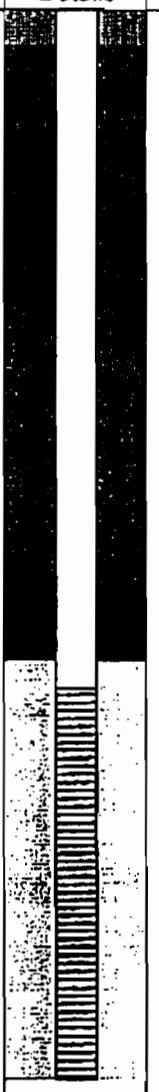
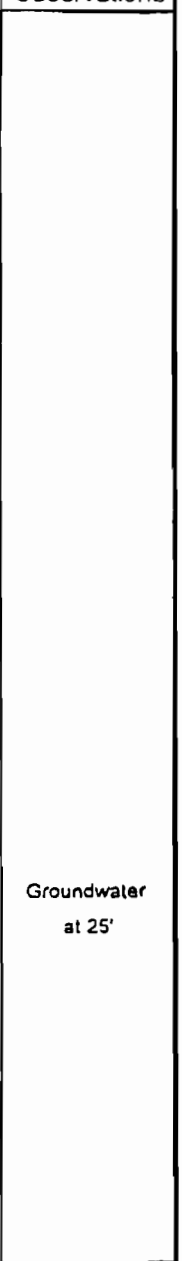
Sample No.	Sample Depth (ft.)	Blows per 6"	"N"	Recovery (ft.)	Sample Description	Field Analytical Reading	Well Details	Groundwater and Other Observations
					Dark red silt, gravel, tight, dry			
					Clusters of large boulders (Gneiss)			
					Dark red silt, gravel, tight, dry			
					Clusters of large boulders (Gneiss)			Groundwater at 29'
					Bottom of Well 30.0'			

mple Types:
S=Split Spoon: _____ T= Shelby Tube: _____
R= Rock Core: _____ O = _____

Backfill Well Key
Cement | Native Fill
Sand | Bentonite

STM D1586

nvironmental roducts & Services, Inc.	Subsurface Log	Hole No.: MW-1 Sheet 1	Date Started: 8/5/98 Date Finished: 8/5/98
Client: Hudson Tech. Inc. 100 Brenner Dr. ocation: Congers, NY	Method of investigation: 4" Air Hammer		
Branch: Newburgh ect No.: N1556 anager: Robert Hulihan	Drilling Co.: EP&S Geologist: Robert Hulihan	Driller: Jeff Ludlow D.Helper Chet Brunelle Drill Rig: CT-150	Weather: Sunny 85° F

Sample No.	Depth (ft.)	Blows per 6"	"N"	Recovery (ft.)	Sample Description	Field Analytical Reading	Well Details	Groundwater and Other Observations
					Light red brown silt, little gravel, tight, dry			
					Large boulder (Gneiss)			
					Dark red brown silt, gravel, tight, dry			
					Large boulder (Gneiss)			Groundwater at 25'
					Bottom of Well 30.0'			

mple Types:
S=Split Spoon: _____ T= Shelby Tube: _____
R= Rock Core: _____ O = _____

Backfill Well Key
Cement — Native Fill
Sand — Bentonite

FM 01585

vironmental ducts & Services, Inc.	Subsurface Log	Hole No.: MW-2 Sheet 1	Date Started: 8/5/98 Date Finished: 8/5/98
Client: Hudson Tech. Inc. 100 Brenner Dr. ation: Congers, NY	Method of investigation: 4" Air Hammer		
anch: Newburgh t No.: N1556 nager: Robert Hulihan	Drilling Co.: EP&S Geologist: Robert Hulihan	Driller: Jeff Ludlow D.Helper Chet Brunelle Drill Rig: CT-150	Weather: Hot 90° F

Sample No.	Depth (ft.)	Blows per 6"	"N"	Recovery (ft.)	Sample Description	Field Analytical Reading	Well Details	Groundwater and Other Observations
					Dark red silt, gravel, tight, dry			
					Clusters of large boulders (Gneiss)			
					Dark red silt, gravel, tight, dry			
					Clusters of large boulders (Gneiss)			Groundwater at 29'
					Bottom of Well 30.0'			

ple Types:
S=Split Spoon: _____ T= Shelby Tube: _____
R= Rock Core: _____ O = _____

Backfill Well Key
Cement — Native Fill
Sand — Bentonite

TM D1586

ıvironmental ducts & Services, Inc.	**Subsurface Log**	Hole No.: MW-3 Sheet 1	Date Started: 8/5/98 Date Finished: 8/5/98

Client: Hudson Tech, Inc.
100 Brenner Dr.
cation: Congers, NY

Method of investigation: 4" Air Hammer

ranch: Newburgh
ct No.: N1556
nager: Robert Hulihan

Drilling Co.: EP&S
Geologist: Robert Hulihan

Driller: Jeff Ludlow
D.Helper Chet Brunelle
Drill Rig: CT-150

Weather: Hot 90° F

Sample No.	Depth (ft.)	Blows per 6"	"N"	Recovery (ft.)	Sample Description	Field Analytical Reading	Well Details	Groundwater and Other Observations
					Dark red silt, little gravel, tight, dry			
					more gravel w/depth			
					Clusters of large boulders (Gneiss)			
					Dark red silt, little gravel, tight, dry			
					Alternating layers of cobbles & boulders (Gneiss)			
					Dark red silt, little gravel, tight, wet			Groundwater at 25'
					Bottom of Well 30.0'			

le Types:
S=Split Spoon: _____ T= Shelby Tube: _____
R= Rock Core: _____ O = _____

Backfill Well Key
Cement — Native Fill
Sand — Bentonite

D158G